

# FORD OWNER and DEALER

NOT CONNECTED WITH THE FORD MOTOR COMPANY

MILWAUKEE, WIS.

JUNE, 1920 /

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## Every Owner is writing a - Testimonial Book for Hasslers

Hassler owners everywhere are writing testimonial books for Hassler Shock Absorbers. These books are their Savings Bank Books.

A saving of one-third in repair and tire expense and in depreciation shows in your savings bank account. And in addition to the savings you have much greater comfort.

A type for every model of Ford Car or Truck. Let the Hassler dealer equip your Ford on ten days' trial. If you do not know who sells Hasslers in your neighborhood, write us.

**ROBERT H. HASSLER, Inc., Naomi St., Indianapolis, Ind.**  
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*The Hassler Guarantee:* "Absolute Satisfaction or Your Money Back."

A Standard Quality Product—Worth the Price.

Good territory still open. Write.

Opportunities now for exclusive distributors in many foreign countries.

For Ford  
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Trucks.



For  
Ford  
Cars



For Ford  
One-Ton  
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## Shock Absorbers

PATENTED

The conical springs set at the angle shown prevent sideways and allow for the most resilient downward action. The springs compress on either upward or downward movements—do not stretch out of shape—do not allow up-throw. Hasslers last as long as the Ford and make it last.

# A Knock-Out!

## This Two-Piece Bushing Remover is Different and Better

**N**OT merely a single piece of spring steel, but a carefully designed high grade nickel steel tool, in two parts with stout driving handle. Rightly constructed to do the work without injuring the bushing or scratching the bushing-seat. This makes reinsertion of bushing easy.

## J & B BUSHING REMOVER

may be used **on the car without removing wheel**. You simply insert lower piece of tool in spindle-body, hold same at greatest spread by applying upper part of tool, and drive out bushing. Strain does not come upon rivet, but on the solid upper end of the tool.

Thousands in daily use by men who KNOW. Used on Ford, Dodge, Overland, Chevrolet, Saxon and all cars using half-inch spindle bolt. You will find the J & B Bushing Remover a quick and heavy seller in constant demand.

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**Ford Switch Keys:** This key may be used as a wrench to adjust coil units; also to gauge the gap between the points of the spark plug and the points of the coil units. Twenty keys mounted on attractive easel-back counter card, 10"x12 $\frac{3}{4}$ ". Retail 15 cents apiece.

**J & B MANUFACTURING CO.**

Pittsfield

Massachusetts



**\$3.50 per  
Set of 3**

## It Costs You Money *Every Time Your Ford Chatters*

That jerk and jar costs you money. It racks the rear end, causes repair bills—shortens the life of your car.

Advance Cork Insert will stop the annoying chatter and save you money.

**T**HE cork Insert Patent has been upheld by Federal Court. Protect yourself from liability by handling only GENUINE ADVANCE CORK INSERT—sold only in the RED and BLACK BOX.

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Advance Cork Insert out-wears three sets of ordinary lining—saves you expense and inconvenience of frequent re-linings.

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Your jobber will quote you, or write us direct.

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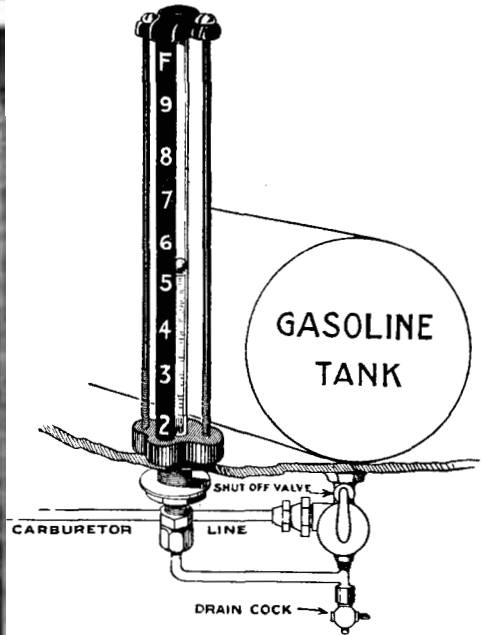
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# THE BAER-GLAUBER VISIBLE GASOLINE GAUGE

## For FORD CARS



PRESENTED.



### COMPLETELY ELIMINATES

1. The Measuring Stick Nuisance.
2. Constant and unnecessary lifting of the entire seat.
3. The worry of ever being caught with an empty gasoline tank.
4. Carburetor trouble caused by using a dusty measuring rule.
5. The possibility of being under-filled by the "gasoline man."
6. Undue loss of time in ascertaining amount of gas in tank.

### BECAUSE—The Baer- Glauber Gauge

1. Cannot help but be seen every time the driver enters his car.
2. Contains a red ball which floats on gasoline in gauge, making the amount easy to read.
3. Is at all times thoroughly accurate.
4. Cannot get out of order, since it works solely on a simple gravity principle.
5. Is durably constructed and easily attached.
6. Is unconditionally guaranteed in accuracy, workmanship and material.

Fits all Fords. Weight 1 lb. Full Attaching Directions with Each Outfit.

**PRICE \$3.00**

PRICE FOR IMPERIAL GALLONAGE, \$4.50

**THE BAER-GLAUBER COMPANY,** 6523 EUCLID AVENUE  
CLEVELAND, OHIO  
WACHOVIA BANK BLDG., WINSTON-SALEM, N. C.

When writing advertisers—Just say FORD OWNER and DEALER



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#### IN THIS ISSUE—

The Third Birthday Party.....	26
The Fan and Fan Belt.....	31
Airing the Tires.....	37
Tales of Ford Tours.....	40
Touring Equipment Articles.....	47-60
Tractor Division.....	68
Hints.....	78
Questions.....	86
Equipment Review.....	92
Does Muffler Impair Efficiency?.....	166

# GOES ON LIKE A HUBCAP

**NO  
DRILLING  
NO  
PINNING**



## Dreadnaught Indestructible Hub-Odometer

*Fits Every Model "T" Ford*

without machining or bolting, gives a complete record of every foot of travel forward or backward. Buy it over the counter, take it out to the curb, unscrew a front hub cap and screw the Dreadnaught Automatic Indestructible Hub-Odometer in its place. From that minute you get a continuous mileage record.

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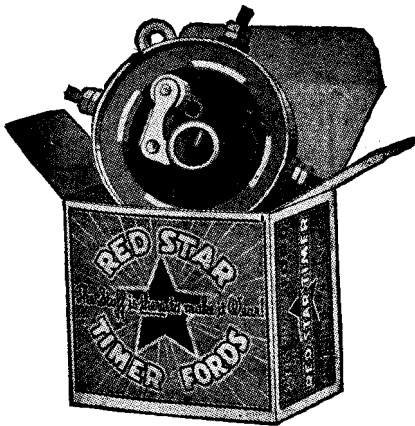
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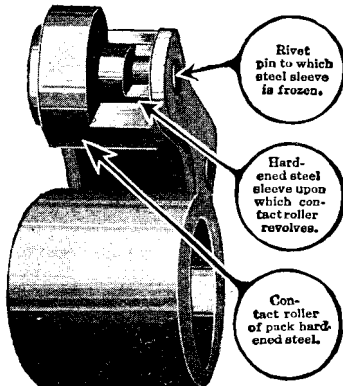
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*Used Wherever Ford Cars Are Run*



*Insist on the Red Star Trade Mark stamped on the shell. Sold only in the Red and Blue Box.*

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FOR FORD CARS-TRUCKS AND TRACTORS



*Study the construction of the Red Star Roller.*

*\$2.25 in United States  
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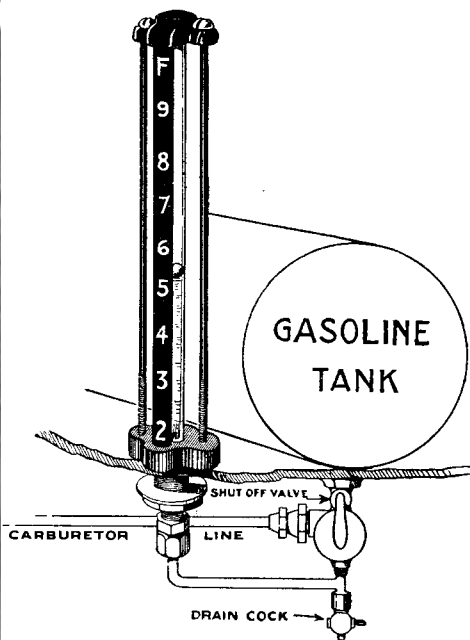
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For FORD CARS



REGISTERED.



## COMPLETELY ELIMINATES

1. The Measuring Stick Nuisance.
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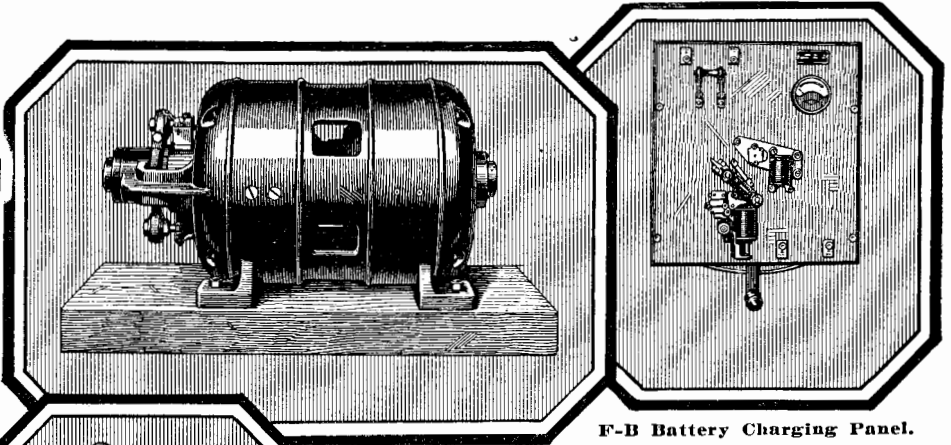
*Advance White Stripe is sold in Sets or Rolls—  
Sets in Cartons, \$2.25; in Rolls, per foot, 36c*

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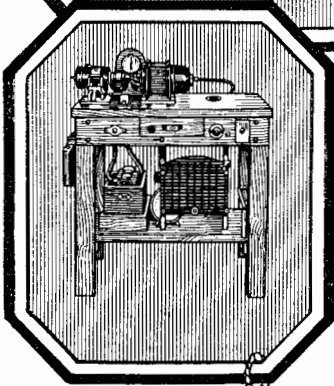
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F-B Battery Charging Panel.

F-B Battery Charger.



F-B Test Stand.



## One Source

**Y**OU will find all the necessary electrical equipment for your service station here under one roof.

A Battery Charging Outfit that will charge sixteen 6-volt batteries or one that charges **FIVE SETS** of sixteen 6-volt batteries.

Test Stands which test starting and lighting systems under conditions identical with those in actual use on the car, easily and quickly locating any troubles.

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Battery Covers which protect the batteries on Ford cars from dust and mud.

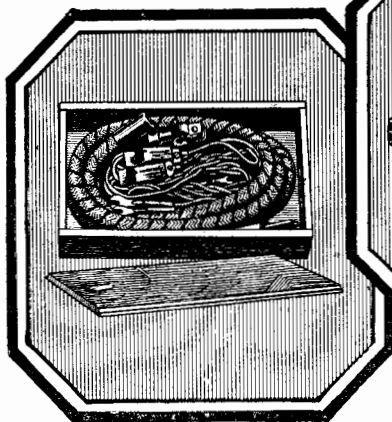
Whether you buy a complete Battery Charging Outfit or a Battery Cover, it is backed by a single guarantee—the "Fairbanks O.K."

The entire Fairbanks line of Service Station Equipment, the largest and most complete in the world, is backed by this guarantee. It means that Fairbanks products are—O.K. in quality, O.K. in price, and O.K. in service.

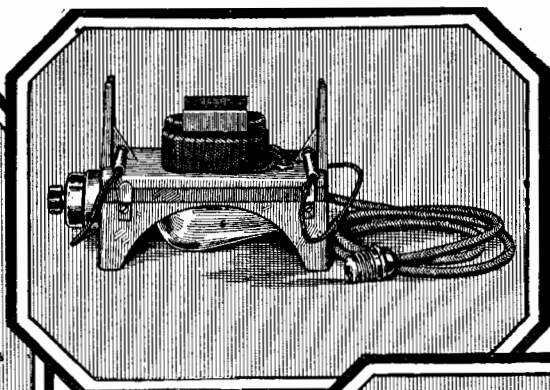
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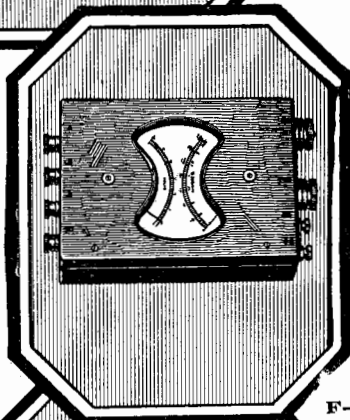
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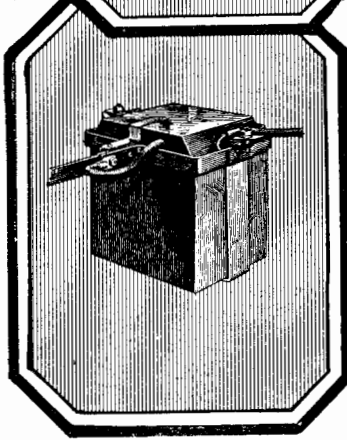
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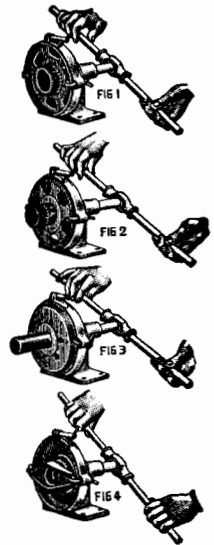
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**SPECIAL TOOLS**  
for AUTOMOBILE REPAIR SHOPS.  
*Save 75% on your labor costs*



## Wilson's Transmission Bushing Reaming Machine for Fords

PRICE  
**\$75.00**

Wilson's transmission bushing reaming machine is the only tool on the market with which a PERFECT job can be done. This machine is especially designed to hold the drums and triple gears at a right angle, and in perfect center line with especially designed reamer that will cut a perfectly true hole, with a highly polished finish. Other types of plain or expanding reamers cut on a one or two inch surface, and are not held rigid and in alignment with drum, therefore impossible to ream bushings true, resulting in a very noisy transmission and usually a dissatisfied customer. Assuming your labor costs to be 50 cents per hour (usually higher), 30 minutes labor costs you 25c. to completely and perfectly remanufacture a transmission with Wilson's Reaming Machine. By any other method, a poor job at its best, 4 hours labor costs you \$2.00; SAVING, by using my machine, \$1.75 on 300 jobs, \$525.00. Pays for itself seven times in one year. Eliminates all comebacks, and enables you to make a real profit on every job, a SATISFIED CUSTOMER EVERY TIME. This machine recommended by the Service Dept. of the Ford Motor Co. 45% of all Ford agents now using them.



### FACTS ABOUT MAIN BEARING REAMERS

Wilson's Perfected Main Bearing and Connecting Rod Aligning Reamer is the  
Only One Made That Will Do Perfect Work. Very Necessary with

#### "BURNING-IN" MACHINES

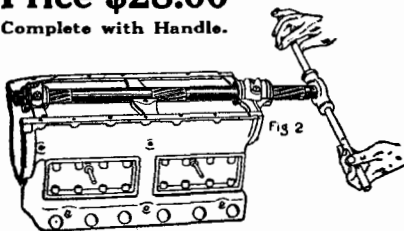
Less than one-third of your Ford Blocks need be re-babbitted. It is, however, necessary that all three Bearings be in perfect alignment, otherwise your Crankshaft will spring down to center bearing, and when assembled, Fly-Wheel running at high speed will "Right itself." This Gyroscopic effect puts a great strain on Center Bearing and Crankshaft, resulting in Burning-out Bearing or breaking Crankshaft.

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**Price \$28.00**

Complete with Handle.



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Guaranteed to work perfectly, stand up indefinitely. Defective reamers replaced free of charge. 30 minutes to perfectly fit main bearings and connecting rods. Saving 8 hours over hand scraping. Only method of insuring perfect alignment.

Pays for itself 40 Times on Actual Saving of time on 300 Motors. INSURES 300 Satisfied Customers.

Write for catalog of complete line Wilson Labor Saving tools.

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IS EVIDENCED BY THE FOLLOWING LIST  
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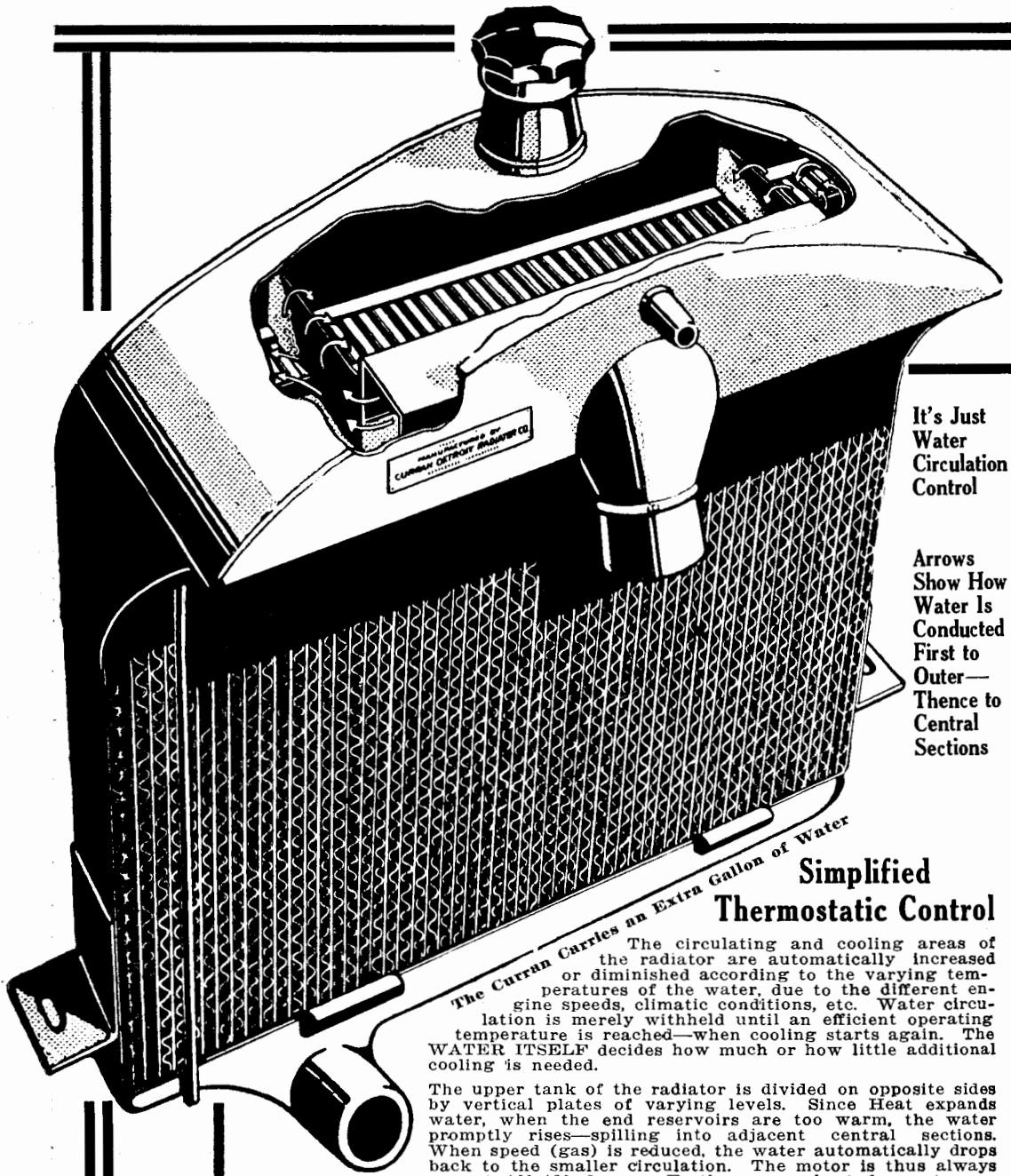
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It's Just Water Circulation Control

Arrows Show How Water Is Conducted First to Outer—Thence to Central Sections

**Simplified Thermostatic Control**

The circulating and cooling areas of the radiator are automatically increased or diminished according to the varying temperatures of the water, due to the different engine speeds, climatic conditions, etc. Water circulation is merely withheld until an efficient operating temperature is reached—when cooling starts again. The WATER ITSELF decides how much or how little additional cooling is needed.

The upper tank of the radiator is divided on opposite sides by vertical plates of varying levels. Since Heat expands water, when the end reservoirs are too warm, the water promptly rises—spilling into adjacent central sections. When speed (gas) is reduced, the water automatically drops back to the smaller circulation. The motor is thus always run at 160-180 degrees F—the proper heat for water returning to the motor from the radiator.

*The Curran Carries an Extra Gallon of Water*

Next Month We'll Explain our Famous "DOWN DRAFT AIR-STRIKE"

**COUNTY DEALERS WANTED**

If you're not a CURRAN Dealer, you'll find it profitable to write us at once about contracting for exclusive territory. Please enclose references.

# THE CURRAN RADIATOR

SIMPLIFIED THERMOSTATIC CONTROL

**WHY  
ARE FLEETS OF  
BRAND NEW FORD TRUCKS**

Having Their Standard Equipment Replaced With This  
New — and ONLY — Thermostatic Control Radiator

**Because Their Performance Justifies It**

**All Currans Are Guaranteed For 1 Year  
THAT**

Overheating is Impossible  
Overcooling is Prevented  
Freezing is Harmless

**THE MOTOR IS RUN  
AT EVEN TEMPERATURE  
SUMMER AND WINTER**

**CURRAN-DETROIT RADIATOR COMPANY**

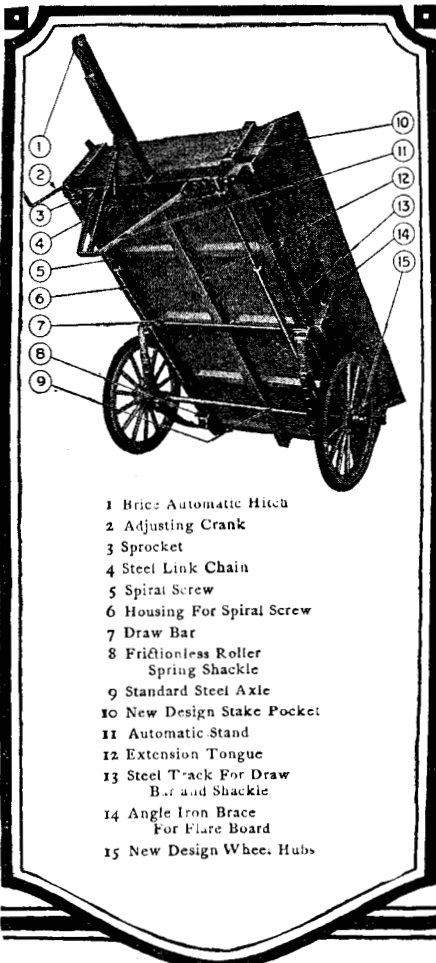
AUTOMOTIVE RADIATION ENGINEERS AND MANUFACTURERS

558-570 Lafayette Blvd. W.

Detroit, Michigan



## The Perfectly Balanced Trailer



- 1 Brice Automatic Hitch
- 2 Adjusting Crank
- 3 Sprocket
- 4 Steel Link Chain
- 5 Spiral Screw
- 6 Housing For Spiral Screw
- 7 Draw Bar
- 8 Frictionless Roller Spring Shackle
- 9 Standard Steel Axle
- 10 New Design Stake Pocket
- 11 Automatic Stand
- 12 Extension Tongue
- 13 Steel Track For Draw Bar and Shackle
- 14 Angle Iron Brace For Flare Board
- 15 New Design Wheel Hubs

THE VanBriggle Adjustable Trailer—the two-wheel trailer with the *adjustable* axle—was the natural outgrowth of two interesting experiences with a two-wheel trailer of the fixed axle type. Here are the incidents as told by the inventor:

“I was using a two-wheel trailer with a fixed axle carrying the wheels under the center of the body. One day I started to deliver a cow to a buyer thirty miles away. A steep hill showed up ahead. I knew my car could pull it—but when only a few yards up, my car suddenly stopped. The engine was racing. No trouble there! A glance behind showed the trouble. The rear wheels were *spinning* on the road. The grade had thrown the weight of the cow to the rear of the trailer, and the trailer’s tongue, acting as a lever, had raised the weight from the rear wheels of my car until they had lost traction. I solved this problem at the time by having a passerby ride in the rear seat of my car.

“Next day I moved the axle to the rear of the trailer. This worked fine until I took on a load of sacked cement, which filled the entire bed of the trailer. Practically all the weight was thrown on the rear of my car—and at the first hard bump the tongue broke. These two experiences gave me the *right*

**VANBRIGGLE**  
*Adjustable*  
**TRAILER**



## —and How It Was Conceived

idea. I needed to carry the load with the axle sometimes at the center of the trailer's body and sometimes at the rear—for no two loads are exactly alike. Therefore, the axle must be adjustable, in order that any load can be perfectly balanced."

The VanBriggle Trailer has this *adjustable* axle, which enables you to haul any load in complete balance. This axle can be instantly shifted to the correct position under the load before starting. By turning the crank at the front of the trailer bed you can shift the axle forward or back, without disturbing the load.

Every farmer should own a VanBriggle Adjustable Trailer. It is light, practical, economical. Its perfect balance insures a straight, direct, steady pull, giving your car even better traction than when running alone—eliminates the side-sway that wears out your car and its tires—permits you to haul a full load, at high speed, and hardly know you are pulling it. Stated capacity 1500 pounds. Two special bodies. We shall be glad to tell you more about this splendid trailer.

Write today for illustrated folder giving further facts and complete specifications

VANBRIGGLE MANUFACTURING COMPANY  
Indianapolis, U. S. A.

**VANBRIGGLE**  
*Adjustable*  
**TRAILER**

Axle in center of trailer—load imperfectly balanced. Turning crank adjusts axle to give correct balance.

Axle back of center—load perfectly balanced. Trailer then carries load easily, even up steepest incline.

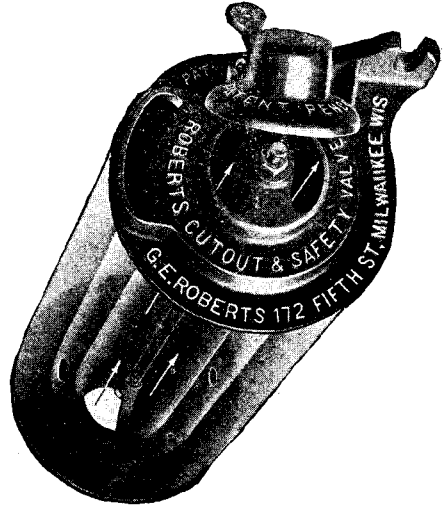
**AUTOMATIC HITCH FOR FORD CARS**

When writing advertisers—Just say FORD OWNER and DEALER



# NOBODY LOVES A TATTLE-TALE—

—but suppose that tattle-tale tattled every time your cylinders missed fire, told you instantly when your ignition system or carburetor wasn't working properly. How would you feel about it then? You can have a faithful little tattle-tale like that on your Ford if you'll equip it with a



## ROBERTS CUT-OUT AND SAFETY VALVE

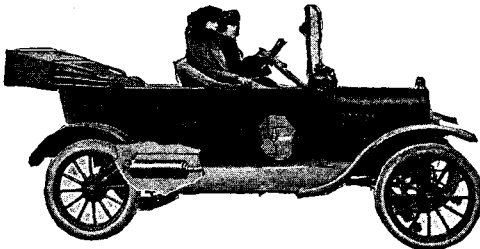
When raw gases escape from the cylinders into the exhaust line and muffler and are ignited there, the spring-controlled safety valve provides a quick escape for the force of the explosion, eliminating all danger of the muffler being burst. The "pop-bang" report tells you immediately that there's something wrong.

Besides eliminating the danger of bursted mufflers, the Roberts prevents the loss of power through back pressure or through carbon clogging the muffler.

The Roberts Cut-Out and Safety Valve also is an effective cut-out which can be operated at the will of the driver by a convenient hand control.

### EASILY ATTACHED

The Roberts Cut-Out and Safety Valve can be installed in a few minutes. No cutting or drilling or other laborious mechanical operations are necessary. Any Ford owner can install it quickly and easily.



### DEALERS—JOBBERS

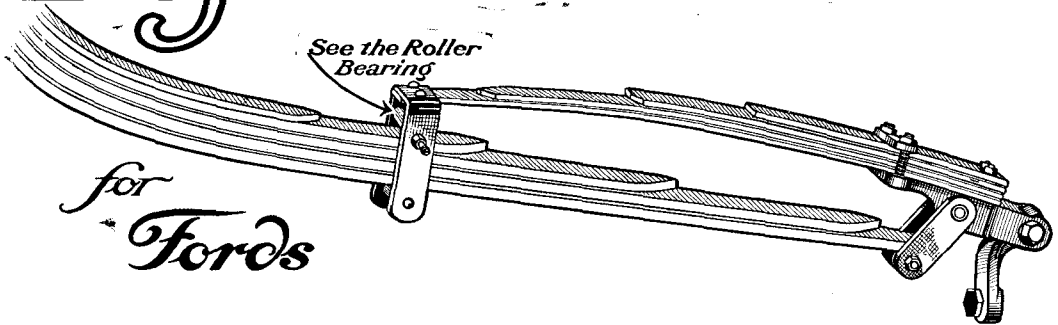
There's a real demand for this new accessory in your territory. Our trade prices make it worth while handling this proposition. Write us today.

### FORD OWNERS

If your dealer has not yet stocked with the Roberts, we will send you one complete, consisting of the Roberts Cut-Out and Safety Valve, Hand Control and Cable ready to install, on receipt of \$4.00.

**The G.E. Roberts Co., 172—5th St., Milwaukee, Wis.**

# Defender Shock Absorbers



## Gain Always By Comparison

DEFENDER dealers are authorized to install Defender Shock Absorbers on your Ford car under a—Money Back If You Want It—trial test of merit.

That enables you to determine for yourself on your own Ford, in your own way, without risk, the true value of Defender Shock Absorbers, and at the end of the trial period, if you are willing to part with them, your money will be instantly refunded.

Because of their superior mechanical principle, Defender Shock Absorbers are the choice of experts. In reality they are both—shock absorbers and snubbers—built tremendously strong to give satisfactory service for the life of your car and to stand up under gruelling road work.

In a single season they will pay for themselves in increased operating efficiency of your Ford—in the riding and driving comfort and freedom from shocks and jars, and, in the end return a big cash profit through enhanced re-sale car value.

Ask your dealer, or write us for the new Defender Shock Absorber folder.

**DEFENDER AUTO-LOCK COMPANY**  
5th FLOOR MARQUETTE BLDG. DETROIT, MICH.

---

### Dealers

Defender Shock Absorbers are best for owners—obviously best for you.

A new illustrated folder describing the mechanical superiority and operating advantage of the Defender Shock Absorbers for Ford cars, is just off the press—it, as well as our dealer proposition, will prove interesting to you—send for them.

We want every dealer and garageman to test the merit of Defender Shock Absorbers on their own Ford cars for a period of thirty days at our risk. May we send you details?

*“Defender service and dealer treatment have always set the pace.”*



## “No Trouble in that Carburetor”

“There can’t be anything wrong in *that* carburetor—I’ll have to look somewhere else for the trouble,” said the mechanic. And every owner whose motor is VanBriggle-equipped quickly learns this, too.

This same confidence—and many other advantages—may be yours, if your Ford, Dodge or Maxwell has a VanBriggle Airplane Principle Carburetor. This carburetor is *so simple* and *so understandable* that you will *know* absolutely, when by chance your motor fails you, that your VanBriggle is not at fault. You, too, will look elsewhere for the trouble. Complete with strainer, ready to install, at prices quoted below. Your dealer or garage man will supply you. *See him today!*

# VAN BRIGGLE CARBURETORS

For FORD Cars and Trucks (Model PF) \$ 7.50

For MAXWELL Cars and Trucks (Model PT) 12.00

For DODGE Cars and Trucks (Model PD) 15.00

## SHOCK ABSORBERS for FORD CARS



1920 Model

The time-proved principle in VanBriggle Shock Absorbers for all Ford open and enclosed cars remains without change. But, by a simplifying step the operation has been greatly improved. Shackling radius has been lengthened and thus has eased action of the car spring. Other advantages have been added and VanBriggle Shock Absorbers give better satisfaction than ever. Installed without removing wheels or changing *anything*. Your dealer or garage man can supply. See him today.

*Car and Truck Owners:* Write for our free booklet “Successful Carburetion.”

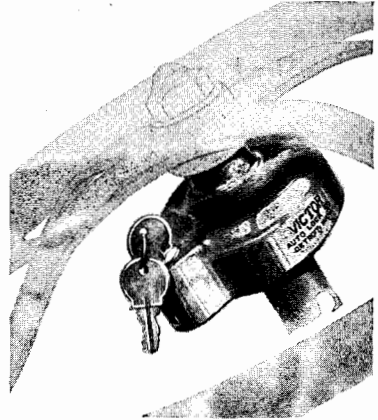
**We will ship direct if your jobber or dealer does not supply you.**

VANBRIGGLE MOTOR DEVICE CO., INDIANAPOLIS, U.S.A.

# VICTOR

## Steering Wheel Locks

### Fit Any Ford Car



**FOOLPROOF.**

**EASY TO OPERATE.**

**EASY TO INSTALL.**

Made of HAVENITE metal, highly finished.

#### Model H

A RIGID wheel lock with eight locking positions.

**PREVENTS CAR FROM BEING TOWED.**

It complies with all parking ordinances, as the front wheels can be locked at any angle.

A full one-inch bearing insures good solid steering service, as well as the best of locking service.

You can leave your car on the street as long as you like. It will be there when you come back when equipped with a Model "H."

#### Model J

A LOOSE wheel lock without springs. When locked the heat-treated steel shuttle plate fits under pinion gear which absolutely prevents the gear from being hammered into mesh.

There is no danger of the pinion gear jumping out of mesh when driving, as the key cannot be removed until the pinion gear is locked into mesh. The car cannot be driven with the key in the lock.

The heavy bearing prevents the steering wheel from becoming loose and sloppy after a few months of service.

This special Underwriters' label is on all Victor Locks. This gives the car owner the benefit of all Insurance Discounts.



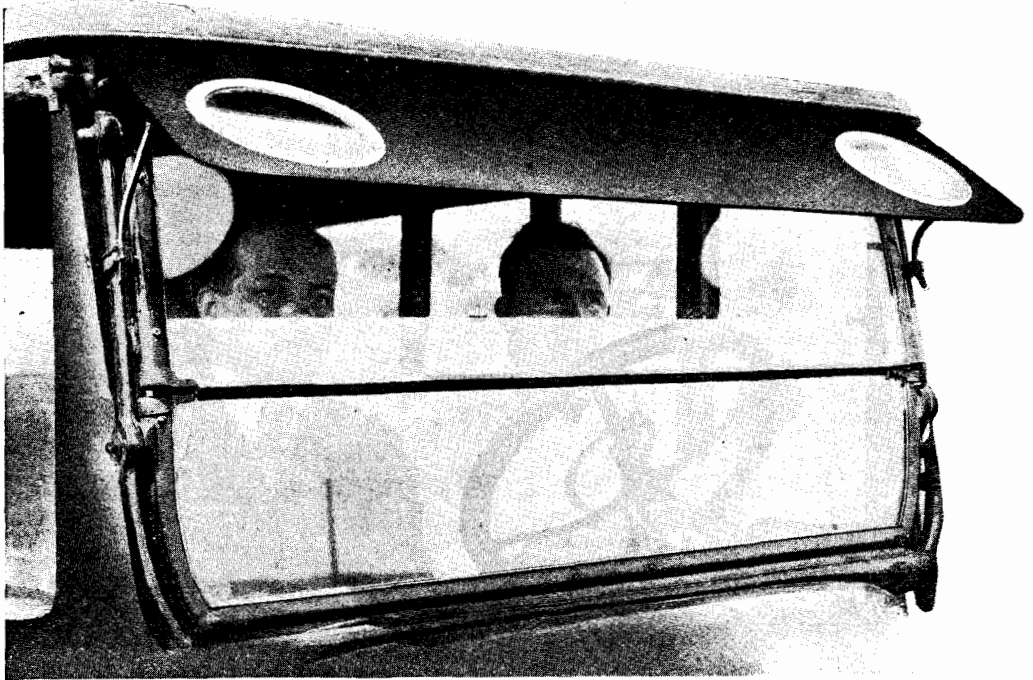
The 17-inch Victor Ford replacement wheel with aluminum spider is highly finished to match Victor Locks.

# VICTOR AUTO-LOCK CO.

80 Fort Street, Detroit, Mich.

# The Protecto Windshield Awning

The Perfect Adjustable **LIGHT** and **STORM SHADE**



## Fits FORD SEDAN and COUPE

and all other makes of OPEN or CLOSED Cars.

**T**HE PROTECTO AWNING is a combination light and storm protector. The device is made adjustable, so that the shadow will fall just below the driver's eyes.

The driver ordinarily is subjected to the continuous glare of reflected light. During the day the sun's rays strike the glass wind shield and are reflected into the driver's eyes. The PROTECTO AWNING eliminates this glare, as well as the direct, blinding light of the morning and evening sun.

Every driver has voiced his indignation against the glare of the arc lights at night. Accidents occur every night because of the blinding effect of approaching headlights. The PROTECTO AWNING keeps these lights from the driver's eyes to within twenty-five feet of the approaching car.

The two awning side lights have a purpose. These windows enable the driver to see, when climbing or when going down a hill.

The PROTECTO AWNING prevents rain, snow or sleet from obstructing the driver's view. During bad storms, however, rain will blow under the awning and adhere to the shield in the form of drops. It is not the water which prevents a clear vision, but the light refraction in the drops of water on the shield. The PROTECTO AWNING casts a shadow over the windshield, which renders these particles of water transparent. Only users of this awning can appreciate the value of this device. The awning folds back with the top.

Black Leatherette, Celluloid, no rims, black braces . . . . .	<b>\$10.00</b>
Black Leatherette, D. L. Glass, Japan rims, black braces . . . . .	<b>11.25</b>
Black Leatherette, Bevel Plate Glass, Nickel rims, black braces . . . . .	<b>13.75</b>

Order a PROTECTO WIND-SHIELD AWNING today. Put it on, use it ten days. If not satisfactory return to us and money will be refunded.

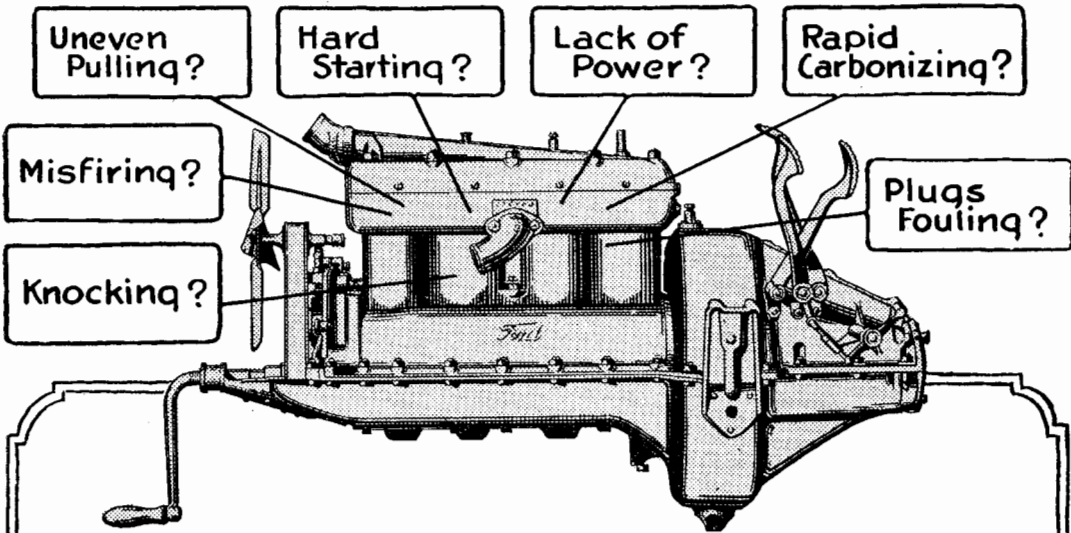
**Dealers:** Write for full information on our attractive dealer proposition. Act now before some other live one gets it first. It's a sure, quick, turn over.

## The Felly Sales Corporation

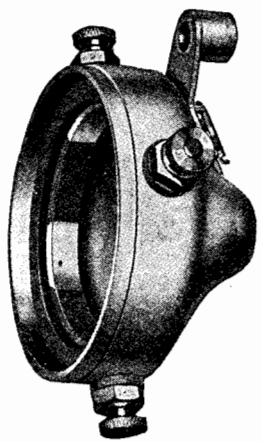
122 S. Pinckney St.

Madison, Wis.

When writing advertisers—Just t say FORD OWNER and DEALER



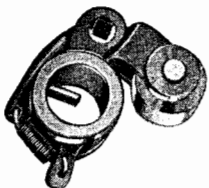
## Is Anything Wrong With Your Ford's Engine?



Has *your* Ford any of the above ailments? Install a MILWAUKEE TIMER and see if it doesn't remedy the trouble. Don't run up a big bill for needless repairs—nine out of ten ignition troubles are due to a faulty timer.

The MILWAUKEE TIMER, with its standard design and precise finish, is universally accepted as the standard replacement timer for Fords. Not only will it keep your Ford running sweetly and smoothly for many months, but it saves wear and tear on the engine bearings and all parts of the chassis, by causing the engine to run more evenly.

## MILWAUKEE TIMER for FORDS



**BRUSH ASSEMBLY** guaranteed to out-wear any other made. Made of fine bronze, with tool-steel roller, finished like a ball bearing. Spring is high-grade piano wire.

RETAIL PRICE, \$2.25

500,000 MILWAUKEE TIMERS were sold in 1919. Over 1,000,000 must be made to fill the 1920 demand. Fits all Ford models—also Fordson Tractor.

DEALERS:

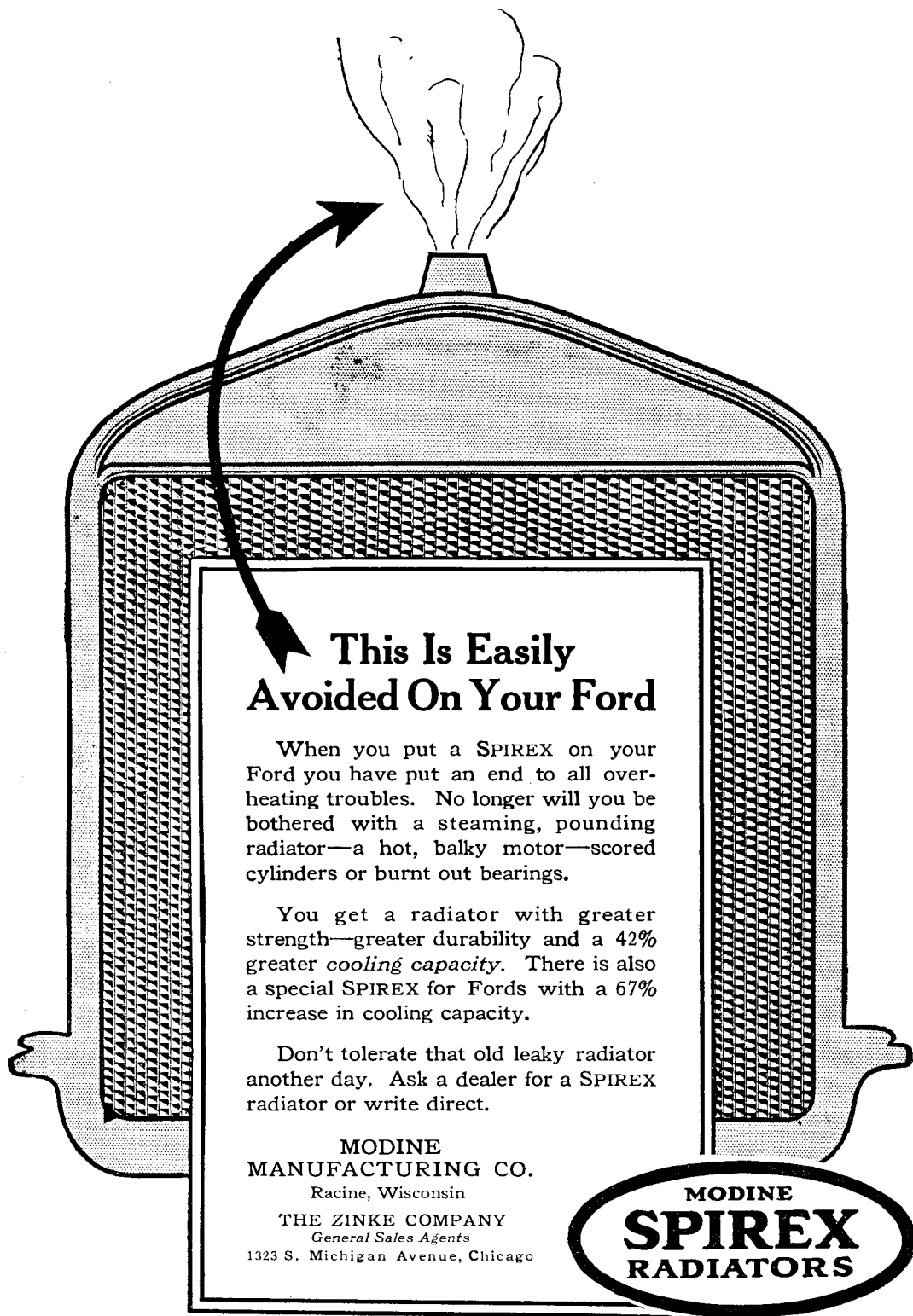
Nine out of ten Ford owners are "sold" on this timer. Concentrate on the MILWAUKEE TIMER. Reduce the High Cost of Doing Business by eliminating the slower-selling makes.

*The MILWAUKEE TIMER is sold by 75% of all Automotive Supply Jobbers and by most good dealers.*

### Milwaukee Auto Engine & Supply Co.

MILWAUKEE, WISCONSIN

(Also Manufacturers of Guardian Bumpers.)



**This Is Easily  
Avoided On Your Ford**

When you put a SPIREX on your Ford you have put an end to all overheating troubles. No longer will you be bothered with a steaming, pounding radiator—a hot, balky motor—scored cylinders or burnt out bearings.

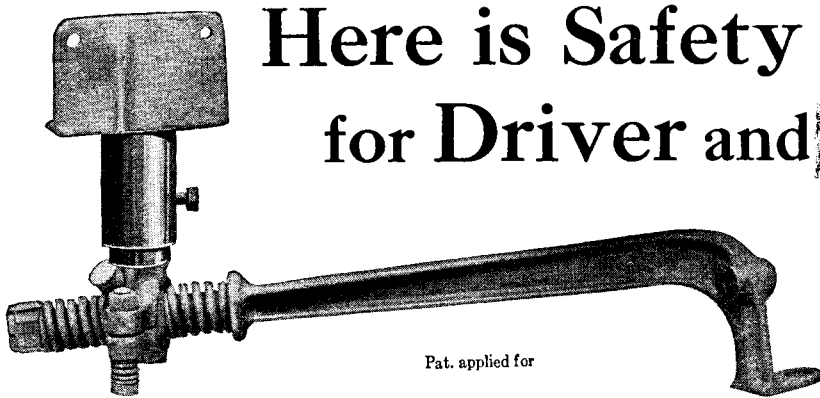
You get a radiator with greater strength—greater durability and a 42% greater *cooling capacity*. There is also a special SPIREX for Fords with a 67% increase in cooling capacity.

Don't tolerate that old leaky radiator another day. Ask a dealer for a SPIREX radiator or write direct.

MODINE  
MANUFACTURING CO.  
Racine, Wisconsin

THE ZINKE COMPANY  
*General Sales Agents*  
1323 S. Michigan Avenue, Chicago

**MODINE  
SPIREX  
RADIATORS**



Pat. applied for

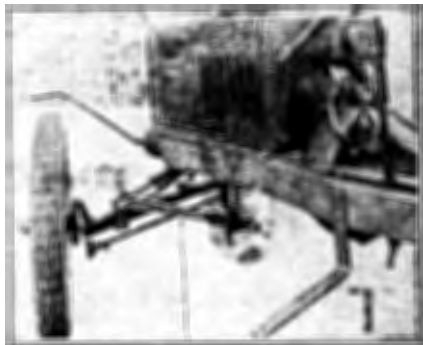
## Adjustable Torque Radius for Ford Passenger Cars and Trucks

Eliminates the Ford Radius Rod entirely and completely does away with your steering troubles—Prevents cracking and breaking of Crank Case and Crank Case Arms and adds to the life of your Car.

Adjustable and easy to attach.

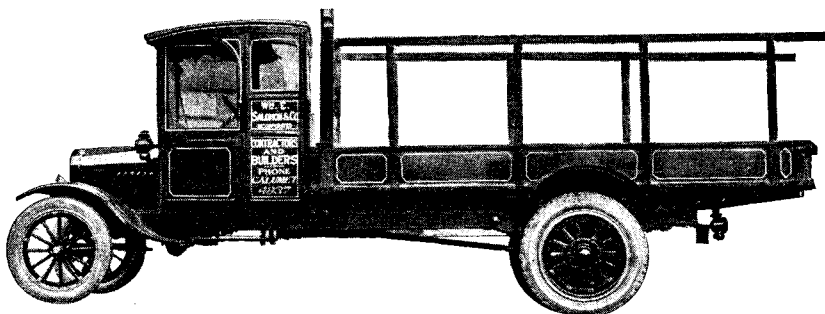
Makes your Ford steer like any high priced Car or Truck. The most value ever offered in a machined product. Weight 30 lbs. Includes bolts to attach. Price \$18.00 per pair.

WRITE FOR FULL INFORMATION.



## A Real Truck Made Out of Your Ford

1½ to 2 Ton. FOR OTHER MAKES OF CARS 1¼ to 4 Ton. Three different wheel base lengths carried in stock. Special lengths if desired. The HUDFORD COMPANY OF CHICAGO has thoroughly mastered the reconstructing of passenger cars into trucks. No matter what make of car you have, by attaching a "FITZALL" INTERNAL GEAR DRIVEN TRUCK UNIT you will have a truck, equal in service to any \$2500 to \$3000 truck on the market.



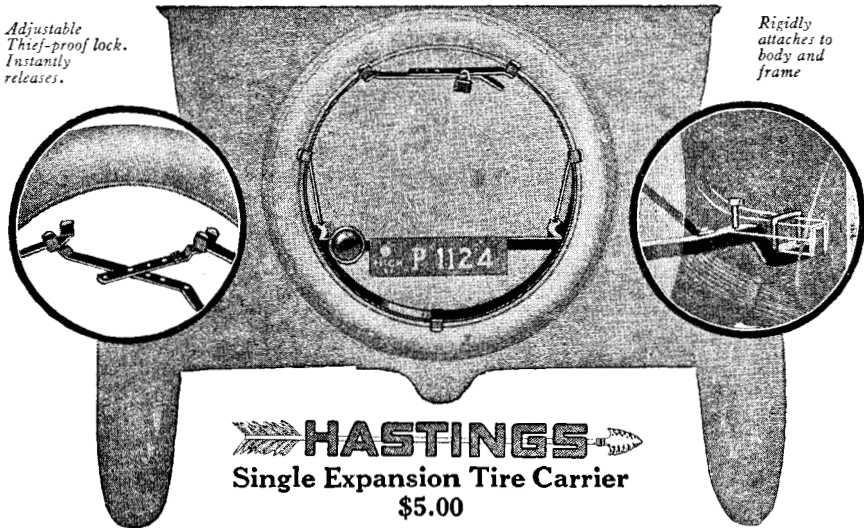
Write today for all particulars and dealer's proposition.

**Hudford Company of Chicago,** 1446-48 South Wabash Ave.  
Chicago, Illinois.

We also handle full line of bodies and cabs for Ford Trucks.



# Why Not Have Your Ford Complete?

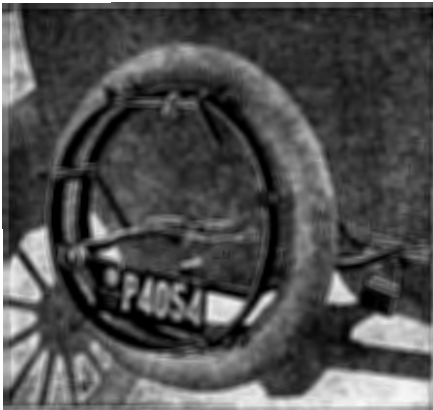


*Adjustable  
Thief-proof lock.  
Instantly  
releases.*

*Rigidly  
attaches to  
body and  
frame*

**HASTINGS**  
Single Expansion Tire Carrier  
\$5.00

**T**HIS Hastings Expansion Tire Carrier gives a completeness and smart look to your Ford. Fits the Ford Touring Car, Roadster, Sedan and Coupe, both *old* and *new* models. It is instantly adjustable to any size of unflated tire or rim used; grips tightly from inside and is instantly removed by easy pull of lever; equipped with our exclusive locking device.



**Rear Double Expansion \$6.50**

This carrier can be attached without raising the body or drilling holes. The two mounting arms are fastened to the rear cross member of the frame with "U" bolts also bolted to the bottom of the rear of the body. This fastening is absolutely secure and the mounting arms are so rigid that two men can put their entire weight on them without bending. No chance to crystalize and break off.

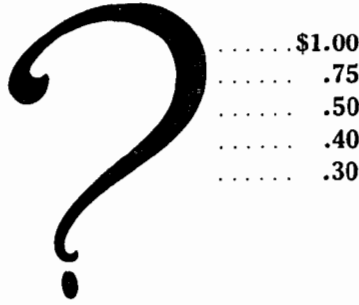
*Ask for the Hastings Expansion Tire Carrier at your dealer's. Or, if he cannot supply you immediately we will send you one prepaid on receipt of price.*

**HASTINGS**

**MANUFACTURING CO.**

Hastings, Michigan

*Dealers: Send for catalog of our complete line*



# What will gasoline cost 6 months from now?

Do you know? This subject is creating a great deal of comment throughout the country. The president of a large Texas oil company said that he expected to see gasoline selling from 60c to \$1 per gallon a few months from now, unless there was a decided increase in production.

## Save money with the Mayer

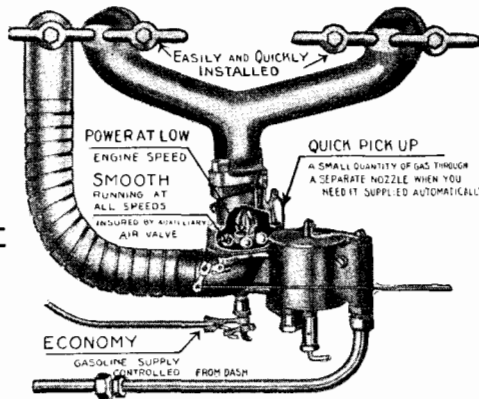
You'll save money by installing a Mayer carburetor on your Ford. The Mayer special carburetor for Fords is not only more economical, giving you more miles per gallon of gas, but will give you an easier starting car, a quicker and smoother get-away, and more power. Large companies are equipping their fleets with Mayers. Don't miss this opportunity.

## Read our money back guarantee

If, after using this Carburetor for thirty days, you do not find that it works better in every respect than any other Carburetor you have ever used, return it and your money will be refunded.

**Famasco Distributing Co.**  
 696 Main St. Buffalo, N. Y.

The Mayer Special Carburetor for Fords.  
 Price \$18.



Available territory for live dealers still open.

When writing advertisers—Just say FORD OWNER and DEALER



# The Soap that Saves Your Car



It is an expensive fallacy to think that ANY soap is good enough to wash your car.

Most soaps and cleaners are unfit for this purpose. To cheapen them they are made of inferior materials, contain a high percentage of alkali and other injurious materials, and are deficient in true soap element.

The result is clouding, checking and peeling of the enameled surface of the car—destroying the finish and requiring frequent repainting.

You can save 60% of the cost of car repainting through using

## Amber Brand Pure Linseed Oil Soap

AMBER BRAND PURE LINSEED OIL SOAP is a combination of common sense, plain facts and scientific results. It is made only from pure, raw linseed oil and contains no injurious elements.

AMBER BRAND PURE LINSEED OIL SOAP is a natural varnish food. While it **CLEANS** the car surface and adds a rich lustre, it preserves the surface, keeping it fresh and intact, reducing the need of repainting. It furnishes protection against air, sun, rain, motor oils and heat.

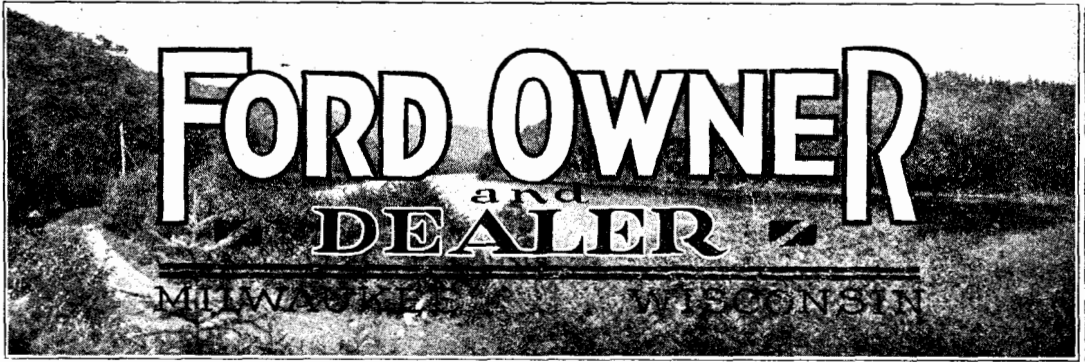
Its use is a **BIG ECONOMY**.

As a matter of saving—write today for full information regarding this "Soap that Saves."

Dealers: If your jobber cannot supply you with Amber Brand Pure Linseed Oil Soap, write us. Big sales are sure.

Jobbers: Write today for prices and information on Amber Brand Products.

**NATIONAL SOAP & PRODUCTS CO., INC.**  
257 EIGHTH STREET  
MILWAUKEE, WIS.



Vol. 13

JUNE, 1920

No. 3

## TOURING TIME



***D**ID you ever look through a microscope at a drop of water and note numerous tiny life cells darting to and fro—resting a moment, then speeding across the field of vision, here—there?*

*Scientists tell us that such were we in Paleozoic antiquity; tiny, restless, ever-moving atoms our ancestry.*

*Archaeologists will tell you about what date thereafter, when ages had developed those cells into humans, a grizzled, pre-historic "cave-man" climbed a crag and looked over distances which he had not explored. And armed with his stone axe he ventured toward the places which lured, because they were unconquered and unknown.*

*Phoenicians, Egyptians, Greeks built their rude galleys and braved uncharted seas.*

*A mariner from Genoa put forth to unknown shores and found the western hemisphere.*

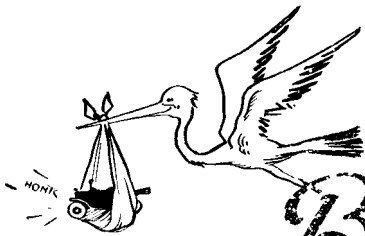
*American emigrants dared chance and conquered the west.*

*Sighing for more worlds to conquer, we leave this earth and signal distant glittering Mars.*

*Thus through aeons we have lived, ever actuated by the instinct to travel; always urged by the thought that "distant shores are ever greenest."*

*Know then, when seductive June arrives and you feel the lure to leave—to travel—to move from here to there—that the urge is age-old, instinctive, natural.*

*Take your Ford—or more properly, let it take you—and go.*



# The Third Birthday Party

Telling When Each Car, Ford Truck, and  
Fordson Tractor Was Born, Including Canadian  
Fords, and Bringing Lists Up to Date.

By  
MURRAY FAHNESTOCK

"Well, here's the same old bunch!" exclaimed Tommy True.

"But, we've got a few new acts to put on," remarked Johnny Jump-Up. "Including the Canadian Fords, and the Fordson Tractor motor numbers. So let's get busy right away. It was on page 62, of the June 1919 issue, that we last gave a list of Ford motor numbers. And the readers of the Fordowner have been holding thir breaths, and waiting for the new list ever since."

"I'm not so sure about them holding their breaths," sighed Tommy. "I was watching one fellow fixing a tire yesterday—and he wasn't holding his breath at all. But, my June, 1919, issue was stolen. And the magazine has added a lot of new subscribers since then. Don't you think that it would be better to give the complete list, for the convenience of car owners, of insurance men, and dealers and agents who buy or sell used Fords; so that they will have all the information together?"

"There you go again," said Johnny. "If it were not for you car owners, life would be easy for me. I wouldn't have any work to do—no job, no pay, no nothing. As soon as we had published our list last year, readers wrote in and asked about this and that, about the B-numbers, and about the Canadian motor numbers; so I am just going to put it all in this time. I guess our subscribers like this magazine because they write practically all of it themselves."

"While I think of it," said Tommy True, "have these numbers always been put on the same part of the engine?"

"No," replied Johnny. "On some of the very early Fords, the motor numbers were stamped on down near the breather, or oil

filler pipe. But nearly all these old Fords have had their cylinder blocks replaced by this time. And practically each and every Ford, now in use, carries the motor number in the same place. And that is stamped on the cylinder block, right over the side water inlet hose connection."

"If a new cylinder block is put on an old Ford engine, that makes it practically a new engine, doesn't it? So doesn't it get a new motor number?" asked Tommy True.

"No," answered Johnny. "We would soon have confusion worse confounded, if we tried that. Besides, the engine is only a **part** of the car. And the motor number is now really the car number, for the complete Ford car. So the same motor number, that was stamped on the old cylinder block, should be stamped on the new cylinder block which replaces it. A car should **always** keep the same motor number."

"And that makes the date, on which the cylinder block was made, which is cast on the cylinder block, of no value, as an indication of the age of the car—but only as an indication of the age of the cylinder block itself," added Tommy thoughtfully.

"The motor number is important, as it is impossible to obtain a car license, in many states, unless the owner can give the correct motor number of the car. If he makes up a fictitious motor number, he is apt to get into trouble with the police. And, as a fact, the motor number is one of the most used methods of identifying a stolen Ford. And so is one of the Bertillion measurements of the car. An altered motor number makes the car an outlaw, and an object of suspicion. Never buy a car on which there is a suspicion that the motor number may have been altered.

	Motor Number	Cars Built
<b>1908</b> —October 1 to October 31.....	1 to 11	11
November 1 to November 30.....	11 to 101	90
December 1 to December 31.....	101 to 309	208
<b>1909</b> —January 1 to January 31.....	309 to 646	335
February 1 to February 28.....	646 to 1052	406
March 1 to March 31.....	1052 to 2025	973
April 1 to April 30.....	2025 to 2691	666
May 1 to May 31.....	2691 to 4036	1345
June 1 to June 30.....	4036 to 5980	1944
July 1 to July 31.....	5980 to 8107	2127
August 1 to August 31.....	8107 to 9840	1733
September 1 to September 30.....	9840 to 11148	1308
October 1 to October 31.....	11148 to 12405	1257
November 1 to November 30.....	12405 to 13132	727
December 1 to December 31.....	13132 to 14161	1029
<b>1910</b> —January 1 to January 31.....	14161 to 15500	1339
February 1 to February 28.....	15500 to 16600	1100
March 1 to March 31.....	16600 to 19700	3100
April 1 to April 30.....	19700 to 23100	3400
May 1 to May 31.....	23100 to 26500	3400
June 1 to June 30.....	26500 to 29500	3000
July 1 to July 31.....	29500 to 30200	700
August 1 to August 31.....	30200 to 31000	800
September 1 to September 30.....	31000 to 31900	900
October 1 to October 31.....	31900 to 32500	600
November 1 to November 30.....	32500 to 33700	1200
December 1 to December 31.....	33700 to 34900	1200
<b>1911</b> —January 1 to January 31.....	34900 to 37000	2100
February 1 to February 28.....	37000 to 40000	3000
March 1 to March 31.....	40000 to 45000	5000
April 1 to April 30.....	45000 to 50800	5800
May 1 to May 31.....	50800 to 57200	6400
June 1 to June 30.....	57200 to 60500	3300
July 1 to July 31.....	60500 to 62100	1600
August 1 to August 31.....	62100 to 66700	4100
September 1 to September 30.....	66700 to 70500	3800
October 1 to October 31.....	70500 to 83100	12600
November 1 to November 30.....	83100 to 86300	3200
December 1 to December 31.....	86300 to 88900	2600
<b>1912</b> —January 1 to January 31.....	88900 to 92000	3100
February 1 to February 29.....	92000 to 95900	3900
March 1 to March 31.....	95900 to 103800	7900
April 1 to April 30.....	103800 to 112900	9100
May 1 to May 31.....	112900 to 123800	10900
June 1 to June 30.....	123800 to 132000	8200
July 1 to July 31.....	132000 to 139700	7700
August 1 to August 31.....	139700 to 144500	4800
September 1 to September 30.....	144500 to 147300	2800
October 1 to October 31.....	147300 to 156300	9000
November 1 to November 30.....	156300 to 161200	4900
December 1 to December 31.....	161200 to 171300	10100
<b>1913</b> —January 1 to January 31.....	171300 to 186900	15600
February 1 to February 28.....	186900 to 203300	16400
March 1 to March 31.....	203300 to 218900	15600
April 1 to April 30.....	218900 to 242300	23400
May 1 to May 31.....	242300 to 260000	17700
June 1 to June 30.....	260000 to 282700	22700
July 1 to July 31.....	282700 to 298200	5500
August 1 to August 31.....	298200 to 306800	8600
September 1 to September 30.....	306800 to 314800	8000
October 1 to October 31.....	314800 to 324900	10100
November 1 to November 30.....	324900 to 344900	20000
December 1 to December 31.....	344900 to 370400	25500
<b>1914</b> —January 1 to January 31.....	370400 to 395500	25100
February 1 to February 28.....	395500 to 419500	24000
March 1 to March 31.....	419500 to 447600	28100
April 1 to April 30.....	447600 to 473200	25600
May 1 to May 31.....	473200 to 490920	17720
June 1 to June 30.....	490920 to 507102	16182
July 1 to July 31.....	507102 to 517800	10698

	August 1 to August 31.....	517800 to 538200	20400
	September 1 to September 30.....	538200 to 558300	20100
	October 1 to October 31.....	558300 to 583400	25100
	November 1 to November 30.....	583400 to 599100	15700
	December 1 to December 31.....	599100 to 611100	21000
<b>1915</b>	January 1 to January 31.....	611100 to 614200	3100
	February 1 to February 28.....	614200 to 630500	16300
	March 1 to March 31.....	630500 to 682400	51900
	April 1 to April 30.....	682400 to 723500	41100
	May 1 to May 31.....	723500 to 805500	82000
	June 1 to June 30.....	805500 to 839700	34200
	July 1 to July 31.....	839700 to 855500	15800
	August 1 to August 31.....	881000 to 913000	32000
	September 1 to September 30.....	881000 to 913000	32000
	October 1 to October 31.....	913000 to 949000	36000
	November 1 to November 30.....	949000 to 985400	36000
	December 1 to December 31.....	985400 to 1029200	43800
<b>1916</b>	January 1 to January 31.....	1029200 to 1071800	42600
	February 1 to February 29.....	1071800 to 1119000	47200
	March 1 to March 31.....	1119000 to 1167900	48900
	April 1 to April 30.....	1167900 to 1219400	51500
	May 1 to May 31.....	1219400 to 1272000	52600
	June 1 to June 30.....	1272000 to 1326900	54900
	July 1 to July 31.....	1326900 to 1362213	35313
	August 1 to August 31.....	1362213 to 1400900	38687
	September 1 to September 30.....	1400900 to 1452200	51300
	October 1 to October 31.....	1452200 to 1510500	58300
	November 1 to November 30.....	1510500 to 1570700	60200
	December 1 to December 31.....	1570700 to 1614600	43900
<b>1917</b>	January 1 to January 31.....	1614600 to 1680000	65400
	February 1 to February 28.....	1680000 to 1739900	49900
	March 1 to March 31.....	1739900 to 1812000	72100
	April 1 to April 30.....	1812000 to 1888000	76000
	May 1 to May 31.....	1888000 to 1968629	80629
	June 1 to June 30.....	1968629 to 2044100	75471
	July 1 to July 31.....	2044100 to 2113500	69400
	August 1 to August 31.....	2113500 to 2162800	49300
	September 1 to September 30.....	2162800 to 2231000	68200
	October 1 to October 31.....	2231000 to 2310400	79400
	November 1 to November 30.....	2310400 to 2383900	73500
	December 1 to December 31.....	2383900 to 2449100	65200
<b>1918</b>	January 1 to January 31.....	2449100 to 2503200	54100
	February 1 to February 28.....	2503200 to 2558200	55000
	March 1 to March 31.....	2558200 to 2611400	53200
	April 1 to April 30.....	2611400 to 2657500	46100
	May 1 to May 31.....	2657500 to 2700800	43300
	June 1 to June 30.....	2700800 to 2735700	34900
	July 1 to July 31.....	2735700 to 2756251	55451
	August 1 to August 31.....	2756250 to 2774600	18349
	September 1 to September 30.....	2774600 to 2787800	13200
	October 1 to October 31.....	2787800 to 2792300	4500
	November 1 to November 30.....	2792300 to 2805100	12800
	December 1 to December 31.....	2805100 to 2831400	26300
<b>1919</b>	January 1 to January 31.....	2831400 to 2880170	48770
	February 1 to February 28.....	2880170 to 2933000	52830
	March 1 to March 31.....	2933000 to 2997100	64100
	April 1 to April 30.....	2997100 to 3067700	70600
	May 1 to May 31.....	3067700 to 3140000	72300
	June 1 to June 30.....	3140000 to 3210800	70800
	July 1 to July 31.....	3210800 to 3277850	67050
	August 1 to August 31.....	3277850 to 3346900	69050
	September 1 to September 30.....	3346900 to 3429400	82500
	October 1 to October 31.....	3429400 to 3515430	86030
	November 1 to November 30.....	3515430 to 3588000	72570
	December 1 to December 31.....	3588000 to 3659970	71970
<b>1920</b>	January 1 to January 31.....	3659970 to 3743075	83105
	February 1 to February 29.....	3743075 to 3817430	74355

"Didn't you mention something about B-numbers?" asked Tommy.

"Yes," answered Johnny Jump-up. "In the year, from October 1, 1912 to October 1, 1913, there was some switching around of the motor numbers and, at this time B-numbers, from B-1 to B-12,247, were used. So, if you have a B-numbered engine, you know that it was made at some time between October 1, 1912, and October 1, 1913."

"And the C-numbers?" asked Tommy True.

"The C-numbers apply to the Canadian Fords. And we will give a list of them," replied Johnny.

"Another thing is that these motor numbers apply to Model T Fords, as made by the Ford Motor Company after October 1, 1908. There was a 'whole alphabet' of Fords, made before the successful Model T was finally designed. Though there may have been only a half a dozen or so, of some of the earlier models, placed on the road."

"Yes, Fords were made long before 1908," said Tommy. "I know that, in 1903-1904, there were 1,708 Ford cars built and sold. Also, I can remember some of the earlier models such as Models N, S, and R; for which it is still possible to purchase parts. That's service! The early buyers haven't been forgotten, even though production is up in the millions now."

"That reminds me," said Johnny, "that Ford car, with motor number 1,000,000, was built on December 10, 1915. And that Ford with motor number 2,000,000, was built on June 14, 1917. And that Ford, with engine

number 3,000,000, hit the road in the early part of April, 1919."

"Another thing is that, if any radical discrepancies arise, between the motor numbers of the list, and those of a car; it is possible that the motor number of the car has been raised, by adding a figure "1," in front of the true motor number, and thus making the car appear to be of much later make than it really is. Sometimes, numbers are erased and new numbers stamped on, or a "6" is changed to an "8," and so on."

**CANADIAN FORD MOTOR NUMBERS**

The Canadian Ford, made by the Ford Motor Company of Canada, Ltd.; located at Ford, Ontario, Dominion of Canada, have their motor numbers prefixed by the letter "C."

These Canadian Fords are manufactured in Canada, not being merely assembled here. Now these Canadian Ford cars, being made within the limits of the British Empire, can be sold to other parts of the British Empire, without having to pay as high import duties as cars that are manufactured in the United States.

As a result of this, Fords in Australia, in New Zealand, and other parts of the British Empire, are very apt to be of Canadian origin, and to have "C" motor numbers.

For the convenience of our far-distant readers, who live so far from the source of manufacture, that it takes a letter a month or two to make the round trip, we are giving the motor numbers of Ford cars made in Canada.

**CANADIAN FORD MOTOR NUMBERS**

Year	Motor numbers
May 1, 1913 to July 31, 1913.....	C-1 to C-1500
Aug. 1, 1913 to July 31, 1914.....	C-1501 to C-16500
Aug. 1, 1914 to July 31, 1915.....	C-16501 to C-37500
Aug. 1, 1915 to July 31, 1916.....	C-37501 to C-70000
Aug. 1, 1916 to July 31, 1917.....	C-70001 to C-121000
Aug. 1, 1917 to July 31, 1918.....	C-121001 to C-170000
Aug. 1, 1918 to July 31, 1919.....	C-170001 to C-208500
<b>Monthly List</b>	
Aug. 1, 1919 to Aug. 31, 1919.....	C-208501 to C-212500
Sept. 1, 1919 to Sept. 30, 1919.....	C-212501 to C-216500
Oct. 1, 1919 to Oct. 31, 1919.....	C-216501 to C-222500
Nov. 1, 1918 to Nov. 30, 1919.....	C-222501 to C-227500
Dec. 1, 1919 to Dec. 31, 1919.....	C-227501 to C-230250

**FORDSON TRACTOR SERIAL NUMBERS**

**From October 1, 1917 to December 31, 1919**

<b>1917</b> —October 1 to November 30.....	1 to 75
December 1 to December 31.....	76 to 259
<b>1918</b> —January 1 to January 31.....	260 to 616
February 1 to February 28.....	617 to 1731
March 1 to March 31.....	1732 to 3082
April 1 to April 30.....	6901 to 7608
May 1 to May 31.....	3083 to 3900
June 1 to June 30.....	7609 to 9580
July 1 to July 31.....	9581 to 11937
August 1 to August 31.....	11938 to 15225
September 1 to September 30.....	15226 to 18637
October 1 to October 31.....	18638 to 22246
November 1 to November 30.....	22247 to 26287
December 1 to December 31.....	26288 to 29978
	29979 to 34426



1919—January 1 to January 31.....	34427 to 39554
February 1 to February 28.....	39555 to 44782
March 1 to March 31.....	44783 to 50961
April 1 to April 30.....	50962 to 53079
May 1 to May 31.....	53080 to 53110
June 1 to June 30.....	53111 to 55304
July 1 to July 31.....	55305 to 60864
August 1 to August 31.....	60865 to 58055
September 1 to September 30.....	68056 to 74809
October 1 to October 31.....	74809 to 81362
November 1 to November 30.....	81363 to 83087
December 1 to December 31.....	88087 to 92113

**FORD CAR WEIGHTS**

Description	Pounds
Touring car, without starter, tanks empty .....	1500
Touring car, without starter, tanks filled .....	1560
Touring car front wheel weight, tanks filled .....	750
Touring car rear wheel weight, tanks filled .....	810
Touring car with starter, tanks filled, front wheels .....	800
Touring car with starter, tanks filled, rear wheels .....	820
Touring car body .....	415
Roadster, without starter, tanks empty .....	1420
Roadster, without starter, tanks filled.. ..	1480
Roadster front wheel weight, tanks filled .....	760
Roadster rear wheel weight, tanks filled .....	720
Roadster with starter, tanks filled, front wheels .....	810

Roadster with starter, tanks filled, rear wheels .....	730
Roadster body .....	300
Coupe with starter, tanks empty .....	1720
Coupe with starter, tanks filled .....	1780
Coupe body .....	450
Sedan with starter, tanks empty .....	1900
Sedan with starter, tanks filled .....	1960
Sedan body .....	600
Chassis .....	1100
Ton-Truck Chassis .....	1500

**OVERALL DIMENSIONS**

Model	Height	Width	Length
Touring	7'-0"	5'-7 1/2"	11'-2 1/2"
Runabout	6'-9"	5'-7 1/2"	11'-2 1/2"
Sedan	6'-9"	5'-7 1/2"	11'-2 1/2"
Coupelet	6'-9"	5'-7 1/2"	11'-2 1/2"
Chassis		5'-7 1/2"	10'-8 "
Truck Chassis		5'-7 1/2"	12'-9 "

**CAR PRICE CHANGES**

	Aug. 1909	Aug. 1910	Aug. 1911	Aug. 1912	Aug. 1913	Aug. 1914	Aug. 1915	Aug. 1916	Aug. 1917	Aug. 1918	Aug. 1919	Mar. 1920
Touring	\$850	\$950	\$680	\$690	\$600	\$490	\$440	\$360	\$360	\$525	\$525	\$575
Runabout	825	900	780	590	525	\$440	390	345	345	500	500	550
Chassis							360	325	325	475	475	525
Sedan						975	740	640	645	775	775	975
Coupelet	950	1050	1050			750	590	505	505	650	650	850
Truck									600	550	550	600
Town Car	1000	1200	1200	900	740	690	640	595				

The increase, from the August, 1919, to the March, 1920, prices, is \$50, for the open cars, and \$100, on the closed car models. The reason that there seems to be \$200. increase,

in the prices of the Coupelet and Sedan, lies in the fact that the other \$100. is for the electric starter and demountable rims, which were formerly considered as an extra.

## The Open Road; "Fording" It Both Ways

By  
Lillian Taylor

"A-foot and light-hearted  
I take to the open road."

Thus sang Whitman in blithesome mood. But that was long before the automobile was heard of. Now, the road invariably leads to California, and both "Henry" and "Lizzie" are ably keeping up the reputation of the Ford family in landing travelers at their destination. Miss Ruby L.Hawn, hit the "long, long trail" for the second time last summer. In writing of her trip she says:

"Five hours was the longest stop for repairs. Since Dad and my uncle are both A-1 mechanics, at least, as far as "Lizzies" are concerned, we were independent of the garages. Dad has owned five or six Fords, and the first one is still running, affording its owner many a 'ratling good time.'"

On the theory that all play and no work is a bad plan, Miss Hawn, who graduated from the College of Agriculture at the University of Wisconsin last year, applied for the job of landscape gardener at the Hotel Raymond, Pasadena—and got it.

And, because skirts are taboo, this enterprising Badger girl (she lives at Ruby, Wisconsin) quietly donned riding breeches, high boots, khaki blouse, and beaver hat, and literally became the "woman with the hoe." Seeing her and her assistant in their garden togs, General Pershing, who visited Pasadena in January, accorded the young women a special salute.

Gardening in the Golden West is fine, asserts Miss Hawn, who expects to "Ford" it back to Wisconsin later in the year.

# THE FAN AND FAN BELT

By  
FUNNYMURRYSTALK

Sometimes—the Ford fan belt rides smoothly and nicely on the pulleys, for miles and miles of smiles—and all goes as evenly as married life. Again, one has as much trouble keeping the wabby strap on the pulleys, as one does in keeping an arm around a pretty girl.

However, there are 'accessories before the fact,' which tend to make the task easier. For keeping the fan belt in position, there are several effective belt holders. For arm holders; boxes of candy, and stories of rich relations, about-to-die-and-leave-you-money, are useful.

As to fan belts, some are made crooked, some become crooked, and some are pulled crooked by pulleys that are out of line. At least that's what Bill Shakespeare said, and he was right, as often as he was wrong.

If the fan belt is cheaply and carelessly made, it may be woven somewhat crooked—and then the owner will have a weary time trying to keep the crooked belt on the pulleys—as the belt will tend to go 'everywhere but there.' Buy good belts, either of leather, or of woven fabric. Both kinds of belts will give splendid results, if well made, and of good material.

## Two Belt Sizes

The earlier Ford cars, from 1909 to 1916, had a shorter fan belt than the fan belt used on the 1917-1920 models. Keep this in mind, when buying fan belts, and then you will have a fan belt of the correct length, when you go to put it on your car. The longer belt lasts longer, because each individual part of the belt does not hit the pulleys quite so frequently.

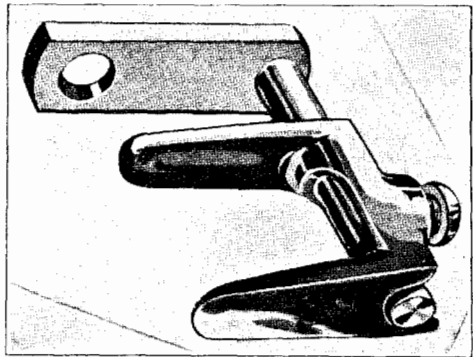
## Leather Belts

When leather was less expensive than it is now, most owners preferred leather fan belts. But, at the present time, leather is so high in price that it is generally more economical to buy belts of fabric, or other woven material. However, many car owners prefer leather belts, even at the present prices, and so it will be well to consider the methods of obtaining the most service from these leather fan belts.

It will be noticed that the ends of the belt are joined together with a splice. Now this splice is the weakest part of the belt, and invariably gives the most trouble. In order to obtain the best results from the belt, attention is to be paid in putting the leather belt on the

pulleys in the proper manner, by arranging the direction of motion of the belt so that the tendency is to close this joint, or splice, as the belt goes over the pulleys. This will make the belt last much longer, and less trouble will be experienced.

It will be noticed that this joint, or splice, is generally cut diagonally, and the belt should



Fan Belt Guide.

be so placed on the pulleys that the thin edge of the belt on the inside of the belt should be in a trailing direction, in regard to the direction of rotation of the pulleys.

## Belt Coupling

One of the advantages, of a leather belt, is that this type of belt can be made with a coupling. Such couplings are usually made of metal, and so arranged that the couplings, on the end of the belt, can be hooked together, after the belt has been placed in position. This makes it much easier to place a new belt on the pulleys, when the breakage of the old belt occurs.

In order to obtain greater service from the belt, the belt leather should be kept soft and pliable. The best method, of doing this, is to dress the belt with Neatsfoot oil, which is the natural oil obtained from leather. A small application of this oil, about once a month, will keep the belt soft and pliable, so that it will cling to the pulley surface, and drive the fan without slipping.

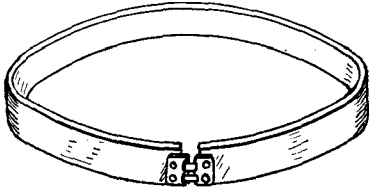
If a leather belt is not taken care of, the heat from the engine, together with the water from the radiator, and the oil from the breath-

er, are apt to bake the leather into a hard, brittle condition. This will cause the belt to slip, and to break very easily.

#### ---Cork Insert Belts

A recent improvement in fan belts, which tends to eliminate slippage of the belt, is the use of cork-insert fan belts. These belts are made with cork inserts, which grip the pulleys and insure long wear, together with freedom from slipping.

When the average car owner drives his car into the garage, and tells the repairman that the car is giving trouble with over-heating, the first thing, that the repairman usually



Coupling on Belt.

does, is to make sure that the fan belt is not slipping, as this is probably the most frequent of all the usual—and-unusual causes of Ford car over-heating.

#### Fabric Belts

Many makes of good fabric fan belts are now on the market. These fabric belts are of woven cotton and, in some designs, are woven endless, so that they are all-in-one-piece. Then there is no joint, or lap, to cause trouble. Sometimes, these fabric belts are impregnated with a compound, or preparation, to keep them from becoming oil or water-soaked; due to their exposed position at the front end of the engine.

R.C.S.—4-27-1920

These fabric belts are placed in position, by lowering the fan bracket arm and dropping the fan as low as it will go. Then slip the belt over the fan, but do not place the belt on the fan pulley. Now slip the lower end of the belt between the starting crank ratchet and the crank shaft pulley. It is usually necessary to turn the starting crank, to work the belt into position.

After the fan belt has been slipped over the crank shaft pulley, the belt can be placed over the fan pulley, and then the set screw, which moves the fan bracket, can be tightened up. After adjusting the tension of the fan belt; the lock nut, on the fan bracket adjusting screw, should be securely tightened.

#### Belt Tension

The adjustment of the belt tension should be so made that, when one rests one finger on the end of a fan blade; the tension of the belt is just enough to keep the fan pulley from slipping.

Another excellent test, for fan belt tension, is to notice whether the fan stops spinning promptly, when the engine stops. If the fan belt is too loose, the fan will usually revolve for a number of revolutions, after the engine stops.

The importance of proper fan belt tension is here emphasized, as the life of the Ford

fan belt can be easily doubled by keeping the belt tension properly adjusted.

There is more to adjusting fan belt tension than just adjusting belt and expecting the tension to remain the same, until the belt wears out. The fan belt tension should be adjusted 'whenever it needs it.' This is apt to be more frequently, when the belt is new-and-stretchy than after the belt has become well stretched.

If the fan belt is too tight, the excess strain and friction will cause the fibers of the belt to rub over each other and this will cut the belt to pieces through internal friction—even if it does not actually tear the belt apart.

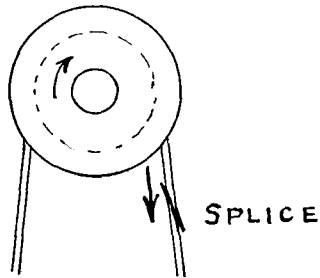
In adjusting belts which have a lumpy joint, the belt should not be so tightly adjusted, as belts which have a smooth, even joint. As a lumpy joint in the belt will cause a jerk, every time the joint passes over the pulley.

If the fan belt is too loose, not only is the belt apt to slip off the pulleys, but also the slipping of the pulleys in the belt will cause much more rapid wear of the belt surface.

In order to keep the belt always adjusted, at the proper tension, belt tension springs are made. These keep a firm-but-constant spring tension on the fan bracket arm. The upper end, of such a spring-tension adjuster, is fastened to a special stud bolt, replacing one of the cap screws which hold the top water inlet hose connection to the front end of the cylinder head. The lower end of the spring is hooked around the fan bracket arm.

Such spring-tension belt adjusters prolong the life of the belt in two ways. One way is by always keeping the fan belt adjusted to the proper tension, so that there is very little slipping of the fan belt on the pulleys. The second manner, in which these fan belt adjusters prolong the life of the belt, is by allowing a certain amount of spring, or give, when the belt joint passes over the pulleys, thus relieving the bolt of much jerk and jar.

Some owners buy separate belt couplings



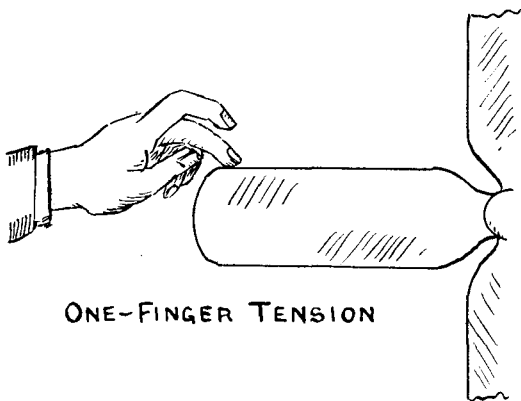
Belt Splice Closes.

and carry these in the tool box, to attach to the ends of a broken belt, and thus make it possible to repair the belt if it should break. However, by the time the average belt wears out and breaks, it is hardly worth repairing and the frayed ends are very difficult to repair effectually.

#### Mechanical Belts

A fan belt which is practically all couplings, is the Crow mechanical fan belt. This fan belt is a combination of metal links and leather pads. As these leather pads are made of sole

leather, and are rather thick, they will wear almost indefinitely. This mechanical fan belt is always well lubricated by the oil vapor from the breather pipe, so such a fan belt requires practically no attention or lubrication, and can be left to take care of itself for long periods of use.



ONE-FINGER TENSION

**Belt Tension.**

If this belt becomes longer, due to wear, one of the links can be taken out and the belt adjusted to the proper length. As such belts are very flexible, they conform very well to the shape of the pulleys, and but little power is wasted.

**Keeping Belt Pulleys**

In order to keep the fan belt on the pulleys where it belongs, there are several requirements which must be observed. In the first place, the fan pulley and the crank shaft pulley must be in alignment with each other. These pulleys can be out of alignment with each other in two different directions.

The fan belt is sometimes too far forward, with relation to the pulley of the crank shaft. When this occurs, it is natural that the belt should run off the crank shaft pulley, or else run up on one of the flanges of the fan pulley, thus causing excessive strain on the belt and often breaking the belt.

The pulleys can also be out of alignment with each other in that the fan pulley shaft may not be parallel with the crank shaft. This trouble is not so frequent, however, as is the trouble due to the fan pulley being too far forward.

To test, whether the fan pulley is parallel with the crank shaft pulley, one can sight along the flange of the fan pulley, and along the edges of the crank shaft pulley. Or else a steel straight edge can be used, to make sure that the two pulleys are even with each other—this straight edge being placed along the flange of the fan pulley.

In order to test whether the fan pulley is too far forward with regard to the crank shaft pulley, one can also use a straight edge, or try-square.

If the fan pulley is too far forward, the best method of moving it to the correct position is to remove the fan bracket arm, and to place the bracket in a heavy vise. Then use a large

monkey wrench to bend the fan bracket and bring the fan pulley to the proper position.

Another method, of achieving this same result, is to place one or more thin washers on the bolt which holds the fan bracket arm, placing these washers between the fan bracket arm and the cylinder front cover plate.

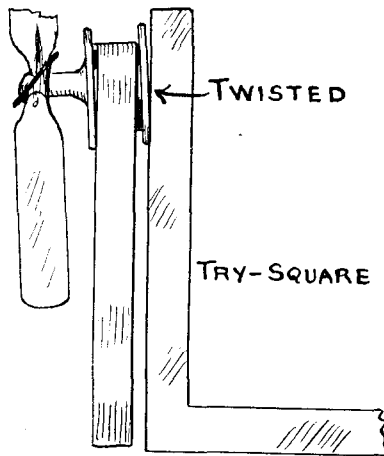
Having thus taken care of the pulley alignment, whether it is forward-and-back, or twisted; we will now take the case when the pulley on the crank shaft is loose or wobbly. Sometimes, these crank shaft pulleys are not bored true. Then the only way that the belt can be kept on the pulley is by the use of a fan belt guide, or retainer.

Sometimes those crank shaft pulleys become loose on the crank shaft, due to long wear. In such cases, the most effective repair is to replace the pulley. These pulleys are so low in cost that it would not justify the trouble and expense, to place shims inside the pulley, to make it a tight fit on the crank shaft.

**Rough Pulley Surface**

One of the simplest little tricks, for keeping a fan belt on the pulleys, is to roughen the crank shaft pulley.

When the writer first worked in a machine shop, and was turning a small pulley on a lathe, he thought to do an extra good job by smoothing and polishing the surface of the pulley which he was turning. The bawling-out, which he got from an old mechanic standing near, was one of the high spots—though not one of the bright spots—in a long and stormy career.



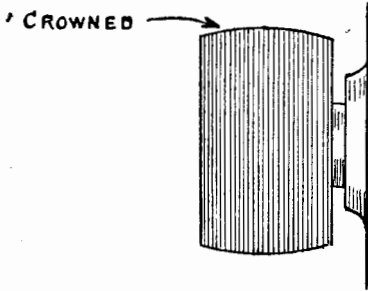
**Not Parallel.**

It was then that he most vividly realized that a belt will slip right off a smooth or polished pulley. It is necessary that the pulley surface be rough, with a 'machine-finish', in order that the belt may get sufficient grip on the surface of the pulley to enable the belt to climb up to the high, crowned surface of the pulley and stay where it belongs.

After the Ford car has been in use for some time, the fan pulley gradually becomes smooth, due to the slight, inevitable slippage of the belt. When this occurs, the pulley surface can be roughened, by the use of the coarsest grade

of sand-paper or emery cloth. A piece of this coarse sand-paper should be tacked on a board, and pressed against the crank shaft pulley while the engine is running slowly.

We do hereby warn the amateur mechanic against trying to hold sand-paper against the surface of the revolving crank shaft pulley.



Crowned Pulley.

with his fingers as there is very great danger that the sand-paper may catch in the holes in the pulley, and pull his fingers down in between the crank shaft pulley and the front end of the crank case. Unless you have more than ten fingers and can spare a few, do not try the trick.

Skilled mechanics often use a rough file, to roughen up the surface of the crank shaft pulley. And this method is all right, for those who can do it. We wish to warn you, however, to use a handle on the file, so that the sharp tang of the file will not be driven up into your hand, if the end of the file should catch in one of the holes of the pulley.

In filing, file from the left-hand side of the engine with the top side of the pulley running toward you, so that there will be no danger of the file being drawn down between the crank shaft pulley and the crank case, and perhaps breaking the front end of the crank case, or causing other serious trouble.

If you will examine a crank shaft pulley, you will notice that it is slightly crowned or curved. That is, the pulley is larger in diameter, at the middle, than at the two edges. This is done in order that the belt may tend to run to the center of the pulley when the engine is running, as a belt always tends to run towards the highest part of the pulley.

The fan belt pulley is also crowned. But it is not necessary to keep the fan pulley rough, to the same extent; as the fan pulley is flanged and the two flanges tend to hold the belt in position on the pulley.

When the two pulleys are in correct alignment with each other, the fan belt should run without touching the flanges on the fan pulley.

When the fan belt rubs against these flanges, this tends to fray and wear the edges of the belt, and will cause the belt to wear out much more rapidly. We might also mention that sometimes the belt itself is crooked. When this is the case, one may have difficulty in keeping the belt running, without contact with the flanges of the pulleys.

### Fan Shaft Lubrication

Another cause, of the belt slipping off the pulleys, is the friction or jamming of the fan pulley bearing. If this bearing is not properly oiled, and is allowed to become rusted and jammed, the belt will be thrown from the pulleys. Always test the fan to see that it spins freely and easily, in case the belt gives trouble.

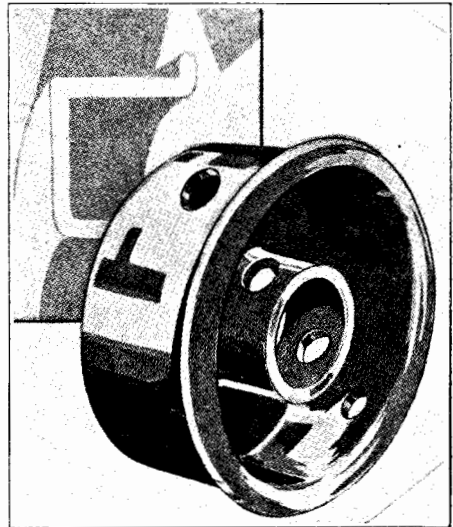
In order to make the lubrication of the fan pulley more easy, a special elbow grease cup is made, which replaces the straight grease cup generally used. This makes a grease cup much more accessible.

Another cause of noise-and-rattle in the fan, and also a possible cause of fan belt trouble, is the fan pulley being too loose in a forward-and-backward direction, on the fan axle.

If too loose, this end-play can be eliminated by removing the fan from the bracket, and filing a small amount of material or metal from the flange on the end of the fan axle, thus allowing the axle to be drawn farther into the bracket, and eliminating the end-play. Thin steel washers, or shims, made of tin, can be used to eliminate this end-play, and thus eliminate this possible source of noise and rattle.

### Flanged Crank Shaft Pulley

One accessory manufacturer is now making a crank shaft pulley, which has a flange, or rim, on the forward edge, which is very convenient for holding the fan belt in place. Such a pulley replaces the regular Ford crank shaft pulley, and is installed in the same manner,



Flanged Pulley.

with a straight pin through both the pulley and crank shaft.

### Casco Belt Guide

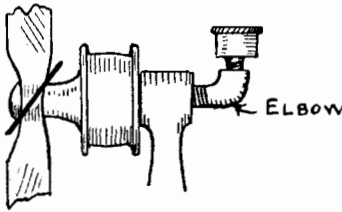
A stationary fan belt guide is the Casco, which is a piece of heavy sheet metal, which acts as a stationary rim in front of the crank shaft pulley, and keeps the fan belt from slipping forward. The ends, of this metal strip, are hooked over, so that they can be clamped

onto the edges of the front of the crank case, thus holding this bracket securely in place.

No trouble is experienced with the fan belt slipping off the crank shaft pulley backwards, as the front part of the cylinder block acts as a flange, and holds the belt in position. One of the chief advantages, of this Casco fan belt guide, is the ease with which it can be placed in position.

**Fan Belt Holders**

Another type, of fan belt guide, consists of a small metal bracket, which is fastened to one of the bolts holding the cylinder front



**Elbow Grease Cup.**

cover plate in position. This guide has a malleable iron bracket, which can be adjusted forward or backward, to guide the belt and hold it in the proper position on the crank shaft pulley.

Such fan belt guides should be attached on the left-hand side of the engine, as this is the side on which the fan belt is running down onto the crank shaft pulley. And the guide is used to guide the belt onto the crank shaft pulley, as the flanged pulley of the fan does not need the assistance of a guide.

**Regular Ford Fan**

Now the fan and the fan belt are simply a means to an end, in that their function is to draw a sufficient amount of air through the radiator, that the engine may be kept sufficiently cool to function properly, even in the hottest weather. And, since we have now considered the subject of fan belts in detail, let us glance at the fan.

We have often made the suggestion that the fan blades be bent to a slightly greater angle; if the engine suffers from overheating, in order that more air be drawn through the radiator. And, though such advice seems to listen well—it does not always prove of practical value.

It is reasonable to assume that the Ford Motor Company knows enough to set the fan blades at the factory, at such an angle that the fan will work most efficiently, for all year use.

If the fan blades are bent too much, then they will simply churn the air, without drawing it through the radiator. This will simply waste power, without doing any good—just as some swimmers churn the water into foam—without making appreciable speed.

If the fan blades are not bent enough—then they will simply cut their way through the air, like the sharpe edge of a knife, but without moving the air to any appreciable extent.

To ascertain the 'happy medium,' it seems

reasonable to study a new Ford fan, which is as Henry made it. For very hot weather, it is possible that some slight increase, in the amount of air propelled by the fan, can be obtained by bending the Ford fan blades to a slightly greater angle. But be careful not to over do this.

In bending the blades of the fan, be careful to get all four blades to the same angle, so as to lessen vibration, and make the fan work more efficiently. Also, try spinning the fan, and see that all four blades revolve in the same circle, in a forward-and-backward direction.

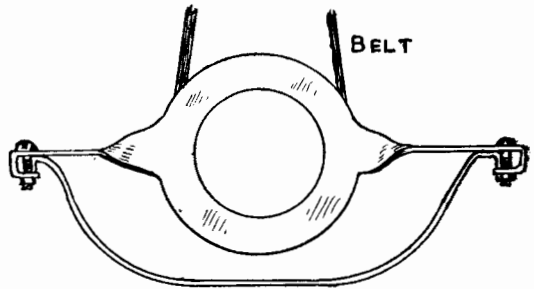
**Patent Progress in Cooling Radiator**

A recent patent, granted to Clyde Hayden, shows a crank shaft pulley with flanges at both front and rear sides of the pulley, in order to assist in keeping the fan belt on the pulleys.

It will be noticed that the ratchet crank pin does not go altogether through the rim of the pulley at the top. The pin only goes about half-way through the metal, and is seated solidly, at the top. In order to keep this ratchet crank pin from dropping out through the bottom, a cotter pin can be slipped through the bottom end of the ratchet crank pin.

A new type of belt guide, which is fastened to the lower edge of the cylinder block, has been patented by Algy Craddock. This is made of sheet metal and is bent to form a rigid connection with the crank case. Where the belt edge rubs against the guide, the metal is rounded over, to reduce the abrasion of the belt.

A crank shaft pulley, for the Ford fan belt, has been patented by Robert Poteet, and is described thusly. "Mounted thereon, said belt wheel having a central hub portion, with a closed outer end portion, the peripheral face of the pulley being formed with a circumferential groove terminating at adjacent points—



**Casco Guide.**

disposed transversely—" It seems that the patent attorney swallowed the dictionary—and that it did not digest—though some few of the words are in English.

In order to secure greater cooling efficiency, when the Ford engine is used for truck or tractor use, or for use as a stationary engine, giving power to saw mills, etc., the Electric Wheel Co., has secured a patent on an arrange-

ment for mounting an auxilliary fan, in front of the Ford radiator, and operating in addition to the regular Ford fan. This plan is more useful than ornamental, and might prove of utility on hard-worked, Ford Ton-Trucks, and for other commercial use, though hardly stylish enough for use on Ford passenger cars.

#### Fan Housings

On some of the Ford cars, made about 1917, a sheet metal shield, or fan housing, was placed in back of the radiator, and surrounding the fan; with the idea of concentrating the air, drawn through the radiator, through the fan, and thus increasing the air flow.

This fan housing did not prove effective, because the edges of the fan housing came too far in back of the fan. The fan was too close to the radiator, and so entirely enclosed by the housing, that the air was blown directly back from the middle of the radiator, and but little air flow was secured through the edges of the Ford radiator.

These fan housings are no longer fitted to Ford cars. And any owners, who still have them on their cars, are advised to remove them, as better cooling results will be obtained without the use of these housings.

Another reason, why the fan housings were not a success, on the Ford car, lies in the fact that the fan only draws air through the radiator at speeds of up to 10 or 15 miles an hour. At higher speeds than this, the air tends to flow through the radiator faster than the fan can draw the air through. So anything, which impedes the free flow of the air through the radiator, is a detriment, rather than a help.

#### Air Propellers

As the ability of the modern aeroplane is so largely dependent upon the propeller which it employs, great care and skill has been taken in developing a most efficient type of propeller, as most of us well know the majority of aeroplanes are fitted with propellers of the two-bladed type.

Acting on this hint, from the science of aviation, the Juelson two-bladed fan is designed with two wide blades, of special shape and slant, which are intended to draw the air through the Ford radiator with greater velocity.

This type of air propeller is also designed to concentrate the air flow onto the cylinder block, and thus aid in cooling the cylinders directly, as well as by cooling the radiator. Also, the two-bladed fan is less in the way, when making engine repairs or adjustments.

#### Multi Blade Fans

Another plan, for increasing the power and efficiency of the fan, is by the use of a fan of the multi-blade type, in which three blades are set tandem with each other. Thus the fan has total of twelve blades, instead of the usual four.

While this does increase the amount of air drawn through, this does not mean that the three blades in a row will draw through three times as much air. The middle, and rear, rows of blades are somewhat shielded or 'shadowed' by the first row of blades, and do not operate at full efficiency. But, even a 50 per cent increase of air, drawn through the radiator, should be of considerable value in reducing Ford radiator overheating.



### MOTERING WITH MOLLY

Motoring with Molly

It's a joy itself to go,  
Whichever road you choose to take  
The wind and sunbeams know.  
And should a sudden storm arise,  
It's over in a minute,  
And there are radiant linings  
And rainbows hidden in it.

Motoring with Molly,

You find the sweetest things—  
A meadowful of boblinks,  
A brook that laughs and sings.  
The happiest earth about you lies,  
The happiest skies bend over,  
And everywhere is color,  
And everywhere is clover.

Motoring with Molly,

Now, up the wooded ridges,  
Now through a quiet valley, where  
You cross a dozen bridges.  
Through morning, noon, and afternoon,  
Into the sunset glowing,  
Until above the mountain,  
One golden star is showing.

Motoring with Molly, —

The daylight may be gone,  
There is no darkness, when one's heart  
Is flooded with the dawn.  
And what if autumn leaves drift by?  
And what if summer closes?  
Where'er she goes, she takes with her  
The morning, June and roses!



# Airing The Tires.

## Tire Pumps for all Occasions

Tire companies are very liberal with the advice to keep tires fully inflated, in order that greater mileage may be secured. But this is one of those things that is more easily said than done. And, when it comes to pumping up a tire on a warm day, the average driver is apt to feel that 'enough-is-sufficient' and to let the car run on tires which do not contain as much air as they should.

Of course, if one is provided with a really adequate tire pump—and there are pumps of this nature—though they are more expensive than the average pump; then such a pump should inflate a tire in from fifteen to twenty-five strokes. By thus making the work easier for the driver, it is dollars-to-doughnuts that the work is much more apt to be done.

There are several forms of hand-operated pumps, and they may be roughly divided into the single cylinder, the compound or two-cylinder pumps, and the triple compression or three-cylinder tire pumps. We are speaking now of the straight cylinder pumps, which are directly operated by an up-and-down motion.

There is also a different class of pumps, having a single, large cylinder, but of comparatively short length. These pumps are fastened to the running board, and are operated by a compound control linkage, which multiplies the pressure exerted by the driver. Such pumps usually include a toggle-joint arrangement, which multiplies the power applied to the handle, as the end of the stroke is reached, and as the compression and resistance increases.

By fastening such a pump to the running board, the action of pumping up a tire is made much easier, and it is not necessary for the driver to stand in any particular position. This is especially for drivers of ample waist measure, who find difficulty in doubling up over the usual tire pump.

As to which type of regular tire pump is

preferable, opinions differ. A single cylinder pump can be made to give high air pressure—if the pump cylinder is small enough in diameter. The smaller the pump cylinder, the greater the air pressure which can be pumped into the tires, with a given amount of pressure applied to the pump handle.

However, the smaller the pump cylinder is, the less air will be pumped into the tire per stroke, and so a larger number of strokes may be necessary.

For this reason, it is necessary that a 'happy medium,' between small pump diameter and easy action, and large pump diameter and faster but harder action, be secured.

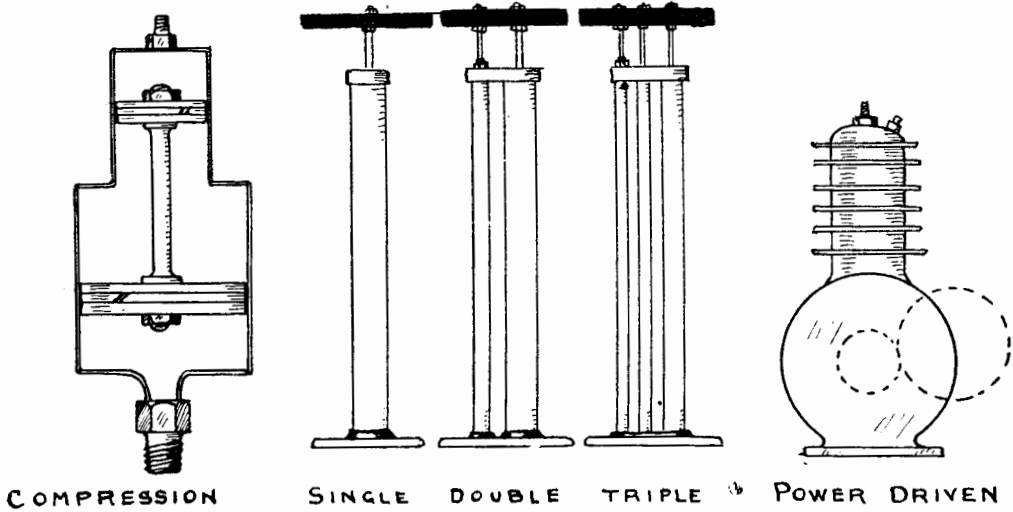
One of the most vital features of a tire pump is the washer, or means of preventing the leakage past the piston of the pump.

In order to prevent leakage past the pump piston, it is also necessary that the inside of the pump cylinder be round and smooth. Consequently, some manufacturers advocate the use of steel cylinders as less apt to be bent and dinged when the tire pump is carelessly carried in the tool box. Other manufacturers advocate the use of brass cylinders as less liable to rust and as giving easier and smoother action.

In the double-cylinder tire pumps, one cylinder is usually much larger than the other. This larger, or primary, cylinder affects the initial compression of the air. Then this air, which has been already compressed, is still further compressed in the smaller cylinder. The same action is carried on, to a still greater extent, in the triple-cylinder pumps.

The disadvantage, of the single and double-cylinder pumps, is that pumps of this kind must have a packing box, around the pump piston, for one of the cylinders. This joint, around the piston rod, is a frequent source of trouble; though, if the piston rod is round and smooth, and, if this compression packing





is kept well lubricated; it is possible to secure an easy running, yet air-tight joint, that will not leak air. However, if the piston rod gets bent, or is scratched or rough, trouble with air-leakage is apt to be experienced.

In making this packing around the piston rod, cotton string, saturated with grease and graphite makes a smooth running and air-tight packing.

Another type of tire pump, which can be used in this car, is the spark plug or compression type of pump, which consists of two superimposed cylinders of unequal diameter.

This type of tire pump replaces one of the spark plugs, and the engine is run on the other three cylinders, while the tire is being pumped up.

As there is a compression, of thirty or forty pounds, in the front cylinder of the engine; this compression flows up into the lower-and-larger cylinder of the compression tire pump. This larger cylinder piston is directly connected to the upper-and-smaller piston, of about half the area, which pumps the air into the tires.

The necessity, of using this double cylinder arrangement, becomes evident when we realize that we only have an available pressure of thirty pounds, or so, in the engine cylinder. And it is necessary to have a pressure of sixty pounds, or more, for pumping up the tires. The only way that we can obtain this increase in pressure, is by the use of the two cylinders of unequal size.

If the lower cylinder is about three times as large as the upper cylinder, in regard to superficial area of the piston head; then it is evident that we can get about three times the available pressure in the upper cylinder—neglecting frictional losses and leakage. And there will always be some loss, due to friction and leakage.

This means that, with the lower cylinder about three times as large as the upper one, we can get a pressure of about sixty pounds in the upper cylinder, which is sufficient for the purpose.

Sometimes, a tire gauge is incorporated

with the compression pump, so that one may measure the air pressure as the air is admitted to the tires. But, it seems preferable to apply the tire gauge directly to the tire valve. For, if the tire gauge is at one end of an eight-foot hose, the gauge may measure the amount of air pressure existing in the pump hose, and yet the air pressure actually in the tire may be fifteen or twenty pounds less. So it would seem that the most desirable location for the air pressure gauge would be as close to the tire valve as possible.

Another type of tire pump is operated by engine power. This drive is usually by gears, or sprockets, fitted at the front end of the crank shaft. Sometimes, the sprocket drives both the fan and pump, through a single chain. And, in such cases, the pump can be thrown out of action, by moving a lever, though the pump always remains attached to its bracket at the front of the engine.

Other manufacturers make a small divided gear, which fits between the crank shaft pulley, and the cylinder block. This gear is bolted into place and always remains in position. The pump itself is fastened to a bracket, on the side of the cylinder block.

When one desires to pump up a tire, then the pump is shifted so that the gears are brought into mesh, and the pump is then driven by the engine. It is advisable to run the engine at a moderate speed, and too great engine speed should not be used, as this is apt to cause the pump valves to work inaccurately.

In some of the 1919, and in all the 1920 and later cylinder blocks, the cylinder blocks are provided with an extension gear case, to provide for the installation of the electric generator, for charging the storage battery of the electric starting and lighting system. For use on such cylinder blocks, a patent has recently been granted for a tire pump which can be bolted to this generator housing plate. then the tire pump gear can be easily meshed with the engine. This makes a very easy and effectual method of running the tire pump, and one that has much to recommend it.

A still different variation, in the method of

driving the tire power pump, is in the use of a friction wheel making contact with the fan belt, and being driven by the fan belts. Such a tire pump is easily installed and, as this friction pulley is of considerable size, enough power can be transmitted to work the tire pump.

**HOSE CONNECTIONS TIGHT**

If a small leak will sink a great ship, it is equally certain that a small leak in the rubber hose, connecting the pump and tire valve, will increase the labor, of pumping up the tire, to an amazing extent.

And the points, at which the pump hose usually leaks, are around the connections, at the ends of the rubber hose. As the rubber and fabric gradually shrink, as time passes, it is necessary to tighten up these couplings, at the pump hose connections, now and then.

The first ten or twenty pounds, with any pump is easy—it is the last ten pounds, which tell the tale, and cause the swear words; especially if the pumping is done in the good old summer time, or just after one has eaten a hearty meal.

By testing the pump hose under water, just as one would test a suspected inner tube, any small leaks, or incipient defects, can be detected and eliminated, before giving trouble in actual use.

In considering the purchase of any power driven tire pump, it is advisable to note the care which has been taken to eliminate the possibility of oily vapor being forced into the tires.

Oil rots rubber. And we do not want oily vapor inside of the tires. But, ample provision has been made in some of the power pumps, to take care of this feature. And many of these pumps supply air that is more free from oil mist, than many of the sources of free air at public garages.

**Tire Pressures**

When inflating the tires, it is best to follow the instructions of the manufacturers of the

tires. It is reasonable to assume that they know their own babies best. And many tires have to be 'babied,' if they are to give reasonable service.

As a general rule, about 20 pounds air pressure, for each inch in cross sectional diameter of the tire, is a good rule to follow. By this rule, the 3 inch front tires should have 3 times 20, or 60 pounds. And the 3½ inch rear tires should have 70 pounds.

However, the writer believes that such tire pressures are unreasonably high, and 50 pounds for the front tires, and 60 pounds for the rear tires will usually be found to give good results on the Ford touring car or roadster.

As the Sedan and Coupelet are heavier, it stands to reason that their tires should be inflated to a somewhat higher pressure, and about 55 pounds front, and 60 or 65 pounds rear is usually recommended for them.

**Tire Gauges**

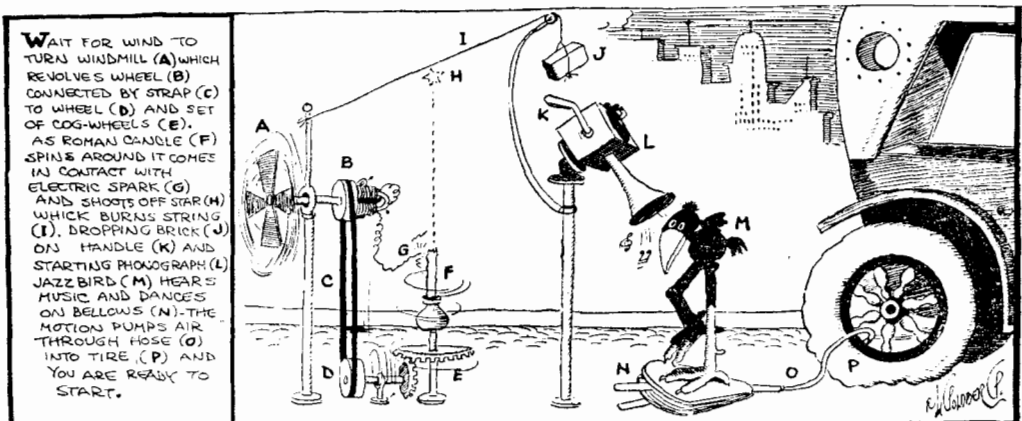
Many drivers think that they can determine tire pressures by looking at the tires—but wise drivers know that there is no use kidding themselves in this manner. While one can usually tell a punctured tire by looking at it; still there are few drivers who can tell whether a tire contains 40 or 60 pounds air pressure, by a glance or casual kick.

If the tires rim cut, and blow out from stone bruises, it is probable that you have not been carrying sufficient air pressure. If the tread of the tire wears off evenly and the tire wears out slowly and gives good long mileage, then it is probable that the air pressure has been sufficient.

Old tires do not need to have as much air pressure as new tires. Old tires are worn thin and flexible. New tires are thick and stiff.

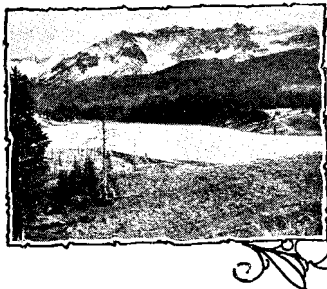
A pocket tire gauge should be part of the equipment of every car owner. Don't count on borrowing one at the garage. It is better to carry your own tire gauge, and then you can get the same pressure each time.

Easy Way to Pump Up a Tire When in a Hurry



**WAIT FOR WIND TO TURN WINDMILL (A) WHICH REVOLVES WHEEL (B) CONNECTED BY STRAP (C) TO WHEEL (D) AND SET OF COG-WHEELS (E). AS ROMAN CANDLE (F) SPINS AROUND IT COMES IN CONTACT WITH ELECTRIC SPARK (G) AND SHOOTS OFF STAR (H) WHICH BURNS STRING (I), DROPPING BRICK (J) ON HANDLE (K) AND STARTING PHOENIX (L). JAZZ BIRD (M) HEARS MUSIC AND DANCES ON BELLOWS (N). THE MOTION PUMPS AIR THROUGH HOSE (O) INTO TIRE (P) AND YOU ARE READY TO START.**

Rube Goldberg (New York Evening Mail).



# Tales of Ford Tours

## Fording in the Great Southwest

By  
Raymond E. King

**W**HEN starting on a long trip through a country where there are not any too many garages, it is best to have a car that is not subject to repairs or one for which you can get repair parts at every grocery store.

Mrs. K. and I left San Francisco the latter part of May on a two thousand mile trip through this country, the Ford being our trusty steed. "Lizzie" as she is known in our family, is just a standard 1918 Ford Roadster with the exception of a high tension magneto ignition system, shock absorbers, spot light and the like for extra equipment.

We left San Francisco about eight o'clock on the morning of May 24, 1919, by the coast route for Los Angeles. That evening found us in Santa Barbara, a distance of three hundred and forty-six miles from San Francisco. Only the splendid roads of California make such mileage possible. We were only about fourteen hours driving this distance.

Another hundred miles the next morning found us in Los Angeles where we spent the remainder of the day. The next day, we left Los Angeles for Riverside, The Automobile Club told us that it was impossible to cross the sand hills of Imperial Valley at this time of the year, so we heeded their warning and went by the way of Riverside, Banning, Palm, Springs, Indian Wells, Thermal, Nilelands and into Yuma. This is far from being as good as the Northern route, but we had to go to one of Arizona's southmost towns so did not have the choice of the better route.

After leaving Riverside we soon left the paved Roads behind. After leaving Palm Springs we began to find bad roads. We did not have any trouble in getting through, but they were either rough or dusty, or both and most of the time both. It was after passing through one of these trying stretches that we found a friend to the wayfarer. Here a little dried up old gentleman had a palm date ranch. We stopped here for water and to rest. It was very warm to us after being used to the northern climate and we suffered a great deal on this trip from the heat. This little dried up old gentleman gave us the coolest and purest water to drink that we had ever tasted, the water coming out of an artesian well.

From here for a ways we traveled very near the Great Sultan Sea, then the road led us away from its sight and nothing but the desert with a few mountains in the distance to break the view. Night soon overtook us so we could not tell much of the road on into Brawley where we arrived about midnight. There was one short stretch of paved road just before we reached Brawley. I understand now that they are going to have paved roads all the way to Los Angeles from Brawley. This will be a wonderful thing to the motorist to Arizona.

We got a late start for Yuma the next morning. A few hours ride brought us to Nilelands. This was the last place we were able to get gasoline till we were on the Arizona side of the Colorado River. We were now on the California Desert proper. From Nilelands we did not expect to find any more water. But the railroad now has two water tanks where you can buy water at five cents per gallon. Here we were able to get nice cold drinking water. On the desert cold drinking water is a very important thing.

This road runs along the railroad most of the way and is a very good desert road, sometimes a little rough or sandy but not bad. About seven or eight miles before we got to Yuma there was a pretty bad sandy stretch but we did not have any trouble in getting through.

After leaving this sandy stretch we came into a nice little farming district, and from there we ran along the canals that carry the water supply to the Imperial Valley from the Colorado River. Along here we saw the first animal life that we had seen all day. There were a good many rabbits and at every turn in the road two or three would scamper out of sight into the brush. We soon came out on the Great Colorado River where we stopped to take some pictures then crossed on 'nto Yuma. Yuma is a very busy little town and a very warm little town at this time of the year. We had a very good night's rest in spite of the heat. This may be because we were worn out by the long hot trip from Brawley and that we did not get any rest there, to speak of.

The next morning we left Yuma for Sentinel,

a distance of one hundred and six miles and only thirty-six miles are charted. The rest being guess, hit and miss roads and more often miss. Any one that has ever been in this country knows the kind of roads that I mean.

About twenty-five miles from Yuma on a turn of the road, a life size road sign warned us not to speed over twenty miles an hour. We took this as a huge joke at first because on the roads we had so far encountered there was not any danger of exceeding the speed limit but to our surprise we came out on a nicely graded road. Mrs. K. had to warn me

the United States and had not even had to change a tire or had the least bit of trouble from Lizzie. We made a wonderful mileage for gasoline and oil considering the long stretches of bad road. Our average was 20 3/4 miles per gallon of gasoline and we used about five and a half quarts of oil. We did not make an adjustment of any kind on the machine. We stayed in this little mining town about five weeks as it took me that long to complete the business I was sent there to do.

Early on the 4th day of July we left this little mining town for Northern Arizona where



Montezuma's Well

several times about the twenty mile speed limit but I am afraid that it did not do much good and we made the next few miles in less than nothing.

We soon left this good road behind and found the worst we had so far encountered. Here we had our first trouble. We were running in deep sand, in fact I think that this sand was so deep that there is a sandy spot on the other side of the earth, just opposite this one. We were stuck three times in two miles and each time had to climb out and gather brush and put under the wheels. Here Lizzie boiled water for the first and last time on this trip. And here Mrs. K. got her first introduction to the large lizards that Arizona produces. It is the only time that I ever heard Mrs. K. scream, but she made up for all other times. "Oh! He is right behind you." I was pumping up the tires as I had let the air out of them to pull through the sand. I looked around and saw Mr. Lizard and tried to explain to Mrs. K. that he only wanted to offer his assistance. Mrs. K. would not let me accept, so I had to persuade him to leave before there could be any peace in the K. family. We arrived in Sentinel about five that evening.

The next morning we left the beloved Sentinel. We had only a short trip to make that day. We expected to make the distance to Ajo, a small mining town in two hours as it was forty-six miles away. It took us four hours to make the trip, arriving there just in time for lunch. There was not any road to speak of on this forty-six miles, just merely a trail across the desert and mountains. This was the end of our trip for a while. We had traveled a distance of nine hundred and fourteen miles over the best and worst roads in

the company that I was traveling for, sent me. From Ajo to Phoenix is only a little over a hundred miles, but storms had swollen the Gila River and we had to go one hundred miles out of our way to cross. This took us by the way of Florence where there is a bridge. The roads were fairly good to Gilabend, where we came to railroad again. The railroad is a great comfort to the traveler in a desolate country. It is generally the only civilized object to look on and it is restful to the eyes after looking at nothing but giant cactus and mesquite. After leaving Gilabend we found some of the worst roads that we have on any of our long trips. For twelve miles we had to fight our way through deep silt, and at one place we were forced to take to the railroad track. Mrs. K. did not like this stunt at all, and plainly told me so. By being good and promising to be good and not to do anything as dangerous as that again, she soon forgave me and married life ran on sweetly once more. Mrs. K. was just beginning to find out what real automobile touring meant. I had often told her of some of my previous trips through this desolate country and how I was once forced to cross three railroad bridges to reach my destination. Mrs. K. told me that she thought that would be great sport. Well now she has changed her mind and wants the good roads of California back.

From this silt bed we came to the little town of Maricopa. The roads were some better from Maricopa on to Florence, which was the next town of any importance that we would come to. We soon passed through one of the government Indian Reservations. Here the Indians are taught to farm and to become civilized. We saw some very good crops that



In the Land of the Cliff Dwellers

were being raised by the Indians. The middle of the afternoon found us in Florence where we had a late lunch. We hurried on from Florence as we wanted to be in Phoenix before it was dark.

We had not left Florence far behind before the nut on the end of the steering post worked loose and we were out of the road before we knew what had happened. This was our first trouble and a few moments with a wrench fixed this.

The little towns of Mesa and Tempe soon were passed and nine o'clock that evening found us in the hotel with most of the desert dust washed off. I believe that this is the hardest trip I have ever made in one day. However two hundred and six miles in sixteen hours counting all of our stops is not bad in that country. We know that if it had been any other make of car than a Ford we would not have gotten through.

After two days rest in Phoenix we left for Prescott, a distance of one hundred and forty-seven miles. We followed the railroad a good part of the way. The first few miles through the farming district the roads were very good but we came out on the open country again and the roads were not very good. It was raining gently and this made traveling much cooler but a bit nasty. We had to ford several

washes before we got to Wickenburg but did not have any trouble. At Wickenburg we left the railroad and began to climb up in the mountains. The roads were much better from here on. The next town we came to, was the once famous town of Congress. This little town is deserted now. From here on we climbed higher and higher in the mountains, now and again passing little farms and once passing a large herd of white goats. Just before we got to Kirkland a thunder storm overtook us and we had to cross a great many swollen streams. At one crossing a large machine was stuck and we had to help pull them out before we could cross. The storm then cleared off and the sun came out for the first time since we left Phoenix.

After leaving Kirkland we soon came to Skullvalley and from Skullvalley we had to cross over the summit into the pine-clad little valley where Prescott is located. Prescott is known as the mile high city and is one of the most picturesque little towns of the state. Here we spent a few days and visited the points of interest. Only a few miles away are the Granite Dells with its beautiful lake and majestic granite formations standing out of the water. Also the Iron Springs, a resort at an altitude of six thousand feet. Between Prescott and Ashfork is the Cathedral Cave, with its myriad stalactite and stalagmite

formations in thousands of weird and fantastic shapes.

The third afternoon we left Prescott and went down into the green Verde Valley and up to Clarkdale, a distance of sixty three miles. This short trip was made through some very pretty country. While going down into the Verde Valley we could see miles and miles of rugged mountains with the most beautiful color effects and know that the Grand Canyon was just on the other side.

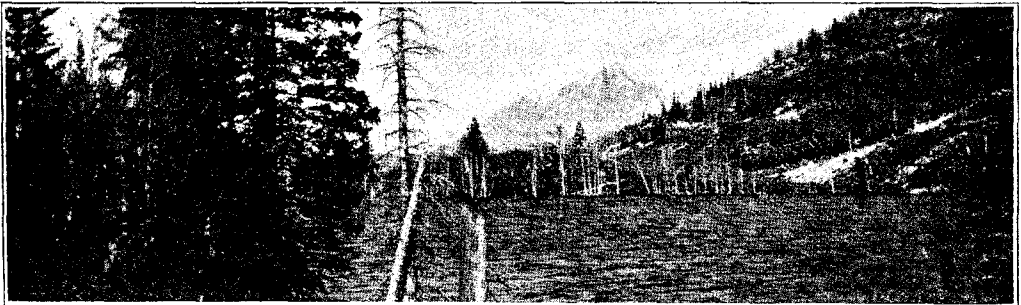
Clarkdale is a very pretty and modern town and near many points of interest. Only a short way up the Verde River are ruins of old prehistoric cliff dwellings and about thirty down the Verde River and three miles up the Beaver Creek is the famous Montezuma Castle. This is one of the best preserved cliff dwellings left. The only way to get to this dwelling is by a series of ladders that are fastened to the side of the cliff. This dwelling is several stories high and on the top is a large balcony. Back of this balcony is a large chamber that is supposed to have been the chief's quarters. From this balcony, one can see all of the surrounding valley.

From the Castle we went about ten miles up the Beaver Creek to the Montezuma Well. The Montezuma is a cup shaped lake with an area of about three acres. From the lowest place on the rim to the surface of the lake is

about eighty feet. At this point there is a crevice where the water flows through the wall and is carried away in a small canal. This canal was originally built by the cliff dwellers and can be traced a mile down the valley. There is about one hundred miner inches of water running through this crevice out of the well all the time. There is a constant uniform inflow of subterranean water and this keeps the lake at the same level all the year round. There are some very interesting cliff dwellings in the walls of the well and some caves to explore. Also there are some ruins of old castles on the rim of the well.

Within a half a mile of the Montezuma Well worth going to see while you are visiting the well. To enjoy the soda springs one must go in bathing. It is impossible to sink in this soda water. If you dive in you come to the top like a cork. We were told that this warm soda water is very good for one's health.

After this trip we went back to Clarkdale where we will leave the reader. Our speedometer showed that we had traveled about two thousand miles and over a thousand of these miles were in Arizona. We only had three punctures and the nut working loose on the steering post for trouble. We have enjoyed many side trips along with my work and Mrs. K. says that she will always go with me from now on.



## A Trip Through the Big Horn Mountains

By  
Mrs. Louise Lighty Smith

**M**ANY have been so interested in the camping trip we made through the west that I have decided to write a sketch that will answer some of the queries concerning the outfit required, the expense, the roads, in fact, the practicability and the pleasure of such a trip by auto.

So enthusiastic am I that I hope to induce others to go and do likewise and find the trail as wholly delightful as we did; nor is that expression figurative, as we traveled long distances over the old Oregon Trail, some days a stretch of fifty miles with no signs of life or habitation on the way, through great silent spaces where the sagebrush and cactus hold sway, or as Brindinstool so aptly expresses it, "through the land that God forgot."

There were two families in our party—the doctor, his wife and two boys in one automobile, while the other carried the farmer, his wife and daughter and the lad with the rifle. I use that term advisedly because the two were inseparable, wherever you saw the boy, there the rifle was also.

The kind of game he bagged varied, but dozens of jackrabbits and sage hens fell prey to his little 22. Often in rounding a bend on the mountain side, we would come upon the hens with their half-grown flocks feeding. Cars would come to a sudden stop and everybody tumble out to admire the pretty sight or take a shot at the game.

Our cars were Fords and they proved practical for the purpose, as one can always get

repairs for them even in the small western towns, and any sort of mechanic understands 'Henry.'

We proved this in Estes Park. Here we met a large party of tourists who were stalled and obliged to wait an indefinite time until repairs could reach them from the factory, as none were kept in stock for the big cars in which they were traveling. Our camp outfits were similar, a good tent enclosing the car with a side extension roomy enough for two cots, besides affording space for a dressing room. The bed for two in the car is worthy of description. This was made by means of two strong strips bent at each end, that hooked securely over the back of each seat and afforded a support for the mattress which in this case consisted of the two cushions of the car, with an extension of canvas for the feet. The soldier cots fold into small compass and took up little room in traveling, nor did the woolen blankets, though we needed plenty of them on account of the cool mountain air.

We carried a camp stove with cooking utensils and just enough porcelain dishes for the party. As a means of stowing away such things as stove, lantern, bag of bedding, bag of cooking utensils, the tent, suit case of clothing, etc., we had built on the left side of the car an extension of tin. This was only the width of the fender and extended as high as the bottom of the seats. Painted black, this compartment was indispensable when time came to break camp. On the other side our small, black oilcloth covered cupboard was securely fastened. Its door was hinged at the bottom and was used as a table at meal time. This held our dishes and what food we carried on the long stretches between towns farther west. You will readily see how these two additions to Henry's anatomy helped, for we were never crowded or bothered with bundles or packages at our feet. A wall pocket affair tacked to the inside near the driver's seat proved so handy for the most needed tools, that it still remains though showing unmistakable signs of its two thousand mile trip. One other device I must mention as a warning, for it proved so impractical that it was abandoned and shipped back when we reached Caspar, Wyoming. This was a rack on the back of each car holding a trunk full of nice clothes. They loaded us too heavily for the steep mountain trails. It was a case of the survival of the fittest, and when the trunks went back nothing survived but necessary clothing. Here let me say, if you love nature and the outdoor life, by all means take a trip like this, but go dressed suitably, and do not carry fine clothing alone. People who worry continually if their apparel is not immaculate might better stay where they can consult their mirrors complacently. The western country is dry, the roads sometimes very dusty, and on a long trip this fine dust penetrates even the crevices of a trunk, rendering its contents unwearable at the road's end, so dispense with it entirely.

The women of the party wore one piece dresses of khaki about shoe top length with saten bloomers of khaki color in place of petti-

coats. These, with high top shoes and wide, soft hats, proved practical. Two such suits apiece are plenty, and as men can buy readymades anywhere, they need not start with extra suits. We found comfortable shoes and the lack of petticoats big assets when it came to climbing mountains or even getting about camp. Every evening the men donned overalls and went over the cars oiling and otherwise putting them in shape for the next day's trip. Sagebrush was gathered so dry that one lighted it like shavings and made a rousing fire over which big, hot dinners were cooked and relished as only outdoor meals can be.

After a hearty breakfast we found it an excellent plan to prepare our lunch before starting out. In this way we avoided unloading the cook outfit at noon. We carried a supply of bread, butter, bacon, eggs, jam, condensed milk, etc., but not in large quantities, as these stores could be replenished at stations passed through.

Our object was to make good time through Iowa, Nebraska, and eastern Wyoming until we reached the mountains and then travel more leisurely and enjoy the scenery. This we did, and one of the party at least will never forget those wonderful nights we camped in the mountains. Their grandeur and majesty and their gorgeous coloring will never be forgotten. The roads in general were good, no mud to speak of and even when the mountain and canyon roads were narrow and steep the road bed was hard and good. We struck some places where the sand was deep, and forded streams that would have been bridged in Iowa. We traveled mountain roads so steep that we could only make a few miles each day, but this was well for here was much to see and we loved to tarry and enjoy the beauty of it all. To those who had never seen the mountains it was like passing through a great art gallery; everywhere beautiful pictures met the eye and challenged the admiration. We camped several days in Estes Park. How can one describe the beauty of the canyon? The great granite mountains on either side with pines towering to the sky, with roads that wind around to the very brink of precipices. The Big Thompson with its swift current and continual roar as the water rushes over great boulders in its bed. Waterfalls, clear as crystal, avenues of quivering aspens, white and stately like the vestibule of some vast temple of nature. And up the mountain side clusters of dead-ripe "thimble berries" whose richness no one knows until he has sampled the luscious fruit crushed between slices of bread and butter as we did! And the fish from those mountain streams! None we had ever eaten tasted quite so good as those we caught in the Big Horn river.

As to the expense of such a trip that depends altogether upon the tourists themselves. Outside of the running expenses of the car one may go quite economically if he chooses. Nor could money be spent more wisely, as such a trip broadens the outlook, and one comes home after weeks of life amid beautiful scenery filled with enthusiasm and inspiration for his own work.





## From Illinois to Montana in a Ford

With Twenty-Five Cents Garage Expense

Charles E. Grote, Oconee, Ill.

Three boy friends and I had heard of the Fort Peck Indian Reservation near Glasgow, Montana and decided to take a look at the country. I had a Ford Runabout that I had only used a couple of months. We put a truck bed and extra seat on it and with a couple of heavy dress suitcases, a 24 x 24 tarpaulin and other small articles, we started on our long trip. At least, it sure looked long to us when we took a squint at the map.

We had a Red Book and a Blue Book by which we followed trails through Springfield, Princeton and Iowa City until we reached Cedar Rapids where we found other trails well marked most of the way. We went on through St. Paul and Minneapolis, Aberdeen, S. D. and Monmouth, N. D. to Terry, Montana. Leaving Terry we crossed a desert for 120 miles to Wolf Point on the Great Northern R. R., then followed the Wonderland Trail to Glasgow.

We camped every night, bought all our grub, fixed our own meals, and drove as many hours as I could stand to drive. When we would camp we wished for nothing better than wheat or oat bundles or a hay or straw stack to make our beds. We sure had a lot of fun over the big cars, for we met all kinds of tourists' cars from all over the United States. Usually they would stop a few minutes to inquire about the roads, especially if it had been raining. Of course, I would ask how they had found the roads and if they thought I could make it. They would always say, "Yes, sure! You can make it—you have a Ford." And believe me, we did make it too. Sometimes we passed as high as three big cars piled up in a ditch at one time, although it was no wonder. If

you have never driven over such narrow roads, steep hills and sliding places, you can't imagine how slick they can get, especially after a light shower. Often when we would start to slide I would tell the three boys to jump and they would help hold and push the old Ford right along. That's where the heavy cars lost out. At all the garages where we stopped to buy oil and gas you would see the place piled full of big cars for repairs but never a Ford—they were always running and so was mine.

We made the trip of 3321 miles in all kinds of weather, over all kinds and conditions of roads on 202½ gallons of gas—an average of 16.4 miles per gallon. Sometimes the road was nothing but a cow trail over sand, sagebrush and gopher holes. One such strip of 30 miles took three hours driving. Several times going through bogs, the ends of the fenders would throw water and mud on the windshield so we would have to stop and clean it off.

We had one puncture going out and two blowouts coming home. The trip cost each of us for all expenses about \$35.00. I sold the Ford for as much as it cost me within a few days after arriving home. Only once did we drive into a garage for repairs and that was one rainy evening when I paid 25 cents to have the cone on one front wheel tightened. The reason for our extra good luck was that whenever anything didn't sound just right, I stopped right there and fixed it. Then, too, I always used plenty of oil.

This trip was accomplished at a little over 200 miles a day. How's that for a Ford?







## TOURING

Did you ever look from the window  
Of your office so cool and so clean,  
At the tired and dusty tourists  
Who are stopping for gasoline?  
Did you wonder what was the pleasure  
In sitting and riding all day,  
Or if you could be happy or decent  
If you were as dirty as they?

But let me tell you it's different  
When you are behind the wheel;  
There is something about it that's thrilling,  
As you rock and ramble and reel.  
Bounding over the purple plains  
Or climbing the mountains high,  
Through rocky canons and gorges,  
O'er deserts dusty and dry.

And Oh! the nights by the roadside,  
Or along some mountain stream,  
Where you sleep beneath the quiet moon  
And dream and dream and dream.  
Then off in the morning like Gypsies  
You leave the long trail behind  
As into the deep dark forests  
You wind and wind and wind.

And do I care if I'm dirty?  
Or dressed as no lady should?  
In boots and trousers of khaki  
Instead of a "coul and hood?"  
You city folk as we pass you  
All stare at us driving by;  
At home we are just like you are,  
You've never gone touring, that's why.

Now that we've travelled the highway  
And know its bumps and thrills  
We hail other dusty tourists  
As our comrades from over the hills.  
And we all agree that "This is the life"  
But think what sport 'twill be,  
When some fine day a great highway  
Will be paved from sea to sea.

Bess Foster Smith.



# Touring Equipment

## TOURING COMFORTABLY

Much of the pleasure of touring depends upon so planning the tour that one can travel **leisurely**. If one wishes to 'get-somewhere' in the shortest possible time, an express train is the proper means of conveyance, rather than an automobile.

In planning the tour, one should not make **definite** arrangements to stop at any **particular** cities for the night. Travelling according to schedule is all right for a railroad train, where the steel rails are known to be in good condition. But in the case of automobile, touring should be a more leisurely-and-haphazard arrangement.

In planning a tour, one should take along sufficient maps or route books to enable one to travel without bothering the people who live at every crossroad. One must remember that there are many thousands of tourists, and it is no wonder that some of those who live at crossroads become a little sharp and snappish in answering questions which must seem to them very tiresome and foolish.

In using a tour book, it is advisable to keep ahead of the car, in reading directions. In other words, the one who is using the route book, should advise the driver that the next turning will be 8.10 of a mile, or whatever distance happens to be, ahead. This avoids confusing the driver, by unexpected directions given at the last minute. It should be the purpose of the one who is reading the route book to make it as easy for the driver as possible. And the strain can be lessened, if the one who is studying the route book anticipates the conditions which are coming.

When entering a small town, where there may be a number of different turns to be made, close together; the one who is reading the route book should study these directions and more or less memorize them, before the town is reached in order that there may be no delay or difficulty experienced, when the different turnings and changes in route come close together.

On many roads, there are few land marks

to guide the drivers, and it is important to be able to distinguish between a **viaduct** and a **bridge**, and whether one goes **over** or **under** a bridge, and to follow the instructions **accurately**, so that one will not lose the way.

### Health of Passengers

Much of the pleasure of a tour depends upon the health of the passengers. And **three** square meals a day are of much greater vital importance, than **three hundred miles** of traveling:

Much of the health of the passengers depends on **regular** meals. If breakfast is early, the noon lunch should be also at an early hour. Going without lunch is poor policy, **even** though eating a little fruit or something **of** that kind may enable one to get along. One might as well gain health while touring, as well as when one actually arrives at the summer resort.

The health of the passengers will also be increased by a comfortable car. For this purpose, shock absorbers add to the flexibility of the springs, and the easy riding of the car. Also, the lubrication of the springs is an important factor in making the car easy riding, and in preventing spring breakage.

There is no use in endeavoring to travel **too** fast. And it will be easier to drive a car at a smooth, easy rate of speed; especially if the car is heavily loaded, if the rear axle is equipped with a set of 4-to-1 or other special, low-ratio gears. The use of these special-ratio gears gives the car more power for hills and rough roads at a more **moderate** pace in high gear, without the necessity of straining the engine.

The pleasure of the tour will be greatly enhanced if the car itself is in good condition. Although the locomotive travels over smooth rails of polished steel, the locomotive is always carefully inspected **before** starting out, on each and every trip. An automobile, which travels over give-and-take roads, should also be given the benefit of an inspection **before**

the trip is taken. The feeling of comfort and safety, which the tourist has when the car is **known** to be in good working order adds much to the pleasure of the trip.

The inspection of the steering gear, which is of vital importance to the safety of the car and its occupants, is another detail which should receive attention before starting. If the transmission bands are harsh and jerky in action and tend to grab and seize when the brakes are applied, it is advisable to have the transmission bands relined, **before starting** on the trip, as the failure of the brakes, on a steep hill, may have unpleasant and possibly serious consequences.

Before starting on the trip, it is also advisable to drain out the old oil from the crank case, and to replace this oil with clean, fresh oil. This will help to eliminate the fouling of

the spark plugs, and will give a smoother running engine.

It is also advisable to have the carbon removed from the cylinders, and the valves ground, before starting on the trip, in order that the engine may develop its **maximum power**. As one usually carries more or less luggage when touring, and the car is more heavily loaded than at other times, it is especially necessary that the engine be able to develop its maximum power for use in touring.

It is also suggested that old tires be removed from the wheels, and kept for use around home. And a set of new tires be installed on the car for the trip, so that the long expected vacation will not be marred by tire troubles. It is better to use the old tires for city use in winter time, when conditions are hard on the tire, and when the car is never far from its base of supplies.



## The Home We Pulled Behind Us

### The Sleeping Car Trailer

There is much more, to towing a trailer, than just "hooking the trailer on behind". If this is all that is done, the trailer is apt to bear the same relation to the Ford, as a tin can tied to a dog's tail, and to cause as much trouble and bother.

In the first place, towing a trailer involves extra work on the Ford power plant. And the only way that this can be satisfactorily overcome is by the installation of such special ratio gears, as the 4-to-one, or the 4.2-to-one gears, in the Ford rear axle.

With these special ratio gears, the Ford car will pull a fair sized trailer just about as easily as the Ford car will usually travel alone. Of course, the speed will not be as high—but—one must make up one's mind to sacrifice something, when one takes one's own hotel along.

In the second place, it is hardly fair to load down such a small, light car, as the Ford, with a big, heavy trailer, if the roads are at all rough or mountainous. Give the Ford a chance—and use the trailer only leisurely touring,

over reasonably good—though not necessarily perfect roads.

While there are both two and four-wheeled trailers, we believe that two-wheel trailer will carry all that should be towed behind a light, Ford car. Also, two wheeled trailers do not require any special steering arrangements, and have fewer bearings and parts to get out of adjustment.

### WHEEL BEARINGS

Much grief has been experienced with the wheel bearings of trailers, especially when the same kind of ball bearings as are fitted on Ford front wheels, have been used. Such ball bearings will give good service if, (and it is a big IF) kept properly adjusted and lubricated.

As the trailer wheels run in a cloud of dust, behind the car, and as the average tourist never bothers with the trailer wheel bearings at all, it is no wonder that they often give trouble.

and keep The wise Ford trailerist jacks up each wheel of the trailer, about once every 250 miles. Then tests the trailer wheel bear-

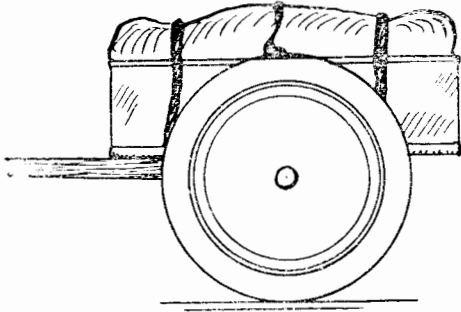
ings for looseness and play, and tightens them up, if they need it. There should be no perceptible play or looseness, and yet the weight

is less dampness and danger of bugs and snakes.

Such a trailer camp can be arranged in a low, box-like manner when folded up, with lids to keep off the rain and dust. The tent part can be set up quickly and easily, as the poles are set in sockets in the floor of the trailer.

The folded down tail board of the trailer forms a step, for getting into the trailer camp. The two uprights and the cross posts, and the tent, and mattresses, are all snugly stowed inside the trailer, when not in use.

While some of these camps are fairly bulky, they are usually of just the two-wheel type; as they are not nearly as heavy as their appearance would indicate. By using a dropped axle, a much lower position for the trailer can be secured. This makes the trailer more immune against sway and skidding, when traveling over rough roads.



**Trailer Carries Luggage**

of the tire valves should be sufficient to start the wheels, and keep them swinging easily.

#### Roller Wheel Bearings

There are a number of excellent makes of roller bearings, now on the market, especially manufactured for use in the hubs of Ford front wheels. These roller bearings are just the thing, for use in the hubs of Ford trailers—and with them installed, the hub-bearing of trailer wheel bearing troubles is practically eliminated.

The Ford Motor Company supplies roller bearings in the front wheels of the Ford Ton-truck, and in the heavier, enclosed car models.

#### Luggage or Trailer Camp

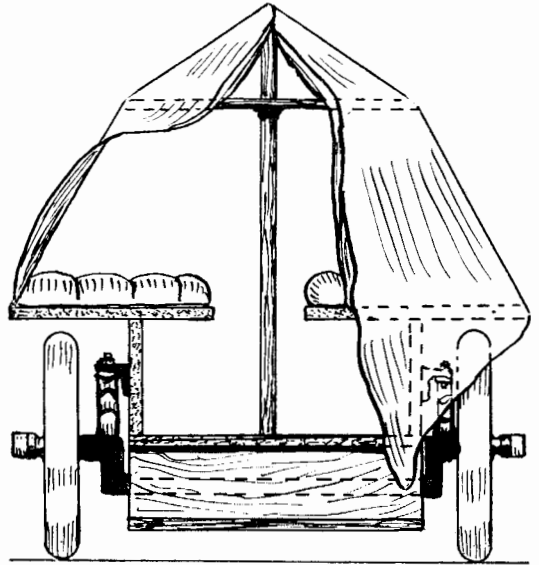
In order to afford more space for the passengers in the car, and to make it easier to carry the tent and other bulky equipment, a light, two-wheeled trailer is easily towed behind the car.

By keeping the car comparatively free from impedimenta, it is easier to repair the car, or make any adjustments which may be necessary, without moving a lot of luggage, so that this touring 'trunk-on-wheels' has much to recommend it.

#### The Trailer Camp

Another trailer possibility, is the trailer camp, or sleeping car trailer. By keeping the trailer camp outfit all together, such a trailer camp greatly simplifies the work of setting-up camp in the evening, or packing-up in the morning.

The trailer camp has berths on each side. And these beds can use real mattresses and springs, which are more comfortable than cots which sag in the middle. Also, as such a trailer is raised so far from the ground, there

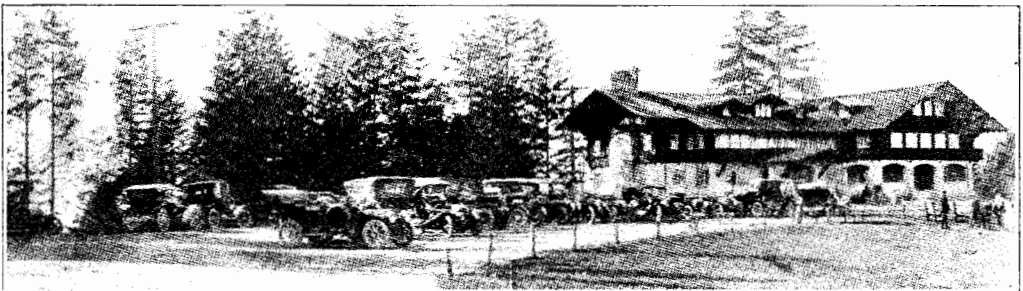


**Trailer Camp With Tent**

Even though only fitted with two wheels, these trailer camps have supporting braces, so that the camp can stand alone, when detached from the car. Then the Ford car can be used for short trips, about camp in the evening, for seeing the sights, and for obtaining supplies.

#### Editor's Note

We are indebted to the Denver and Rio Grande Ry. and to the American Motorist for some of the scenic photos which appear in this issue.



# Building a Pullman Car Ford

By  
E. S. Hall.

Did you ever drive your Ford all day on 'the long, long trail' and yet, when coming dusk told you it was time to camp, still feel fresh and easy in your seat,—with never a sore place in your back or cramp in your legs? No,—unless your legs are ten or twelve inches shorter than mine, you will have to admit that you unfolded them with something like relief, when you slid out of that front seat. And, whatever the length of your legs, wasn't there a real 'misery' in the small of your back?

No wonder, then, you would think uncomplimentary things of my veracity if I told you that my Ford touring car has never cramped my legs or lamed my back. It is altogether the most comfortable car to drive—hour after hour—and day after day of any car of any make I ever drove. And my experience with other makes is not limited to a few, either. I could mention names; but I hate to knock those 'rubber-tired mechanical monstrosities' that weigh two or three times what a Ford weighs, and cost five or six times as much.

Right here and now, you must realize that it is impossible to get anything for six cents. I have had to sacrifice a little style, to get the comfort. And if you are of the sort that put style above comfort—save your eyes for something else. Don't read the rest of this. If, however, you are of a practical nature—willing to be comfortable and content with a workmanlike job, even if it is not the last word in stream-line body design, you will be interested in my method of remodelling the back of the front of a Ford touring car, so it not only provides maximum driving comfort, but also produces, when wanted, a comfortable bed for two in the car.

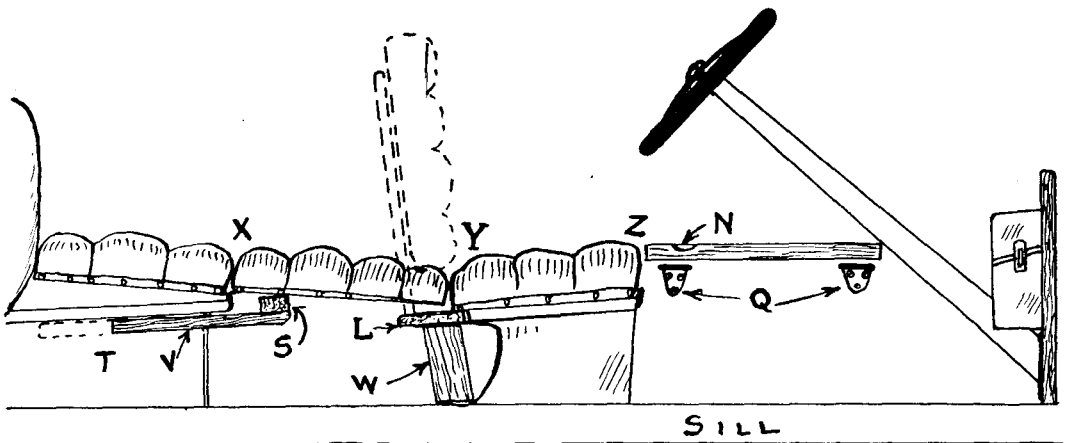
The usual method of doing this leaves you, when driving, more doubled up than ever, and when you stretch your weary bones out for the night, what a hard bump that is under your hip. Or, if not that, a hole there that you have to stuff your coat into. Oh, well, camping isn't supposed to be all ease and joy!

A rather extensive touring experience, including two trips across the country, has taught me a better way. In brief, it is to take out the seat back entirely, finish up the upholstery of the two arms, and use an extra front seat cushion for a new back. The sheet of metal removed, is placed on a hardwood frame and used for backing, for the third seat cushion.

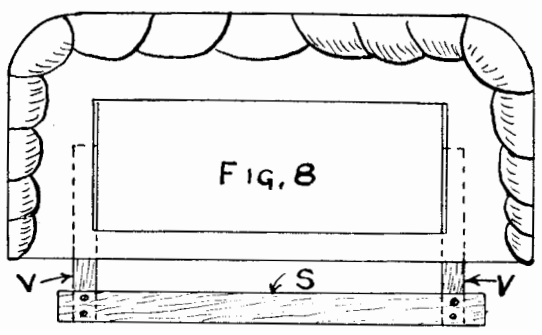
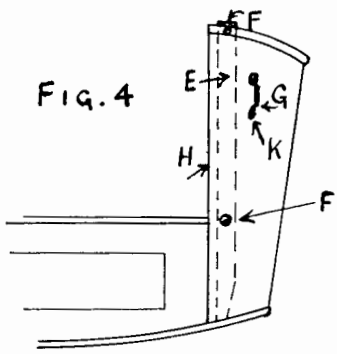
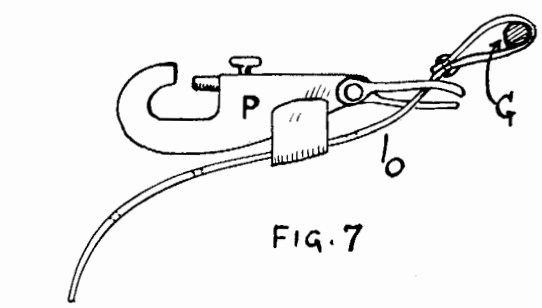
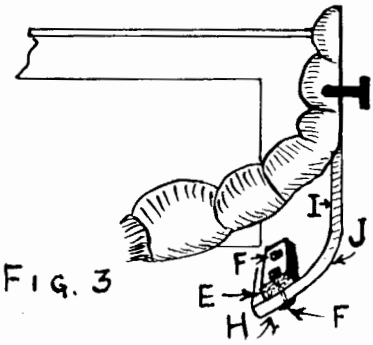
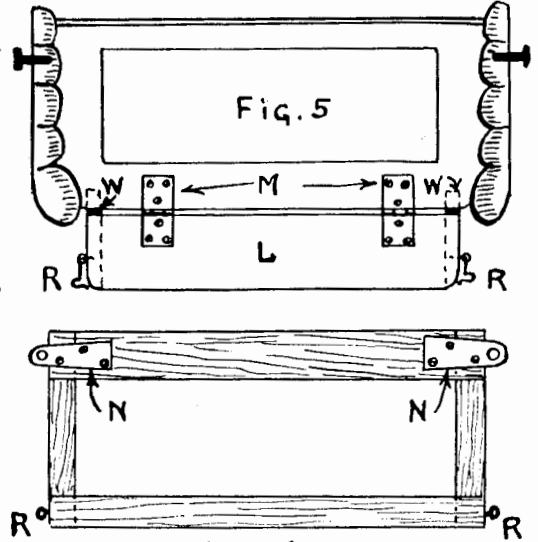
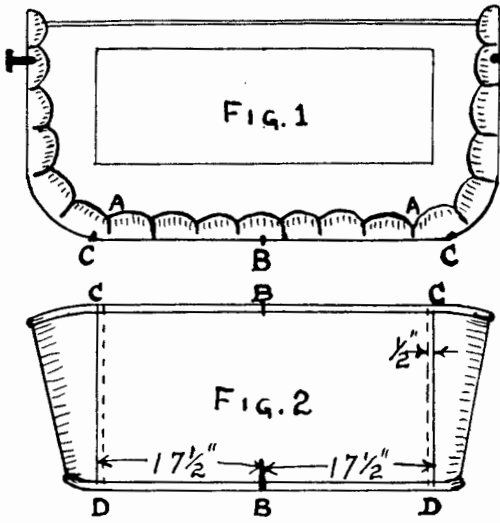
Here is the method in detail:

Fig. 1 is a top view of front seat, with cushion removed. In one of the folds, near "A," will be found a seam. Rip it out, from top to bottom. Pull apart the curled hair and cotton batting, and cut the burlaps in back of it. Pull out the tacks that hold the top and bottom of that back panel of upholstery and remove it entirely—springs and all.

Determine carefully the center of the sheet metal back and mark it plainly at top and bottom "B." Measure  $17\frac{1}{2}$ " either side of points "B" and mark points "C" and "D," (See Fig. 2,—a back view of the front seat-back) and scribe the vertical lines "C-D." Start the cut with a hack-saw. Remove the two wooden strips across the top, to which the upholstery was tacked. The rest of the cut can be made either with a saw, or with compound lever snips. Leave a clean edge on the outside of the cut, following exactly the line "C-D." On the other hand, keep within  $\frac{1}{2}$ " of the line and don't bend the metal panel unduly. We



Complete Assembly of Pullmanized Ford.



No. 1. Top View of Front Seat.  
 No. 2. Back of Front Seat.  
 No. 3. Top View of Right Arm.  
 No. 4. Back View of Right Side.

No. 5. Extension Board.  
 No. 6. Back of Frame.  
 No. 7. Buckle and Strap.  
 No. 8. Top View of Rear Seat.

are going to need at least 34" of that sheet later on. Dotted lines (Fig. 2.) show, with lines "C-D," the limits within which the cut must be made. Remove the sheet of metal and set aside.

In considering next the method of finishing the two arms, directions apply to right arm only. It is advisable, however, to carry along the work on the two arms together, step by step, so that both will approach the finished state at the same time. It is difficult to make them symmetrical if one is finished before the other is started.

Fig. 3, shows a top view of the right arm, the upholstering having been detached as far forward as the top iron. Fig. 4, shows a back view of same. Fit a strip of hard wood "E" about  $1\frac{1}{4}$ " x  $\frac{3}{4}$ " in section, so that it will leave an even  $\frac{3}{8}$ " of metal "H" projecting beyond it, the inner top strip "I" being cut back to fit up to strip "E." Bolt "E" in place with two  $\frac{1}{4}$ " carriage bolts "F," the upper one passing through the end of the outer top strip "J" as shown in Fig. 3. With a hammer, bend the projecting edge of metal "H" around "E" so that it lies flat against the wood.

Just ahead of "E" bore two  $\frac{3}{16}$ " holes "K"  $1\frac{1}{2}$ " apart, the upper one about 2" below top strip. Pass the ends of a 30" piece of heavy wire through these holes leaving the bight "G" outside. Secure the ends to the top iron. This bight and its mate on the left, will serve as a solid anchorage for the straps that hold the new seat back in place.

Replace the upholstering, tacking the back edge neatly to "E" so that finishing strips cover the cut edge of metal.

To support the extra cushion used as a seat-back, it is necessary to extend the seat bottom from 3" to 5" to the rear, according to the amount of legroom desired. Fig. 5, is a top view of front seat with back cut out and arms finished. A single board "L" of hard wood, supported under the ends by uprights "W," and tied to the original seat frame by thin metal straps "M" is a good way to make the necessary extension. The uprights "W" rest on the body sills (See also Fig. 9.)

Fit the sheet metal removed from the back to a hardwood frame, 36" long! Fig. 6 shows the back side of frame. The top piece should be 4" wide or more. The sheet metal is fastened to the front side of the frame by  $\frac{1}{2}$ " flat-head screws. On the back of the frame, fasten two steel straps "N," sawed from a 6" strap hinge. Ream the hole in each project-

ing end, to take the snap end of a combination harness snap and buckle "P" (Fig. 7.) A leather strap "O" will buckle into "P," its other end being riveted into the bight of wire "G," before provided.

The lower edge of the frame, with its metal covering, will rest on the back-edge of "L." A hook and eye at each end as shown at "R" (Fig. 5 and 6) will keep it from slipping off.

By placing hooks "R," to give the desired legroom, the straps "O" can be adjusted at any time, to give the new seat-back the desired angle, and to arrange the driver's position to suit the individual. This, and the fact that the third cushion, on edge against the frame, gives a straight, even support to the driver's back, several inches higher than in the stock body, assures that driving comfort of which I spoke.

A few more fittings are necessary to make it possible to spread the bed, chief among these being the supporting bar for the rear end of the middle cushion. Fig. 8 is a top view of the rear seat. The three hard-wood strips "S," "T" and "V" form a sliding rack, shown drawn out ready to support rear of middle cushion. When driving, it is shoved in so that "S" lies close under edge of rear seat. "T" and "V" occupy the corner just under the frame on which the rear seat cushion rests, and just outside the ends of the storage compartment.

The relationship of the parts is shown in Fig. 9. The dotted lines show the arrangement while driving. The solid lines show the cushions arranged for the night.

The rear end of rear cushion is raised up pillow-wise. Usually there is enough stuff around that can be put under it to hold it up the desired height.

The sheet metal-covered frame which, while driving, supports the back of the front seat, is used at night to extend the foot end of the bed. Four small wooden brackets ("Q" Fig. 9.) on the fore doors serve to hold it up, frame side down; or, for greater comfort, the frame side can be padded out with curled hair from the discarded seat-back, in which case, the padded side will be placed up.

If the work has been done skillfully, it will be found that the cushions will be so that the slight hollow at "X" will accommodate the shoulder, the hollow at "Y," the hips, and the slight rise at "Z" will prove comfortable under the knees. The whole together will prove so easy to sleep on that you will be loath to turn your craft toward the comforts of home.



"Take Me With You"

# A Complete Ford Camping Outfit

O. E. Parsons

Each year more and more of the millions of Ford users are learning the pleasure to be derived from a life in the open, independent of hotels and summer resorts with their hot, stuffy bed rooms and high prices. The camp outfit here described has been built up as experience showed the necessity, until it seems to the writer that it is as nearly complete as it can be made. It has been thoroughly tried out and has proved a practical, easily transported, outfit.

The first thing was to have the car, a Ford touring, fixed so that it could be converted into a bed. This was done by having the back of the front seat cut and hinged so as to hold down to the rear seat. This has been fully described before in this magazine, but there are a few things to do in order to make this a comfortable and satisfactory bed. The back of the seat when let down must be held in just the right position or it will drop too low and an uncomfortable ridge will be the result.

This can easily be accomplished by drilling two holes below where the seat is hinged and directly opposite the holes that are in the metal that forms the front of the space under the rear seat. Half inch iron rods are placed so one end is in the hole in the back seat and the other end in the hole in the front seat. When the back of the seat is let down it rests securely on these rods and there is no danger of its giving away and spoiling a comfortable night's sleep. If you are a long legged person like the writer, it will be necessary to fill in all the space between the front seat and the windshield or the bed will not be long enough. Take some light weight pieces of board and nail them together with cleats until you have a piece the size of the space to be filled. With a piece of paper make a diagram of this part of the car, holding the paper on a level with the top of the coil box and marking where the steering column, coil box, etc. come. Cut these places out with a scissors and try the paper until you have a fairly good fit. Mark this diagram on the wood you have fixed and cut out to proper shape. If you are fortunate enough to have a small boy who owns a scroll saw this can easily be done; but a key hole saw will do the work. This board when in use must be held at the right height, which can be done in any way that is most convenient.

The writer put hinged legs on the side toward the seat while the other end rests on the bolts that hold the dash and body together. But it must be tight fit in order to rest securely on these bolts. In order to be more easily carried it was cut in two and hinged so that when folded it took up very little space. A pad is placed on it when in use so as to make it soft and level with the front cushion. If only small people are to sleep in the machine a short extension can easily be fixed, even suit cases held at the proper height being suffi-

cient for the purpose. Fix a block of some kind so that the back end of the rear cushion is raised about four inches above the front end as this adds a great deal to the comfort of the bed. Also turn the front cushion so that what is the front when driving is the back when used for sleeping.

When making up the bed fill in the cracks between the cushions with spare clothing so as to make as nearly smooth a surface as possible. If a light feather tick can be carried it helps a whole lot in making the bed comfortable. It took a lot of fixing and experimenting before we got a really comfortable bed, but when finally fixed it beat any hotel bed we ever got into. But if you want to get any sleep be sure and take plenty of mosquito netting along and have it wide enough so that it can be tucked under the padding that keeps the top in shape. A good way to fix the netting is to sew it to a strip of strong cloth. Get some metal eyelets similar to those used in the side curtains and put them in this strip of cloth so that they will fit over the fasteners used for the curtains. When fixed in this way the netting is strongly held and easily rolled up out of the way when not in use. It is surprising how small a space a mosquito can get through so watch out and have everything as nearly tight as possible. If the car is used without a tent have the side curtains handy so that a sudden rain during the night will not soak you. So much for the bed; now for the tent.

The first tent the writer tried out was the regular style auto tent extending on one side of the auto with a flap extending over the top of the machine. This is a very satisfactory arrangement for one night stops but when a stop of several days is to be made there are two very distinct disadvantages. The biggest objection to this arrangement is that when once set up it is impossible to use the machine without breaking camp, so that little trips from the camping site cannot be made without considerable work.

The other disadvantage is that when a rainy day comes (and camping out is not all sunshine) you will find yourself mighty cramped for space, especially if there are more than two in the party. The main use for a tent of this kind is for a dressing room or an extra sleeping room if there are more than two people. If a tent of this kind is used be sure and have the canvass extend entirely over the top of the machine, otherwise a heavy rain will run over the top of the machine and down into the tent. After camping out for two weeks with a tent like this and with three in the party, the writer started to work out an arrangement that would give a bedroom, garage and living room all combined under one tent.



Fig. 1

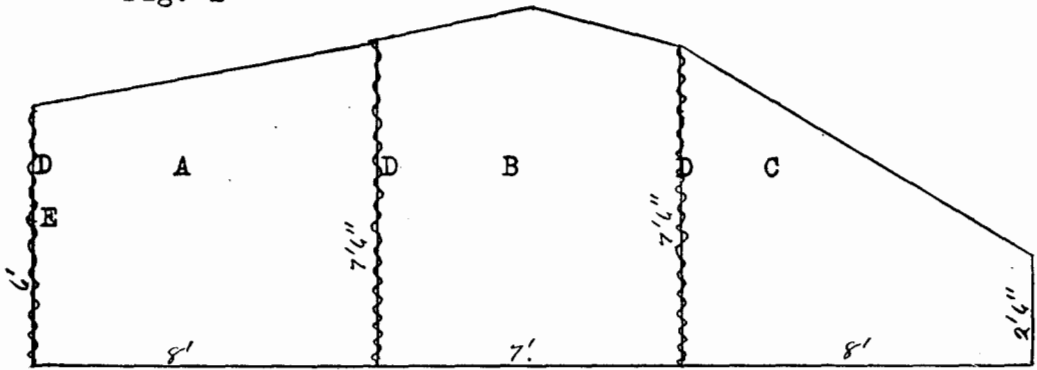


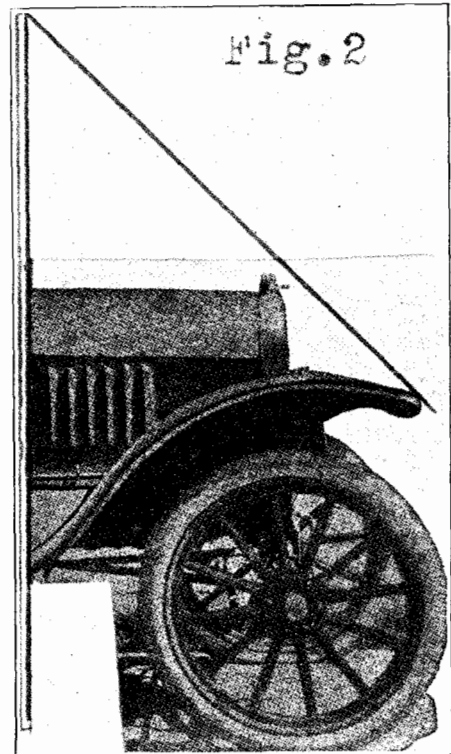
Fig. 1 shows the tent completed. "A" is the kitchen or living room, "B" the garage, and "C" the original sleeping tent described above and joined to the other tent by heavy fasteners. These fasteners enable the tent to be taken apart so that part "C" can be used alone when only one night stops are to be made. Instead of having "A" and "B" made in one piece they are cut at "D." Eyelets are inserted and the sides laced together as shown at "D." When it is desired to use the machine all you have to do is to unlace the cords holding piece "B," throw this piece up out of the way, and back out as you would from a regular garage.

The front, back and side of part "A" are fixed in the same way so that in pleasant weather either or all of these sides can be raised and fastened out, giving six feet more of canopy on each side. In cold or stormy weather they are laced together and a warm, dry tent is the result. This tent extends only to the windshield of the machine and an arrangement as shown in Fig. 2 is fixed to cover the hood. Instead of the canvass being laced and fastened down as shown in "B," Fig. 1, the piece that went across the front of the "garage" was left loose and eyelets and ropes fastened to the lower end for staking to the ground when extended over the hood.

A saving in canvass can be made by having this piece narrower at the bottom than at the top as it is only necessary to have it wide enough at the bottom to extend just outside of each fender. But be sure it extends to the outside edge of each fender, for these fenders make an excellent rain spout to throw the rain into the main part of the tent unless they are well covered. Side pieces can be sewed in so as to completely cover the hood. The tent the writer has is made out of a fine grade of sail cloth, khaki color, so it can be rolled into a smaller bundle than if made from ordinary canvass.

The pole arrangement for this tent is shown in Fig. 3 "A" "A" are two round tent poles 7' 6" high and jointed at "B" so as to be easily carried. "C" is a 1" x 1½" piece with holes to slip over the pins in the top of the uprights. Hinge this piece of "E" with a strop hinge, being sure that the hinge is on the lower side. A 1" x 1" piece 9" high, "D," upon which the ridgepole is placed, is fitted into a slot at "E." The ridgepole is made out of

the same material as the cross pieces and is hinged in the middle in a similar manner. Holes are drilled near each end of it to fit over pins in the top of piece "D." The width between poles "A" and "A" will depend on how much room you need in order to run the machine in and out without knocking the whole arrangement down. The writer has placed



these poles two inches beyond the outside edge of each fender. Six foot jointed poles are used at "E" in Fig. 1.

So much for the tent arrangement; now for a few of the "fixins" that help make you comfortable. Take my advice and don't go on a camping trip without first getting one of the small gasoline camp stoves of which there are several makes on the market. Some of

these are high priced but it is the writer's experience that the cheaper ones do the work equally well. Instead of bothering with a wood fire and waiting a long time for a meal to cook, these little gasolene stoves will do the work as easily and as quickly as your gas stove at home.

You are always hungry when out on a trip of this kind, and believe me, you will appreciate a hot meal of coffee, bacon and eggs, fried potatoes, etc., all prepared in fifteen or twenty minutes at some wayside stop. These stoves will burn in nearly any kind of weather but if it is windy the hood of the machine, set on end, makes a fine wind break and protects three sides of the stove. When in camp, the branch of a tree stuck in the ground and with the smaller branches cut off to about two inches, makes an excellent clothes rack. A knock-down table of some kind will also be found handy. The top of the one the writer fixed is just large enough to fit in the bottom of the tonneau, the edges resting on the wood frame of the car. This gives quite a little space below the table for tent pegs and other small articles. The legs are separate from the top, bolting into place, and the table kept from wobbling by  $\frac{1}{4}$  inch iron rods that hook into the middle of the top and extend to the middle of the legs.

When traveling these legs are used to build up the sides of the running board carrier so

that a great deal more luggage can be carried. Another handy article is what is known as the "Australian" water bag. This is a porous bag that keeps the water cool enough for drinking purposes. The hotter the day the greater the evaporation and the cooler the water. Folding camp stools, and if there are more than two in the party, a folding canvas cot will be needed. If you are at all handy about fixing things you will be able to add a number of little extra articles that will suggest themselves to you.

You may consider this a rather elaborate and expensive outfit, especially if you only get a short vacation each year. Even if you don't get any vacation you can derive a great deal of pleasure from little week end trips, going out Saturday afternoon and staying until Sunday evening or Monday morning. If you are shut up in an office during the week, these little trips will be bright spots to look forward to. But don't expect a camping trip to be all pleasure. Rain and wind storms will come and possibly cause considerable unpleasantness; there will be many comforts lacking that you would have if at home; the mosquitoes will do their best to annoy you, etc. Still, if you are a lover of outdoor life, the pleasure to be derived from such trip will far outweigh any discomforts. The great north woods and your Ford are calling you. Take my advice and heed their call.



Very Necessary on the Tour

## In June

By G. G. BOSTWICK.

Just a little ride in a comfy car;  
A little fresh air on a sunny day;  
A peep at the peaceful country, say,  
With its woods and brooks—and there you are!

Just a little dash through the magic air  
With the care and the fret of life forgot;  
With adventure ahead, as like as not,  
And romance waiting everywhere!

Just an hour's release from the daily grind;  
In the vast out doors just a breathing space—  
The tang of the wind in your tired face—  
And you'll be like a soul reborn, you'll find!

Just a little ride in a comfy car—  
O this is the cure for blues and things—  
Till your heart beats high and your spirit sings  
With your merry Ford—and there you are!

# A Practical Camping Car



## A PROFIT OR PLEASURE CAMPING CAR

By  
R. D. Coont

Each year sees another augmentation to the number of auto campers; both for lengthy trips and for the modest week-end sojourn.

At first the auto owner was content to carry his camping equipment rolled and stowed in the tonneau of the car or roped on the running board. Later came the camping trailer of more or less elaborateness; also autos which were equipped for sleeping in the car itself by means of "knockdown" bunks. In every case, however, the equipment was exclusively for pleasure purposes, i. e., camping, and it has remained for a San Diego man to design a compact and efficient camping car capable of being converted in a few minutes time into a standard commercial truck.

Reference to the illustration will show the outfit in its entirety. The driver's cab is permanent and by means of its side doors may be closed against rain, snow or sand storms; another door in the rear of the cab gives access to the main body of the car.

This (the main body of the car, is the living compartment, and is fitted on the left side with two woven wire spring cots—seen in brackets, one above the other—which may be occupied there or lifted out on the ground and used in the regular way.

On the side opposite the bunks is an elongated cabinet pantry, the top of which serves as a table and supports a small gasoline stove, while the lower part is divided into numerous shelves, drawers and compartments for the storage of necessities. This pantry may also be instantly detached and lifted out.

In order to convert this camp car into a commercial truck all that is necessary is to lift out the two bunks and the pantry cabinet,

then by removing a bolt from each of the side struts the roof and upper sides may be lifted off and set aside, leaving a body five feet eight inches wide, eight feet long and with three foot sides and tail gate.

The frame of the car is a standard Ford truck chassis with worm drive and which was also equipped with transmission gears, electric starter and lights. The cost for this was about \$880. Built of the best grade of seasoned lumber the body of the car with its cover, lockers, and all other fittings brought the cost up to \$1500.

Just under the driver's cab will be noticed a gas tank. This is an auxiliary to the usual tank under the seat and brings the gasoline carrying capacity up to eighteen gallons. Further back is another and smaller tank which holds five gallons of kerosene for the oil heater which warms the compartment on chilly evenings. On either side under the body and also in the rear are built lockers for carrying extra provisions, tools, and necessary extras.

The total weight of the outfit is slightly over 2,000 pounds and the mileage per gallon of gas will average from 14 to 18 according to roads and grades.

This car was built primarily for service in the oil fields of Texas and where, owing to the scarcity of satisfactory living accommodations, it will be used for trucking by day and a camp at night.



## Photography for the Fordite

How to Get a Pictorial Record of Your Trips

By B. B. Snowden

A sarcastic contributor to a photographic journal of which I was editor for a couple of years once took a left-handed whack at the tendency of motorists to keep forever on the road, without giving anyone a chance to get out and look around. Writing on "automobile photography" he said: "The method of practice is simple, the requirements being merely an ordinary hand camera and an automatic pistol. When an exceptionally beautiful view stands revealed, the muzzle of the pistol is held to the driver's head and he is ordered to stop and wait until the amateur (photographer) has exposed his plate or film. Many interesting pictures may in this manner be obtained."

I might take this passage as the text for a denunciation of Fordites who scorn to stop and make pictures, but I won't. They probably wouldn't read it anyhow. Instead, I will address myself to that other group of Fordites which is interested in keeping some sort of photographic record of their experiences with the car.

First of all, however, I want to make it plain that although I have had a good many years of experience with photography and possess quite a line of cameras, I am not now and never have been a photographer in the professional sense. In the course of much editorial and journalistic tapping of the keys I have had much use for the ever-ready camera, and I have also spent many pleasant hours in the making of pictures as a matter of relaxation and enjoyment, but I have never made my living out of photography and I should hardly care to. So I present the subject of photography here from the standpoint of the Fordite with a camera, not of the photographer with a Ford.

In these days practically everyone has a camera, or the use of one, and it is assumed quite generally that there is nothing much to the making of photographs except to go ahead and do it. But in the case of motorists this common assumption does not seem to produce the pictures. For one reason or another, the motorists don't make them, although a great many, on returning from a trip, wish that they had done so.

Now aside from lack of interest in the matter there are two great reasons for all this. The

first is that the average person has no clear idea of what pictures ought to be made upon a trip. The second is that the average person leaves the making of a picture to the impulse of the moment, instead of thinking the matter out ahead a little, as he would any other detail of the journey. As a matter of fact, pictures can be planned for just the same as anything else, and without getting nervous prostration over the effort, either.

The simplest plan is to divide the pictures you wish to get into two classes: pictures of the members of the party, and pictures of the things you see. This plan is indeed so simple as to seem almost silly, but it has at least this virtue, that if you form it beforehand you won't be so likely to forget photographing the party just before you start, with the flivver in the background, perhaps, while in the course of the trip you will also be reminded by the plan of the desirability of stopping here and there to photograph some interesting view.

Now let us extend the foregoing plan by subdividing the two classes of pictures named above. First, as to members of the party. If in addition to photographing them in a bunch before we start we also photograph them during the various episodes of the trip—at luncheon by the road, filling the radiator, changing a tire, getting out of a mud-hole, etc.—we shall have a much more pleasing record. Then as to pictures in the second class—pictures of things seen. These can easily be subdivided. First will come striking bits of scenery or (and here is a kind of picture frequently not thought of at the time) stretches of road, whether through woods or over level country, which are characteristic of considerable sections of the trip. Then will come perhaps a general view of some interesting or picturesque town through which we pass. Next will come landmarks, let us say, odds and ends of interest, and the hotels or other places stopped at on the way. Finally, people seen or talked to whom we may wish to recall for one reason or another; these may be friends we have dropped in on, or they may be local characters who have interested us.

Splitting it up in this manner, our plan has grown considerably from its original simple form, but there is one further step we can

take, and this requires in the long run the highest degree of photographic skill. It is to take as many of the pictures of things seen as we can with some member or members of the party included in the view. For instance, if we take a road view, it will be a more interesting picture to those who share the trip if we compose it so as to include the flivver and some of the party, even if they are doing nothing more than sitting on a fence by the side of the road. Or if we take a picture of a



A Cabin Near the Roadside

lake, it will be a more interesting picture if someone is shown looking out over the water. You can buy along the way a good many pictures of striking scenery which you will encounter, but you can't buy pictures of this striking scenery with your own Ford and your friends in the view. These things serve to give the personal touch.

On a trip I often include a picture of a sign-post with somebody standing by it reading the directions. There is a certain finality about a sign-post. If you can show a picture of that it is proof positive you have been there. However, I would not imply that people might otherwise discredit my tales of "wandering by the way."

Now I am going to unburden myself of a few remarks on the camera and its use.

The best camera to use is the one that will get the picture with the least fuss and feathers. If you are a bonehead at photography, like most people who have cameras (excuse the brutality), probably the ordinary or garden variety of box camera with fixed focus will do as well as another, if not better. This camera is pretty near fool-proof if you use it according to directions and make snapshots only when the sun is shining. I should like to prevail on you to take along a tripod also, so that when you come to a pretty bit of road through the woods or some other scene too dark for a snapshot with this type of camera you can make a time exposure, but if you have a box-camera brain in this matter you will probably scorn the tripod utterly for all that I can say.

However, for the benefit of those who are willing to put a little thought and a few extra dollars into this idea of making a photographic record I will tell you what I have found most satisfactory in my own case during two seasons of driving.

On the seat beside me I carry a little folding

pocket camera making pictures  $2\frac{1}{4}$  by  $3\frac{1}{4}$  inches. It happens to be what is known as the Ansco Vest Pocket No. 2 Speedex, with a reasonably fast lens (F 6.3) and shutter to match. It cost \$27.50 when I got it, but I believe the price has recently advanced somewhat. Mine is not the highest-priced vest-pocket Ansco making this size of picture—for about twice the figure you can get a model with a still faster lens—but it has met practically all the demands I have had occasion to make of it. The lens is an excellent one, about sixty per cent faster than the rectilinear furnished with most folding hand cameras, the shutter is efficient and well suited to the lens, and the barrel focusing device has proved highly convenient in getting the picture quickly. If you do not wish to pay so much, however, there are many other Anscos and Kodaks and other folding cameras, good ones, making pictures of this size. An excellent choice would be a No. 1 Kodak Junior with rapid rectilinear lens (this is the double lens), which costs about fifteen dollars. I have recommended this camera to a number of people, and they have all been highly pleased with their results from it.

At any rate, I should strongly advise a camera making this size of picture. After considerable experience with trying to combine driving and photography, I had to come to this size as the one on which chiefly to rely. The larger the camera, the more you fuss



Photo the Oddities—The Zo-Ophite of South Dakota

around in attempting to make a picture, even if you are somewhat of an adept. There are technical reasons for this which there is not space to go into here. Also there is often the feeling that you don't want to waste a film. With the smaller camera this factor hardly enters. The films cost much less; so you go ahead and make the pictures anyhow. In general, the small camera is quicker to work with, costs less to work with from start to finish,



**Ford Trips are Doubly Enjoyed if You Keep a Picture Record**

and brings home more bacon. The pictures though small, are plenty large enough for an ordinary record, and an enlargement can be made from any good negative that especially pleases. The little camera is the Ford of photography. It gets you the little things that the big camera passes by, and the total of these little things is what makes up the interest of a record.

However, on long trips and often on short rides I also carry some larger camera, though many times I do not use it at all. If you are camping or picnicking and have time to fool around, it is convenient to have a larger camera with which to make some of the views. The camera I use chiefly for this purpose is, nevertheless, what many would consider a small one—a No. 3 Special Kodak, which takes a picture  $3\frac{1}{4}$  by  $4\frac{1}{4}$  inches (not as large as the 3A or postcard size). I also carry a tripod of the folding metal variety, under the back seat. It takes up no room, and it is always there if I want it.

But my case is somewhat peculiar, as I can choose from a line of cameras the second camera which I think I am likely to want the most. If, therefore, I were asked to recommend to other Fordites the best camera to take in addition to the small one, it would be one of an entirely different type—one that few would think of without its being particularly mentioned. This is the panoram camera. It is the only camera that will get the big sweeping scenic affects in a thoroughly satisfactory way. The panoram camera was invented long before the day of motoring, but it is essentially a camera for the motorist, and the motorist

who buys one to use on the wide stretches of river and mountain scenery which so delight the eye will take great pleasure in it. This type of camera requires a tripod, but it is not otherwise difficult to use or especially complicated, nor is it expensive, as good cameras nowadays go. For instance, the No. 4 Panoram Kodak, which makes a picture  $3\frac{1}{2}$  by 12 inches in size, sells for about \$25, and the No. 1 Panoram Kodak, which makes a picture  $2\frac{1}{4}$  by 7 inches, sells for about \$15. The No. 1 is entirely adequate, and in many respects is better for the motorist, while the pictures are not too big to go into the average album. With a small pocket camera which can be brought quickly into action on practically anything at all, and a No. 1 Panoram Kodak or its equivalent of some other make, for the big scenic effect, the Ford tourist is equipped to get a wonderful pictorial record of his trip.

As this is a motoring magazine, there is no room for instructions as to how to use a camera, but one or two helpful suggestions of a general nature may be given. First of all, don't reserve the use of the camera solely for the big things. The big things are harder to photograph, especially if you are in a hurry, than the little things. Besides, oddities here and there are always interesting features of a trip and things of which you like to show pictures afterwards in connection with it. Another suggestion is to decide on most of the subjects for pictures yourself, not paying too much attention to the ideas of others in the car, unless they happen to be proficient with the camera. The average person has the most

fantastic notions of what will make a good subject for a picture. A little orderly thought on the matter yourself along the lines suggested, thinking things out ahead, will be worth a whole lot more than the advice so freely offered from the rear seat. Just kid them along when they tell you what to photograph; don't take them too seriously, even when they think they mean it. The one who makes the pictures is in much the same relation to others as the one who drives the car;

the business is up to him, and therefore he is the one to make the decisions. So don't rely on others especially, any more than you would in threading your way through a crowded city street. It's your job.

But to go back, and at the same time to conclude, I would lay the greatest stress on forethought. Forethought makes the business simple, easy, and delightful. It gets you the pictures, and gets them with the minimum of bother. See if I am not right.

**HIRAM ANNOUNCES A TOUR.**

Said Hiram Jones one day in June, "Well friends, I'm goin tourin soon—to New York City, yessiree! and I'm as happy as can be. I've run my Ford enough to know just what 'twill do and where 'twill go and I'd jest have you understand I'd chance it anywhere on land. Folks tell me tourin aint no cinch—that I'll get into many a pinch and have a hard time steerin through the traffic on Fifth Avenue; but I aint scared of any crush and simply laugh at all such mush. I met a friend the other day who recently had gone that way. He said, 'Now, Hiram! without fail, you go right down the Catskill Trail! You'll see some

wondrous, gorgeous sights and glimpse The Hudson from the heights; then, if you ferry o'er the stream toward night, watch for the sunset gleam on windows of the buildings tall—it is a sight you'll oft recall.' So I then says, 'Alright, old man! I'll do it—it's a blamed good plan.' Mirandy's heart is full of song as she packs things to take along. The Ford jest seems in perfect trim and downright full of pep and vim; the thing is sure my joy and pride—a feelin I dont try to hide. I know the trip that we have planned is bound to pan out something grand. By heck! I'm glad that it is June and we're a goin tourin soon."

Ethel Hope.



**Sonnet**

To Elizabeth.

Elizabeth, at last you are my own—  
 You whom I've sighed for oft, in days gone  
 by;  
 And many are the joys that I have known,  
 When you, my dear Elizabeth, were nigh.  
 We've wandered far o'er tangled wayside  
 trails,  
 Where sights of wondrous beauty did  
 abound;  
 We've rambled over mountain peaks and  
 vales,  
 Where tumbling cataracts did loud re-  
 sound;  
 We've roved beside the roaring, surging sea  
 O'er which, the screaming gulls went soar-  
 ing far.  
 Elizabeth, you are, ah verily,  
 A treasure which no time nor place can  
 mar;  
 With you, I'm never tired nor vexed nor  
 bored,  
 Elizabeth—my lovely, shining FORD.

Ethel Hope.



## Ford Plays Star Role In Races At St. Petersburg Beach, Florida

A Ford car, entered in the speedster contest at St. Petersburg beach created quite a sensation when it played rings all round the big racing cars.

Just an even thirteen was the number of entries in the speedster automobile race staged on the beach track between Pass-a-Grille and the Casino at St. Petersburg beach.

Two National cars, a Regal, Stutz and Mercer cars competed; but a Ford driven by Harold Roller of Abilene, Kansas led the field all the way and romped home at a speed that was estimated at 60 miles an hour.

Roller was induced to enter his car in the races by a brother. The Ford was then in Abilene, and arrangements were made to bring the little machine to the gulf-side resort for the races. When it was found that the car could not reach St. Petersburg in time by the ordinary shipping processes, orders were

given by the Roller brothers that it should be sent by express. The Ford reached Tampa just in time to be brought to St. Petersburg for the race.

Owing to the fact that a strong inshore wind was blowing throughout the afternoon, the tide interfered with racing. All afternoon the wind was so strong that there was practically no low tide and this fact made the staging of the races more or less hazardous.

However Roller in his Ford got away to a flying start and kept the lead to the finish. He was closely followed across the line by Paul Pegg; of Tampa in a Stutz and by J. H. Hanckey of St. Petersburg who drove a Ford.

The success of the event will insure the establishment of winter racing on the west coast, it was announced by officials of the St. Petersburg Automobile Racing Association.



### ANOTHER "TAILOR-MADE" ENTRANT

The Epidemic of "Forditis Resartus" which is almost porcine Latin characterizing the tendency to put the Ford in new clothes—is steadily growing.

Here is the latest showing in early summer styles. It is the product of Harry H. Sandberg, 1801 Gray Ave., Houston, Texas. Mr. Sandberg describes his creation as follows:

"Herewith are two pictures of my French Peugeot (alias American Ford). It is my own design and my own manufacture. I have spe-

cial pistons, piston rings, carburetor ignition and gears.

I also have an irreversible worm steering gear from an Overland-Six. Have the reverse pedal removed and operate the reverse with a hand-lever. I have a Saxon-Six radiator with Peugeot name-plate on it. I have the seat-backs and cushions made so they can be removed and the car used to sleep in on camping trips. The color is blue and the wheels and trimmings are black.

It is hardly necessary to mention that the four-inch exhaust sounds good—it's like firing a pistol in a well—but I also have a muffler!

I intend to put Dodge valves in my engine this summer and would like to know of the experience others are having with them and also hints as to how to put them in the engines.

I am agent for the Ford Owner here and have read it for the past two years and it helped me very much in building my car."

Have you noticed that style tendencies with Fords differ from those of womankind? With the Ford the vogue seems to be to put on more clothes. With the gentler sex, on the contrary, it is—lower here—higher there—and fewer all around. But you will admit that both styles are becoming.



# Notes From Our Correspondent In France

THE following true story will not come as a surprise to many Americans who were over here during the War. They will already have told you of similar experiences in their business affairs with the French.

A certain Motor Car firm had a large quantity of parts arriving at a certain port from U. S. A. The necessary papers for the Customs Authorities had not arrived and it was necessary to pay a "deposit" for Duty,—let us say 20,000 dollars.

The exact sum was found later to be say, 19,500 dollars, so there was to be a "refund" of 500 dollars. It was just an ordinary Office employee who had gone to the Customs Office and paid the 20,000 dollars but when he went for "the change out" business was being done in quite another street. Who was he that he should have the right to receive money for the Motor Car firm? Where were his papers of Identity and his letter of authority signed by the head of the firm, that he could be entrusted with that 500 dollars?

Then the office staff got busy. But it took a few days before they could get the various documents together and duly signed by the people concerned. The General Manager was hundreds of miles away. But at last the clerk sallied forth in his majesty and pride once more in the direction of the Custom House, to "touch" that 500 dollars. He was duly certified by the General Manager of the noble house of "X" as authorized to receive and bring to the office the 500 dollars.

It was certified by the General Manager of the firm that the money, etc., etc.,—Ah, yes? But don't go so fast. You are not in America now! Where is the authority for this man calling himself the General Manager? To be valid in France such an appointment has to be duly announced to the world in a certain Journal. And a copy of that Journal must be produced to the Customs Authorities before they can accept the instructions of the "manager" to pay over the money.

That took up some several days more but at last it was obtained. And then there had to be a duly attested letter written on "stamped" paper setting forth that the person referred to in the Journal was the same and identic person who signed the letter authorizing the clerk to receive the 500 dollars.

I'll tell you another.

My friend brought me into the city one day with his Ford. He happened to have a small basket with a chicken and some other things he had bought in Paris the day before and had forgotten to leave them at home. When we arrived at the city "gates" we were searched as usual and the chicken was due to pay the "Octroi" duty. My friend protested that as he was coming back again with it it should

not be paid for. But they didn't do business that way. They would give him a special receipt and the money would be refunded when he passed out again. He had nothing less than a 20 franc note but the good-natured officer gave him 19 francs and 85 centimes change, just as though he were used to doing it every day. But it makes one think that is one reason why many things in Paris are dearer than they ought to be.

A little "passage of arms" has just been rehearsed over the Customs tariff question for Automobiles. When it was first announced in the "journal officiel" of the French Government that the Duty on Automobiles etc., had been reduced from 70% ad valorem to 40%, the President of the Council took the trouble to say that it was to be remembered that "the American Import Duty still remained at 45% ad valorem."

Effort was soon forthcoming for correcting this erroneous and prejudicial statement. Practically all the newspapers of importance and trade journals printed the news at great length but not one of them could be got to print the retraction, until someone with perhaps a little more influence than the rest of us "got a word in."

But it is astonishing with what bad grace the correction is given out. I have before me the principal trade journal for the Automobile industry. The editor could not give the words, and nothing but the words, of the Secretary of the General Motors Corporation but prefaces them as follows:

"The lowering of the tariff on Automobiles has given rise to some astonishment in America." Of course, it wasn't the lowering of the tariff that gave "rise to astonishment" at all. It was the statement which accompanied the announcement, which was so "astoundingly" incorrect.

The facts are that motors and bodies entering America pay a duty of 45% if the value is over 2,000 dollars. Motors and Frames (chassis) pay only 30% no matter what value and the rate is the same for spare parts. Not only that but for cars entire,—frame, engine, body, wheels and all, the rate is 30% only, if the total value of the car be under 2,000 dollars.

Of course, the French manufacturers are always fearfully jealous of the foreign article. It's unreasonable but it can't be helped. It's the French nature. They cannot make a Ford nor anything like it,—especially at the price,—but the general public clamour for it. But the laws in France are not made by the general public. And what worries the French manufacturer is that he cannot get the benefit of the 30% duty because he cannot deliver a 10,000 franc car. Nothing else. The Frenchman can build a good car,—but it must be

costly. He can't help it. Quite apart from the fact that a big sum has to be tacked on for "profits."

It occurs to me to mention here that France is particularly "exclusive" as regards conditions for workmen in factories etc. All foreigners must have a certificate from the Police Authorities before taking a post of any kind. Both the employer and workman are liable to fine for infraction of this law. Singularly enough they had to allow plenty of latitude during the war. Thousands of foreigners were allowed to work without much danger of breaking the law! "When the devil drives needs must" was the motto!

About the worst habit you have to contend with over here is the "never in a hurry" way of the French trading people. Enquiries Correspondence and orders are treated quite in a leisurely way. If you want to buy something the best thing is to go to "the shop" and get it,—if they have it,—and pay for it. I am referring, of course, to commercial affairs, not to groceries and the like.

The writer knows a firm who wanted 10,000 cardboard tubes, about 15 inches long by two inches diameter; such as are used for sending drawings or designs through the post. They knew where they could get them in London, and the price too. They wrote to four Paris manufacturers of such tubes, delivering the letter by hand with a sample tube. But as somebody had warned the manager of the strange little ways of the Frenchman, an order for 5,000 tubes was sent to London the same night.

Exactly a week later one of the firms sent their man to ask some questions. Number two wrote that their representative would call shortly. Number three actually sent quotation. It arrived 10 days after the enquiry and the price was three times that of the London firm. Number four never answered at all!

It was exactly fourteen days after the enquiry that the Representative of No. 2 called. He was not ready with his price, however. He seemed to only want to make sure that the firm really meant business! However, just as he was leaving the Railway Lorry arrived with the boxes of tubes which had come from London!

If you want to buy a few postage stamps you make a mistake if you go to the Post Office. You will get them,—if you wait long enough. You should go to the tobacco shop. If you want to find a business man it is often more useful to know which is his favorite cafe than to know his business address.

Americans will fraternize out of business hours, but not the Frenchman. It is rare indeed that he invites anyone to his house except his relations. Of course, they have no "home." They have no word for "home" either. If they want to meet you in a friendly way it will be at a restaurant or a cafe. Deep down in his heart our French friend dislikes the "foreigner" coming to do business in his country. He thinks he can do all that sort of thing well enough himself. He likes the foreigner to come to the "City of Light" and spend his money to enjoy himself, and many there be that do it!

It reminds me also that they have no word for "hobby." Nobody has a "hobby" here in fact. They will tell you frankly they haven't time. And this is quite natural when you see how long they take over their meals! It is the same with learning languages. They haven't time! So the foreigner has to come and help them. But they are a good hearted lot. And they take things easily. And the climate is marvelous. Lots of Americans and Englishmen would have been in their graves years ago if they had not come to stay in France. Vive la France!

Edward Deason.

## Pieces of Glass

By  
S. OMAR BARKER.

Yellow and green and blue and red  
In the road and grass,  
Sun-glinted jewels that shine like the stars—  
Pieces of glass.

These in the halcyon days of my youth  
Were a treasure trove:  
They beckoned me on like the romance of Spain  
Where the gypsies rove.

Now I'm a man and I drive a Ford,  
And I hate to pass  
These jewels of yellow and white in the road—  
Pieces of glass!

### The Chauffeur's Viewpoint

"So you find pedestrians very careless?"

"They're the limit. The last fellow I ran over ruined one of my tires. He must have been carrying a package of tacks in his pocket."  
—Browning's Magazine.

"Any old fashioned horse thieves around Crimson Gulch?" asked the visitor in quest of adventure.

"No," replied Cactus Joe. "The hoss thieves have all gone East an' took to stealin' automobiles, which is less risky and more remunerative."—Washington Star.

# Law for the Motorist

*"A Tip in Time May Save a Fine"*

## "TEACHING THEM TO RUN IT"

By LESLIE CHILDS

**I**N some localities, it has almost become the rule, where a man buys a car, and is unacquainted with mysteries of operating same, that the dealer will agree to give a certain amount of free instruction. In fact it is quite common for dealers and sales agencies to furnish a demonstrator, who "demonstrates," at least sufficiently and to the extent of coaching the buyer, until said buyer learns enough to crank up and steer the car on a reasonably wide and sparsely populated highway.

In fact we once knew a man, a very mean man, we believe honest to goodness cross our heart, the meanest man we ever knew, who actually learned to operate a car by sponging on gullible dealers, who furnished him with a demonstrator and a car for a few hours each day. This insect posed as a possible buyer when in fact he did not have sufficient where-with-all to pay for his laundry.

But by persistence and a frequent change of base he eventually became a good driver. We think he is at present demonstrating for a large sales agency in the east, and we have been informed that he is very successful in spotting "moochers." We quite readily believe he would be, for according to an old adage, slightly paraphrased, it takes a crook to catch a crook.

But, to be on with the story, the liability of the dealer, who undertakes to instruct would be buyers, is a real life sized liability. If he employs a demonstrator he is of course responsible for the latter's acts, within the scope of the employment. Some very curious cases have arisen under this situation.

In one case a demonstrator, in the employ

of a dealer, had a prospect out with him who was presumably "crank shy." At any rate he did not display any weening desire to master the mysteries of cranking, so the demonstrator, doubtless seeking to arouse the other's interest, assured him that he could crank it, and invited him to try. The demonstrator, however, omitted to warn his pupil of the danger which inhered in the process of cranking.

There was a kick back, or whatever you choose to call it, and the novice received a whack on the arm that caused him to loose all interest in automobiles for some time. But after he had interviewed his lawyer his interest in law was aroused, and in the suit that followed the dealer was held liable in damages. The court holding that the demonstrator should have explained the danger to his pupil, and because of his neglect of this duty his employer the dealer would have to respond in damages to the injured person.

And it does not matter whether the title has passed or not, if the dealer supplies an instructor he will be liable for the latter's acts, within the scope of his employment. So, even though the buyer has paid his money, if while receiving instruction the car is damaged through any carelessness of the instructor the later's employer will be held responsible.

Therefore, demonstrators and instructors, if they have a decent regard for their employers pocket books, will treat the novice who may be under their wings with care. And dealers will be more likely to clip coupons if they select staid married men for demonstrators, who, as a rule are not so addicted to "stepping on 'er," as others with lighter responsibilities.

### FIRST MENTION

By George Lyman Banks

Teacher—When and where do we find mention of the automobile in civilized warfare?

Bright pupil—In Kiplings poem "The Ford of Kable River."

### THE RULE ARRESTEE.

He slowed to ten in Hickeyville,  
But Hiram pinched him tight;  
He left a fat fine in the till  
And grinned, some day, he'll fight!

### A MODERN PICNIC

By

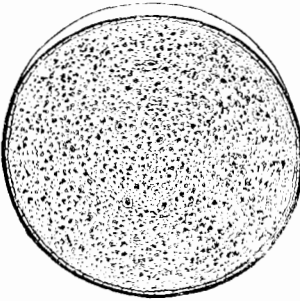
G. G. BOSTWICK

(With apologies to Omar.)

A patient Ford run underneath a bough  
A jug of buttermilk, my love, and thou—  
Beside me spouting in the wilderness—  
And wilderness were paradise enow!

Lot's poor wife, she turned to Salt,  
And lots of men today will halt  
And risk their necks a moment while  
They gaze at shapely things in lisle.

*Millions of Tiny, Air-  
Filled Cells Make*  
**PARCO INNER TIRES**  
*Ride Easy*



A tire that cannot puncture or blow-out, and which has been tested by thousands of motorists and declared to be the greatest factor yet discovered in solving the problem of Tire Troubles,—the PARCO INNER TIRE. No more trouble, no more delay and no more aggravation with tubes and casings, if you equip your car with these tires.

*Why You Can Depend  
Upon the Name*

**PARCO**

It stands for highest efficiency in craftsmanship. Every article bearing this brand is guaranteed satisfactory or money refunded. Our guarantee covers a number of things as follows:

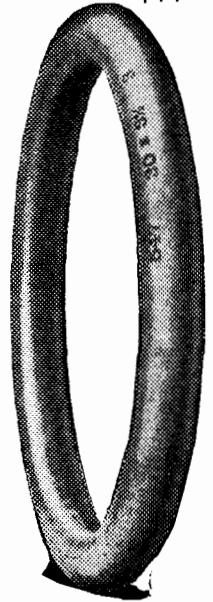
PARCO INNER TIRES are made of 80 per cent pure rubber filled with myriads of air-filled cells that give the tire extreme lightness and great resiliency, thereby making it capable of absorbing vibration.

These tires add from 8,000 to 10,000 miles to any ordinary casing, giving them all the practical usefulness of the inflated tire without the expensive upkeep which is unavoidable in inflated tires.

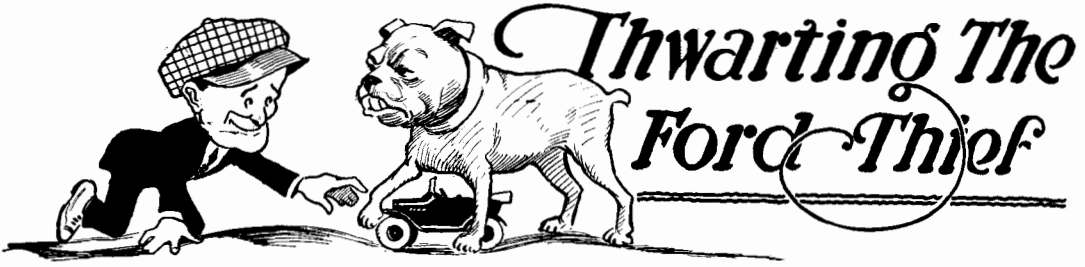
PARCO INNER TIRES are guaranteed against hardening or crumbling or deterioration in any way due to either hot or cold weather. They will give positively no trouble if properly fitted to the rim. Will not fly off or creep. The first cost is the only cost.

PARCO INNER TIRES are proving their superiority in hundreds of communities where dealers are not only taking first orders, but are selling them on the recommendation of buyers who want their friends and neighbors supplied.

Send us the size of tires used on your car, and we will send full particulars. Some choice territory still open for dealers. Write today.



**The Pan-American Rubber Co.**  
WATERTOWN, WISCONSIN



## A Dozen Inexpensive and Practical Ways to Lock Your Ford and Foil the Auto Bandits

By Edward Fountain Penn.

My first Ford was stolen thirty days after I bought it, and I heard nothing further from it.

My second Ford was equipped with a lock and was insured. It was stolen three days after I bought it. The thief broke the lock off. The insurance company busted and I got nothing.

My present Ford has no lock and is not insured. I've had it two years and it appears thief proof.

There are numerous auto locks on the market, of various kinds and prices, ranging from \$3 up, mostly up. You pay your money and take your choice. Such a great expense of \$3 is out of the question these days with the majority of Ford owners, who have mortgaged their home, sold their poultry and drawn their savings from the bank to buy their car. They look for a cheaper protection. For those, the following dozen methods of making the Ford thief proof, have been compiled:

**No. 1—Gasless Method.** Carry several red cans on the running boards. When you leave the car standing, drain your gasoline into these cans and take the cans with you, refilling your tank when ready to start again. While some few Fords will run without gasoline, yours may be one of those which will not.

**No. 2—Hidden Gas Method.** Have the tinsmith build a gasoline tank beneath the rear seat, connected with the tank in the front seat. When leaving the car unprotected, drain your gasoline back into the rear tank. When starting up again, transfer it back to the front tank.

**No. 3—Phoney Sparkplug Method.** Secure four old broken spark plugs which are absolutely worthless. When you leave car standing, remove the good plugs and conceal them in your pocket. Screw in the phoney plugs. This method never fails to annoy the car thief.

**No. 4—Wireless Method.** Simply remove the magneto wire and use it as a watch chain. The car cannot be driven away while your back is turned.

**No. 5—Wild Animal Method.** Fasten securely to the front seat, or steering wheel, a live wild cat, grizzly bear, or rattlesnake. Guaranteed to be as effective as a bull dog, in scaring off thieves.

**No. 6—Railroad Tie Method.** Secure a railroad tie, tapering same at both ends. Place this across front of car, an end through each wheel. Drive same in firmly with wooden wedges. Car cannot run while this is in place.

**No. 7—Garage Method.** Place wheels or rollers beneath your garage and tow it along behind you. When parking car, run it into the garage and lock the door.

**No. 8—Body Guard Method.** Secure the services of a couple of trustworthy gunmen, to ride with you and remain seated in the car while you are absent.

**No. 9—Poison Gas Method.** Attach beneath the floor of the car, a two-gallon jug of poison gas, the cork of which is fastened to a wire leading to the fan belt, so arranged that when the fan belt starts the gas will be released and overcome the driver. Care should be taken not to get caught in your own trap.

**No. 9—Dynamite Method.** Lay a mine of dynamite under the hood, attached to the explode it. If thief turns crank, engine will be wrecked and he cannot steal your car.

**No. 10—Hornet Nest Method.** Fasten securely to driver's seat, a nest of live hornets. If thief seats himself upon the nest—good night.

**No. 11—Baby Welfare Method.** Borrow four sleeping infants from the neighborhood. Place one on ground in front of each wheel, so that car cannot be moved forward or backward without rolling over them. The most hardened criminal will shrink from driving over the sleeping children.

**No. 12—Niagara Falls Method.** Cut a hole in the top of the car directly over the driver's seat. Attach a section of fire hose to the nearest hydrant and lay the hose up over the car and turn on the water, allowing the steady stream to pour down onto the seat. When you are ready to go, turn off water, wind up the hose and drive away rejoicing.



**IT IS  
Not an  
Up-Hill  
Pull to  
Sell**

**PEERLESS  
HONEYCOMB  
RADIATORS**



***THE** Peerless Guaranteed Honeycomb Radiator is designed to meet all requirements for Ford cars. Its unique core construction which gives it so much cooling surface, also permits of a flexibility that will withstand freezing.*

**Retail Price**

**\$25.00**

For Ford cars—for they sell themselves on their own merit. Live, progressive dealers readily recognize this fact—that there is no resistance in selling PEERLESS PRODUCTS.

National advertising of Peerless Radiators is stimulating the already large demand—and a banner year is the outlook. Your jobber can supply you—if not, write us direct. Address Dept. 2.

**The CORCORAN Mfg. Co.**  
**C I N C I N N A T I**



# TRACTOR DIVISION



## Fordsons Keep Shop Wheels Turning

That old bromide "Where There's A Will There's A Way" has been subjected to revision on the part of many Ford fans to the point where they have made Ford or Fordson synonymous with "will." For instance, there is the case of The Warner Gear Co., of Muncie, Ind., which faced a rather bad situation due to the

coal strike a short time ago. In order to keep certain portions of the machinery operating, fifteen Fordson tractors were put to use. For four days these tractors were kept busy furnishing motive power and production was thereby maintained. Of course, they did satisfactory work.

ditions were encouraging factors in stopping the rise of the water which is now four feet above flood stage.

that an agreement might be reached Turn to No. 1, First Col.

was under arrest here to-day a number of others were sought in connection with what police said was a plot to flood the market with low-grade spark plugs bearing the trade mark and name of a Toledo, O., company. The imitations, according to the police and company representatives, have been made in Chicago and disposed of by thousands for four years. The alleged swindle is said to have netted more than \$1,000,000 and to have threatened the existence of the original company. So nearly perfect in appearance is the imitation that it deceived scores of dealers handling the genuine spark plug, the police said, and many dealers innocently replaced spurious plugs after they quickly wore out. Other dealers were charged with "profiteering" when they asked the standard price for the genuine plug after the imitation had been purchased elsewhere at a lower figure.

**HUGE SWINDLE IN SPARK PLUGS IS UNEARTHED**

**One Man Held in Chicago; Others to Be Arrested.**

**MILLION WAS CLEARED**

**Imitation of Toledo Concern's Product Marketed.**

(ASSOCIATED PRESS DISPATCH)  
CHICAGO, February 20.—One man

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**THIRTY**

A'

# For Your Protection

THE clipping reproduced above has appeared generally in the newspapers throughout the country. It refers to a plot entered into by certain unscrupulous persons in an effort to defraud dealers into buying a low-grade imitation of much inferior quality to our famous Champion "X" Spark Plug.

While prosecution and conviction has already resulted in some cases, we expect to obtain the same results in other actions now pending both for the protection of the consumer, dealer, jobber and ourselves and we will not stop till we have cleared the country of these fraudulent imitations.

While the figures mentioned in the press dispatch are exaggerated, they serve the purpose of warning dealers to handle only genuine trade-marked goods.

All genuine Champion "X" Spark Plugs are packed in cartons—25 cartons per case to the dealer. Each carton as well as each plug must bear our trade-marked name "Champion."

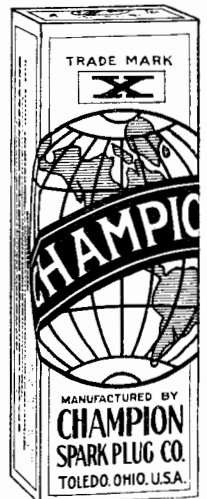
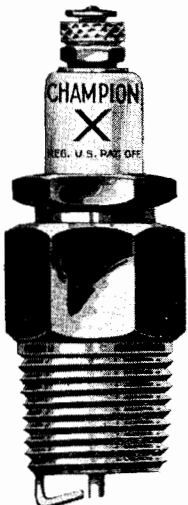
For your protection

—Avoid Champion Spark Plugs offered at less than regular prices and not in original packages.

—Buy Champion Spark Plugs through regular jobbing sources.

**Champion Spark Plug Co., Toledo, Ohio**

*Champion Spark Plug Company, of Canada, Limited,  
Windsor, Ontario*





# LAYING OUT FIELDS FOR TRACTOR PLOWING

## ARTICLE IX.

From Charts Compiled by the U. S. Department of Agriculture

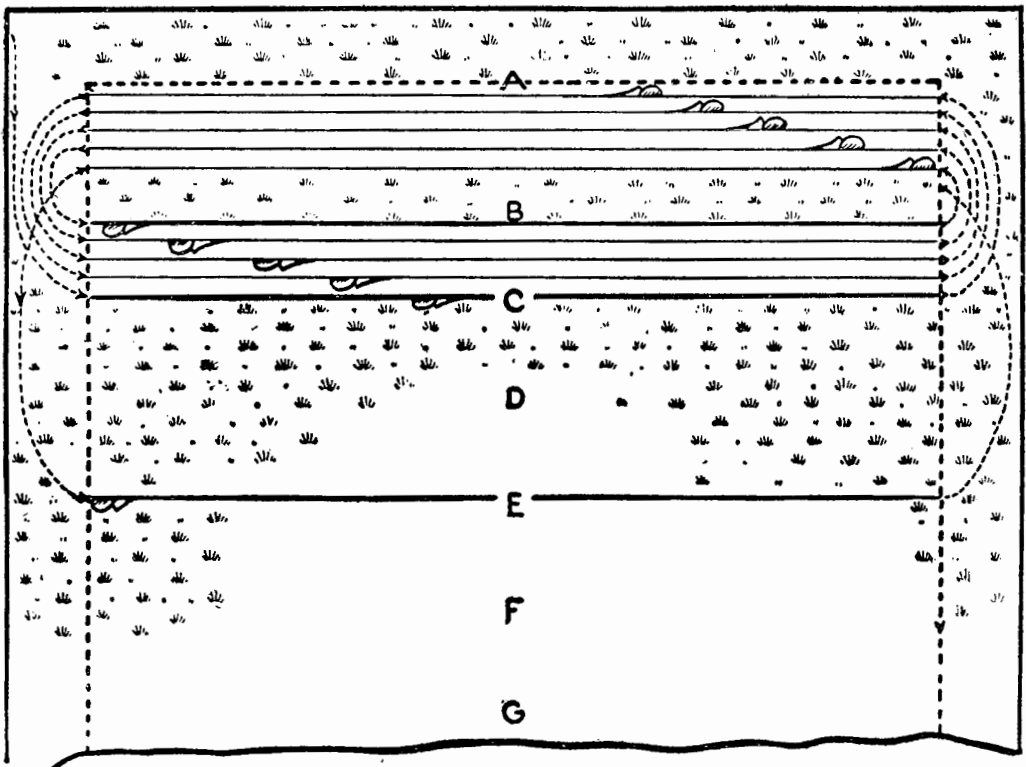


Fig. 17.—Method VIII, first stage: Start with a furrow through C, plow the return furrow through A, and plow around this strip until the remaining strip is too narrow to permit of convenient turning. The next step is shown in figure 18.

### METHOD VIII

This is another method designed to eliminate the short turns. Probably it is somewhat simpler than the two methods described.

Measure the distance from A to C (fig. 17), which is to be the entire width of the first land. Plow around this land, turning to the left as indicated in the diagram until the strip at the center is too narrow to permit of convenient turning at the ends. Thus far the procedure is the same as in plowing the first land in the preceding method (the one between A and D in figure 14). Now measure the distance from C to E, making it approximately the same as that from A to C, and finish plow-

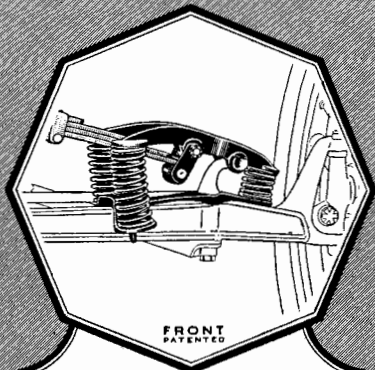
ing out the first land by turning to the left, as indicated in figure 18. When this land is plowed out to the dead furrow at B, start plowing on this land between C and E in the same manner that the land between A and C was plowed until the center becomes too narrow to permit a turn. Then measure the distance E to G and finish plowing out the middle at D, in conjunction with the start of the new land at G, and so on across the field. There will then be back furrows at C, E, G, etc., and dead furrows at B, D, F, etc.

If the width of the lands, i. e., from A to C and from C to E, is made the same as in Method II (figs. 3 and 4), there will be the same number of dead furrows as in that meth-

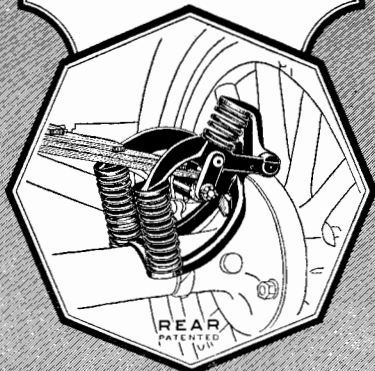
# Float-a-Ford

Shock Absorbers for Ford Cars and Trucks

## Make Your Ford Float



The first or downward shock is absorbed by the large twin springs. Then comes the deadly rebound, but the famous Float-a-Ford "third spring" is on guard. It gently restores the car to normal. Note the free suspension of the Ford springs. This bearing not only allows normal spring action but insulates the car against sidethrusts.



### Soon Pay For Themselves

Float a Ford shock absorbers more than pay for themselves in one season's driving. The saving in gasoline, tires and repairs equals the cost of the shock absorbers and installation.

Figuring in real comfort or "easy riding," Float a Fords pay for themselves many times over, during a season. They will make your Ford take the rough roads like the biggest and most expensive car. We receive letters daily from owners who declare nothing could induce them to remove their Float a Ford shock absorbers. Enthusiastic dealers report that a single demonstration means a sale.

Float a Fords are the shock absorbers with the famous "third spring." The first or main shock is absorbed by the large twin springs. Then comes the deadly rebound, but the "third spring" is on guard. It gently restores the car to normal.

Float a Fords do not clamp or bind the Ford springs, nor bump the lamp posts or body. Easily and quickly installed without weakening the car in any manner.

Dealers—A Float-a-Ford demonstration means a sale.

**Burpee-Johnson Co., Mfrs.**  
1908 Singleton Street  
Indianapolis, Ind.



THE WAY YOU RIDE, WITH FLOAT-A-FORD

THE ROAD



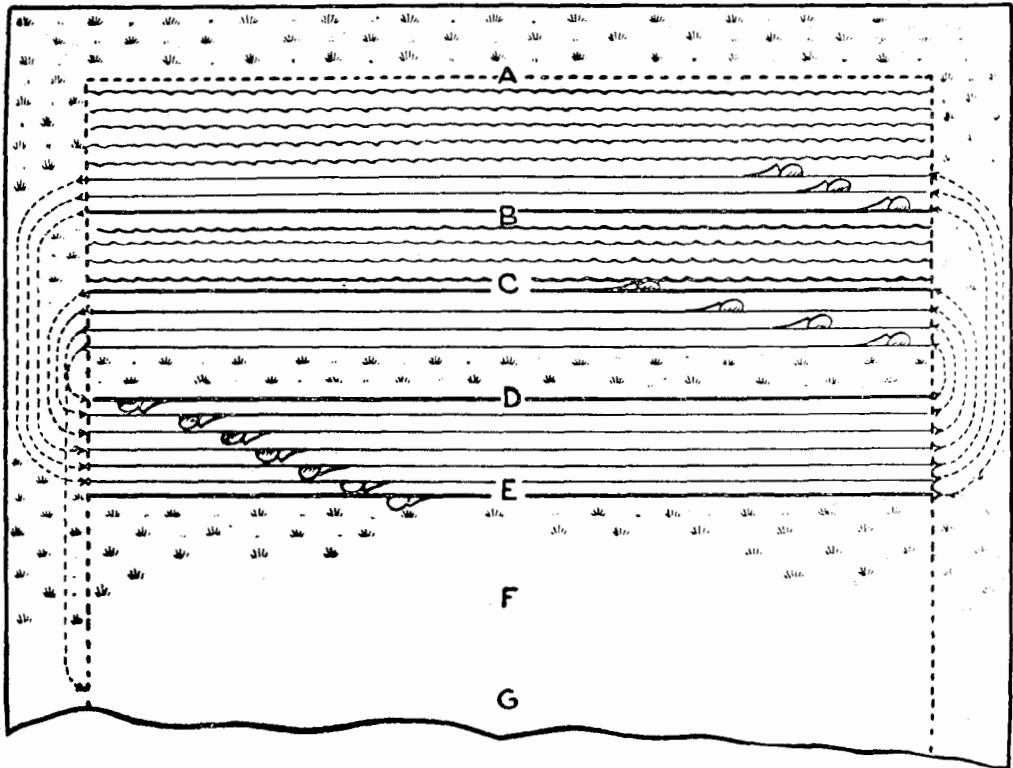


Fig. 18.—Method VIII, second stage: A furrow is plowed through E, and left-hand turns are made until the narrow strip is finished, when a furrow is plowed through C, and this plan continued till the unplowed strip between C and D becomes too narrow to make a convenient turn.

od, but the dead furrows will not be exactly in the middle of the lands. The travel across the ends with the plows idle, in finishing each land, equal to that shown in figure 18, from the line through B to that through E, is substituted for the short turns necessary in Method II. The question in deciding between the two methods is whether this extra travel is preferable to the short turns in finishing the lands. It is apparent that the wider the strip left in the middle the greater will be the amount of idle travel necessary to finish it.

In comparing this method with Method VII, it is seen that there will be the same number of back furrows and dead furrows in the field if the lands are made of the same width in each case, but there is no complementary method which stands in the same relation to

Method VIII that Method VI does to Method VII, by which the dead furrows and back furrows can be smoothed out at alternate plowings.

The amount of idle travel necessary to plow out the middles of the lands is somewhat greater in this method than in Method VII. The distance from B to E in figure 18 must be traversed for each trip across the field, while only a distance corresponding to that from B to D would be necessary in finishing the lands if Method VII were used. On the other hand, not so much care in getting the distances all exactly the same is necessary here, for it makes little difference if the strips which are left to be plowed out in connection with the beginning of the succeeding lands are not all exactly of the same width.

## TRACTOR QUESTIONS

While operating a Wallis Cub tractor for a year, I learned lots—and then there was lots that I didn't learn.

The greatest trouble that I had seemed to be in the ignition system. The tractor would be running along fine—and then just stop. After cranking a few minutes, it would run for a little while again. The last running I did was at harvest, and it was doing much better then. Since reading your article on crank shafts, it is certain, to my mind, that the crank pins were worn oval. I would adjust the bearings—and then in a few hours they would be loose.

Have been using a Fordson tractor this fall. I like it fine—but, if it should rear up, and fall over backwards! Have plowed 50 acres, disced

75 acres, and done 30 hours wood sawing and haven't cleaned a spark plug. On taking one out, I find it practically clean, and of a reddish hue.

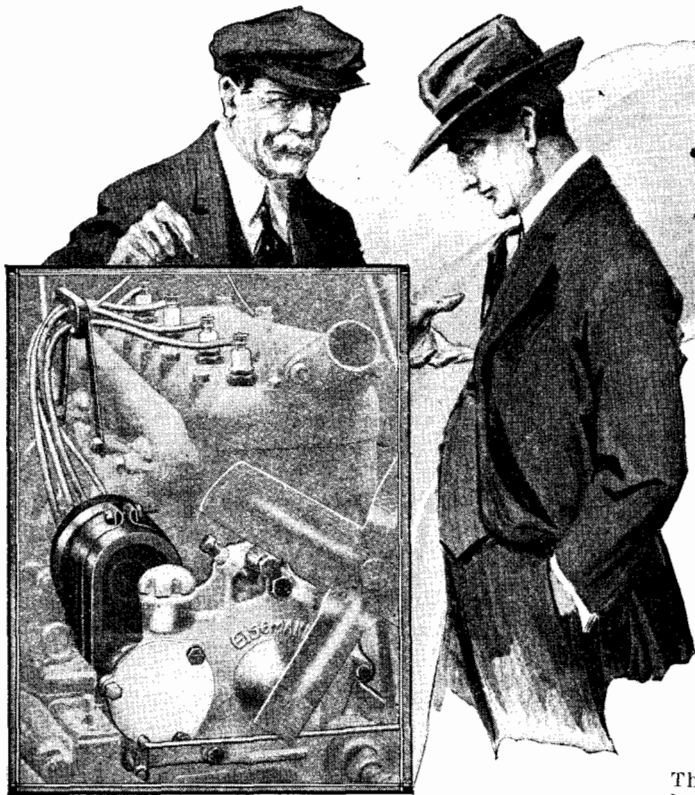
Am using heavy cylinder oil, and keep it running out of the top cock. Also, refill the air washer often.

How soon should the bearings be adjusted? If these bearings are not adjusted soon enough, will they not have a tendency to wear the crank shaft oval more quickly? Do the main bearings ever wear out of true?

If the Wallis Cub tractor engine ceased firing abruptly, then the trouble was probably with a broken wire or loose connection, in the ignition

# EISEMANN MAGNETO

## The Ideal Ignition for Ford Cars



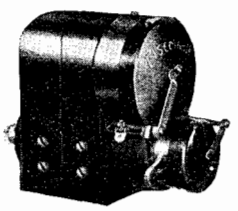
The Magneto used in the Ford Outfit is our regular G-4 Type of instrument. This same magneto is used by 167 manufacturers as standard on automotive equipment. No better evidence than this could be desired to establish the reliability, durability and economy of the Eisemann type of Ignition.

The Eisemann will deliver a hot, fat spark to the engine at very low speeds.

This is a notable Eisemann feature and is especially desirable on Ford cars, the wonderful engine of which has a comparatively high compression.

Bear in mind the fact that when you buy an Eisemann Magneto for your Ford car you are getting the very highest type of ignition device produced. Your Dealer or Service Station can attach an Eisemann Magneto in a few hours or you can do it yourself. Our booklet tells you how—send for it.

- Increased Power and Hill Climbing Ability.
- Positive Relief from Ignition Troubles.
- Greater Fuel Economy. More Rapid Acceleration, Etc.



Plant, Sales and General Offices:  
32 Thirty-third Street,  
Brooklyn, N. Y.

# THE EISEMANN MAGNETO CORPORATION

Chicago:  
1469 S. Michigan Ave.  
Detroit:  
85 Willis Avenue, West

system. However, if it MISFIRED a little—just before stopping—then it is possible that some obstruction in the fuel feed to the carburetor caused a shortage of fuel—but that when the engine stopped, then the carburetor slowly filled up, and the engine could be started again.

It is not necessary to adjust the connecting rod bearings, until they begin to knock. Just how long they will go, without adjusting, depends upon so many factors, such as how much, and how good the oil is, and how frequently the oil is renewed, what the load pulled is, and the skill of the driver in setting the spark advance, that it is impossible to give any definite distances at which the bearings should be adjusted.

If the connecting rods are allowed to run so loose that they knock, then they will certainly wear the crank shaft oval more quickly than if kept properly adjusted. A hammer, resting on one's thumb, does not hurt. But, when one's thumb is hit by a hammer—then, Zowie—curses arise. A tight connecting rod follows the crank shaft pins. A loose connecting rod HITS it.

As the wear and strain from TWO cylinders is distributed on each main bearing, and as the main bearings are so large and strong—the main bearings give but little trouble with wearing out of round and the crank shaft is usually replaced, for some other reason, before it becomes necessary to true the main bearings.

What kind of a light do you recommend for the Fordson tractor?

If I use an electric light from the Fordson magneto, is it possible to get a bulb that will give satisfactory service, without burning out?

Kerosene oil headlights, of the locomotive type, are sometimes used on large tractors; but would be difficult to mount on such a small tractor as the Fordson, and they do not give much light. Acetylene gas tanks will furnish a good light, but are difficult to obtain in some localities, and replacing the tanks costs money.

As the Fordson tractor engine averages a more steady speed than the engine of the Ford car, you may reasonably expect to obtain a rather better electric light, from the Fordson

tractor magneto, than from the magneto of the Ford car. If you race the engine, while the headlights are turned on, you are very apt to burn out the bulbs.

Have much trouble in starting my Fordson tractor in cold weather. The engine is stiff and hard to turn. The oil that I used seemed to get too cold and stiff. I used heavy Polarine mostly.

Can the Fordson tractor be jacked up, like a Ford car, so that it is easier to crank? I tried it, but it did not help any.

What brand of lubricating oil do Henry Ford & Son recommend for the tractor engine?

Would a magneto, and an impulse starter, help starting the engine?

Am using gasoline altogether, and find it more satisfactory than kerosene. Am using a special timer, and find that it is more reliable, and lasts much longer, than any roller timer that I have ever had.

As the Fordson tractor has a sliding gear transmission, which affords a perfectly free neutral—it does no good to jack up one of the rear wheels, as this does not make the engine crank any easier. The Ford car has the altogether-different, planetary transmission, which has no rear neutral, and jacking up the rear wheel eliminates the drag between the discs of the high-speed clutch.

Using a lighter grade of oil, or a different brand of oil, which does not congeal so easily in cold weather, will be helpful in giving easier cranking in cold weather.

Henry Ford & Son do not recommend any particular brand of oil, as they know that there are many good brands of oil now on the market. They only recommend that a HEAVY grade, of good motor oil be used.

Either a set of dry cells, or a magneto with an impulse starter, which will give a good spark at slow cranking speeds, will prove helpful in securing easier starting, no matter how slowly the engine is cranked. Using high-test gasoline, in the small starting tank of the tractor, will also be helpful in securing an easier start.

## Farmer Praises Fordson

When Mr. Ben Drew, of Ivor, Va., bought a Fordson some of his neighbors shook their heads and prophesied all manner of things. In short they threw considerable cold water on Mr. Drew and his enterprise.

But—

Here's what Mr. Drew wrote to O. P. Higgins, proprietor of the Central Garage at Waverly, Va.:

R. F. D. No. 2, Ivor, Va.,

March 10, 1920.

Mr. O. P. Higgins,

Dear Sir:—

I want to commend you on the tractor. I was discouraged when I bought it by hearing my neighbors talk.

But I wish it was possible for you to come down here and see it and bring some of your friends. Those who need a tractor would not leave here before buying.

I have never bought anything that I was better pleased with than I am with this tractor. I have 40 acres of wet and weedy land; and it stayed so wet I could not cross it with a team. With the tractor I have made it like a plant bed.

My neighbors around me are not able to cut down the stalks in their fields because the teams cannot cross the ground. I have taken my stalkcutter and put a short tongue on it and hitched it behind the tractor and a three-horse disc behind the stalkcutter. I cut the stalks up and broke up the land, all at one lick with one man.

I went over about 20 acres a day once to a row. No man can know the work a tractor can do without using one. I am well pleased with it. Three men and seven head of mules are idling around while one man and the tractor are doing all the work. I can do just as much work in a day as I desire to do. Come and see.

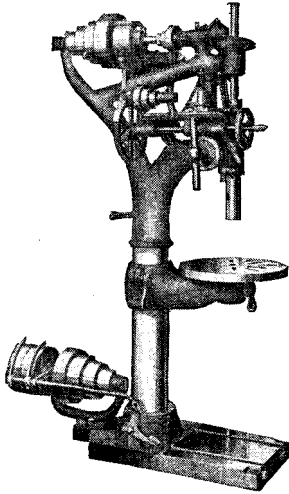
Yours truly,

BEN DREW.

No comment needed. Mr. Drew has voluntarily come forward and frankly told of the good service he is getting from his Fordson. There are plenty of others with the same testimony if they would turn it loose.

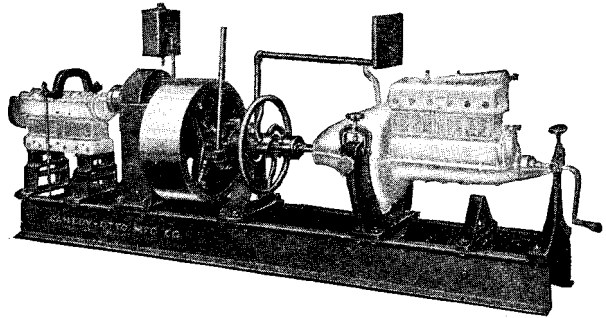
—Fordson Tractor Journal.

**For the Garage Repair Shop and Service Station**



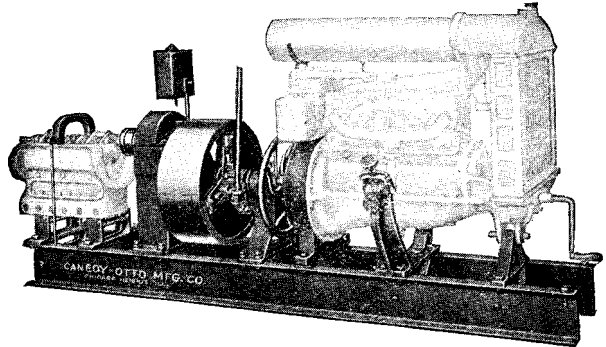
**No. 36, Canedy-Otto Power Drill.**

Improved 20-in. type model. Has back gear, power feed automatic stop. A machine worthy of preference under all conditions. Drills to center of 21-in. circle. Bores 0 to 1½ inches. Spindle socket No. 3 or No. 4 Morse taper.



**Burning-In and Running-In a Ford Model T Motor.**

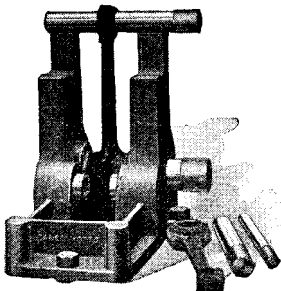
Every feature in construction of the Canedy-Otto Burning-in machine represents accuracy, durability and workmanship, built to perform every required operation with maximum results. A compact, speedy, reasonable priced, accurate and durable combination which will produce a one hundred per cent bearing surface, and materially increase the efficiency and profit making ability of any live and progressive repair shop.



**Burning-In and Running-In a Fordson Tractor Motor.**

**AUTOMOTIVE EQUIPMENT SPECIALISTS.**

Radial Drills, Sensitive Drills, Engine Latches, Punches, Shears, Countershafts, Upright Drills, Post and Wall Drills, Grinders, Buffers, Forges, Rear Axle Test Stands, Bench Motor Clamps, Boring Machines, Straightening Presses, Motor Test Stands, Portable Floor Cranes, Piston Clamps, Arbor Presses, Connecting Rod Straightening Jigs, Bearing Burning-in Machines, Tractor Tools and Special Machinery for Ford and Fordson.

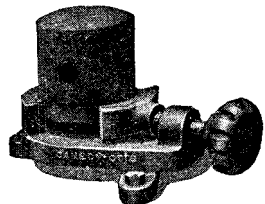


**Connecting Rod Aligner.**

For testing the alignment and straightening twisted connecting rods, a great time-saver on overhauling and straightening connecting rods for both the Ford and Fordson.

*It is worth while for every dealer to write for our 1920 Catalogue*

**The Canedy-Otto Universal Piston Clamp.**

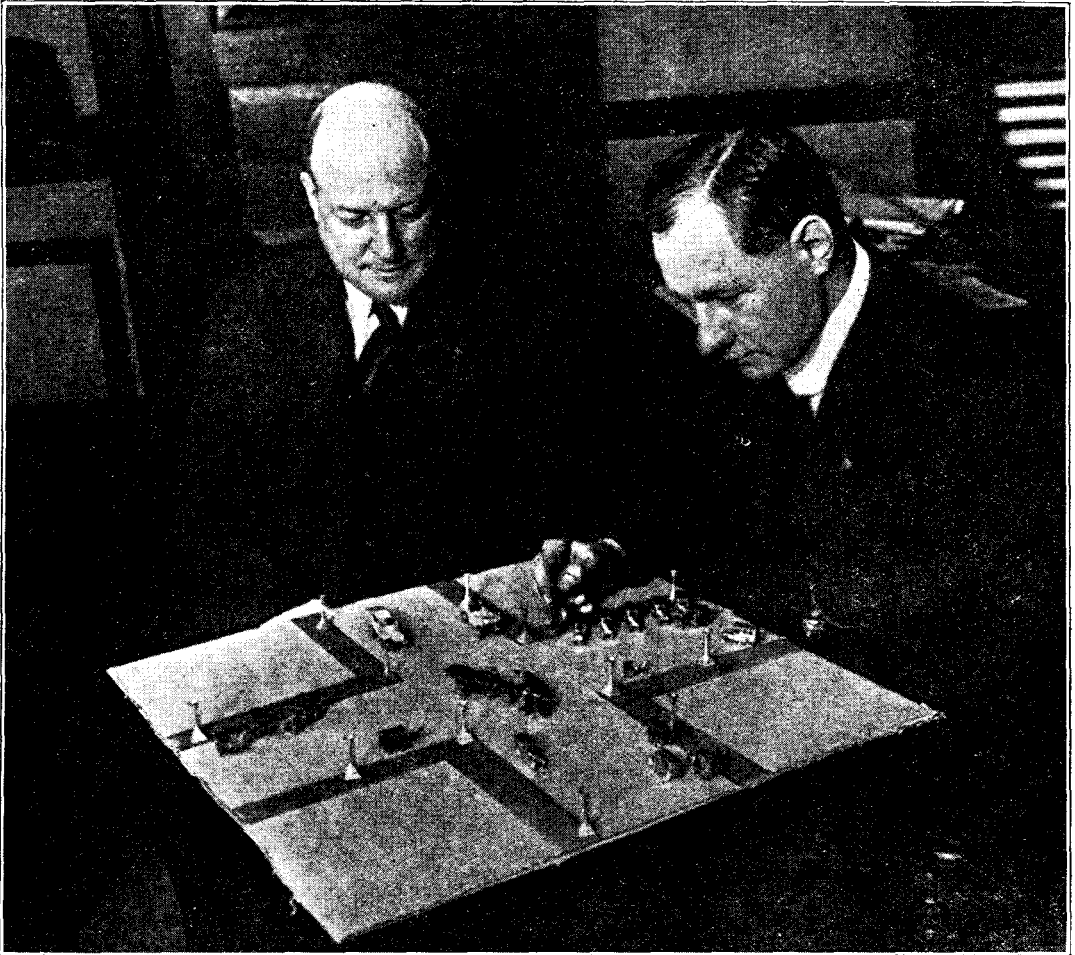


**CANEDY-OTTO MFG. CO.**

GENERAL OFFICES AND FACTORY  
CHICAGO HEIGHTS, ILL.

*Canedy-Otto Automotive Equipment is carried in stock in all of the principal cities of the World. Prompt shipments are a feature that distinguish Canedy-Otto Service.*

When writing advertisers—Just say FORD OWNER and DEALER



## A Practical Way to Study Traffic

Of course at first glance at the illustration herewith, the gentle reader will think that it represents two students of the occult consulting an ouija board to get some straight tips from the Great Beyond. As a matter of fact it represents the manner in which traffic problems are studied by the traffic courts at Washington. By means of a model street intersection and miniature vehicles of all sorts, details of acci-

dents are thus worked out by traffic experts. Their deductions are of value to the law makers in framing ordinances for the regulation of traffic. The practicability of this plan is evident; and by the expression on the faces of the experts we would say that they are getting as much fun out of their investigation as we could have gotten in our childhood days with a similar set of the little toy cars.

### JUNK THOU ART, TO JUNK RETURNEST.

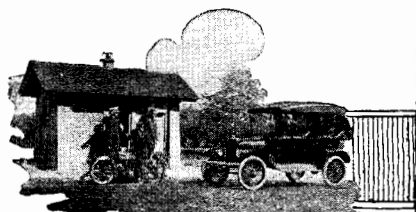
A dippy young geezer named Blunk  
 Bought a Ford, and as quick as a wunk  
 Chanced to hit a mosquito,  
 Short-circuited magneto,  
 And so Blunk went kerplunk to junk.  
 —Chuckwood.

### THE ARTISTIC VIEW.

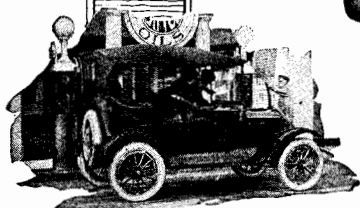
Jiggs: Why is the Ford automobile Henry Ford's greatest work?

Polk: Because, taking everything into consideration, it is a car that has no equal.

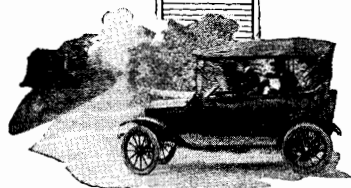
Jiggs: And the reason it has no equal is that he has put himself in it.



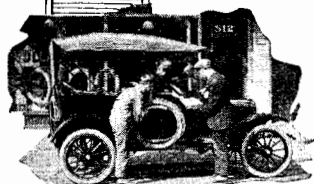
1—Prevents speeding. Saves costly fines



2—Shows mileage you get from gas and oil



3—Indispensable in following road guides



4—Gets more liberal tire adjustments



## Stewart SPEEDOMETER For Ford Cars

YOU'LL find more pleasure in driving when you know just how fast you are going —how far you have gone. Your Stewart Speedometer registers your speed and records your mileage **accurately.**

**\$15**  
WEST OF 100° MERIDIAN \$16

Acts as a warning — preventing speeding — saving court fines. In many other ways it eliminates unnecessary expenditures.

For every model of Ford car there is a Stewart Speedometer. Perfect in construction, attractive in appearance.

Stewart-Warner Speedometer Corporation  
CHICAGO, U. S. A.

### Other *Stewart* Custombuilt Necessities for Ford Cars

**Speedometer and Instrument Board**

For Ford Open Car Models . . . \$16.25  
For Ford Closed Car Models . . . 16.25

**Warning Signals Motor Driven**

Popular Priced Model . . . \$ 6.50  
Standard Model . . . . . 10.00

**Warning Signals**

Hand Operated  
Popular Priced Model . . . . . \$5.00  
Standard Model . . . . . 6.00

**Searchlights**

Popular Priced Model . . . . . \$5.50  
Standard Model . . . . . 7.50

**Autoguard**

Special Ford Model . . . . . \$10.00

*Prices shown are slightly increased west of 100° Meridian*



# HINTS

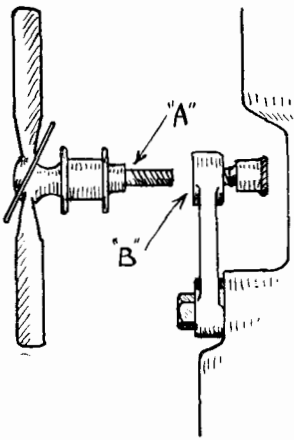


Send us rough sketch and description of any repair hint that would be of assistance to Ford owners. If acceptable, we will pay \$1 for same. Here's a chance for easy money.



## KEEPS BELT ON.

The fan belt persisted in slipping off—even though a new drive pulley was put on the crank shaft. As the belt always slipped forward, when coming off the pulley, I figured that setting the fan back would help to keep it on the pulley.



So the fan was removed from the pulley, and the abutting surfaces of the fan and the fan bracket, marked "A" and "B", were ground and filed off a little. Also, some metal was filed off the other end of the fan bracket, where the bracket was fastened against the side of the cylinder front cover plate.

The bolt, on which the fan turns, was then screwed in tight enough to prevent end play of the fan—this prevention of end play being important in keeping the fan belt in place. This did the work.

Worn bushings, due to failure to oil the fan at reasonable intervals, are often responsible for fan belt trouble, as they allow the fan pulley to wobble and throw the belt off.

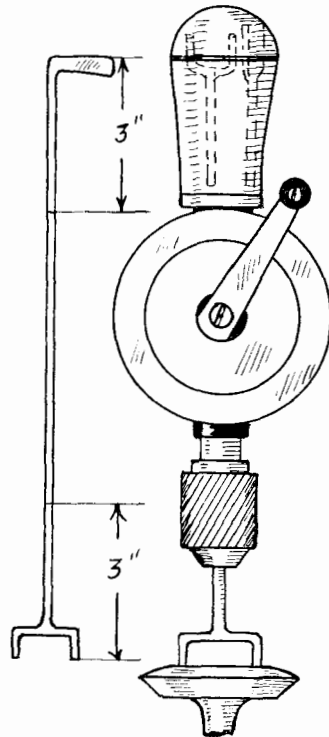
T. C. McDOWELL, Adrian, Mich.

## VALVE GRINDING BITS.

The carburetor dash adjusting rod can be used to make a couple of valve grinding bits, or tools, which can be used for fast work in grinding the valves with a small, hand-drill.

Cut off the forked end of the adjusting rod for a length of about three inches, and file the forked ends to a snug fit in the holes in the head of a Ford valve. The shank of this bit will fit nicely in the chuck of a ¼ inch drill chuck.

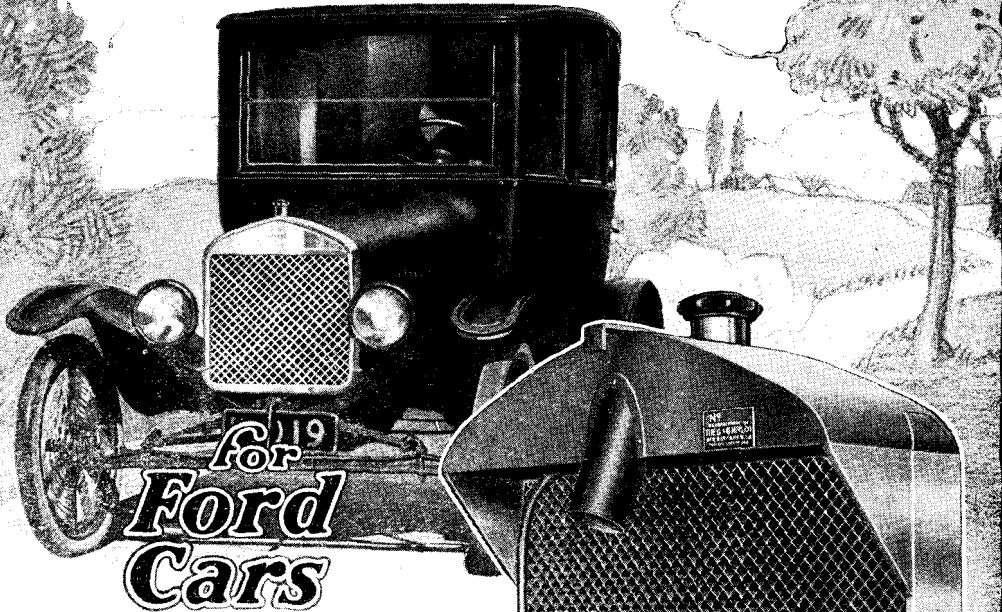
The opposite end, of the carburetor adjusting rod, can also be cut off and straightened out, and used as a screwdriver bit, for valves on ordinary cars, as many of these valves have slotted heads.



These valve grinding bits are light and easily carried in the handle of the hand-drill, and are available when needed.

G A. LUERS, Washington, D. C.

# G&O Radiators



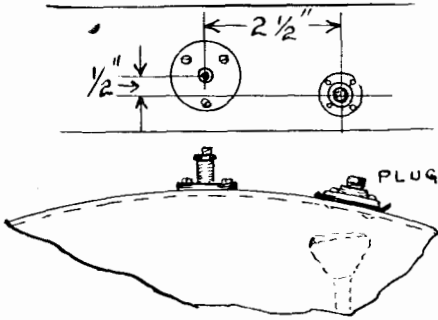
G & O Radiators for Ford cars are built of the same materials and with the same painstaking care that characterize G & O Radiators for the most expensive motor cars. Tanks and core brass throughout. Made to fit standard shell.

**The G&O Mfg. Co., New Haven, Conn.**

*Special core orders filled and shipped on day  
of receipt*

### CLEANS OIL PIPE

In order to make it easier to inspect, and to clean out the oil feed pipe, a flanged pipe fitting, with pipe plug, can be fitted on top of the transmission cover. Purchase a floor flange and a quarter-inch pipe size plug, to fit.



Remove the transmission cover and, at a point that is just over the oil tube funnel, (which is about  $2\frac{1}{2}$  inches to the right of the magneto contact point, and about  $\frac{1}{2}$  inch farther back) fit the floor flange. Drill a  $\frac{3}{8}$  inch hole through the transmission cover at this point. Place a leather gasket, between the floor flange and the transmission cover, and bolt or rivet the flange in place. Make sure that the heads of the bolts or rivets do not project enough to be struck by the fly-wheel.

To inspect oil feed pipe, remove the pipe plug, and look through the hole with a flashlight, or with light reflected from a mirror, while some one cranks engine slowly, until a space, between two magnets, comes beneath the opening. Then insert a small wire cable, about  $\frac{3}{16}$  inches diameter, and push cable through, until it strikes the timing gear at the front end of the motor.

R. M. Jewett, Berkeley, Calif.

### SHEARED AXLE KEY.

Sometimes the nut, on the end of the axle shaft, is allowed to become loose. Then the key is sheared off, and the axle shaft spins around in the hub, without turning the wheel, and the Ford is stalled.

But, if the driver is wise, he will take the sheared halves of the key—stand them up on edge, and thus secure a new key, which will last long enough to get the car home and, perhaps, for many miles, if the axle shaft nut is pulled home up tightly enough.

This is only intended for a temporary repair. But it is quick and easy, and may save a ride at the end of a tow-rope and a bill for towing.

IVE. V. PENNINGTON, Wauneta, Nebr.

### REMOVES DROPPED PARTS.

When working—and swearing—on the number 4 connecting rod, a cotter pin, or nut, is apt to slip from one's fingers, and fall down into the crank case, beside the fly-wheel, where it is very difficult to reach.

By taking a four or five inch horse shoe magnet, or one of the magnets that are used in the Ford magneto, and tying a string to the magnet, this magnet can be lowered down into the crank case, and used to pick up the cotter pin or nut that has been lost.

This may save one the job of removing the transmission cover, or fishing around in the crank case with a swab.

When the cotter pins are put through the holes of the connecting rod bolts, or any place where there is excessive vibration, the cotter pin should be bent around firmly and solidly, so that the cotter pin will not slap from side to side in the hole in the bolt.

If the cotter pin is left loose, it will eventually cut through and the parts of the cotter pin may drop down into the crank case, and get into the transmission or magneto—perhaps causing a short-circuit and trouble.

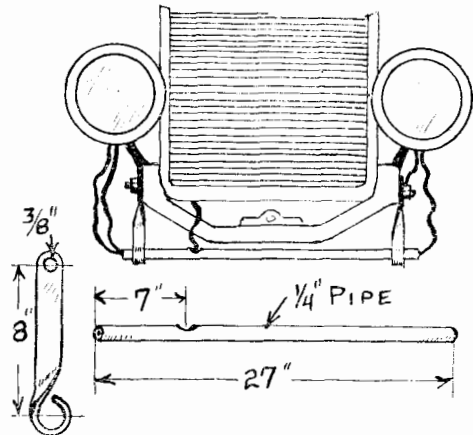
JOE ALLEN, Modesto, Calif.

### PROTECTS HEADLIGHT WIRES.

Having had trouble with the head light wires short circuiting and grounding, and thus causing the burning out of the head light bulbs, I made a neat arrangement for enclosing and protecting the headlight wires and have not had any trouble of this kind since installing it.

The two brackets, which hold the cross tube, are made of strap iron, about three quarter inch wide, and one quarter inch thick. These brackets are bolted onto the bolts which hold the front fender irons in place.

The cross pipe, which is of one quarter inch inside diameter, (and so is called one quarter



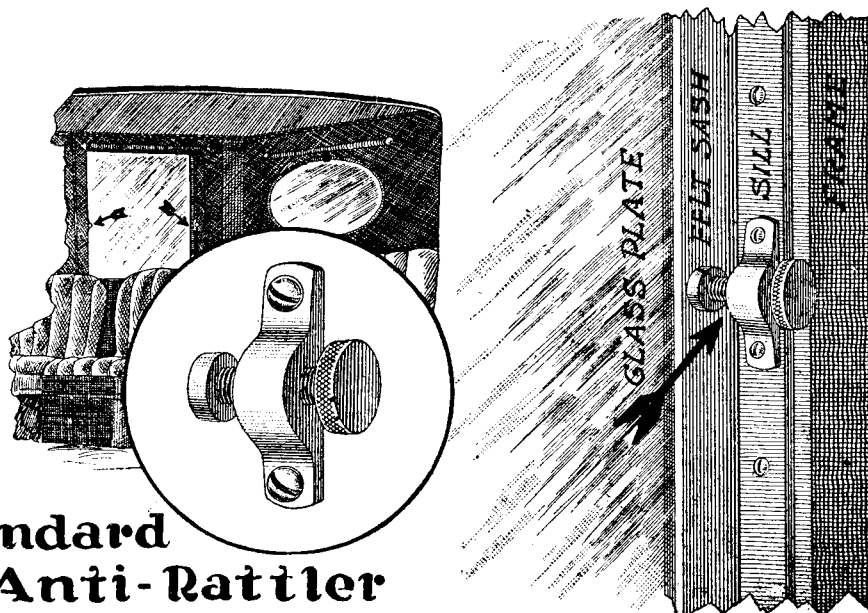
inch pipe) is placed behind the front cross member of the chassis frame, where it is out of the way, and is not noticeable. This wiring arrangement gives a much neater effect than running the wires out at the bottom of the hood.

WERNER STAAB, JR., Pittsburgh, Pa.

# STOP?

## RATTLING WINDOWS

### CLOSED CARS



### Standard Anti-Rattler

Holds windows in any desired position. Stops that rattling noise. Does not put pressure on the glass but bears on the felt sash preventing breaking glass. Brass, nicked and polished. Handsome in appearance. At dealers or order direct. Attractive dealer's and jobber's discounts. Prompt delivery. SET OF ONE DOZEN COMPLETELY EQUIPS FORD SEDAN. PRICE \$6.00 PER SET.

**Standard Sales Co. (Mfrs. Agents)**

EXCLUSIVE DISTRIBUTORS

L. C. Smith Bldg.

Seattle, Wash.

# Speedometers For All Occasions

## Utility of Speed and Distance Recorders

Speedometers are no longer furnished as standard equipment with the Ford car, though they are part of the equipment of cars of practically every other make. But, there is no doubt that the speedometer can afford much to interest the car owners and also be of material assistance in enabling him to get the most out of his car, and to run the car most economically.

While we usually think of a speedometer as being primarily for registering speed, the fact is that the most useful part of the speedometer is the mileage-recording part. This enables the car owner to keep track of the number of miles which have been traveled, since the car was last lubricated, or filled with gas.

The mileage figures are also of vital importance, in enabling the owner to determine accurately just how many miles he has obtained from his tires. And it stands to reason that the car owner will have a much greater chance of obtaining a satisfactory adjustment on tires, which have not given the good service; if the car is fitted with a speedometer and the owner is in a position to state definitely, rather than to guess, the number of miles that the tires have been used.

In commercial car service, it is of especial advantage to be able to check up the number of miles the truck has been driven. This tends to prevent joy riding, and enables one to keep track of which drivers are obtaining the best service from the trucks.

For commercial work, there are several hub speedometers which are not as complicated as the speedometer, and so are more suitable for truck use. Such odometers do not register the speed, but only the distance covered. This is usually quite sufficient for truck use, and the Ford Ton-Truck is hardly capable of being driven over the speed limits, which are allowable in most parts of the country.

The advantage, of such a hub odometer, lies in the fact that it can be sealed in place, so that there is but little chance of the driver changing the mileage, which the truck has actually covered. A lead seal, which fastens over the wires of the holding bolts, makes it impossible to tinker with, or adjust the odometer, without the knowledge of the one in charge of the trucks.

It might seem possible to jack up the front wheel, and spin it backwards; and thus keep the odometer from showing the sum of the mileage which has been covered in joy rides. However, this is considerable trouble. And even this possibility has been guarded against in some odometers, which are so designed that they do not subtract mileage, when the wheel is spun backwards.

Such hub odometers should have strong sturdy cases, as the wheel hubs are subjected

to many bumps and jars in service conditions, and commercial use. But even for pleasure cars, some types of hub odometers are convenient, as they eliminate the flexible shaft drive, which is the cause of about ninety per cent of the grief with the average speedometer.

Speedometers are intended to be located on the dash. But, in the case of electric starter equipped boards, the logical position for the speedometer is on the cowl, or instrument, board; as this brings the speedometer closer to the driver, and makes it easier for him to keep accurate check of the figures.

Special brackets are made, which permit of hanging the speedometer right under the windshield, even though the car is not fitted with a cowl board. But, if the car is not so equipped, it is often convenient to fit a cowl board; as this affords a most convenient location for the lighting and ignition switches, and other car controlling devices.

When selecting a speedometer, careful consideration should be given to the type of drive, shaft, between the front wheel and the speedometer. Some of the flexible drive shafts of speedometers give considerable trouble. And in other flexible drive shafts, the drive shaft linkage is so constructed that, when the flexible drive shaft breaks, it also breaks the gears in the universal joint. As the universal joints are only supplied as a unit, this necessitates an exorbitant bill for new parts.

Before buying a speedometer, it is well to secure Parts Price Lists, of the various makes of speedometers under consideration. One can tell, from a study of these Parts Price Lists, just which parts may give trouble, and how much it will cost to replace them.

As a rule, speedometer drive shafts require repairing, in from five to ten thousand miles of use; so it is advisable to give this part of the speedometer careful thought, before deciding just which type of speedometer to buy.

The length of time, that the flexible drive shaft of a speedometer will run without repairing, is partially determined by the manner in which the flexible drive shaft is installed.

Long sweeping curves should be used, and sharp, sudden bends in the drive shaft should be avoided. Small radius curves cause unnecessary friction, and wear in the drive shaft parts, and also cause strain and binding, which may cause the breakage of these parts.

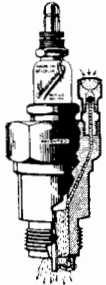
When installing a flexible drive shaft, one should use straps, or coil springs, to hold the drive shaft with smooth flowing curves, and yet allow the drive shaft to swing freely, when the front wheel is turned to one side or the other.

It is advisable to so arrange the flexible drive shaft that it will not rub against the



Grease leaking from the rear axle housing costs you money, because grease rots tires. It is dangerous, because the brakes are affected and lose their efficiency—and every auto owner realizes the importance of dependable brakes. It is messy and unsightly, because the grease collects dust on the axle housing, brake drum, and wheels.

A Shurnuff grease retainer absolutely stops all this. Consists of three extra high grade felt washers, one rubber composition washer, steel cup, and two retaining rings. Easy to install. Complete with full directions, 90c set. If your dealer can't supply you, send us 90c with the order form below, and we'll supply you direct. Absolutely guaranteed.



SHURNUFF SPARK PLUGS are great for oil pumping engines. Air is drawn into the cylinder on each downward stroke of the piston—breaking up the gas pocket which forms above firing point, and prevents fouling. Increase of oxygen in cylinders gives more perfect mixture, more complete combustion, and full, steady, power delivery. Ball valve prevents compression loss on upward stroke.

Price per plug: Ford and  $\frac{7}{8}$ " sizes—\$1.50. Put a SHURNUFF PLUG in that oil pumping cylinder—and notice the difference.

If your dealer can't supply you, just use the order coupon below.



SHURNUFF RUNNING BOARD SUPPORT for Fords, stops sagging of running board, eliminates excessive vibration of front fenders, reduces shocks and stabilizes the car. Consists of two metal supports. One end fastens to frame with lug and other end attaches to front section of running board at junction with fender.

Price per pair.....\$3.00  
West of Rockies..... 4.15



SHURNUFF COMBINATION MANIFOLD for Fords. Combines intake and exhaust so that the heat from the latter dries incoming gasoline and vaporizes it perfectly. Result: Smoother running, more power, more miles per gallon, less carbon.

Price .....\$ 9.00  
West of Rockies.... 10.00

DEALERS: Shurnuff necessities are sure enough fast sellers. All guaranteed. All packed in attractive cartons for shelf display. Carried by jobbers everywhere. Order from your jobber—write for literature.

SHURNUFF MFG. CO., DEPT. A. ST. LOUIS, MO.

Enclosed find.....for....Shurnuff Grease Retainers at 90c set.

Enclosed find.....for....Shurnuff Spark Plugs at \$1.50 each.

Enclosed find.....for....pairs Shurnuff Running Board Supports, at \$3.90 pair.

Enclosed find.....for....Shurnuff Manifolds at \$9.00 each.

Name .....

Street Address ..... or R. R.

Name of Car.....

City ..... State.....

When writing advertisers—Just say FORD OWNER and DEALER

front radius rod, or chafe against the mud pan; where the drive shaft passes between the chassis frame and engine. As this is apt to cut through the drive shaft casing, and cause it to break.

The lubrication, of the speedometer drive shaft, is another important factor in determining the length of time the drive shaft will run without giving trouble. As a rule, most owners of cars do not lubricate the drive shafts at all.

Some of these drive shafts should be lubricated by a mixture of thin grease and graphite, while others are best lubricated with heavy oil.

As no set rule can be given, one should be careful to follow the instructions of the makers of the speedometer on this subject.

Perhaps the easiest way, to introduce a lubricant into the drive shaft, is to remove the flexible drive shaft from the casing, and thoroughly lubricate the drive shaft. Then replace the well-lubricated drive shaft in the casing.

The gears, which connect the speedometer universal joint to the front wheel, should be carefully meshed; so that they run smoothly, without noise or causing unnecessary wear.

The teeth of the fiber pinion should not mesh too tightly with the teeth of the ring gear, which is fastened on the front wheel. If they are meshed too tightly, any mud or dirt, on these parts, will tend to jam the gears, and will cause excessive friction and wear.

There should be just a little play, but not enough to cause rattle, between the teeth of the two gears.

The spiral gears, of the universal joint at the front end of the speedometer flexible drive shaft, require fairly frequent lubrication; if they are to give reasonable service. And, as these universal joints are quite expensive, and cost about as much as the large universal joint which drives the Ford car, it pays to give this universal joint fairly frequent attention.

## Our Engines

(Anne Rogers.)

Once upon a time—(or twice),  
 We used to wonder  
 Why folks were so fond of buying  
 Second-hand Fords.  
 And when they had bought 'em,  
 Why they were always  
 So proud  
 To think they owned  
 Such a good second-hand car.  
 Or why  
 They were forever bragging  
 About their Engines!  
 Just let them talk  
 While you kept quiet,  
 (For you had to, anyway.)  
 And you soon found that  
 "My Engine"  
 Was the only engine  
 That could really do things.  
 They would say  
 "O Boy,  
 You should have seen us  
 Go up Mt. Washington,  
 And leave all the big cars  
 Puffing and sweating  
 Half way up!"  
 Or maybe they would jeer  
 At the double super sixes,  
 Which "My Little Ford"  
 Had yanked out of the ditches!  
 They were Geo. Washington truth-tellers,  
 So all this talk  
 Made us as curious  
 As a kid on Christmas eve.  
 Until one day  
 In a fit of emotion  
 We bought a Ford.  
 It was a second-hand Ford  
 And it limped a little

Out at the elbow,  
 And down at the heel.  
 We took it home  
 After dark, and felt a bit nasty  
 Somewhere between our brain  
 And our stomach.  
 Because we didn't know then  
 About Ford engines.  
 But that we might learn,  
 We dismembered it.  
 It didn't need many brains  
 To unjoint the thing.  
 But gosh, wasn't it  
 One whale of a mess  
 When we tried re-assembling?  
 We had to call in  
 A Ford doctor.  
 He twisted its vitals  
 Here and there.  
 Stretched out a transmission  
 Band or two.  
 Dropped in  
 Two handfuls of cotter pins  
 And a half a pint  
 Of screws and bolts  
 And gently messaged  
 The carburator.  
 Then flicking a bit of dust  
 From off his trousers,  
 He turned on the juice  
 And ran Our Automobile  
 Around the block.  
 "Some Engine that!"  
 Says the Ford doctor:  
 "You can sell it  
 For twice what you paid for it,  
 At any price!  
 Fords are built that way!"  
 And we did!

# THE ROMORT AIR & WATER STATION

## Twice the service in half the time

Improving your air and water service a 100%, the new Romort air and water station does away entirely with the dirty, grimy air hose and the bothersome old water bucket.

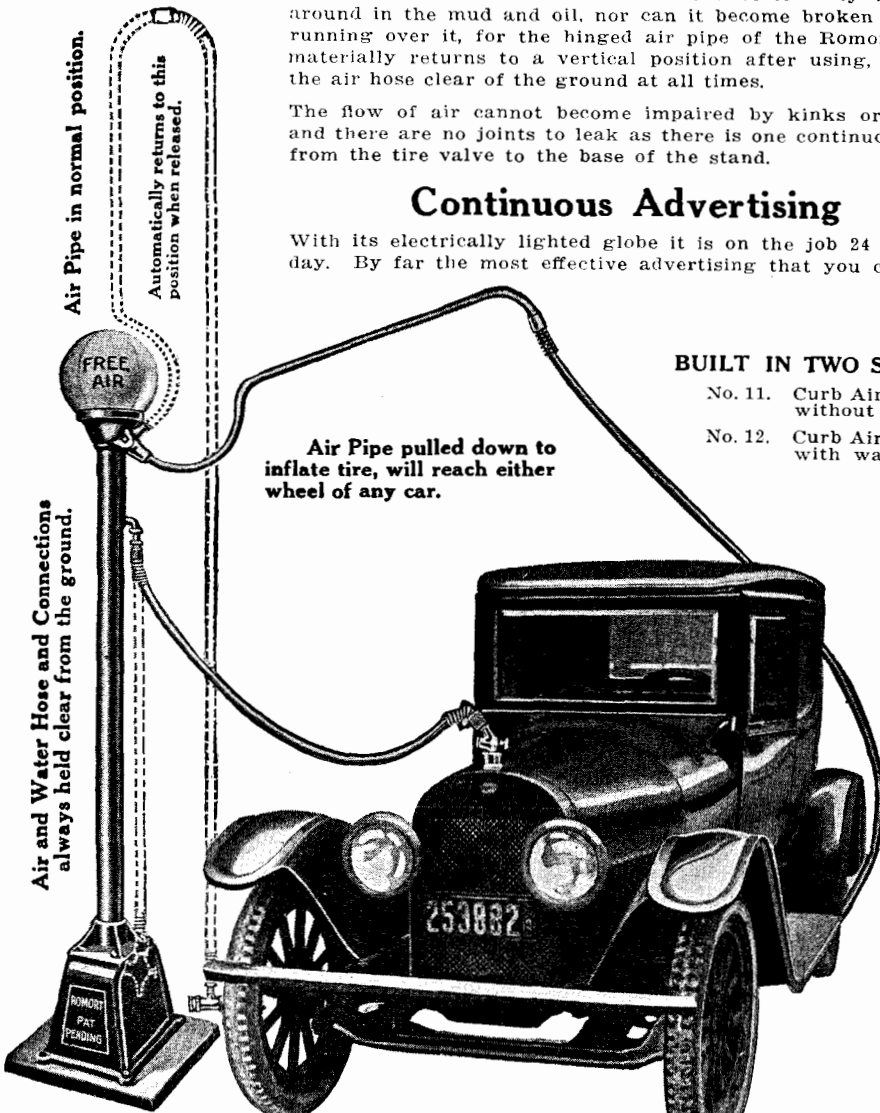
### Super Service For Your Customers

The air hose of the Romort cannot become dirty slopping around in the mud and oil, nor can it become broken by cars running over it, for the hinged air pipe of the Romort automatically returns to a vertical position after using, holding the air hose clear of the ground at all times.

The flow of air cannot become impaired by kinks or breaks and there are no joints to leak as there is one continuous hose from the tire valve to the base of the stand.

### Continuous Advertising

With its electrically lighted globe it is on the job 24 hours a day. By far the most effective advertising that you can buy.



Air Pipe in normal position.

Automatically returns to this position when released.

Air and Water Hose and Connections always held clear from the ground.

Air Pipe pulled down to inflate tire, will reach either wheel of any car.

#### BUILT IN TWO STYLES

- No. 11. Curb Air Station without water.
- No. 12. Curb Air Station with water.

Manufacturers  
**Romort Mfg. Co.**  
 Oakfield, Wis.

Write us today  
 for full details

Sales Dept.  
**The Zinke Co.**  
 1321 Michigan Ave.  
 Chicago, Ill.



# WHY- WHAT- HOW-



Wherein Your Questions  
Are Answered

Conducted by  
Murray Fahnestock

What was the number of the first Ford  
On what engine number can a Ford starter  
be installed? I understand that some 1919 Fords  
cannot be equipped with the electric starter  
that is on 1920 Fords.

On January 1, 1919, Ford car with motor  
number 2,831,400 was built.

On September 30, 1919, motor number 3,429,400  
was shipped.

It is too soon yet to give complete figures for  
the cars built in 1919, but it will be from 900,000  
to 1,000,000 Fords, if the same rate is kept up.

There isn't any definite engine number on  
which the electric starters can be installed. For  
quite a while, both starter and old-style cylinder  
blocks came through the factory together. Sometimes  
there were enough electric starters for the starter  
cylinder blocks—and sometimes the starter cylinder  
blocks went out without starters. A glance at the  
crank case, will tell at once whether or not the  
starter can be fitted.

Have put, in the right-hand headlight, a  
special plug. It gives more light, but I cannot  
get the bulbs to last. They burn out, sometimes  
in a few minutes.

The plug, to which you refer, simply connects  
the two headlight bulbs in parallel; and so  
sends the full voltage of the Ford magneto to  
EACH headlight, instead of dividing this voltage  
between the TWO headlights, as is done with  
the regular series connection.

If you use 12-16 volt, nitrogen bulbs, instead  
of the regular Ford, 9-volt bulbs, they will be  
far less apt to burn out; and they will take  
much less current from the Ford magneto. Even  
with these bulbs, you will have to be careful  
about racing the engine, when in low gear with  
the headlights turned on, or you will burn out  
the bulbs.

Have been experimenting, with different  
makes of combined inlet-and-exhaust manifolds,  
and have found them to be of great help, with  
the present low-grade fuels of today.

Am using a special carburetor, which is de-  
signed to for kerosene, but found it carbonizes  
very fast on kerosene. Am now using a half-  
and-half mixture of kerosene and gasoline, and  
find that I get a 'fuel knock' on a hard pull on  
high gear.

Do you think the manifold I am using heats  
the fuel too much?

Kerosene is more successfully used with a  
lower compression, than that which gives best  
results with gasoline. If your car is a couple  
of years old, you can get a lower compression  
by fitting one of the late, high-type, low-com-

pression cylinder heads, such as all Fords are  
now fitted with.

Or, you can use two or three gaskets, between  
the top of the cylinder block, and the cylinder  
head, to lower the compression. This will do  
much to eliminate the 'fuel knock,' which you  
describe.

For cold weather use, of the 50-50 mixture  
of gasoline and kerosene, we do not think that  
the manifold that you are now using heats the  
mixture too much. When the mixture is over-  
heated, the engine lacks power TEMPORARILY,  
when hot, but regains full power as soon as  
allowed to cool off a little.

Would like to have you discuss counter bal-  
ances, for the crank shaft. If the pistons are  
of equal weight, and accurately placed on the  
quadrant, together with the fly wheel, isn't it  
already balanced?

Have a 1911 Ford (which I expect to keep  
indefinitely.)

Have a heated manifold, which saves gas,  
gives more power at the start, and the engine  
pulls better on a hill. In this rolling country,  
on State roads, I get 28 miles per gallon on  
long runs. And 22 miles on short runs, or dirt  
roads. The car has been 40,000 miles.

Briefly, the reason that counter balances are  
needed is that, while the 4 cranks of the Ford  
engine can be in perfect STATIC (balance at  
rest) balance, they cannot be in good DYNAMIC,  
or RUNNING balance, when in motion, because  
the equal and opposite weights do not revolve  
in the same plane of rotation. The idea, of the  
counter balances, is to balance each individual  
crank pin, with an equal and opposite weight,  
as nearly as possible in the same plane of  
rotation.

Had my 1916 Ford overhauled, because there  
were two knocks in the engine. On the level,  
going at 25 miles and suddenly slowing down,  
there is a dull knock. In going up hill, when  
the engine is working hard, or when the  
gassing the engine quickly, there is a tinkling.

A knock, that occurs on level roads, when  
slowing down from a 25 mile speed, is most  
generally due to loose connecting rod big end  
bearings.

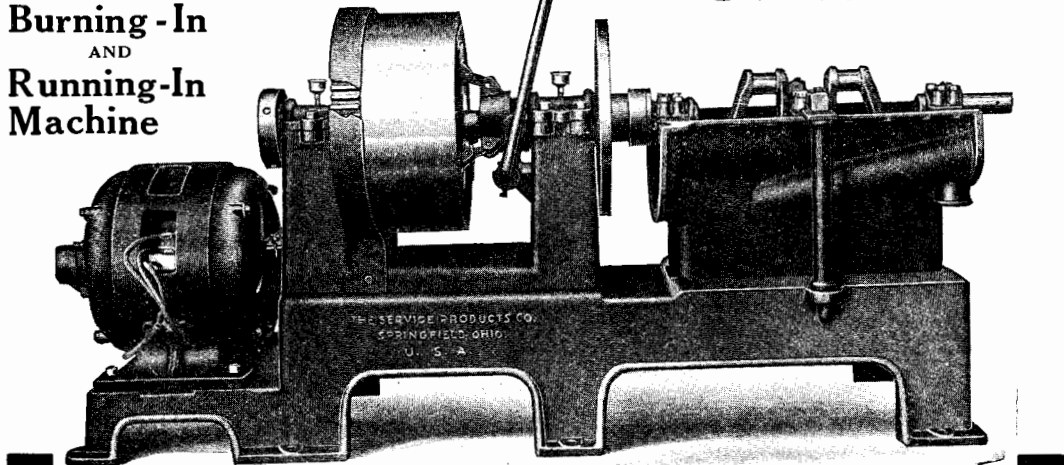
The 'tinkling' knock, when 'gassing' the en-  
gine quickly, may be due to a sprung connect-  
ing rod, which should be straightened and ad-  
justed in a connecting rod aligning jig or fix-  
ture. Or, it is possible that this tinkling knock  
may be due to piston slap, caused by the piston  
being too loose a fit in the cylinder. The remedy  
for this is an oversize piston.

A 'tinkling' sound is sometimes caused by the  
exhaust pipe striking against the emergency

# Quicker, Cleaner Better Work

—with Model FS-51  
Burning-In  
AND  
Running-In  
Machine

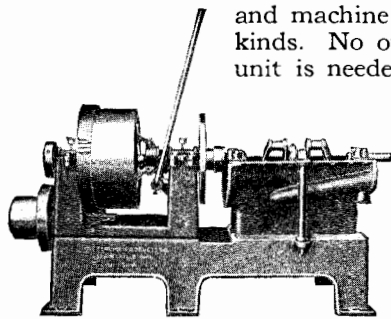
# —and Plenty of Power for Other Jobs



**H**ERE is a simple, powerful Burning-in and Running-in Machine for the bearings of Fordsons and Ford, Maxwell, Dodge, Chevrolet and Overland-Four cars. As the photographic illustration shows, this is a very sturdy, substantial outfit built to stand up under the hardest kind of work.

**Equipped With High-Grade Motor—A Complete Power Plant For Your Entire Garage Equipment!**

Model FS-51 is driven by a powerful motor. This same motor drives line shafting and machine tools of all kinds. No other power unit is needed for your



MODEL FS-52 BELT DRIVEN

garage. It will handle all of your work perfectly. A very sturdy drive of machines can be obtained in this way because of the heavy drive pulley which tends to maintain constant speed.

**Model FS-51 Is A Money-Maker—A Machine of Highest Quality**

In operation, the cylinder block of the motor is quickly mounted onto the bed of the unit—and a **perfect surface** is given to any set of motor bearings in a few minutes' time.

If you desire to give highest-grade service, write today for full details regarding our complete line of **Burning-In Equipment**. If you are at all interested in **Burning-In** or **Running-In** Machines of **any** description—or electric test units for automotive electrical equipment—get in touch with us at once.

---

## Service Products Co.

Springfield Ohio

**brake lever controller shaft. The reason it only sounds when the engine is 'gassed,' is that then the engine vibrates most strongly in the chassis frame, and so strikes the exhaust pipe against the rod. Bend the exhaust pipe a little, and tighten the nut holding the exhaust pipe to the rear end of the exhaust manifold.**

Have late 1913 Ford. Will the new style cylinder head fit this engine? How about the water connection?

In regard to the ball-thrust bearings, advertised in your magazine, should one or two be used? Please give the number of Ford parts, which they replace.

Wish to change a 1913 roadster into a touring car, with a 1916 or 1917 body. What changes must be made in such parts as hood, radiator, dash, fenders, etc?

The latest type Ford cylinder head will fit on your 1913 Ford engine very nicely. While the higher cylinder head will throw the top hose connections slightly out of alignment with each other; this can be very easily corrected by using a heavy gasket, made of leather, or lead; between the cylinder head, and the water outlet hose connection.

The makers of the ball-bearing thrust washers, for the rear axle state that only one of these thrust, ball-bearings is NEEDED, though one on each side is PREFERABLE. All of the side thrust, on the bevel drive gear, when either accelerating or retarding the car, can be nicely taken care of by the ball-bearing thrust washer on one side. By placing these anti-friction bearings on both sides, the strains which occur when the car is turned to one side or the other, are taken off. The ball-bearing thrust washer replaces Ford parts No. 2528, Diff. thrust washer, and two of No. 2529, Diff. Thrust plates.

In changing from a 1913 to the late model bodies, you will need a new dash, new hood, and new radiator shell. And preferably a new radiator, though the new radiator shell CAN be used over an old radiator. It will not be necessary to change the fenders, running boards, or metal shields. Of course you can use the old-style hood, but the new one looks much better.

My 1913 Ford is good to use—but bad at night—for want of good light. Could I install parts 3276-B, the  $\frac{3}{4}$ -inch magnets, and 3250-D, the  $\frac{3}{4}$ -inch magneto coil assembly, on my car and get results?

Yes, you can install the latest type of Ford magneto, on your 1913 Ford; and get equally good results as from the magneto of a 1920 Ford car. And, if you use Nitrogen bulbs in the headlights, of 9 volts and 21 candle power; you should get good light, when the engine is running at a fair rate of speed. This magneto will also give good ignition.

If the cylinder block on your car has been reboled, and the engine really requires an overhauling, it is worth considering—though we do not say that it is advisable—as to whether or not it would pay to install the latest type cylinder block in your car, and a Ford electric generator on the engine, and use this to charge a storage battery. The Ford electric generator would cost about as much as the new magneto parts—and the new cylinder block would cost more. But, with the generator and storage battery, you would get a good light at slow speeds, and with the engine stopped. It all depends on the general condition of the car, as to which would be advisable.

Bought a 1917 Ford and the gears were noisy when the weight of the car came on the left rear wheel. Took apart the rear axle system and replaced axles, thrust washers, and drive shaft. When I had axle apart, I noticed that the housings were loose, and that grease was oozing out. Also that the ring gear was a little loose, but was not worn.

The left rear radius rod was bent, and the left tire was worn, as if the wheel had not been in alignment. The rubber is worn off the center of the tread.

After installing the new parts, the axle is still giving a disagreeable hum. Do you think

that the left-hand side of the housing is sprung, so that the gears do not mesh with the proper pitch?

By jacking up rear axle, with the wheels off the axles, the hum is not noticeable. When the wheels are replaced—the hum is heard. This hum gets worse, when one wheel is held. The roller bearings seem to be in good condition, and there is no wear in either of the drive gears.

A sprung rear housing, especially on the left-hand side, could easily force the pinion and drive gear into too tight mesh, and so cause the hum which you describe.

We suggest that you take off the two rear wheels. ALSO the two outer roller bearings, from the axle shafts. Now run the engine and axle shafts slowly, and note whether or not the axle shafts tend to stay in the CENTER of the axle housings. If they do not, but tend to remain STEADILY NEARER one side of the housing than the other, then the rear radius rods must be adjusted, or the housings straightened, until the axles do remain in the middle of the housings.

If the axle shafts themselves are not true, they will tend to describe circles, and will be nearer the housings at first on one side, and then on the other.

The drive gears may be so worn now, from being improperly meshed, that it may be necessary to replace them also, in order to secure a very quiet running rear axle.

What is the brake horse-power that a 3  $\frac{3}{4}$ -inch bore by 4-inch stroke, 4-cylinder engine will develop, at 800 revolutions per minute?

What would be the fuel consumption, per brake horse-power hour?

About what would be the life of this engine, if used to pull a steady load, up to its capacity?

Will a 4-cylinder engine, of 16 brake horse-power, run more economically on fuel, than a single cylinder engine of the same horse-power?

The Ford engine, of 3  $\frac{3}{4}$ -inch bore, and 4-inch stroke, develops 12  $\frac{1}{2}$  horse-power, at 800 revolutions per minute. The total, or theoretical, horse-power, is equal to the brake horse-power, plus the friction loss in the engine. This is about 15 or 20 horse-power, at 800 revolutions per minute; but this is of no practical value.

Of course, there are engines with larger valves, and different timing, which develop more power than this, with the same size cylinders. Just as two men may be of the same size, yet show vastly different capacity for work.

We have no figures on the fuel consumption, per brake horse-power hour; and the fuel consumption would vary widely, according to the speed and load. Around 1/10 gallon, per brake horse-power hour, is our guesstimate.

The 'life' of an engine is an indefinite thing. On some Ford Tom-Trucks, the engine is worked up to its full load capacity nearly all the time—yet gives fair service. But the bearings of the Ford engine are too light for steady, full-load use. See how much heavier the Fordson tractor engine is, which is intended to give less power—but all the time.

The volumetric efficiency, of a single cylinder engine, is much higher than that of a 4-cylinder engine delivering the same power, and much less heat is lost through the water jackets. But, there is less vibration loss in a 4-cylinder engine. For stationary engine use, the simpler, single-cylinder engine is often preferred.

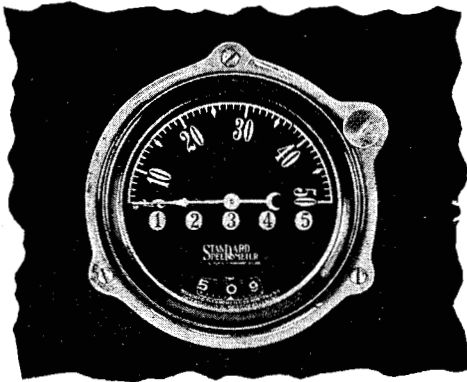
Have 1914 Ford, and the rivets, which hold the rear axle housings to the differential housings, are pulling loose, so that the grease leaks through the seam. Can this seam be welded?

Have been told, at the Ford service station, to get a new housing. But, if this housing held well enough in the first place, why can't it be made to hold again?

When I start the engine, and throw it in low, I get plenty of speed to let it come back into high. But, when the engine is hot, I can hardly get enough speed to engage high gear.

Why does the engine stall at times, when climbing a hill in low gear? Why does the engine race, when climbing a hill in low—without gaining any speed?

# STANDARD SPEEDOMETER AND TOOLS FOR ATTACHING



Model 505 complete \$18.00

## Cut Metal Cowl Board in FIVE Minutes

The STANDARD CUTTING TOOLS do the job Neatly and Quickly, and the STANDARD SPEEDOMETER Actually Fits the Board.

Designed especially to fit FORD cowl board; elegant in appearance, designed for most satisfactory results and strongly constructed throughout. No makeshift attachment here, but a simple, solid installation.

## MR. FORD DEALER!

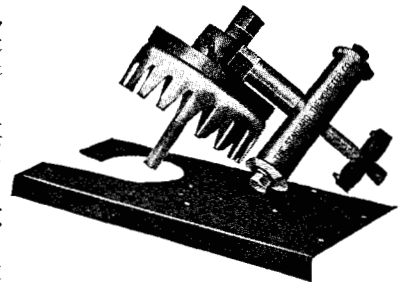
## YOU CAN'T BEAT OUR PROPOSITION

Model 505 has been tried and proven, is high grade throughout, from the Speedometer itself to the Helical Gear Driving Joint. The Speedometer fits the Cowl Board, the Joint is attached by only one bracket, and our special Sprocket attaches without drilling metal flange.

Furthermore—the Standard Cutters make Speedometer installing a paying proposition and give you the satisfaction of doing a good job quickly without marring or weakening the Cowl Board.

Your Mechanic is bound to appreciate such a layout; your Customers to be pleased with this high-grade Product and YOU!

—You will be a Standard Booster when you learn of our proposition. Write or wire today and we will send full details by next mail.



Dealer's price per set \$10.00

## ADJUST YOUR CARBURETOR

### FROM INSTRUMENT BOARD

Don't take chances by over-reaching or waste time and energy in useless cranking. Remove your Ford Adjuster from the dash (you can't see it, and it is hard to reach) and put the STANDARD CONTROL on your INSTRUMENT BOARD where you can SEE IT, REACH IT and USE IT with convenience and safety.

The graduated dial shows your needle valve adjustment at a glance. It's at your finger tips when a change is desired, helps reduce gas consumption and soon impresses on you that a better adjustment of fuel means smaller carbon deposits. If you desire higher motor efficiency, write for descriptive circular. Once used you wouldn't be without it.

Our Jobbers Proposition on any of the above very Attractive—  
All Service in Largest Cities.



Price complete \$2.50

STANDARD THERMOMETER CO. 65 SHIRLEY ST., ROXBURY 19, BOSTON, MASS., U. S. A.

When writing advertisers—Just say FORD OWNER and DEALER

It is natural enough for an agent to prefer to make the profit, on the sale of a couple of rear axle housings at \$22.00, rather than to repair the old axle housing. But, we think that if the old rivets are chipped off, and NEW rivets installed; that you should be able to get many more years' use from the old axle housings. We are using a 1914 rear axle, but we had to tighten up the rivets once. It should not be necessary to weld the seam.

The lack of power and speed, when the engine is hot, suggests that there is not sufficient clearance, between the end of one of the valve stems and its tappet. Then, when the heated valve stem expands, it is held off its seat, and the valve leaks. This may cause the engine to stall.

The engine races, when climbing hills in low, because the slow-speed band is not adjusted tightly enough, or else the slow-speed band lining is worn out.

What is the best time, made by a Ford speedster, on a half-mile dirt track? And where was this record made?

The writer once refereed a foot-race, between the gum-chewing members of the gentler sex, at a motorcycle picnic. As the first girl crossed the tape, I yelled "She done it"—and then the losers started after me, but fear lent me wings and I am still living.

Haunted by this lurid memory—I absolutely refuse to have an idea as to where and when the best speed was made on a half-mile dirt track. I do not believe that there is any 'official' record—but I do believe that there are nearly as many 'unofficial' records as there are Ford speedsters.

I suggest that you write to the secretary of the American Automobile Association, of 501 Fifth Avenue, New York City; as they are in official control of automobile racing in this country.

Have 1919 Ford, which ran fine until November. Then I put in new transmission band linings. Of course, they dragged some, for a while, which kind of worked off the power. But, shortly after, I heard a squeak, which I found to be in the second cylinder. I took the second piston out, and it was dry.

I scraped the carbon from under the rings, and replaced the piston, but this did not help, so I kept the oil way above the top petcock, and it would run for 10 or 15 miles, and then it would begin to squeak and would not have any power. I have run 10 miles, after it began to squeak, but the connecting rod bearings did not burn out. So I put powdered graphite into the oil, which seemed to help some, but I have to put the graphite in often.

If the oil feed pipe were clogged, wouldn't the connecting rod bearings burn out before the piston went dry?

While graphite is a splendid lubricant, it is apt to short the Ford magneto, if you mix it with the cylinder oil—and you had better carry a set of dry cells as an emergency source of current supply.

Evidently, the oil feed pipe is clogged, and you should clean it out, after removing the transmission cover, or the cylinder front cover plate. Running a piece of wire, through the oil feed pipe, to clean out the dirt. This clogging, of the oil feed pipe, may be due to lint, worn from the old fabric transmission band linings, or to bits of metal worn from the bearings.

If the connecting rod bearing is fairly tight, then it may burn out, before the piston squeaks—especially if the piston is a fairly loose fit. If the connecting rod bearing is fairly loose, after several thousand miles or so of use; then the piston may squeak first, as any small amount of oil mist will reach the connecting rods, before it reaches the pistons. Much depends on the relative tightness of the piston and of the big-end bearings of the connecting rods, as to which gives trouble first. Also, something depends on the speed and load under which the engine is working, when the oil supply fails.

I put a quart or so of oil in the engine, and open the top pet-cock, so that the oil drains level with it. This keeps me from putting in too much oil. I do this about once a week, as I only use my car for pleasure.

Have placed the rear view mirror on the front bow of the top, where it is near the line of vision, and can be seen through the side curtains, if the celluloid is clean. Of course, I always drive with the top up.

Before winter sets in, I sew the side curtains to the top, and to each other, where they are not used, on the left-hand side of the car. Also, sew the back curtain and the front curtain, on the right-hand side, together. I use a small stitch outside, and a large stitch inside—using black thread. This is neat, keeps out the weather, and is easily removed in the spring, without injury to the curtains.

I also sew celluloid up, when it begins to tear; thus keeping it from further breakage, and making a neat repair.

Are the late type springs, now used on the car, with fewer but heavier leaves, more resilient than the older style springs? I do not hear the buyers of the later type Fords talking so much about hard-riding, as they did when the older models came out. Have a 1913 Ford with many improvements. If I keep adding parts, by 1923 it will be at least a 1920 car.

Keeping the oil at the upper pet-cock uses more oil than is really necessary and tends to form carbon—but then the owner does not have to bother with the messy oil so often—so there is much to recommend your method.

Your method of sewing the side curtains is very clever—and the idea should prove of value to many of our readers, in whose behalf we thank you for passing the good word along.

As far as design goes, the late type of Ford spring, with the thicker and fewer leaves, should be less flexible and yielding than the old-style spring with thinner leaves, but of the same total thickness. But it is possible that the Ford Motor Company may be using a better grade of steel—or giving it better heat-treatment; and thus securing greater resiliency and easier riding qualities. Our opinion is that car owners are oiling the springs more now than they did, thus securing easier riding.

Have a 1917 touring, which gives good satisfaction, except when the weather is around 95 degrees, and the roads hilly. Then the engine overheats more than I think it should.

The engine has not the latest type of cylinder head, giving more water space and a lower compression.

This year, I am going to use a combined inlet-and-exhaust manifold. Would I get better results with this manifold, and the large stove or air inlet heater, as now fitted on Fords; or would it be wise to buy the latest type cylinder head, and use the heated manifold and stove.

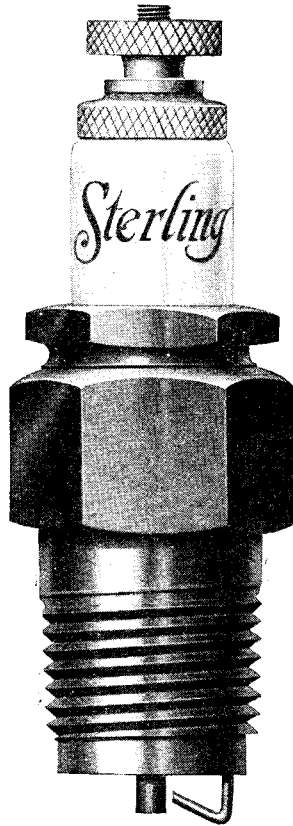
Whether or not the stove should be used in connection with a combined inlet-and-exhaust manifold in summer, depends very largely on the fuel available. For really low grade fuel, you may find it better to use both. If the fuel is of average grade, or a little better, you may get better results by using only the combined inlet-and-exhaust manifold. But as the stove is easily removed, you can make the with-and-without tests very easily yourself, and thus determine which gives best results with the fuel that you use.

My 1914 Ford has a knock. When I pull the spark lever half-way down, the knock is not there. But, when I pull the lever all the way down, then there is a knock.

The knock, with the spark lever all the way down, may be simply due to having the spark too far advanced. That is, if the motor develops best power without the spark lever being pulled down to this extreme position. Or, the knock may be due to piston slap, or worn bearings. You do not give us enough information to make it possible for us to give you a definite answer.

It is quite possible that there is piston slap in your engine, and we suggest that you fit new pistons, if there is more than .005 inch clearance, between the cylinders and the pistons.

# Sterling Spark Plugs



## More Power To Your Motor

Sterling Red Brand Spark Plugs in the motor of your pleasure car increase its power and smooth action.

The strong porcelain core and non-warping monel metal electrode of the

Sterling eliminate ordinary spark plug troubles.

Then too, Sterling Red Brand Plugs are separable and easily cleaned of carbon deposits.

*Progressive garage and supply dealers everywhere sell and endorse these plugs*

### THE LOCKWOOD-ASH MOTOR COMPANY

2057 Douglas Street

Jackson, Michigan

(72)

SEPARABLE

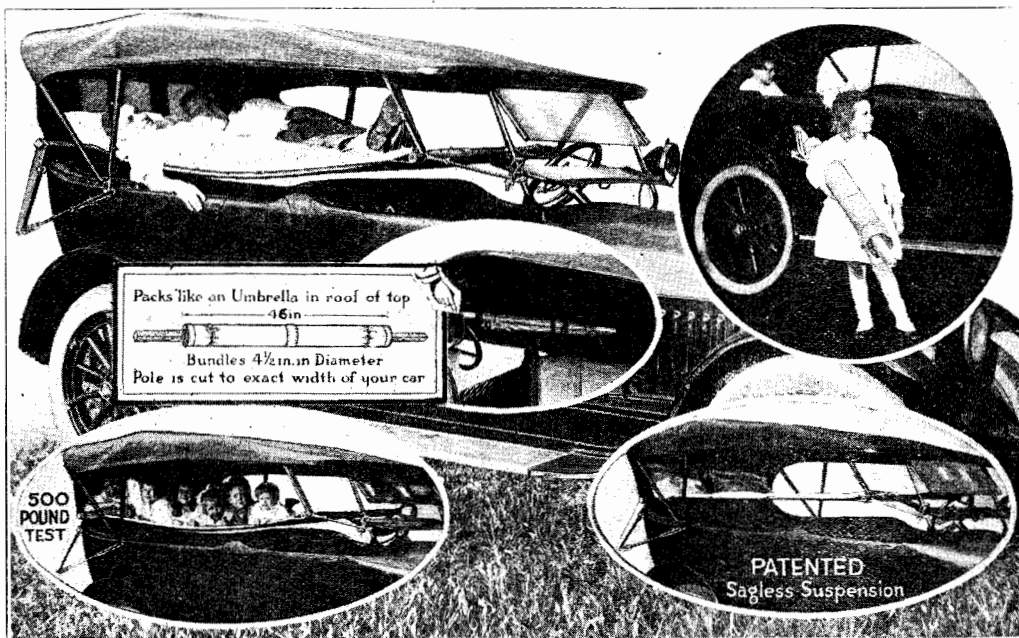


CLEANABLE

When writing advertisers—Just say FORD OWNER and DEALER

# Equipment Review

A monthly department in which manufacturers are given an opportunity to furnish news and views concerning accessories, equipment and ideas for the Ford car.



## A PRACTICAL CAMP BED.

The typical Ford touring fan seldom likes to take time out of his travels for sleep. It happens, however, that the unusual association with fresh air produces eventual fatigue; and from from time to time he must seek slumber. At such a time, it is a mighty handy thing to have a comfortable bed. The A. B. C. Mfg. Co., Kansas City, Mo., has taken this fact into consideration, and have produced a car bed made for touring cars, which is said to make a person almost

drowsy just to behold.

This is a very light outfit, weighing only 7½ pounds, and can easily be packed under the seats. It can be set up inside of five minutes; and does not require the altering of the car, in any way.

This bed is but one of the several touring and camping items manufactured by this Company, which specializes on such products. More complete details will gladly be furnished by the manufacturers upon request to them.

## NEW PRESIDENT OF SCHRADER'S.

M. Charles Schweinert, who entered the employ of A. Schrader's Son, Inc., thirty-four years ago in the capacity of office boy and who has been associated ever since with the growth and development of that concern from a three-story "walk-up" factory at 32 Rose Street, New York to the present seven-story fire-proof building occupying the entire block on Atlantic Avenue and Vanderbilt Avenue, Brooklyn, has been elected President of the Company.

The new President of A. Schrader's Sons, Inc., has long enjoyed a wide popularity among the men who made and who now direct the tire industry. Mr. Schweinert is "M. C. S." to most of them and the same affectionate familiarity marks his relations with the veteran workmen of A. Schrader's Son, who have seen him rise step by step in the management of the firm and have rejoiced for him and with him at every stage of his advancement.

Every improvement brought to the manufacture of tire valves, every saving made in the cost of their manufacture, every widening of their use, have found the new President of A. Schrader's Son, an active contributor thereto. It was due to his untiring energy and long fore-

sight that at no time the rapid increase in the manufacture of automobile tires overtook the output of valves to fit these tires.

The dealers in automobile accessories throughout the country are indebted to Mr. Schweinert for the Schrader sales policy, which is based upon a License Agreement and which is designed to permit the smallest dealer to reap the same profit through his sales as the dealer in large cities. This has resulted in giving to the Schrader products a nation-wide distribution, and has prevented the use of these products in the demoralizing practice of "price-cutting."

## NEWS NOTE.

The Neverfail Carburetor Company, Long Island City, N. Y., manufacturers of Neverfail Carburetors for Fords, announce the recent appointment of the Select Products Sales Corp. of Long Island City as exclusive "Neverfail" distributors for Brooklyn and Long Island.

The Neverfail Carburetor Company, Long Island City, manufacturers of "Neverfail" carburetors for Fords announce the recent appointment of the following district sales managers:



## Equip Your Ford NOW!

ONCE enjoy the perfect riding comfort given by S & S Shock Absorbers on your Ford, and you will regret every day that you have been without them. So install them now and make this season a success from the start.

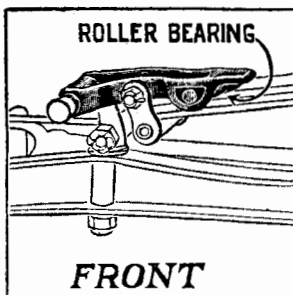
Do not confuse S & S Shock Absorbers with any others. S & S are brand new in design—**and revolutionary in results.** Their principle of leverage regulated to load by roller bearing makes it impossible to transmit a road bump to the car or its passengers. **NO JAR PASSES THE S & S.**

Drive at any speed over the roughest road and you feel only a gentle,

pleasant wave-like motion, no matter how severe the road bumps or how close together. No "buck" in the springs, no "whip"—and absolutely no side-sway.

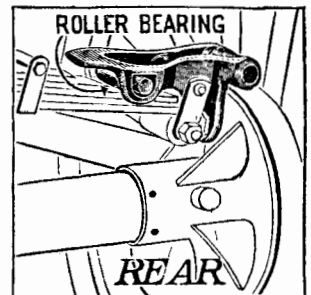
S & S Shock Absorbers displace the spring shackle, and take up at that point ALL jars. They have no springs or plungers to wear or rattle; no small parts to break or need adjustment. They last for the life of the car, and make the car last longer.

If your dealer is not yet equipped to supply you, write us direct and mention your dealer's name. We refund purchase price if S & S Shock Absorbers are not perfectly satisfactory—true to our claims—after 30 days' trial.



FORD DEALERS, S & S Shock Absorbers are the surest, fastest-moving and most profitable accessory proposition in the market. One short demonstration always sells them. Easily attached. Need no attention afterward.

**Retail at  
\$15 a Set  
For All Fords**



### S & S SHOCK ABSORBER CORPORATION

General Offices and Factory: Moline, Ill.

Eastern Sales Office: 1731-1733 Broadway, New York

**DISTRIBUTORS:**

- Jordan Distributing Co., 17 W. 42nd St., New York.
- N. J. Auto Parts Co., 383 Halsey St., Newark, N. J.
- N. E. S. & S. Shock Absorber Co., 141 John St., Bridgeport, Conn., and 41 Columbus Ave., Boston, Mass.
- Burgwin & Norstrom, 1515 I. Street, N. W., Washington, D. C.

- Dunlap Distributing Co., 10 W. 9th St., Kansas City, Mo.
- Western Purchasing Co., 609 Mills Bld., El Paso, Tex.
- Arizona S. & S. Shock Absorber Co., 502 W. Washington St., Phoenix, Ariz.
- M. D. Naylor Co., Salt Lake City, Utah.

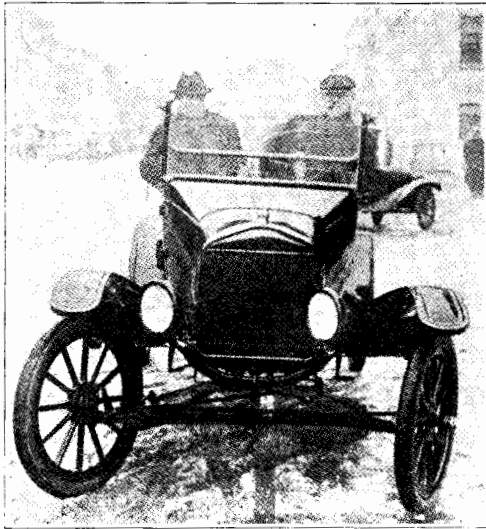


W. L. Banks, Michigan, Ohio, Indiana; Fred W. Engel, Illinois; E. C. Gardner, Minnesota; Deckert Bros., Western N. Y.; T. Cappello, Colorado and Fred J. Mitchell, Utah and Idaho.

This company has established direct factory branches in Detroit and Los Angeles. The former office is in charge of the Frank M. Eldredge Co., and the latter M. J. Seibert.

#### THE AUTO-TURNING HEADLIGHT

Do you remember that night on the dark country road, when in turning to allow room for a passing car, you left the road and slid gracefully into the ditch? The reason it happened was that you did not realize that you were so close to the gulley because the headlight rays being directed straight ahead did not illuminate the road where the wheels suddenly turned. Avoiding such occurrences is just one of the many instances where the Auto-Turning Headlight can prove of unusual value. The Auto-Turning Headlight is a recent inven-



tion, designed for the Ford car and can be attached to a machine without the changing of any of the standard parts or equipment.

In operation the headlights with which the car is equipped are so attached to the brackets that the turning of the steering wheel turns the lights to the proper angle to keep the center of their focus always directly in front of the front wheels. Thus, when turning out for another motor car on the highway, or when turning sharp corners, the driver need not trust to his belief that proper roadway is there when he swings into the darkness. The headlights turn as soon as his wheel does and show him exactly what he is driving into as clearly as they illuminate the straight road.

The Auto-Turning Headlight retails at \$8.00 per set. It is a product of the Auto-Turning Headlight Co., 113 Reed St., Milwaukee, Wis.

#### THE BOOTY CARBURETOR.

The Booty Carburetor is said to be entirely new and original in principle, strikingly simple in construction, and possesses exclusive and distinguishing features radically different from other types of carburetors. It has only one moving part, gives great flexibility in accelerating and idling, and is unaffected by changes and altitude.

In the accompanying sectional view of the Booty Carburetor the principle of operation is clearly illustrated. When the throttle valve is partially open the piston (b) raises and creates an area of opening around cone (c). This opening admits the volume of air required by the opening of throttle and the grooves in fuel metering pin (d), which are very shallow at the top and gradually deepen at the bottom

permit the measurement of the proper proportions of air and fuel at all speeds and loads.

The Booty Carburetor differs from other carburetors in that the velocity of air through the mixing chamber is constant at all speeds of the motor and does not vary from the idling to full load condition. This constant velocity is maintained by the movable venturi which is represented by the bottom of piston (b) and the contour of cone (c). The floating piston maintains a constant vacuum in the carburetor which is very low (approximately one-inch mercury column) thus giving very high volumetric efficiency.

The proportion of air and gas required for perfect carburetion is determined by the shape of the cone and the depth of the tapered grooves in the metering pin, which are very shallow when the piston is in an idling position, but which increase in depth as the metering pin is raised by the piston. As the piston raises the opening around the venturi cone is increased, therefore the shape of the cone and the graduated depth in the metering pin when calibrated, one to correspond with the other, cannot fail to give perfect proportions of air and gas in the motor.

A distinctive feature in the Booty Carburetor is the fact that it has but one adjustment and that is on the instrument board or steering post of the car—right at the driver's finger tips, where he can operate it himself to meet the most varied driving conditions as may be necessary.

The function of this control is to lift the cone (c) which automatically causes piston (b) to raise away to maintain its fixed and constant vacuum. Piston (b) at the same time is raising metering pin (d) which increases the depth of the fuel orifices, enriching the mixture as may be required. It is evident that any desired density of mixture constant throughout the range of the carburetor may be produced by setting the cone.

The raising of the cone is utilized in the same way to create a rich mixture for starting the cold motor instead of choking the air off by the use of a butterfly valve on the air intake.

The Booty Carburetor is universally adapted to give perfect results on all makes and types of motors: Any individual instrument being equally efficient in operation on passenger cars, trucks, tractors, aeroplanes, and even marine and stationary engines. All parts are standard and interchangeable.

#### NEW ENGLAND MILLS INCREASES CAPITAL.

Today the New England Mills Company, 1027-33 W. Van Buren St., Chicago, is one of the country's leading automobile accessory jobbers. The rapid growth of this institution has been wonderful. In almost a breath they jumped from a stock room of 1,100 square feet with \$15,000.00 capital to 10,000 square feet and a \$35,000.00 capital, and now with over 20,000 square feet besides large warehouse space and \$150,000.00 capital.

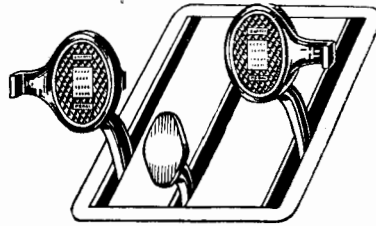
Their operating policy is: "Orders in Today and Out Today." It must be a great satisfaction to the dealer, not only to have his goods shipped the day the order is received, but also to have it correctly billed the same day the order is received, with receipts attached and all the information so that he will know just where to look for his goods and when to expect them.

There is no doubt about their customers being pleased with their monthly catalog, "The Little Salesman." With this catalog, a dealer can keep as well posted on current prices as if he were standing at the counter of the world's greatest market, although he may be a hundred miles off a railroad.

They served over 15,000 dealers last year and are planning to increase this 100% in 1921. The New England Mills Company evidently realizes that this is not always going to be a seller's market, and the amount of "Good Will" and hearty co-operation that they give their customers now will no doubt be the standard the dealer will judge from when dividing his business after things are again normal, and jobbers can be sure it will be in proportion to the "SERVICE" rendered the dealer today.

# SAFETY EXTENSION PEDALS FOR FORDS

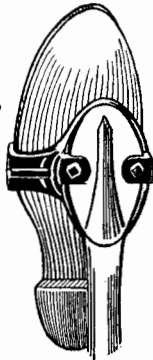
*“The Quick Selling Accessory”*



PATENT PENDING

**“SAFETY”**

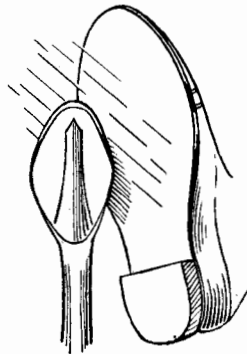
FOOT  
CANNOT  
SLIP



New Way

Insures  
Perfect Control.

Makes Driving  
Safe  
and Pleasant.



Old Way

**“DANGER”**

FOOT CAN  
EASILY SLIP  
AND CAUSE  
ACCIDENT

Why risk accidents and endure discomfort when both may be avoided by equipping the Ford “brake” and “clutch” with a pair of Safety Extension Pedals.

They prevent “killing” the motor in congested places and make driving a genuine pleasure. The safety and comfort derived from them make them an absolute necessity to Ford cars. That is why they sell so quick.

The cut shows how well they protect the foot from slipping.

**Price \$1.25 a pair**

## Automotive Mfg. Co.

Clark and Fourteenth Sts.

Racine, Wis.

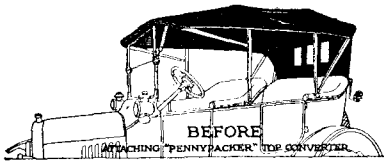
### RELIABLE SHOP EQUIPMENT.

Why do some repair shops make real money while others struggle to make a living? In nearly every case the answer is that the successful shop has equipment which makes for success in saving time and cutting costs. Such equipment is that manufactured by the Tribune Engineering Co., Owego, N. Y. Space does not permit an exposition of the complete line of equipment which this company offers, but it may be said that practically every shop need is well met by the many reliable tools and fixtures manufactured by this company. Among these is the Cylinder Reamer for Ford motors hardened and ground to assure long wear and equipped with pilots which greatly facilitates the work. After the locating plate is layed on the cylinder and before it is bolted down the forward pilot is inserted into the cylinder, which centers the cutting blade. Then the locating plate is bolted down and acts as a guide, as the cutting blades fit into the locating plate. This furnishes a simple and efficient tool.

Just as practical is the Tribune Babbitting Jig, Babbitting Fixture, Piston Pin Bushing Reamer and the new Main Bearing Aligning Reamer with Spiral Flutes. Any shop man would do well to write to the Tribune Co. for complete information on this line of practical equipment.

### THE PENNYPACKER TOP CONVERTER FOR FORD CARS.

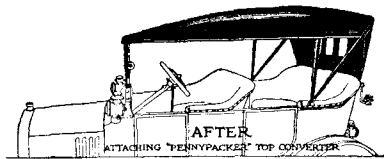
Every Ford Owner should know about the new Pennypacker Top Converter recently put on the market by the Pennypacker Mfg. Co. of Chicago, Illinois.



It is by far the greatest improvement yet seen for modernizing the appearance of the Ford car, giving it the same detail of finished appearance found in the more expensive cars.

Eliminating the unsightly front bows and tension straps that obstruct the vision, hinder passage through the front door and interfere with the freedom of the elbows, the Pennypacker Top Converter turns the standard Ford top into a neat, and snappy one-man top that may be put up or down by one person from the inside of the car.

Utilizing the cover material of the old top, it stretches the fabric neatly and snugly over the framework, eliminating the sag and wrinkles that tend to mar the appearance of the whole car.



It may be quickly installed by any car owner with a hack saw and screw driver.

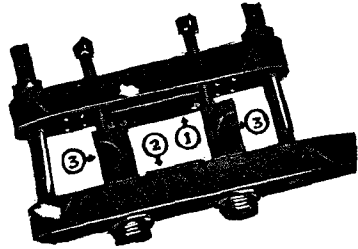
Dealers, for further information and trade discounts, write the Pennypacker Mfg. Co., 1001 Michigan Ave., Chicago, Illinois.

### THE ATLAS ABRASIVE TOOL.

No matter how conscientious the garageman may be, he often hesitates to tell a car owner the truth about motor knocks that are caused by crank pins being worn oval. Only a few garages have a lathe large enough to handle a crankshaft and even if they are fortunate

enough to have such equipment, the job of truing up bearings and pins is a mighty nice task, even though the operator be an experienced machinist.

If time is of no value and a man has unlimited patience and muscle, he can lap a crank pin round and true—eventually. But such a job, finished to stand the test of a good pair of micrometers often costs as much as a new crankshaft.



Every garageman can now own a \$10.00 tool that will allow him to handle crankshaft grinding jobs in a better fashion than they have ever been handled before. He can true up a pin in less than one hour and do a better job than nine out of ten machine shops can do in any length of time. And better yet, he can, if he so desires, do the work without removing the crankshaft from the crankcase.

The Atlas Abrasive Tool, a product of the Atlas Mfg. Co., 705 N. Canal St., Pittsburgh, Pa., is a simple, compact little fellow that is made especially for this formerly undesirable job. The Atlas Tool has but one cutter, cuts in one direction only, and is adjustable by the same sense of "feel" that you use when operating a micrometer.

The working parts of the Atlas Tool are as follows:

1. Hardened and tempered steel-cutter. Cuts in one direction only.
2. Bronze track bearings. Cannot cut ring in pin like hard steel nor freeze against pin from friction like soft steel.
3. Adjustable Abutment Blocks, which slip easily up against the face of the crank pin and hold the cutter and track in their power working place.

The Atlas Tool will true up a hard case within one hour's time and do the work accurately within 1-1000th of an inch. New cutters which are good for from 10 to 20 jobs may be purchased for 30 cents each. The Atlas requires no extra equipment, no special tools—for the job of crankshaft grinding, it is its own little machine shop and for that reason it is becoming standard equipment in the kits of garagemen throughout the country.

### A RELIABLE FIRE EXTINGUISHER.

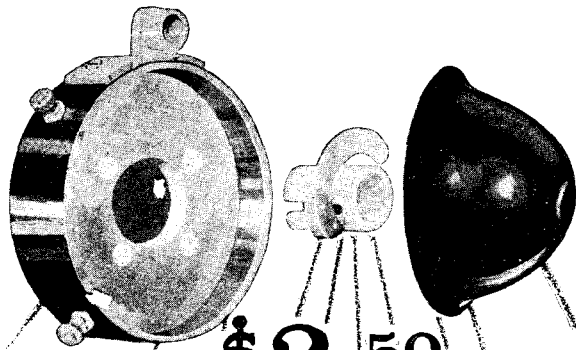
The motorist who ventures forth on a trip without any satisfactory fire protection is either very interpid or equally foolish. In proof that there are many who cannot be classified thus the Boyce-Veeder Corp. Long Island City, New York, reports heavy sales for the practical fire extinguisher manufactured by this company.

The "Boyce" is an automatic chemical-sprinkler system. Once installed under the hood (where 95% of motor car fires originate), a fire can never become serious. By creating the heat that sets the "Boyce" in operation, a blaze destroys itself.

A Fire is no sooner started than the automatic fuse melts off, and a fan-shaped torrent of chemical is sprayed over the entire motor. In fifteen seconds the fire is out. An overheated motor cannot melt the fuse—only an actual blaze will put the instrument into operation. In case of fire in any other part of the car, the "Boyce" can be easily slipped from its bracket and operated by hand.

The Ford model can be purchased for \$6.00.

Two  
Timers



In One

\$2.50

# THE RANDALL TIMER

## FOR FORD CARS

*Jobbers and Dealers:*

**AT LAST—  
A TIMER THAT WILL LAST!**

The RANDALL has two commutator surfaces. One side alone will outwear any Timer on the market. When after long usage, the front side is worn, turn it over and use the reverse side. You have two timers for the price of one.

The working surface faces forward, and away from the muck and grease. The dust cap covers the surface. You will always have a clean contact with no possibility of having the segments caked with grease and dirt.

Mr. Jobber, we have a proposition that will interest you. Write for it, now.

Mr. Dealer, get a supply from your jobber, now. If he cannot supply you, write us.

Very truly yours,

**DUFF DISTRIBUTING CO., Inc.**

United States Express Bldg.  
NEW YORK CITY

IT WORKS  
ON  
BOTH SIDES

### NIEHOFF MAG-CHARGER

The Niehoff Mag-Charger has been specially designed to fulfill the long felt want for recharging Ford Magnets and burning out shorts in the Ford magneto case. It is said that this is accomplished very successfully and it requires but a few minutes to do the recharging. An ordinary mechanic can operate it successfully.



The Niehoff Ford Recharging apparatus is a complete electrical testing outfit in addition to that of recharging magnets and burning out shorts. The illustration shows clearly the attachments for testing Ford coil units, electric bulbs and spark plugs. This equipment enables the average Ford Service Station to give quick electrical service with a definite determination which will appeal to the motorist.

The entire equipment including cables with terminals, list price \$60.00. It is a product of Paul G. Niehoff & Co., 323 E. Ohio St., Chicago, Ill.

### STOPS WINDOW RATTLE

Rattling windows on Ford closed cars are done away with by a little device called the Standard Anti-Rattler, Standard Sales Co., L. C. Smith Bldg., Seattle, Wash., exclusive distributors. It consists of a setscrew which mounts on the sill and wears on the felt sash, preventing any possibility of breaking the glass. It not only prevents rattling but serves to hold the window in any desired position. A set of twelve, selling at \$6.00 completely equips the Ford Sedan, two to the window.

It is of brass heavily nickled and polished and is of handsome appearance, in keeping with the car. Also furnished for other makes of closed cars.

### PRESS-O' VULCANIZING OUTFIT

Who wants a splendid vulcanizing outfit?

The Ackerman Brothers Co., Inc., 95 Liberty Street, New York City, has this to say about their outfit which includes one Press-O' Clamp, Sand Paper and 12 "Match-less" Patches and Heat Units:

"The Press-O' Clamp, the invention of Mr. William A. Zeidler, is unique and novel in its construction as well as in the performance of its function.

"It will not give too much pressure to the patch, which frequently happens where a thumb screw is used, as too much pressure will render the patch so thin in the vulcanizing process that it will result in another leak. This is never possible with the Press-O' Clamp, as the pressure given on the patch is absolutely correct for vulcanizing and the full thickness of the patch is retained at all times, this being essential in order to get a firm and solid patch over the puncture or gash in the tube.

"With the "Match-less" Patch and Heat Unit, you get "A Patch Without A Match," because all that is necessary is to scratch the ignition spot (invention of Mr. Harry A. Sheetz, Jr.) with a pin, knife or any abrasive article available. This ignites the fuel. After this burns out, remove the clamp and the job is done. The "Match-less" Patches and Heat Units can also be used with any Vulcanizer.

"No automobile owner or driver can afford to be without one of these outfits in their equipment, as it is a source of satisfaction to know that once a "Match-Less" patch is put on with the Press-O' Clamp, it will not come off. Your patch is thoroughly vulcanized and guaranteed to hold any pressure after being placed back in the shoe.

"The use and operation of the Press-O' Clamp is so simple that a child can operate it.

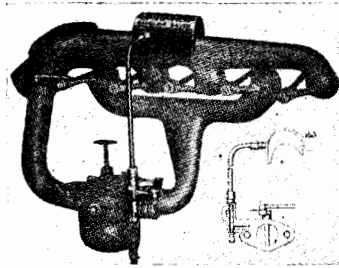
"Price of complete Outfit, \$1.75. "Match-less" Patches and Heat Units only, per box of 12, \$1.00.

### SAVE-ALL CARBURETOR ATTACHMENT.

Here's a new device which will be welcomed by Ford owners in these days of high priced gasoline. It is an auxiliary attachment for the regular Kingston and Holley Carburetors which are standard equipment on Ford cars. It is claimed this device will give 6 to 11 more miles per gallon, increase the power and speed of the motor and prevent 90 per cent of the usual carbon.

Save-All is not a liquid, tablet or chemical, but a scientific device that utilizes the principle of hot air to volatilize the gasoline mixture. It can be attached in ten minutes without changing the motor or boring of holes. It is attached between the carburetor and intake manifold and is connected to the exhaust by means of a hot air stove. Its action is automatic and positive and needs no attention after it is installed.

Exhaustive tests covering the mechanical as well as the hot air theory on which Save-All is based have been made by the manufacturers.



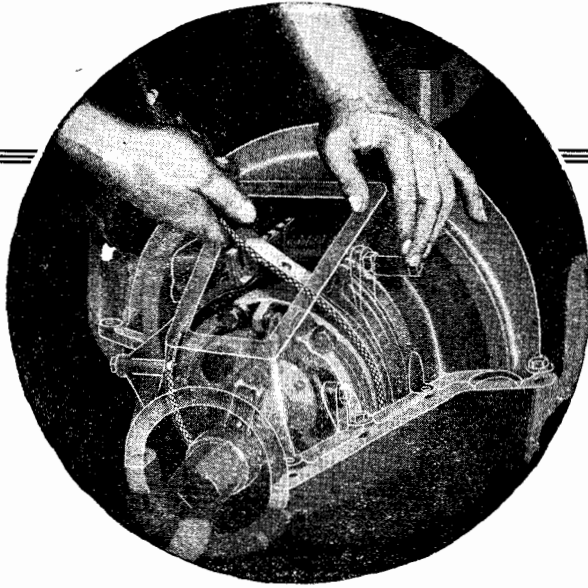
Various road tests have proved that it saves at least 25 per cent in gasoline consumption. A one gallon auxiliary tank was attached to a Ford car and a test was made with and without Save-All attached. It was found that the car made 17 miles without Save-All attached and 24 with it—an increase of seven miles to the one gallon.

A test was made for power over steep hills, through mud and sand and proved that it increased the power about 33 1/4 per cent. Another test covering six months proved that Save-All practically eliminates all carbon deposits and keeps the spark plugs absolutely clean. From a business standpoint, Save-All is said to cost the user nothing. He saves enough money in two months of average driving to pay for it.

The Saveall Company, 3716 North Clark St., Chicago, are the manufacturers of this device and report a tremendous business.

### A CASE WATER PUMP

The value of a circulating pump in preventing over-heating in summer and freezing in winter has been previously discussed in this magazine. In this connection car owners and garage men should be interested in the Case Special Circulating Pump, manufactured by Case Pump Co., 2575 North High St., Columbus, Ohio. It is claimed for this product that it prevents over-heating in summer and freezing in winter; that it reduces wear on the motor, saves gasoline and lubricating oil and adds from 25 to 50 per cent more power. It weighs only five pounds and has no extra gears or pulleys and the regular Ford fan belt runs the fan and pump. It is sold complete, with extra hose and clamps and full instructions at a cost of \$12.00.



## Here is an economy that will interest Ford owners

The customary half day's labor in relining Ford transmissions is reduced to 15 or 20 minutes by the use of Raydex Reliners. This means a big saving in time, trouble and money.

With Raydex Reliners once installed, Ford transmission relining becomes a quick, simple, economical operation. No more having to take down transmission cover—disconnect exhaust pipe—remove self-starter, electrical connections, gears, etc.

With Raydex Reliners you simply (1) Remove handplate of transmission cover, (2) Pull out pedal, (3) Slip Ray-

dex Reliner between Ford band and drum, (4) Secure by reinserting pedal, and you are again ready to go. Bands can be relined singly if all three do not need relining at once.

No danger of breaking gasket oil seal, for the transmission cover is not disturbed. None of the original Ford equipment is disturbed or removed. The old method of relining can be reverted to at any time, if desired.

Ask your dealer for Raydex Reliners. If he is not yet carrying them, send us his name and we will see that you are supplied.

**Raydex Manufacturing Co., Brackenridge, Pa.**

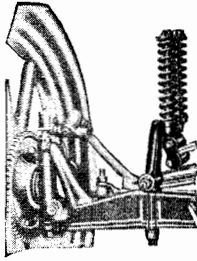
Sales Dept.: Charles F. U. Kelly, Inc., 1834 Broadway, New York City



When writing advertisers—Just say FORD OWNER and DEALER

**LUXRY SHOCK ABSORBERS.**

As another means of smoothing rough road-ways come Luxry Double Spring Shock Absorbers which appear to be quite practical. These consist of double spring devices which are easily and quickly attached to both front and rear springs, all that is required for the operation



being a wrench. In these springs it is said that the slightest road jar is lost, and the car rides as smoothly on rough roads as on a pavement. The double spring feature is said to assure double resiliency and strength. These shock absorbers sell for \$18.00 for a set of four. They are the product of The Specialty Device Co. 106 West 3rd St., Cincinnati, Ohio.

**NEW KOREX GREASE RETAINER.**

If personnel is any assurance of the success of an organization, the new Korex Mfg. Co. of San Francisco, incorporated Dec. 3rd, 1919, under California laws, is scheduled for brilliant achievements.

W. F. Fowler, President and founder of the company served with the Westinghouse Company for eighteen years, most of that time as District Manager at Pittsburgh.

W. B. McCain, Treasurer, also from Pittsburgh, was for many years prominently identified with the American Water Works and Guarantee Co. of that city; and, in addition to his present relations with the Korex Co. is Vice President of the Superior California Farm Lands Co. of Willows.

O. F. Fowler, Sales Manager, and J. M. Fowler, Secretary, both held responsible positions with the Corona Typewriter Co. for several years.

The host of friends these men have through the East and Middle West will be glad to hear the report of the Korex Co. that the new enterprise is already booming; the company rapidly approaching national scope in its operations; and its product, the new Korex grease retainer for Ford cars, evoking spontaneous and enthusiastic response wherever exhibited. The company is located at 426 Larkin St., San Francisco.

**A GOVERNOR FOR THE FORDSON.**

The results of an over-heated motor are too well known to require outlining here. These results are just as evident with the Fordson tractor as with the Ford car. A means of preventing engine racing and consequent over-heating of the Fordson tractor is found in the "Fan-Mount" Governor.

The "Fan Mount" governor is substantially built, has no parts to wear since friction is practically eliminated in its simple design; there are no parts to oil; no valves to get out of adjustment, and no fine delicate parts to bend or cause you trouble. You simply install the "Fan Mount" according to the simple directions that accompany each governor and then forget it. It will always be in its place ready to serve you when needed.

This is a product of the Paramount Manufacturing Works, Rohrerstown, Pa.

**THE ADVANCE MOTOR RECTIFIER.**

A new product which is said to be winning favor is the Advance Motor Rectifier marketed by the Advance Electric Co., 131 East 6th St., Los Angeles, Calif. This is said to be a more

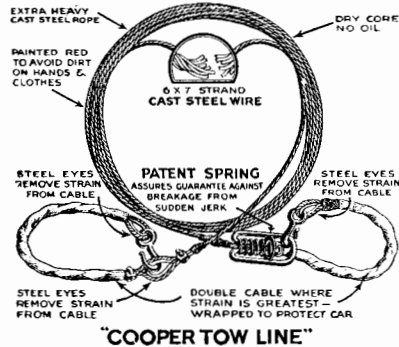
efficient, simple and economical means of re-charging storage batteries.

The Advance Motor-Rectifier consists of a one-eighth horse-power motor, "special type," with an extended shaft, upon which is mounted three collector rings and two special commutators (as a unit), which absorbs the alternating current from a transformer, as a three-wire circuit, and directly converts the A. C. current into a direct current to two separately controlled circuits, in graduated voltages of twenty-two-volt steps to 110 volts and normal capacity of 1 K. W. per circuit, or 10 Amps. 110 volts. Total output. Direct current, 2 K. W.

**A NEW COOPER PRODUCT.**

The Cooper Mfg. Co., Marshalltown, Iowa, is already well known for dependable accessories which have met success. The newest product of this company is the Breakless Cooper Two Line.

The Jerk-Absorbing Spring is a patented feature found only on the Cooper Tow Line. It dissipates the shock—eliminates breaking the line—and increases the pulling power. Steel



"COOPER TOW LINE"

Eyes are used to prevent contact between hooks and strands—keeps strain from cable. The loops for attaching to car are wrapped to protect scratching and marring running gear. Also they are double cable to avoid breaking at this point where strain is greatest. The Cable is made of extra heavy cast steel wire, 6x7 strand dry core, emits no oil, and is painted (red) to facilitate handling without soiling hands or clothing, and prevent rust.

The Cooper Tow Line lists at \$8.00.

**SENG ELECTRIC SWITCH.**

Quite an interest is being shown in the Seng Electric Switch, manufactured by the Seng Auto Device Co., at 1452 Dayton Street, Chicago. Their new switch for Ford cars makes it easy for drivers of cars to sound their horn without taking a hand off the steering wheel. In times of emergency this has been found to be a great advantage to drivers.

The Seng Switch can be used with either storage battery or magneto current, and its simple construction and manner of attachment to the steering wheel, makes it a device that is absolutely dependable at all times. The Seng Switch is also made for all makes of cars.

The Seng Switch for Ford cars sells for \$3.50; for other cars, \$5.00.

**REGARDING RAYMOND RIMS.**

Raymond Rims manufactured by The Raymond Rim & Wheel Co., Jackson, Michigan, are said to be meeting with considerable favor in the field. With these rims it is possible to change a clincher or straightside tire without the aid of one or several tire tools, in a moment's time. The use of these rims greatly

The poppet valves of your auto or truck engine are vital parts. Operating unseen makes them none the less important.

The engine is the heart of your machine and its correct valvular action is as necessary to its well-being as is the functioning of the valve of your heart.

Not only may the valves become diseased but the surface against which they seat is subject to disorders—allowing slip-page of energy—slowing up of the machine.

To have your motor equipped with valves immune to disease would be a happy arrangement. Do you not think so?

The public generally does not know that the engine valves are liable to a part or all of the following faults:

Pitting, warping, cracking, burning, leaking—any one of which faults sets up an erosion or destructive action on the seats, which are unreplaceable.

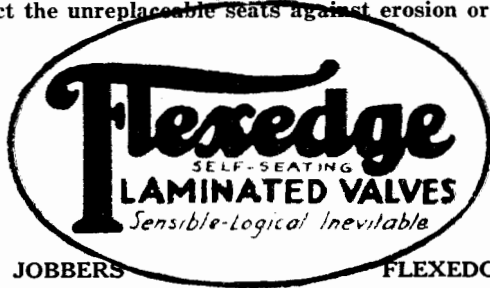
Stop valve leakage and you save gas, maintain compression and the smooth action of your motor.

Evade valve and valve seat erosion and you save cost of regrinding.

Burning and cracking is destructive and necessitates replacement of parts.

Flexedge valves are the solution—they will not pit, warp, leak, crack nor need regrinding.

Flexedge valves do not fall a prey to disorders, common or otherwise, and they protect the unreplaceable seats against erosion or destruction.



**\$4.80**

per set for Ford valves

**FLEXEDGE JOBBERS**

**FLEXEDGE JOBBERS**

- Herring Motor Co., Des Moines, Ia.
- The Gibson Co., Indianapolis, Ind.
- Motor & Machinists' Supply Co., Kansas City, Mo.
- Reinhard Bros., Inc., Minneapolis, Minn.
- Repas Automobile Co., Waterloo, Ia.
- Chicago Automobile Supply House, Chicago
- Motor Car Supply Co., Chicago
- Western Motor Supply Co., Milwaukee, Wis.

**Chanslor & Lyon Company**

- |               |           |
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| San Francisco | Spokane   |
| Seattle       | San Diego |
| Los Angeles   | Portland  |
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**The Beckley Ralston Company**

- |   |               |
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| Chicago                                 | San Francisco |
| The Automobile Supply Co., Detroit      |               |
| Electric Appliance Co., Chicago         |               |
| The Auto Equipment Co., Denver          |               |
| Nicols, Dean & Gregg, St. Paul          |               |
| Minneapolis Iron Store Co., Minneapolis |               |

**Kopac Brothers**

- |   |                 |
|---|-----------------|
| Omaha, Nebr.                                  | Columbus, Nebr. |
| Norfolk, Nebr.                                | Schuyler, Nebr. |
| David City, Nebr.                             |                 |
| Continental Auto Supply Co., Chicago          |                 |
| National Auto Supply Co., Chicago             |                 |
| Harbison & Gathright, Louisville, Ky.         |                 |
| Campbell Iron Co., St. Louis, Mo.             |                 |
| Universal Accessories Co., Indianapolis, Ind. |                 |
| The M. & M. Co., Cleveland, O.                |                 |

MANUFACTURED FOR ALL CARS BY THE

**SELF-SEATING VALVE COMPANY**

**CHICAGO**

**706-8 Townsend Street**

**ILLINOIS**

When writing advertisers—Just say FORD OWNER and DEALER



reduces the trouble and annoyance of tire changing, which is a welcome innovation to any motorist.

The materials entering into the building of Raymond Rims, combined with the thorough workmanship involved in the process of manufacturing, insure a surplus of strength far in advance of actual requirements.

Complete details regarding Raymond Rims may be had from the manufacturers.

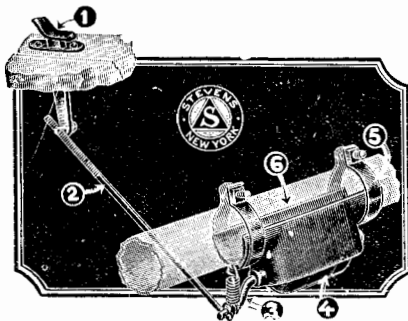
#### AN INTERESTING BOOK.

The Norman W. Henley Publishing Co., 2-4 and 6 West 45th St., New York City, has recently issued a new revised and enlarged edition of "Sloane's Electrician's Handy Book." This is a really splendid volume of more than 800 pages and is profusely illustrated with clear diagrams and engravings which add greatly to the lucid text. In this volume intricate technical problems are handled in such a way as to simplify them and the wide diversity of subjects are handled in such careful detail that the book is a most valuable asset for anyone interested in things electrical. The book sells at the nominal price of \$4.00.

#### STEVENS SNAP EXHAUST VALVE.

Stevens & Co., 375 Broadway, New York City, need no introduction to the trade as manufacturers of dependable automotive equipment. However, there is one of their items, which being new may not be known to the automotive field. It is the Snap Exhaust Relief Valve for Fords.

A simple, positive acting pedal, with direct control of extra large damper, makes SNAP a



more quick, sure, efficient cut-out and motor-tester. It's new, patented features:

- 1) Simply-operated pedal snaps to right or left instantly at touch of foot, opening and closing damper. No hooks, no catches.
- 2) Adjustable steel rod directly controls (3) eccentric damper spring. No chain, no pulley.
- 4) Extra large, lengthwise damper does not obstruct pipe; gives completest relief.
- 5) Steel bands hold cut-out more securely, without mutilating pipe.
- 6) SNAP requires only a V-shape cut in pipe. No weakening or sagging of pipe.

**SNAP** is easily applied. Made of best material. Complete for installing \$1.70.

#### OILPROOF AND WATER-PROOF LEATHER.

A treatment for leather that makes it oil tight and proof against the deteriorating action of mud and water has been developed by the Woodworth Manufacturing Corporation of Niagara Falls, N. Y., for use in the Lubricating Spring Covers which they make for the leaf springs of automobiles.

Leather treated by this process is especially adapted not only for Spring Covers but for any other leather parts which are subjected to the action of mud, water, grease or oil. A number of the leading automobile manufacturers have adopted this leather for drag link boots, universal joint covers and other parts, having found in tests that it does not soak up the oil or grease and does not become brittle or rotten with age and the action of the elements.

#### "BURNING-IN" FORD BEARINGS.

By K. R. Wilson.

The Burning-In methods of fitting FORD bearings have been only partially successful in most of the smaller shops, where they do not rebabbit each and every block. The larger shops doing a much larger volume of business and having more elaborate equipment insist on Rebabbiting every job. This insures perfect alignment of bearings when properly bored out. However, this operation is not necessary on more than 25% of the overhaul jobs, the bearings being still serviceable and in good condition. After removing the glazed surface and leveling up all three bearings so that they are in perfect alignment you can then burn in by the usual method and know that your crank shaft is running absolutely true.

This leveling operation can be done by old-fashioned methods, like hand scraping which will require several hours of hand fitting, or can be accomplished with a self-aligning main bearing reamer having pilots nearly as large as the cutters to insure perfect alignment. It is necessary that the main bearing reamers be full diameter throughout to insure rigidity and prevent any possibility of springing away from the bearing to be reamed. After being reamed you can then use reamer for a "SPOTTING-IN BAR" using Prussian blue, etc.

WHAT HAPPENS IF YOUR BEARINGS ARE NOT IN PERFECT ALIGNMENT? Ford crank shafts will spring down several thousandths of an inch with the pressure of your hand, so that if you use an old crank shaft for Spotting-in it may appear to be touching on all three bearings because you are pushing down on the shaft to make it run, while with a regular Spotting-in-bar you will notice that it will usually not touch the center bearings, this will prove conclusively that your bearings are not on a perfect level.

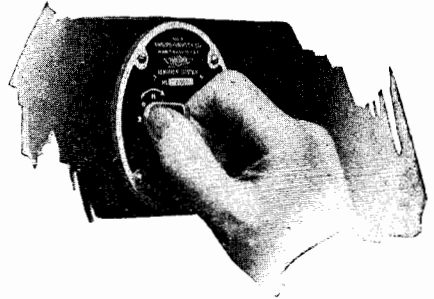
You have often noticed Motors partially assembled on which the magneto field coil and fly wheel assembly rub, or nearly so on the lower side while on the opposite side the gap is twice as large as it should be. This is nearly always due to the center bearing being lower than the others, and when engine is running at high speeds the fly wheel having a certain amount of Gyroscopic effect will assume one direction of rotation, and create a great amount of pressure on the center bearings and shaft itself, often resulting in burned-out bearings or a broken crankshaft. Repair shops equipped with the best labor saving tools often save their entire cost on one job.

#### CORRECTING AN ERROR.

In the May issue of FORDOWNER AND DEALER appeared advertising for the International Metal Manufacturing Company, Wayne Ave. and Berkeley St., Philadelphia. One of the items advertised was the Yankee Tire Holder and Bumper manufactured by this company and in which the price was quoted as \$7.50. This is a typographical error and the price should be \$12.00. The error has resulted in many inquiries being received by the manufacturer which point that a discrepancy must exist for the reason that the printed price does not agree with the market price. Also, this typographical inaccuracy was received with considerable astonishment by former purchasers of the Yankee Tire Holder and Bumper, who because of the thorough satisfaction which this reliable item of equipment had given, had considered that the correct price of \$12.00 was by no means an excessive charge. We take this means of acknowledging the error which occurred in our composing room and to say that the Yankee Tire Holder and Bumper is a really worth while product selling at a fair price—\$12.00.

# SPEED

**Speed to Satisfy The Most Daring Wish Is The Reward Of The Ford Owner Who Installs Philbrin Duplex Ignition.**



You Ford owners need no longer envy the speed-thrills experienced by the owners of high priced cars. When you install the Philbrin Duplex Ignition that we have devised for the Ford motor, and adjust your carburetor for a lean mixture, you will learn what this remarkable engine can furnish in the way of an exciting dash down the level stretches, or a smooth, easy pull up the steep grades.

The intense, rending spark produced by the Philbrin contact maker and condenser, tears violently into the mixture as a spark should. The result is complete and instantaneous combustion of the compressed gas: giving a new conception of speed, power, flexibility and economy.

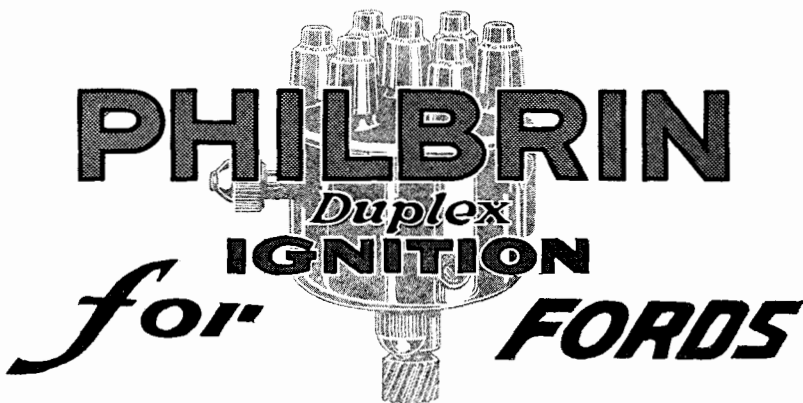
And the Duplex feature provides absolute insurance against ignition failure, as you have two independent systems to draw upon. The second or High Frequency system feeds a veritable torrent of sparks into the firing chamber at each power stroke, and is used for cold

A turn of the Philbrin Duplex Switch to "H" throws on the High Frequency system—sending a teeming shower of sparks into each cylinder in regular firing order. An emergency system of great value.

weather starting, difficult hill climbing (without speed change), or to overcome faulty carburetion or bad oil conditions. This system insures against all possibility of plug fouling.

Philbrin Duplex Ignition is easily installed in place of the regular Ford equipment. Additional information will be mailed upon request.

**DEALERS:** We have a splendid sales proposition for your consideration. Write for details.



**PHILBRIN**

*Duplex*

**IGNITION**

*for*

**FORDS**

**Philips-Brinton Company**

**511 S. Broad St., Kennett Sq., Pa.**

When writing advertisers—Just say FORD OWNER and DEALER




## “Carbon Brush” Timers For Ford Cars, Trucks and Tractors Out In Front

Zenite Timers are **right there** as you enter your favorite accessory dealer's store. They are “out in front” thru Zenite reputation and demand for Zenite quality products.

The Special construction of the Zenite Timer assures a hot spark at all speeds—putting your car in the lead all the time. It completely eliminates hard starting, unequal power, misfiring or knocking.

Ford drivers are putting Zenite Timers on their cars,—recognizing in it the standard replacement timer.

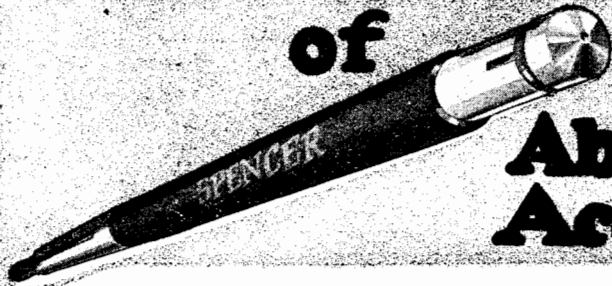
The unusual popularity of Zenite Timers has made the demand greater than production. Dealers who have placed orders will be taken care of as quickly as possible and arrangements are going forward rapidly for increased production.

**ZENITE METAL COMPANY**  
Manufacturers Indianapolis, Ind.

**WALTER ECKHOUSE & CO., Distributors**  
616-622 S. Michigan Blvd., Chicago, Ill.

# Machined to CENTERS

is Your assurance  
of



**Absolute  
Accuracy**

## Your Jobber Can Give You Prompt Delivery on SPENCER Guaranteed Axle Shafts for Ford Cars

Spencer Axle Shafts, in fact, every Spencer replacement part, is **GUARANTEED TO BE AT LEAST AS GOOD AS THE PART IT REPLACES.**

The extra manufacturing care that makes Spencer **guaranteed quality** possible, is not at the jobber's or dealer's expense. It results from factory efficiency—operation on a large scale—modern equipment.

**MR. DEALER:** Your jobber is prepared right now to give you prompt service on Spencer Guaranteed Axle Shafts for Fords. **SEND HIM YOUR ORDERS AND BE SURE TO SPECIFY "SPENCER."**

*The Spencer line of guaranteed replacement parts for Fords includes:*

Axles and Drive Shafts

Steering Wheels

Connecting Rods

Gilliam Take Down Taper Roller Bearings for touring cars

Radius Rods

and Ford 1 ton trucks

Fans

Mufflers

## THE SPENCER METAL PRODUCTS COMPANY SPENCER, OHIO

616 S. Michigan Ave., Chicago

16-24 W. 61st St., New York

*Spencer Quality*

*Costs You No More*



When writing advertisers—Just say FORD OWNER and DEALER

### AN ECONOMICAL CAR CLEANER.

Elsewhere in this issue is printed the advertisement of the National Soap and Products Co., Inc., 257 Eighth St., Milwaukee, Wis. This ad introduces to those motorists and tradesmen who may not have as yet become acquainted with the product, Amber Brand Pure Linseed Oil Soap, a car cleaner which surely appears to be an economical and satisfactory cleaning agent. It is a fact that if owners would use proper care in the selection of automobile cleaners 60% of the cost of repainting could be saved.



As a matter of fact most soaps are unfit for this purpose, as in order to cheapen them they are made of inferior materials with insufficient care. Many so-called soaps or cleaners contain a high percentage of alkali which is injurious to painted or varnished surfaces, leaving them dull and cloudy, and promoting the trouble they are supposed to cure. These soaps are mostly deficient in the pure soap element, so important to perfect cleansing, which is replaced by cheap fillers, such as rosin, silicate of soda and often containing gritty substances which mar the finish.

Amber Brand Pure Linseed Soap is made only from pure all linseed oil and contains no animal fats or injurious elements. While it cleans, it also preserves the car surface and goes far towards reducing the number of times which the car needs to be repainted. Complete details regarding this product may be had from the manufacturer.

### A PRACTICAL TIRE CARRIER.

The Laclede Auto Devices Co., 1626 Olive St., St. Louis, Mo., make the following announcement: We are putting on the market a real tire carrier for Ford open cars; not just another carrier to add to the dozens already on the market, but an entirely new carrier, differing radically from any now in use; employing a new principle and offering such advantages that we have had users of other carriers eagerly discarding theirs for our device.

We have the very simplest of carriers. It is a side carrier, practically invisible, easily installed, and holds the tire and rim absolutely steadfast, free from all vibration. The cost is \$5.00, a low price for an all bronze and brass carrier with lock.

Full information may be had by writing the manufacturer.

### EVERYTHING FOR THE SHOP.

A new organization enters Automotive Equipment field. The Dearborn Equipment Co., Factory and General Office, Kalamazoo, Michigan, organized and incorporated under the State Law of Michigan for \$100,000, are located in a new and modern factory fully equipped with modern machinery and manufacturing a full line of repair equipment, including many new and improved features.

One of the interesting items of this Company is the Ford and Fordson Burning-In and Running-In Machine. It is claimed that this requires a surprisingly small amount of power to operate and that it permits of rapid and accurate work. Another item is the motor stand

shown herewith and which has many practical features of saving for the shop. The entire line of tools and equipment manufactured by this Company covers practically every shop need. Each item is well made and its construction the result of study by technical men who know the requirements of an up-to-date shop. The Dearborn Equipment Co., has prepared a complete catalog containing descriptive matter and prices which will be sent upon request. An attractive proposition has recently been perfected for which jobbers and distributors are invited to send.

### LAUGH AT COST OF GAS.

"Laugh at the high price of gasoline" is the advice offered by the Guaranty Motors Co., Cambridge, Mass. Most readers cannot quite see the joke in the present cost of gas until they study the suggestion of the Guaranty Spark Intensifier, which is guaranteed to save 25 per cent of the gasoline used. This statement alone should be sufficient to cause car owners and dealers to wish to investigate this device, which sells for \$1.00.



Other features of interest are that Guaranty Spark Intensifier shows how each cylinder is firing, eliminates ignition and short circuits, assures a hot spark in the cylinders, makes old spark plugs fire like new even if the porcelain breaks, and promotes easier starting.

The Guaranty Motors Co., has already received a host of inquiries and orders from jobbers and retailers which would seem to indicate that the car owner recognizes this product as really worthy. It is advertised elsewhere in this issue.

The teacher was attempting to illustrate the word perseverance, and was having some job.

As a sort of last hope, she started once more.

"What is it boys," she said, "that overcomes any obstacles, even to the very steepest of the grades and hills?"

Little Ikey got up, and on being asked, he replied: "Teacher, there ain't no such car on the market."

# The Classi-Body and Equipment for Fords



From this to THIS



YOUR CAR

### TWO MODELS

The **Touring** model carries five passengers with surplus room. The luxury of big space is merely one mark of its elegance and distinction.

The **Roadster** is a cozy one-seater for two passengers. A big rear compartment for luggage; a low-hung, racy body, and an air of ultra modern refinement make it a great show car.

## It's a Real Car Now!

### A TREMENDOUS BUSINESS IN FORD REPLACEMENTS

About 4,000,000 Ford cars are today somewhere upon the roads of America. Their engines and chassis are as good as gold. Their bodies are wearing out.

We offer here two new, modernly equipped bodies, Touring and Roadster types, which will replace the old bodies and equipment upon thousands of Ford chassis.

Everyone who has seen them has emphatically declared that the new Classi-Body and Equipment makes an old Ford look like a new fifteen hundred dollar car.

### EXPERIENCED MANUFACTURERS

For 14 years we have built cars on contract for Chandler, Chalmers, Saxon and other makes of high grade cars. Now we have built a new plant and have turned our entire equipment and resources to making our own Classi-Bodys.

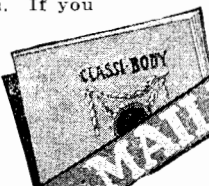
### HERE IS PART OF EQUIPMENT

Double texture one man top with curtains, windshield, hood, entirely new radiator shell, mud guard over front axle, crown fenders, running board with shield, gasoline tank in rear concealing Ford rear axle, Stewart vacuum feed, extra tire carrier on Touring car, choice of maroon, blue or green for body color.

### WE OFFER DEALERS:

Liberal terms upon one of the most lucrative and easy selling propositions open today. The business is still young enough to have many rich territories still untaken. If you get merely a small proportion of the normal replacement business, your annual earnings will easily pass \$10,000.

**The Dayton Metal Body Co.**  
Dept. F-620 DAYTON, OHIO



**MAIL THIS TODAY!**

The Dayton Metal Body Co., Dept. F-620, Dayton, O. Gentlemen:—Please send me full information at once about Classi-Body and Equipment.

- Owner Literature
- Dealer Literature

I am interested in

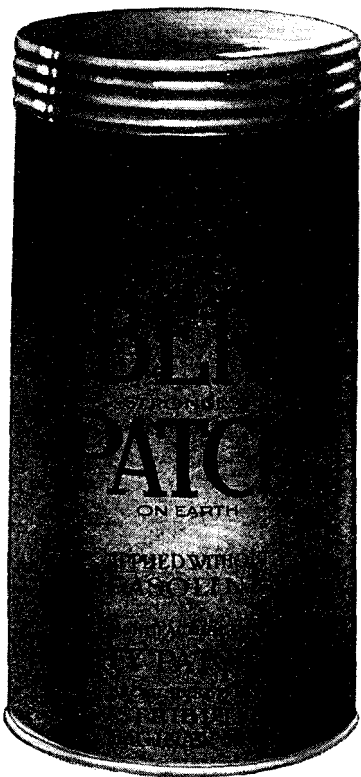
Name . . . . .  
Address . . . . .

When writing advertisers—Just say FORD OWNER and DEALER



# SAVE TIRE COSTS

With inner tubes steadily advancing in price, today more than ever before, it pays to cut your tire costs by making simple and reliable repairs of the inner tubes. The easy, economical and lasting repair is through the use of the



## LIBERTY STRONGEST PATCH ON EARTH

The Liberty Patch will make a permanent repair of a tack or nail puncture, up to a 16-inch tear.

It is guaranteed not to loosen, creep or blow through. Applied **WITHOUT GASOLINE** or heat.

If it fails, your money cheerfully refunded.

Made of Pure Para Rubber.

Stretches with the tube.

Stronger than the tube.

Has withstood the most severe tests.

If your dealer cannot supply you, send us his name or remit \$1.00 for 100 puncture size or \$1.75 for 200 puncture size.

**REMEMBER OUR GUARANTEE.  
YOU ARE TO BE THE JUDGE.**



## U. S. DISTRIBUTION CO.

INCORPORATED

DEPT. A

SAGINAW, MICH.

# Restores Power in Old Motors



Restores Power in Old Motors

### System No. 1

The original patented non-clogging, oil-sealing groove means perfect lubrication, prevents leakage due to warped, worn and imperfect cylinders—restores power to old motors—*and a new oil-sealing groove.*

Made in one piece—individually cast—*non-corrosive.*

Quick seating—easy fitting—*easy to install.*

Non-leaking—gas and oil tight—*perfect compression.*

Equalized pressure on cylinder walls, the result of a patented coating process.

Finest material—*guaranteed against leakage.*

The perfect oil seal means low stroke loss, carbon—*cleaner spark plugs—lower gas and oil consumption—a longer wearing, smoother running engine.*

Keeps cool oil out of oil pit and away from crank shaft bearings.

Simple in construction—*high efficiency—has not been equalled by world's largest piston ring plant.*

Some users of success the day in 1911—*a million a month in 1920. Why? They make good.*

All sizes to fit any make of engine for motor cars, trucks, tractors, and marine uses.



100% Perfect—Price 50c and Up

Keep in the market NO-LEAK-O Piston Rings for motor cars, trucks, tractors, and marine uses. They make good. They are made in the United States from the finest material.

Patented in the U.S. and other countries.



### DEALERS AND ENGINEERS

NO-LEAK-O Piston Rings Company, 124 W. North Ave., Baltimore, Md.

As superior to other piston rings, they have been tested by the U.S. Army and Navy. They have been tested in actual service and have shown a long life. They are made in the U.S. and are available in all sizes for motor cars, trucks, tractors, and marine uses.

# NO-LEAK-O Piston Rings

NO-LEAK-O PISTON RING COMPANY 124 W. NORTH AVE., BALTIMORE, MD.





## The Book Wagon

### FORDS USED TO SPREAD LITERATURE

By John S. Thorp.

Distribution of useful and entertaining books to dwellers in remote rural sections of the country now is being accomplished with a great degree of success through the medium of the book wagon, which, during the last two decades has come to be recognized as an integral and wholly indispensable unit of the county library system. The book wagon, in brief, is a public library on wheels.

In the twenty-one states which have county library laws, there are but a dozen which have the system in operation, and in but few of these is the book wagon in actual operation. This may be attributed to lack of funds for the maintenance of public libraries in many communities but this condition rapidly is becoming ameliorated and the book wagon is cropping up in sparsely settled sections to render a maximum of library service.

The county library system is operated as follows: A central or administrative headquarters is set up usually in the county seat or largest town, or better still, in the largest library. A small tax, usually not more than one mill of a dollar of assessable property, is levied upon the population for support of the system. Branches are established in the villages in stores, churchse, residences or where space is obtainable within easy access

to the majority of the residents. Often this is done without rent or building expense. For the far-away section the book wagon is employed to give the books circulation. This circulates among its patrons from the county library at definitely set periods. Usually its trips are made daily and each section is completely covered until the whole district is served. Within two weeks or a month, according to the size of its territory, the trips are repeated. This assures the country dweller as good book service as though he made trips to town to exchange his books.

Often the book wagon carried a driver and a librarian, a generous assortment of fiction and non-fiction, current periodicals, and indexes and reference books. Its service is as complete as an ordinary library for hundreds of books can be stowed away on its compact shelves.

The Washington County, Maryland, book wagon and that at Hibbing, Minnesota, are two which are best known for the work they have accomplished. The former, the first in the United States, has developed a highly efficient library service within its territory, and its patrons chiefly are farmers. That at Hibbing, purchased and equipped at the cost of \$8,000, circulates in the iron ore ranges of the wheat state, and now is being



**Where Most Belts Break-**

*Rie Nie Fan Belts* stand the wear and tear. Cut-on-the-bias fabric—wrapped, jacketed and vulcanized into a solid belt that gives longer life and service. No stitches to break—no rivets to cut through. Plies cannot separate. Oil-proof—heat-proof—water-proof—and will not stretch. Self-adjustable. Will not ride or slip over pulley. Strong and flexible.

*Rie Nie Belt* is especially serviceable on Ford cars. See our dealers or write for catalog.

*Rie Nie Products Manufactured Only by*  
**DURKEE-ATWOOD COMPANY**  
 Minneapolis U. S. A. Cleveland  
 In Canada: Canadian Durkee-Atwood Co., Ltd., Toronto

Cross Section of *Rie Nie Belt* showing filler plies and wrapper

**Rie Nie**  
 Trade Mark Reg

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# Automotive Products

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When writing advertisers—Just say FORD OWNER and DEALER



# Laugh At the High Price of Gasoline

You can save gasoline—you can save repair bills—you can get more power and speed from your engine—you can end your ignition troubles—you can get perfect combustion with every cylinder on the job at once—if you equip with the

## **GUARANTY Spark Intensifire**

The Guaranty Spark Intensifire is not an experiment—it is a scientific triumph. It is making gasol-

# A Gas And a Saver of Time

# For Ford!

The Guaranty Spark-Intensifire  
Is Guaranteed to—

## Save 25% Gasoline

YOU should see the Guaranty Spark-Intensifire work on the Ford. It's wonderful. AND IT'S GUARANTEED TO DO EXACTLY WHAT WE SAY.

You know that your Ford goes anywhere, but that its ignition system needs help.

The Guaranty does the work of high tension magnetos and expensive master vibrators.

Hitch Your Spark Plugs to Guaranty Spark-Intensifires take the miss out of your engine and enjoy POWER to the peak!

Join the army of Ford owners now using Guaranty Spark-Intensifires, who are enthusiastic over the INCREASED POWER and DECREASED COST of GASOLINE.

Get a set TODAY—tear out the Coupon NOW so you won't forget.

Why go on wasting gasoline?—why go on putting up with ignition troubles? Order a set of Intensifires NOW—you'll be agreeably surprised to see how easily and quickly your engine starts; and the rich, hot spark you'll get will take you up hills on high that were formerly all but hopeless on second!



Especially tempered glass encloses all possibility of hazard. At

# A Cash Register For Jobbers and Retailers

A real DEMAND is being created for you for the Guaranty Spark Intensifire.

We have signed a BIG CONTRACT with the SATURDAY EVENING POST using LARGE SPACE (complete half pages) every month for a full year. And the contract is NON-CANCELLABLE. Other publications are being used, also. Note the upper corners of this advertisement, showing two of the SATURDAY EVENING POST advertisements in reduced size. The first one appeared in the issue of May 22nd.

# GUARANTY MOTORS Co., Inc.

When writing advertisers—Just say FORD OWNER and DEALER

FORD OWNER and DEALER

June, 1920

# Saver! and Temper too!

# Owners

### ALSO GUARANTEED TO—

1. Show how each cylinder is firing the minute you look under the hood.
2. Eliminates ignition trouble, by indicating the slightest disturbance in the ignition system and locating trouble exactly.
3. Intensify spark, automatically keeping spark plug clean.
4. Eliminate short circuit caused by carbon.
5. Give a red-hot spark in the cylinders that keeps them free from oil and carbon.
6. Overcome trouble with leaky or oily cylinders.
7. Make old plugs fire like new—even if porcelain is broken.
8. Make car start much quicker and easier in cold weather because of intensified spark.
9. Attach quickly and simply—(Applied to any spark plug without tools. Simply attach to spark plug wire by means of contact screw provided. Affix other end of Guaranty-Intensifire to spark plug, replacing thumb screw. Cut down carburetor. That's all.)

**ONLY \$1.00 EACH.**

In Canada \$1.25. Parcel Post Prepaid.

No matter what model your Ford may be, the Guaranty will work equally well. And Trucks, Tractors and Gasoline Engines get the same results. \* One Intensifire required for each spark plug.



enclosed, eliminating  
Attached in a jiffy.

## Nothing Like It!

**N**OTHING like confidence if the "Lady of the House" has to be her own chauffeur.

Nothing like the comfort she gets in having her car equipped with the

### GUARANTY

#### Spark Intensifire

Nothing like *knowing* that the spark plugs, so equipped, will fire if oil soaked, carbonized, or even if broken above the bushing.

Nothing like *knowing* that if her car should take the hills on high, that it will take them on high.

Nothing like



# energizer for Retailers

### WE GUARANTEE YOUR SALES!

For a limited time only we are making a most unusual offer to Jobbers and Retailers.

Get in on this startling offer. You take absolutely no risk—we absolutely GUARANTEE the sale of every Guaranty Intensifire you order. This sales plan is revolutionary.

Guaranty Intensifires are for ALL makes of cars and for trucks, tractors, motor boats and stationary engines. The sale for them is unlimited.

Place a modest order today to meet immediate demands, and—  
WIRE or write AT ONCE for our GUARANTEED-SALES Plan. Don't wait—ACT NOW!

# Cambridge, Mass

When writing advertisers—Just say FORD OWNER and DEALER

# Ford Owners Money Back Coupon

Guaranty Motors Company  
Manufacturers of the well known "Guaranty Line"  
Cambridge (39), Mass.

Gentlemen: Enclosed find \$..... for..... Guaranty Spark Intensifires. If they do not do what you claim for them, the undersigned will return them within 10 days and you will refund the money.

Name.....  
Address.....

PRINT name and address CAREFULLY

FORD OWNER and DEALER  
JUNE, 1920

used as a model for others which are coming into being. The accompanying photograph shows a book wagon in Missouri rendering actual service. Its patrons in this section are mostly children.

More book wagons will be encouraged in states where none exist under the recently projected Enlarged Program of the American Library Association, for which a fund of \$2,000,000 is being raised through the personal efforts of 4,000 librarians affiliated with the organization, library trustees and friends of libraries. The movement, which has for its slogan, "Books For Everybody," purposes the extension of the county library system to reach 60,000,000 persons now inadequately served with books. Americanization, encouragement of technical libraries in industrial plants in co-operation with the Special Libraries Association, printing of books for the blind in standard Braille type, and increased book service to men aboard vessels in the merchant marine, to patients in hospitals of the United States Health Service, lighthouse keepers and coast guards are other important phases of the A. L. A. program.

The officials of New York City's municipal government are going to ride in Fords from now on. No longer is the indignation of the taxpayer going to be aroused by the spectacle of Commissioners, Deputy-Commissioners, Government Inspectors, and various other important looking gentlemen with shining gold badges, parading through the city's streets in richly upholstered, high-priced limousines. Mayor Hylan has decided that the humble but reliable Ford can transport the members of his cabinet and their subordinates just as effectively as the more pretentious cars—and at a saving to the city of at least fifty per cent in operating expenses.

A fleet of Ford taxicabs has been ordered by Commissioner Grover A. Whalen of the Department of Plant and Structures, who has obtained an initial appropriation of \$30,000 from the Board of Estimate for that purpose. As soon as these cars arrive from the factory they will be put into service to supplant the more luxurious automobiles of various types, including touring cars and runabouts, now

in the municipal garage for the use of city officials.

The taxicab stand will be located at the Municipal Building. The chauffeurs will wear a regulation municipal uniform, and all city officials desiring to use a car will put in a call by telephone, the car returning to the stand after making the trip.

Although these Fords will be used exclusively for government business, there will be a meter service. The official using the taxicab will not be charged a fare, of course, but the trip will be recorded on the meter so that the time and expense can be charged up to the department using the car.

This will be a big reform from the standpoint of economy, as hitherto several government officials have had a big car assigned exclusively to their personal use, which has stood idle in the garage all day, eating up the taxpayer's money, when the official did not have business which took him outside his office.

"There has been a great deal too much wastage of time under the prevailing municipal garage system," Commissioner Whalen explains, in announcing Mayor Hylan's plans for a municipal taxicab service. "Take a walk around the Municipal Building and see the number of city cars parked there from morning to night, waiting the pleasure of city officials.

"An investigation has shown that we are wasting about 75 per cent of time, to say nothing of the big expense of operating these high-priced cars."

There are over four hundred passenger cars operated by the government of New York City at the present time. These will not be discarded immediately, but they will be replaced by Fords as soon as possible. It is Mayor Hylan's intention to get rid of all of them eventually, with the exception of a few in the service of the Police and Fire Departments.

Even in these departments Fords are to be used as much as possible. Only the cars actually needed by the police for chasing criminals and by the Fire Department for going to fires will be equipped with engines of higher power.

## The Calendar Car

By

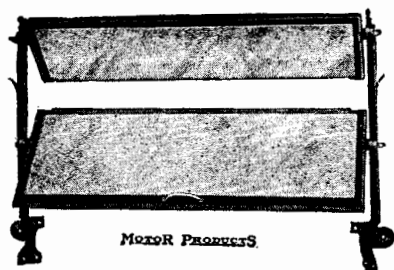
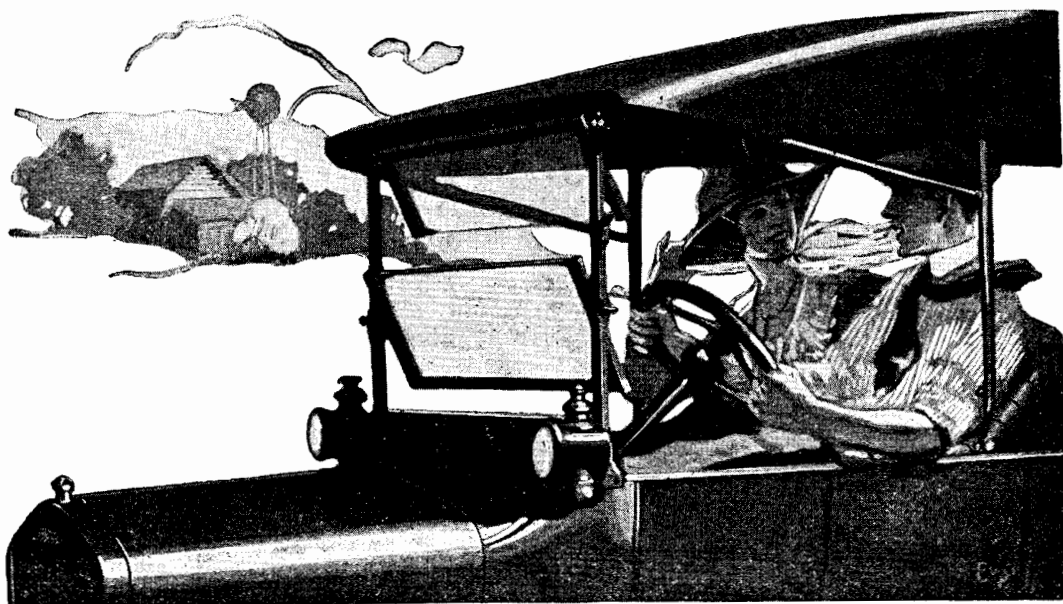
M. Y. CROWDUS

January, snow and ice,  
Crank my Ford and in a trice,  
Into town, and though some chilled  
With the joy of living filled.

February, slush and mud  
March winds, tingling April's bud  
The old car feels the pulse of spring  
Seems to make the motor "sing."

And, through summer's sultry days,  
Loafing, playing, 'till the haze  
Of golden autumn fills the air,  
Our good Ford takes us everywhere.

A coat of paint from Santa Claus,  
And there, a New Year, without pause;  
I cherish thee, good pal thou art  
My little Ford, the "all year" car!



### Here's How

With the glass cutter and frame parts which we supply you, packed in a heavy fibre carton, you can do this work in a few minutes. A screw driver and wrench are the only other tools you need.

The sidearms have loops to accommodate the Ford top anchor straps, also top studs which enable you to use pressed steel top fasteners if you have them. If you haven't these we can supply them for \$1.00 per pair.

Complete instructions accompany the shipment. A rubber rain strip to seal the opening between upper and lower panels is included.

This equipment, beautifully finished in black enamel and nickel plate, for only \$13.00.

Ask the dealer first; then ask us.

## Enjoy the Breezes RE-FRAME Your Windshield

Let the breezes in. Equip your Ford with this adjustable RE-FRAME Windshield.

Tilt the upper panel outward when it rains and you have a rain-vision windshield.

Use your old glass in our new Model 150 RE-FRAME Device at a trifling cost; get comfort and appearance equal to higher priced cars.

Don't be satisfied with a windshield which cannot be opened up. The rain vision and ventilating features of this Windshield will enable you to drive in comfort, rain or shine.

If you haven't the time to re-fit the RE-FRAME to your old glass, any hardware dealer or garage man can do it for \$1.50 to \$2.00.

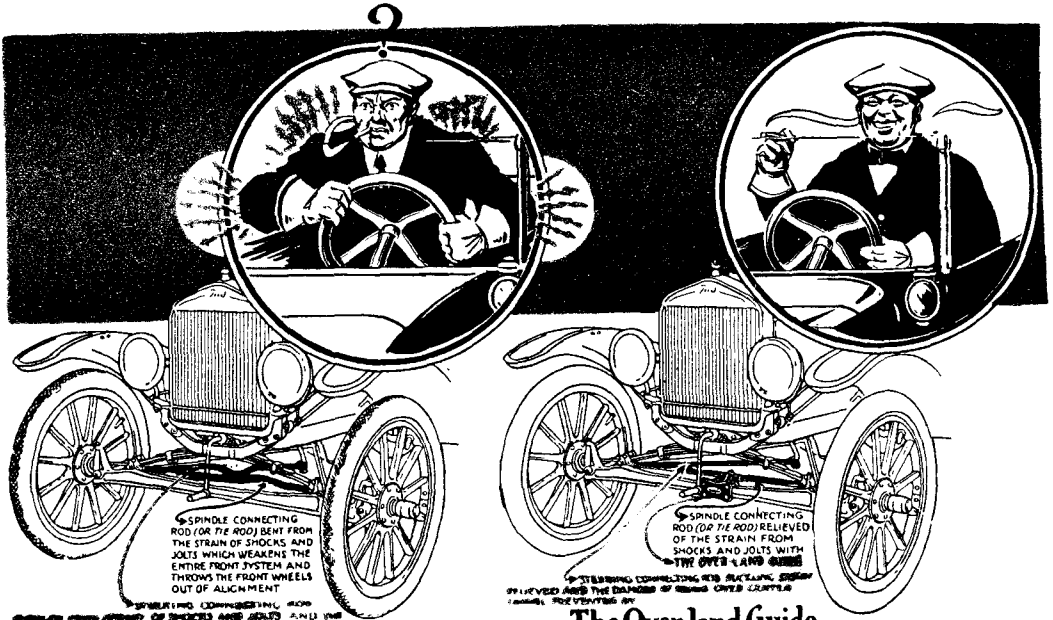
Get this Model 150 RE-FRAME equipment through your dealer or jobber, or write us direct if he hasn't it in stock.

(2)

# MOTOR PRODUCTS CORPORATION

DETROIT, MICHIGAN

When writing advertisers—Just say FORD OWNER and DEALER



**A Ford Controlling Itself**      **The Over-land Guide**  
*Controlling the Ford*

**DON'T LET THEM SAY "I TOLD YOU SO"**

Install an Over-Land Guide NOW

The Over-Land gives you the best insurance against danger of accident and destruction of your Ford car or truck through the loss of control caused by the steering connecting rod passing over center travel in short turns.

The OVERLAND Guide will eliminate the danger of ditching and collision with the possibility of fatal results to the occupants and the destruction of the car even though the steering mechanism be broken or failed to work.

Your steering gears may get out of service, or the steering connecting rod may become locked over center travel, but the OVERLAND Guide, with its grip on the tie rod and axle, will hold your car in the middle of the road until it is brought to a safe stop, avoiding the possibility of being ditched or destroyed.

The Over-Land Guide stops the wobbling, scooting, and creeping of the front wheels. It also removes the strain from the arms and shoulders of the driver. It is life-and-car-insurance of the highest order and affords a degree of security that makes it worth a hundred times the cost to any owner. It greatly reduces wear and tear on the front system and steering mechanism by eliminating vibration.

After the Over-Land Guide is installed give it a severe test and try-out. Drive the car over the roughest roads you can find and when you strike a hole six or seven inches deep, remove your hands from the steering wheel, regardless of the speed you are driving. Then you will realize how the Over-Land Guide controls the running of the car, absorbs all shocks, and eliminates the strain and vibration from the front system and steering mechanism.

**Pays for Itself Every Two Weeks in Reduced Wear and Tear**

**The Over-Land Guide takes up all lost motion, eliminates the shocks and vibration from all the ball joints and bushings in the front system and steering mechanism, and in fact all joints and bushings that constitute a Ford car or truck.**

The Over-Land Guide also reduces breakage and repairs of all the following parts—such as spindle connecting rod (or tie rod), Spindle body arms and bushings, Spindle body and bushings, Ball and roller bearings and hub, Steering connecting rod and ball joints, Steering gear drive pinion and steering gear pinions, Steering gear internal gear case and bushings. Also prevents the axle from bending—and may save your entire car from destruction with loss of life of occupants.

If you knew the advantages, comfort and protection to be gained by equipping your car with an Over-Land Guide, you would not drive another day without it.

**THIS BROAD GUARANTEE PROTECTS USERS OF THE OVER-LAND GUIDE.**

Use it 20 days, properly installed, and if at the end of that time it does not do all we claim for it, full purchase price will be refunded.

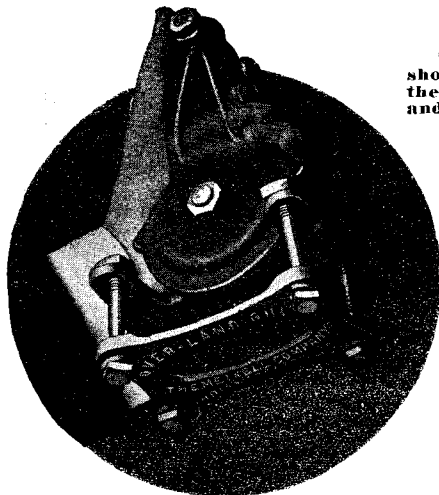
**We will ship you one \$8.50 Parcel Post for**

**IN ORDERING STATE YEAR CAR WAS MADE**

**THE MEIXELL COMPANY**  
216 Board of Trade      Indianapolis, Ind.

Sole Foreign Distributors—Automobile Sundries Co., 79 Walker St., New York

When writing advertisers—Just say FORD OWNER and DEALER



UNDER ALL OTHER WORKING PRINCIPLES THE SPRING IS THE ONLY PART WHICH IS WEAKENED BY SHOCKS AND COMPLETELY RELIEVED WHICH KEEPS IT FREE FROM BREAK AND WEAR AND WHICH WEAKENS SPRING AND SHOCKS

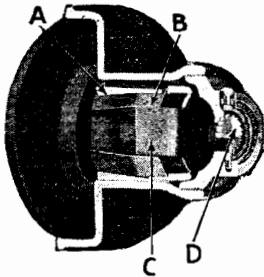
# Stewart Wire Wheels

*The Wheel that  
Won't Come Off*

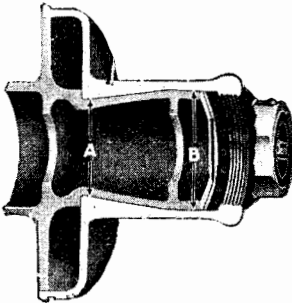


## The Stewart Hub Makes Safety Sure

These two cross-section views of the Stewart Hub show clearly why the Stewart Wheel cannot possibly come off by accident, and how the tapers take all the strain off the hub-cap.



The reverse tapers of the outer hub (a) and of the inner hub (b) are brought into correct contact by one-eighth turn of the wheel and are locked into an absolutely solid unit by the steel wedges (c) of the hub-cap. The hub cap is held in place by the spring lock positive acting ratchet (d).



With the front of the Stewart Hub cut away, you can see how the clearance at point (a) in the outside hub cannot possibly slip over the greater thickness at point (b) of the inner hub. The Stewart Wheel won't come off—because it can't.

## —AND THE GREATEST OF THESE IS—SAFETY

The same principle of construction that is employed in securing the breech lock of heavy artillery and the propellers of the fastest and most powerful combat aeroplanes, makes it impossible for the Stewart Wheel to come off by accident.

To the attractiveness, comfort, economy and convenience of wire wheels, Stewart construction adds the most important feature of all—that of absolute safety. There is no strain on the hub-cap—the strong reverse tapers bear it all. No play—no back lash—the hub is as rigid as a single piece of steel.

Complete set of five Stewart Wheels with four inner hubs, four hub-caps, hub-cap wrench, etc., in choice of colors, black, white, cream, green, red, blue and khaki—for Ford Cars ..... **\$75.00**

For Overland "4" and Chevrolet "490" ... **\$85.00**

Prices for equipment for other cars on request.

To dealers: Stewart Wire Wheels offer a big selling opportunity. Write for our attractive dealer proposition.

**Stewart Wire Wheel Company**  
501-537 W. Barner St. Frankfort, Ind., U. S. A.





## Henry At The Cowboys' Reunion

By S. OMAR BARKER

The wildest long horn on the open ranges no longer snorts and runs with high head and higher tail for the cedar brakes when a car buzzes along. And if a wild horse shies at a Ford it is in the same playful spirit that he would shy at a mere jackrabbit. Fords are common on the cowrange, and so they are given a place in the program of events at the annual Cowboys' Reunion during the week of July 4 at Las Vegas, and cowboys who have just raked the sides of a tall twisting bronco shake off their chaps and boots and strip to running shirts for the "Henry and George" relay race.

Three in a team, they all get in their tuned up Lizzies and at the signal make the rapid getaway that only a trained athlete or a better trained Ford can make and take the curves of the dirt track on one wheel. At a

given point the cars are stopped and the driver continues the race on foot till he reaches another car into which he must pile and return to the one he has left. As the returning Henry passes the proper point the two remaining men of the corresponding teams crank the jitney and hit'er up to the next quarter mile mark where the same performance is repeated.

The last lap, however, the runner comes in to the starting point instead of doubling back. Thus three men and three flivvers alternate for the mile around and prizes are given the winners. Of course the main events of the Reunion are bronco busting, steer riding, steer bulldogging, roping, etc., but with the possible exception of the wild mule race nothing gets the applause like the Ford relay.

## Getting A Camel's Goat

The flivver has got the camel's goat.

A camel, as a certain propaganda has widely advertised, can go eight days without a drink. But the abstemious capacity limit of the Flivver balks at nothing, and just for that the w. k. "Ship of the Desert" is out of luck. The "devil wagon" has worked him out of a job.

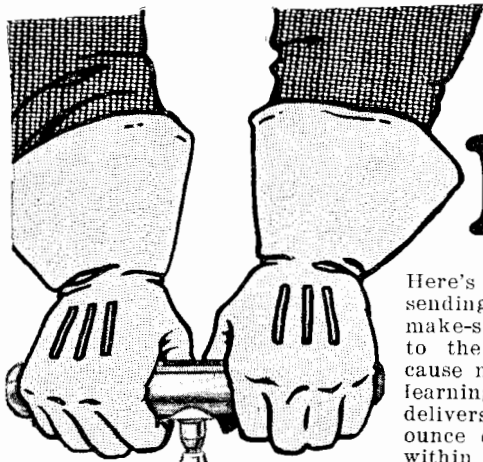
In his century-long habitat, the Sahara, Flivvers are running all over the place. No matter where he turns his mournful eyes, he is sure to see an imposing Arab Sheik, seated in regal dignity in his new car, contemplating the sandy landscape with unruffled composure, while underneath the machine a slave performs the usual gyrations that accompany the putting on of a new tire, or the exploring of the thing's innards. Flivvers undoubtedly are going to give the Bactrians and dromedaries just such a raw deal as their myriad brotherhood in this country have given poor old Dobbin.

It was an American Red Cross officer, en-

gaged in completing a medical tour of Algeria, who discovered the extent to which the Arabs are becoming modernized. In the Algerian section of the Sahara the chiefs are getting rich these days, through the "oasisation" process introduced by French irrigation engineers. With almost magical swiftness they see fig and date groves springing up, following the sinking of wells by the engineers. As a result, the Arabian fruit grower finds a bumper crop on his hands, with a new means of bringing it speedily to the market towns along the French-built roads that link the oases and railroads.

Dozens of inexpensive American cars have been sold throughout Algiers, and refitted with big water tanks. In these the Arabs who once sped on fleet-footed steeds, or lumbered along on the backs of the slow-pacing camels, now skim lightly from one oasis to another, whenever rain-storms harden the sand. It's a fine thing for the Arab Chieftain, but the poor camel's nose is out of joint.

# A Blow to Poor Pumps



Here's the pump that is sending many of the make-shift backbreakers to the junk pile; because motorists are fast learning that it positively delivers to the tire every ounce of air contained within its extra long cylinder.

This means that tire inflation is now made a quicker job and an easier one.

In the diagram below, arrows marked "A" point to air passages through the piston which fully recharges the cylinder on the up stroke.

Arrow "B" shows the heavy leather cup 1/2 in. deep, 1/4 in. thick, especially oil treated. Air cannot escape past this washer.

## E-Z-Quick TIRE PUMP

is 100% efficient on account of its improved, never failing air valve. There can be no leak or escape through or past this valve on the down stroke. The extra heavy, oil-treated leather washer and the ingenious check valve **cannot** fail.

Every up stroke completely recharges the cylinder.

There is no lost motion, no wasted air, no back pressure and **no backache**.

### Will Last for Years

The E-Z-Quick Pump is built to give full service indefinitely without attention of any sort. The leather washer will not dry out even though the pump is not used for years; and every other part of this pump is made with the same thought in mind: **Real Service**—Quick, Easy, Continuous.

Ask your dealer to show you an E-Z-Quick. Take hold of the handle and try it. You will see the difference at once.

If your dealer won't supply you, send to us giving his name and we will see that you are supplied. Whatever you do get an E-Z-Quick pump.

#### PRICES

Large size 22-in. barrel E-Z-Quick, 1 3/4-in. barrel beautifully finished in polished nickel, price....\$3.50  
made to fit the Ford tool box; black and nickel finish, price .....\$3.00

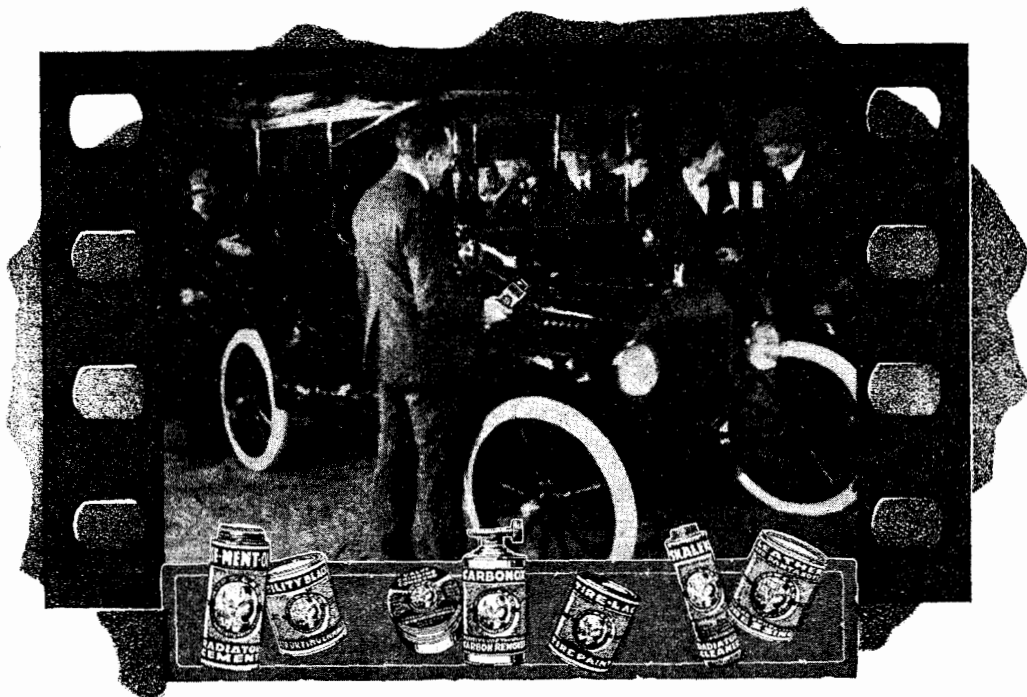
Equipped with Thumblock connection 25c extra. Prices Higher in Canada.

**DEALERS:**  
Take advantage of our big advertising campaign. Write today for our proposition, giving the name of your jobber.

Also manufacturers of the famous SKINNER PUMP, Mayo No. 8 Air Compressor, Mayo Electric Garage Pump, Silver Giant Gun, etc.

# Mayo-Skinner Mfg. Co. 2116 Elston Ave. Chicago, Ill.

When writing advertisers—Just say FORD OWNER and DEALER



## “—draw your own conclusions”

“Gentlemen,” concluded Mr. Fred Hall, President of The Northwestern Chemical Co., “you have just seen how SE-MENT-OL works in badly leaking radiators. Before you is the result—draw your own conclusions.”

Seventeen representative auto supply jobbers, assembled in Marietta, Ohio, had just seen a radiator, spurting water from many leaks, completely and permanently repaired in *seven minutes* by SE-MENT-OL. Other conclusive tests proved to them that this self-acting radiator repairer could not clog or injure the cooling system in any way.

This demonstration was concluded by completely renewing the appearance and efficiency of the old and very shabby car with other products of the NORWESCO line.

If your jobber was among those present, he will advise you to *stock* SE-MENT-OL and NORWESCO products and *concentrate* on them. He knows they are *right*.

This NORWESCO demonstration was filmed and will be shown everywhere through the courtesy of the jobbers.

### THE NORTHWESTERN CHEMICAL CO.

1026 State St., Marietta, Ohio

Canadian Factory: Montreal

SE-MENT-OL retails at 75 cents, Liquid or Powder. One can is enough for even the largest cooling system.

# SE-MENT-OL

When writing advertisers—Just say FORD OWNER and DEALER

## Victorious Tires made with expert skill

BRUNSWICK Tires are fortified by a reputation for quality manufacture that began in 1845 and which has attached to every product bearing the Brunswick name.

In our Brunswick Tire factories all materials are the best obtainable. The workmanship is the finest that expert tire builders can produce. And both must meet the Brunswick standards of excellence.

Because of these policies and the reputation we pledge to maintain, Brunswick Tires offer a combination of qualities not found elsewhere.

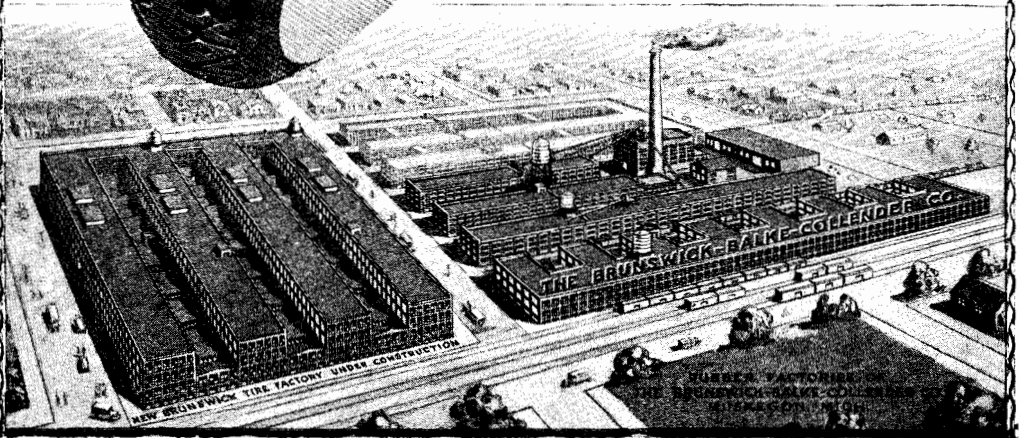
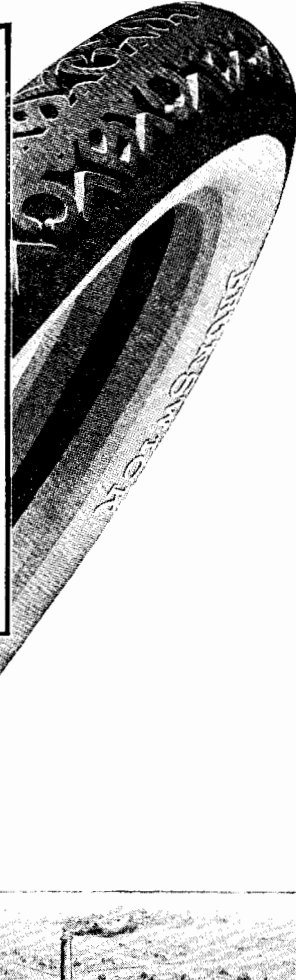
Dealers will recognize that tires of this merit are the tires to sell. Car owners know that these are the kind to buy.

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# An Angel In Overalls

By Henry S. Kidd.

It was Sunday evening of a cold December day. The wind was blowing heavy from the east. At intervals all day long the wind had whipped the snow around the corner of the house in biting drifts, the forerunner of the blizzard sweeping down from the Canadian line. A splendid night to stay in the house by the cheerful fire, and the soul-satisfying fellowship of home, and laugh at the wind as it roared by in its fury.

The Rev. Stephen Owen laid aside the manuscript he had been conning, rose from his desk, stepped to the window, looked at the leaden sky, listened to the every increasing volume of wind now nearing a gale, frowned a little, gave vent to his feelings in a protesting sigh, and remarked to himself, "It is going to be a bad night for man or beast, or 'Flivver,' that has to be out in this storm. I'd feel sorry for a cat that had to be out in this blizzard weather. In fact, I feel sorry for myself, for I have got to go out in it, and that very soon. There is no help for it. The little church will be open, and somebody will be there, and it is up to me to conduct the services. It is also up to the "Old Girl" to carry me there and bring me home again. She has turned the trick many times before, and I reckon she will do it again, and do it tonight."

The Rev. Steve was the stated supply for a little country church by the side of the pike about eight miles from his comfortable home, straight out in the darkness and the stinging cold of the storm. He had seen service enough to rest from his labors. But the church by the pike was weak, and Steve could not turn away from its need, so he kept the doors open, and taught the Word.

Ordinarily the distance between home and church was a pleasant drive over well-kept roads, through fine farm lands, and past modern homes, which could be covered in half an hour in the rigid dignity of a decorous ministerial gate.

"But tonight is different," soliloquized the Rev. Steve. "It is cold. Very cold. The mercury is hanging around zero. The wind is increasing, and the storm will be driving across country in the grip of a young blizzard in another hour. I'd be justified in staying home under the circumstances. But I never have done such a thing, and after thirty-five years in the pastorate it is a little too late to begin to be a slacker."

So his lips drew tight in a straight line, his jaw snapped, his chin made a feint to knock the wart off his nose, and the question was settled—he would conduct services in the little chapel by the side of the Lincoln Highway that night if any one came—"Well, if no one came it were better to have a preacher and no congregation than to have a congregation and no preacher"—so he was going anyway, "Cold or hot, snow or rain, blizzard or

summer zephyr." This had been his creed through life, and he was not going to change it now even if it was guaranteed to grow hair on the bald spot that adorned the top of his head.

So Stephen stepped to the study door and called down to Mrs. Steve with the inquiry, "was there plenty of hot water on the kitchen range?" Being assured that there was he proceeded to warm up "Henrietta," and to get her in action for the trip through the storm.

As he was going out of the kitchen door with a pail of steaming water he called back over his shoulder to the madame, "It will be too cold for you to go out tonight, dear. Stay home by the fire." As the door closed he heard Mrs. Steve say, "I have never deserted you yet, Stephen, and I will not begin quitting tonight. Where you go, I'll go." So that was settled also.

A few minutes later the sharp staccato of Henrietta's marching tune was heard from the garage, and then she glided up to the side step, picked up the madame, and pushed out on the highway head into the wind, Zip! Zip! Zipping! with Flivver pep for the battle with the elements.

The trip over was made without event of interest, except that the wind came with quicker and fiercer blasts, while the cold, increasing in intensity, found its driven way through the enclosed sedan body.

The parson and his helper commented feelingly upon the blessings of the modern auto, and the opportunities it opened to the church, that was closed to it a few years ago. "Such a trip as this would have been impossible a few years ago, dear," remarked the dominie. "Yes indeed" replied Mrs. Steve, "And only a few years ago, a very few years ago, before the days of the Sedan, this trip would have been impossible even in an auto." "You are almost right, honey," said the parson. "We could make it in a touring car, but, believe me, it would be some punishment. But this car is just like sitting by the fire. We won't know that we have made this trip in an hour from now."

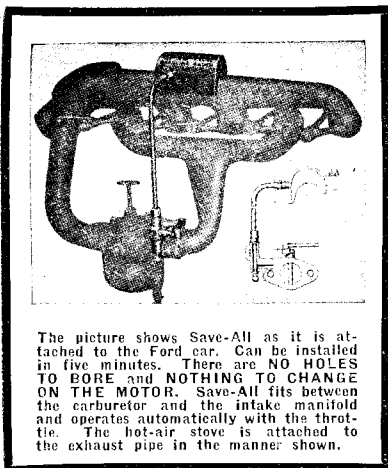
"You better knock wood, old man. You don't know what is coming to you before this trip is finished," warned Mrs. Steve.

"Come out of it, dear, cut out the Jeremiah stuff. This is a joyride, not a calamity pilgrimage. The 'Old Girl' is all right. She can almost talk. Besides, she knows me, and loves me like a dog loves its master. She's a Ford auto, not a yellow streak. There's not a mean twist in her whole assembly. She's the good old faithful, a credit to her maker, and a joy to her owner. Besides . . . . . Bang! Whir-r-r-r! Zig-ziz-ziz-z-z! Plunk!

They had just reached the church, and were pulling up to the stone step to alight,

# GASOLINE IS GOING DOWN

## WAS 27c NOW 18c FOR SAVE-ALL USERS



The picture shows Save-All as it is attached to the Ford car. Can be installed in five minutes. There are NO HOLES TO BORE and NOTHING TO CHANGE ON THE MOTOR. Save-All fits between the carburetor and the intake manifold and operates automatically with the throttle. The hot-air stove is attached to the exhaust pipe in the manner shown.

### What Save-All Does

- Gives 6 to 11 miles more per gallon of gasoline.
- Increases power 30%.
- Increases speed 20%.
- Prevents 90% of carbon.
- Reduces vibration.
- Prevents overheating.
- Makes starting easier; running smoother.
- Pays for itself in one to three months.

### READ THIS

I find the Save-All very satisfactory. I used to make about 20 miles on a gallon of gasoline and after I had it on I made 58 miles on two gallons. Your car don't get so dirty with carbon. It's worth the money it cost. Wenzel Seidl, R R, Kewaunee, Wis.

**GUARANTEE:** Save-All is guaranteed to do what we claim or money refunded. Also guaranteed to last five years. REFERENCES: CITIZENS STATE BANK, CHICAGO.

Address Orders and Inquiries to  
**THE SAVALL COMPANY**  
 1435 Grace Street  
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HERE, Mr. Fordowner is a device that will cut your gasoline cost down to 18c per gallon. Save-All Carburetor Attachment, a new mechanical invention, will positively give from 6 to 11 miles more out of every gallon of gasoline you use. Besides this it increases the power and prevents 90% of the usual carbon, and makes the motor run better and smoother in every way. At the present high price of gasoline think what it means to save from one quarter to one-half on your gasoline bills.

## "SAVE-ALL" CARBURETOR ATTACHMENT

**S**AVE-ALL Carburetor Attachment is an automatically controlled device which is placed between the carburetor and intake manifold and connected with a "stove" heated by the exhaust. It vaporizes every particle of gasoline as it passes to the cylinders, making every drop count for more miles, more power. It prevents carbon and fouling spark plugs by removing the cause. It keeps the engine from overheating, makes starting easier and running better, smoother and quiet.

**D**ONT be skeptical about Save-All. The impossibilities of yesterday are the realities of today. The entire motor world has been endeavoring to find a remedy for the high cost of gasoline. The remedy has been found. It is here. It is Save-All. You will be surprised, delighted, yes even startled with the way this wonderful device increases mileage and how it makes your Ford run like a "twin-six."

### THOUSANDS ALREADY SOLD

**S**OME of the things Save-All has done for Ford owners are astounding. We would hardly believe them, if they hadn't told us so themselves. Getting 30 miles on a gallon of gasoline is a common occurrence among Save-All users. Just listen to this. "On a trip of 1061 miles last summer I averaged 31½ miles per gallon. Had lots of bad roads and many hills to climb," (signed) H. J. Pheil, Park Ridge, Ill. Here's another one: "I drive a rural route out of Creston (Iowa) of 29 miles and make the trip every day over quite rough roads on just one gallon of gasoline. Save-All gives my car more power and pep on hills and keeps out the carbon," (signed), E. O. Moore, Creston, Iowa.

## 10 Days FREE TRIAL

**T**RY Save-All for ten days and we'll prove that it will do these things for you. We'll do it on a "show you" basis. You get the proof before the deal is closed. We mean just what we say. There is no trick or catch to it. All we ask is that you deposit its price with us, or if you don't trust us, then deposit it with your own bank. Then if Save-All fails to do the things we claim for it or if you do not want to keep it for any reason whatsoever, you'll get your money back.

### ORDER FROM THIS AD AND SAVE \$1.50

The regular price of Save-All is \$7.50, but as an introductory offer to readers of the Fordowner and to save the expense of handling an avalanche of inquiries, we will send it for only \$6.00. You take no chance.

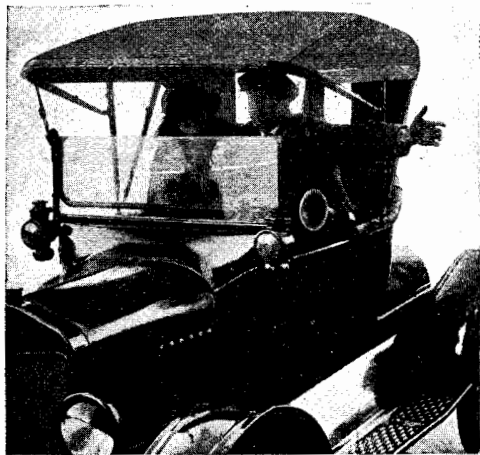
### THREE WAYS TO BUY - Use This Coupon

- The Savall Company, 1435 Grace St., Chicago, Ill.
- Check  I enclose herewith \$6.00 for which send me one Save-All for ten days free trial. You are to refund my money if I am not satisfied with it.
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REFERENCES—THE CITIZENS STATE BANK, CHICAGO



# step on the gas

There is the utmost safety and convenience in driving a Ford through traffic when you use the Williams Accelerator.

The car is under full control at all times and one hand is always free for emergencies.

## The Williams Accelerator (Foot Throttle)

The vibration of the car in no way affects its perfect use; there are no springs to pull the hand throttle shut, and the Williams Accelerator operates entirely separate from the hand throttle. There are no bolts to remove in installing; it is self-adjusting and drops into position almost of itself.

ONLY THREE WORKING PARTS—ALL INTERCHANGEABLE

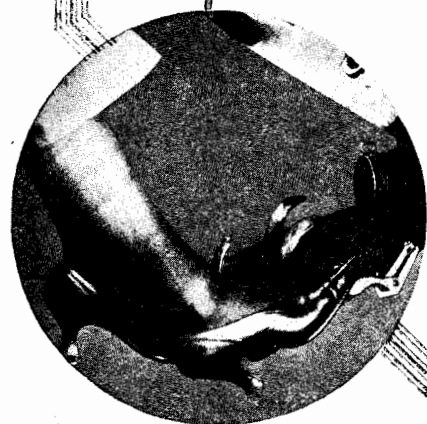


Your Dealer **\$ 3.00**  
Sells Them **COMPLETE**

### Williams Bros. Aircraft Corporation

816 Oak Street

SAN FRANCISCO



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when something happened, the right rear body dropped to the ground, the engine stalled, the lights went out, the doors flew open, and the blizzard swept through the car like a raging demon. The Rev. Steve groaned—"Good night! A broken axle! Some luck!"

A rapid picture, like a movie, passed before his mental vision—night—nine miles from home—a blizzard in the first flush of its new-born fury—mercury taking a toboggan through the zero hole—nobody in sight—the only garage man who would come after him twelve miles away—no 'phone within a mile—Whow! Some trouble!—and at the end of his vision a \$, followed by X. It was as dark as the inside of a black cat, but the dominie was seeing things, all right.

He was also thinking things. "Well, well, this is some fix for a white man to be in, and he a man of the cloth. Trouble is certainly no respecter of persons. Why save the wallop for this particular night? What had he done? Why not hand it to him when the stars were shining, and the breezes were soft and mellow, and the fragrance of flowers was in the air—and the walking was good. Why . . . ."

And then the angel appeared. He came out of the night, and the wind, and the storm, and the killing cold. He came in jumper and overalls with a grin on his map like the rays of a spotlight in the darkness. He came with a lantern in one hand and a hand-truck in the other. He came without advice or superfluous information. He came to work, not to talk. He set about the job as if it was all in the days work.

And the Rev. Steve, beholding him by the yellow rays of the lantern, murmured to himself, "There is no beauty in him that any one but he's an angel just the same—and behold, an angel appeared, bearing a truck in his hand—I didn't know angels had so much sense—he's an up-to-date angel—a practical angel—of all the things on the face of the earth that an angel ought to have under the circumstances, a hand-truck is that thing—except for a hydraulic crane with an arm four miles long that could pick me up and swing my car over to my garage, a hand-truck is the most practical thing I know—an angel? Sure he's an angel—and I love him more than the kind I have read about—I don't know much about the other kind—but thank God for this kind."

In the meantime the "angel" hadn't said a word. All the noise he made was to grin at the parson. The blizzard was yelling to beat wildcats, and driving zero snow straight into his face, but it couldn't put a crimp in that grin. It had broke through from the inside, and there weren't blizzards enough stored up at the north pole to put it out of business.

But he was doing things. He made a yell for the boys, and two husky lads romped out in the storm bare-headed, and in sweaters, yanked the rear axle on the hand-truck and while "Dad" steered the truck they backed the crippled "Lizzie" out of the lane and into the "Angel's" garage. It was all over in ten

minutes, and the storm still blustered and roared and raced on in its mad mid-winter fury.

Then the "Angel" told the Rev. Steve where he was to get off. He was to leave his car in the garage, and the "Angel" would put it in shape for him—a new axle, or anything else that the car needed. No, he was not an auto man. He was only an all-around expert mechanic. Rebuilding a disorganized "Lizzie" was only a pleasant overtime exercise after the regular day's work was done. When the car was ready he would let the dominie know. In the meantime the parson could go on with his church service, and forget that there was any such thing as trouble in the world. No, he wasn't coming into the church service. It was too darned cold. Besides, that other axle looked as if it had the willies, and he wanted to see what was the matter with it. Besides, again, he had to get his own car in shape to take the parson home after church. All together he was too busy to bother with church.

The dominie looked at him with a kindly light playing around the wrinkles of his wise old eyes, and whispered under his breath, "Some angel! If all my flock were like you I wouldn't care a hoot if they never came to church." Then he went into church, and talked to his people about the good Samaritan from a new angle.

After the service the "Angel" drove the parson and his good wife home. His car was a 1912 "Lizzie." During the intervening years it had chased the landscape for sixty thousand miles, and was still going like the wind, and making noise enough to make a traveling tin shop hang its head in shame. The storm was still on the job, yelling, howling, biting. But "Lizzie" yelled back her defiance, and hit the pike like an Arab steed.

On the way home the parson opened his mouth long enough to register his disappointment because the loss of his car would prevent him from attending the Christmas exercises in the church the next night.

"I've got that all doped out," said the "angel." "I will come after you and take you home." He did. A drive of thirty-two miles in zero weather. He liked it.

Three days later the "Angel" called up the parson and told him that his car was all ready, and that he would be over with the machine in about an hour. On scheduled time he drove into the dominie's lane, with the two boys trailing behind in the 1912.

Then came the settlement. The "Angel" had put in both rear axles, a new rear hub, taken up the slack in the steering gear, overhauled the car generally, and—Listen!—the bill was twelve dollars and a fraction, including labor and material.

The parson tried to make him take a check for \$15.00. Nothing doing. All he wanted was what was coming to him. No more! Here was the change. Take it and square the deal. He was fully paid, and besides, the parson had not counted in the bill the joy that he, the "Angel," had got out of the job.



"No," said the parson, to himself, "And you haven't taken into consideration the lesson I have learned from you, nor the joy I have had in running up with an angel in overalls. Besides, as you are so fond of saying, you will have to go some if you beat me

at this game. I'll put you on the 'Ford-Owner' subscription list for three years, and I'll keep you there for the rest of your natural life. You are some angel, but I'll beat you to it, old man, just the same."

#### U 1 2?

KT had a little Ford  
4 she was very YY  
A ride a day affORDED EE  
And sights 2 feast her II.

All the JJ did NV her  
And often tried to TT  
But KT spurned their MT talk  
And called them NMEE.

KT says that Fords XL  
And she is very YY  
Says they R EZ 2 UU  
And she does not tell lies.



## My Best Investment

"You are not going to buy one of those automobiles just to get your name in the county papers?" asked neighbor Jones one day, when I told him I contemplated buying a FORD. "No," I replied; "you have the wrong idea; I think I can use one to advantage in my business."

"What?" said Jones, "You, a farmer, going to put your money in a thing like that?"

Autos were then just beginning to appeal to the tillers of the soil as a necessity, and in this section everybody was waiting to see what success the other fellow would have. They were rather doubtful as to their usefulness. I thought quite a bit over what Jones said to me, for he was really a more prosperous farmer than I.

The following Saturday I went to town and purchased a five-passenger Ford touring car. The agent spent the afternoon with me and in the evening pronounced me a competent driver.

Jones was rather surprised that night to see me drive home, unattended. The next day being Sunday, I drove my family to church. We had decided that this should be one of the ways that the car could be put to practical use.

As it had been hard to hitch up the team on Sunday after working them hard all week, and drive eight miles to and from church, consequently we could not attend services regularly.

On the following Monday morning I took out the rear cushion, put five cans of milk in the back of my gasoline buggy, and started for the milk station. It was a four-mile drive, and I had always made it with a team. Jones lived a quarter mile nearer than I, but I passed him on the first half mile. Coming

back I met him still a mile from his destination.

I could load fifteen bushel of apples or potatoes, take them to market, and return, while Jones was making the trip one way.

And when it came to recreation that car made this farmer's life worth while. I always had a hard time keeping my horses looking good. Their ribs always had a tendency to show, but after I had the car a couple of months they picked up, and were in better condition than ever before.

One day Jones asked, "what has happened to your team? I never before saw them look so good."

"Well," I replied, "they have not lately been called upon to make so many quick trips to town."

It was not long before Jones realized what he had been missing, and he too purchased a Ford car. Today he will put up as good an argument in favor of the automobile as any man I have ever met.

The car I mentioned in the beginning of my story has passed its days of usefulness, and another has taken its place. I figured when I gave the old car up that it had paid for itself several times over.

I always used my car at every job I could at advantage, and it has paid me to do so. I knew it would be very nice to keep it for pleasure and recreation only. But unless one can afford both a pleasure and a business automobile it is a paying proposition to use one for both. It will be the means of earning the next one.

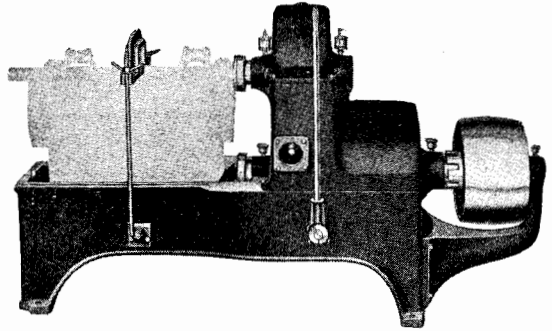
My FORD has been as good an investment as I have ever made. It has saved me on the average of eighteen hours a week. This makes quite a figure at the end of a year and will pay for a lot of tires, gas and depreciation.

Lewis Dieffenbach.



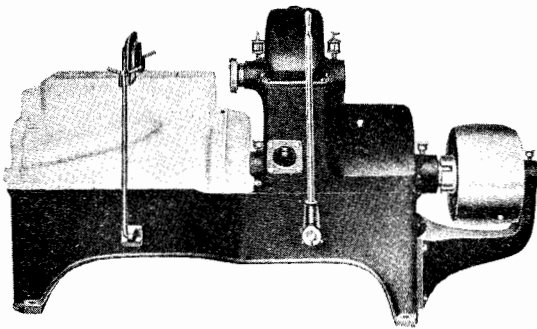
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You can use three different methods for power operation in connection with the "Dearborn" Ford and Fordson Burning-in and Running-in Machine and it requires one-third less power to operate than any other method.



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A new and improved line of repair equipment is now ready for delivery, designed and manufactured by pioneers in the equipment field, assisted by engineers and technical men of various automobile manufacturers, to build a high grade and medium priced, substantial line of tools and equipment for your use. The line now consists of the following items:



Burning-In and Running-In Machines, **three models.**

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Catalogue containing prices and detailed descriptive matter will be mailed upon request.

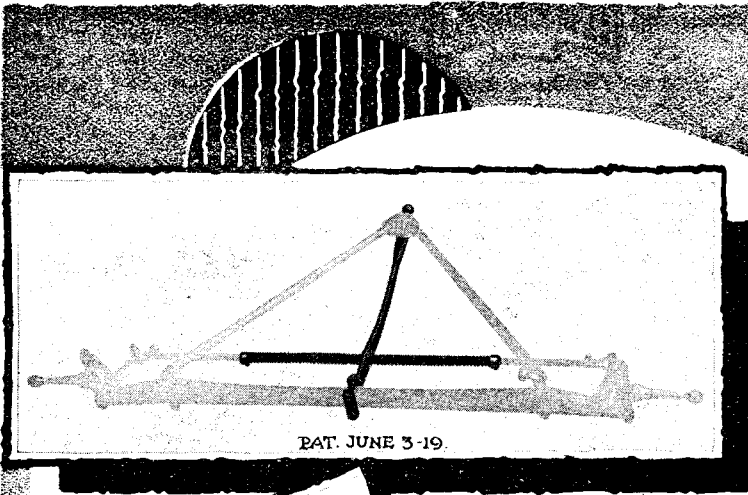
We will submit our proposition to jobbers and distributors of automotive repair equipment.

## Dearborn Equipment Company

Manufacturers of

AUTOMOTIVE TOOLS AND EQUIPMENT

Factory and General Office, Kalamazoo, Mich.



# The Fast-Selling Four

It is not surprising that this quartette of practical accessories everywhere is selling in such large quantities.

Each item fills a genuine need. Each is reliable. All are of the well-known Casco quality.

They are:

### THE "HOLD 'EM IN THE ROAD" ATTACHMENT

For safety and sure driving. Ends strain of "hanging on" to wheel. Holds the car on a straight-ahead line. The retail cost—\$5.50.

### THE CASCO METAL FAN BELT GUIDE

Holds and will not cut belt. On in a minute—and stays there. Installed at ratchet opening—back against fan pulley—screw up nuts.

Needed on every car. The cost—35c.

### THE CASCO METAL COIL BOX PROTECTOR

250,000 users prove the worth of this water proof real protector. Positively keeps coils dry.

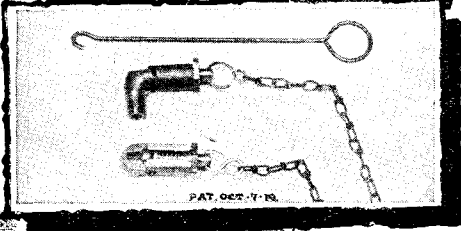
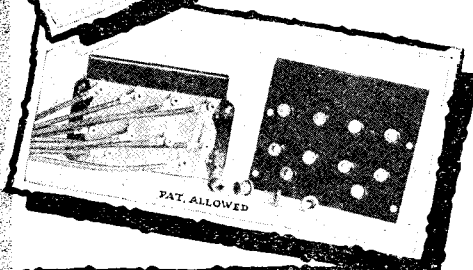
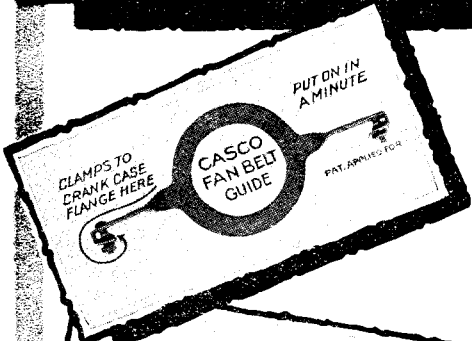
Note curved rolled top.

Rubber insulated—\$1.00.

### THE AUTOMATIC SPRING STEEL BALL SEAT DRAIN COCK FOR FORD CARS AND TRACTORS

Pull the hook—see the oil in engine. No cock wrench, no "get under." no loss, no leak, no worry.

Complete per pair—\$1.50. Necessity for tractors.



Dealers: Jobbers have the stock.  
If not—write now.

## Casco Manufacturing Co.

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All Patents  
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Thomasville, Georgia

48 States  
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Casco

# Canada to Spend \$50,000,000 for Good Roads in Next Five Years

In addition to the \$23,000,000 which the Province of Quebec has spent for good roads in the past 7 years, Canada and its 9 provinces will expend \$50,000,000 for the cause of better highways in the next 5 years.

Of this \$50,000,000, forty per cent of it or \$20,000,000 will be spent by the Dominion government and sixty per cent or \$30,000,000 by the provinces. It will be spent substantially on a basis of population and for construction and improvement of highways, not for maintenance.

Active construction will begin in all nine provinces as soon as the weather makes road work practicable.

The administration of the fund of \$20,000,000 appropriated by the federal government will rest with the Hon. J. D. Ried, Minister of Railways, who has long been interested in better roads for Canada.

The procedure connected with the expenditure is not involved. It is assumed that the provincial authorities best know what roads should be improved to best serve the public interest and come within the legislative intention of Parliament. So the Highway Engineer of each provincial government, with the countersign of his Minister, is called on first to prepare a map showing in a general way, the particular highways designed for improvement. This has to be sent to the department at Ottawa, but, with it, a lengthy questionnaire has to be answered. The character of the road proposed, the population and industry it serves, the prospective development of the district, the present and estimated traffic and various other points have to be clearly set forth. The plans must be up to a certain standard and be approved by the federal authorities.

The types of roads will vary considerably according to the availability of material adjacent to the construction. In the Maritime Provinces for example, many of the roads will be of gravel. In Quebec and Ontario the macadam type will be more generally adopted. In the Prairie Provinces the roads will be largely earthen. As the expenditures will be spread over a period of five years it will be necessary to indicate, on the plans, just what portion of the whole work is proposed to be accomplished each year. No payments are to be made till an

agreement is executed between the Minister of Railways and the province.

How the \$50,000,000 will be made up and the proportion of each province is set forth in the following table:

	Federal Ap- propriation (40%)	Required Provincial Expenditure (60%)
Alberta -----	\$1,477,810	\$2,216,715.00
British Columbia---	1,251,955	1,877,932.50
Manitoba -----	1,602,265	2,403,397.50
New Brunswick ---	1,163,845	1,745,767.50
Nova Scotia -----	1,468,720	2,203,080.00
Ontario -----	5,877,275	8,815,912.50
P. E. Island -----	603,455	905,182.50
Quebec -----	4,748,420	7,122,630.00
Saskatchewan ----	1,806,255	2,709,382.50
Total -----	\$20,000,000	\$30,000,000.00

At the base of the whole undertaking is the condition that the 40 per cent to be spent by the Dominion Government is contingent upon the province spending 60 per cent. The Dominion is "aiding" the provinces, not relieving them.

The roads to be built, as above stated are to be of a high standard, generally, but they will vary in accordance with the volume of traffic they will have to carry and the population they will serve. The main object in view is to better the highways so as to increase production and facilitate its handling, but, apart from the ever increasing utility of motor vehicles used for these purposes, motorists, in general, will benefit by the national system of better roads. By connecting up different roads to different provinces a national highway from the Rockies east to the Atlantic may be brought about, but this is not the particular object in view. It is rather to build, or improve, in each province, those main or market arteries that will best serve the population and produce the results which is set forth as the dominant purpose of this progressive piece of legislation.

Every province is going into the plan enthusiastically. The end of the present year promises to see the works well advanced everywhere.





# The AERMORE Exhaust Horn

## “The Signal With a Smile”

**T**HE Aermore is the gentleman's signal. It adequately warns but does not frighten. Its polite musical chord is in direct contrast to the usual growling, snarling, screeching signal that is as likely to cause the pedestrian to jump into your path as away from it.

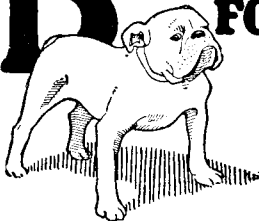
Many accidents are caused by terrifying signals that cause nervous persons to “freeze” directly in front of an on-rushing car. When the Aermore is in use there comes from the pedestrian no angry flash of the eye, no scowl of class hatred, no muttered words of condemnation and your car is smilingly given the right of way.

The Aermore requires no further attention after installation, and has no batteries, wires or other troublesome parts “to get out of order.” It is attached to the exhaust pipe and is operated by the exhaust gas of the engine.

- List Price, No. 1—15 inch Aermore Horn outfit complete for cars of 30 H. P. and over . . . \$10.00
- List Price, No. 2—13 inch Aermore Horn outfit complete for cars of 25 H. P. . . . . 9.00
- List Price, No. 3—11 inch Aermore Horn outfit complete for Ford and other Light Cars . . . 8.00

When ordering please give outside diameter of Exhaust pipe between Muffler and Engine.

# BULL DOG FOOT ACCELERATOR

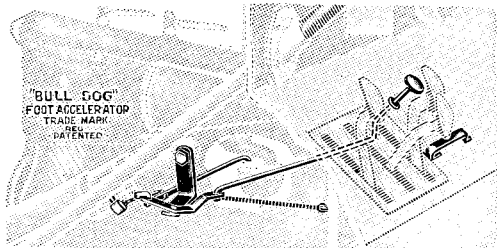


Perhaps the weakest point in the equipment of a Ford is the absence of a foot accelerator. Many accidents are traceable to killing the engine by mis-operation of the steering wheel accelerator when the driver becomes frightened and does not have the same sensible speed control found on higher priced cars. By the installation of a Bull Dog Foot Accelerator, the Ford is given the same foot speed control as is found on higher priced cars. The Bull Dog Foot Accel-

erator leaves the hands free to guide the car while the speed is regulated with an easy touch of the foot.

Rough roads make no difference in the operation of the Bull Dog Foot Accelerator since a handy foot rest is included in each outfit. Absolutely correct in design, substantially made, simple in construction and practically unbreakable. Easy to install and requires no further attention. Comes packed complete for installation.

Manufactured by W. H. THOMAS CO., Spencer, Ia.

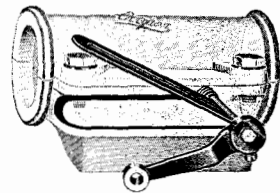


Retail Price, \$1.50

**THE FULTON CO.** 75th & National Avenues  
Milwaukee, Wisconsin



# The Roar Heard Round the Land



On boulevard and country highway—in metropolitan cities and cross-road towns—the healthy roar of the COOPER-equipped engine brings the smile of contentment to the wise motor car owner.

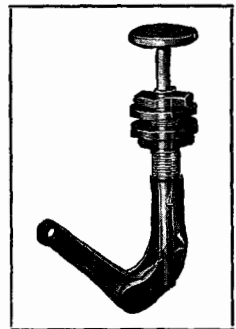
For every time the pedal is pushed the motor answers with a deep throated response that spells clean cylinders—that means a carbonless engine with a fund of reserve power that's marvelous. And, what's more, a COOPER "SPECIAL" CUTOUT adds miles to every gallon of gas—gives you a big, fat, clean shot of power from every drop.

There's a COOPER "SPECIAL" CUTOUT for your car—and your dealer has it. Attach it yourself in a few minutes—it's simple.

Sizes	With No. 3 Pedal	With No. 4 Pedal
1½ inches .....	Complete \$3.00	\$3.50
1⅝, 1¾, 1⅞ inches.....	" 3.50	4.00
2, 2⅛ inches .....	" 4.00	4.50
2¼, 2⅜, 2½, 2⅝ inches.....	" 4.50	5.00
2¾, 2⅞, 3 inches.....	" 6.00	6.00



NO. 3 PEDAL



NO. 4 PEDAL.

**Cooper Manufacturing Co.**

Dept. F., Marshalltown, Iowa

THE FULTON COMPANY

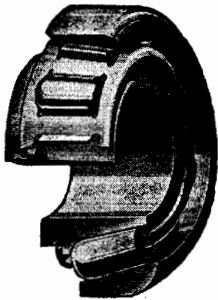
Sales Managers

Dept. F., Milwaukee, Wis.

# F&H

## ROLLER BEARINGS

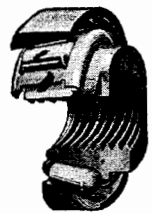
For FORD and CHEVROLET "490"



Your front wheels run crooked, steering is difficult, noise is on the increase, your tires are grinding themselves away at a tremendous rate.

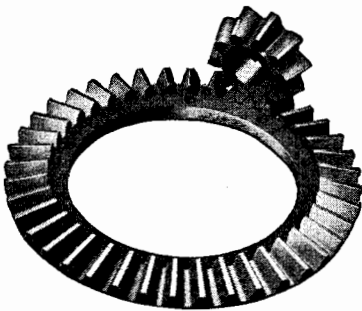
It's time to replace the inadequate old-fashioned front wheel ball bearings with a superior roller bearing.

F. and H. Roller Bearings are guaranteed to be mechanically perfect, they are made of chrome steel throughout and may be installed in a few moments' time.



Write us today for full details.

FULTON-HOUSTON CO., 1148 Michigan Ave., Chicago, Ill.



For Heavy Hauling

The Ford Pleasure Car is geared for light work, and there is a limit to its pulling capacity.

But with Krom-Nik Anderson special ratio gears you can add at least 20 per cent more power. This is a mechanical fact, not a mere claim, for

**As You Lower the Gear Ratio—You increase the Power**

And Krom-Nik Anderson gears are at a ratio of 4.2 to 1, the lowest possible gear reduction that will give a maximum in results and length of service.

It will pay you to investigate. Write us today for full details.

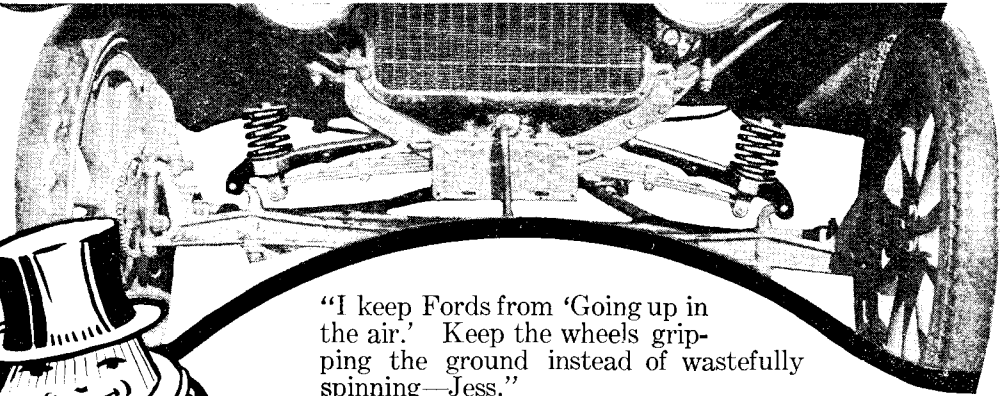
FULTON-HOUSTON CO., 1148 Michigan Ave., Chicago, Ill.

## 20% MORE POWER!

FOR FORD CARS

KROM-NIK  
ANDERSON

## SPECIAL RATIO GEARS



"I keep Fords from 'Going up in the air.' Keep the wheels gripping the ground instead of wastefully spinning—Jess."

## Ford Owners Are Interested in Saving

Every now and then you hear somebody say Ford owners are sick and tired of hearing about money saving equipment.

That's bosh. Some have been "stung" it's true, but if they could get real—guaranteed satisfactory—equipment, would they take it? You bet! They all want the kind of saving that "Jess" offers and guarantees.

Here's the way "Jess" argues. "If the wheels stay on the ground and devote all their energy to making the car go, it stands to reason that gas is saved and a lot of it. And if the big, heavy shocks are reduced to mere ripples, why it's a sure bet that the car is going to last longer, dodge the repair shop and bring a better price second hand."

### BURGESS

Rebound-Shock Absorbers do all these five things at one time:

- 1—Relieve the action of the leaf spring.
- 2—Check recoil of the leaf spring.
- 3—Prevent dangerous side sway.
- 4—Prevent leaf spring breaking.
- 5—More than double Ford spring length.



Walter S. Burgess Mfg. Company

300 Sterling Street, St. Joseph, Michigan

"Jess" has written a leaflet that goes into detail about the difference between Burgess and other shock absorbing equipment. Just use the coupon. The five-in-one efficiency of the Burgess makes it a wonderful dealer's proposition. Let us know you're interested if you're a dealer. There's a special Burgess type for the Ford truck, too.

**COUPON**

Walter S. Burgess Mfg. Company,  
300 Sterling St.,  
St. Joseph, Michigan.

Kindly send me your leaflet written by "Jess from St. Joe" telling all about Burgess Rebound-Shock Absorbers.

Name . . . . .


Address . . . . .

I am a ( ) dealer  
( ) Ford owner



# Blows Your Horn Instantly

Here's a Convincing Letter from a Big Dealer.  
READ IT—



**WRIGHT-KENDERDINE CO.**  
1111 NORTH CLARK STREET  
PHONE SUPERIOR 8080  
CHICAGO  
March 27th, 1920.

Seng Auto Device Co.,  
1452 Dayton St.,  
Chicago, Ill.,

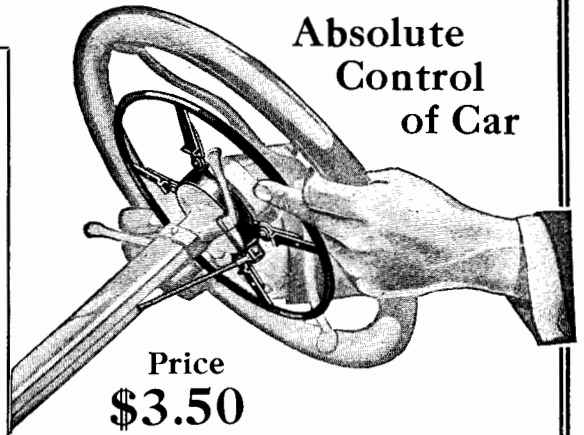
Gentlemen:-

We feel that you would be interested in knowing the success we have in selling your Seng Switch, for use on Ford cars.

We have used at least a gross of your switches in the last few months, and as yet have had no complaints from our customers. We have had several of them thank us for calling their attention to this useful device and state they will never drive another car without one. It really is a very useful article, especially on cars driven in congested cities. Sometimes one second lost in blowing your horn might mean a very serious accident, not saying anything about having to let go your steering wheel to blow the average horn.

We have enjoyed a very nice profit in handling the Seng Switch, and will gladly recommend it to any customer or dealer.

WRIGHT-KENDERDINE CO.  
BY *W. Wright*



Absolute  
Control  
of Car

Price

**\$3.50**

After July 1st, Price \$4.00.

An instant warning is necessary mighty often these days.

And when it is necessary—when danger is greatest, that is the very time you need both hands on the wheel; that is the time you should have complete and uninterrupted control of your car; and that is the time you will appreciate most the

## SENG SWITCH FOR ELECTRIC HORNS ON FORD CARS

(USED WITH BOTH STORAGE BATTERY AND MAGNETO CURRENT)

This switch is within reach of any finger of either hand all of the time. A light touch and the warning is given as quick as a thought; and all the time you have a firm grip on the wheel; or one hand is left free for the emergency brake.

No reaching or feeling around for the horn button with this switch—no uncertainty. Both hands are given over to the proper handling of your car—to make a

quick turn, or a "side step" to avoid an accident.

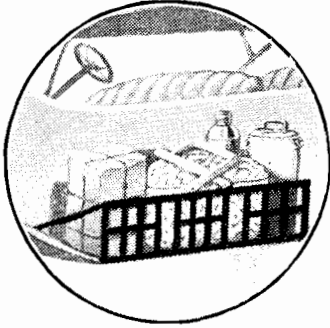
Thus the **SENG SWITCH** is a life saver, and the cheapest and most certain insurance against many kinds of accidents in the world. Besides, it is the handiest and most convenient device ever put on your car.

SENG STANDARD SWITCH FOR OTHER CARS, \$5.00.

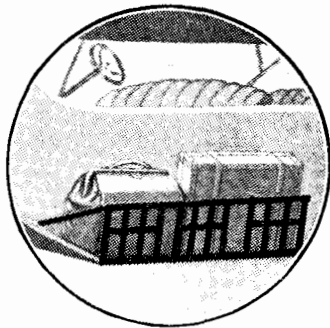
Car Owners—Ask your dealer. Dealers—Ask your jobbers.  
Dealers and Jobbers—WRITE US.

**SENG AUTO DEVICE CO.** 1450 DAYTON ST. CHICAGO, ILL.

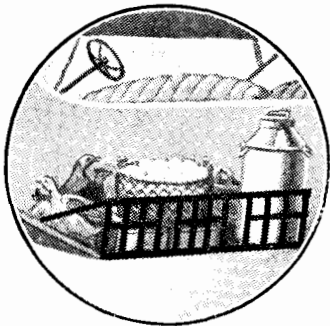
# More Leg Room



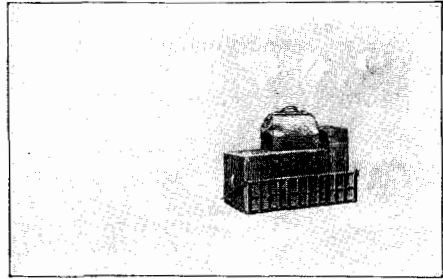
Picnic Party



Salesman



Farmer Coming to Town



For Tourists

**R**IDE in comfort. Don't be cramped in the car. Have plenty of "leg room." Get a

## Rust Standard Detachable Folding Parcel Carrier

Strongest, most rigid carrier made. Ford touring car doors open above it. Does NOT clamp on with a small bite at the edge of the running board, it's ALL ABOVE the board. Lasts a lifetime, fine for farmers, tourists, city delivery cars, traveling salesmen, campers, picnickers, ANYBODY. Put up in separate lock-end cartons. Folds up 10x15x2 inches, opens out 10x44, high grade of steel, baked japan to match fenders. Designed especially for the consumer who actually has use for a carrier.

**Retail Price, \$6.00**

**Dealers and Jobbers:** The big sales season is on. Are you well stocked? We guarantee delivery.

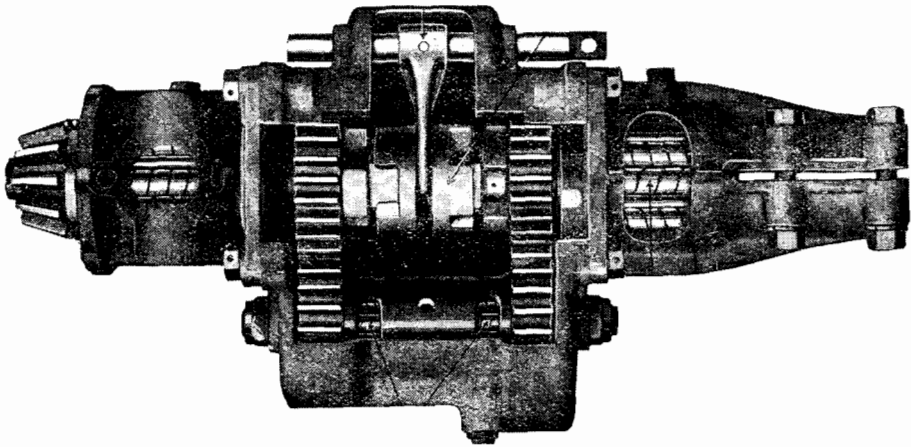
## Rust Manufacturing Company

Offices:  
MARSHALLTOWN, IA.  
3rd Ave. South

Factory:  
MINNEAPOLIS, MINN.  
1201 4th St. South

# Four Forward Speeds Two Reverse Speeds

**For All Ford Cars, Trucks and Truck Attachments**



Double the power of your Ford and make it a Four Speed car or truck by installing a "MOORE" Transmission.

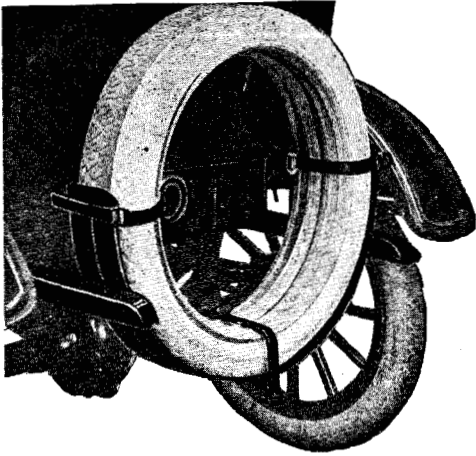
The "MOORE" Intermediate, the speed you have always wanted, is half way between the Ford High and Low. This Intermediate Speed enables your Ford to do heavier duty on any sort of roads, or to climb hills easily, without the necessity of holding your foot on the low speed pedal.

The "MOORE" Emergency Low is slower than the Ford Low and has double the power. The "MOORE" Emergency Reverse also doubles the power of the Ford Reverse and enables the car or truck to back out of any hole or up any hill when necessary, providing the rear wheels can get traction.

The "MOORE" is equal to any emergency and does not fail when put to the test.

Write our nearest factory for further information and our folder "WHAT USERS SAY."

**TRACTOR-TRAIN CO., 1346 Wall St., Los Angeles, California**  
**TRACTOR-TRAIN CO. of INDIANA, <sup>10th and</sup> Conwell Sts. Connersville, Ind.**



## YANKEE

### *Tire Holder and Bumper*

Combines attractive appearance with exceptional strength and durability. Will carry either one or two tires securely, without noise or rattle and holds them clear of the body of the car.

Handsomely finished in black enamel—in appearance, a permanent, "built-in" part of the car. Will withstand any ordinary shock from the rear. Cannot telescope into the body of the car. Many other exclusive features.

**Retail Price \$12.00**

## YANKEE

### *Truck Tire Carrier*

Will accommodate one 30x3½ (front wheel) tire and one 33x4½ (rear wheel) tire. Staunchly made of pressed steel—built to withstand the hardest kind of service. Designed especially for standard Ford one-ton truck, but can readily be used on Chevrolet and other one-ton trucks.

Offers the most convenient, practical method of carrying truck tires. Write for literature giving complete details.

**Retail Price \$7.50**

**The YANKEE fits  
all Ford models**

# The Demand For

# YANKEE

## Ford Automotive Products

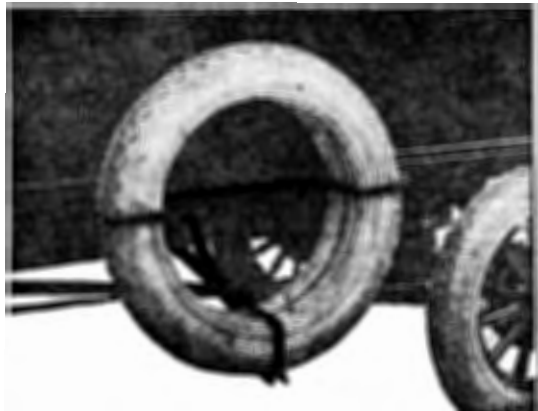
### *Is Constantly Growing*

Every Yankee product has been evolved and scientifically developed by our experienced automotive engineers, to fill an urgent need. There is nothing flimsy about them; on the contrary, their sturdy construction and superior finish has created for them a demand that live wire dealers everywhere, are cashing in on. There are good profits to be made on the YANKEE line.

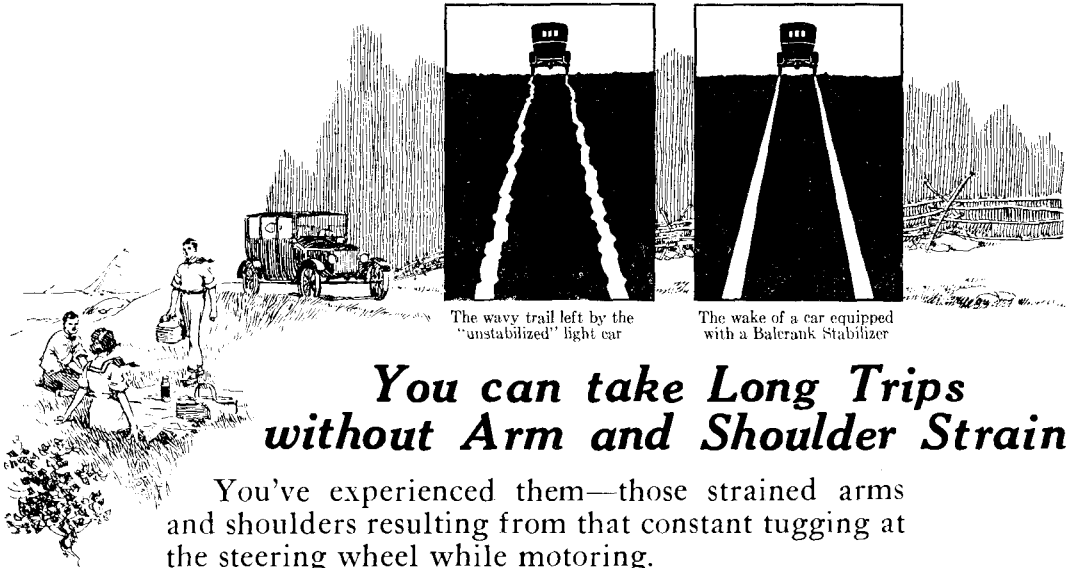
*Send for complete catalog.*

## International Metal Mfg. Co.

Wayne Ave. and Berkley St.  
Philadelphia, U. S. A.



When writing advertisers—Just say FORD OWNER and DEALER



The wavy trail left by the "unstabilized" light car

The wake of a car equipped with a Balcrank Stabilizer

## You can take Long Trips without Arm and Shoulder Strain

You've experienced them—those strained arms and shoulders resulting from that constant tugging at the steering wheel while motoring.

Have a Balcrank Stabilizer take up these vibrations for you.

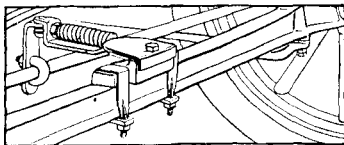
This is a finely made steering device which fastens to the front axle and tie rod. It steadies the front wheels and prevents excessive oscillating motion while the car is being driven over rough roads.

Likewise, with this device, the vibration and joggling of the steering wheel is prevented. The wheels follow the course marked out for them at all times.

Added strength—and therefore added safety—is imparted to the entire steering mechanism.

Put a Balcrank Stabilizer on your Ford or light car. The economy it makes possible in tires, and the greater safety it gives in driving, are worth many times the price asked for it, \$6.75.

Your nearest accessory dealer can supply you with a Balcrank Stabilizer. If not, write us, enclosing a check for the amount, and we will send you one immediately.



The Balcrank Stabilizer is attached to the front axle and tie rod, strengthening the entire steering mechanism. Can be attached with a wrench, in about ten minutes' time.

The Cincinnati Ball Crank Co., 40 North St., Cincinnati, O.

# BALCRANK STABILIZER

FOR FORDS AND OTHER LIGHT CARS

When writing advertisers—Just say FORD OWNER and DEALER

# "Dress Up" Your Ford

Add to its appearance—lengthen its life. Whether your Ford be new or old, you are sure of greater riding comfort and additional safety by attaching



bumpers and supplies—appreciated because of their protection and utility at low cost.

**DEALERS:** Thousands of motorists are demanding GEMCO supplies. Get GEMCO stocked—meet this demand. Write today for dealer discounts and catalog, cross-indexed for every make of car.

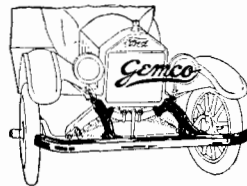
## Gemco Manufacturing Company

750 S. Pierce St.

MILWAUKEE, WIS.

### Do You Know

that before being nickel-plated, GEMCO bumpers are first coated with copper to make them absolutely rust-proof? Black finish GEMCO bumpers are coated with a special, elastic enamel which will not chip.

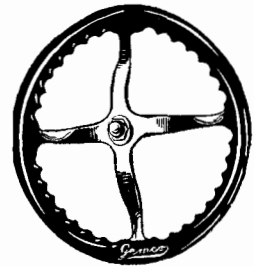


### Front Frame Type Bumper for Fords

Adds a desirable touch of smartness to a Ford, giving it appearance of longer wheel base. Sturdily built, it furnishes ample protection. Channel or Diamond bar. Nickel or Black Finish. Retail prices, \$10.50 to \$14.40.

### 17-Inch Steering Wheel for Fords

Corrugated, beautifully finished rims of selected walnut, mounted on polished aluminum spider. Large diameter makes steering easier. List price, \$7.54. Also made with black malleable spider, in tilting and non-tilting styles. Write for prices.



### Gemco Visor for Fords

Made in emerald green or plain glass. For Ford Sedans and Coupes. Makes driving safe. Keeps vision clear in all seasons. Retail prices, Emerald Glass, \$15.00. Plain Glass, \$16.80.

# The Best Battery For Fords

The autoist who has his Ford equipped with Universal Batteries can forget his Battery worries. They give positive starting and lighting power at all times. Eliminate many of the annoying lighting troubles.

They are the ideal Batteries for the Ford car. Designed and built by one of the oldest starting and lighting Battery manufacturers in the country.

It is little wonder that they are being received with great enthusiasm by Ford owners in every part of the country.

The dealer who carries the Universal Battery is going to be in the lead on sales this year—next year—every year. He is going to experience a demand that heretofore has had no equal. He can count on a Battery trade that will increase sales far beyond expectations.

Dealers who want a Battery that not only builds up profitable business but gives the greatest amount of satisfactory service to the user, should write us without delay.

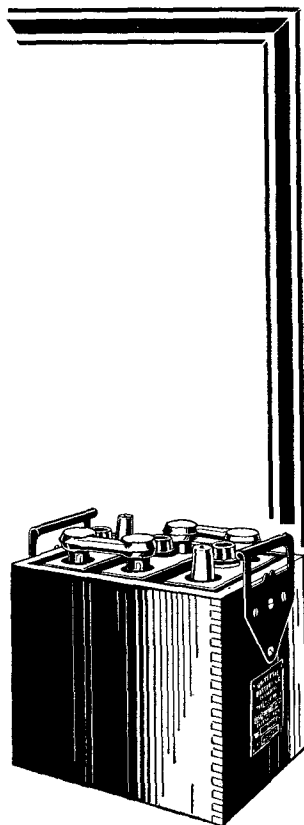
There is a Universal Battery for every make car and a repair part for any make or size Battery.

Ask about the special sales proposition. The 1920 Universal Catalog is now ready. Let us send your copy.

**Universal Battery Company**

3412 So. La Salle St.

Chicago, Ill.



# UNIVERSAL Batteries

**D & O**  
TRADE MARK

**SAFETY STEERING CONTROL**  
*for Fords*

Adds thousands of miles to life of front tires.  
Maintains alignment of front wheels, absorbs shocks to steering gear. Reduces steering effort 50%.

Makes Ford run true as 3000 pound car. Kills sidelash on rough roads. Attaches in ten minutes without disturbing any part. Outlasts the car—requires no attention. Money back guarantee.

Price **\$5.00**

In Canada **\$7.50**

A quick moving, easy selling, profitable, high quality item. Put up in labeled cartons, advertising material furnished. Stock it now to meet the demand being created by our sales making advertisements. Get your order to us early, for our shops are running to capacity now. Discounts liberal. Write for them.



Showing D & O Safety Steering Control attached, which has run 30,000 miles.

**GREEN SALES CORP., 99 State St., BOSTON, MASS.**

When writing advertisers—Just say FORD OWNER and DEALER

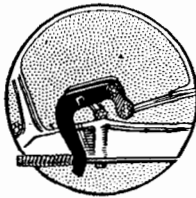


# —to make your Ford ride like a \$3,000 car

Is the added comfort and convenience of easier riding and easier steering worth anything to you? Can you drive your Ford over rough, rutty roads, over curbs and ditches without punishing yourself and passengers?

The Nash Shock Equalizer keeps the body level over rough roads and bumps, even with one wheel raised 8 inches, absorbs the shocks, stops side sway—steers easier, rides easier.

## Here's Our Offer:



Write us that you want to try the Nash Shock Equalizer on your Ford at our risk. If you're not satisfied after 10 days' trial, you won't be out a cent. Installation requires no changes in Ford design, no holes to bore, all standard parts. Send for trial order blank. We can ship promptly. Our offer makes us **prove** that you need this device on your Ford. Price \$10 (\$11 West of Rockies), 10 days' trial.



## Open Territory for Distributors and Dealers

Our exclusive co-operative sales plan offers really big possibilities. You'll be interested in the details. Write quick before we close with someone else in your territory.

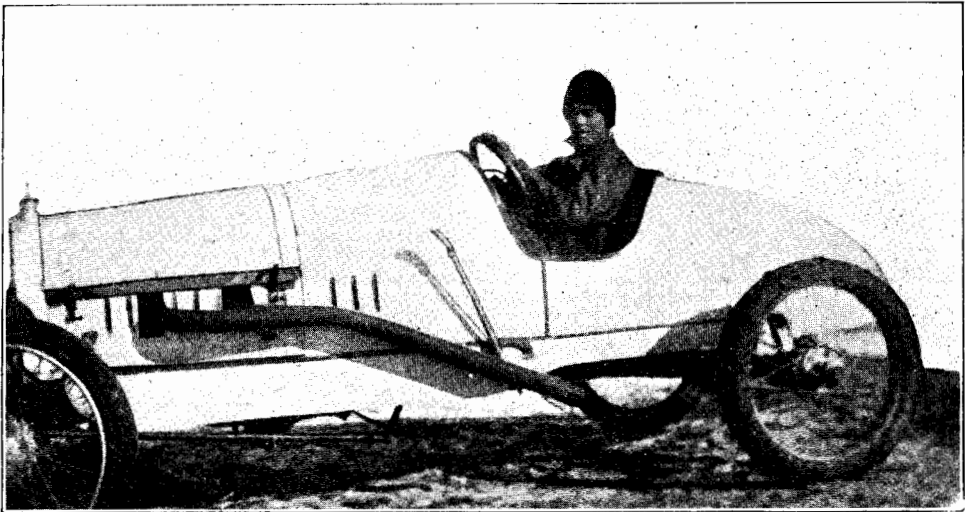
**NASH SHOCK EQUALIZER MFG. CO.**  
INDIANAPOLIS, IND., U. S. A.

This shows  
Equalizer  
in action

# NASH SHOCK EQUALIZER

When writing advertisers—Just say FORD OWNER and DEALER

# Make Your Ford a \$3,000 Car From the Standpoint of Motor Service



Chas. Skinner, Willow Bunch, Sask., in his Roof 16 overhead valve Ford racer, which has a well earned speed reputation throughout Western Canada

## ROOF 16 OVERHEAD VALVE EQUIPMENT Power Device Needed by Every Ford Owner

One hundred per cent extra efficiency, with greater gasoline and oil economy, for either touring car or truck. Hill climbing for the touring car owner beyond his wildest dreams. Sand, mud, or the steepest grades have no terrors for the Ford owner with the Roof 16 valve cylinder head.

### FORD RACING CARS

**SPEED**—Ford cars with our 16 valve cylinder head equipment have been rivals of the best racing cars on mtle and half mile tracks, and have practically driven the high priced racing cars from competition, excepting on Speedways. Ben Lawell of the Fielding Auto Racing Team, Toledo, Ohio, who has attained a speed of 100 miles per hour; Joseph C. Hayes of San Francisco, with a record of 37 miles per hour, and hundreds of others with phenomenal speed records attest the wonderful power given to a Ford car, by the use of the Roof 16 overhead valve equipment.

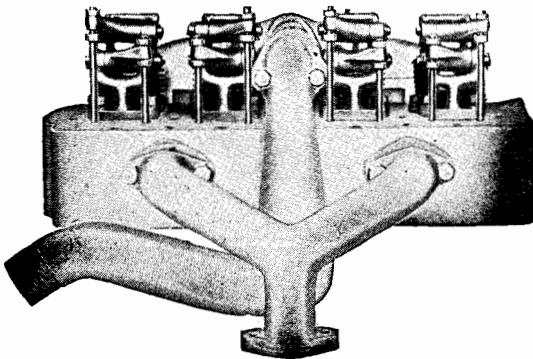
We are headquarters for everything necessary in Ford speed equipment, including polished nickel Roof 16 overhead valve equipment, Aluminite and Triple Lite pistons and rings, grey iron pistons and rings complete, Aluminite and Triple Lite connecting rods, parts for underslinging chassis, nickel steel racing gears three to one ratio, racing carburetors, everything in ignition equipment, counter-balances for crank shaft, high speed cam shafts, wire wheels and steering gears.

Tell us what you want. We can supply it. Send for photographs of our beautiful racing bodies and racing radiators, which are our own special design.

Get Our Special Circular on Long Mileage Tires and Illustrated Folder Showing Our Full Line of Special Touring, Roadster and Racing Bodies for Fords.

### DEALERS—GARAGEMEN—REPAIRMEN

The ROOF-PEUGEUT TYPE CYLINDER HEAD FOR FORDS IS AN ALL-YEAR SELLER. THEY ARE QUICKLY AND EASILY INSTALLED—SET RIGHT IN PLACE OF THE OLD CYLINDER HEAD. ROCKER ARMS OPERATE FROM THE REGULAR CAMSHAFT. Every Ford owner is a likely prospect, every Ford truck owner is a SURE SALE. If you want a steady stream of business throughout the year that pays, get our agency terms. Send for free illustrated literature of the greatest selling specialty for 1920. Place one equipment in your territory and it will bring every Ford owner to your door.



Made in the "Puncture Proof" City

**WRITE TODAY  
FOR  
Special Agency Terms**

**Laurel Motors Corporation**  
Union Bldg. Anderson, Indiana

Over 2,000,000  
satisfied users of

# ROSE TIRE PUMPS

The reason is the unsurpassed  
quality and correctness  
of design

- (1) Seamless steel barrel, polished inside, baked enamel outside.
- (2) Patent valve, admitting the air thru the center of the rod and not around the leather. The leather valve is not disturbed and the compression starts the instant the downward pressure on the handle takes place.
- (3) New steel base permitting the hose to run alongside the barrel.
- (4) Steel stirrup folds alongside barrel.
- (5) Steel hose band, no bolt, permitting of the connection being made in close places.
- (6) 5-ply hose with pure para-rubber inner wall.
- (7) Locking nut for handle. Loosen nut, remove handle by spinning backward.
- (8) Your protection. The insignia of Tire Pump perfection.

Manufactured and Guaranteed by  
**Frank Rose Mfg. Co.**  
(Formerly J. H. Haney & Co.)  
Hastings, Nebr.

DRESS UP YOUR  
FORD  
with a set of  
**HIPCO, Jr.**  
RUNNING BOARD  
MATS

They will add vastly to its appearance, and prevent mud and dirt from being tracked inside the car.

Made of tough, durable rubber composition, their rich, velvety-black finish harmonizes perfectly with the standard Ford enamel, or any other finish you may have applied.

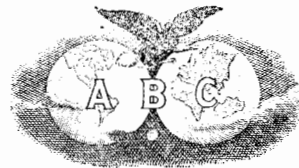
They give a perfect non-slip footing in all weathers, and—unlike the old-style coca mat—can be washed off clean as a whistle by the stream from a hose.

Equally suitable for Overland, Chevrolet, Dodge and other small cars.

**Price \$2.40 per pair; \$1.20 per mat.**

**JOBBERs AND DEALERS**

who want a quick-selling, profit-paying specialty, should write at once for details of our proposition.



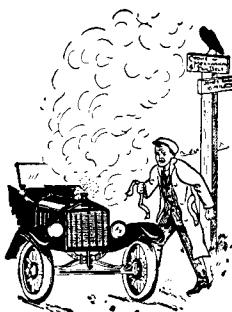
**AMERICAN BUSINESS CORPORATION**

Automotive Division

1780 Broadway

New York

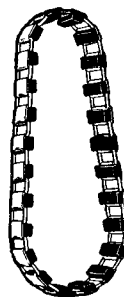
# Did This Ever Happen to You?



Of course it has—10 miles from the nearest garage—with a broken Fan Belt—is an everyday occurrence. The result is an overheated motor which decreases its efficiency and increases repair bills, to say nothing of the annoyance and loss of time.

## The One Answer

“CROWE” Mechanical Fan Belts eliminate these difficulties. Steel links prevent stretching or breaking. Sole leather blocks provide noiseless friction and eliminate slippage.



**GUARANTEED 15,000 MILES**

Standard Ford Sizes.....	each	\$1.25
Other Cars—any width—flat type, per ft.		.60
“ “ “ “ “ V “		1.20

**LIBERAL DISCOUNTS TO DEALERS**

**Premier Motor Products Co.**  
 3946 N. Robey St. CHICAGO, ILLS.

**CAR OWNER COUPON**

PREMIER MOTOR PRODUCTS COMPANY,  
 3946 N. Robey Street, Chicago, Ills.

Find enclosed \$.....for one “CROWE” Belt.....Car.....Model.

Name .....

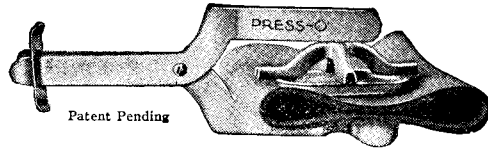
Street .....

City and State .....

My Dealer is .....

**“A Heat Welded Patch Without Even A Match”**

# PRESS-O' VULCANIZING OUTFIT



¼ Actual Size

**T**HE Press-O' Vulcanizing Clamp will appeal to every car owner for it solves the problem of making a permanent repair on the road. Anyone can operate this clamp without having any knowledge of vulcanizing.

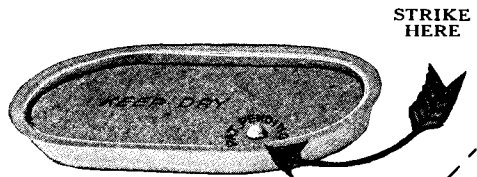
All that is necessary to repair a tube is to place it in the clamp, put one of our “Match-less” patch and heat units over the part to be repaired and then pull the clamp on the handle as far back as possible.

This clamp gives the correct pressure to the patch. For this reason, a patch put on with the Press-O' Clamp is permanent. It is guaranteed to hold any pressure after being placed back in the shoe.

## “MATCH-LESS” PATCHES AND HEAT UNITS

With the “Match-less” Patch and Heat Unit you get **“a patch without a match,”** because all that is necessary is to scratch the ignition spot with a pin, knife or any abrasive article available.

This ignites the fuel. After this burns out, remove the clamp and the job is done.



**Ackerman Brothers Company, Inc.**  
95 Liberty Street New York

### Prices:

Outfit, including Press-O' Clamp, Sand Paper and 12 “Match-less” Patches and Heat Units.....**\$1.75**

Extra “Match-less” Patches and Heat Units, per box of 12.....**\$1.00**

**Order**—From your local dealer or send your order on attached coupon to us.

**Press-O' Vulcanizing Outfit**

Please send me

.....Vulcanizing Outfit.

.....Boxes “Match-less” Patches

For which I enclose \$.....

Name.....

Address.....

Dealer's Name and Address.....

**Ackerman Brothers Company, Inc.**  
95 Liberty Street New York City

“Over 125,000 Users”

No Punctures  
No Blowouts



Here's the **PROOF**

MORE than 125,000 owners of passenger cars, trucks, tractors and trailers have already paid over \$6,000,000.00 for Essenkay The Tire Filler. These Essenkay users travel more than 500,000,000 miles annually over all kinds of streets and roads WITHOUT A PUNCTURE OR BLOWOUT. These Essenkay users include farmers, bankers, doctors, retail merchants, municipalities, departments of government and great industrial concerns in nearly every country of the world. This is final proof of Essenkay success

# No Punctures No Blowouts

Essenkay is the final solution to the tire problem. It makes punctures, blowouts and tire troubles impossible. No air is used, therefore no inner tubes are required.

Essenkay is a flexible, highly resilient material that looks like rubber and possesses practically all the desirable physical characteristics of fine Para rubber, yet actually contains no rubber in any form, therefore has none of the imperfections of rubber. Essenkay is guaranteed against being affected by heat, cold, atmospheric or climatic conditions—crumbling or flattening. The use of Essenkay is an economy in that Essenkay filled tires run from two to five times as far as air filled tires. The usual delays, inconveniences, discomforts and expense incident to punctures, blowouts, etc., are entirely done away with.

The perfection of Essenkay is a fitting climax to the magical development of the colossal automobile industry which in a few short years has grown from practically nothing to one of the largest industries in the world.

## Essenkay

THE TIRE FILLER

### First Cost—Last Cost

Essenkay does not wear out like tires, but lasts many years—as long as the car itself. When one set of tires has worn down to the last layer of fabric, simply transfer the Essenkay to new casings.

# Doubles Tire Mileage

It should be possible to get from two to four times the usual mileage by the use of Essenkay. 10,000 to 20,000 miles is the rule, not the exception. Tires filled with Essenkay are kept at constant pressure, cannot be deflated or run flat, thus they wear down to the last layer of fabric.

### Guarantee

Essenkay is guaranteed against being affected by heat, cold, water, friction, atmospheric or climatic conditions; flattening, hardening, crumbling, deteriorating or changing its consistency in any way in accordance with the standard guarantee of the American Tire Filler Industry (Inc.).



### Free Trial Offer

We will send Essenkay for Free Trial on your own car. Test it over roughest roads. Give it hardest trials under all conditions. If you are not satisfied that it rides satisfactorily—that it will end all tire trouble and double tire mileage—the test will cost you nothing. Write for free trial offer and booklet, "The Story of Essenkay."

➤ Write for Free Booklet—"The Story of Essenkay" ◀

## THE ESSENKAY PRODUCTS COMPANY

8-220 W. Superior St.

Member American Tire Filler Industry (Inc.)

Chicago, Illinois

Dealers: Write for proposition in open territory

When writing advertisers—Just say FORD OWNER and DEALER



# Centrifugal Water Circulating Pump for Fords

Just Like Its Big Brothers

**A**S adequate as those on the big, high-priced cars, this improved cooling system for Fords puts an end to such summer annoyances as over-heating, boiling and steaming. In design and construction this special Atlas Pump is identical with the larger Atlas Pumps in use on many of America's costliest cars. It actually contributes to Ford engine power; makes the Ford more economical to operate; saves time, labor and constant inconvenience.

## Ready Money for Dealers

The Atlas Centrifugal Water Circulating Pump for Fords assures quick returns to dealers. The demand exists—it does not have to be created. From experience all Ford owners know the need of an adequate cooling system for their cars. Dealers will do them an appreciated service by showing them the improved Atlas Pump. A satisfied customer means more sales and more sales mean increased profits. Write for our proposition today.

## Anyone Can Install It

A few minutes is all that it takes to install this perfected pump. Simply remove the two bolts that fasten water outlet to cylinder jacket, slip in pump bracket and gasket; screw up the two bolts; fasten water connection and slip on fan belt. Anyone can do it. Entire installation equipment, including copper asbestos gasket, fan belt, hose and fasteners is furnished complete with each Atlas Special Pump.

Delivered, Complete, East of Mississippi River.....**\$10.00**

Delivered, Complete, West of Mississippi River.....**\$12.00**

**Note:**—If there is no Atlas Dealer in your vicinity, we will ship to you direct on receipt of price.

The Atlas Brass Foundry Co.

1006 S. Front Street

Columbus, Ohio

When writing advertisers—Just say FORD OWNER and DEALER



# DUPLEX SPECIAL

## PISTON RINGS

For  
*Fords*



**T**HE individually cast outer ring with step joint is a thoroughly efficient Snap Ring. Possible leakage from any source is entirely eliminated, however, by means of an inner ring of clock spring steel which seals joint and insures uniform pressure on the cylinder walls.

Motor mechanics recognize Duplex superiority. Duplex Special Piston Rings save gasoline, minimize oil and repair expense, increase power and eliminate carbon troubles.

Enterprising dealers will procure Duplex Rings for you or you can send direct to factory.

*The Piston*  
**THE RING COMPANY**  
SPECIALISTS IN PISTON RINGS

116 SANFORD ST.

MUSKEGON MICH.



## STOPS THE MEANEST LEAKS

Radiator leaks can be cured, permanently and satisfactorily, in 5 to 10 minutes, without the least risk, at a cost of only 75c. Why pay \$15 to \$30 for a costly repair job, giving no better results,—your car laid up for days?

Good results are **guaranteed** when you use

# RADIATOR NEVERLEAK

a phenomenal liquid, almost magical in its ability to stop the meanest leaks **anywhere** in cooling system simply by pouring contents of a 9 ounce can into the water in your radiator. It reaches the leaks and seals them. There is no need of dismantling the radiator or drawing off the water.

Read our \$1,000,000.00 Guarantee. You take no chances whatever for Radiator Neverleak **cannot** harm your radiator. Your dealer will refund your money without question if you are not perfectly satisfied.

**IMPORTANT.** Always carry a can in the tool box for emergency use. Be prepared for that untimely, aggravating, inevitable radiator leak. It's cheap insurance and saves lots of trouble and expense.

Ask for RADIATOR NEVERLEAK in the yellow, white and green can. Two sizes, 50c for Ford cars; 75c for larger cars. At all Dealers or sent direct.

**BUFFALO SPECIALTY CO.** "The LIQUID VENEER People"  
349 Ellicott Street

BUFFALO, N. Y.

### GUARANTEE:

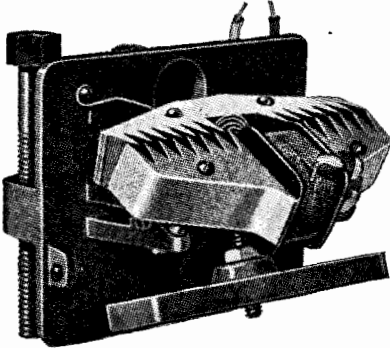
If Radiator Neverleak doesn't do all we claim for it, if it doesn't quickly and satisfactorily stop any leak in the cooling system when used according to directions, in fact, if it isn't the finest article of its kind you ever saw or used, your dealer will refund your money or replace the goods, free, at your option.



*Neverleak Experts for 25 Years*

When writing advertisers—Just say FORD OWNER and DEALER

# A Perfect *Ford Light* At Last



Now you may have a bright, even, white light at all engine speeds. Will not dim when you slow down, or flicker, flare up, or burn out bulbs when your engine races. A steady light all the time you are in motion.

## "EVEN-LITE"

This perfect current regulator is for Ford cars only, because Ford car headlights are lighted from magnetos and not from batteries. "Even-Lites" are easily attached. Require no care. Are not affected by oil, dust or water. Delicate as speedometers and durable as engines. One will outlast your car. No up-keep, and fully guaranteed.

**Retail Price \$10, including two bulbs**

State and county agents wanted.

There's money in this new device.

**The "Even-Lite" Mfg. Company**

INCORPORATED

MANUFACTURERS AND DISTRIBUTORS

539 S. Third St., Paducah, Ky.



## PREFERRED THE WORLD OVER

**E**VERY Ford owner acknowledges the necessity of a better cooling system.

Every Ford owner who has used a National Zig-Zag radiator will tell you emphatically that it eliminates his radiator troubles.

The reason is that the Zig-Zag principle affords greater water space and more cooling surface.

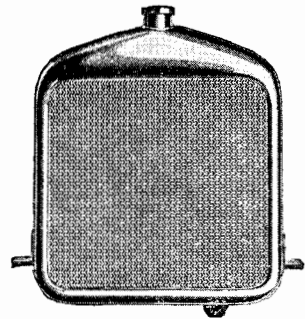
It means a smoother running engine. And it improves the looks of the car decidedly.

That is why the National Zig-Zag is preferred by thousands of Ford owners the world over as a vital addition to Ford efficiency.

Let us put you in touch with the nearest dealer.

### DEALERS.

We are now in a position to offer you an attractive agency proposition. Full information upon request.



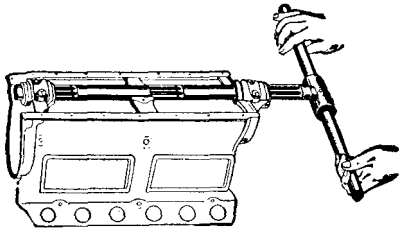
**NATIONAL ZIG ZAG RADIATOR**

### PRICES.

\$28.00 finished in Black Enamel. \$30.00 finished in Nickel. F. O. B. Detroit. Shipping weight complete, 35 pounds.

**NATIONAL CAN COMPANY**  
DETROIT                      RADIATOR DIVISION                      MICHIGAN

# Touring Time Means Profits to the Well Equipped Shop



## "TRIBUNE"

### Main Bearings Aligning Reamer

You can ream **all three** Ford Crank Case Bearings and **four** Connecting Rod Bearings in **one hour** if you own a **Tribune Line Reamer**, for it is the one reamer on the market that is 100 Per Cent Efficient and is Fool Proof.

**Three** Pilots; one before **each** set of blades, so that all bearing caps may be drawn down equally tight before reaming is begun.

Then these pilots are ground just enough smaller than the blades so they will clean up a slightly worn bearing without waste of babbitt and leave a finish like polished glass.

Quick, reliable work assured. This tool is made with **both straight and spiral flutes**.

Ford Reamer, Straight Flutes.....\$15.00  
 Ford Reamer, Spiral Flutes .....\$18.00

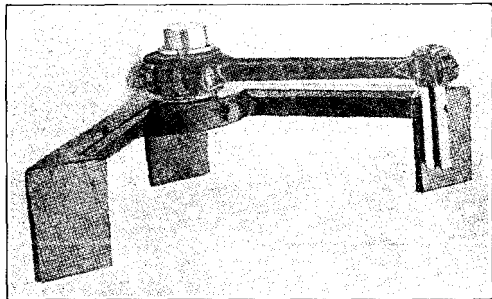
## "TRIBUNE"

### Connecting Rod Testing Fixture

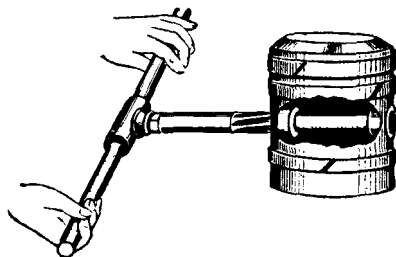
Replacement of connecting rods is one of the most often called for repairs. It is not only profitable in itself, but it generally brings other work later—if the connecting rods give satisfaction.

Rods that are bent or twisted when placed in a motor often lose other work that would show hundreds of dollars profit.

Simply slip the rod over the stud, which is the exact size of the Ford crank shaft bearing. Swing the rod in one direction until the piston pin seats against the flat surface. This will show whether the rod is bent. If it is, straighten it. Then swing the rod in the opposite direction until it touches the other flat plate. This will show that the rod is twisted.



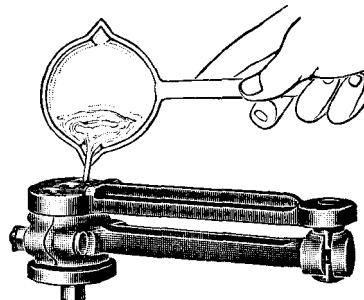
Tribune Connecting Rod Testing Fixture.....\$8.00



## "TRIBUNE"

### Piston Pin Bushing Reamer

You know what trouble you have had in reaming piston pin bushings. Here is a tool that any novice can use satisfactorily. The pilots guide automatically. Cost \$4.75.



## "TRIBUNE"

### Babbitting Jig

With this equipment the average mechanic can easily rebabbit eight to ten connecting rods in one hour. No need of buying new rods when bearings are needed. A rapid worker and a money-maker. Price complete, \$1.75.

## THESE ARE BUT A FEW

of the many "Tribune" Time Saving and Money Making Tools. Write for information on complete line. Mention jobber's name.

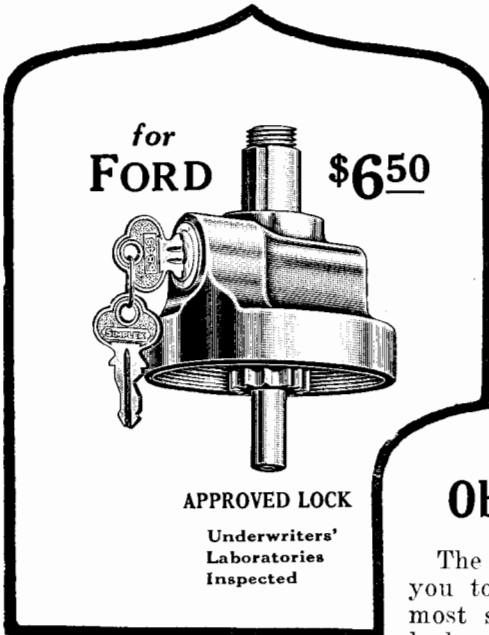
# TRIBUNE ENGINEERING COMPANY, Inc.

Equipment Department

OWEGO, N. Y.

# SIMPLEX

## Steering Wheel Locks



### Obviously Superior

The name Simplex will guide you to the safest, strongest and most satisfactory steering wheel lock made. The only lock of this type that will cause you to automatically lock it in driving position. Gears are always in mesh although wheel is "spinning" when locked against theft. Strong beyond any need and will resist the blows of a sledge hammer or the cunning trickery of the auto thief. Furthermore, it is the lowest in price.

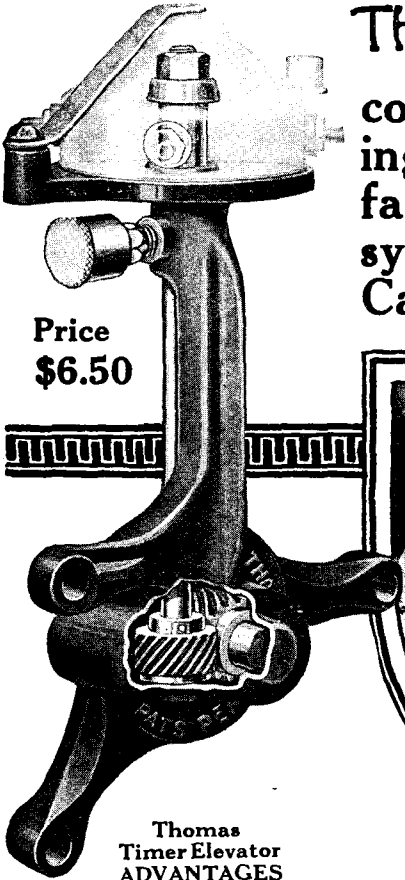
**"The lock with an ironclad guarantee"**

Mfgd. by **SIMPLEX CORPORATION** Chicago

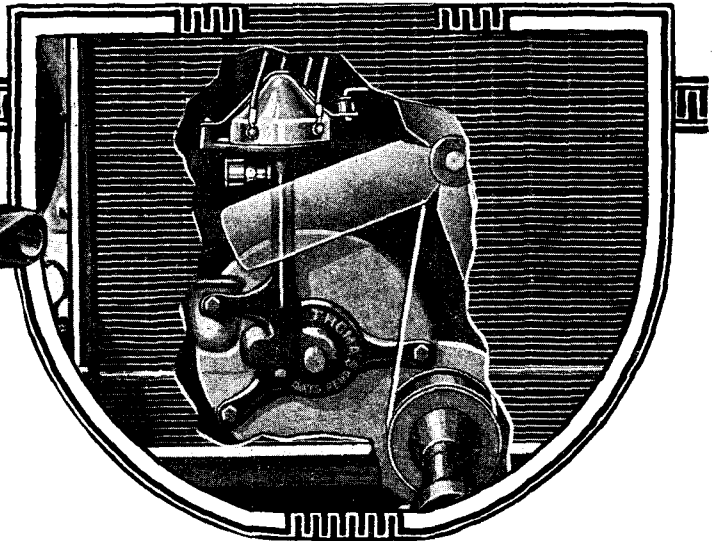
IF YOUR DEALER OR JOBBER CANNOT SUPPLY YOU—WRITE US DIRECT

# THOMAS Timer Elevator

corrects all ignition trouble arising from the Timer. Compares favorably with the best ignition systems on the highest price cars. Can be installed in 20 minutes.



Price  
**\$6.50**



### Thomas Timer Elevator ADVANTAGES

- 1 Ease of installation—in 20 minutes.
- 2 Simple in construction—fits any timer.
- 3 Protects against oil, dirt, grease and water.
- 4 Allows overhead wiring.
- 5 Machine-cut, hardened spiral steel gears.

## DEALERS All Ford Owners Are Thoroughly Sold on This Elevator at Sight The Thomas Timer Elevator

Over One Hundred Thousand Now In Use

The Thomas Timer Elevator corrects ignition troubles by lifting the Timer up where it remains clean and is easy to get at.

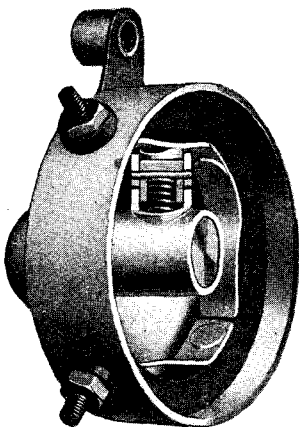
By employing the Thomas Elevator, the wiring is overhead—where it belongs—and compares favorably with the most expensive ignition systems. The Thomas Timer Elevator can be installed in 20 minutes without any special tools. It is not necessary to remove the radiator. Any Timer made to fit a Ford will fit the Thomas Timer Elevator without making any changes.

### THE THOMAS TIMER

The Thomas Timer employs the wiper contact principle which is recognized in the electrical field as being the most satisfactory. Contact is always made at exactly the right time, thereby assuring perfectly balanced explosions. An outstanding feature of the Thomas Timer is the fact that worn parts can be replaced in a few minutes for a few cents, which is not practical with a roller type Timer.

The Thomas Timer is guaranteed for one year from date of purchase

Thomas Products Are Sold Through Jobbers



Thomas  
Timer  
**\$1.50**

**Thomas Andrews Corporation, Chicago**  
Department of Sales 624 Michigan Ave., Chicago  
Factory Waukegan, Illinois

# MORE MILEAGE

## INSYDE TYRES



### Cut Your Tire Cost in Half

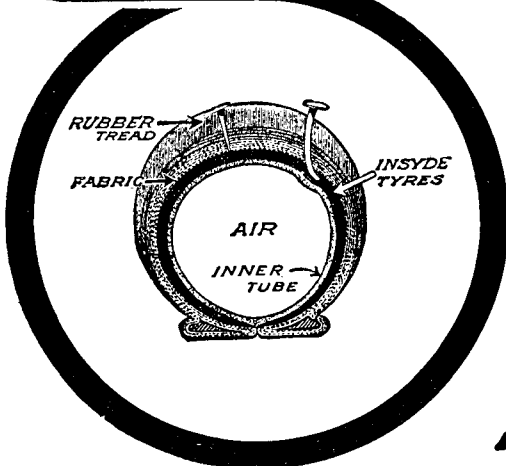
Double tire mileage. Prevent punctures and blowouts. Insyde Tyres are inner armor for automobile tires. Thousands in use, tremendous demand due to high cost of tire casings.

### We Want Distributors Everywhere

**Devote all or your spare time**

F. X. A. sold \$143 worth in two hours. C. T. B. sold 40 tyres in 4 hours, \$100 worth daily sales is easy. Best agency proposition on market today. Guaranteed sales or goods may be returned. No risk but big opportunity to anyone who wants to make real money quickly—territory free.

**Write your name carefully on the coupon below and mail at once for full details about proposition—FREE**



**THE AMERICAN AUTOMOBILE ACCESSORIES CO.**  
Dept. 244 CINCINNATI, OHIO

Gentlemen—Without obligation or cost to me please send free details about Insyde Tyres as advertised in leading magazines. What is your introductory offer? Yours truly,

Name.....

City or Town.....

County..... State.....

R. F. D. No..... P. O. Box.....

Do you want agency proposition?.....

Name of car..... Size of Tyre.....



# New Convenience Plus Old Reliability

# RED SEAL SPARKER

## A Gang of Red Seal Batteries Handled As One

Try the Red Seal Sparker—Red Seal reliability in its most convenient form. And you'll save time, bother and money. These items are all developed in Red Seals—the dry batteries you have learned to rely upon. Now you have gangs of them in one package. Investigate!

### Best Wherever a Spark Is Needed

The Red Seal Sparker is best for every dry battery use—on your Ford Car—farm engine—tractor—truck—for lighting plant—or on bells, signals, etc.

**The Guarantee  
Protects  
You**

No chance of improper wiring. Connect up the sparker for use as easily as one cell. Shift it as a single unit from one job to another. No fussing with short wires, unnecessary binding posts, etc. The two posts are large and square to turn easily with fingers. Broad web strap for carrying can't cut hand. Double moisture proof casing preserves batteries' strength. Just what you need!

### Ask Your Dealer

Dealers selling Red Seal Dry Batteries also have the Sparker. Made in units of 4, 5, 6, 10 and 12 cells in various shapes—one for your exact requirements. Ask for it.



### Manhattan Electrical Supply Co., Inc.

New York, Chicago, St. Louis  
San Francisco

Factories: Jersey City  
St. Louis Ravenna, Ohio

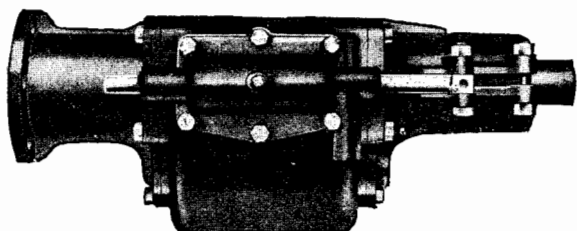
## DEALERS

If you are not now selling Red Seal reliability in its new form—The Red Seal Sparker—get in touch with your jobber or write us at once. Don't neglect supplying this splendid convenience to your customers.

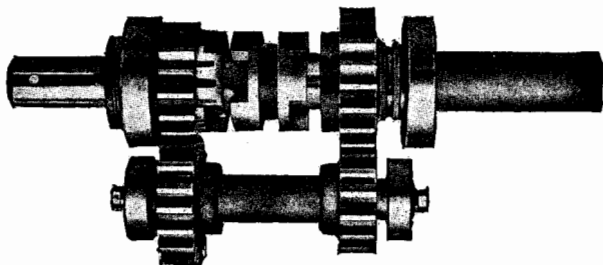
# Langbein 4 speed auxiliary

## Transmission for Fords

(truck and passenger car)



BUILT COMPLETE  
IN OUR OWN WELL  
EQUIPPED PLANT TO  
"STAND THE GAFF"



*The Transmission with the  
Hess Bright Ball Bearings*

Furnished complete, ready  
to install

**MODEL W**  
For Model T Ford Worm Drive Truck

WE WANT EXCLUSIVE  
DEALERS—WRITE TODAY

### MODEL W GEAR RATIOS ARE:

#### Underdrive Type:

- 1st Speed (Emergency Low) . . . 39.80 to 1
  - 2nd Speed (Ford Low) . . . . . 19.90 to 1
  - 3rd Speed (Intermediate) . . . . . 14.50 to 1
  - 4th Speed (Ford High) . . . . . 7.25 to 1
- The underdrive type gives 50% more power.

#### Overdrive Type:

- 1st Speed (Ford Low) . . . . . 19.90 to 1
  - 2nd Speed (Intermediate) . . . . . 12.30 to 1
  - 3rd Speed (Ford High) . . . . . 7.25 to 1
  - 4th Speed (Extra High) . . . . . 4.50 to 1
- The Overdrive Type gives 45% more road speed without increasing engine speed.

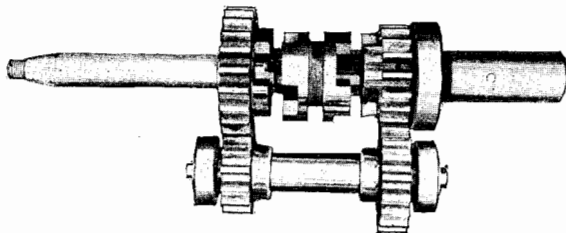
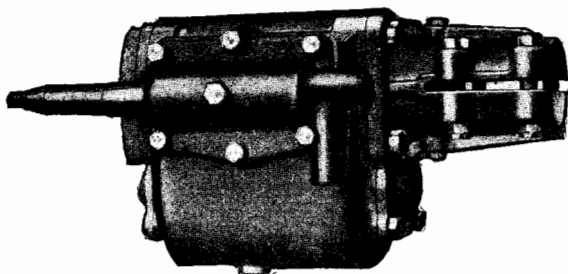
### MODEL B GEAR RATIOS ARE:

#### Underdrive Type:

- 1st Speed (Emergency Low) . . . 18.30 to 1
  - 2nd Speed (Ford Low) . . . . . 10.00 to 1
  - 3rd Speed (Intermediate) . . . . . 6.60 to 1
  - 4th Speed (Ford High) . . . . . 3.63 to 1
- The underdrive type gives 45% more power.

#### Overdrive Type:

- 1st Speed (Ford Low) . . . . . 10.00 to 1
  - 2nd Speed (Intermediate) . . . . . 8.00 to 1
  - 3rd Speed (Ford High) . . . . . 3.63 to 1
  - 4th Speed (Extra High) . . . . . 2.9 to 1
- The overdrive type gives more road speed without increasing engine speed.

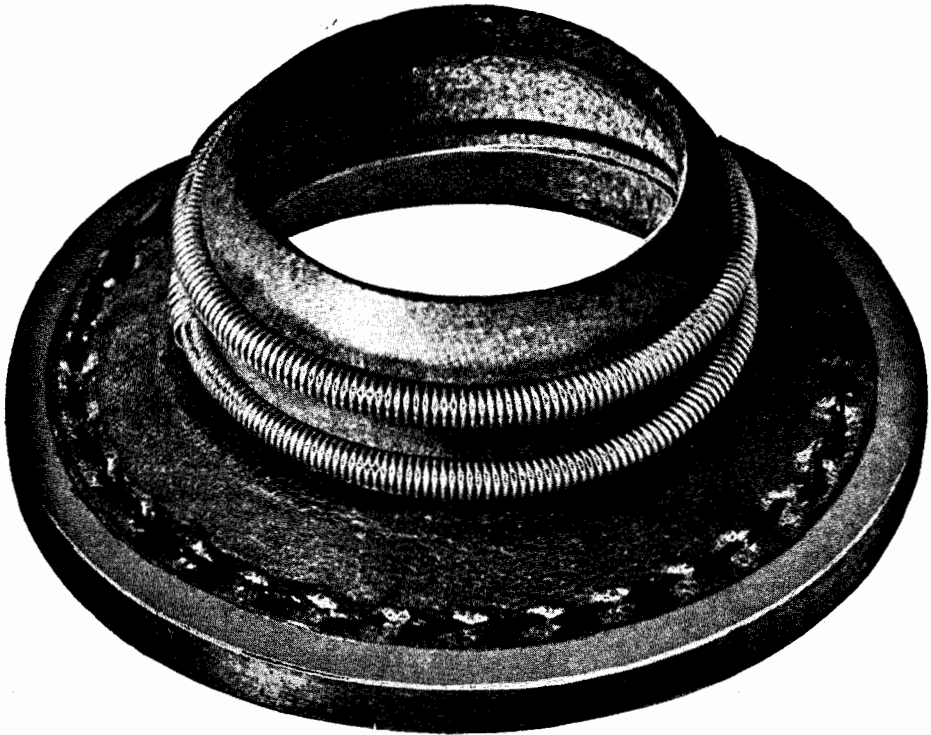


**Model B**  
For pleasure cars, all models and chain-drive  
truck attachments

SOLE FACTORY DISTRIBUTORS

**THE BIERLEIN SYNDICATE, Limited**  
1144 S. Los Angeles St., Los Angeles, California, U.S.A.

# C & M OIL RETAINERS

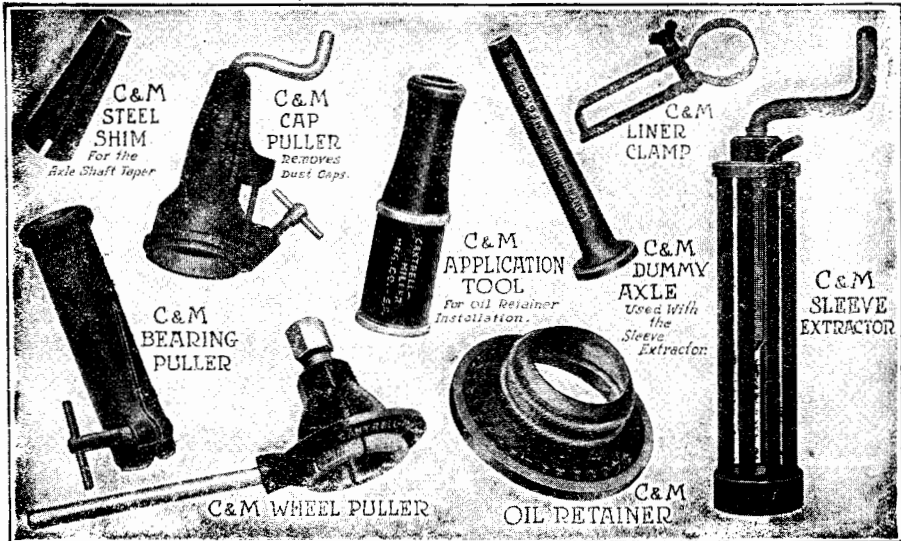


Patented April 1, 1913—Jan. 9, 1917—Jan. 14, 1919

“MADE OF LEATHER—THEREFORE LEAK-PROOF”

## OTHER C & M PRODUCTS

PATENTED



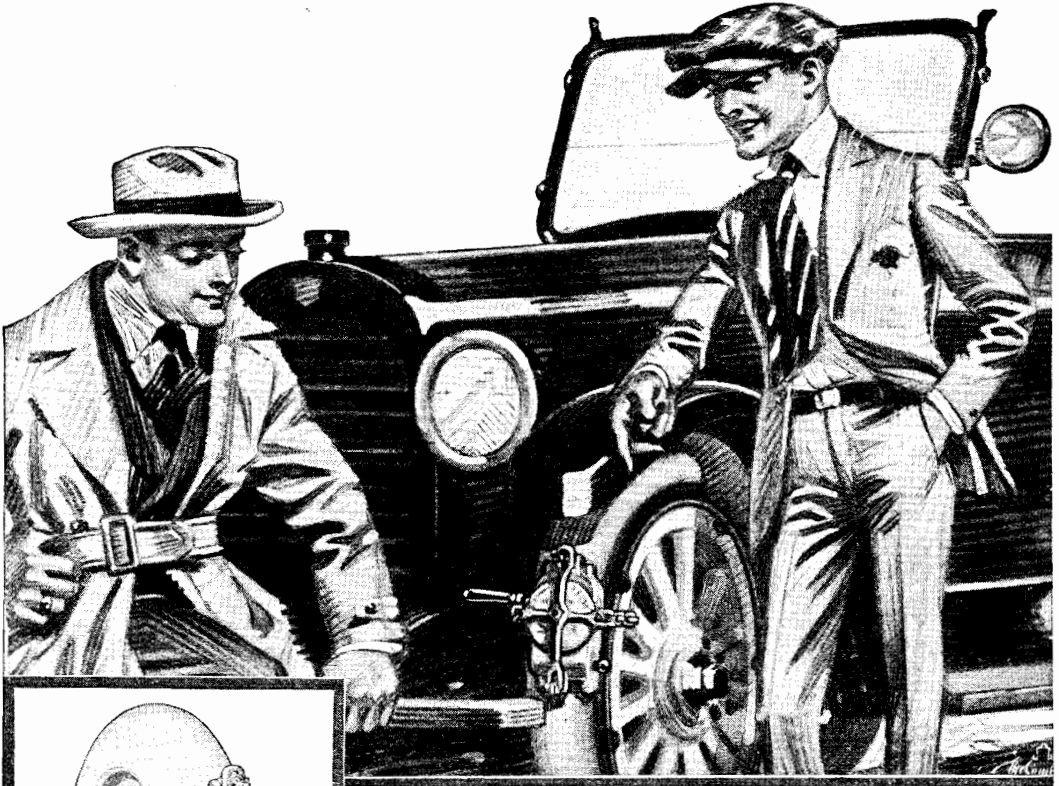
FORD REPAIRMEN AND AGENTS—WRITE TO US OR YOUR JOBBER.

“Exclusive Manufacturers and Patentees.”

### Cantrell-Miller Manufacturing Co., Inc.,

1246-1254 Larkin Street,  
San Francisco, Calif.

When writing advertisers—Just say FORD OWNER and DEALER



—saves two-thirds of my  
**Tire Expense**

“Once a week I go over my tires—and seal the little holes and cuts that ruin tires by permitting dirt, oil and water to reach and rot fabric. With the SHALER Vul-Kit I ‘vulcanize’ these holes with tough, new rubber that makes a lasting job of it. It takes only a few minutes—but keeps my tires good as new—prevents tire trouble—*doubles* my mileage—and actually *saves* 2/3 of my tire expense.”

# SHALER Vul-Kit

Fits any size or style of casing. Works with the inflated tire on the wheel. Anybody can use it—simple, quick, safe. One “Vul-Kit Treatment” a week on your tires will prevent blowouts and tire trouble, save expense—make one tire outlast two.

**Also Mends Tubes - Every Size - Any Puncture**

SOLD BY ACCESSORY DEALERS AND GARAGES

Ask Your Dealer for a Demonstration

**Complete Outfit**

**\$3<sup>50</sup>**

*Slightly higher West of the Rockies and in CANADA*

**C. A. Shaler Co. 2604 Fourth St. Waupun, Wis.**

*Oldest and Largest Manufacturers of Vulcanizers in the World*

When writing advertisers—Just say FORD OWNER and DEALER

# Selling Used Cars

During the past year there has been a greater demand for automobiles of all makes than ever before in the history of the country. Many dealers have been obliged to turn down perfectly good sales when customers were waiting with the check in hand.

The necessity of the refusal of sales has been due to the inability of manufacturing plants to turn out their products fast enough. Most of the automobile concerns have been continuously over-sold,—the orders piling up faster than they could complete the machines.

Each of the retail dealers of the leading makes has had to be contented with his proportional allotment for his territory, or in other words to take cheerfully what he could get.

This condition has produced a great demand for used cars of all makes throughout the country. Then too, many people prefer to change cars often rather than to keep one too long. By this method of frequent exchange, they are always driving a car comparatively new and up-to-date. In this way, the repair bill is less, and the exchange value more.

Sometimes car owners wish to exchange because they need a larger car or have a desire to try a different make which promises to develop greater speed or quicker "pick-up." Few people, however, can afford to put the old car into the discard and to go ahead and buy a new one, and so oftentimes dealers find it expedient to take a used car in part payment.

In fact, there is a variety of reasons why the used car market is a large and important one. Naturally these used cars which are taken in trade, come to the dealer in various conditions depending on the car, and the service they have rendered. Good judgment should be used in the matter of purchase, for of course, the dealer takes them in, only with the idea of re-sale, and while there is no guarantee with second-hand cars, the customer who purchases takes them largely on the reliability and reputation of the dealer.

Different dealers in different parts of the country use their own methods to dispose of used vehicles. Perhaps two illustrations of men who are successful in this business and who handle the situation differently, will be illuminating.

Mr. Brown takes in such used cars as he believes to be in good running conditions. He has his mechanic test out each vehicle which he has under advisement, and report to him on the following points:

1. Make and date of model.
2. Mechanical condition.
3. Number of miles run.
4. Condition of body.
5. Condition of top.
6. Condition of tires.

7. Condition of upholstery.
8. Probable re-sale value.
9. Probable expense of putting into good shape.

10. Expenses for demonstration purposes. Now, a blank which calls for these details is filled out by the mechanic and handed to the dealer, or he fills out such a blank himself. Upon these facts he bases his offer in trade.

As soon as used cars are taken they are divided into two classes. Those which are either just junk cars or in a very poor condition indeed, are sold directly to another dealer who handles this class of stock, and who is prepared to get the most out of it. The better class of cars are put in good condition for demonstration purposes only. That is to say, they are washed, polished up, the valves ground, the carbon cleaned out of the engine, or work of that kind done. The outlay upon each car is limited. No attempt is made to take out body dents, to straighten fenders, to dye tops, or to put on fresh paint. The cars are sold for just what they are, and the buyer given a chance to do his own sprucing up.

The line of argument is something like this. "You as a buyer will have to pay for the repairs anyway, and so why not have them done at your own direction, have the body paint any color you wish, and such other changes made as you feel the circumstances warrant. You can see the car is in good running condition, and that is what counts."

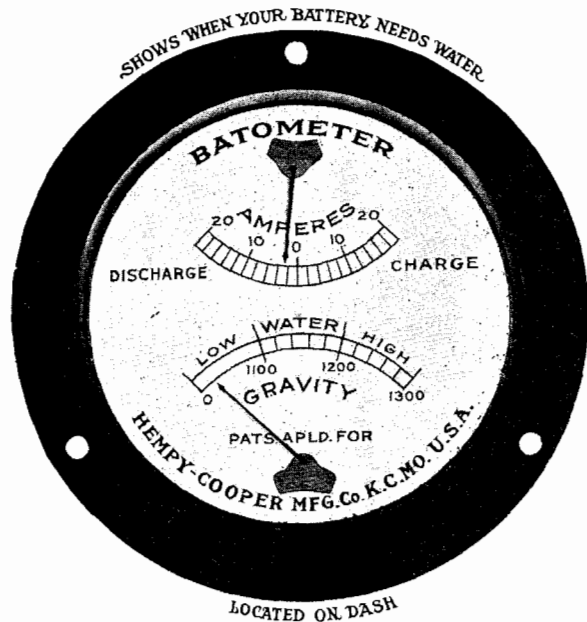
This man is very successful and turns over a large number of cars at a good profit, with a minimum of expense in doing it. In his locality this system is very successful because he is located in an industrial town where a great many people live out in the suburbs and pick up cars at a reasonable figure to take them back and forth. These cars usually stand out of doors in all kinds of weather, and a high finish and an expensive job generally, is not likely to be a selling recommendation to the majority, as most of these industrial workers want something for use rather than for show.

In another locality which chances to be an aristocratic city of medium size, a dealer who buys used cars, makes a handsome thing out of it. He does not even deal in new cars, but he picks up automobiles of whatever makes he can, upon which he believes he can earn a fair return. He tests the car out, and being a good judge of values, makes a spot cash offer which usually brings him a good value and many bargains because so many people are anxious to realize quickly.

His next step is to put the car in the hands of his mechanic who goes over it and makes such repairs as the dealer would make if he were going to use the car for himself. When the machine is in as good condition as can

Announcing  
The

Hempy-  
Cooper



# BATOMETER

Pronounced Bat-o-meter

## What It Is—

An ammeter, a water indicator, and a gravity meter.

## What It Does—

Takes the place of ammeter on instrument board.

Shows when battery needs water.

Shows at a glance water level in battery.

Shows the gravity charge in battery.

Shows the strength of battery.

Shows number of amperes, charging or discharging.

Shows whether battery is under or over-charged.

A new appliance which fills a long felt want.

No more anxiety—"I wonder if my battery is dry?"

You plainly see all this on the little instrument located on your dash.

No climbing out raising cushion, seat box cover and taking out battery plugs.

No more testing your battery with a glass hydrometer.

The gravity hand tells the gravity charge in your battery.

Tells you when your battery is weak.

Causes you to give your battery the attention it deserves, thereby lengthening the life of the battery by keeping it fully charged.

Electrically controlled.

### For use on

AUTOMOBILES      TRACTORS      RAILROAD COACHES  
HYDRO-AIRPLANES      MOTOR BOATS, ETC.

Can be used in connection with all closed batteries.

Inquiries from Manufacturers, Jobbers, Dealers, Owners, solicited.

MANUFACTURED BY

**The Hempy - Cooper Mfg. Company**

Kansas City, Mo., U. S. A. Firestone Bldg. Dept. F. O.

be expected, it is put into the paint shop. This man makes a contract with a skilled firm of automobile painters to do all his work at a regular discount, and they have orders to do first-class work on whatever he turns in.

Sometimes, a car will only need varnishing; again the hood and fenders will need repainting; or possibly the whole finish will need to be removed and a thorough job done from the ground up.

However, before a car is offered for sale, it is groomed inside and out. Then a price is asked for that car which includes the purchase price, the expense of repairs, and a very handsome margin of profit.

Those who handle real estate say that there is nothing which sells for as much as paint and paper, and our automobile dealer has also come to the conclusion that there is nothing in the way of motor car equipments which will sell for more than mechanical reliability and appearance.

This retail dealer uses plenty of printers ink, for he finds that in almost every case, his buyers come through this medium. Some one sees the description of a car which appeals to them, and looks the matter up. He uses sufficient space to describe what he has for sale fully. He is careful never to overstate the value he offers, but he lists the good points and the extra equipment. He has come to be known within a radius of two hundred miles, and from a very small beginning is

doing a large and profitable business. He firmly believes that the "pep and push" which he has put into his business matters are what are accountable for his success. He is never in a hurry, always genial, and always fair. It is his conviction that there is good money in the used car business, for in his own case he has proved it.

He finds that he can turn over a medium priced car the quickest of all. There is the least profit on cheap cars, and the highest profit possible in the expensive ones. Many times he is able to offer vehicles which are almost brand new, upon which he can realize well. He advances the argument to his customers that the used car which has been tested out and well broken in, has demonstrated its worth and is like a man whose experience has proved him to be trustworthy.

It stands to reason that with the automobile concerns turning out cars in large numbers and people continually buying, that the used car market will grow more extensive instead of shrinking. Somebody must handle these vehicles and it takes good judgment and a high standard of integrity to do it right. The man who has no higher aspiration than to be a car jockey, and to "Do" his customer will not stay in business very long.

There are good values to offer here, and the man who handles the business properly is entitled to a reasonable margin of living profit.

#### DRILLING INLET MANIFOLD

When drilling the inlet manifold, to install a pet-cock for the auxiliary air supply, the metal chips, from the drill, are apt to get down into the carburetor, where they may possibly cause trouble. Removing the carburetor is considerable bother, on account of the difficulty of reaching the carburetor-to-manifold bolts.

Keep the drill cool and dry, and smear the drill with heavy cup grease. Keep the drill cool, by frequently dipping the drill into cold water. Just as the drill is breaking through, wipe drill clean, and cool it well. Then put on plenty of fresh grease, which will collect and hold the metal chips.

Better results are obtained by drilling a little below the place where the manifold divides. Probably, this is because the inrushing air causes a swirling motion to the air and gases, making a better mixture.

Sometimes, when the car is not used regularly, the tires will weather check along the sides. This will tend to let in the moisture and rot the fabric. To cover the cracks, and keep out the moisture, apply a couple of coats of vulcanizing rubber cement, about the consistency of mucilage. If the cement is thicker than this, thin with gasoline. Let the cement dry for 12 hours, and then dust over with tire talc. The tires look nice, when treated this way. Use a quite stiff brush.

R. F. Levens, Portsmouth, R. I.

#### SPARK PLUG CARRIER.

Wise Ford owners always carry an extra spark plug or two in the car but, only too often, the extra plugs are carelessly thrown into the tool box. A good carrier, for the extra spark plugs, can be made from a section of garden hose, cut the length or the width of the tool compartment.

A wooden plug can be placed inside the rub-



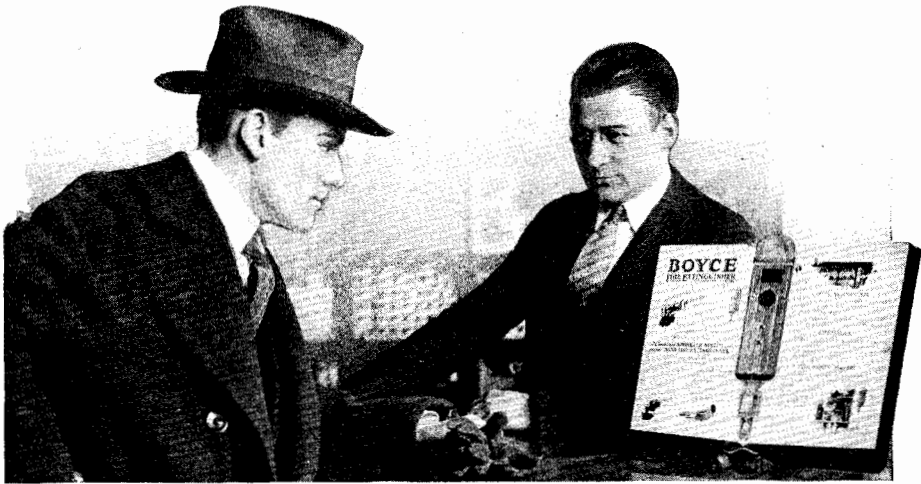
GARDEN HOSE

ber hose, and held in place with a tack. And this plug will prevent injury to the spark plug points. Tapered wooden plugs, or corks, can be placed in the ends of the garden hose, to keep the plugs from falling out. Though, if the garden hose is cut right length, so that the ends of the hose are jammed against the sides of the tool compartment, this will hold the plugs in place.

W. F. HILD, Chicago, Ill.

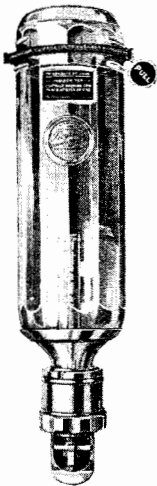
My son, of all the little tricks

That I have learned to date,  
The best one is, don't even mix,  
'Booze' and 'Gas,' that's straight.



BEFORE PURCHASING **"A FIRE EXTINGUISHER"**

*Ask yourself the following vital questions:*



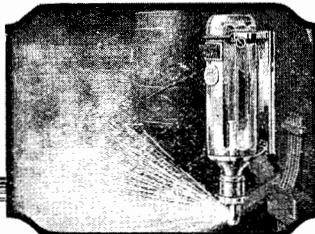
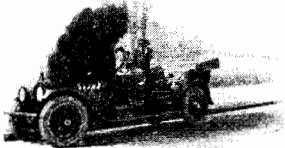
- "Will it work automatically?"
- "Will the container leak?"
- "Will the chemical evaporate?"
- "Is the chemical visible?"
- "Can the average woman operate it?"
- "Will it corrode, stick, bind—in other words—fail to operate when I need it most?"
- "Is it a worked-only-by-hand type or is it a combined hand operating and **automatic** type?"

BOYCE-VEEDER Corporation  
Long Island City, N. Y.

**BOYCE**  
*The* **AUTOMATIC**  
**FIRE EXTINGUISHER**

PRICES  
Model 1 . . . \$6.00  
Model 2 . . . 8.00  
*(Model 2 holds twice quantity of Model 1.)*

*When you need it most—  
you need the Best.*





# Does Muffler Impair Engine Efficiency?

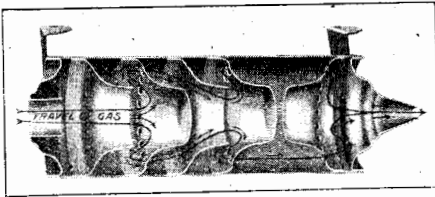
By G. I. MITCHELL.  
Automotive Engineer.

Considerable discussion has appeared in the automobile press of late regarding the gain in power of an automobile engine when run without the muffler. Manufacturers claim that their mufflers are so efficient that little or no back pressure is placed on the engine and it is therefore unnecessary to use a cut-out on their cars. However, the general opinion of car owners and drivers and especially truck operators seems to be that a considerable gain in power with a proportionate saving in fuel is noticed when the engine is run without a muffler.

The muffler is applied to automobile engines to deaden the noise of the exhaust. We are all familiar with the series of sharp reports which accompany the operation of an engine without a muffler and we can easily imagine what a bedlam this old world of ours would be if the present day automobile was not fitted with a silencer.

The cause of the sharp sound of the exhaust of an unmuffled engine is the sudden release of gas under pressure upon the opening of the exhaust valve. The gas in the cylinder at the end of the working stroke is still under a pressure of about 40 pounds per square inch. When the exhaust valve opens this gas immediately rushes out into the atmosphere with a loud 'pop' report. In order to stop this noise it is necessary to keep the gas from reaching the open air all at once. In other words, it must be released slowly and at a low velocity. The muffler is attached to the exhaust ports for this purpose.

In the early days of automobiling not much



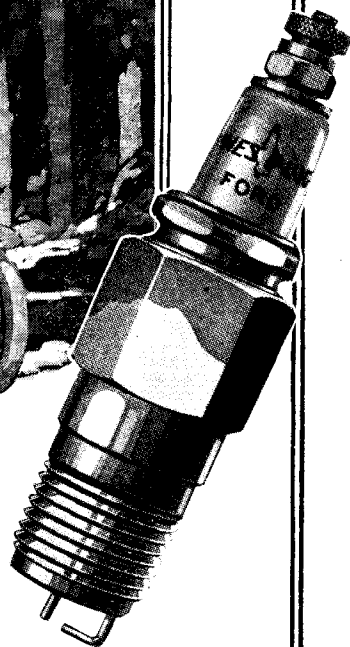
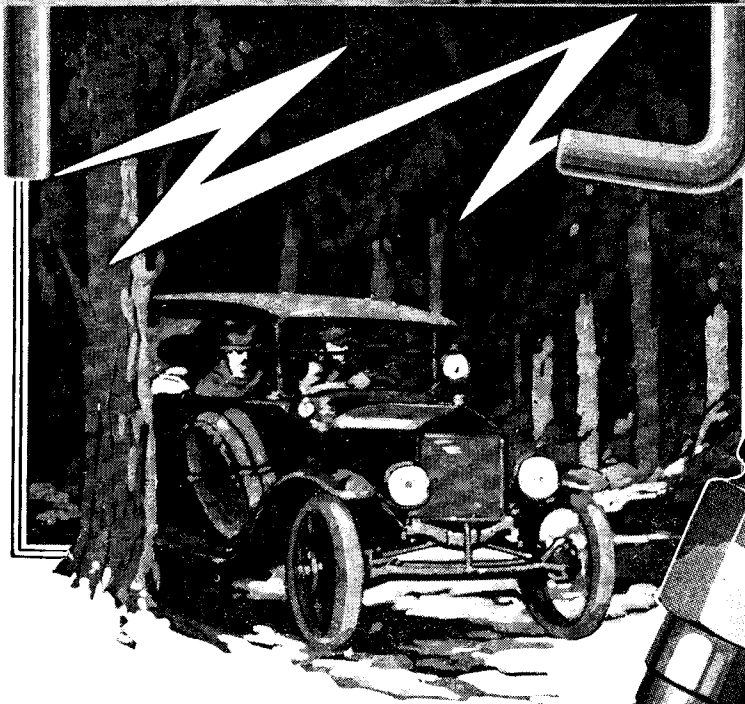
attention was paid to the muffler, the cars were noisy in operation, and the little additional noise due to a poorly designed muffler did not amount to much as compared with the many clashes and clanks which were a component part of motor car operation. But as the design of the car advanced and quiet and smooth-running became a requirement which the buying public demanded, the muffler was improved to give a nearly absolutely quiet exhaust.

A cross section of a typical old style muffler is shown in Fig. 1. This muffler consisted of a cylindrical assembly of several concentric chambers, the pipe from the exhaust manifold of the engine opening into the

inner chamber where the gases were allowed to expand somewhat. From the inner chamber the gases passed into the next outlying chamber, which had considerable more volume than the first, through several openings in the wall between the two. The increased volume of the second chamber permitted the gases to expand to a still greater volume. The third or outside chamber received the gases in turn after a third expansion. By this time the gases had expanded to a point where the pressure had dropped to very nearly atmospheric and from the third chamber they were permitted to escape to the air. Due to the many expansions as the gases passed through the muffler their escape to the air was in a slow steady stream which resulted in a gentle hiss rather than a puff or loud report. The temperature of the gases had fallen rapidly in their passage through the muffler and this helped to relieve the pressure. The muffler had received a series of discharges of hot, high pressure gases and had blended these together, lowered the pressure, cooled them off, and finally discharged them to the air in a steady noiseless stream.

This process deadened the sound and gave quiet operation but it also had the undesirable effect of putting back pressure on the engine. By this is meant that the muffler did not permit the gases to escape unhampered to the air, but due to the fact that the escape of the gases was held back somewhat a pressure built up in the muffler and in the exhaust pipe. This pressure had to be overcome by the engine before it could pump the exhaust gases out against it. The result was that the engine worked continually against this back pressure and could not deliver as much power as when the muffler was not attached. More fuel had to be used to drive the car. Muffler cut-out valves were installed to let the gases out into the air without going through the muffler. The use of these cut-out valves resulted in a saving of several gallons of fuel on a long trip and also gave an engine which took the hills and bad places with greater ease.

The old style muffler created back pressure on the engine because of the many restricted passages and abrupt turns through which the gas passed on its way out. Later-day mufflers such as are placed on modern engines have greatly overcome this possibility of producing back pressure. Figure 2 shows the cross section of an up-to-date design wherein the direction of flow of the gases through the muffler is in smooth lines, the change in direction of flow being very gradual. The passages through which the gases pass are open and permit the gases to



*“Clean as a  
hound’s tooth”*

Here is a spark plug built especially for Ford users. Examine it—and you’ll understand just why the WESPLUG makes friends and *keeps* them. The WESPLUG keeps “clean as a hound’s tooth” because its electrodes—finer than ordinary electrodes—are made of special, sturdy material costing five times as much as ordinary spark plug wire. These electrodes get red hot immediately the motor is started, give a bigger, hotter, fatter spark and do not allow carbon or other deposits to adhere.

The WESPLUG Ford is equipped with an extra large body allowing the plug to sit high on the motor, easily

accessible to the wrench. All other plugs made for the Ford car sit so far into the motor that it is next to impossible to use a wrench on the body.

*Ford Owners!*

Ask your dealer or garage man about the WESPLUG. If he can’t supply you, remit \$3.60 and we will send you a set of four special Ford WESPLUGS prepaid.

**WESPLUG**  
TRADE MARK

SYMMS-BROWNELL  
MFG. COMPANY  
Sioux Falls, So. Dakota

escape with the least possible friction without creating back pressure. The gases are at all times in contact with the cool outside walls of the muffler which helps to cool them and to reduce their volume.

The low grade fuel used today causes much carbon or soot to be formed by the combustion of the gas in the cylinders of the engine. Every car owner knows how often it is neces-



sary to have the valves ground and the carbon scraped or burned out. The cylinder of the engine is not the only place in which this carbon may collect. Some of it is carried along with the exhaust gases into the muffler where it finds lodgement on the surfaces of the baffle plates and in the openings from one chamber to another. After a season's running it is not uncommon to find mufflers half full of carbon which stops up the passage ways and makes it extremely difficult for the gases to make their way through. Under these conditions the muffler cannot be expected to work without putting some back pressure on the engine. Running too rich a mixture, retarded spark, and using a poor quality of cylinder oil or poor fitting pistons and rings aggravates this condition

and causes the muffler to fill with carbon and half-burned oil much sooner.

An automobile operated with a clogged muffler will show an excessive consumption of gasoline and the engine will show lack of power on the hills and in quick acceleration. The valves may be ground and the engine tuned up without noticeable result. The driver then finds that by using a muffler cut-out valve he gets more power and increased mileage. The natural consequence is that he blames the muffler, which is in no way at fault except that it needs a good cleaning. This should be given at least once each season. The muffler should be taken entirely apart and the carbon accumulations removed. The increased mileage and better performance will amply pay for the trouble or expense involved.

A badly clogged muffler will decrease the efficiency of the engine as much as 30 per cent and of course the engine will show a corresponding increase when operated with the muffler removed. The modern muffler if kept well cleaned will cause a loss of but 3 to 5 per cent, not enough to be considered when compared with the quiet running of the late automobiles. It is for this reason that few manufacturers of pleasure cars equip their product with a cut-out. It is really not needed and the maker of the car would rather have the owner help to maintain its reputation for quietness than to shatter this reputation, together with the peace of the region through which he is passing, by opening the muffler cut-out.

## The Latest from the Ford Muse

### THE SURVIVAL OF THE FITTEST.

Six little motor-cars, going for a drive.  
One of them turned upside down, and  
then there were five.

Five little motor-cars along the high-  
way tore.

One skidded down the bank, and then  
there were four.

Four little motor-cars, swift as they  
could be.

One blew up in the air, and then there  
were three.

Three little motor-cars, red and white  
and blue.

One stepped on a horse-shoe nail, and  
then there were two.

Two little motor-cars, having lots of fun.  
The barber's pole got in the way, and  
then there was one.

One little motor-car—bless me! How it  
roared  
As it went speeding home again!  
(Of course it was a Ford!)

### HIS RIVAL.

His rival owned a giant car!  
A little Ford drove he!  
His rival was near-sighted as  
A jealous man could be.

Their hearts and minds were set alike  
On winning Genevieve;  
They both cranked up, and started out,  
One moonlit, dewy eve.

Alas! alack! 'tis sad to tell;  
The moon was in the plot;  
He hid his face from rival in  
Just one secluded spot.

Lo! then the Ford crept up by stealth—  
The giant passed unseen;  
Then it was, "Ho! for Genevieve;—  
As fair as fairest dream!"

Away they flew in little Ford;  
And happiness o'erflowed  
On lucky owner of the Ford,  
Who wedded—a la mode!

**FORD OWNERS**  
**STOP!**  
**THAT CHATTER**

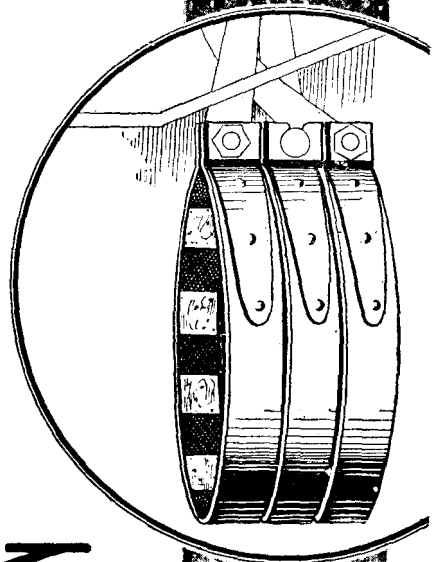
*with*

**KHK** Kork **in** **KHK** Laid  
**BRAKE LINING**

Drive with a feeling of security—anywhere—in downtown traffic, on the steepest hills.

KHK Kork-In-Laid Brake Lining guarantees a sure, smooth brake without that usual shaking or chattering, and adds life to your Ford.

KHK Kork-In-Laid Brake Lining is made of the finest materials obtainable. The cork inlaid surfaces are so scientifically placed as to insure a positive, unfailing and absolutely smooth, quiet brake.



**KHK** Kork **in** **KHK** Laid  
**BRAKE LINING**

will easily outlast several sets of ordinary brake lining in addition to giving you 100% better braking service.

**GUARANTEED FOR 5000 MILES**

Your dealer, garage or repair shop can supply you with KHK Kork Inlaid Brake Lining, or he can easily get it for you

TO DEALERS, GARAGE AND REPAIR MEN—The KHK sales plan will interest you Write for details.

**Kay H. Kay Company**

967 Woodward Avenue

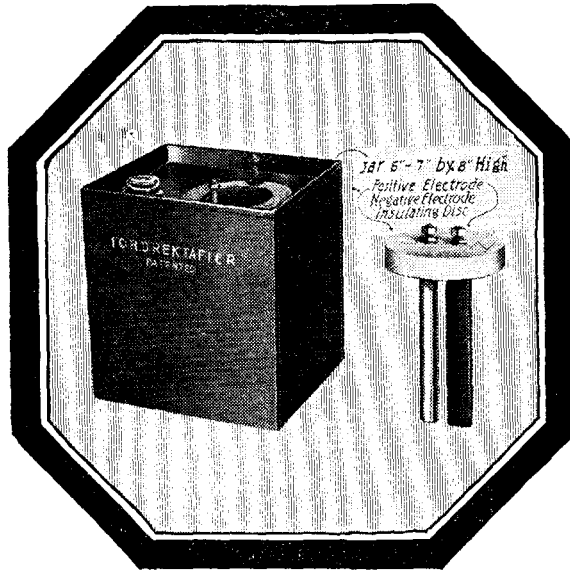
**DETROIT**

**MICHIGAN**

**PRICE**

**\$3.00**

**PER SET OF 3**



# The Secret of the Magic Box

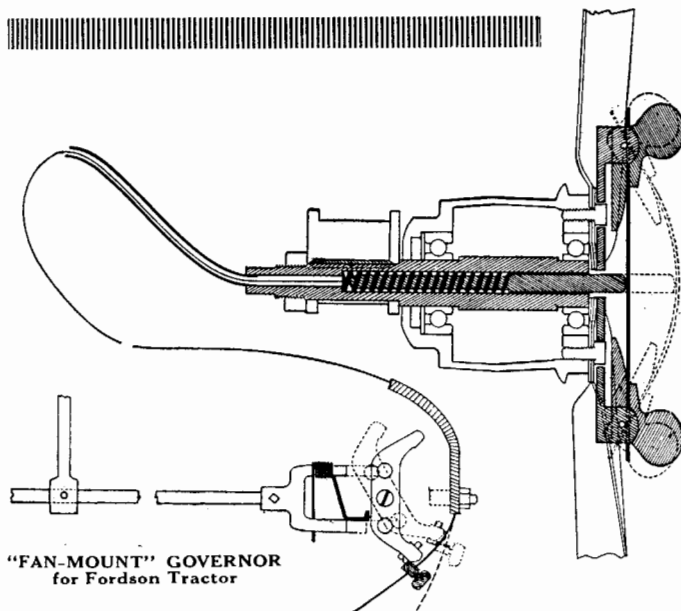
**F**ORDREKTAFIER does act like magic. This simple electro-chemical device provides a reserve of electrical energy—a constant stream of current for light, power and ignition. Electrical troubles vanish as if by magic. Running or standing you always have current a-plenty for every use. Once installed it never needs attention. No moving parts to wear or get out of order. Keeps your battery charged. No need for separate generator. Costs nothing to operate—and it makes efficient use of wasted power.

**ORDER:** Ask Your Dealer for the Fordrektafier. If he cannot supply you, order direct from the factory. Easily and quickly installed. Satisfaction guaranteed or money refunded. Shipping weight 6 pounds. Price f. o. b. **\$10.00** factory

**DEALERS:** Garage and Battery Service Men. There's money for you in the Fordrektafier. It's a real fast-selling, business-building specialty, backed by a national campaign. Over 3,500,000 prospects. Write today for Dealer Plan and get your share of the profits in your territory.

*"Warnerlite Products are Universal and Dependable"*

**The Warnerlite Company,** 8 RITZMAN AVENUE  
PASADENA, CALIF.



## Guarantee

We stand squarely back of the "FAN MOUNT" governor, and are ready at all times to take back or replace any part that is defective in workmanship or material, providing you send the broken or defective part to us post paid. Our policy is to satisfy our customers.

# Save Your Fordson

Save your Fordson from the injury and abuse caused by a racing motor. Save time and trouble through the use of the

## FAN-MOUNT GOVERNOR FOR FORDSON TRACTOR

When using your Fordson for belt power the "FAN MOUNT" governor is of exceptional value to you as it prevents the motor from racing the machine when pulling an empty load, thus eliminating the hazard of a breaking fly wheel or other part of machinery, which might cause instant and horrible death to one or more of your helpers. It may save some one from injury. A break down is always expensive both in time lost and money expended for repairs. A governor on your Fordson is a form of insurance you can not afford to be without and the "FAN MOUNT" is efficient and not expensive.

True! There are a number of governors on the market for the Fordson more or less complicated, but the "FAN MOUNT" is simple in design, easily installed, is foolproof, requires no attention after installation, is always ready to serve you, does not detract from the appearance of your Tractor, and is inexpensive. The first cost is small and is the only cost. With a "FAN MOUNT" governor installed on your Fordson your fuel and repair bills will be lighter, and you will feel a sense of satisfaction and security from the former worries your Fordson caused you. With "FAN MOUNT" installed you can use the hand throttle as before, but within the limitations at which you have the governor set. This feature is very helpful in field work. In case you wish to use the Tractor without the governor, it takes but a few seconds to disconnect it.

### Why the Governor For Your Fordson Should Be a "FAN-MOUNT"

The "FAN MOUNT" governor is substantially built, has no parts to wear since friction is practically eliminated in its simple design; there are no parts to oil; no valves to get out of adjustment, and no fine delicate parts to bend or cause you trouble. You simply install the "FAN MOUNT" according to the simple directions that accompany each governor and then FORGET it. It will always be in its place ready to serve you when needed. Get your governors for the threshing season.

## Paramount Manufacturing Works

Office: 114 South Queen St.  
Lancaster, Pa.

Manufacturers of Paramount Accessories  
Rohrerstown, Pa.

MODELS

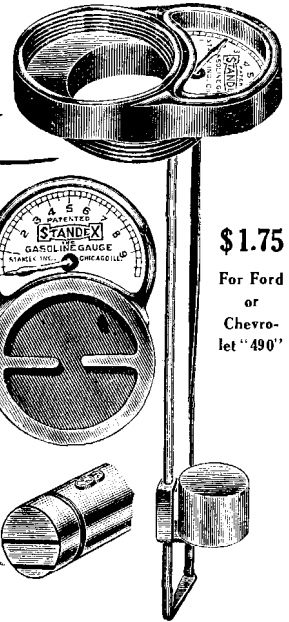
- A—ROUND TANK
- B—SQUARE TANK



GASOLINE GAUGE

For FORD Cars

- Uses regular filling-hole \_\_\_\_\_ is never in the way of filling tank—need never be removed—because, SEE? \_\_\_\_\_ to install, you simply screw it, in one minute's time, into the top of your "gas" tank.
- Is always in plain sight \_\_\_\_\_ Alongside filling-hole—tells ALWAYS if you are getting the gasoline you are paying for—and how much you have to run on to where you want to go.
- Uses regular Ford cap \_\_\_\_\_ to close filling-hole.
- Is the only accurate mechanically-actuated gauge made, because it's the only one that is graduate to the contour of a cylindrical tank (not merely to depth). Obviously, one inch in depth HERE \_\_\_\_\_ means much more in gallons than one inch HERE \_\_\_\_\_



**\$1.75**  
For Ford  
or  
Chevrolet "490"

**PRICE ONLY \$1.75 COMPLETE**  
Mfgd by **Standex-Inc.**, 341-49 E. Ohio St., Chicago, Ill.

"Accurate to the Dot"

# Ford Owners

who read this magazine each month, simply can't do without it. Do you wonder at it.

*Sign and send in now!*

## Subscription Blank

THE FORD OWNER,  
Montgomery Bldg.,  
Milwaukee, Wis.

Gentlemen:

Enclosed find \$1.00, for which enter my subscription to THE FORD OWNER, beginning with the next issue. (Canada and other foreign countries, \$1.50 per year.)

Name .....

Street Address .....

City and State.....



**YOU** have ruined a lot of tires by running them without enough air in them, and all because it was too much trouble to take off dust-cap to measure the air pressure.

**SCHRADER UNIVERSAL KWIK-ON-AN-OFF DUST CAPS** can be removed or put on in two seconds or less.

Price 50 cents per set of four

# Let Me Send You a Set of Sparko-Gaps for 30 Days' Free Trial

Let me prove to you on your own car that Sparko-Gaps make your motor 37% better, and save 10% to 35% in gasoline. See why they end spark plug troubles, and see why they were used as standard equipment on all French airplanes during the war.

### Send No Money

I don't want you to send me a single penny now. Just fill in and mail the attached coupon and I will send you a SPARKO-GAP for each cylinder of your car. Try them on your car for 30 days. Try them on the foulest, sootiest, oiliest spark plug you can find. Try them on a cracked plug or try them on your best plug. You be the judge. If Sparko-Gaps don't give you a smoother-running car, if they don't save half their cost in gasoline bills during the month, send them back and you won't be out one cent.

**If Sparko-Gaps Do Not End Your Spark Plug Troubles—If They Do Not Make Your Motor Run Smoother, Easier, Better—If They Do Not Save 10% to 35% Gasoline Send Them Back.**

The Sparko-Gap is not a new idea, but an old idea applied in an ingenious new way, made necessary by the fierce competition of war. The Sparko-Gap principle has been used for years in wireless telegraphy to give twice the radius to sending outfits.

**The Sparko-Gap condenses current—develops a hotter, fatter, surer spark.** It sends the electric current through the spark plug in one intense spark instead of in many weaker oscillations.

**The Sparko-Gap explodes 100% of gas and fires even fouled plugs.** The intense spark insures 100% explosion and saves from 10% to 35% in gasoline. It stops carbon formation. It lessens the necessity for gear shifting. It fires plugs under all conditions, when fouled by oil or carbon—even when the porcelain is cracked. No miss-fires—more snap—quicker pick-up.

**The Sparko-Gap shows a visible spark.** You can see how each cylinder is firing and so locate ignition trouble quickly.

**The Sparko-Gap is easy to adjust.** There are no holes to bore, no attachments. All you have to do is to screw one little thumb nut on top of your spark plug. Just as if you were making a spark plug connection.

A. PRESS, Professor of Electrical Engineering of Berkeley, California, watched Sparko-Gap working on U. S. sub-chasers, Liberty airplane engines, Liberty truck engines, and popular commercial motors in Government Laboratories at Washington. He states that the Sparko-Gap will fire plugs in conditions two hundred and fifty times as difficult as will an ordinary ignition system without them; so that plugs will fire, no matter how dirty they are, and even with broken porcelain.

### Don't Send a Penny

Remember you don't send a single penny now. Just mail the coupon and tell me the make of your car and the number of cylinders. Don't bother to write a check or money order now. Simply pay the postman \$1.50 for each Sparko-Gap when they arrive. Then try them for 30 days on your car. If they do not make your car noticeably better send them back and every penny you paid will be refunded. End your spark-plug troubles now forever. Mail the coupon now. You can't begin too early to get more power out of your motor and more mileage out of your gas.

### Price, \$1.50 Each

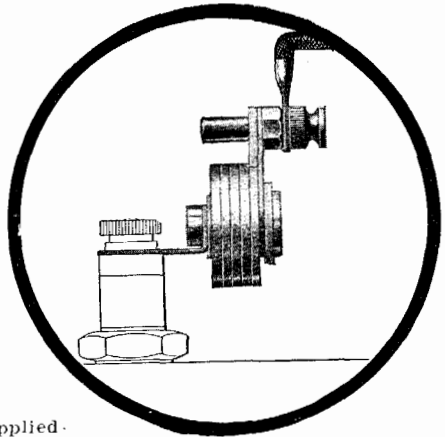
Guaranteed for life of car. Fits all plugs and cars without attachments or motor adjustments. Patented in all important countries.

Dealers take advantage of our advertising. We back you up on the above proposition.

MONEY BACK AT ANY TIME IF DISSATISFIED.

**SPARKO-GAP CO.** Dept. Z, 29 Beekman Street NEW YORK.

When writing advertisers—Just say FORD OWNER and DEALER



### A FORD EXPERT'S OPINION ON SPARKO-GAPS.

Peter Weiss of Albert Hirst, Inc., Ford Agents, 2008 Broadway, N. Y. C. I tested your Sparko-Gaps on several cars and found a remarkable improvement in the running. Not only was there an increase in power as shown by their taking hills on high which they could not before, and a remarkably quicker response to the throttle, but also there was a distinct saving in gas. In one case where the car threw oil your Sparko-Gaps removed the miss and made it hit on all four. In another car they fired a fouled plug. I believe you have a device which will be of great service to Ford owners, combining an improvement and real economy.

**Sparko-Gap Co., Dept. Z.**

**29 Beekman St., New York City.**

Send me . . . . .

Sparko-Gaps on 30 days' trial (one for each cylinder). I will pay postman \$1.50 for each on arrival. It is understood that if I am not more than pleased you will refund my money in full.

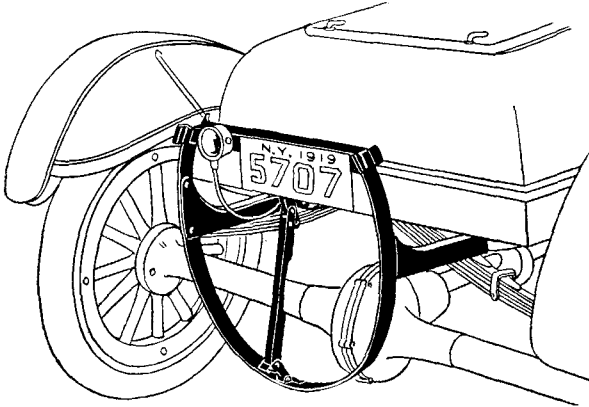
My Name . . . . .

Address . . . . .

City . . . . . State . . . . .

Name of Car . . . . .





## A New Tire Carrier for Fords Made By EMCO

Car owners, dealers and jobbers all know what 'EMCO' means on any automotive product. They know it represents

- 1—A product which fills a distinct need.
- 2—Honest workmanship and honest value.
- 3—An unconditional guarantee that the purchaser **MUST** be satisfied or money back without question.

Is it any wonder then that EMCO "Dependable Products for the Auto" have such a wide and ready sale?

The EMCO TIRE CARRIER pictured above has been found so efficient that Ford has selected it as standard factory equipment on all enclosed cars.

The EMCO is easy to install and has but one moving part. A slight pull on the Toggle releases the spare tire or rim. An easy push locks it fast. A child can operate it. There are no straps, bolts or chains to fuss with and nothing to get out of order. It will certainly pay you to look further into this Tire Carrier.

### DEALERS:

*Write for EMCO  
Catalog and At-  
tractive Proposition.  
It Will Pay You.*

# Emco Manufacturing Company-Inc.

Main Office and Works

Binghamton, N. Y.

# Just Enough Gas and No More!

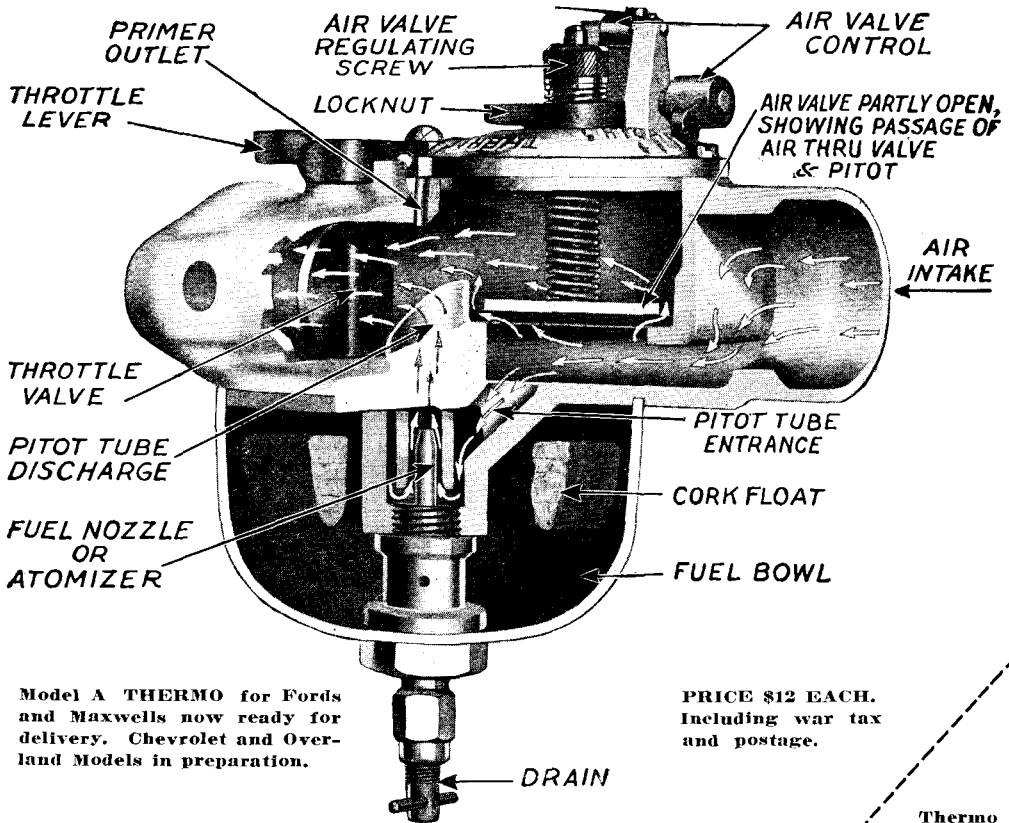
That is the basis of efficient carburetion. To obtain this result you must have

## Automatic Mixture Control

The **Engine** and not the driver is the proper judge of how rich or how lean a mixture is required for the load imposed on it. Unless the mixture is controlled **automatically** and continuously by the engine, and not theoretically and occasionally by the driver, you are liable to be running your car on the basis of **FEAST OR FAMINE**,—sometimes too much fuel; sometimes too little; seldom **just enough**.

An exclusive feature of the THERMO CARBURETOR is the **Automatic Air Valve**, by means of which (in combination with the Pitot Tube construction) **THE ENGINE CONTROLS THE MIXTURE** at all times,—making it rich or lean as required. No adjustments; no needle valves; no bother; no trouble. The Thermo **principle** does it!

### Model A THERMO CARBURETOR. Sectional View



Model A THERMO for Fords and Maxwells now ready for delivery. Chevrolet and Overland Models in preparation.

PRICE \$12 EACH. Including war tax and postage.

## WE MAKE NO EXTRAVAGANT CLAIMS

But we do know from exact scientific laboratory tests and from actual road tests made by hundreds of car owners during the past 18 months that the Thermo Carburetor

- REDUCES GASOLINE COST MATERIALLY.
- GIVES A WIDE SPEED AND POWER RANGE.
- ACCELERATES VERY QUICKLY.
- STARTS EASILY AT ALL TEMPERATURES.
- REQUIRES NO ADJUSTMENTS.

Let us convince you—at our expense.

## THERMO CARBURETOR CO.

4315 LINCOLN AVENUE

CHICAGO

Thermo Carburetor Company, 4315 Lincoln Ave., Chicago, Ill.

Without any obligation on my part send me complete information and descriptive matter on the Thermo.

Just tear it off.

Name .....

Address .....

If you are a dealer, please attach your letterhead. We have some good news for you.

# Ford Owners Buy Rex Light Control For Safe and Comfortable Night Driving



MAXIMUM



SLIGHTLY DIMMED



DIMMER



DIMMED

## Ideal for Fords

**R**EX CONTROL is a special head light controller for use on Ford cars with magneto lighting systems.

It is the only device on the market that will increase your light at low speeds.

The new State Law requires a minimum of 4800 candle power, 100 feet

ahead of the car below the level of the head lamps. But a Ford which lights from the magneto cannot comply with this requirement at low speeds.

Rex Control will enable you to comply with the new State Law and will also increase your light 100 per cent when driving in high at a rate of speed between 5 and 15 miles per hour.

There is also a Rex Controller for regulating the headlights of any car equipped with a storage battery. You can reduce your lights to any desired degree without even taking your hands from the steering wheel. Rex Control can be used with plain or patent lenses.

Try a Rex Control  
on your car for 10  
days

**FREE**




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# REX MANUFACTURING COMPANY

FOND DU LAC WISCONSIN

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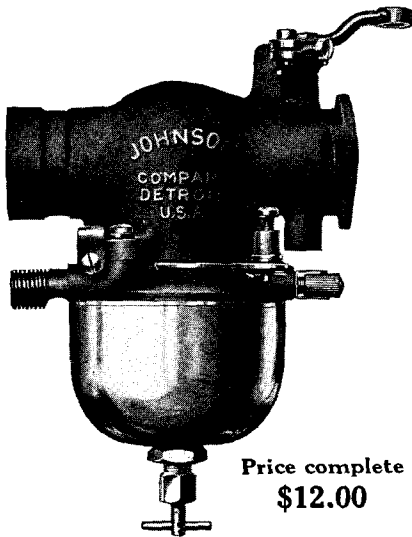


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A. W. KAUFMAN, State Distributor, Oshkosh, Wisconsin

When writing advertisers—Just t say FORD OWNER and DEALER

# Johnson Carburetor for Fords



Price complete  
\$12.00

Counts Every Drop of Gasoline.  
Makes Every Drop Count.

## Ford Gasoline Strainer



Traps the Dirt. Fits Any Ford.  
Price \$1.25

**JOHNSON COMPANY, 515 Forest Ave. E., Detroit, Mich.**

# CREX Automobile Mat

Made  
Expressly  
for  
Tonneau  
of  
Ford  
Cars



Dealers  
and  
Owners!  
Write for  
Color-folder  
and full  
particulars

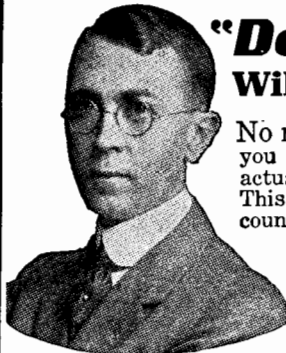
## CREX CARPET COMPANY

212 FIFTH AVENUE

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NEW YORK



**A. J. STEPHENS**  
President  
A. J. STEPHENS RUBBER CO.  
Capitalized \$1,500,000.00

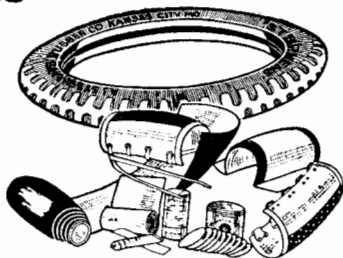
## "Dealers--My New Selling Plan Will Increase Your Daily Profits \$50 or More"

No matter where you are located, nor how much competition you have, I can show you a most extraordinary selling plan that will actually add from \$1,000 to \$1,500 monthly profits to your business. This is no experiment. Hundreds of enthusiastic dealers throughout the country are using my selling plan and enjoying big profits. *J. W. Neal of Sedalia, Mo., sold over \$6,000 worth of Stephens Products in less than a month. F. F. Swinson, Pratt, Kans., made \$400 profit in 5 days. Reinhart Motor Co., Ottawa, Kans., sold over \$2,000 worth of Stephens Tires in 10 days. McDavid Bros., Excelsior Springs, Mo., made over \$300 profit in 4 days.* I can refer you to hundreds of other dealers who have done as well. This is the best proposition ever presented to you.

### I Will Bring a Steady Stream of Customers Into Your Place of Business

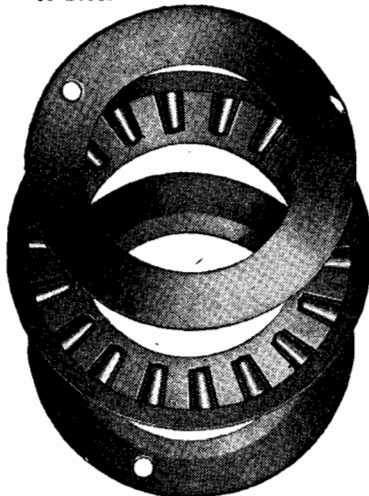
By using big advertisements in your local paper, showing your name as distributor for STEPHENS TIRES and accessories, I will bring you business that you never hoped to get. My plan is to do this advertising without cost to you. My plan is to increase your business without increasing your overhead—in other words, to *positively guarantee* the sale of our products. Not a cent is required until I prove my claims to you. Write today for all information. Learn the facts; judge for yourself the money-making possibilities.

**A. J. STEPHENS RUBBER COMPANY**  
1409 Chestnut Street      Kansas City, Missouri



## THE SIMMONS TAPER ROLLER THRUST FOR FORD AND CHEVROLET CARS PREVENTS REAR AXLE TROUBLES AND EXPENSE

A pair of Simmons Taper Roller Thrust plates makes the rear axle entirely roller bearing—roller thrusts on both sides of differential—thereby eliminating practically all rear axle trouble—a radical improvement over the regular Ford type of plain flat brass-to-steel bearings



(Patent Applied for)

The present Ford type of brass-to-steel bearing wears rapidly, even under favorable conditions, causing "misalignment" and rapid wear of gears.

The Simmons Taper Roller thrust has one hundred times more real bearing surface than any BALL thrust now on the market, and is used on both sides of the differential case. The entire differential is thereby protected from gear and end thrusts.

The construction of the Simmons Taper Roller Thrust is such that if the differential case sags or drops down, bearing contact is still maintained, because of the special construction of the retainer plate. Protection must be given to gears from both sides of the differential case, which is subjected to extremely heavy strain when the car makes a sharp turn.

Your dealer or repair man recognizes this as the only proper type of thrust bearing. If your dealer or jobber cannot supply you, write us.

**Price \$4.00 per set of two, \$5.50 in Canada**

Sold in Complete Sets Only

Mr. Jobber—Dealer—Repairman: NOW is the time to place an order for a stock of Simmons Taper Roller Thrusts.

Ready for immediate delivery.

Manufactured by

**THE SIMMONS MANUFACTURING COMPANY**  
3405-11 Perkins Avenue      Cleveland, Ohio

## THE TIRE FILLER THAT HAS MADE GOOD

### TROUBLE PROOF TIRES WITH AMPLE RESILIENCY

is a combination that has long been sought by the motoring public. Some tire fillers failed to stand up under long service—most of them lacked the essential resiliency. But these two vital qualities were at last combined in

### NATIONAL RUBBER TIRE FILLER

It has brought joy and satisfaction to tens of thousands of car owners. It has done away with punctures and blow-outs, vulcanizing, patching, and saved many a long wait on the road-side. Users get 10,000 to 20,000 miles out of every tire. Besides, National Rubber Tire Filler has a wonderful resiliency. It takes the place of the air and inner tube, rides as easy and makes the car a real pleasure.



National Rubber Tire Filler is made of the best grade of rubber, cut in small pieces, treated, moulded and vulcanized by our special process. The result is a compound that is light, strong and resilient, that will stand all kinds of hard, rough service. We have been manufacturing and selling it for more than eight years, selling more than 300,000 sets, shipping it into every one of the states in the United States and a number of the foreign countries. Let us tell you more about it.

**DEALERS**—National Rubber Tire Filler sells because it has made good. It combines comfort with economy of tire upkeep. Your customers are going to want it. We have a fine proposition for you. Write us today.

### NATIONAL RUBBER FILLER COMPANY

222 COLLEGE STREET

MIDLOTHIAN, TEXAS

## Exceptional Dealer Opportunity

# UNITRUX

## EXTENSION FOR FORD TRUCKS

## Makes a 1½ Ton Truck in Three Chassis Sizes

Exclusive High Class Features Used Only on Highest Priced Trucks

Model 10—124 w. b. for \*92" body; 1½ ton—\$180

Model 20—136 w. b. for \*112" body; 1½ ton— 190

Model 30—148 w. b. for \*130" body; 1½ ton— 200

Prices f.o.b. Philadelphia. \*Minimum—Larger bodies if desired

*Write for Dealers' Terms at once*

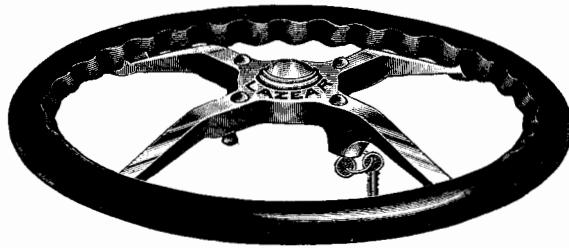
## COMMERCIAL CAR UNIT COMPANY

Factory and General Offices 16th and Glenwood Ave., Phila., Pa.

Manufacturers also of the well-known TRUXTUN (Hudford) Unit

When writing advertisers—Just say FORD OWNER and DEALER

# THE LOCK THAT LOCKS



Why not end the worry of possible car theft? Why experiment with locks which do not protect your investment surely? Play safe and sure with the

## LAZEAR LOCK STEERING WHEEL

The Lazear Auto Lock-Wheel is the only lock or lock-wheel that locks without the use of the key when leaving the car.

In driving position the wheel operates the steering post by means of two independent clutches which are locked into their respective positions automatically, thus preventing any possibility of jumping out of place (which has happened with other locks) resulting in the wrecking of the car and possible loss of lives.

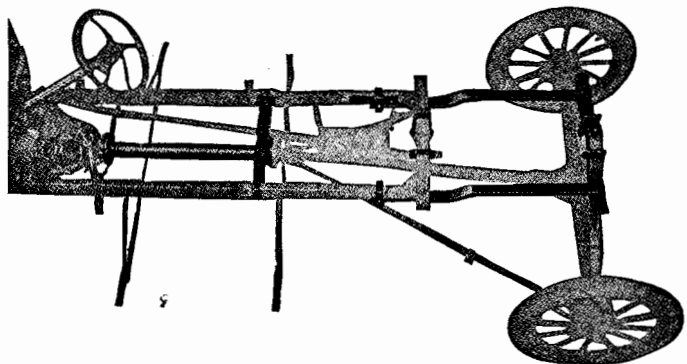
No key is required with the Lazear Auto Lock-Wheel when leaving your car, to lock it against being used by unauthorized persons or thieves. Releasing the double safety lock simultaneously, disconnects the clutches from the steering post and permits the wheel to revolve idly about the post. When in this position, it is impossible to steer the car or to even tow it by another vehicle.

For Sale by Ford Dealers Everywhere.

**LAZEAR AUTO LOCK-WHEEL CO.,** 557-559 W. Quincy St. CHICAGO, ILL.

# The Hay-Dee Extension on a FORD will solve your delivery problem

With the Hay-Dee, a hammer and wrench is all you need to convert your Ford into a practical delivery car chassis with 96 or 108 inches loading space back of the driver's seat.



*The Hay-Dee Extension served the Government —let it serve you.*

15 inch—\$55—Making a 115 inch wheel base  
30 inch—\$60—Making a 130 inch wheel base

## A. J. DIEFENDERFER CORPORATION

410 West 52nd St., New York City

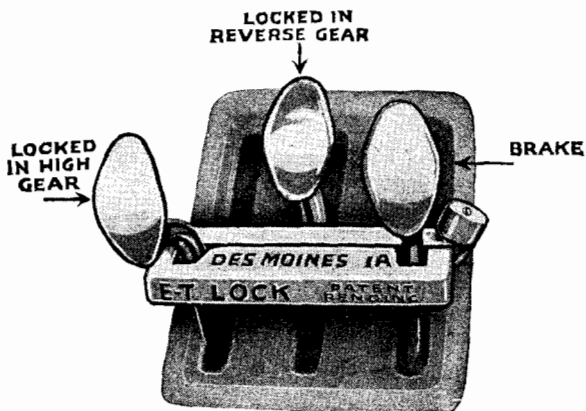
More than 5000 in use

Dealers— Write for data

# The E-T AUTO LOCK For Fords

Price  
**\$3.25**  
without  
Padlock.

Price  
with Padlock  
**\$4.75**



Ask your Dealer to show you the E-T Auto Lock. If not procurable, write to factory—giving your Dealer's name and lock will be sent prepaid.

The E-T Auto Lock locks your car all over

It can not be cranked. Can not be moved, pushed or towed, either forward or backward. Locked while sitting in car. Made of steel, enameled black. A white kid glove job.

**The E-T Auto Lock Company,** 1015 Grand Avenue  
Des Moines, Iowa

# QUALITY LAMPS

For

Fords

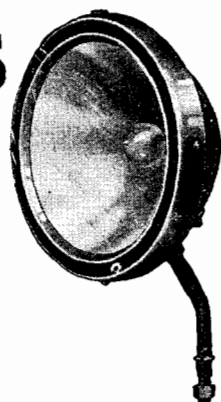
MODEL NO. 7.

A special designed lamp for use on Ford cars, having nickel plated door with black enameled ring inserted.

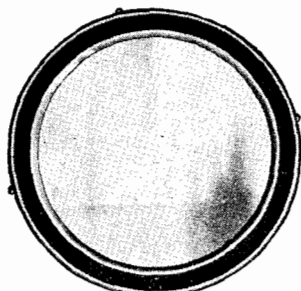
A high grade lamp, adding greatly to appearance of the car. Furnished either single or with dimmer bulbs.

Price per pair .....\$8.00

Dimmer Bulbs extra ..... 2.00



MODEL NO. 7



MODEL NO. 43.

MODEL NO. 43.

Door rim, can be furnished separately and is interchangeable with door on regular Ford equipment.

Price with glass.....\$1.20 each

Price without glass..... 1.00 each

INQUIRE YOUR NEAREST JOBBER  
OR WRITE DIRECT

**The K-D Lamp Co.**

**Cincinnati, Ohio.**



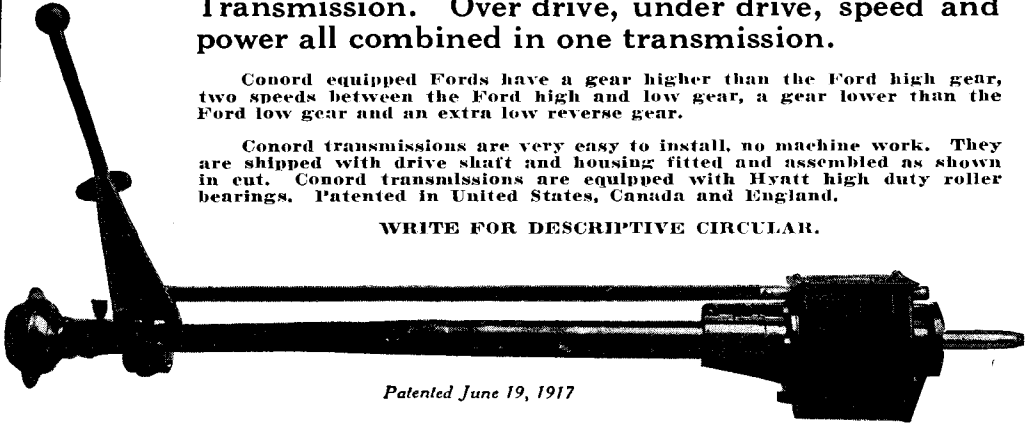
# 6 SPEEDS FORWARD

For all Fords equipped with a Conord 6 Speed Auxiliary Transmission. Over drive, under drive, speed and power all combined in one transmission.

Conord equipped Fords have a gear higher than the Ford high gear, two speeds between the Ford high and low gear, a gear lower than the Ford low gear and an extra low reverse gear.

Conord transmissions are very easy to install, no machine work. They are shipped with drive shaft and housing fitted and assembled as shown in cut. Conord transmissions are equipped with Hyatt high duty roller bearings. Patented in United States, Canada and England.

WRITE FOR DESCRIPTIVE CIRCULAR.



Patented June 19, 1917

Manufactured by

**BROADWAY TOOL & MACHINE COMPANY, Inc.**  
717 Livingston Street  
ELIZABETH, N. J.

# KEYSTONE

## REAMERS IN SETS

We pack a large number of sets of Keystone Reamers in substantial hardwood cases. These sets are made up of the most practical and useful sizes in both Solid and Expansion reamers. They are all illustrated and described in our 1920 booklet of Automobile reamers. Also shown in leading Supply catalogs. Ask your Supply Jobber about the KEYSTONE Line.



No. 12. FORD SET

## KEYSTONE REAMER & TOOL CO.

Western Sales Division  
180 N. Market St., Chicago

Eastern Sales Division  
30 Warren St., New York

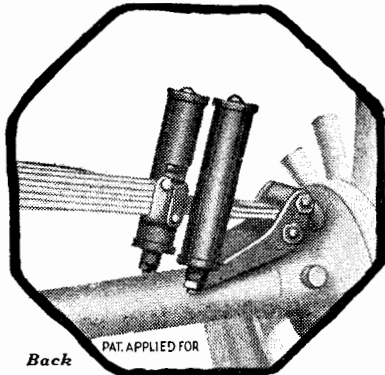
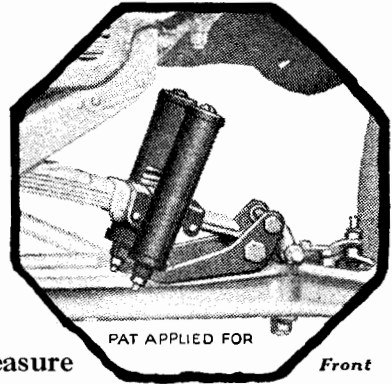
Factory  
Millersburg, Pa.

When writing advertisers—Just say FORD OWNER and DEALER

The principle of leverage correctly applied

# UNIVERSAL SHOCK ABSORBERS

Absorb downward shock  
Snub the upward rebound  
Stop the rolling sidesway  
and make driving a Ford a real pleasure



Put on a set, and if not entirely satisfactory after 10 days your money gladly refunded.

*Attractive Dealer Territory Open*

H. L. G. MFG. COMPANY  
29th and Canal INDIANAPOLIS, IND.  
**UNIVERSAL SALES CO.**  
Sole Distributors  
507 Odd Fellows Bldg. Indianapolis, Ind.

## ONE BY ONE EVERY BIG BUYER GETS THE A-K LINE



A-K AUTOMOBILE ACCESSORIES are a good example of *quality* recognized. Shapleigh, Simmons, Bigelow & Dowse—yes, all the great jobbing institutions—not only carry *but prefer* A-K products.

A-K HORNS are mechanically perfect. Geared to six revolutions instead of two. Speak at slightest touch. Beautifully modulated, yet farthest-reaching and long-enduring, one and all alike in uniformity of perfection.

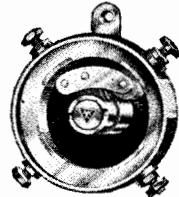
A-K TIMERS have a die-cast hub of *brass*; well seasoned genuine bone-fibre; contact plates machine-ground and polished to mirror-finish; roller-assembly perfectly balanced; hardened roller on hardened pin; eight brass nuts, insuring perfect contact; double-tested for short circuit. Always uniformly perfect. Their superiority is very apparent.

Get acquainted with A-K products. *They satisfy.* Leading jobbers carry the A-K line. If yours can't supply you, write us.

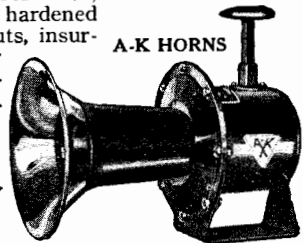
**ANGSTEN-KOX COMPANY**  
110 S. Dearborn Street, Chicago  
Plants at Chicago and Michigan City, Ind.



A-K TIMERS



A-K HORNS



### A-K ACCESSORIES ARE BEST

When writing advertisers—Just say FORD OWNER and DEALER

# Your Radiator

is no better than its water-channels. If they are small and constricted—and possibly every alternate one a “dummy” or dead channel, they are **short in water capacity**. If they are sharp-angled they are **deficient in drainage and circulation**. If they are tubular, they **lack cooling surface**. And tubular radiators break out when frozen!

In these days of heavy, heat-producing gasoline, Ford owners are finding service, satisfaction and efficiency in

## KUENZ AEROPLANE-BUILT RADIATORS

And here's the reason:

- 362% more cooling surface.
- 388% more water capacity.
- 200% better circulation.

**GUARANTEED** to keep the Ford engine cool, against damage from freezing.

Kuenz Radiators for Ford Cars and Trucks give **MORE—cost LESS.**

Write today for proof and descriptive literature.

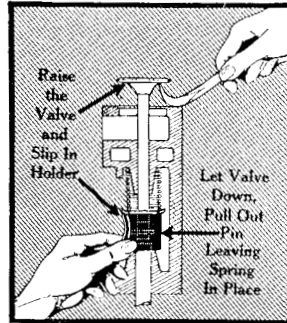
**KUENZ RADIATOR COMPANY**  
Jackson, Michigan

## When Grinding Ford Valves

USE A

# Fleming Valve Spring Holder

And Make a Hard Job Easy



No need to remove the carburetor or manifold.

Don't remove the springs.

Easier to get pins out of valve stems than with any tool heretofore devised.

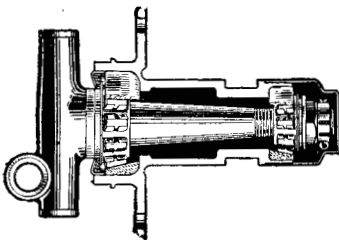
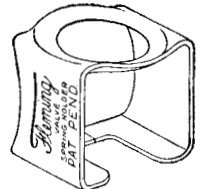
You will be delighted with it.

**Sent postpaid for 35 cents.**

**DEALERS:** Sample display card mounting one dozen mailed on receipt of \$2.52.

Jobbers write.

**American Motor Appliance Co.**  
1938 Euclid Ave.  
CLEVELAND, OHIO



## TROJAN Roller Bearings

The Best for

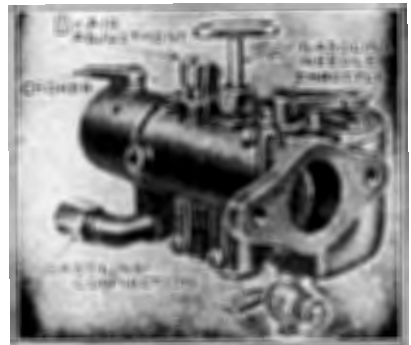
### Ford Front Wheels

The Trojan Roller Bearing for front wheels will eliminate all bearing trouble.

Gives easier steering and longer life to tires by holding wheels in proper alignment.

Write us for particulars.

**Ahlberg Bearing Company**  
317 E. 29th St., Chicago, Ill.



### THE MOST POWER AT THE LEAST COST

Real economy consists of getting the most power at the least cost. This is positively accomplished through the use of

### THE MARVEL CARBURETOR

The Marvel, Model N Carburetor is a horizontal type, side opening, two jet instrument, designed especially to meet the needs of Ford owners who demand a powerful and economical carburetor. Simple in design—but one moving part, the auxiliary air valve, which proportions the mixture to the demand. No excess amount of gas on the low speed needle in order to have power enough at high speeds, is necessary only sufficient gas to give proper idling and low speed performance and the high speed jet is then only called upon as the motor demand increases. Uniform carburetion at all speeds and maximum economy of fuel. PRICE \$10.00 F.O.B. Factory. A 30 day trial—money back if not satisfactory—protects you. No extra fittings necessary.

**DEALERS—Write today, seeing is believing.**  
**MARVEL CARBURETOR COMPANY**  
Flint, Michigan, U. S. A.



**Piston 3A Rings**

Give the engine lots of pep—stop the oil leak and piston slap and cut down the gas—and all it costs is the price of the rings—no reboring and no new pistons.

**STEEL SPRING PISTON RING CO.**  
147 Metropolitan Ave.      BROOKLYN, N. Y.



*“That’s It”*

**“The 3-A-  
The Piston Ring I Use”**

Have you sent for literature on the scientifically correct piston ring? Do so to-day. You'll not regret it.

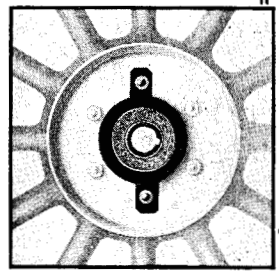
# USE COMMON CENTS!

You don't wait until you're dead to insure your life. The grease leaking from your brake drums is rotting your tires—penetrating the rubber, disintegrating the fabric. How long will you watch this waste work its havoc? Use common

sense. Stop that leak **now**—in ten minutes with an ordinary wrench and a simple **KOREX Grease Retainer**.



“The **RIGHT** preventative in the **RIGHT** place.” Buy a set of **KOREX GREASE RETAINERS** now, and avoid present and future trouble and expense. **They**—save expensive tires—prevent your brakes from slipping—protect your bearings from dirt and grit—save grease, and keep the grease in the bearing where it belongs.



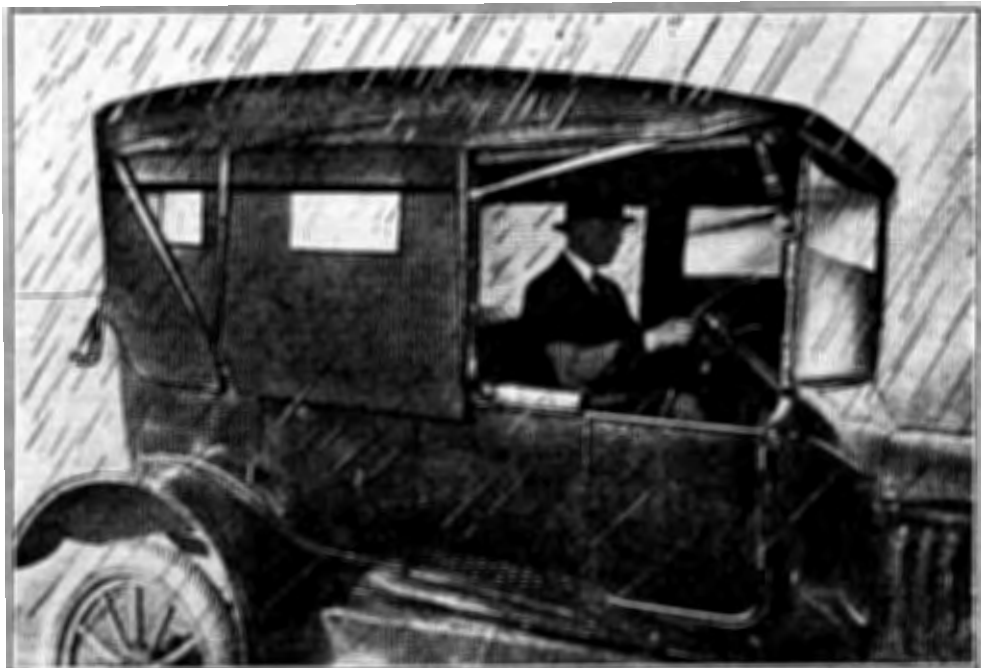
## KOREX GREASE RETAINER

KOREX—that's it—the one installed without special tools—simply attached inside the brake housing—10 minutes and all's done—\$1.50 at your dealer, or write the

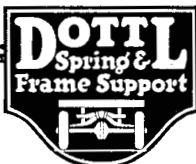
**KOREX MFG. CO., 422 Larkin St., San Francisco, Cal.**

*Dealers—Write for Proposition*

**Carry Your Side Curtains in Nofalt Pockets** Ready for Instant Use. And Derive All Benefits of Open Car—Closed Car At Lowest Cost. Dropped and Buttoned In Less Than A Minute.



PRICES: Touring, \$4.50 set; Roadster, \$3.50 set. Delivered anywhere in United States.  
NOFALT MOTOR PRODUCTS COMPANY, HOLYOKE, MASS.



Haul A Ton on Your Ford

Save Your Tires from Fender Scraping

## A Ford Can Haul a Ton

Every part of a Ford converted truck is strong enough for the job except the rear spring. Re-enforce this with the Dottl Spring and Frame Support which distributes the strain over three points instead of only one.

It also prevents pounding of rear axle housings, shearing of center bolts and wearing of tires against the fenders. The

load is more evenly balanced, so that side-sway is almost entirely eliminated.

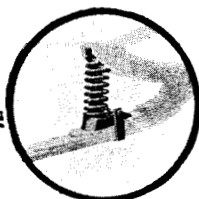
That's why it's safe to add another half ton to your load.

The Dottl can be put on in 30 minutes, without boring holes or removing the body. Fully guaranteed and sold on 10-days' trial. Price \$8.00 per set—In Canada, \$10.00.

**Dottl Mfg. Co., 128 S. Pinckney St., Madison, Wis.**

### DOTTl LICENSE BRACKET

Keeps the front license tightly clamped to the lamp, where it is out of the way. Handsome, convenient. Price 50c.



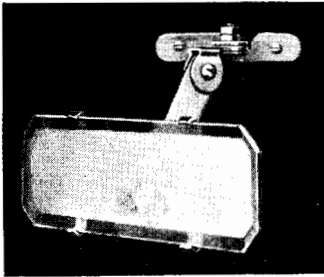
### DEALERS AND JOBBERS

The Dottl Line will pay you. Every owner of a Ford converted truck, bus or taxi needs a set.

Put a "Safety-Zone" inside your enclosed car.

# TRI-CO Friction Joint MIRROR

—the only mirror bracket adaptable to enclosed Ford (or Dodge) sedan and coupe.



It is attached over the windshield—inside the car. Commands a complete rear view of the roadway and warns of cars approaching from the rear. They cannot be heard in an enclosed body. Glass is always clean and clear; not exposed to breakage.

The drop arm bracket has a friction joint which permits free movement of the glass at all angles without adjustment. Mirror is bevelled French plate. Standard size 7 inches x 2½ inches.

TRI-CO friction joint mirrors carried in stock by leading dealers and jobbers.

- Black enamel.....\$3.00
- Polished nickel plate.....\$3.50

Also clamp windshield attachment for open Ford Cars.

DEALERS—Your stock of Ford equipment isn't complete unless you have this mirror—the only one suitable for Ford enclosed cars—if your jobber can't supply you with the Trico—send us his name.

**Tri-Continental Corporation**  
TRI-CO PRODUCTS

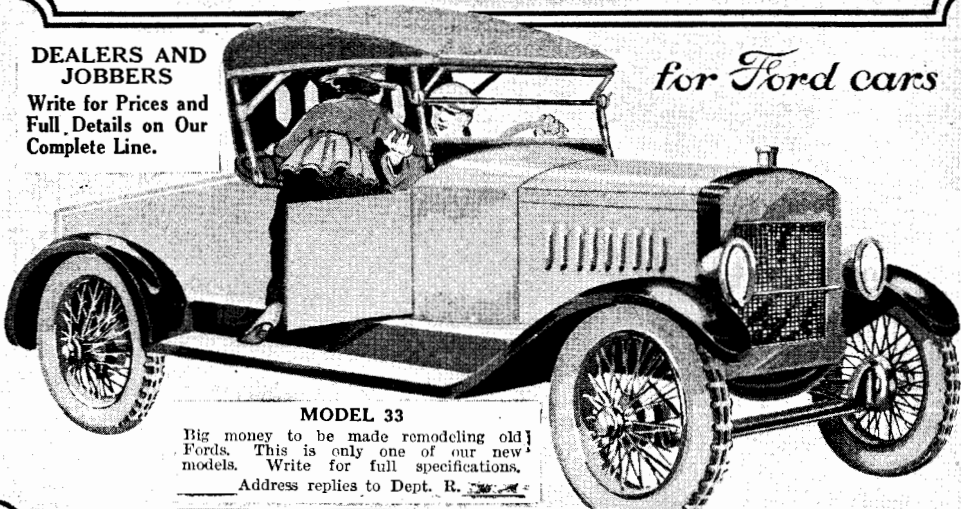
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# TAILOR-MADE-BODIES SPEEDSTER SPORT RACING AND TOURING

DEALERS AND  
JOBBER

Write for Prices and  
Full Details on Our  
Complete Line.

for Ford cars



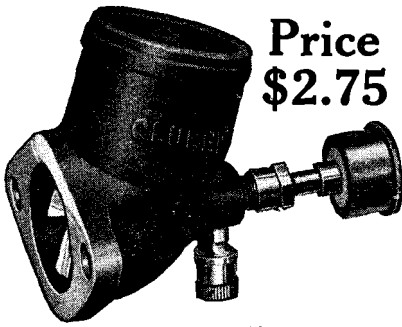
MODEL 33

Big money to be made remodeling old Fords. This is only one of our new models. Write for full specifications.

Address replies to Dept. R.

**TAILOR MADE BODY CO.**  
1467 SOUTH MICHIGAN AVE., CHICAGO.





Price  
\$2.75

(Pat. July 15, 1919)

## Gusher Water Circulator

For

Ford Cars, Trucks and Tractors

PREVENTS BOILING, STEAMING AND OVERHEATING

The Simplest and Most Efficient Water Circulating Pump in Existence.

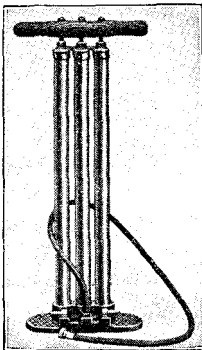
The GUSHER is easily installed by any one with a wrench, can be done anywhere in a few minutes.

Made in two types: Type A is for cars prior to 1917 and Type B is for 1917 and later models.

Price  
\$5.00

The most efficient pump made

Meets all requirements and easy to use by weak or strong



(Patented)

3  
Speed  
Tire  
Pump

High  
Pressure  
Little  
Effort

Under the control of the operator at all times

Three single cylinder pumps joined to make one large pump can be used as one, two or three cylinder pump — three cylinders for volume on low pressures and one cylinder for high pressures.

Will deliver 120 pounds pressure with but little effort.

The pump a lady or child can handle and inflate tires to 80 pounds pressure with ease.

Good Proposition to Dealers.

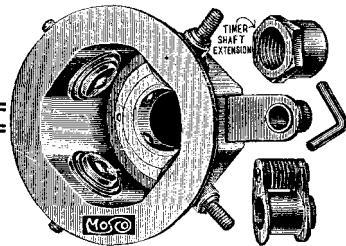
Cluley Auto Supplies Co.

467 East Ohio Street  
CHICAGO



## Improved Bemis Ball Contact Timer

Easier Starting  
Smoother Running  
Longer Life  
Saves Coil Points



The IDEAL TIMER for the FORD high speed, short stroke engine because form contact is the only one which is correct both electrically and mechanically.

This is made by a hardened tool-steel brush coming in contact with steel balls, which are kept in proper position by means of a spring with plug on the end pressing against them. The impact of the brush causes the balls to turn so that a fresh surface is presented for each contact. The brush comes in contact only with the four balls, touching no fibre or insulation. This is a decided improvement over the ordinary type timer, where the roller is constantly wearing grooves in fibre ring which holds contacts. The balls are so located that each has a track of its own on the brush, this insuring a maximum amount of wear.

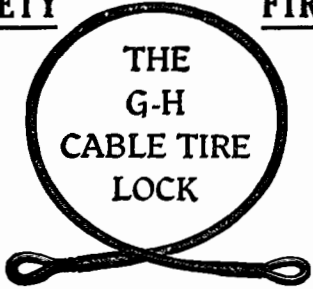
Price \$3.00

MOTOR SPECIALTIES CO.

MANUFACTURERS  
WALTHAM, MASS.

**SAFETY FIRST**

Lock Your Tire

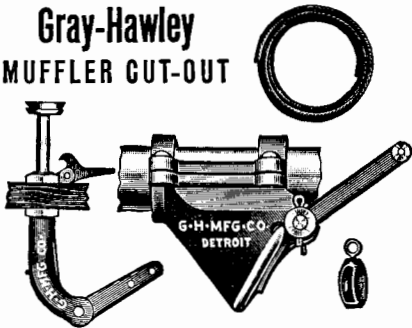


Lock Your Car

Highest Grade Crucible Steel Cable, 40 inches long, especially hardened and water-proofed. Neatly covered with genuine leather. In an emergency can be used as a tire chain to secure traction. Furnished without lock. Get your choice of lock at any garage or hardware store.

PRICE, each .....\$1.50

**Gray-Hawley MUFFLER CUT-OUT**



**"Puts Pep in Your Motor" Special Ford Outfit**

Saves Muffler in case of back fire. Neatly designed, best material and accurately machined to be instantly attached without any fitting. Entirely different from the cheap outfits usually offered for Ford Cars. It's up to the GRAY-HAWLEY Standard in every way.

Price complete as shown only \$2.00

**Gray Muffler For Fords**



This Model has all the excellent features of the "Standard" GRAY Muffler. It is designed especially for the Ford Motor and a better silencer cannot be purchased at any price.

It is furnished complete with brackets ready to attach. A suitable tail pipe is included.

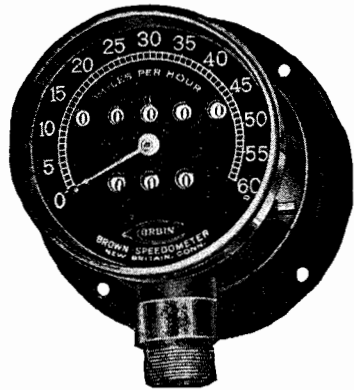
- No. 629 Without cut-out.....\$3.25
- No. 619 With cut-out and safety valve ..... 4.50

**GRAY-HAWLEY MFG. CO.**  
937 E. Jefferson St. Detroit, Mich.

**A Speedometer is Not Merely an Ornament**

—if it were, any old speedometer would do. It must record accurately and regularly your mileage, tire and fuel consumption, and speed. These are the every-day things performed by the brass-and-steel built

**CORBIN-BROWN FORD SPECIAL SPEEDOMETER**



Always on the job, always accurate at all speeds, plus two exclusive extra features—Maximum Speed Hand and Luminous Dial and Hands.

The Maximum Speed Hand records the highest speed made and holds it until tripped back to zero. Easy reading of the figures in the dark is made possible by the Luminous Dial and Hands.

Make your Ford a better car—Corbin-Brown equip it.

Illustrated Catalog On Request

**CORBIN SCREW CORPORATION**

American Hardware Corporation, Successor

**NEW BRITAIN, CONN.**

Branches: New York Chicago Philadelphia

Makers of Corbin Duplex and Two-Speed Coaster Brakes, Corbin-Brown Automobile, Motor Truck, and Motorcycle Speedometers, Corbin-Brown Tachometers, and Corbin Automatic Screw Machine Products.



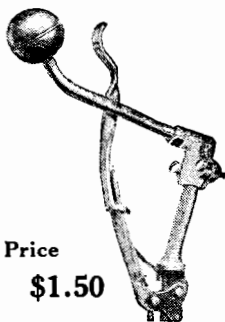
**HUGHES LEVER EXTENSION**  
FORD  
for emergency brake gear-shift



"If the brake handle wasn't a mile away from your hand life would be easier, drivin' a Ford. I can fix that for you and bring it right where y' want it, with a Hughes Ford Extension."

—Hughes.

Hughes (Mellin) extension for the brake handle is the most convenient and comfortable thing imaginable. Instead of a long back-bending reach forward it brings a handy ball grip to an easy distance from the hand. You release and move the lever with one movement.



Price  
**\$1.50**

Hughes (Mellin) extensions are also made for the shift-lever of all cars. Prices for gear shift lever extensions are: Dodge and Overland (Models 75-90-4) \$1.25; Cars with removable ball top on lever, \$1.50; all others, \$2.00. Ford brake handle extensions, \$1.50. At dealers, or order direct.

**M&H NOVELTY COMPANY**  
1468 West 28th St. Los Angeles, Cal.

**Distributors**—Motor Accessories Mfg. Co., 5 N. Calif. Ave., Chicago; Norton Munter Co., Seattle, Wash.



**Standard Grease and Oil Cup Equipment for Ford Cars**

There is an Empress lubricator for every part requiring lubrication of practically every model of Ford car in use.

Besides these, we manufacture a number of accessories for use on the Ford, including:

- Hub Caps
- Oil Gauges
- Valve Stem Adjusters
- Spring Leaf Lubricators
- Spring Shackles
- Radiator Caps
- Filler Tubes

These accessories are all carefully made from the best grade of materials. Designed to meet all conditions of service.

**The liberal margin of profit makes them an attractive stock article for the Ford dealer**

*Write for Catalog 2-A Today*

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## The Efficient Transmission Lining

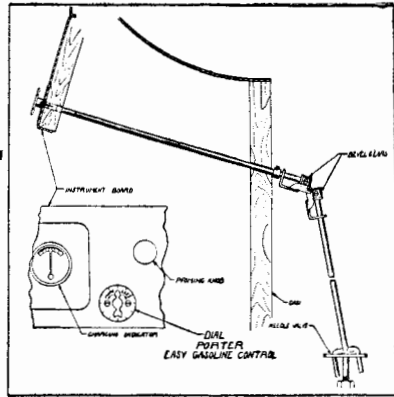


### Facts About Viking

- 1—Made exclusively for Fords.
- 2—Compactly woven fabric—greatest braking surface.
- 3—No wire or compound to “short” ignition system.
- 4—Treaded to innermost thread.
- 5—Made to run in hot oil.
- 6—Does not glaze, swell or become mushy.
- 7—Eliminates jerking and bucking.
- 8—Gripping power certain at all times.
- 9—Permits smooth application of brakes.
- 10—Greater durability.

**Vogt Manufacturing Corp.**  
 Rochester New York  
 Canadian General Electric Co., Ltd.  
 Distributors for Canada  
 Head Office, Toronto

**Exclusively for Fords**



## The Porter Easy Gasoline Control

**B**RINGS the needle valve regulation up on the instrument board within convenient reach of the driver. Stooping down, which obscures the vision and is awkward and dangerous is entirely eliminated. The driver simply reaches forward to the instrument board and turns the gas on or off as indicated by the dial.

By making it convenient to maintain the correct mixture, the efficiency of the engine is greatly increased and the highest possible gasoline mileage is easily obtainable.

It is easy to install and does not necessitate the services of a trained mechanic.

Being beautifully finished in nickel, with a black and white enameled dial, it adds greatly to the appearance of the instrument board.

**In United States \$2.00**

At your dealer's or order from us giving dealer's name.

**George G. Porter**

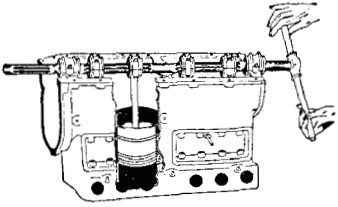
SPECIALTY ENGINEERING AND  
MANUFACTURING

GENERAL OFFICES

Keith Theatre Bldg., Syracuse, N. Y.

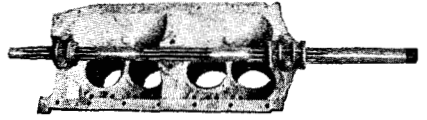
DEALERS: Get them from your jobber.

# USE the LEWIS COMBINATION ALIGNING REAMER for FORD MOTORS and Increase Your Profits



Position for reaming connecting rods.

You can avoid scraping FORD bearings by hand when using the Lewis reamer, which is scientifically correct and will ream both the main bearings and connecting rods on Ford Motors in absolute alignment. No end thrust.



Position for reaming main bearings.

FOR COMPLETE INFORMATION AND PRICES, WRITE YOUR JOBBER OR DIRECT.

MANUFACTURED BY

LEWIS TOOL COMPANY, 612 5th Avenue South, Minneapolis, Minn., U. S. A.



## The Petry Cut-Out For Fords

and the Ford car itself, have made good on the same basis—the ability to give efficient, dependable, and consistent service under all motoring conditions. The last word in muffler Cut-Outs because of its efficiency, its ease of application and its meritorious features. Expels the full exhaust to the rear, not down. Does not spatter mud and stir up dust. Has adjustable lever, making attaching easy, positive cut-off from the muffler. Spring away from heat, and easily adjustable, compound lever action and spring makes action smooth and easy on pedal. Valve seat and valve machined to prevent leakage. A scientifically designed mechanical job. Neat in appearance, strong in construction, thoroughly serviceable. Size plainly cast on each size. Invaluable for "tuning up" the motor.

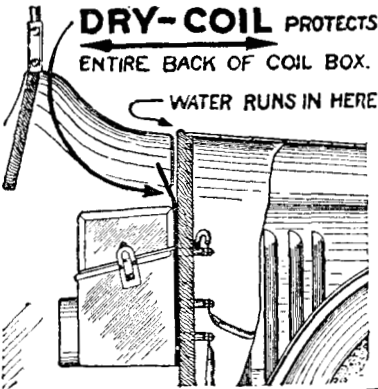
Sold complete with pedal and chain for \$4.50. At your dealer's—or direct.

N. A. PETRY Co., Inc., 1317 Race St., Philadelphia

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Write or wire to us at once. Hand-some working counter display sent with order for twelve assorted sizes.



DRY-COIL PROTECTS ENTIRE BACK OF COIL BOX.

WATER RUNS IN HERE



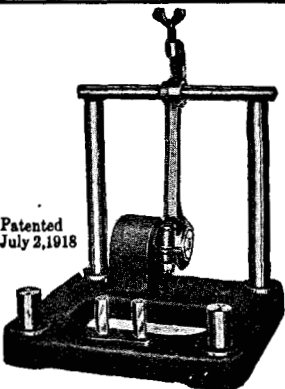
A PROTECTOR FOR FORDS

MAKES ALL FORDS WATERPROOF. Price 75c. ENDS ALL WATER TROUBLES FOREVER.

JOBBERS - DEALERS - FORD AGENTS

Over a thousand cars a week are being equipped. Liberal discounts. Order a trial lot today.

Peter Gray & Sons, Inc., Sole Manufacturers, Boston, Mass.



Patented July 2, 1918

## HANDY TOOLS

FOR LITTLE MONEY WILL ADD PROFIT TO YOUR SHOP

Straighten that Ford connecting rod in ONE MINUTE by the use of the

## PATENTED PAGEL JIG

Our other SPECIALTIES which are big time and money savers include a Piston Clamp, Motor Block Clamp and Three Wheel Dolly Jack.

Increase your shop efficiency—give your customers first class work—and build up a reputation for real satisfactory SERVICE. Let us show you.

Write your jobber or direct to

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When writing advertisers—Just say FORD OWNER and DEALER



**\$12.00**

Sold on a ten day trial plan. You risk no money.

## Keep Your Car Cool

Help your Ford to make good on its summer trips and tours. Protect the motor, save on fuel and oil and be assured of a summer of driving without trouble by installing

### A Case Water Pump

The Case Special Water Pump for Ford cars and trucks insures the same water circulation through the engine and radiator as is had in all high grade automobiles. Here is what the use of the Case Water Pump positively assures:

- Prevents your motor from overheating in summer.
- Prevents your motor from freezing in winter.
- Prevents undue wear on your motor.
- Saves you gasoline. Saves you lubricating oil.
- Saves you trouble.
- Gives you 25% to 50% more power.
- Gives you a perfect working motor under all conditions.
- Gives you maximum efficiency and satisfaction.

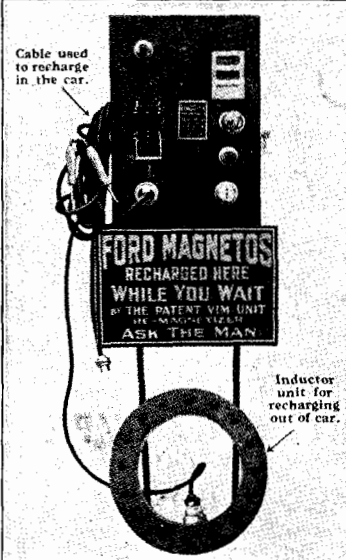
The Case Water Pump is made of the best materials, weighs only five pounds and will last as long as the car as there is nothing to get out of order. It does not interfere with any of the Ford mechanism and no extra gears or pulleys are needed. The regular Ford fan belt runs the fan and pump. Easily installed in twenty minutes by anyone who can use a wrench. Cost, complete with extra hose and clamps and full instructions, \$12.00.

**DEALERS AND DISTRIBUTORS:** A big season's business is assured. Write us for our special plan which means profit.

2575 N. HIGH STREET

**CASE PUMP CO.**

COLUMBUS, OHIO



Cable used to recharge in the car.

**FORD MAGNETOS**  
RECHARGED HERE  
WHILE YOU WAIT  
BY THE PATENT VIM UNIT  
OF THE SERVICE STATION  
ASK THE MAN

Inductor unit for recharging out of car.

# Put "VIM" into your business

Put into your shop the equipment which is making money for many service stations; the equipment which is not only a business-builder but a remarkable time-saving service device—the

## VIM UNIT REMAGNETIZER

It is recognized as standard electrical equipment and is being installed in every up-to-date shop. Let present users convince you. We will be glad to refer you to service stations which have found the Vim Unit Remagnetizer a source of continuous profit.

### INVEST NOW

Every day without Vim Unit Remagnetizer means money lost. The cost of the complete standard equipment is \$200. Every machine is sold on a thirty-day money back GUARANTEE. Financial reference: THE PATERSON NATIONAL BANK of Paterson, N. J. Write today for complete information regarding the money-making possibilities in this equipment.

**THE VIM UNIT REMAGNETIZER**

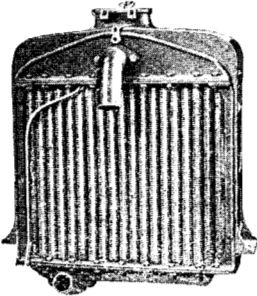
Eastern Distributors: **A. J. PICARD & CO.**  
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When writing advertisers—Just say FORD OWNER and DEALER

# Every Ford Truck Owner Needs It

## The Standard Ford Radiator Cannot Hold Ford Engine Temperature Down when it is Doing Ford Truck Hauling

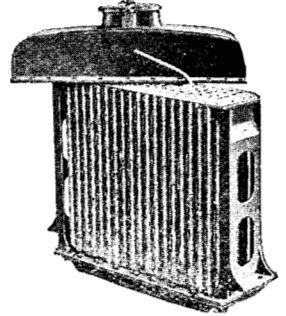


Rear View of the Emco (Ford Type) Radiator. Note the strength and compactness of its construction. It is a real truck radiator in every respect.

The Emco Radiator was designed to give perfect cooling under the most severe conditions of road and load operation. Its success is made apparent through its nation-wide adoption. It embodies the same features of design that mark the big Emco Radiators as high duty service performers.

The Emco Radiator for Ford trucks is compact, strong and durable. It will withstand shocks that would put the ordinary radiator out of commission. Will not boil. Freezing cannot split the tubes.

*DEALERS—You will get a ready hearing and quick buying appreciation from truck owners who use Ford power plants for trucking purposes. Let us send you the details.*



Top and bottom tanks are detachable. Core consists of 76 individual 3/8-inch tubes with separate renewable pins. Tubes can be removed and replaced with a blow torch.

**Motor Truck Radiator & Mfg. Co.**

General Office

2 Columbus Circle, New York City



### Vacation Trips

Only make you the more sure they are

### A Necessity

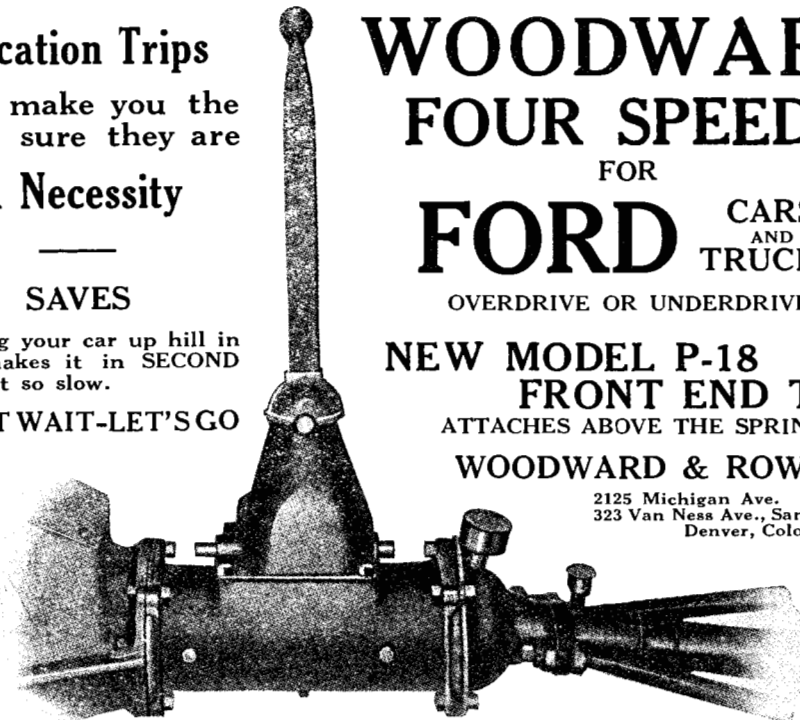
SAVES

Pushing your car up hill in low, makes it in SECOND and not so slow.

**DON'T WAIT-LET'S GO**

Simple  
Efficient  
Durable

Write for  
Descriptive  
Circular



PATENTED 5-7-18

# WOODWARD FOUR SPEEDS

FOR

# FORD CARS AND TRUCKS

OVERDRIVE OR UNDERDRIVE

**NEW MODEL P-18  
FRONT END TYPE**  
ATTACHES ABOVE THE SPRINGS

**WOODWARD & ROWE**

2125 Michigan Ave., Chicago  
323 Van Ness Ave., San Francisco  
Denver, Colo.

Price  
**\$60**

Agents  
Wanted

When writing advertisers—Just say FORD OWNER and DEALER

## Pulls More Air Through Radiator

The Juelson Two-Bladed Fan stops overheating of Ford cars and trucks. Special aeroplane-type blades furnish greatest possible pull of air through radiator. Keeps cooling system at top notch efficiency. Thousands already in use.

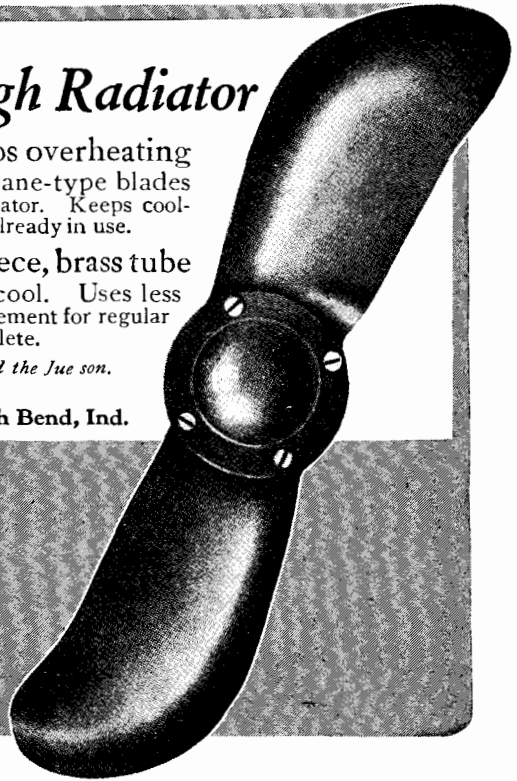
Simple—strong—durable. One-piece, brass tube bushing. Air chamber in hub. Runs cool. Uses less power. Doubles life of fan belts. Exact replacement for regular Ford fan. Easy to install. Price, \$1.60, complete.

*Leading jobbers and dealers everywhere recommend the Jue son. Get yours now.*

THE AMERICAN AERO CO.,

South Bend, Ind.

**JUELSON**  
Two  
Bladed **FAN**

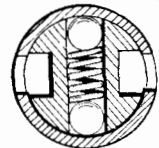


## Saves Time and Trouble

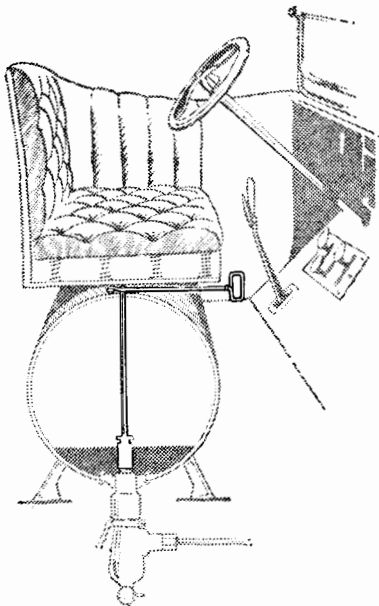
You never miss the gas until the tank runs dry. It usually happens a long distance from the filling station which means trouble and a waste of time. You never need to be held up if your car is equipped with.

### SAV-A-WALK

The Sav-A-Walk is a tank attachment designed to give an alarm as soon as the gas runs down to the last gallon. When the motor commences to run short of gas all you have to do is to reach down and pull the little handle and then you have your extra gallon, on which you can drive to your next filling station. This valve is a positive shut off. Entirely new construction. No need of raising the cushion or seat cover or to open or close the valve. The good features of this valve are easy opening and closing. When you hear the clock then you know that the valve is closed. This valve will outlast the life of the car. It is made of brass with two ball bearings and a spring.



Showing Spring and Ball Bearing Construction of Valve.



The Sav-A-Walk is easily installed. Disconnect the sediment bulb from the gas tank, screw Sav-A-Walk into tank, return sediment bulb into tank, connect feed line up, same as before. Punch Sav-A-Walk and connect feed line up, same as before. Punch Sav-A-Walk. A recent test was made with Sav-A-Walk and valve opened and closed 100,000 times, and found to be in good condition after test. The Sav-A-Walk will save you time and money at a very small investment—\$2.50.

DEALERS:—If you cannot buy from your jobber, write direct to us for very attractive offer.

**ARLINGTON MANUFACTURING COMPANY,** 72 ARLINGTON AVENUE  
Mariners' Harbor, New York

**FORD USERS DON'T REALLY WANT CHEAP SPRINGS**

any more than cheap or poor tires or service. Cheap (?) goods—usually are the dearest—especially if the cost of installing must soon be repeated.



**'BETTER' FORD SPRINGS That Do Stop the Breakage**

Don't queer chances for future business from customers by selling a spring no better than the broken one.

Insist on **New Era Springs** from your jobber—or order direct from us. A genuine New Era guaranteed Ford front spring is stamped A-1 and "New Era" on bottom leaf—has seven leaves graphited for about two years' lubrication, bushed, tie clips bolted, painted and oil tempered. Weight 18 pounds.

**POPULAR PRICED FORD FRONT SPRING No. A-401** is exactly like A-1 except not graphited and clips not bolted. The only one we know of sold at competitive price that is positively oil tempered.

Sold by 220 Best Jobbers

A-1 Ford Front Spring 7 leaves (Graphited) .....	\$ 4.50
A-401 Front, not guaranteed, 7 leaves .....	3.50
A-2 Rear Standard tread 51 lbs., 8 leaves (Graphited) .....	12.00
A-1900 43 lbs., Rear, 8 leaves (not guaranteed) .....	10.50
A-402 Rear Tread, 60 inch, 8 leaves (Graphited) .....	15.30

FORD TRUCK SPRINGS	
Ford Truck	
T-1210 M/T '18 R., Half R. or L. 7.40	Hudford
T-1208 R. S., 52x3, 9 L., 1 Ton....	31.50
T-1209 R. S., 50½x3, 12 L., 2 Ton.	42.00
Make-a-Motor	
T-1203 R. S., 49½x2½, 8 L.....	19.30
Max-fer Truck	
T-1204 R. S., 42x2, 10 L.....	13.65
T-1205 R. relief, Cr. 31x2, 7 L.....	5.50

FORD TRUCK SPRINGS—Cont'd	
Olson Unit One-Ton Truck	
T-1207 R. S., 44x2, 7 L.....	14.60
Redden Truck	
T-1206 R. S., 40x2½, 8 L.....	15.75
Smith Form-A Truck	
T-1200 R. S., 42x2, 10 L.....	13.65
T-1201 R. S., 42x2, 12 L.....	16.50
T-1202 R. Relief, Cr. 31x2, 7 L.....	6.00

Ask for complete stock list of Better Springs for all cars.



**Extra Heavy Springs for Ford Cars of Commercial Use**

A-1894 Front, 9 plates, (Graphited).....	\$ 6.50
A-1895 Front, 10 plates, (Graphited).....	7.20
A-1896 Rear, 56-in. tread, 10 plates, (Graphited)	19.50
A-1897 Rear, 56-in. tread, 11 plates, (Graphited)	21.50
A-1898 Rear, 60-in. tread, 10 plates, (Graphited)	22.00
A-1899 Rear, 60-in. tread, 11 plates, (Graphited)	24.00

It's poor economy to spend labor replacing a broken spring with one NO better. Use New Era "Better" Springs for all cars, and stop the breakage. 150 best jobbers list them.

**NEW ERA SPRING & SPECIALTY Co., 50 Cottage Grove Ave., Grand Rapids, Mich.**

AGENTS

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AGENTS



View of Fracto Visible Lubricator Installed on Ford Car

**Fracto Visible Lubricator**

Is the Biggest Seller Today

Write for proposition.

See full description of all our products in April and May Ford Owner.

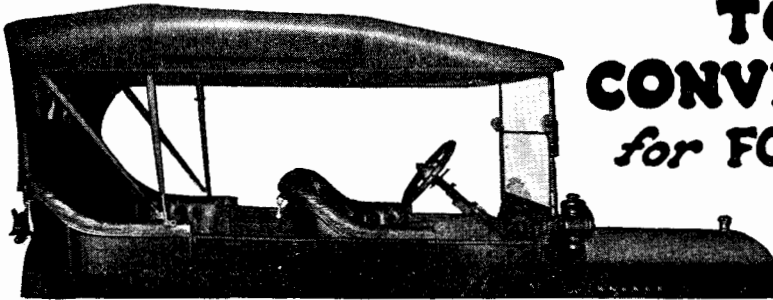
Manufactured by

**Fracto Specialty Co., Inc.**

Motor Car Specialties of Merit

161 Massachusetts Ave., Boston, Mass.

# PENNYPACKER



## TOP CONVERTERS for FORD CARS

Price complete  
for touring car  
or runabout

### A Revelation in Appearance

Whether your car is new or old, The Pennypacker Top Converter turns your present top into a classy stream line "one man" top giving your car the same graceful appearance found in the most expensive equipment.

Eliminating the unsightly front bows and tension straps, it gives a clear view and unrestricted passage thru the front door.

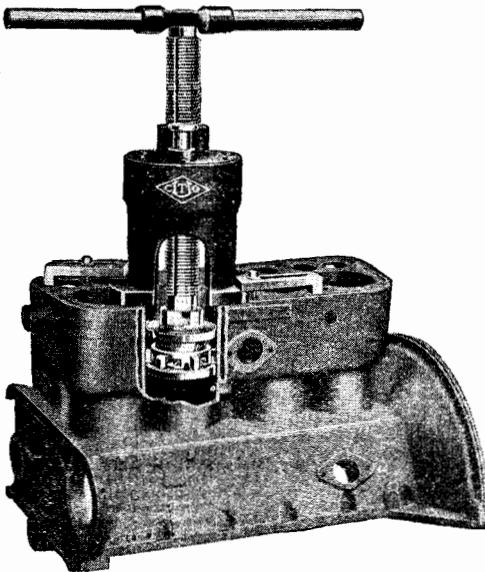
Easily and quickly installed by any car owner with a hack saw and screw driver.

If your dealer cannot supply you, order direct from the



**PENNYPACKER MFG. CO., 1001 Michigan Ave., Chicago, Ill.**

Meritorious Automotive Inventions Financed, Developed and Marketed.



### Some Interesting Facts

concerning the Universal Tool Cylinder reborer tool—

It will reborer the cylinder of any truck, tractor or passenger car motor in twenty minutes.

One Thousandth or Thirty-one Thousandths of an inch can be taken out in one cut.

The tool leaves a perfectly smooth surface and the bore is round and absolutely straight.

Can be used either by hand or under a drill press.

The garage-man who does not include the Universal Cylinder Reborer Tool in his shop equipment, is losing profitable business.

Write for Catalog

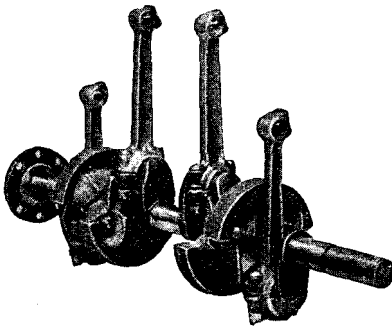
See current issue Auto Trade and Chilton's Directory for list of jobbers carrying stock.

**THE UNIVERSAL**  
435 Woodward Ave.



**TOOL CO., Inc.**  
Detroit, U. S. A.





## Announcing 3 New Ones

DUNN COUNTERBALANCES can now be furnished for Dodge—Chevrolet 490—New Overland 4

SO SUCCESSFUL have Dunn Counterbalances been for the past three years on the Ford motor and so well and favorably known have they become throughout the world of motordom that we have literally been forced to supply them for other popular makes. And since the most calls were for the above cars, we of course will supply this demand first. Other models will follow as rapidly as we can tool up for them. It is our intention to supply them for all current models of automobiles, trucks, and tractors, where the demand is sufficient, and on which they can be used. Each individual make of motor requiring a specially designed counterbalance.

ALL THE KNOWLEDGE AND EXPERIENCE gained in making Counterbalances for Ford motors for years, enables us to produce these new models correct from the start. So certain are we that you will be satisfied with their use that we agree to refund your money if you are dissatisfied for any reason whatsoever after using them fifteen days.

ENDORSED BY ENGINEERS EVERYWHERE and tried out on tens of thousands of Ford motors, DUNN COUNTERBALANCES have taken their place in the front rank of motor accessories. We claim that a motor shaft with DUNN COUNTERBALANCES properly installed is as efficiently and scientifically balanced as any shaft in any motor made.

THE DUNN COUNTERBALANCING IS FULLY PROTECTED BY PATENT. Do not accept an infringement, an imitation, or a counterfeit. The name "DUNN" and patent date appears on the article itself as well as in advertising relating to them.

DUNN COUNTERBALANCES FOR FORD.....\$ 8.00 per set.  
 DODGE ..... 12.00 per set.  
 OVERLAND ..... 10.00 per set.  
 CHEVROLET ..... 10.00 per set.

Terms cash with order or C. O. D., F. O. B. CLARINDA, IOWA.

DEALERS AND JOBBERS—Assist us in this distribution. Our proposition is worthy of your investigation. Our literature is interesting and educational. Write us.

### DUNN MANUFACTURING CO., Clarinda, Iowa

(Dunn Sales Co., 250 W. 54th St., N. Y. City.)

(Dunn Sales Co., 1220 San Pedro St., Los Angeles.)

## A-C External Foot Brakes For Ford Cars



The entire mechanism of a Ford car is at the mercy of the brakes many times a day. Wrenching, gripping brakes, transmit jolt, jar and vibration to the entire machine. The result is rapid and costly depreciation. When the original Ford brakes are applied they shake up the entire car. Located in the transmission, they set up a reverse strain that passes through the brake drum, universal joint, drive shaft, pinion gear, bevel gear and thence via the differential to the rear wheels. Aside from this strain, there is a jolting and jarring action that affects the power plant in every weak point. A hard stop is equivalent to at least a day's wear and tear. The depreciation is most rapid at the rear axle and transmission—ask any repair man.

### A-C FORD BRAKES

Eliminate this continual cause of Depreciation and Double the Useful Life of a Ford Car!

They substitute firm, gentle action for jolt and jar. They operate independently and do not damage any vital part of the car. They are designed by an expert whose experience in charge of a great fleet of Ford cars showed him the necessity of some such improvement. First installed on these cars, they cut 25 per cent from their upkeep. They are now built for universal Ford service and are making good on thousands of cars.

A-C Brakes can be installed by any mechanic in one hour. They furnish a foot and service brake on the outside of the rear wheel emergency brake drum, connecting with the stock Ford foot brake pedal. The entire equipment is of very durable material, finely finished, and sold under definite guarantee for the life of the car.

COMPLETE \$16.00

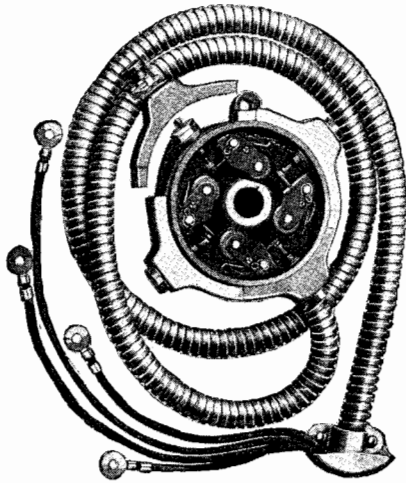
Here is a money-saving, efficiency-creating device that will make good and make money for you. Write us. JOBBERS AND DEALERS can supply you.

A-C MANUFACTURING COMPANY, INC., Manufacturers of Motor Car Devices  
 2251-55 W. GRAND AVE., CHICAGO, ILL.

When writing advertisers—Just say FORD OWNER and DEALER

# DUNTLEY MAGNETO BREAK TIMER

THE MOST EFFICIENT TIMER EVER PUT ON A FORD CAR



SHOWING GUARD AND TIMER COMBINED.  
Timer, \$5.00; Price of Wire and Terminal Guard, \$5.00.

## 6 EXCLUSIVE FEATURES 6

That guarantee its perfect performance.

1. It has no whirling grinding contacts.
2. It is equipped with wear proof metal rollers.
3. It is self-cleaning at each magneto break.
4. It cannot become insulated with oil, for
5. It is friction proof and requires no lubrication.
6. It is equipped with genuine tungsten points.

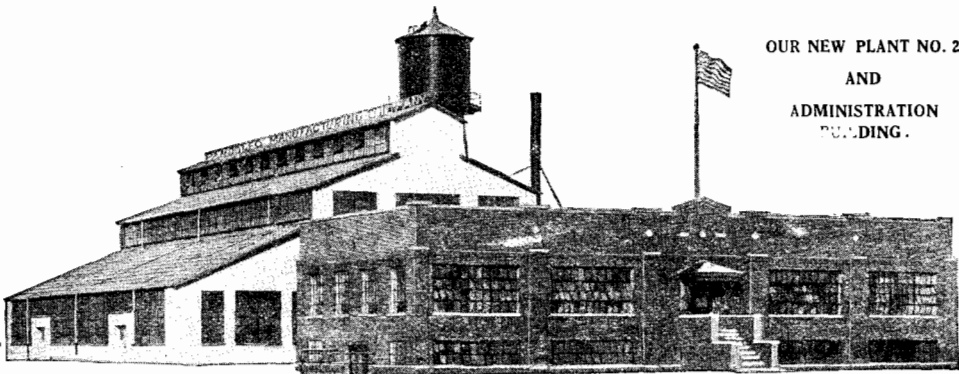
## WIRE & TERMINAL GUARD

Your motor sputters and spurts, hours are lost and then a trip to the repair shop only to find that a loose terminal connection was the cause of the trouble.

The Duntley wire and terminal guard prevents loose connections, broken wires and short circuits for it affords absolute protection to the most vital part of the entire ignition system.

**DEALERS:** Write or wire us today for our sales plan.

# J.W. DUNTLEY 1007 MICHIGAN AVE CHICAGO



OUR NEW PLANT NO. 2  
AND  
ADMINISTRATION  
BUILDING.

## WRITE, WIRE OR PHONE TODAY

LIVE WIRE DEALERS CAN MAKE MONEY WITH

# MADE-O-METAL PRODUCTS

We are now manufacturing a number of high-grade metal specialties that sell on their merit and make a decent profit for the man who sells them. We are adding to our present line as fast as we can design and develop other meritorious products. It is our plan to offer additional money-making opportunities in the future to the men who can make money for themselves—and us—NOW.

Sole Licensee, U. S. Patents, for SIMMONS Wheel of Steel for Automobiles. Write for Particulars.



## PANDOLFO MFG. COMPANY,

(NOT INCORPORATED)

Sheet Metal and Pressed Steel Products. Saint Cloud, Minn.

SOME OF OUR PRODUCTS.

Handy-Pandy Folding Chairs and Tables.

Handy-Pandy Luggage Carriers.

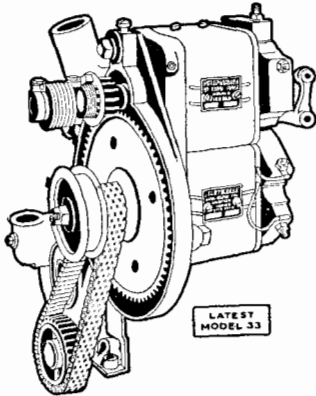
Pandolfo Combination Compartment Tanks.

Fenders for Fordsons.

Other Accessories.

Stampings, Etc.

When writing advertisers—Just say FORD OWNER and DEALER



# Heinze - Springfield

Starting and Lighting System for Ford Cars

**L**ATEST model with all improvements which fits all types of Ford motors, including those built previous to 1919..... **\$75.00**

## DEALERS:

**T**HE increased price of Ford cars has caused an unusual demand for a high grade starter that will fit old models.

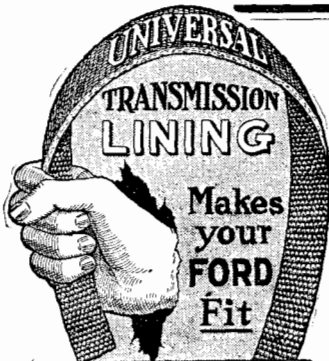
Write or wire at once for Special Proposition.

ASK YOUR DEALER—OR WRITE US.

**A** QUICK, sure start; bright, steady lights all the time; no danger of broken arms—these are some of the HEINZE-SPRINGFIELD advantages.

Everything complete—right on the dash. Ask for full information regarding our latest model—NOW.

**THE JOHN O. HEINZE COMPANY**  
SPRINGFIELD, OHIO



## Gets down to brass tacks— RIGHT AT THE START

There's the beauty of the

### UNIVERSAL Unit Display Rack

It cuts out all selling time and effort—cuts down overhead. You start in at the sales point. With your stock of **UNIVERSAL Transmission Lining** you begin at "brass tacks."

Up on your counter, right where every incoming Ford owner can see it, this unique rack will sell

### UNIVERSAL Transmission Lining

steadily—the handy Ford set with all the brass rivets required. It is the best transmission lining the Ford owner can buy anywhere. And the service and mileage it gives him will always serve as a pleasing reminder of the house from whom it was purchased.

Live Dealers, who know the profits lying in the use of "brass tack" sales helps like the Universal Unit Display Rack would write at once for Special Introductory Proposition on Universal Transmission Lining.

**STAYBESTOS MFG. CO.** 5522 LENA STREET PHILADELPHIA

The Modern Factory

Makers of the celebrated S-M-C Asbestos Brake Lining

When writing advertisers—Just say FORD OWNER and DEALER

Ford Accessory Dealers and Owners who are anxious to reduce delivery expenses by carrying bigger loads with safety and save tire and rear axle bills will be keen to get acquainted with Alford Auxiliary Springs. They will permit you to carry  $\frac{3}{4}$  ton loads.

*More tire mileage—more capacity—more service*



**How many springs and axles have you broken and tires have you crashed with heavy loads?**

The Alford Auxiliary Spring Attachment can be installed in one hour and is the most meritorious device ever designed for a Ford car.

**SAVES MONEY EVERY WORKING DAY**



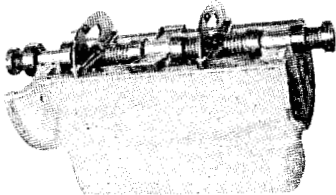
**NO HOLES TO DRILL**

Ask your dealer to order you a set today, sold on a thirty day trial offer, money refunded if not as represented.

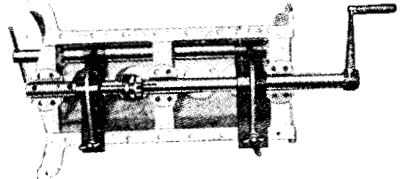
**AGENTS WANTED**

Dealers: You should have this attachment in stock. It is just what your customers have been wanting. Write us today.

**Andrew Hoffman Mfg. Co.**  
5034-8 So. State St. CHICAGO, ILL.



**D**ETROIT Reabbiting and Reboring Outfit for Fordson Tractor Main Bearing. Also supplied in separate unit for Ford Model "T" Main Bearing.



*Ford Owner:—*

Insist upon having Detroit Service Tools, "The Approved Line," being used to repair your Car or Tractor. This insures factory accuracy and methods, at all times. There is a garage in your town equipped with these tools. If not, write us and we will give you the location of one that is properly equipped.

- Burning-In Machines
- Cylinder Reboring Outfit
- Burnishing Tools
- Drill Presses
- Arbor Presses

- Assembly Stands
- Commutator Grinders
- Motor Lifting Devices
- Connecting Rod Alignment Fixtures
- Electric Motors, Etc.

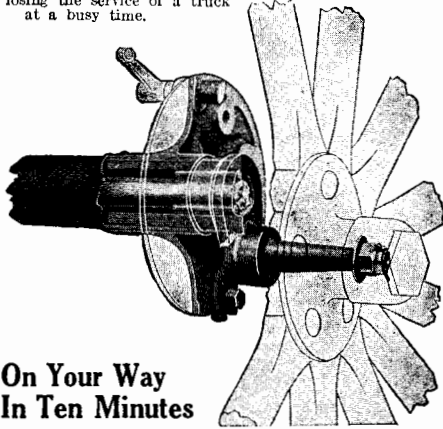
*For full particulars write your Jobber or direct to*

**Detroit Garage Equipment Company**  
DETROIT, MICH., U. S. A.



## The Slipon Emergency Axle FOR FORDS

Ends the trouble, lost time and towing costs which the broken axle has meant to Ford owners. No more of the fear of being "hung up" miles from help, or losing the service of a truck at a busy time.



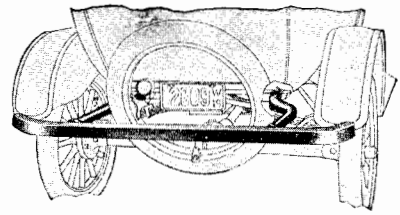
### On Your Way In Ten Minutes

The Slipon Emergency Axle is bolted to the brake drum. Three fluted rollers quickly lock the broken shaft and the sound axle drives the car, permitting you to proceed on your way.

A Slipon in the tool kit means that a broken axle will not cause more than a ten minute delay. It serves perfectly until you have the time and reach the place where a permanent repair can be made.

DEALERS: Stock Slipons for the service, truck and tourist trade. Write direct to

THE SLIPON COMPANY, Mfrs.  
Milwaukee Dept. O Wisconsin



## Protect the Rear, too—

Your Ford needs a rear bumper even more than one in front because you can't see what's behind you. Protect your car completely by equipping it, front and rear, with the dependable, easily attached

### BADGER BUMPER

Designed and built as carefully as Badger Bumpers for the most high priced cars. Besides the protective feature they make the wheelbase seem longer and otherwise improve your Ford's appearance.

The nickel finish is smooth and even and the black enamel cannot chip or crack. Diamond or channel bars. Ask your dealer.

BADGER MFG. CORP.  
MILWAUKEE WIS.

## BALANCED LIGHT WEIGHT FERROLYTE PISTONS

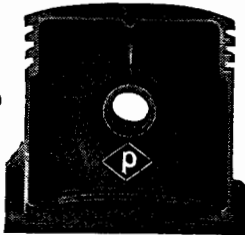
(Trade Mark)

### FOR FORD

\$16.00

(Set of Four)

Less Rings



\$18.00

(Set of Four)

Complete

### DESIGNED FOR EFFICIENCY

Higher Speed—Quicker Acceleration—No Engine Vibration—Less Wear on Motor Bearings—Lower Operation and Upkeep Cost.

#### SIZES:

Standard, +.0025, +.005 +.031, +.033, +.062

THE PERFECTION AUTO PARTS CO.

420 Lakeside Ave. N. W.

CLEVELAND, OHIO

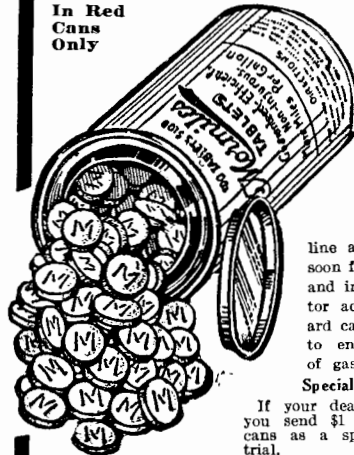
## Mormiles

TRADE MARK

SAVES GASOLINE  
ADDS MILEAGE  
EASY TO USE  
PREVENTS AND REMOVES CARBON  
EVERY PACKAGE GUARANTEED

In Red Cans Only

### Mormiles



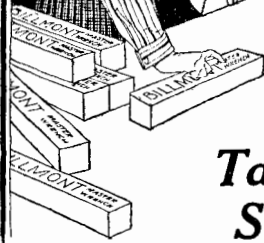
comes in convenient form. You drop one tablet into the tank for every gallon of gasoline. These tablets dissolve completely in gasoline and their effect is soon felt in added power and in clean "live" motor action. One standard can contains enough to energize 100 gallons of gasoline.

#### Special Introductory Offer

If your dealer cannot supply you send \$1 for two standard cans as a special introductory trial.

### Mormiles Company

416 Sherman St. Dept. D.W. Chicago, Ill.



**Each  
Wrench  
Takes 24  
Sockets**

And with the Billmont car owner's set any Ford owner can reach any Ford nut or bolt.

For with the Billmont Master Wrench, Junior, Speeder, long and short T's, Rim Brace and Offset you have a complete Ford wrench equipment.



The Billmont universal nose piece makes each of these wrenches twenty-four wrenches in one, for all Billmont sockets fit all Billmont wrenches.

The lightest, most economical, most useful and most convenient wrench set you can obtain. Ask your dealer—or write us.

**Edgar C. Guthard Co.**

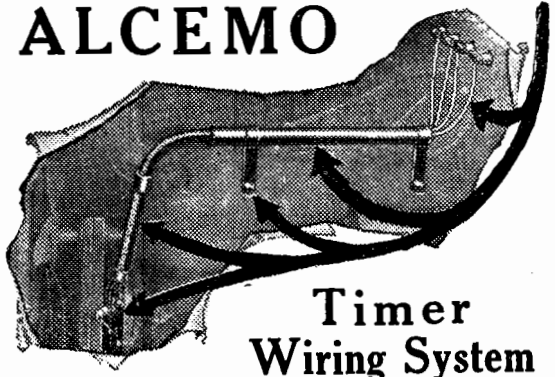
361 East Ohio St. CHICAGO, U. S. A.

BRANCHES

New York City      Minneapolis  
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**ACCESSORIES—Representing  
Economy, Safety and Comfort**

**ALCEMO**



**Timer  
Wiring System**

**No More Oil Soaked "Leaky" Wires**

Alcemo Timer Wiring System positively saves the usual 40% spark waste and delivers to the motor an intense, hot spark just where it is intended.

The highest quality glazed Goodrich oil and waterproof wire used in construction, costing many times more than the standard Ford wiring equipment. Alcemo Timer Wiring System is a direct overhead connection between the coil box and the commutator and shortens by 50% the old methods of wiring.

The hot, fat spark transmitted to the motor gives perfect combustion, there is no missing, no carbon trouble, therefore more miles per gallon of gas and a saving in lubricating oil. Prevents "rippling" of commutator.

Equip your Ford with this system and make riding a pleasure. A pair of pliers and a wrench is all you need.

Sold by all first-class dealers and garages throughout the U. S. for \$2.50. Canada \$3.25.



**KOR-KER  
TIRE  
TREATMENT**

**Kor-Ker** instantly and permanently seals punctures.

**Kor-Ker** stops slow leaks—makes tires non-porous.

**Kor-Ker** often gives 50% more mileage.

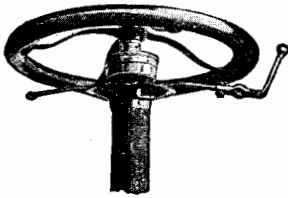
**Kor-Ker** keeps tires at normal inflation—no broken side-walls, rim cuts, chafed beads, etc.

**Kor-Ker** reduces possibility of blowouts to a minimum.

**Kor-Ker** saves many dollars a season.

**Kor-Ker** is used in forty countries by thousands of autoists with positive success.

**Alcemo Manufacturing Company**  
115 Bridge Street Newark, N. J.



ATTACHED STEERING COLUMN  
RAISED TO SHOW APPLIANCE

# “EXTENDOR”

No Ford Owner Should Be Without It.

- No. 1—Regular size steering wheel.....65 cents
- No. 2—17-inch steering wheel.....90 cents

Ask Your Jobber or Dealer

**S & P Manufacturing Co., Inc.**  
163 Columbus Ave. **NEW YORK**

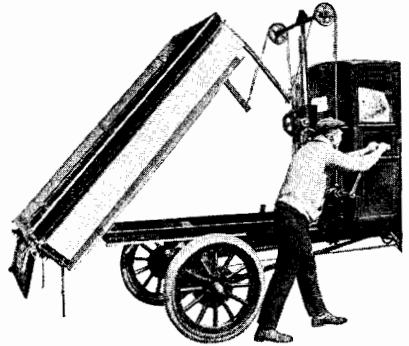
For Speed, Strength, Durability  
Equip Your Ford With An

## ARCHER Steel Dump Body and Hand Hoist

The Archer is ideal for bulk deliveries; the body is strong and the hoist is quick. A pull of only 20 pounds dumps the load in 30 seconds. No upkeep. The body can be fitted by one man in one hour.

Write for free booklet of further particulars.

ARCHER IRON WORKS, 2441 W. 34th Place, Chicago, Ill.



**\$1** **TUBE**  
**SALE**



### DIRECT FROM FACTORY

Highest quality, laminated, floating stock, extra HEAVY tourist inner tubes. To introduce I am giving this remarkable offer.

SIZE	GREY TUBES ONLY
30x3	.....\$3.35—two for \$4.35
30x3 1/2	.....4.05—two for 5.05
31x4	.....5.50—two for 6.50

Any tube not satisfactory within one year will be replaced FREE. When tubes are received if not satisfactory, return at my expense and money will be refunded. Shipped PREPAID when cash is sent with order. If C. O. D. charges collect. BUY DIRECT.

LYMAN HART, FORD TIRE SPECIALIST, 109 Michigan Street, Grand Rapids, Mich.  
(DEALERS, AGENTS, GET MY COMPLETE LINE.)

# TEN EYCK

## COMPRESSED AIR STARTER FOR FORDS

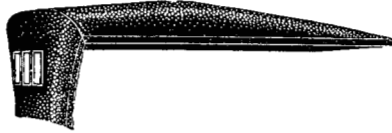
Starts your Ford instantly every time. Operates from steering post. Keeps engine and spark plugs free from carbon. Inflates tires. Fully guaranteed. Low in price. Write us today.

AIR DEVICE CO. 2977 Cottage Grove Ave. CHICAGO

# FORD TOP RE-COVERS

With Two Bevel Glass  
in Curtain

Touring, . . \$11.50  
Roadster, . . 8.50



With Three Celluloid Lights  
in Curtain

Touring, . . \$10.00  
Roadster, . . 7.00

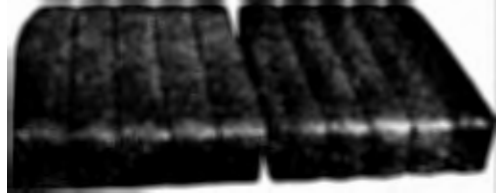
Rear Curtain with only two BEVEL GLASS \$4.50; with Three Celluloid Lights, \$3.00  
Made from heavy top material and furnished with Tacks, Welt and Fasteners. Cash with order. We pay the postage.

**AUTO TOP COMPANY,** Box 147 Dept. 5 **Fremont, Ohio**

A More Comfortable Seat Cannot Be Bought at Any Price



Front or Rear \$12.00.



Front Divided Seats \$15.00.

Construction fully covered by U. S. and Canadian Patents.

With a KANT SAG Seat your Ford is as Comfortable as any Car on the Market.

## KANT SAG SEATS KANT SAG

Remember a car can only be as comfortable as the seat. Order from your dealer or direct. We prepay express charges.

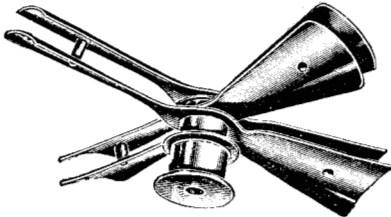
KANT SAG CORPORATION

11 ABBOTT, DEPT. 6

DETROIT, MICH.

### "The Fan with the Hurricane Blast"

P  
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N

With the Pitter Multi-Blade Fan you utilize your entire radiator capacity, as this fan drives air through the corners of the radiator which is done by no other fan.

Guaranteed to keep Ford motor cool.

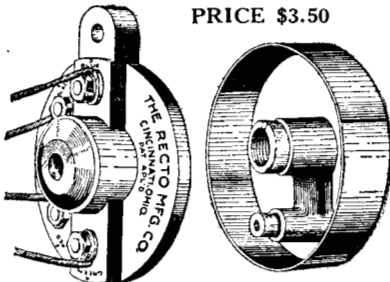
### The Pitter Fan Co.

208 So. La Salle St. Chicago, Ill.

## "RECTO" THE DISTRIBUTOR HEAD TIMER, IS RIGHT

PRICE \$3.50

### 24 YEARS PROOF



High grade ignition systems, motors, generators and hundreds of other electrical units use this principle (are they all wrong?). SELLS ON LOOKS—PRAISED ON PERFORMANCE—MONEY BACK GUARANTEE.

The "CORBAN" anti-friction non-sparking Brush can be renewed for 30c.

Attractive Proposition for Dealers and Jobbers

### THE RECTO MFG. CO.

CINCINNATI, OHIO



**SPEEDSTERS  
SPORT  
TOURING  
MODELS**

## Aristocrat Runabout Bodies for Fords

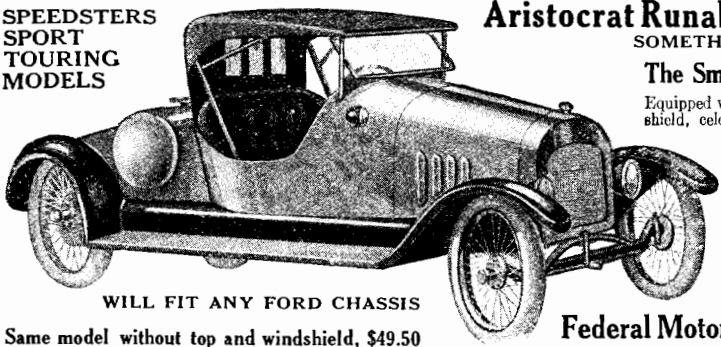
SOMETHING DIFFERENT

### The Smartest Body on the Market

Equipped with stylish one-man top, single glass windshield, celebrated cordette upholstery and includes latest streamlike hood, radiator shell and gasoline tank.

**SPECIAL PRICE \$87.50**  
F. O. B. CHICAGO

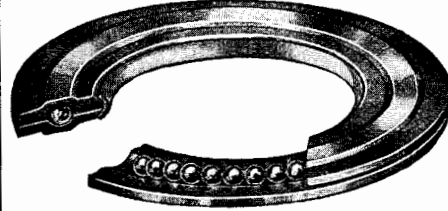
Dealers—Write at once for special proposition. Can make immediate shipment Shipped C.O.D. on receipt of \$10.00. Satisfaction Guaranteed or Your Money Refunded.

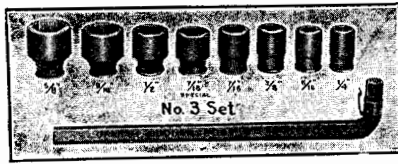


WILL FIT ANY FORD CHASSIS  
Same model without top and windshield, \$49.50

**Federal Motor Supply Co.** 1238-44 W. Harrison St  
CHICAGO

**Graham Socket Wrenches**  
**THE UNIVERSAL WRENCH**  
Convenient—Compact—Clean  
Contained in Case  
**Solid Steel Hardened**





Attractive Discounts to Jobbers and Dealers

**GRAHAM THRUST BEARING**  
For Ford and Chevrolet No. 490 Cars  
Full Type The One That Has Made Good  
Micro Chrome Balls—Special Alloy Steel  
Manufactured only by  
**The Graham Roller Bearing Co., Coudersport, Pa., U. S. A.**

## The Three Point Tire Carrier and Lock



**INVISIBLE STEADFAST  
VIBRATION PROOF**

The Three Point Carrier was designed on an entirely new principle to overcome the necessary defects of all other Ford Tire Carriers.

It is a side carrier, holds the tire in an absolutely steadfast and firm position, is operated from inside or outside the car. It has an inside lock where no thief will operate; the tire is removed in 5 seconds by turning with your hand a wing nut inside the car; putting the spare on the carrier is as simple and takes just 5 seconds.


Once on it requires absolutely no attention; no chance to loosen up; no vibration. If not used, it presents no unsightly appearance; in use it actually improves the looks of your car; made of the best materials; an ornament, plus a positive necessity.

**Price complete with lock, \$5.00. At your dealer or direct.**



Installed in 10 min.  
2 holes to drill.

**LACLEDE AUTO DEVICES CO.**  
1626 Olive Street  
St. Louis, Mo.



PAT'D. U.S.  
MAY 11, 1915

McCadden Leakless  
Piston Rings

## Ford Owners, Racing People and Aeronauts

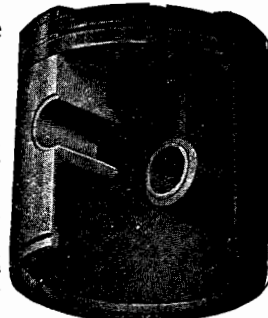
In our light grey iron piston weighing under 1 3/4 pounds each, equipped with McCadden leakless rings, bronze bushings and pins at \$18.00 a set, we offer a permanent source of satisfaction.

**THE McCADDEN ADJUSTABLE PISTON**

New and different. Can be adjusted to 1/32 inch. Write for full information.

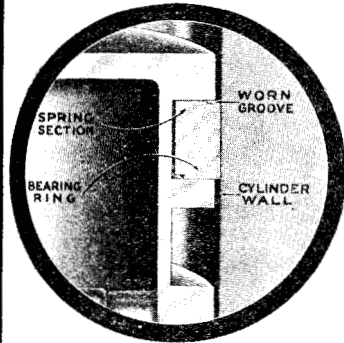
Ford cylinders rebored and reground and fitted with the light grey iron pistons, leakless rings and bronze bushings at \$23.00. Send head with cylinder. The shop of quality.

**McCadden Machine Works, Inc., St. Cloud, Minn.**



Sectional Light Grey Iron  
Piston 1 3/4 pounds.

When writing advertisers—Just say FORD OWNER and DEALER



## YALE RINGS STOP THE LEAK

The inner spring section slides up against the top of the groove, forcing the outer bearing section down against the bottom of the groove, and outward against the cylinder wall. Leakage is stopped around the ring as well as past it. The cylinder is sealed up tight. Write to our nearest distributor.

YALE PISTON RING CO. INC., Boonton, N. J.



### Distributors

Zim Accessories,  
208 N. Wabash Ave., Chicago, Ill.  
C. B. Bolton,  
613 West Pico St., Los Angeles, Cal.  
Yale Sales Corp., 209 West 76th St., N. Y. C.  
Charles L. Fawcett, St. Augustine, Florida.



EQUIP YOUR CAR AT ONCE WITH THE

## "Alsop - All - Spark"

**SIMPLE - SAFE - SURE**

It eliminates the cost of new plugs, by causing old, cracked, carbonized and oil soaked plugs to give powerful sparks, which retard carbon, saves gas, develops greater power, and insures continued driving without misfires.

Controlled from a handsome dial on dashboard.  
PRICE: 4 cylinder type \$7.50 with money-back guarantee.

NOTE:—This device does not contain DANGEROUS EXPOSED SPARK GAPS, which may SET YOUR CAR A-FIRE and make your engine HARD TO START.

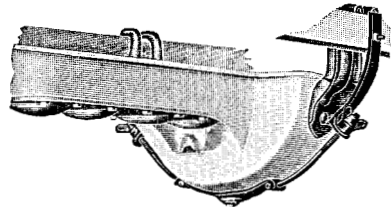
Write for our great Catalogue of Government Tests.

DEALERS—AGENTS—SALESMEN—WANTED

ALL-SPARK IGNITION CO., Inc.  
13 F Water St. New York

## Johnson Crank Case Support

For Ford Cars and Trucks



Patented Sept. 11, 1917.

Weight 3½ lbs. Price \$3.00

Prevents oil leaks and holds engine firmly in place, before or after crank case arms break.

On the car before that vacation trip!  
On the truck for service!

Adopted by The Texas Company and many others.

Jobbers—Big and clean ones are taking on this article. Goods ready.

## CHAS. R. BACKUS

Mystic, Conn.

## SUNDERMAN \$7.50

Vacuum Carburetor MODEL F FOR FORDS F. O. B. Newburgh, N. Y.

Save 30 to 50 Per Cent of Your Gasoline

The Sunderman Carburetor will positively save from 30 to 50 per cent on gasoline on any car, and it will give your Ford in addition the POWER, the SPEED and the FLEXIBILITY enjoyed otherwise by only the owners of the larger cars. Put on a Sunderman, and see your Ford pass all other cars on any kind of a hill.

Send your order at once—state make and model of your car. Great Dealer's Proposition—Write for it.

SUNDERMAN CORPORATION  
LAKE and ANN STS., NEWBURGH, N. Y.

### Your Prospective Customers

are listed in our Catalog of 99% guaranteed Mailing Lists. It also contains vital suggestions how to advertise and sell profitably by mail. Counts and prices given on 9000 different national Lists, covering all classes; for instance, Farmers, Noodle Mfrs., Hardware Dealers, Zinc Mines, etc. This valuable reference book free. Write for it.

### Send Them Sales Letters

You can produce sales or inquiries with personal letters. Many concerns all over U. S. are profitably using Sales Letters we write. Send for free instructive booklet, "Value of Sales Letters."

**Ross-Gould**  
Mailing  
**Lists St. Louis**

# WIRE WHEELS

## HOUSE

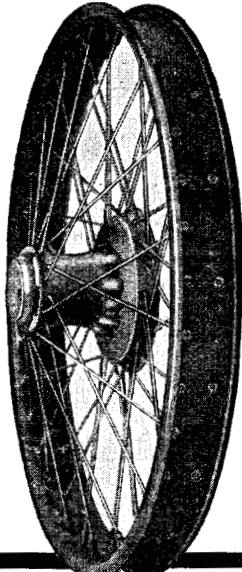
QUICK CHANGE

FOR FORDS

A set consists of five wire wheels, four inner hubs, four hub caps, hub cap wrench, and spoke nipple wrench.

Finished in White, Black, Red, Cream—color optional.

WIRE WHEEL CORP.  
OF AMERICA  
(Successor to Houk Mfg. Co.)  
1700 Elmwood Ave.  
Buffalo, N. Y.



Direct Factory Branches and Service Stations:

New York, 835 11th Ave., at 57th St. Detroit, 11 Leland St.  
Philadelphia, 328 N. Broad St. Los Angeles, 1216 S. Grand Ave.  
Chicago, 23rd St. and Indiana Ave. San Francisco, 1690 Pine St.

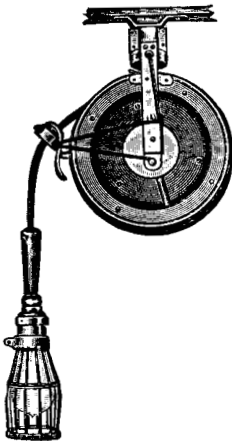
Exclusive Canadian Representatives:

DUNLOP TIRE & RUBBER GOODS CO., Toronto

Canadian Factory: Ajax Wire Wheel Corporation of America,  
64 Niagara Street, St. Catharines, Ont.

# AUTOMATIC EXTENSION REEL

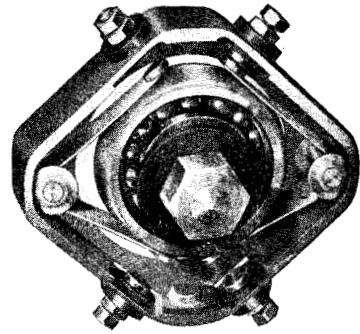
For ELECTRIC LAMPS



For use in Garages, Machine Shops, etc. Equipped with 25 ft. reinforced cord, lamp socket and guard. Attached to ceiling, beam or conduit. A swivel joining enables lamp to be carried in any direction from Reel, returning it automatically when not in use. An automatic lock holds the lamp at any desired distance from the reel.

Approved by the Underwriters. Full particulars and prices on request. Pat. Jan. 30, 1917.

THE CINCINNATI SPECIALTY MFG. CO.  
1901 Powers St., Cincinnati, Ohio



## No Timer Trouble on Your Tour

You can be assured of freedom from timer troubles when touring if you equip with the

### Wayne Ball Bearing Timer

100,000 Miles of Satisfaction is *Guaranteed*

This means a timer that operates positively—contacts are closed by power of motor acting through ball bearings of highest grade, wonderful strength and wearing qualities.

Positive "make" and "break"—surfaces cleaned by wiping action. 3/8 inch diameter contact points.

Equip now and end timer expense. The cost—\$6.00 complete.

Jobbers-Dealers: Get your share of growing sales.

WAYNE ENGINEERING CO. :: Honesdale, Pa.

## Simpson Crank Case Support For Fords



Price, \$2.00

Protects Crank Case Arm—Repairs if broken.

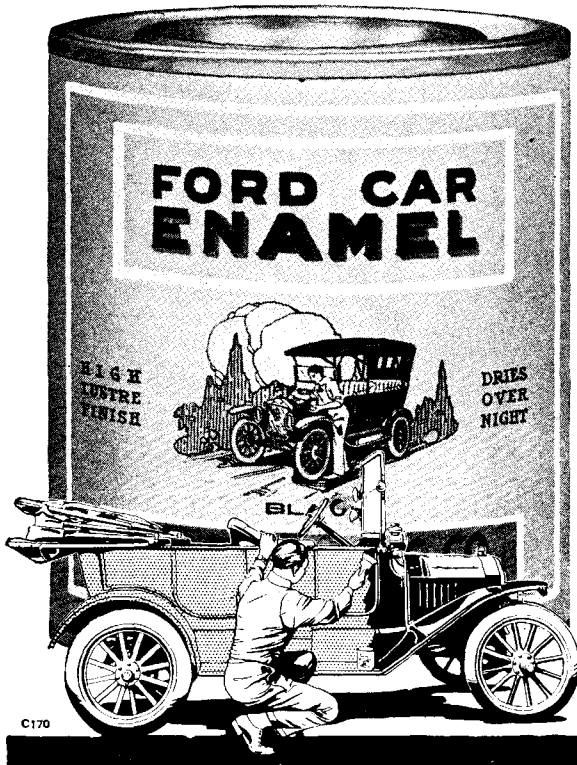
Jobbers and Dealers: Write for full particulars and trade prices.

WALTER ECKHOUSE & CO.

616-622 So. Michigan Blvd. Chicago, Ill.

Sales Department for

The Simpson Garage & Machine Co., Newark, O.



## Dries Over Night

You don't put your car out of commission for several days when you refinish the body with Ford Car Enamel. Apply today and drive a spick and span, new-looking car tomorrow.

One coat for \$1.75 is all that is needed to make the body a rich, lustrous black that lasts.

## FORD CAR ENAMEL

paints and varnishes at one time. Won't crack or peel. Anybody can apply it. Why don't you?

Quarts, \$1.75; pints, \$1.00.

LEATH-R-NU your leather and imitation leather cushions and top. Easy to apply. Dries in fifteen minutes. Makes leather soft and pliable. Won't rub off or peel off. Not affected by heat or cold, water, gasoline or oil.

Half pints, 50c; pints, 90c; quarts, \$1.50; half gals., \$2.75; gals., \$5.00.

At Auto Accessory, Hardware, Harness and Paint Stores. If your dealer hasn't our products, let us know and we will see that you are supplied.

Write for illustrated folder, all about Ford Car Enamel, Leath-R-Nu, Mohair Top Dressing, Lining Dye, Aluminum Paint, Body Nu, Nu-Auto Finish, Engine Enamel, Diamond Carbon Remover, Rubber Nu, Brass Nu.

**NU-BACK MFG. CO.**

Dept. F, 114 Commercial St., St. Louis, Mo.

Complete Your Ford by Equipping it with the

## *National* Shock Absorber

**ELIMINATES** all sidesway — **REBOUND** positively checked

The only absorber which, without in any way changing the adjustment, gives an efficiency constantly maximum at all rates of travel and under all conditions of road surface.

**READ** the preceding paragraph again. Did you ever before hear of a shock absorber which really met all of the conditions of this claim?

**THINK** what it means to be able to hold the road the same at 40 miles as at 15 and to have your car ride as smoothly on country gravel as on level macadam.

**TRY** the National; demonstrate it to yourself.

**JUDGE** for yourself as to the goodness of the National and of the "meet you more than half-way" manner in which we sell it. Send today for a set. Put them on, yourself. Try them out, yourself.

Write for our special price and 30 day trial proposal

**J. S. Lang Engineering Co.**  
5B Park Square Boston, Mass.





**Increased Power In An Hour**

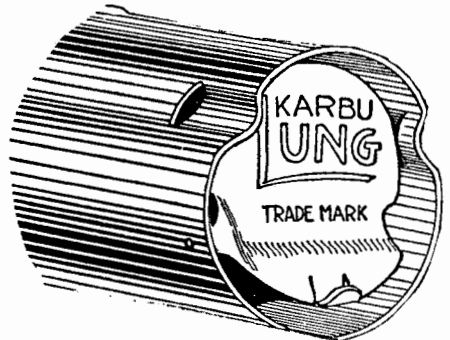
**N**O ANNOYING "run in" period. You install the rings, run an hour, and the punch is there! That's because **KEYS 3 PIECE PISTON RINGS**, built on entirely new engineering principles, conform themselves to the cylinder's shape *at once*, seat themselves *at once* and don't have to be worn down to adjustment! The only piston rings in the world sold under *money back guarantee* to do this.

Dealers: Write for special proposition

**KEYS PISTON RING CO.**

3014 Olive Street Saint Louis, U. S. A.

**LUNG your FORD**



WHY SPEND \$15.00 to \$40.00 for a NEW Carburetor, when a **KARBU-LUNG AUTOMATIC AIR VALVE** installed in your OLD one will accomplish the same results?

**GUARANTEED** to SAVE 25 to 40% of GASOLINE. Made to FIT your Carburetor. No HOLES to DRILL. Installed in THREE MINUTES.

Agents Wanted. Exclusive Territory, Open.

PRICE \$3.00.

Send P. O. or Express Money Order.

**KARBU LUNG COMPANY**

629 Second Ave. DETROIT, MICH.

**50% to 90% Saving**

on motor bearing fitting is effected by means of

**Martell Aligning Reamer**

For new work or repair work on Ford and all makes of motors, it insures:

Perfect alignment of all bearings.  
Correct position of crankshaft with reference to centers of camshaft, driving gear and pinion.

Correct size of bore of bearings, allowing for oil clearance.

Hundreds of repair shops and the largest manufacturers use it.

Write for Repair Reamer Booklet R.



NEW YORK: Woolworth Building.  
CHICAGO: First National Bank Building.  
DETROIT: Majestic Building.

(2060)

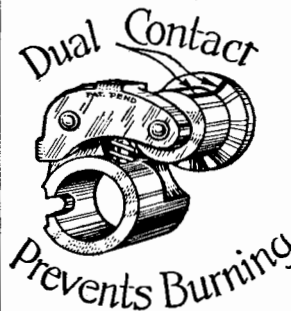
**ELECTRICITY**

The real destructive agent of all Ford Timers.

This destruction is prevented by the scientific action of the

**Rush Dual Contact Timer Roller**

for Ford cars, trucks and Fordson Tractors, and enables the regular Ford Timer to remain smooth indefinitely.



TO PROVE the certainty and positiveness of our solution of the Ford timer problem,—install a **Rush Timer Roller** in a timer that has already become rough and corrugated,—we guarantee to make it as smooth as when it was new, and never miss a shot.

Once the scientific principle of the **Rush Roller** is demonstrated and digested it will be easily seen that it has no equal in any other timer device made, at any price. We guarantee service and absolute satisfaction.

LIST PRICE \$1.50 POSTPAID

Dealers—Write for proposition. Full technical data on request.

**W. S. RUSH & CO.**

108 N. Daly St. LOS ANGELES, CALIF.

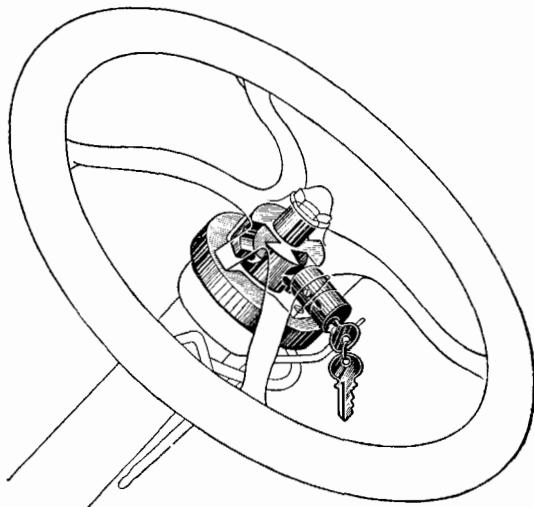
### Ford thieves quit when they see this lock

They know that a Ford locked with a Fox-Proof Steering-wheel lock cannot be towed, pushed or driven out of sight around a corner. The Fox-Proof locks steering wheel, steering column, and front wheels rigidly in any of three positions—straight ahead or cramped to right or left. Complies with fire and police regulations. Yale lock cannot be picked or opened with master key. Underwriters approve the Fox-Proof Steering Wheel Lock; its use brings lower theft insurance premiums.

Standard Ford size (black) \$7.50  
14 inch nickeled, \$10.00

### No more walking for gasoline

if you put a Fox-Proof Self-Filling Reserve Tank on your Ford. Fills itself automatically and holds enough gasoline to run two to five miles. Is also gauge, tank cap, and primer. Price anywhere in the U. S., \$1.50.



Fox-Proof Rigid Steering Wheel Lock for Fords—\$7.50 in U. S.

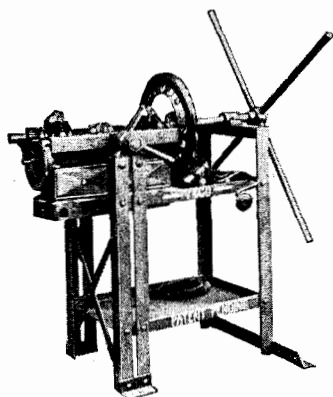
### The Fox-Proof Liberty Rear Tire Carrier

holds two "spares." It also provides tail light bracket, license bracket, and bumper support. Heavy metal clamps hold tires firmly in vertical position—cannot shake or rattle. Price anywhere in the U. S., \$12.50.

**A. H. FOX GUN COMPANY, Philadelphia**  
*Makers of "The Finest Gun in the World."*

**DEALERS:**

Take advantage of the big demand for Fox-Proof Ford necessities. Wire or write today for proposition.



Patent Pending.

### "BURN" BEARINGS IN BY HAND WITH THE VECO OVERHAULING STAND.

The use of this machine means:  
A saving of time and labor, better work, satisfied customers and more profits for you.

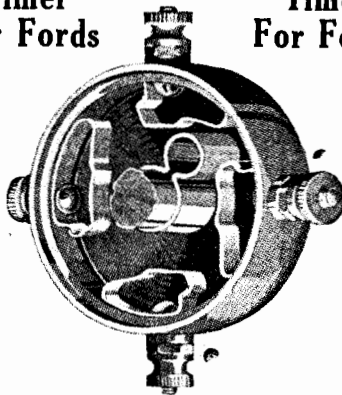
As necessary in your shop as a vise or a work bench.

Simple, Durable and Low in Price.

Write for circular giving complete description.

**VAN TRUMP-ESELBEY CO.,**  
5400 Norfolk St., Philadelphia, Pa.

### Timer P E P Timer For Fords For Fords



THE BEST TIMER ON THE MARKET

### Pep Timers Excell

because they have a wiping contact that is always clean—cannot miss-fire, and are made of the highest grade of spring steel. They have less wearing parts than any other timer.

Your dealer has it—if not, write us.

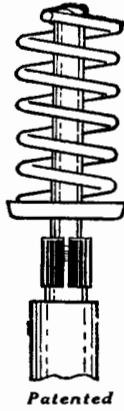
**J. T. SPECIALTIES CO.**  
53 W. JACKSON BLVD. CHICAGO, ILL.

# KNOCK OUT

the Valve-Knocks on your Ford  
by installing

## TOWNSAN VALVE ADJUSTERS

They take up the wear on Valve-Lifts; prevent knocking; increase the power, and prolong life of the motor. Price \$1 for Set of eight—worth MANY dollars to you every season. If local Dealer cannot supply you, order from us or write for our descriptive circular.



Patented

DEALERS—Write for our interesting proposition—and for particulars regarding exclusive territory.

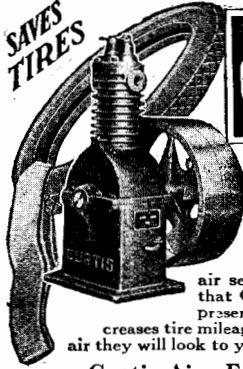
### Chadborn Sales Company

Sole Manufacturers

Minneapolis

Minn.

SAVES  
TIRES



**FREE**  
**CURTIS AIR**  
**FREE FROM OIL**

### Make More Money

Secure new patrons—  
increase your sales and  
profits by offering superior  
air service. Car Drivers know  
that Curtis Air—free from oil—  
preserves inner tubes and in-  
creases tire mileage—and when they stop for  
air they will look to you to supply their wants.

#### Curtis Air—Free from Oil

Curtis Air Compressors have an exclusive, patented, controlled splash oiling system that prevents oil from being forced into the air line. They are built of the highest quality materials—are dependable—and economical to operate and maintain.

#### Ask Your Jobber

There is a style of Curtis Compressor Outfit that will meet your particular needs. Ask your jobber for particulars, or write us, Style "Z"  
Five Sizes

#### CURTIS PNEUMATIC MACHINERY CO.

1639 Keinlen Ave., St. Louis, Mo.

Branch Office:  
532 L. Hudson Terminal,  
New York City



## When Sick Batteries Come In

—is your shop prepared to take care of them? Have you the equipment that will make your battery service efficient and profitable?

### First Aid Equipment for Battery Hospitals

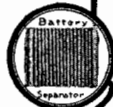
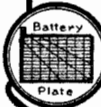
**Ferry-Mark Battery Separators**—Guaranteed, Chemically Treated—a necessity for first-class battery service.

**Ferry-Mark Lead Burner**—Simple, efficient. Uses city or acetylene gas. Complete with Special Torch, Air Pressure Regulator and two 10-ft. rubber leads.

**Ferry-Mark Burning Rack**—Like cut, or with wood base. Complete with accurate spacing guide.

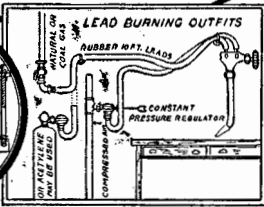
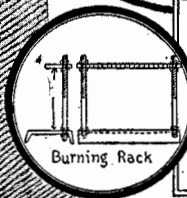
Also Battery Plates and Boxes, Acid-proof paint, Sealing compound and full line of Battery Supplies.

Write for particulars and prices.



### Ferry Mark Mfg. Co.

2119 S. 4th St., St. Louis, Mo.



## DO NOT NEGLECT YOUR OILING—USE

### The **LIDSEEN** POSITIVE FORCE FEED OILERS

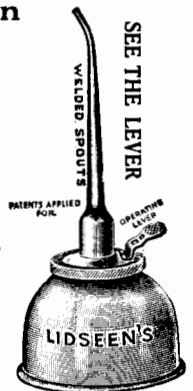
They force oil in  
most difficult  
places.

Oil overhead  
and below.

A drop or a big squirt.

No solder on  
spout or can.

Ask me, or any dealer.



**LIDSEEN** 850-854 So. Central Ave.  
CHICAGO

When writing advertisers—Just say FORD OWNER and DEALER



**FOOT BOARD MAT**

Both these mats make an instant appeal to motorists who take pride in their cars—the Foot Board Mat for its driving comfort—the Running Board Mat for its muddy-weather cleanliness.

The one provides a solid footing at the wheel, prevents slipping, and relieves leg-muscle tension. The other affords a perfect, muddy-weather foot-scraper, protects car interior from the tracking in of mud and road filth, and minimizes wear on running board. Easy to attach—easy to keep clean—made of selected steel and practically unweartoutable.

Get in touch with your jobber or

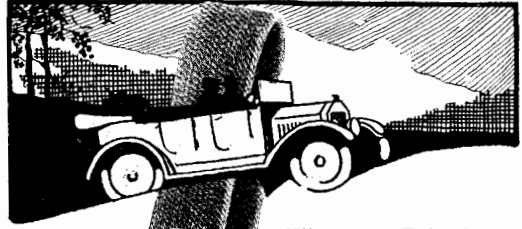
**Fernald Mfg. Co., Inc.,**  
NORTH EAST, PA.

**FERNALD**  
**Mats for Motor-Comfort**

The Fernald Foot Board Mat and the Fernald Running Board Mat are comfort-necessities that all classes of car owners welcome.



**RUNNING BOARD MAT**



Tilton Fan Belts insure your motor against damage from overheating.

They overcome for all time that disagreeable tightening which a stretching belt continually requires.

They wear longer, cause the motor to operate better because it is properly cooled.

It will pay you to insist on the Tilton mark on every belt.

**Sales Department**  
**EDWARD A. CASSIDY CO.**  
23-31 West 43rd St., NEW YORK CITY

**Manufacturer**  
**ARTHUR S. BROWN MFG. CO.**

101-54

**ENDLESS WOVEN**  
**TILTON FAN BELTS**

**The NANCE Carburetor Adjuster**

Only FLEXIBLE SHAFT Adjuster on market. Shaft eliminates rattle, does not get out of order due to strain on rough roads; applied on the driver's side or any position desired, with or without instrument board. Fits car, truck or tractor. Spring lock keeps it from jarring loose. Saves gas by making the mixture rich when starting and lean after the motor warms. Aluminum Dial. Easily installed by anyone.

**Complete \$1.75**  
Guaranteed for life of car.

**NANCE STARTING MOTOR EXTENSION BEARING**  
Your car may run six months or more without stripping the starter gears, but once they are stripped it is necessary to tear down entire motor to replace fly-wheel gear. It means large expense. The Extension Bearings, by keeping small (1/2 inch) non-supporting shaft in accurate alignment overcomes the trouble, caused by shaft becoming bent (due to constant "pounding-in" of the Bendix), allowing the pinion to stick in the fly-wheel. Installed by anyone with pair of pliers and screw driver in fifteen minutes.

**Complete \$10.00**

Special Discount to Jobbers and Dealers. Samples billed at dealer's price. Shipped direct when jobber or dealer cannot furnish.

**NANCE MFG. CO.,** 1348 N. Clark St., Chicago, Ill., U.S.A.

**B. K. F. Make and Break Timer for Ford Cars**

Guaranteed to last the life of the car

(Patent applied for)

**Price \$4.00 F. O. B. CHICAGO**

We challenge the world to show us a timer that will give as positive and as hot a spark as the B. K. F. TIMER.

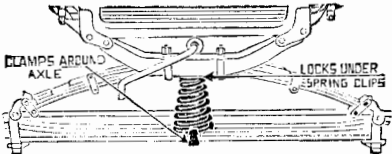
**Master Sales Corporation**  
1919 S. Michigan Ave.  
CHICAGO



## A.R.G.'s

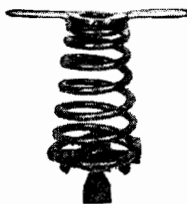
### KEEP FORD SPRINGS FROM BREAKING

Clamped to the Ford, they reduce the smashing rebounds which crush springs—and they eliminate the hard jars, making your Ford last longer. A set of A. R. G.'s



**A.R.G. Auxiliary Spring**

can be put on in a few minutes, saving the cost of replacing many broken front springs. When ordering mention whether touring car, roadster, or truck.



**DEALERS**

A. R. G. Springs sell on sight. The profits are liberal. Order thru your jobber.

**Retail Price**

**\$5.00**

**A.R.G. Auxiliary Spring Co.**  
Inc.  
BIRMINGHAM, ALABAMA

# POWER

the brute force that drives your motor thru mud and sand or over the top of the hill—without effort—without changing gears—the kind that lets your car slide from under the instant you put your foot on the accelerator—any time—all the time—that's the kind of power you get with

## PRESSURE PROOF RINGS

One 3-part or the 2-part rings per piston are all you need.





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**PRESSURE PROOF RINGS CO.**

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## Keep Gears in Mesh

Bailey Ball Thrust prevents noise, gear rattle and does away with washer friction, permits gears to operate, gives you more power, less noise, greater rear axle service.

Ask your repair or garage man to equip your Ford with Bailey Ball Thrust to the right and left of differential and do away with flat washers altogether.

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In Shafer Concave Roller Bearings every blow delivered by road unevenness is received on the full length of roller instead of on single point as in cup and cone bearings.

Shafers are self-aligning, quickly and easily installed without mechanical change in hub or spindle.

Have your repairman replace front wheel "cup and cones" with Shafers.

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Self Aligning

# SHAFFER

Roller Bearing

100% Load Capacity From Any Angle

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A notched stick will turn an oil cock, but a

## Fawasco Oil Cock Wrench WITH CLEANING PIN



proves whether the crank case is empty or clogged with dirt.

**Our Patented Wrench is the Tool**

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**S**TORM TOOLS are made by practical men for practical purposes — they save you time, improve your work and increase your profits.

The Storm line includes a tool for every class of repairing. Write for catalogue and prices.

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### Grind Crankshafts In One Hour

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### Atlas Abrasive Tool

Pat. Nov. 11, 1919.

and do the work easily, by hand, right in your own shop without machinery of any kind. Adjustable to crank pins from 1 1/8 to 2 1/2 inches diameter. One hour completes the entire shaft accurate to one-thousandth. Not even necessary to remove shaft from crankcase. Use the same old bearings. The Atlas Tool removes just enough to true up bearing, making re-babbiting unnecessary. 3000 satisfied users. Get yours now.

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A sure fit. Absolutely round. Threelap joint rings. Hardened and ground wrist pin. Square with crankshaft. Best grey iron.

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**PUT FORDS IN THE PACKARD CLASS**  
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*Plus Time Lost and Pain*

"NON-KICK" device positively protects you and your family—cranking made free from danger—no chance for accident. Better than insurance because it prevents the accident. Thousands of satisfied users. Easy to install. No special tools required.

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*The Justrite is the only carburetor with a year's free service card tied to it*

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Prevents oil spraying over motor, fan belts and wires. At your Dealers. If he cannot supply you, we will. Type A for 1915-1918 Fords; Type B for 1919-1920 Fords. Easy to install. Black Enamel Finish.

Price **85c**

Manufactured by **EXCELSIOR AUTO PARTS & SUPPLY CO.**  
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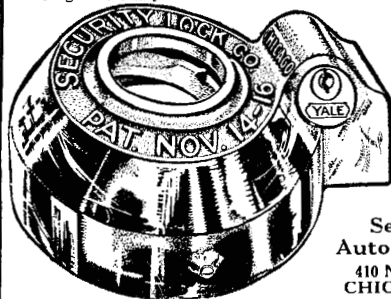
## Champion Lathes

Are built in 12, 14, 16 and 18 inch swing sizes, and each size can be furnished in two styles. One our Standard or semi-quick change and the other our Full Quick Change Gear Lathe.

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**Rats Your Ford Horn \$1.00**  
where you can reach it. It is attached to the throttle or gas lever where it is under the driver's finger at all times.



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consists of button, bracket and wire  
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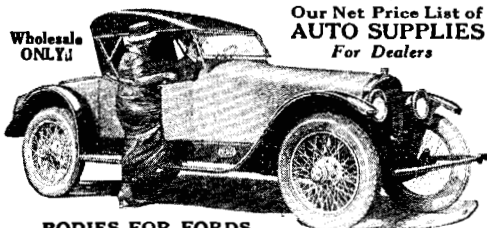
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With a Cruiser Outfit on your Ford Roadster you can make a camp wherever you please—sleep high and dry on a real mattress with a good tent over you and do your own cooking. Not a TRAILER.

Set A—Body attachment only \$ 60.00

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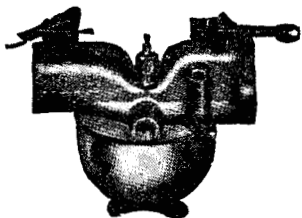
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Undreamed of Power and Economy.

FORD CARS, \$15.00

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**Simplest and Most Effective Carburetor in the World.**

Write and ask how the Stokes prolongs the life of motor three-fold.

Dealers—Write for official service station proposition.

**STOKES CARBURETOR CO., Inc.**  
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## IB-W

### COIL TESTER

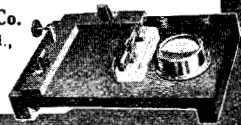
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Manufacturers Of  
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NOW is your opportunity. Make \$150 to \$350 Clear Profit every month with this HB Charger. Recharges 32 6-volt batteries, or equivalent at one time. Cost 10c to 15c each. Owner pays 75c to \$1.50. Figure the profits. You can make big profits and build a permanent business. Others are doing it—you can, too. Small Cash Payment brings this money-maker. Balance on easy monthly terms. Profits pay for outfit. Money-Back Guarantee. No expensive repairs or replacements. Runs 24 hours a day. Big, steady, profitable income. Hobart Bros. Co., Box F 64, Troy, Ohio. Successful Manufacturers since 1893



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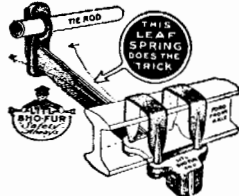


Wheels of beauty. Distinctive, sturdy, safe.  
 Standard tread. Five times stronger than ordinary wheels. More economical in tire wear and gasoline consumption. Spokes will not work loose or rattle.  
 Quick selling. Stay sold and satisfy. Liberal profit margin. Territory open. Write for dealer's proposition.

Also Pasco Type For Fords, Chevrolet 490's and Overland 4's

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SAFETY STEERING DEVICE FOR FORD CARS. The only device having no coil springs, cams or bearings. The double leaf flat spring does the trick. Thousands in use. Dealers, distributors and agents wanted.  
**Price Only \$3.00 Each**

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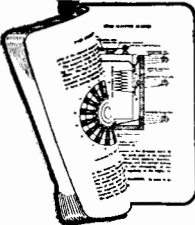
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Written in simple, easily understood language with illustrations and diagrams. Tells about starting, lighting and ignition troubles, too.

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**Three Popular Models**  
 Prices \$1, \$1.50, \$2

Wipes both front and back of windshield. Fits the cars that other wipers don't. Gives dealers complete line. Better made, easier attached, longer lasting.

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**WE TOP 'EM ALL**  
 Auto Tops for All Makes and Models of Cars  
 Seat Covers—Dust Hoods—Fenders




Save one-half the cost of new Top by using our Slipover Coverings. *Write for our Catalog.*

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 FOR  
**FORD CARS - FORD TRUCKS - CHEVROLET'S**



DEALERS—Send us your inquiry.    JOBBERS—Write for our proposition.  
*Manufactured by*  
**Baltimore Hub-Wheel & Mfg. Co.,** Baltimore, Md. U. S. A.

**PERFECTION  
 COIL PROTECTOR**

Makes your coils and wiring on both sides of dash absolutely waterproof. It's a necessity and saves you trouble. Order one now and be prepared. One dollar by mail, prepaid.

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**ATLANTIC MFG. CO.,** Washington, New Jersey

A NEW  
**"Superfect"**  
 HANDSOME IMPROVEMENT!



Immediate Deliveries—Dealers Get Busy!  
 Sells like wild-fire—Order today!

Wide-Awake Dealers Wanted: To distribute "Superfect" Honey-comb Radiators and original type Crown Fenders for Ford Cars. Write for proposition and discounts. It's a money-maker. Write for catalog.

This Rolls-Type Radiator casing is made to fit over all 1917-20 Standard Ford Radiator Units. Made of Liberty Silver. Its beautiful silver finish is permanent—does not corrode or wear off like plating.

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LAMCO DISTRIBUTORS AND DEALERS insist on LAMCO BODIES ONLY, because their distinctiveness of style pleases the most fastidious Ford owner; their staunchness of construction delivers absolute satisfaction.

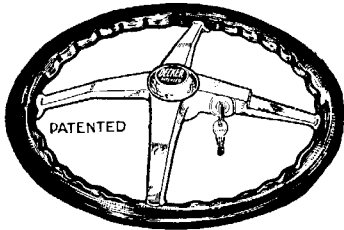
**THE LAMCO LINE IS COMPLETE**  
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## Lock-Steering

## Wheel



### Foil the thief Dress up the Car Make driving a joy

A faultless lock, insuring maximum theft protection while parked—and absolute safety while driving.

Most strikingly handsome steering wheel ever made. **Oversize-17"** wheel increases steering ease and control 50%.

**Retail Price \$13.50**

SOLD BY MOST FORD AGENTS EVERYWHERE

*Dealers—Investigate.  
Write for details covering our line.*

**R. M. DECKER CO.**

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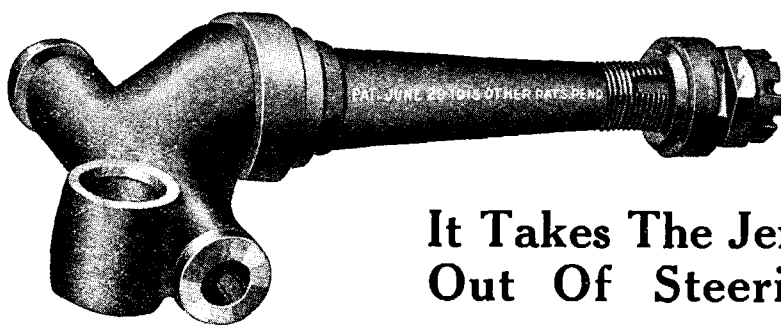
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## For Ford Owners Only

All Ford owners contemplating a trip during the coming season will find it to their advantage to write immediately for our special proposition—one that will help to make their journey profitable as well as a pleasure. We have what we believe to be the best, simplest, handiest and most practical luggage carrier, especially developed for the Ford car, on the market. It can be attached or detached in a jiffy without the use of tools, bolts, clamps and other makeshifts. Simply grips and automatically locks itself on the left running board and attaches to the top support. It is neat in appearance and affords carrying capacity for the entire length of the running board. Reinforces the running board and fenders and helps to prevent sagging and rattling. Fits both touring and roadster models. Every Ford owner needs one. They are selling like hot cakes. You can make more than your expenses, while touring the country, selling this carrier. They sell on sight. Write for particulars.

**Pandolfo Manufacturing  
Company, Uninc.**

5th St. and 33rd Ave. No.,  
ST. CLOUD, MINN.



## It Takes The Jerks Out Of Steering

The Mospico Spindle eliminates the dangerous "jerking" so common in the steering of Ford cars. The Ford becomes as easy to control as larger cars.



The Spindle That Gives Perfect Control Over Steering.

This is because the Mospico Spindle is offset. Its center is set back of the center of the axle. As a result, the front wheels of the car are pulled along, rather than pushed. Turns are made evenly and gradually—instead of in sharp jerks. The dangers of slewing, skidding and turning turtle are practically eliminated.

The Mospico makes it possible to drive a Ford safely without keeping a tight grip on the steering wheel—even when driving over rough roads or through sand and mud. And the car can be driven out of ruts in the road without danger of "ditching." Turns are made in four feet less space.

Manufactured by Motor Spindle Corporation, 214 E. Jefferson Ave., Detroit, Mich.

Sold at all stores of the

**Times Square Auto Supply Co., Inc.**

*World's Largest Auto Supply House*

### ARE FORD OWNERS PEOPLE?

By G. W. Morrison.

There seems to be a disposition on the part of professional humorists, newspaper paragraphers, and owners of "classy" automobiles to regard owners of Ford cars as being quite beyond the pale.

As I have been a Ford owner myself and very reluctantly traded in my Sedan for a more pretentious vehicle, I am qualified to speak with feeling upon this subject.

The Ford owner, in spite of the jokes and jests that fall upon his head, is after all a man whose habitat is the state of which St. Louis is the leading city. When the time comes for him to yield to his wife's entreaties and buy a more elaborate conveyance, he has already had valuable experience in motor mechanics and no one is more motor-wise than he.

For one thing, he has learned that the performance of a car depends largely upon the reliability of its ignition systems.

In this respect the Ford owner's experience has been pleasant rather than unpleasant. Of course, everyone knows that the Ford power plant has an excellent magneto built in the fly-wheel. There is, therefore, no need of depending upon a storage battery for ignition. Cold weather has little terror for the Ford owner, because he can always crank her up and get going on the magneto (even if his starter fails because of running down

his battery, in cold weather, when trying to spin the fly wheel with it.)

So the astute possessor of the Pride of Detroit buys a new car with his eyes entirely opened.

One of the first things he looks for is the presence of a magneto upon the coveted chariot. If it is there, he knows what to expect in the way of dependable service. If it is not there, he is very apt to seek the emporium of another and more progressive dealer, even though the first car may be radiantly beautiful and to all outward appearance sound and good.

#### FIRST STAGE.

He bought a ford, and laughed; said he,  
I'll hardly miss the money; gee!"—  
Then thought of things accessory!

#### SECOND STAGE.

The midnight light he burns all day;  
Course of accessory reading, say!  
Awakens needs—this man so rash,  
Has soon dispersed his ready cash.

#### THIRD STAGE

"It don't cost much to get a wife;  
You spend the cash for dresses!"  
He moralized, as oft he sighed  
O'er finances distresses!  
He now would sell—so cheap for cash,  
Fine auto accessories;  
But keep his Ford, which kills a horde  
Of minor ills—distresses!

When writing advertisers—Just say FORD OWNER and DEALER



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Advertisements inserted under this classification for 7c per word; name and address must be counted; no order for less than \$1.50. Cash must accompany order. Advertising copy due by the 10th of the month preceding date of issue. Write for Classified rates on twelve-time contracts.

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Everywhere With

## FORD CARS

To Work at Home or Travel

**\$10. to \$25.** Per Day  
From Start

Write for Particulars

**ROBERT H. HASSLER, Inc.**  
MANUFACTURERS

DEPT. 11-A, INDIANAPOLIS, INDIANA

**Insyde Tyres Inner armour for old or new automobile tires.** Double mileage prevent punctures and blowouts. Big saving. Details free. Agents wanted. **American Accessories Co., Dept. FO, Cincinnati, O.**

**FORDOWNERS—Going to overhaul your car this month? Don't fail to get our Bargain list of new standard parts.** Write for circular on 20th Century Spark intensifiers, the best on the market. Agents wanted. **Manley Auto Devices Co., 1123 Chestnut St., St. Louis, Mo.**

**MANUFACTURER wants dealers, county and state representatives for greatest auto accessory ever invented; patented August, 1919.** Territory destined to be as valuable as the Ford agencies. **N. E. C. Co., 129 S. Green St., Chicago, Ill.**

**PATENTS—Write for illustrated Guide Book and Evidence of Conception Blank Send model or sketch and description for our free opinion of its patentable nature.** Highest references. Prompt service. Reasonable terms. **Victor J. Evans & Co., 627 Ninth, Washington, D. C.**

### IF YOU CALL ON FORD DEALERS

**Service Stations, Garages, Jobbers and Accessory Stores, we have a proposition which will net you a neat sum each month without interfering with your regular work.** Write for particulars to **FORD OWNER AND DEALER, Dept. T.**

**Auto Top Roof or Seat Cover, \$7 and up.** Parcel post prepaid. Easy to apply. Samples of cloth free. **Auto Equipment Co., 33 Canal St., Cincinnati, O.**

**SALESMEN—To sell Oils, Belting, Paint, Roofing, Roof Cement, General Supplies to Garages, Factories, Mills, Stores, Auto Owners, Farmers, Threshers. Splendid proposition. Paid weekly.** **O. L. Doty, Dept. 64, Cleveland, Ohio.**

**FORD CYLINDER REBORING TOOL \$20.** Easy to operate. Does perfect work. Guaranteed. Lasts a lifetime. Worn cylinders made better than new. Garagemen everywhere are grasping this wonderful opportunity. Do this cylinder reboring yourself and make **Big Money** in a big growing business. Be up-to-date. Send for circulars. **National Products Company, Elmira, N. Y.**

**WANTED—Salesmen each state to sell Ford No. 4 rod wrench, does it in fifty seconds. Very easy seller; good commissions.** **The Way Co., Houston, Tex.**

**"Genuine Wilmo Hot Spot Manifolds for Fords—Studebakers—Maxwells—save one-third your gasoline. \$4.50 check gets one shipped at once.** **The Way Company, Houston, Tex.**

## EVERYTHING FOR THE MOTOR CAR

**IF IT'S MADE, WE CAN FURNISH IT.** Ford electric lighted head to tail \$1.50 to \$35.00. Speedster Bodies, Business Bodies. Our special Streamline Hoods, Radiators, Shells, Crown Fenders and Electric Lights bring old-style Fords up to the minute. Carefully selected line Accessories for the Ford. Write today. **Victor Auto Supply Co., 2004 Locust St., St. Louis, Mo.**

### STEER RELIEF FOR FORD CARS AND TRUCKS

Saves the bushings in the front wheels.

Saves the wear on the steering parts.

CUT TIRE COST fifteen to twenty per cent.

STEER RELIEF is the SHOCK ABSORBER for the steering gear, taking this work from the arms and hands of the driver.

STEER RELIEF is built on correct mechanical principles. No coil or wire spring to get out of order.

### "STEER RELIEF"

**\$7.50 Postpaid**

**SATISFACTION GUARANTEED**

**Dealers and Salesmen—Write for proposition.**

**THE BURR MANUFACTURING CO.**

**1011-51 Power Ave. N. W., Cleveland, Ohio.**

**Attention of H. M. Strong, Pres.**

**New York Office, B. F. Goodwin, 258 Fifth Ave.**

**Western Representative—Motor Necessities Company, Box 276, Denver, Colorado.**

**Will sell outright my patent Anti-Rattlers for brake rods, that will stop all rattle of brake rods, pins, clevises, brake shoes, cams, and will aid in releasing brakes.** First reasonable offer takes it. **S. W. B., Box 43, College Corner, Ohio.**

**FORDS run 34 miles per gallon with our 1920 carburetors.** Use cheapest gasoline or half kerosene. Start easy any weather. Increased power. Styles for all motors. Runs slow in high gear. Attach yourself. Big profits for agents. Money back guarantee. 30 days' trial. **Air-Friction Carburetor Co., 549 Madison Ave., Dayton, Ohio.**

**SALESMEN—If you call on Ford Dealers, Service Stations, Garages, Jobbers or Accessory Dealers, we have a proposition that should net you not less than \$300.00 per month extra.** Write us at once. **Gardner Auto Products, 23-25 W. Hancock Ave., Detroit, Mich.**

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# INDEX TO ADVERTISERS

<p><b>A.</b></p> <p>Ackerman Brothers Company, Inc. ....147</p> <p>A-G Mfg. Co. ....198</p> <p>A. R. G. Auxiliary Spring Co. ....214</p> <p>Advance Automobile Accessories Corp., I, 5 .....184</p> <p>Ahlberg Bearing Co. ....184</p> <p>Air Device Co. ....204</p> <p>Albertson &amp; Co. ....216</p> <p>Alcemo Mfg. Co. ....203</p> <p>All-Spark Ignition Co. ....207</p> <p>American Aero Co. ....195</p> <p>American Automobile Accessories Co. ....157</p> <p>American Bureau of Engineering. ....218</p> <p>American Business Corp. ....145</p> <p>American Motor Appliance Co. ....184</p> <p>American Taximeter Co. ....2</p> <p>Angsten-Kox Company .....183</p> <p>Apco Mfg. Co. ....217</p> <p>Archer Iron Works .....204</p> <p>Army &amp; Navy Supply Co. ....216</p> <p>Arlington Mfg. Co. ....195</p> <p>Atlantic Mfg. Co. ....219</p> <p>Atlas Mfg. Co. ....213</p> <p>Autoaccessory Sales Co. ....218</p> <p>Auto Components, Inc. ....3</p> <p>Atlas Brass Foundry Co. ....119</p> <p>Automotive Mfg. Co. ....95</p> <p>Auto Top Co. ....205</p> <p><b>B.</b></p> <p>Chas. R. Backus .....207</p> <p>Baer-Glauber Co. ....4</p> <p>Badger Mfg. Corp. ....202</p> <p>Geo. D. Bailey Co. ....214</p> <p>Bailman Whitten Mfg. Co. ....217</p> <p>Baltimore Hub Wheel &amp; Mfg. Co. ....219</p> <p>The Bierlein Syndicate, Ltd. ....159</p> <p>Bowen Products Corp. ....190</p> <p>Boyce-Veeder Corp. ....165</p> <p>Broadway Tool &amp; Machine Co. ....182</p> <p>Brodrik Bros. Auto. Co. ....215</p> <p>Arthur S. Brown Mfg. Co. ....213</p> <p>Brunswick Balke Collender Co. ....121</p> <p>Buob &amp; Scheu .....219</p> <p>Buell Tractor Equipment Co. ....221</p> <p>Buffalo Specialty Co. ....151</p> <p>Hurpee-Johnson Co. ....71</p> <p>Walter S. Burgess Mfg. Co. ....133</p> <p>Burd High Compression Ring Co. ....218</p> <p><b>C.</b></p> <p>Caney-Otto Mfg. Co. ....73</p> <p>Cantrell-Miller Mfg. Co., Inc. ....160</p> <p>Casco Mfg. Co. ....193</p> <p>Case Pump Co. ....193</p> <p>Chadborn Sales Co. ....212</p> <p>Champion Tool Works .....216</p> <p>Champion Spark Plug Co. ....69</p> <p>Cincinnati Ball Crank Co. ....138</p> <p>Cincinnati Specialty Mfg. Co. ....208</p> <p>Chuley Auto Supplies Co. ....188</p> <p>Commercial Auto Mfg. Co. ....179</p> <p>Common Sense Mfg. Co. ....151</p> <p>Cooper Mfg. Co. ....151</p> <p>Corbin Screw Corp. ....189</p> <p>Corcoran Mfg. Co. ....67</p> <p>Crex Carpet Co. ....177</p> <p>Powel Crosley, Jr. ....218</p> <p>Cruiser Motor Car Co. ....217</p> <p>Curran-Detroit Radiator Co. ....10</p> <p>Curtis Pneumatic Machinery Co. ....212</p> <p><b>D.</b></p> <p>Dayton Metal Body Co. ....107</p> <p>Dearborn Equipment Co. ....127</p> <p>R. M. Decker Co. ....220</p> <p>Defender Auto Lock Co. ....15</p> <p>A. J. Diefenderfer Corp. ....189</p> <p>Detroit Garage Equipment Co. ....201</p> <p>Dottl Mfg. Co. ....186</p> <p>Duff Distributing Co. ....97</p> <p>J. W. Duntley .....199</p> <p>Durkee-Atwood Co. ....111</p> <p>Dunn Mfg. Co. ....198</p> <p><b>E.</b></p> <p>E-T Auto Lock Co. ....181</p> <p>Eisemann Magneto Corp. ....73</p> <p>Emco Mfg. Co. ....174</p> <p>The Essenkay Products Co. ....148</p> <p>The Even-Lite Mfg. Co. ....152</p> <p>Excelsior Auto Parts Co. ....216</p> <p><b>F.</b></p> <p>The Fairbanks Co. ....6</p> <p>Famasco Dist. Co. ....23</p> <p>J. H. Faw, Inc. ....215</p> <p>Federal Motor Supply Co. ....206</p>	<p>Folly Sales Corp. ....18</p> <p>Fernald Mfg. Co. ....213</p> <p>Perry Mark Mfg. Co. ....212</p> <p>A. H. Fox Gun Co. ....211</p> <p>Fracto Spec. Co. ....196</p> <p>The Fulton Co. ....130</p> <p>Fulton-Houston Co. ....132</p> <p><b>G.</b></p> <p>G &amp; O Mfg. Co. ....79</p> <p>Garage Equipment Co. ....192</p> <p>Gardner Auto Products .....215</p> <p>Genco Mfg. Co. ....199</p> <p>Graham Roller Bearing Co. ....206</p> <p>Gray &amp; Davis, Inc. ....215</p> <p>Gray Hawley Mfg. Co. ....189</p> <p>Peter Gray &amp; Sons, Inc. ....192</p> <p>Green Sales Corp. ....111</p> <p>Guaranty Motors Co. ....112-113</p> <p>Edgar C. Guthard Co. ....203</p> <p><b>H.</b></p> <p>H. L. G. Mfg. Co. ....183</p> <p>Lyman Hart .....204</p> <p>Robt. H. Hassler, Inc. ....Front Cover</p> <p>Hastings Mfg. Co. ....22</p> <p>Hempy Cooper Mfg. Co. ....163</p> <p>The John O. Heinze Co. ....200</p> <p>Hobart Bros. Co. ....218</p> <p>Andrew Hoffman Mfg. Co. ....201</p> <p>Hudford Co. of Chicago .....21</p> <p><b>I.</b></p> <p>International Metal Mfg. Co. ....157</p> <p><b>J.</b></p> <p>J. T. Specialties Co. ....211</p> <p>J &amp; B Mfg. Co. ....Inside Front Cover</p> <p>Johnson Co. ....177</p> <p><b>K.</b></p> <p>K-D Lamp Co. ....181</p> <p>Kant Sag Corp. ....205</p> <p>Karbu Lung Co. ....210</p> <p>Kay H. Kay Co. ....169</p> <p>Charles F. U. Kelly, Inc. ....99</p> <p>Keys Piston Ring Co. ....210</p> <p>Keystone Reamer &amp; Tool Co. ....182</p> <p>Korex Mfg. Co. ....185</p> <p>Kuenz Radiator Co. ....184</p> <p><b>L.</b></p> <p>Laclede Auto Devices Co. ....206</p> <p>J. S. Lang Engineering Co. ....220</p> <p>Leaut Motors Corp. ....113</p> <p>The F. H. Lawson Co. ....215</p> <p>Lazar Auto Lock-Wheel Co. ....180</p> <p>Lehman Mfg. Co. ....219</p> <p>Lewis Tool Co. ....192</p> <p>Lidseen .....212</p> <p>The Lockwood-Ash Motor Co. ....91</p> <p><b>M.</b></p> <p>M &amp; H Novelty Co. ....198</p> <p>Manhattan Electrical Supply Co., Inc. ....159</p> <p>Marvel Carburetor Co. ....184</p> <p>Maryland Pressed Steel Co. ....216</p> <p>Master Sales Corp. ....213</p> <p>Mayo-Skinner Mfg. Co. ....119</p> <p>McCadden Machine Works .....206</p> <p>The Meixell Co. ....116</p> <p>Milwaukee Auto Engine &amp; Supply Co. ....19</p> <p>Modine Mfg. Co. ....29</p> <p>Mormiles Co. ....202</p> <p>Motor Products Corp. ....115</p> <p>Motor Specialties Co. ....183</p> <p>Motor Spindle Corp. ....221</p> <p>Motor Truck Radiator &amp; Mfg. Co. ....194</p> <p><b>N.</b></p> <p>Nance Mfg. Co. ....213</p> <p>Nash Shock Equalizer Mfg. Co. ....172</p> <p>National Can Co. ....153</p> <p>National Rubber Filler Mfg. Co. ....179</p> <p>National Soap &amp; Products Co. ....24</p> <p>New England Mills Co. ....21</p> <p>New Era Spring &amp; Spec. Co. ....195</p> <p>Nofalt Motor Products Co. ....186</p> <p>No-Leak-O Piston Ring Co. ....199</p> <p>Northwestern Chemical Co. ....120</p> <p>Nu-Back Mfg. Co. ....209</p>	<p>Perfection Auto Parts Co. ....202</p> <p>N. A. Pety Co. ....192</p> <p>Philips Brinton Co. ....103</p> <p>The Piston Ring Co. ....150</p> <p>The Pitter Pan Co. ....205</p> <p>George G. Porter .....191</p> <p>Powriok Co. ....217</p> <p>Premier Motor Products Co. ....146</p> <p>Pressure Proof Piston Ring Co. ....214</p> <p><b>R.</b></p> <p>Raydex Mfg. Co. ....99</p> <p>The Recto Mfg. Co. ....205</p> <p>Rex Mfg. Co. ....176</p> <p>G. E. Roberts Co. ....14</p> <p>Romort Mfg. Co. ....85</p> <p>Roose Mfg. Co. ....216, 218</p> <p>Frank Rose Mfg. Co. ....134</p> <p>Ross-Gould .....207</p> <p>W. S. Rush &amp; Co. ....210</p> <p>Rust Mfg. Co. ....135</p> <p><b>S.</b></p> <p>S &amp; P Mfg. Co. ....204</p> <p>S &amp; S Shock Absorber Corp. ....93</p> <p>Scandinavia Belting Co., Inside Back Cover</p> <p>The Savall Company .....123</p> <p>Security Auto Lock Co. ....217</p> <p>Self-Seating Valve Co. ....101</p> <p>Seng Auto Device Co. ....134</p> <p>Service Products Co. ....8</p> <p>C. A. Shaler Co. ....161</p> <p>A. Schroeder's Son, Inc. ....172</p> <p>Shurnuff Mfg. Co. ....83</p> <p>The Simmons Mfg. Co. ....178</p> <p>Simpson Garage &amp; Machine Co. ....208</p> <p>Simplex Corp. ....155</p> <p>The Siipon Co. ....202</p> <p>Sparko-Gap Co. ....173</p> <p>Spencer Metal Products Co. ....105</p> <p>Standex, Inc. ....81</p> <p>Standard Sales Co. ....172</p> <p>Stewart Wire Wheel Co. ....117</p> <p>Stewart Warner Speedometer Corp. ....77</p> <p>Standard Thermometer Co. ....89</p> <p>A. J. Stephens Rubber Co. ....178</p> <p>Staybestos Mfg. Co. ....200</p> <p>Stevens &amp; Co. ....217</p> <p>Stokes Carb. Co. ....217</p> <p>Storm Mfg. Co. ....215</p> <p>Steel Spring Piston Ring Co. ....185</p> <p>Sunderman Corp. ....207</p> <p>Superior Lamp Mfg. Co. ....219</p> <p>Symms Brownell Mfg. Co. ....167</p> <p><b>T.</b></p> <p>Taft-Peirce .....210</p> <p>Tailor Made Body Co. ....187</p> <p>Thermo Carburetor Co. ....175</p> <p>Thomas Andrews Corp. ....156</p> <p>Tractor Train Co. ....136</p> <p>Tri-Continental Corp. ....187</p> <p>Tribune Engineering Co. ....154</p> <p><b>U.</b></p> <p>U. S. Distribution Co. ....108</p> <p>Universal Battery Co. ....140</p> <p>Universal Tool Co. ....197</p> <p>Utilities Sales Corp. ....216</p> <p><b>V.</b></p> <p>Van Briggles Motor Device Co. ....16</p> <p>Van Briggles Mfg. Co. ....12-13</p> <p>Van Trump-Esley Co. ....211</p> <p>Victor Auto Lock Co. ....17</p> <p>Vim Unit Remagnetizer .....193</p> <p>Vogt Manufacturing Corp. ....191</p> <p><b>W.</b></p> <p>Warnerlite Co. ....170</p> <p>Wayne Engineering Co. ....208</p> <p>Weldon Auto Specialty Co. ....216</p> <p>White Products Co. ....218</p> <p>Wilke Armstrong Co. ....216</p> <p>Williams Bros. Aircraft Corp. ....124</p> <p>K. R. Wilson .....8, 9</p> <p>Wire Wheel Corp. of Amer. ....208</p> <p>Woodward &amp; Rowe .....194</p> <p><b>X.</b></p> <p>X Laboratories .....Back Cover</p> <p><b>Y.</b></p> <p>Yale Piston Ring Co. ....207</p> <p><b>Z.</b></p> <p>Zenite Metal Company .....104</p> <p>The Zinke Co. ....85</p>
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