

## MG, TC & TD WINDSHIELD WIPER MOTOR REPAIR

### I DISASSEMBLY FROM AUTO

When the windshield wiper motor ceases to function, it must be repaired. To repair it, the following procedure must be followed. First, carefully with a wrench, loosen the nut on the windshield wiper arm (1952 and earlier) or the stub arm (1953 TD's). To loosen and remove wiper linkage from wiper motor shaft.

Next, with a small wrench, loosen the locking nuts and holding nuts on the threaded studs on either side of the wiper motor shaft on the outside of the windshield.

Remove the two locking nuts and the two holding nuts from the threaded studs.

After the nuts are removed, remove the two cup shaped washers (with cork gaskets on the back side in the cup) from the studs and then remove the chrome plated holding plate from over the studs and wiper motor shaft.

Carefully slide the motor out of the holes in the top of the windshield and hold.

With a narrow blade screwdriver, loosen the screws in the terminal block (See Figure 3, Part A) and remove leads from wiper motor terminals. Keep the two leads from touching. Tape bare ends of the leads to keep them from touching one another and/or the windshield frame which would create a short and at best, blow a fuse.

Once the motor is free of the leads take to workbench for disassembly to replace faulty parts.

### II DISASSEMBLY OF MOTOR

The two categories of fault with a malfunctioning wiper motor are either mechanical (frozen shaft, jammed gears, or sheared pins, etc.) or electrical (broken leads, worn brushes, grounded connections, or burned windings on armature and/or field coils.)

Mechanically, the motor is very rugged with good gearing and linkage of heavy construction.

The weakest portion of the windshield wiper is the electrical portion. See figures 3 and 4. The main electric parts of the motor assembly are: The brush gear (Lucas part No. 730244) Part B figure 3, brushes, part C & F, figure 4 (Lucas part (No. 730388), field coils and poles (Lucas part No. 730669) and armature (Lucas part No. 733108).

Since the electrical portion of the windshield wiper motor is the weakest part of the wiper motor assembly, the following procedure is to be used to replace the electrical parts mentioned.

First, remove the motor actuating arm by inserting and removing the slotted holding nut in the arm on the wiper shaft. (Part E figure 3). After the screw is removed the actuating arm can be removed from the wiper shaft with firm pressure exerted on the arm pulling out, away from the wiper shaft.

After the arm is removed, the cover may now be loosened and removed from the electrical portion of the wiper motor assembly. This is accomplished by removing two screws from coverscrewed into casting at part F figure 3. (Also see Figure 5 part A).

Gently grip casting of motor (part B figure 5) in one hand and cover (Part C figure 5) in other hand, and gently work apart by a rocking pulling motion with both hands. Once the cover is removed, the field coils, armature and brushes may be inspected for faults causing the motor to malfunction.

The field coils must look a translucent reddish maroon and not look charred or a deep matte brown to be functioning correctly and when checked with an ohmmeter, should read approximately 100 ohms resistance. In addition, if the coils show a reading between a coil lead and ground or the metal pole piece, these coils are faulty.

The armature should also look a translucent reddish maroon and not look charred, on the most of the windings with a light tan or white colored cast to a very few of the top turns.

Removal of the electrical parts is accomplished as follows: First, with a hook made per figure 6, pull the brush springs from behind the brushes, one at a time, and to one side and clear of the brush holders (See figure 7 parts A and B) to be able to shake out the brushes, when spring holder is removed, tip motor into palm of hand and shake out brush, repeat with second brush on opposite side. With hook reposition holding springs back in their respective slots.

Next, unsolder terminal leads at point W figure 3, point Z figure 3, point Y Figure 3, and point X figure 4.

All of the electrical connections are now separated and the electrical components may now be removed.

Take out two screws, (part D figure 3) and remove the brush gear assembly (Lucas Part No. 730244). With brush gear removed, the armature may then be pulled out figure 4 part B)(Lucas part No. 733108).

Next, unscrew the two screws, part C figure 3 and remove pole pieces with coils attached (Lucas part No. 730669) and aside. This completes the electrical disassembly.

The mechanical work on the motor amounts to removal of the gear box cover plate (See figure 2 and figure 5) and cleaning out the old grease in the gear box, and repacking the gearbox with a good grade of lithium grease. To remove the gearbox cover plate, first remove the two threaded studs one on each side of the wiper motor shaft (See part A figure 2, and parts D and E figure 5). With the two threaded studs removed, part D figure 5, the wiper motor spacer may now be removed. Next unscrew the two remaining screws (see parts B figure 5) with all screws removed, the plate may now be pried up with a thin bladed screwdriver inserted under the plate at point C on figure 2. The gearbox may now be cleaned up, the old grease removed and new grease packed into the gears. Note: the shaft, gear and spring assembly will come out with the cover plate and will easily reassemble into the gear box after greasing is completed.

### III MOTOR REASSEMBLY

Reassemble the plate with the shaft, spring and gear assembly back into the

gear box and carefully mesh the gear on the shaft (see part 5, figure 1) so that no binding occurs. Press the plate into the depressed perimeter of the gearbox body and assemble the two small screws at B in figure 2. Run these screws down with a screwdriver. Next, assemble the black plastic spacer (Part D figure 5) over the wiper motor shaft and align the two small holes in this spacer with the two holes in the plate (see A in figure 2).

Pick up one threaded stud (with round, end slotted nut assembled to it) and assemble to one of the small holes in the plastic spacer. Make sure slotted portion of nut is facing outward so that when stud with nut is fully screwed into body of gearbox the slot may be seen in the hole facing outward. Repeat for second stud.

Next, the electrical parts are now to be assembled. Turn gearbox around so that you are looking at the threaded side of the windshield wiper motor shaft (See figure 3). Pick up pole piece with field coil attached (See figure 3, part H) that has the large hole for the motor shaft and the two small crew holes and assemble to bosses on gearbox housing and over wiper motor shaft (see part E, figure 3). Pick up one short screw and assemble to small hole in pole piece at part C (left side, figure 3), run screw down finger tight. Pick up second pole piece and assemble to bosses in gearbox housing on opposite side to first pole piece. Pick up second short screw and assemble to hole at part C figure 3 (right side) and run screw down finger tight. Pick up armature and assemble to housing, geared portion of shaft into hole in gearbox housing, turning armature slightly so that geared shaft meshed with mating gear in gear box. (See gears 1 and 2 in figure 1) See figure 4. Align pole pieces (parts E in figure 4 so that there is equal clearance around the perimeter of the armature and inside circle formed by the two halves of the pole pieces. Next, pick up the brush gear (part B figure #) and place over the two open holes near the bottom of the pole pieces and the center hole clears the commutator of the assembled armature.

Pick up one of the longer screws and assemble at hole in Part D figure 3. Run down finger tight and assemble second screw in hole on opposite side, run down finger tight. Tighten all four screws down with screwdriver, being careful to keep the alignment of the pole pieces to the armature.

Pick up spring tool (shown in figure 6) hook one spring in brush gear and pull out of brush slot and position away from brush holder. Pick up (1) brush, assemble to open brush slot. With spring tool, hook spring and pull out and back over the seated brush making sure spring is home in slot of holder and brush. Repeat above assembly for second brush.

Refer to wiring diagram (figure 4) and motor side view (figure 3) for wiring of motor correctly.

Pick up (1) short piece of spaghetti (insulated) tubing - about one inch long) and put it over the right lead of the left hand coil. Grasp the right lead of the right hand coil and join it to the right lead of the left hand coil (see point X figure 4) by twisting the bare ends together. Solder these (2) leads together at point X figure 4. Slide spaghetti over solder connection and place in tab on brush gear and bend tab to hold wires and insulation (see figure 3, Point X). Grasp left hand lead of left field coil and position to tab on brush gear (see point Z figure 3). Bring lower lead from terminal block on inside of housing over to tab on brush gear at point Z figure 3. Solder (2) leads to tab with soldering iron.

Bring top lead from terminal block on inside of housing over point W on figure 3, ( this is terminal for the switch on the brush gear) and solder to point W on figure 3.

Grasp left hand lead of right field coil and position to tab at point Y figure 3. Solder lead to tab with soldering iron.

All leads are now soldered. Form all leads in so that cover will clear the leads and not pinch them to short them out against body of wiper motor. After leads are formed,

pick up cover, position over wiper motor and press on body of gearbox to seat in place. Pick up (1) small screw and start thru side of cover to fasten cover to motor and gearbox assembly (See figure 5, part A). Repeat for second screw on opposite side of cover. Pick up screwdriver and run both screws down tight. Pick up manual position control arm (See figure 5, part f) and assemble over wiper motor shaft making sure that slots in arm mate with back pin on motor shaft. Pick up and assemble special cylindrical slotted nut into control arm hole. Pick up screwdriver run slotted nut down tight.

Motor is now assembled. Fasten short test leads into terminal block holes, hook up battery charger or battery to motor and turn on switch to start motor and check wiper motor function.

#### Wiper Motor

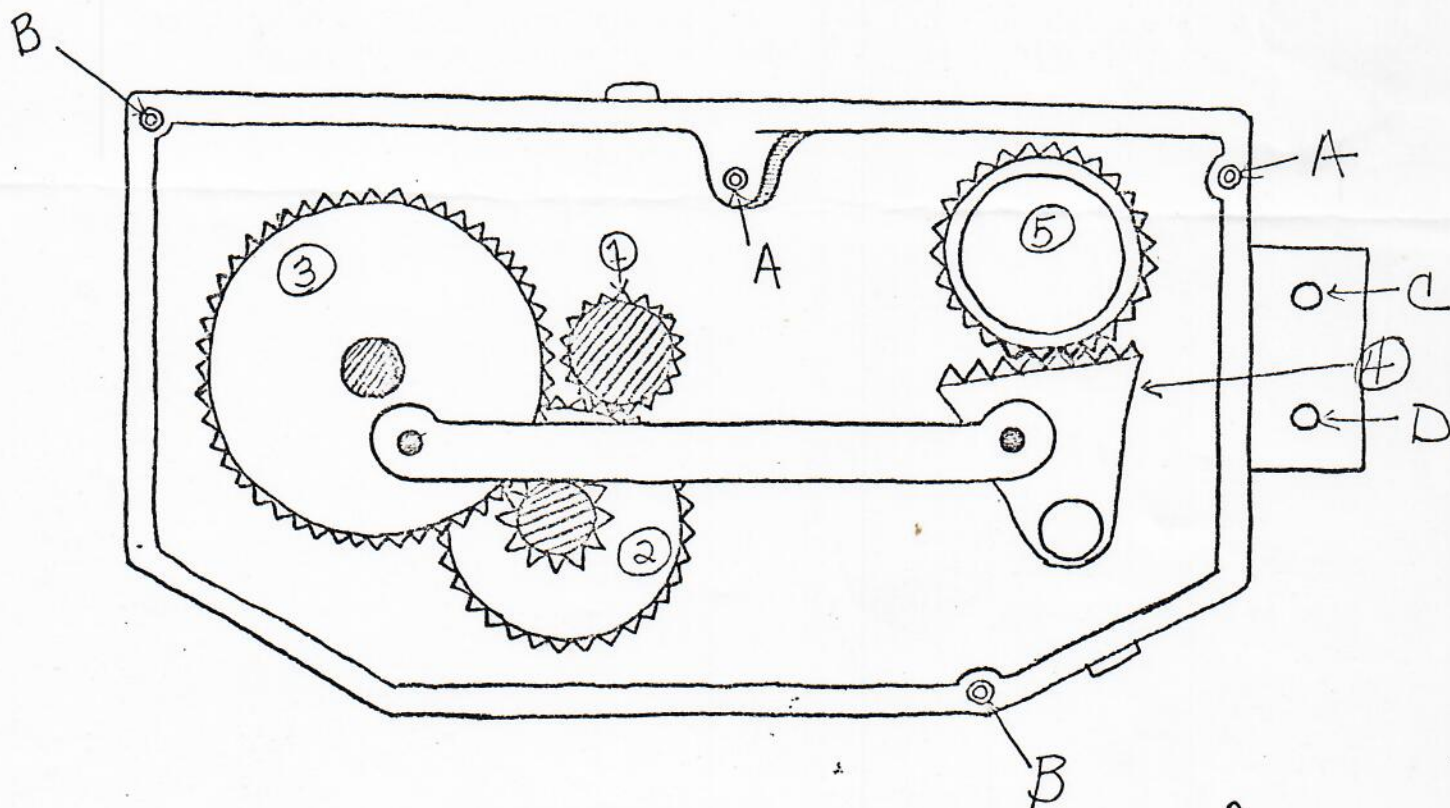
Comparative costs from Lucas.

|   |                             |         | Purchased date |
|---|-----------------------------|---------|----------------|
| 1 | 730244 Brush gear           | \$ 1.70 | (3-17-69)      |
| 1 | 730388 Brush set            | .40     | (2-27-69)      |
| 1 | 730669 Set of Poles & Coils | 3.50    | (2-27-69)      |
| 1 | 733108 Armature             | 3.65    | (2-27-69)      |
| 1 | 730467 Cover                | 2.50    | (4-22-69)      |
|   |                             | <hr/>   |                |
|   |                             | \$11.75 | plus tax       |

Richard W. Sokol

Fig. 1

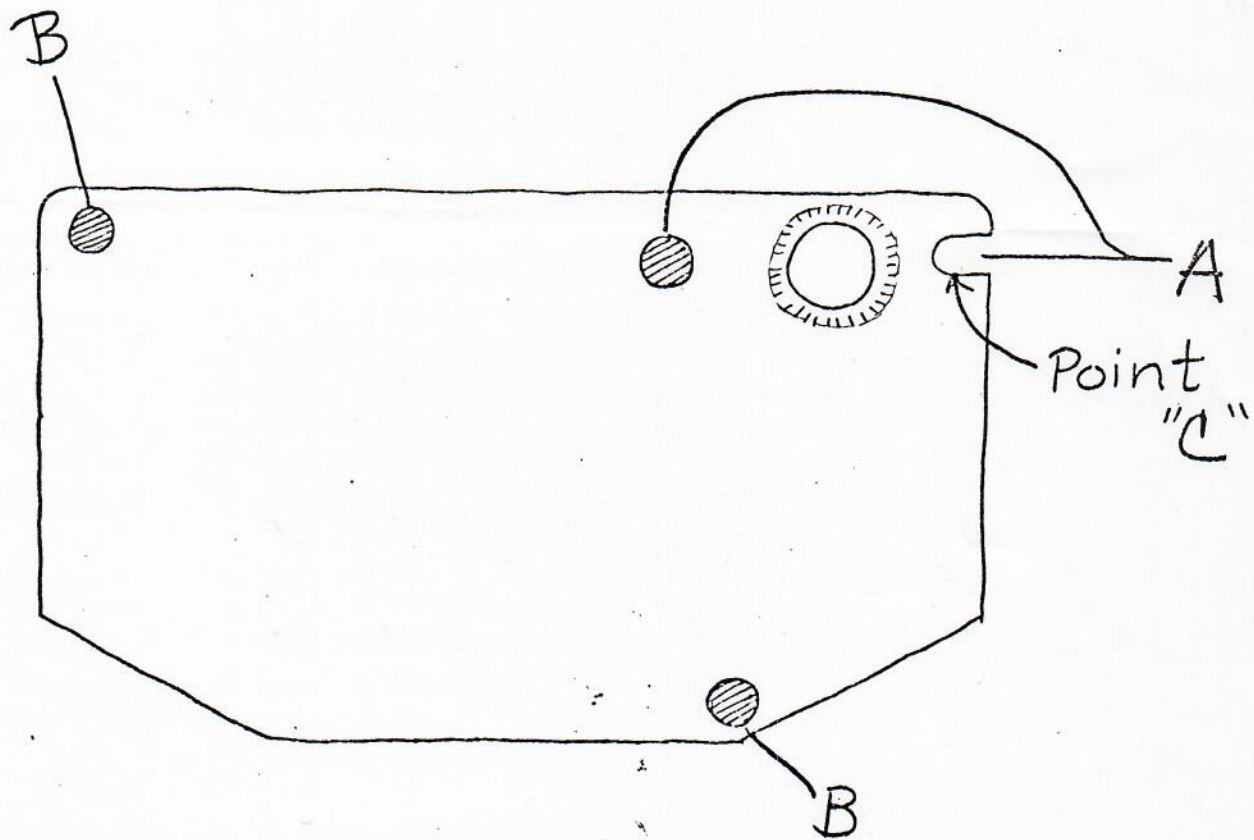
# INSIDE OF GEARBOX



*V. S. K.*

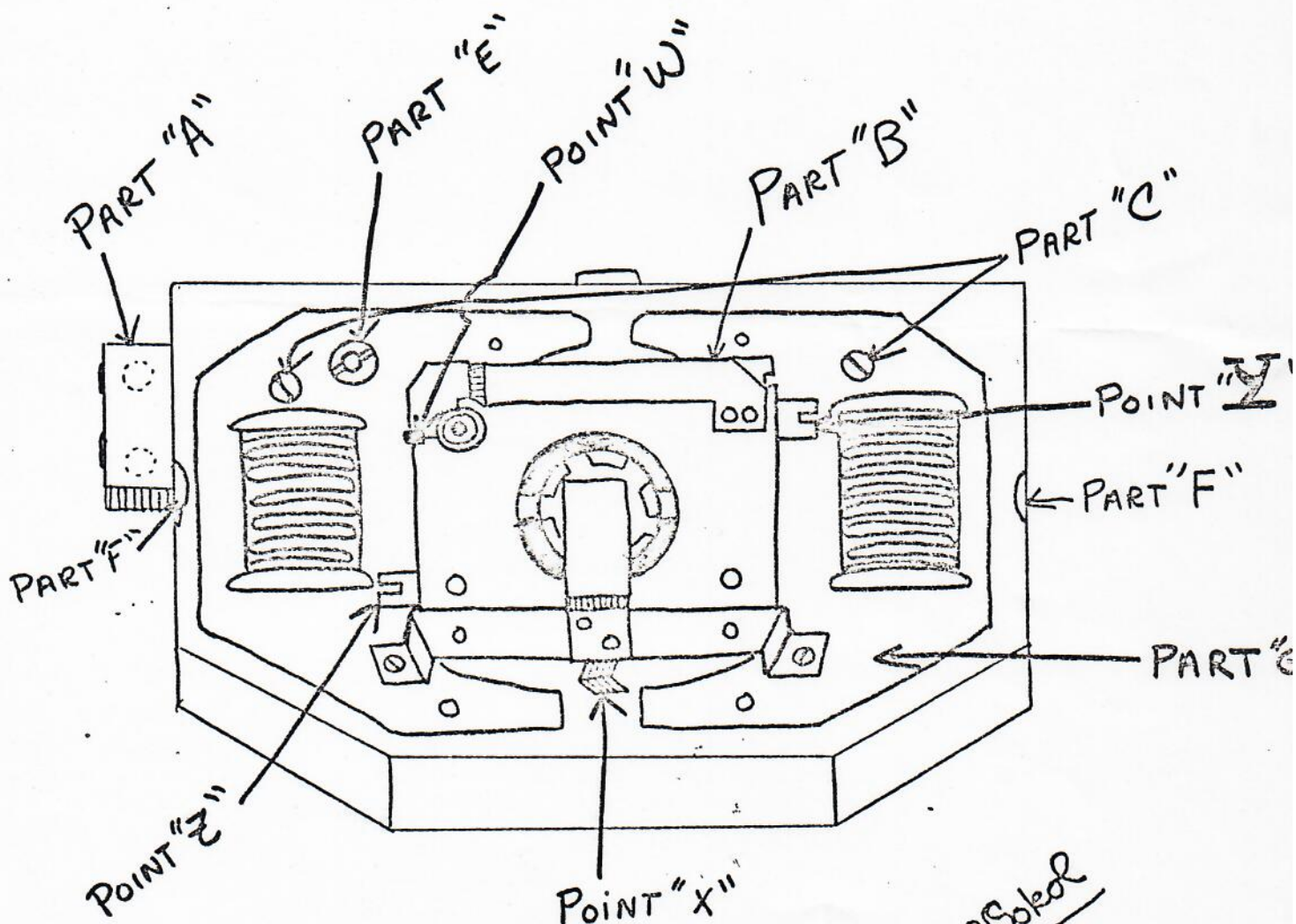
# GEARBOX COVER PLATE

Fig. 2



# MOTOR SIDE

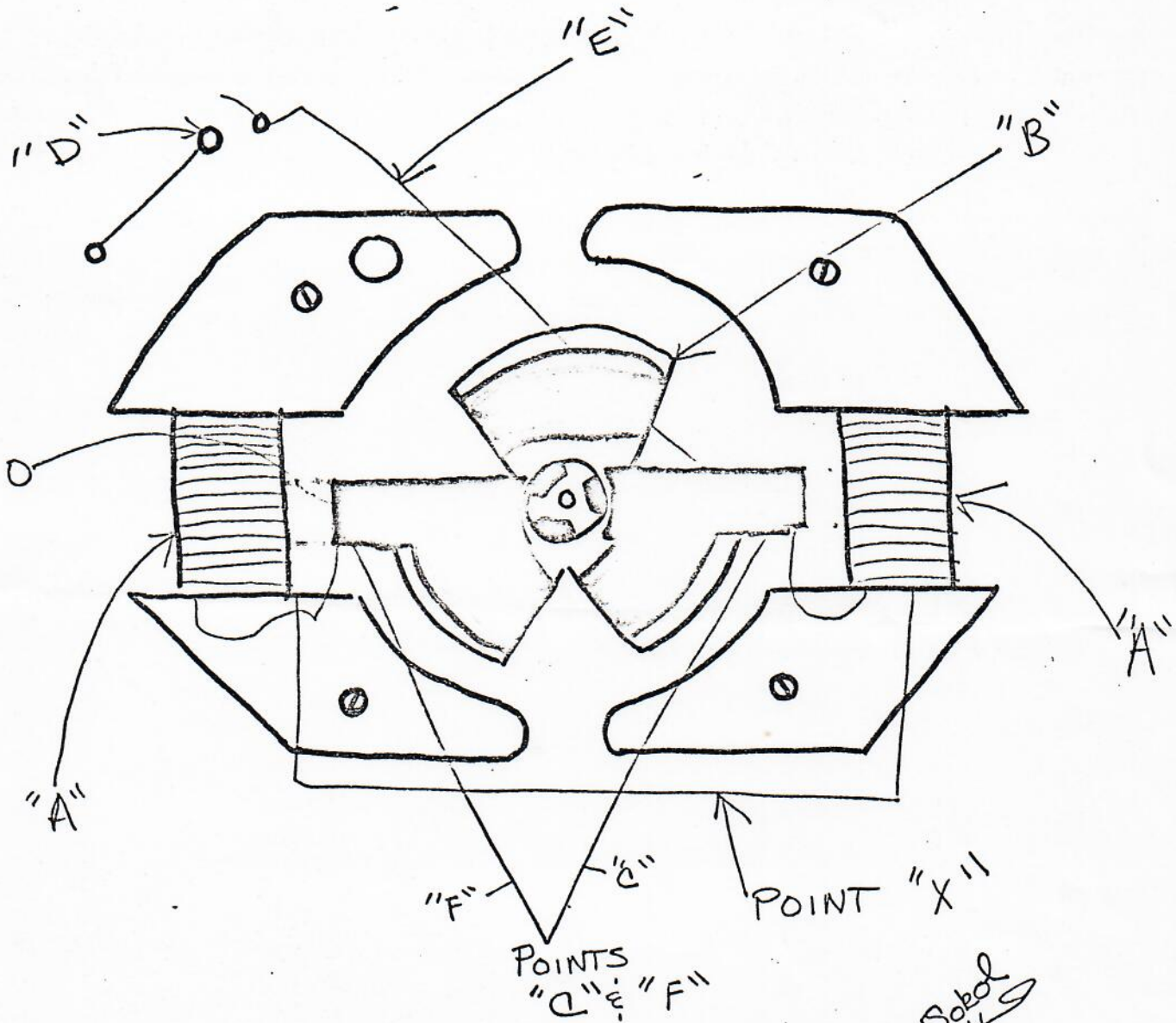
Fig 3



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Fig 4

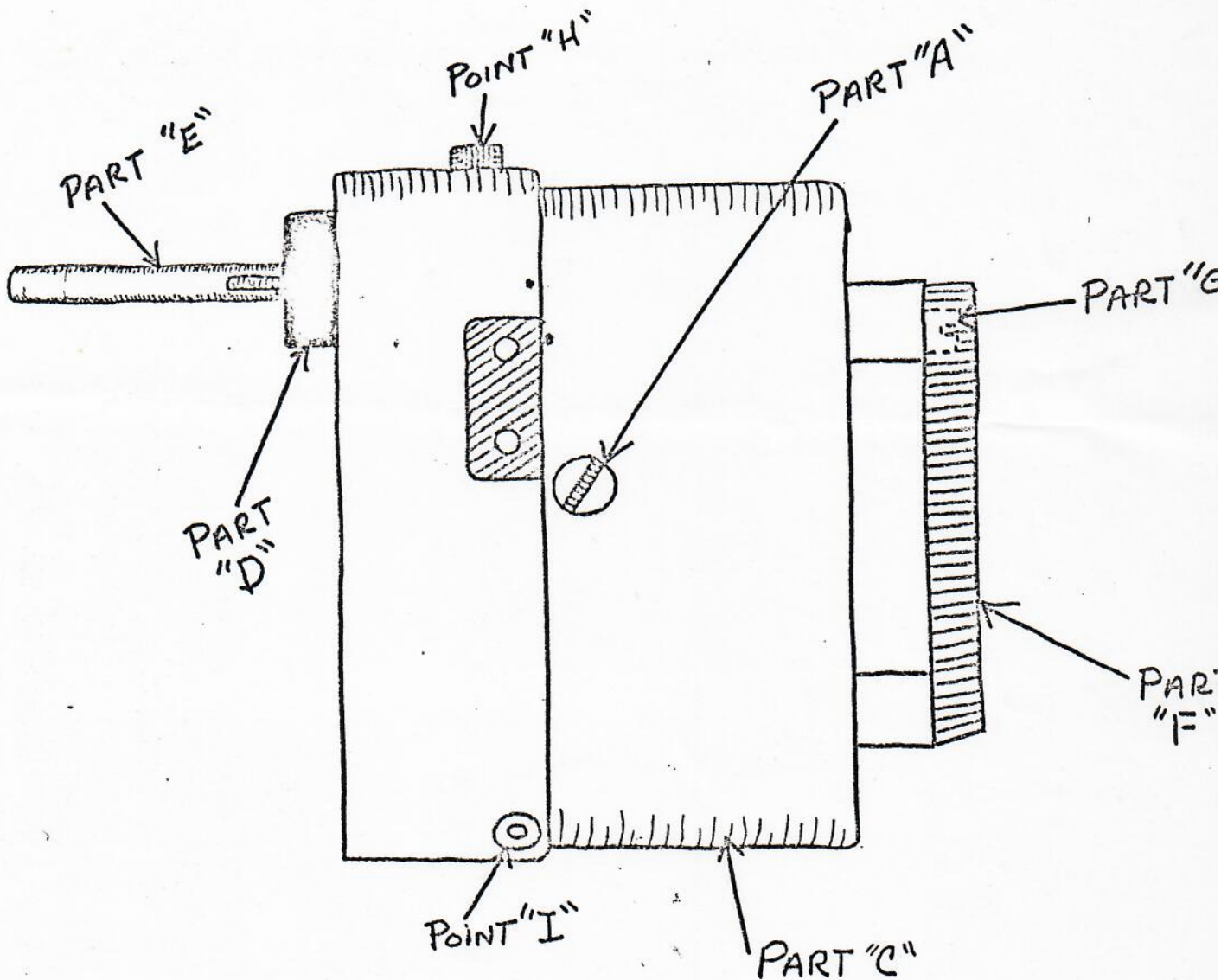
# WIRING DIAGRAM



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H

# SIDE VIEW

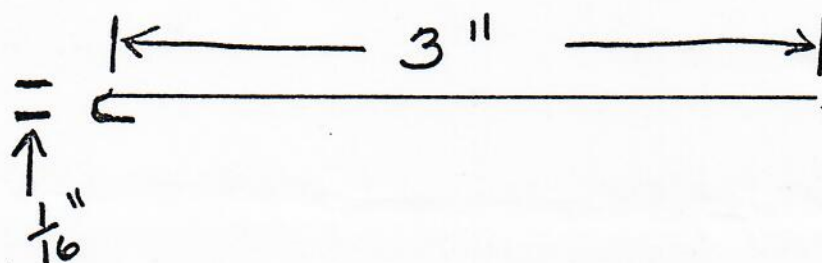
Fig. 5



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Fig 6.

MATERIAL -  
24 GA  
Copper or Iron  
Wire



Tool to Pull Brush  
Springs away from  
Brushes, to  
Aid brush  
Removal

Scale  
- 2" -  
↑ equals  
one  
inch

Fig. 7

