4. The commutator consists of copper segments separated by mica plates. If the commutator is out of round and scored or burned it should be turned on a lathe to obtain a true surface. Maximum permissible run-out 0.05 mm (.002 in.). Do not remove more metal than is necessary. The mica should then be undercut 0.3 to 0.5 mm (.012 to 0.20 in.). This operation should be performed with a motor driven undercutter which will provide a small chamfer on each segment, or in an emergency very carefully with a thin hacksaw blade.

   No metal chips should remain between the segments since these will lead to short circuits. Remove all burrs from the undercut slots to provide a smooth running surface for the brushes.

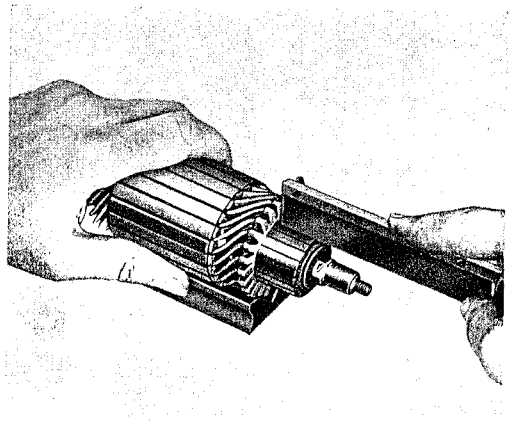

Fig. 33

17 LI

Testing Field Coils

The two field coils are tested for open circuits, short circuits and ground.

Test

1. Test each field coil individually for open circuits with a 6 volt test lamp in series with the battery.

2. If the outer insulation of the field coils is found to be in order there is rarely a short circuit in the windings. Finding short circuits is generally beyond the scope of workshops as this requires a very sensitive ohmmeter or resistance bridge. However, if they have been disassembled, the field coils may also be tested on the growler by hanging them on an iron bar over the growler. If the coil becomes warm, a short must be present.

3. Test for a grounded field coil (coils installed) by connecting a 40 volt test light and 40 volt source between one coil connection and the starter housing. The lamp should not light.

4. Also check the electrical connection between the two field coils for continuity with a 6 volt test lamp.