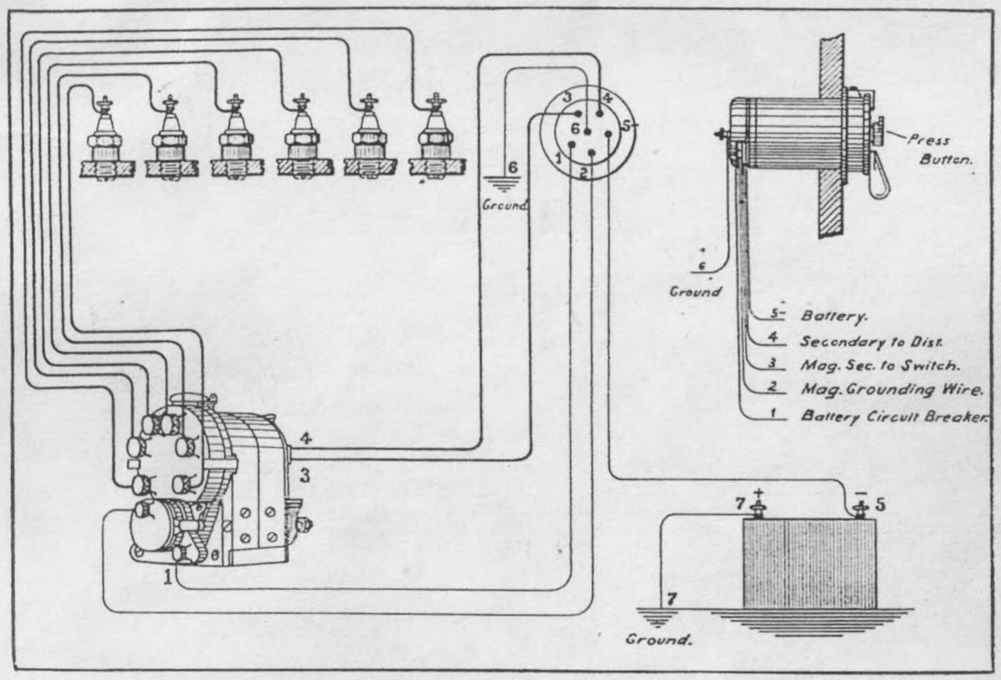
loop around the terminal screw, and no more. The wire is then to be twisted hard and bent to a circular or loop shape, after which the wire should be slightly tinned.

When the thumb nuts on the distributor plate are screwed into position, the edge should press on the end of the cable insulation, thus expanding it and making a tight, moisture-proof fit in the recess of the circular boss.

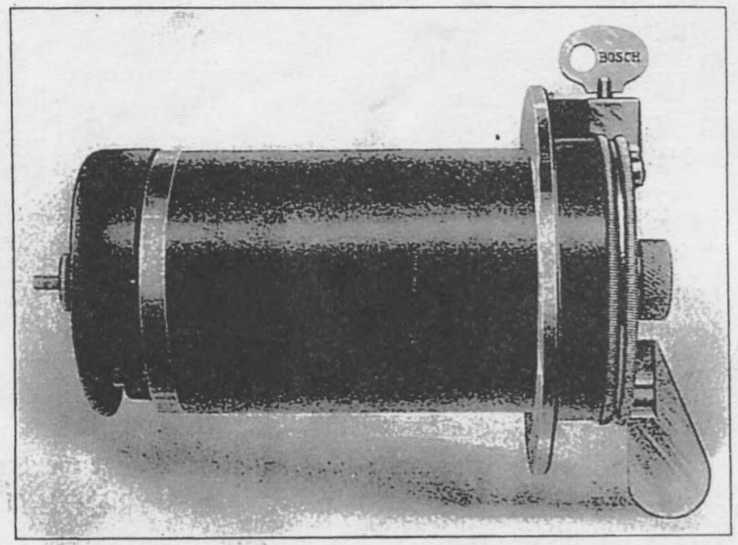
Coil

The coil used with the "ZR" Dual Magneto is identical in every respect with the coil used for the "D," "DR" and "DU" Dual Magnetos, and the instructions for wiring, etc., apply when employing any of these magnetos.



Wiring Diagram for the "ZR" Dual System

BOSCH



Bosch Dual Coil

Dual Ignition System

For "ZR" Magnetos

Bosch Magneto Company, New York

CHICAGO DETROIT SAN FRANCISCO TORONTO

Bosch "ZR" Dual Magneto

The principle and action of the "ZR" Dual magneto are identical with those of the "D," "DR" and "DU" Dual types described in the booklet entitled "Bosch Dual Ignition." However, certain detail changes are required by the altered construction of the "ZR" magneto.

Setting

In the "ZR" magneto it is unnecessary to remove either the interrupter housing cover or the distributor plate in order to determine the setting of the instrument, or to locate the distributor terminal with which contact is being made.

The magneto having been bolted into position, the crank shaft is to be turned to bring one of the pistons, preferably that of cylinder No. 1, to the firing position for full advance. This point may be determined by the table and diagram given in the "ZR" instruction book, or by inquiry from the manufacturer of the engine.

The armature is then rotated until the figure "1" can be seen through the window in the face of the distributor plate. The cover of the oil well on the distributor end of the magneto is then to be raised, and the armature is to be turned a few degrees in one direction or the other until the red mark on one of the distributor gear teeth is brought into register with the red marks on the side of the window located between the two oil ducts.

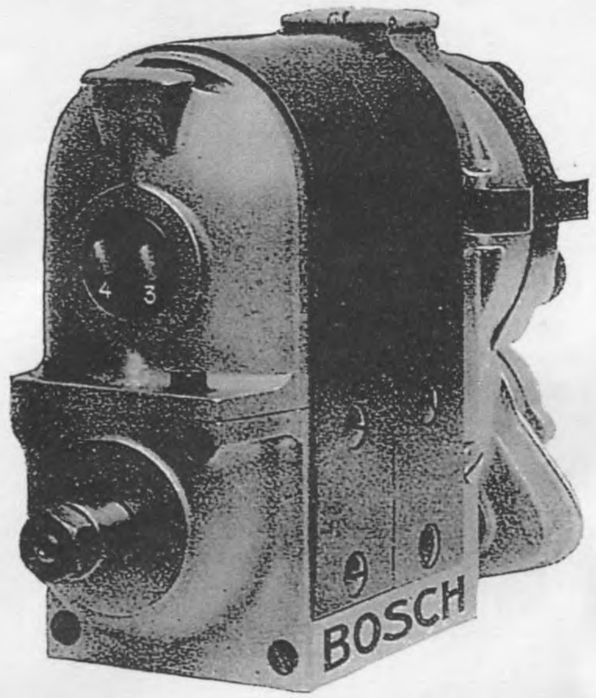
The magneto is then in time for the full advance position, and the gear or coupling is to be secured to the armature shaft. Great care should be taken not to disturb the position either of the crank shaft or of the armature shaft when fitting the driving member.

Making the Connections

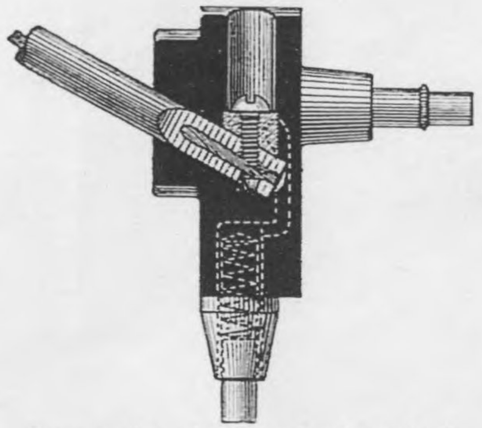
In the "D," "DR" and "DU" Dual magnetos, the magneto current is led from the collector ring connection to the coil, and back to the distributor terminal that is located in the center of the distributor plate.

In the "ZR" Dual magneto this central distributor terminal is eliminated, and the current is led internally to the distributor from a con-

nection on the shaft end of the magneto. To expose this terminal, the shaft end bonnet should be removed, which is done by withdrawing the two screws in its lower flange, and sliding the bonnet backward. The terminal will then be seen to be a vulcanite post, with a boss that projects through a hole in the bonnet. In the top of this post are two vertical holes, in the bottom of each of which is a screw. These screws are to be withdrawn. The ends of the high-tension wires No. 3 and No. 4 leading to the coil are then to be cut off square, and after being led through the hole in the bonnet, are to be pressed to the bottoms of the slanting holes in the boss. The pointed screws are then to be replaced in the vertical holes, and in being driven home, they will pierce the cables (and their insulation) and make the required connections. It is essential to use a screw driver of the proper size, for a tool with too large a blade will inevitably crack the vulcanite. Great care must be taken to apply the screw driver to the screws vertically, in order to avoid cracking the vulcanite by side pressure. When the connections are made the bonnet is to be replaced.



The Shaft End of the "ZR Dual" Type, illustrating the cable outlets


Cross section of the insulated standard, showing cable in position and fastening screw

All other connections to the magneto or coil should be provided with Bosch Loop Terminals. If Bosch Terminals are not at hand, the insulation is to be stripped from the cable to expose a sufficient length of wire to form a