Ford Service Bulletin

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No. 18 | MARCH 1, 1920 | Page 13

THE ABOVE is a photograph of Dealers who attended the Repair Clinic held at our Winnipeg Branch, February 4th. The Repair Clinic program was conducted by representatives of the Canadian Fairbanks-Morse Co., Ltd., Montreal, distributors of repair equipment and tools approved by the Ford Motor Co. for use of Ford Dealers and Service Stations.

Accessories
Supplies
Repairs

Gasoline
Greases
Oils

AUTOTOWN GARAGE CO.

FORD SERVICE STATION

Phone 970.

MAIN STREET
AUTOTOWN, ONT.

# Service Stationery Makes a Hit

The above heading is for Service Stations. All Ford Service Stations should use it. Note two letters from progressive garage proprietors holding Service Contract.

R. R. No. 1
Marshville, Ont., Dec. 13, 1919

The Ford Motor Co. of Canada, Ltd.,
Toronto, Ont.

Gentlemen:

Please find enclosed money order for Four dollars and seventy-five cents ($4.75) for 500 Letterheads and 500 Envelopes.

I have made a sample and attached it to this letter. You may arrange it to suit yourselves.

Thanking you for your endeavors to advance the interests of Ford Service, I beg to remain,

Yours very truly,
Ernest J. Stillwell.

Dear Sirs:

Your information re stationery reached me. I consider it a good booster for the Genuine Ford Parts trade. I carry Ford parts and repair Ford Cars.

Send
1,000 Envelopes—

W. A. Gallop
Machine Shop & Garage,
Ford Parts & Tires,
Oil, Gas and Greases
Everything in Ford line.
Dalhousie, N. B.

You may fit the envelope ad to suit the occasion, only ***hit*** on Ford Genuine Ford Parts and rubber, also oils, gasoline and greases.

## Prices Are As Follows:

| LETTERHEADS | | ENVELOPES | |
|---|---|---|---|
| 500 | $2.50 | 500 | $2.00 |
| 1,000 | 4.50 | 1,000 | 3.75 |
| 2,000 and over | 4.25 per 1,000 | 2,000 and over | 3.50 per 1,000 |

Mail your order to the Branch under whom you operate.

*Introducing*

FLAT RATE LABOR CHARGES

ON

# FORD CARS

*Phone Garry 730*

**Dominion Motor Car Company**

*Ford Dealers*

Canada Building, 346 Donald Street

WINNIPEG

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## DOMINION MOTOR CAR COMPANY

GET YOUR FORD CAR OVERHAULED AT WINTER RATES

We have reached the season when, in order to avoid laying off mechanics, we are willing to give your car a thorough general overhauling at a very special saving to you.

*We will bring your car from your garage and have our experts make a thorough overhaul of it—motor, transmission, rear and front axles, steering gear—and return the car to your garage for a flat labor charge, as follows:*

| | |
|---|---|
| 1919 Model | $37.50 |
| 1918 " | 40.00 |
| 1917 " | 45.00 |
| 1916 or earlier | 50.00 |

The above prices cover everything except starter, battery or radiator work. If your car needs this extra and further attention, we will do the work at our regular rate of $1.25 per hour.

These special flat labor rates do not of course cover any material, but, should any other parts than the usual bushings, gaskets, etc., require replacing we will advise you before doing so.

Phone us to bring your car.

*Garry 730*

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*Phone Garry 730* — *Efficient Service Guaranteed*

## The following prices cover labor on Car driven in to our Service Station :--

SPECIAL FLAT RATES

| Job. No. | | |
|---|---|---|
| 1. | Overhaul motor and transmission | $28.00 |
| 2. | Overhaul motor only | 23.00 |
| 3. | Overhaul transmission only, repair or replace magneto | 18.00 |
| 4. | Replace transmission bands | |
| | (a) Open cars without Liberty starter | 5.00 |
| | (b) Open cars with Liberty starter | 6.00 |
| | (c) Closed cars without Liberty starter | 6.00 |
| | (d) Closed cars with Liberty starter | 7.00 |
| | An extra charge of 50c. when bands are relined. | |
| 5. | Grind valves and clean carbon | 5.00 |
| 6. | Overhaul ignition: Includes | |
| | 1. Commutator. | |
| | 2. Coil points. | |
| | 3. Plugs. | |
| | 4. Wiring and | |
| | 5. Testing magneto | 2.00 |
| | Note:—If magneto needs re-charging see Jobs No. 3 and No. 7 | |

*We Use Genuine "Ford" parts only*

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| Job. No. | | |
|---|---|---|
| 7. | Re-charge magneto in car | $5.00 |
| 8. | Overhaul carburetor | 2.00 |
| 9. | Overhaul rear axle (on cars equipped with shock absorbers $1.00 extra) | 8.00 |
| 10. | Overhaul front axle and steering and front wheels and line up wheels (on cars equipped with Hassiers $1.00 extra) | 5.50 |
| 11. | Replace front radius rods | .75 |
| 12. | Replace radiator | 1 50 |

ON PARTS ONLY BROUGHT OR SHIPPED IN FOR REPAIR.

| | | |
|---|---|---|
| 1A. | Overhaul motor and transmission | $22.00 |
| 2A. | Overhaul motor only | 15.00 |
| 3A. | Overhaul transmission only | 5.00 |
| 8A. | Overhaul carburetor | 1.25 |
| 9A. | Overhaul rear axle | 6.25 |
| 10A. | Overhaul Front axle | 4.00 |

Prices subject to change without notice.

*We Use Genuine "Ford" parts only*

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## Safety First

### Steel Against Steel

Striking tempered steel against tempered steel is dangerous because chips may fly. Use a soft hammer for such work—or wear your goggles.

### How Not to Use a Wrench

Pulling away from the open end of a monkey wrench or an "S" wrench is like attempting to hold your weight on a bar with one finger. You can hold on if you have the strength; so can the wrench, if it has the strength.

## Relieving the Battery in Cold Weather

In cold weather, there is a heavy drain on the storage battery, due to its drop in efficiency, the slower charging rate because of slower driving, congealed oil in the motor, and the reluctance of the fuel to vaporize at the lower temperatures.

The driver may assist the battery by exercising the following expedients:

When the car is to be left standing for some time, cover the hood and radiator with a pad or blanket and set the control lever in high speed. The former retains the heat in the system while the latter forces the oil from between the clutch discs lessening the drag on the motor when starting.

To start the car, pull back the control lever, open the throttle wide and pull out the choke rod. Close the starting switch, turning the motor over half a dozen turns. Retard the spark, position the throttle about half way down, put the switch on the magneto side and push in the choke valve rod. Hold the left hand on the spark lever and close the starter switch. The instant the engine fires, advance the spark and keep it running at a fair speed until the system is thoroughly warm. If the engine coughs, due to a lean mixture, hold out the choke rod a little until it picks up speed again.

## Gear Pullers

The cam shaft gear puller shown in Fig. 138, Bulletin No. 11, may be obtained from any of our Branches. This puller will be included with our regular repair tools and shown in the next edition of our parts price list. This puller is also used for removing the pinion from the generator shaft.

## Tractor Repair Equipment

We will publish in an early issue of the Bulletin a list of the essential repair equipment for the Tractor, also tools that can be used for both car and Tractor.

## Drill Press

Cylinder reboring machines can be operated to much better advantage under a 24″ drill press than under a 20″ press. This is particularly true when reboring the Fordson Tractor Block. Dealers and Service Stations should anticipate their needs and when installing a drill press purchase a 24″ power feed press. A power feed drill press does away with the necessity of a screw feed cylinder reboring tool.

## Counterfeit Connecting Rod Trade Mark

**PROTEX**

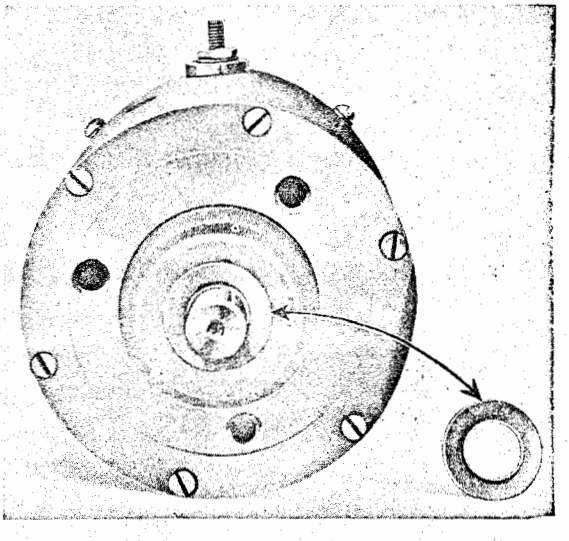

*Fig. 196*

## Oil Discs

We are now in a position to furnish generator front bearing discs, T-1847. The use of these discs will prevent oil from working back into the generator. To install the discs, remove the pinion from the generator shaft. slip the disc over the shaft and press its convex surface against the ball bearing. Branches will furnish these discs to dealers without charge for installation on generators now equipped with the felt washer on the gear end.

# Practical Methods of Repairing Ford Cars

## Repair Bench

355. Fig. 200 shows a convenient arrangement for a generator repair bench. A six-volt battery is connected through an ammeter by means of a wire to a bolt on the vise. Another wire is led from the opposite terminal of the battery and is used as the movable wire in testing the generator. Immediately to the right of the vise protruding through two holes in the bench are two terminal wires of a test lamp. The current in this circuit is 110 volts. The lamp is installed under the bench and shows through the bullseye at the extreme right of the cut. At the rear of the bench, immediately behind the vise, is shown the nozzle of an air hose, which may be pulled up through the hole in the table when required. A weight on the hose pulls it back to the position shown when not in use.

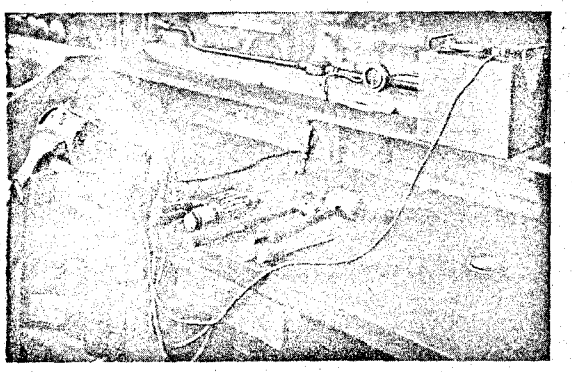

*Fig. 200*

## Generator Test, Adjustment, and Repair

356. The generator to be tested should be set in the vise as shown in Fig. 200 and clamped with a slight pressure to prevent it from falling out. The operator should acquire the habit of clamping the generator each time it is moved to prevent its dropping on the floor. Do not clamp it too tight as the yoke may be sprung out of shape, causing the armature to ride on the pole pieces.

357. Remove the dust cover by running out the two screws which hold it to the brush bracket and drive it off with a screw driver. This exposes the commutator and brushes.

358. If the old type of insulator (See Fig. 201) is around the terminal post it should be removed, together with the bottom insulator, and the new style assembly made (See Fig. 201).

359. Before applying the current to the generator try turning the armature shaft by hand to see that it turns freely. If it does, touch the wire to the terminal to see if the generator will run as a motor. If it runs and draws less than six amperes, as indicated on the meter, the generator is probably in good

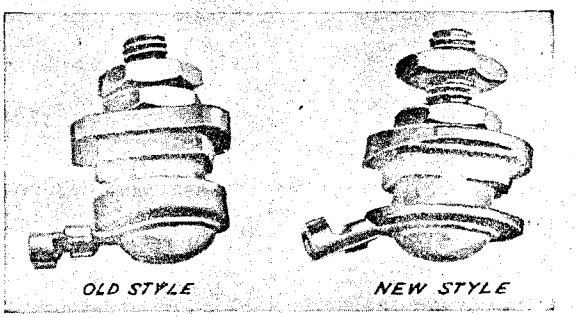


*Fig. 201*

condition, although the brushes may need resetting. If it draws a little higher than six amperes, take a piece of No. 00 sand paper and hold it against the commutator until a bright surface is attained. If this does not bring the amperage down, there is probably a short or ground.

**Never use emery paper as the emery is a conductor and will short circuit the commutator.**

360. Usually, this treatment will be all that is necessary unless the brush end bracket assembly be dirty. However, while the generator is off, it is advisable to inspect the brushes to see that they are not sticking and that they show a proper seat.

## The Brushes

361. There are two essentials to the proper seating of a brush: The brushes should show a 75%, or better, bearing, and the bearing should extend all the way across the brush in the line of rotation of the commutator. That part of the brush, showing a copper surface, is bearing. See that the brushes are not too short, that is, the spring should still be bearing firmly upon them and not catching on the side of the brush holder. Raise the brush by means of the pigtail. When released it should snap back onto the commutator with a sharp click. See that the pigtails are in good condition and that the terminal connections are tight, by trying them with a screw driver. A loose connection is usually indicated by the heat generated at that point.

362. If it is necessary to install a new brush or reseat an old one, proceed as follows: Cut a strip of No. 00 sand paper so that it will

fit onto the commutator, raise the brushes by pulling the spring back with a hook (Fig. 202) and pull the brush out by the pigtail, after

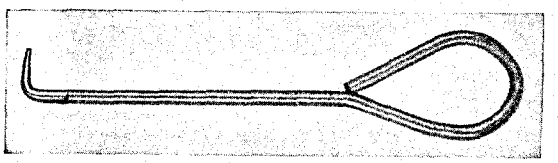

*Fig. 202*

which the spring is allowed to rest against the brush as shown in Fig. 203. Insert the sand paper under the brush with the sand side out; hold it so it conforms to the shape of the commutator, and move it, together with the commutator, back and forth under the brush, the brush having been dropped on the sand paper and the spring positioned on it. After a few oscillations, the brush should be lifted and examined to see if it has been properly seated. If it has, remove the sand paper and set the brush back in position.

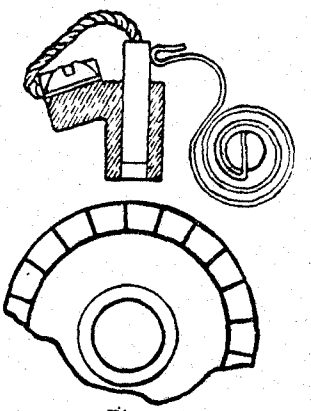

*Fig. 203*

363. Figs. 204 and 205 show two methods of sanding the third brush, while Fig. 206

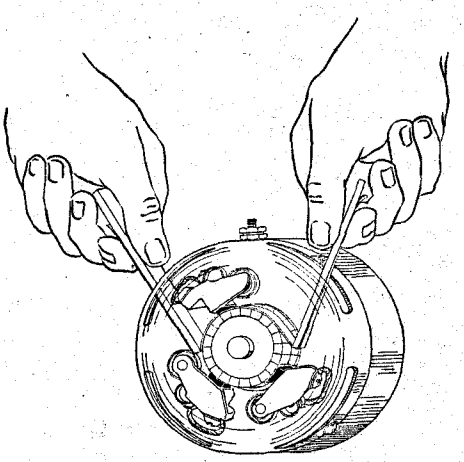

*Fig. 204*

shows the method of sanding the two lower brushes.

364. Fig. 207 shows the incorrect method of sanding a brush. It will be noted that the seat on the brush could not possibly conform to the radius of the commutator, and it is essential that the bearing be the full width of the brush. When the brushes have all been

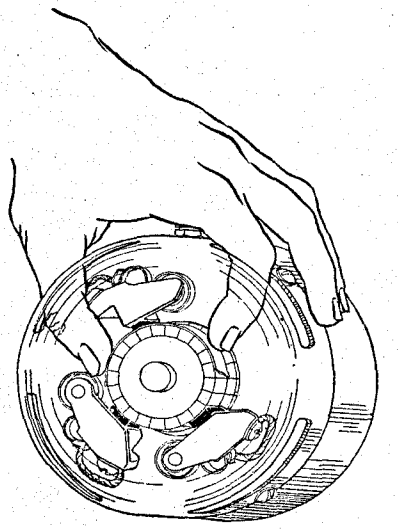

*Fig. 205*

sanded, lower them onto the commutator, hold them in position with the springs and run them in by attaching the wires to their terminal. To assist in forming the bearing, a slight pressure may be applied to the brushes by pressing on the center with the fibre drift.

365. When the motor has been run for a minute or so, remove and examine the brushes. That part of the surface which shows a copper color is bearing. If a full bearing is not ob-

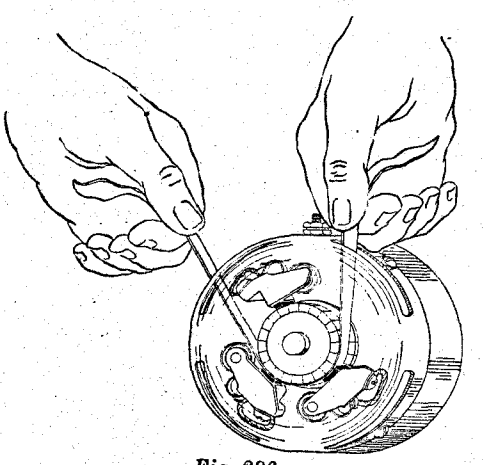

*Fig. 206*

tained, scrape off the copper part with a knife or with a piece of sand paper rolled on a pencil, as shown in Fig. 208—the sand paper should be applied with a rolling motion. The repairman, with a little practice, will become

very skilled in the use of the pencil in scraping the seat of a brush, but the amateur will find the knife an easier tool to handle.

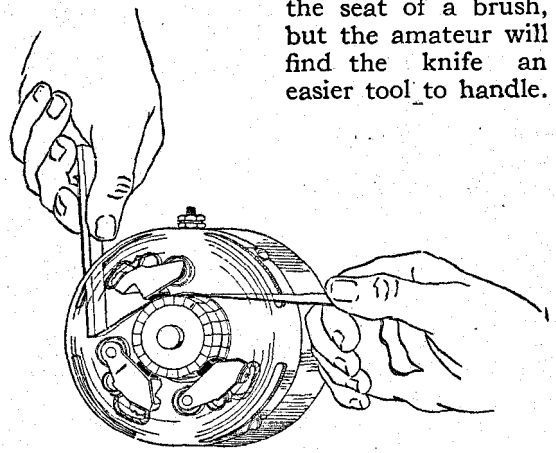

*Fig. 207 Incorrect Method*

## Setting the Brushes

366. When the brushes seat properly the lower brushes should be set on the neutral point. Start the lower and loosen the three upper screws which hold the brush ring to the head. Raise the third brush, holding it in position as shown in Fig. 203, connect the

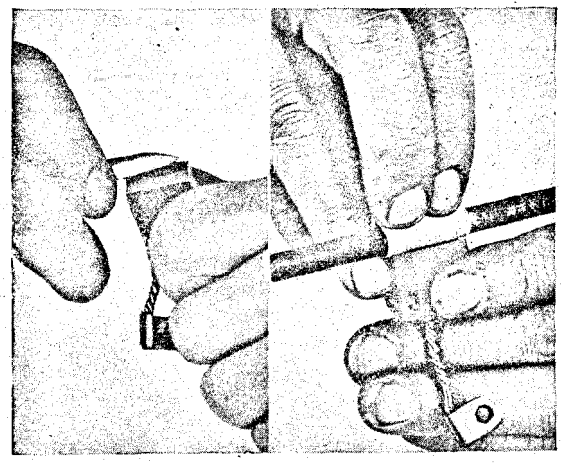

*Fig. 208*

wire to the terminal post. If the armature revolves, the brushes are not set on the neutral point. Turn the ring against the direction of rotation until the armature ceases to turn or until it revolves in the opposite direction. If it turns in the opposite direction, bring the ring back until the armature will not revolve in either direction even when started by turning the shaft by hand. The brushes are now set on the neutral point which is their proper setting. Tighten the screws which hold the ring to the head; lower the third brush and try it for running. If it turns over properly, drawing less than six—preferably less than four—amperes, the generator should be assembled to the motor, and **proper connections through cutout to battery should be made.**

367. The next operation is setting the third brush. The third brush may be moved back and forth on the brush ring. It is clamped to the ring by means of a bolt which is also used as a post for the brush spring. To move the third brush, together with its holder, loosen the nut on this post until the holder may be moved back and forth. The third brush should be set in such a position as to give a charging rate of 10 to 12 amperes when the engine is running at about 20 miles per hour.

## The Carburetor Float

*(Continued from page 136)*

368. The level of the float is lowered by bending the lever arm of the hinge up with a 3Z-3223 bending tool. Fig. 209 shows this operation being performed. The level is raised by bending the hinge down with the thumbs as shown in Fig. 210; keep the thumbs close to the hinge, and put the necessary pressure on each thumb to bring down both sides evenly. If the float is cocked, it may

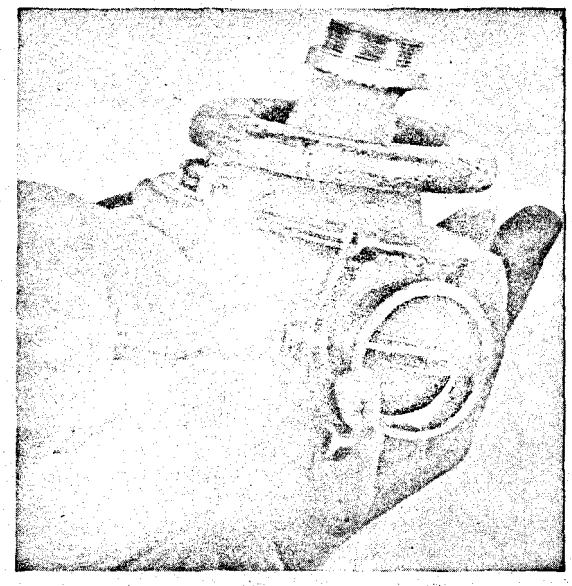

*Fig. 209*

cause the hinge to bind, resulting in erratic action of the engine.

## The Spray Nozzle

369. The spray nozzle is machined separately from the mixing chamber. It is composed

of two separate parts, the body and the jet plate. The body is made of brass, while the jet plate is made of monel metal, which will

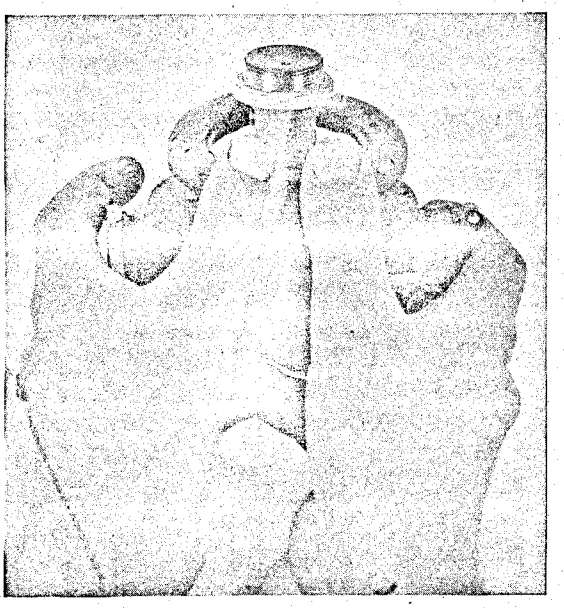

*Fig. 210*

not corrode nor rust. The threads on the lower end of the body screw into the threads in the lower part of the mixing chamber body. A fibre ring gasket is placed in the mortise of the mixing chamber body, forming an air tight seat when the shoulder of the nozzle is screwed down against it. There are six holes in the body of this nozzle besides the jet. The two larger holes are to supply the gasoline to the jet. The four smaller holes just under the bowl are air bleeding holes. At the higher speeds air is drawn through them thus thinning the mixture which would otherwise become too rich. These holes together with the jet hole are drilled with a No. 52 drill, and under no circumstances should the size of any of the holes in the jet be changed.

370. As the spray nozzle is removed through the top of the mixing chamber it is necessary to remove the mixing chamber cap together with the spray needle, the low speed tube and strangling tube. The cap is removed by running out the three mixing chamber cap screws. The cap, together with the spray needle, may then be removed from the assembly, thus exposing the low speed and strangling tubes. The low speed tube is removed by running off the low speed tube nut with a 3Z-3223 wrench. When it has been removed it should be put where nothing will strike it causing it to be knocked out of shape. The strangling tube should be removed by prying the retainer out of the groove with a screw driver. Take care that it does not spring out as it might injure the eye.

371. After the retainer has been removed, turn the carburetor upside down and the strangling tube will drop out. There is no gasket between the strangling tube and the mix-

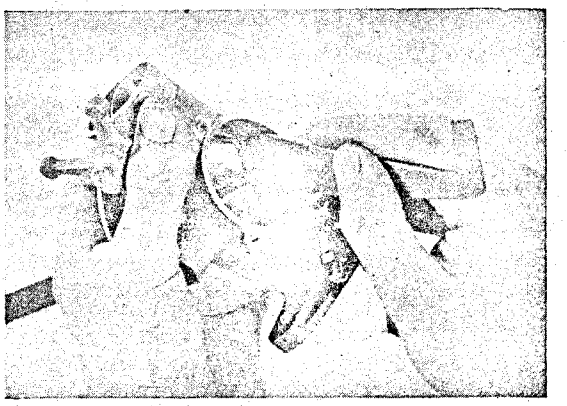

*Fig. 211*

ing chamber body. When the strangling tube has been removed the spray nozzle is exposed and may be removed with a special wrench which is slotted to correspond with the lugs of the spray nozzle body. Fig. 212 shows this operation being performed on the carburetor with a standard Ford wrench.

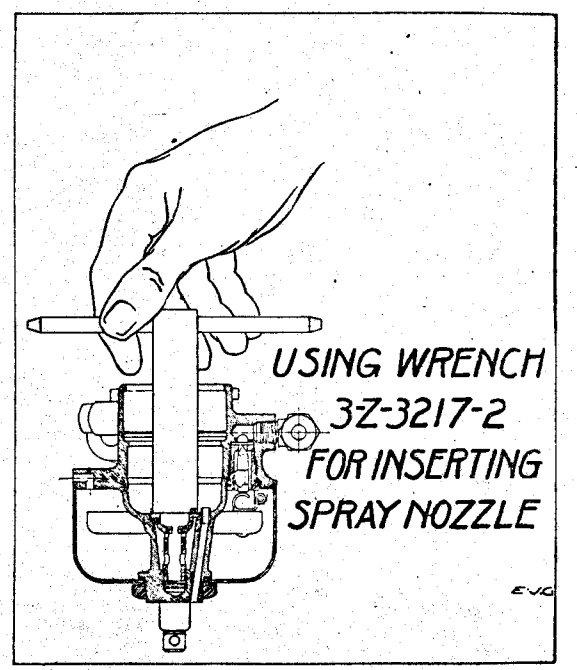


*Fig. 212*