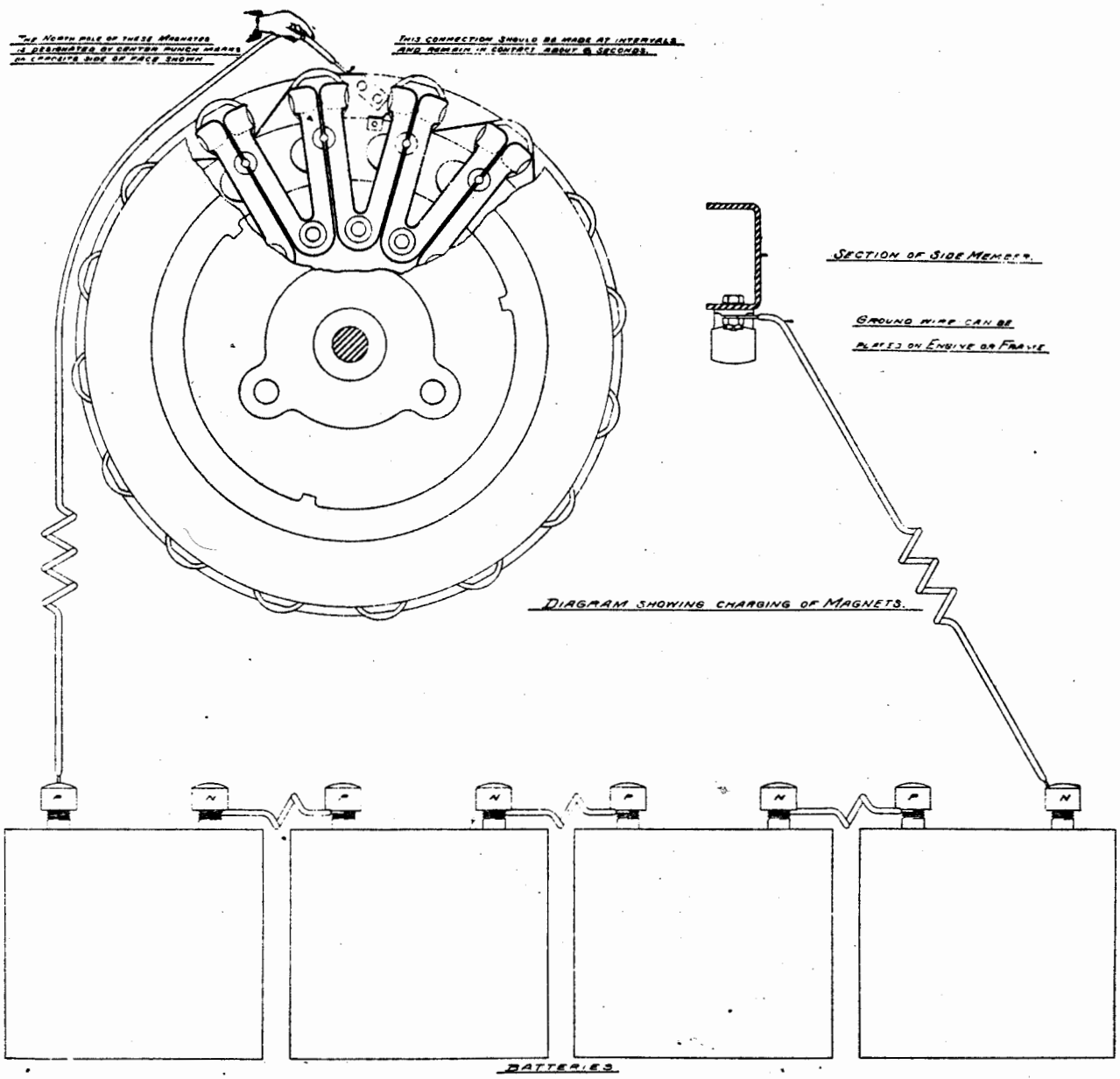
INSTRUCTIONS IN REGARD TO RECHARGING THE MAGNETO



RECHARGING MAGNETS WITHOUT THE USE OF THE MAGNET CHARGER

Five or six 6-volt 40 ampere storage batteries should be used to furnish the necessary current and should be connected as shown in the diagram.

The first step is to get the magneto in proper position to receive the current. To do this, hold a compass over the transmission cover, as shown in the diagram, and turn the motor over slowly until the end of the compass which normally points north will point to a spot about one-fourth of an inch from the side of the fibre at the bottom of the contact assembly on transmission cover.

Next disconnect the wire leading to the dash coil from the contact assembly, and attach instead the wire leading from the positive pole of the battery. You are now in a position to use the current. To do this, make and break the circuit by striking the wire leading from the negative pole of the battery against some part of the motor. About twenty contacts should be sufficient to fully recharge the magnets.

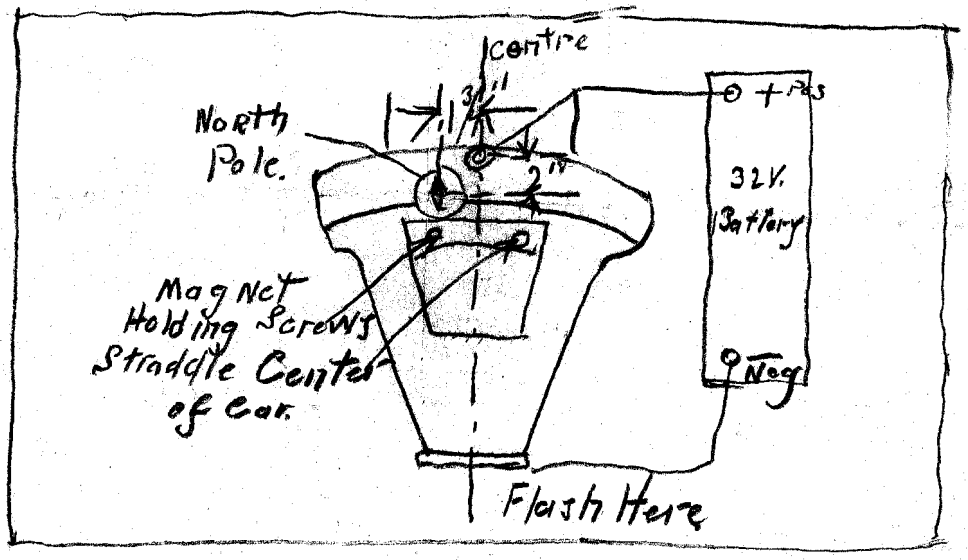
USE FROM 24 to 36 VOLTS to CHARGE FORD MAGNETO

Successful recharging of magnets in a Ford magneto depends primarily on having the engine properly set so that the magnets are properly located with respect to the winding. This requires the use of a compass which should be carefully checked away from all machinery to see which end of it points towards the north. This end we will call the north pole. Now disconnect all wires from the magneto terminal and remove the slanting cover on top of the transmission. It is also well to take out the spark plugs so that the engine can be turned easily without interference from the compression. Now turn the engine until the brass studs which hold the magneto on and which can be seen at the back of the flywheel by looking through the slanting door opening are so located that one is at the right of the center of the car as much as another is at the left. In other words, two of these brass studs must be straddling the center of the car.

Now take the compass and hold it tow inches back of the magneto terminal and $1\frac{3}{4}$ inches to the left and see if the north end of the needle points toward the radiator of the car. If it points the other way have someone turn the crank so that the flywheelturns the distance of one brass stud. The compass should now point with its north end toward the radiator. Now take either two 12 volt batteries well charged or four 6 volt batteries and connect them in series, that is, in a string with the plus end of one connected to the minus end of another. Now connect the positive end of this string of batteries with a heavy wire, the copper part of the wire being 1/8 inch in diameter if possible, to the magneto terminal.

A similar heavy wire should be connected to the negative end of this string of batteries and should be flashed 15 or 20 times against the frame of the car. It is essential that this connection be quickly made and broken as the current is so heavy that the insulation of the coils may be damaged if the connection is left on for any length of time. To do a really good job the starting crank should be turned one quarter turn and the compass again used to check the flywheel position and the flashing operation repeated.

This should be done at every quarter turn of the flywheel for best results. The advantage of repeating the process every 90 degrees is due to the fact that the iron plate supporting the coils has a certain amount of spring to it, so that magnets at the bottom of the flywheel become slightly more magnetized than those at the top and the process is repeared in order to give all the magnets a chance to become as strong as possible. This process will also burn out any small shorts in the coils and if the magneto is weak after doing this work the trouble is probably due to end play in the crankshaft which means that a new rear main bearing cap must be installed to remove the end play.



Adjusting air-gap clearance: The clearance, or air gap, between the coils and magnets should be .030", which is almost 1/32". The allowable limits are from .025" to .040". **If the gap is too wide,** put the necessary shims behind the coil support. **If the gap is too narrow,** take out some shims. The steel shims are .015", and the paper ones are .005".

If the needle fails to reach this mark, remagnetize the magnets.

If then the magneto fails to test up to this mark, and the missing still occurs, and is not due to loose terminals, and runs satisfactorily with a battery, then you may know you have a "grounded" magneto coil. The magneto must be removed, the defective coil located, another put in place, and the "air-gap" clearance must be given as described above.

Remagnetizing Ford Magnets

There are various methods of remganetizing Ford magnets. The usual and proper method of remedying weak magnets is to replace them with new ones. The Ford Co. does not advise everyone to attempt this work. This however necessitates taking down the engine and then reassembling. This makes a costly job, and is a big job. Therefore different methods of recharging magnets without removing them from the car will be given.

Remagnetizing by electromagnet and battery:[1] It is not necessary to remove the flywheel from the engine when remagnetizing Ford magneto magnets with the device shown in Fig. 94. Simply remove the transmission-case cover so that the ends of the magnets are available. Use a compass to determine the N pole of each magnet, and chalk them; also chalk the S pole of the remagnetizer. Place the S pole of the remagnetizer so that it will be on the N pole of the magnets.

Turn the flywheel over after remagnetizing one magnet, and remagnetize each magnet separately.

After remagnetizing, check the polarity of all magnets with the compass again.

The connections are shown in Fig. 94. The storage battery can be either a 6 or 12-volt battery. It is possible to use 6 or 8 dry cells, if connected as in Fig. 95.

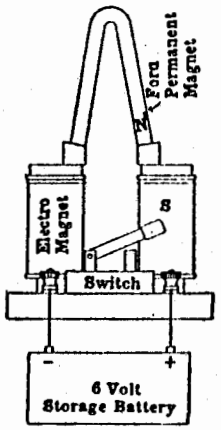


Fig. 94. Electromagnet using a storage battery for remagnetizing Ford magnets.

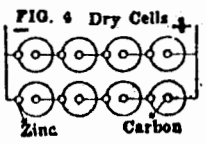


Fig. 95. Dry cells can be used instead of a storage battery, if connected as shown.

Magnets of all types of magnetos can be charged with this remagnetizer. When remagnetizing magnets which are separated from the magneto, it is important to place a "keeper" across the magnets until placed on the magneto. It is also advisable to rap the magnet a few times with a piece of wood while being remagnetized. See also page 312.

Remagnetizing with storage batteries: Five or six, 6-volt storage batteries should be about right. Refer to Fig. 96.

To prepare the magneto for recharging, first disconnect the wire (A) which goes from the magneto terminal on the transmission cover to the coil on the dash.

Next remove the transmission cover (B), so that you can look at the magneto. Locate the brass studs on the rim of the fly wheel which hold the magnets in place, and have someone turn over the engine very slowly until one of these brass studs is in line with an imaginary line drawn about 1" or so from the magneto terminal, to the left of the latter and paralleling the frame. The N-pole end of a compass needle should now point toward this brass stud. If the S-end is attracted, turn flywheel until next brass stud is in same position.

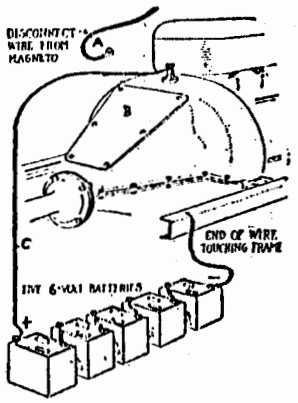


Fig. 96. Remagnetizing Ford magnets with storage batteries.

Another method is to place an ordinary small compass on the transmission cover about 1" from and to the left of the magneto terminal, at the same time turning the engine slowly until the needle of the instrument is parallel with the engine.

The N pole end of the needle should point toward the engine when in this position.

Connections: Connect wire from positive (+) terminal of battery to magneto terminal on engine, as shown at (C) (Fig. 96).

Next connect a wire from the negative terminal on the battery, and make and break the circuit by striking the free end of the wire on some metal part of the engine.

Permanent connection should not be made, but only thirty or so momentary contacts, which, it is said, will recharge the magnets much more satisfactorily than if permanent contact is made. (*Motor Age.*)

Dry cells can be used if necessary. Use 48 connected in series-multiple, as shown in Fig. 97. Connect the positive (+), or carbon poles, with the terminal.

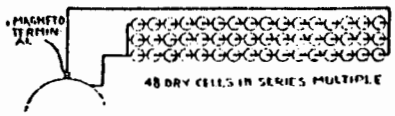


Fig. 97. Remagnetizing Ford magnets with dry cells.

Resistance wire can be used. Use 13 ft. of nichrome No. 16 wire, or 8 ft. of No. 18. If German silver, use 35 ft. of No. 16 or 22 ft. of No. 18—in series, as shown in Fig. 98.

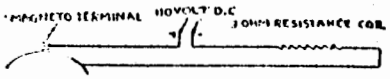


Fig. 98. Method of remagnetizing Ford magnets with 110-volt direct current and resistance.

110-volt direct current can be used. To use this it will be necessary to use a resistance lamp bank, as shown in Fig. 99. Use twenty-eight 32 c.p. carbon filament lamps. Connect the positive pole with the magneto terminal. Connected as shown, this gives 27½ amperes. To find the positive pole, or polarity of any circuit, see page 504, "Polarity, how to find."

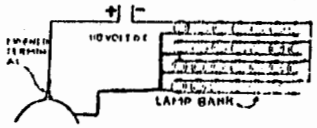


Fig. 99. Method of remagnetizing Ford magnets with 110-volt direct current and lamp bank.

[1] Can be secured of A. L. Dyke, Granite Bldg., St. Louis, Mo. Price $9.50 with Ford attachment and full instructions.