

263. Excitation of Fields in a Dynamo. In the alternating-current dynamo the electromagnets which form the fields are

sometimes excited by a small direct-current dynamo belted to the shaft of the machine; in the direct-current dynamo the fields are magnetized by a current taken from the dynamo itself. When the *full* current generated in the armature (Fig. 270) passes through the field-magnets, which are wound with coarse wire, the dynamo is said to be *series-wound*. A dynamo of this class is used when a constant current is required, as in arc lighting. When the

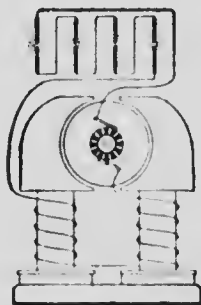


FIG. 270.—Series-wound dynamo.

fields are energized by a small fraction of the current, which passes directly from brush to brush through many turns of fine wire in the field coils, while the main current does the work in the external circuit (Fig. 271) the dynamo is *shunt-wound*. This type is used where the output of current required is continually changing, as in incandescent lighting, power distributing, etc. The regulation is accomplished by suitable resistance placed in the shunt circuit to vary the amount of the exciting current.

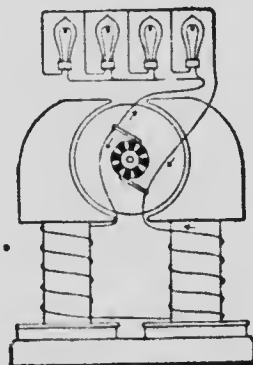


FIG. 271.—Shunt-wound dynamo.

The field-magnets, of course, lose their strength when the current ceases to flow, but the cores contain sufficient residual magnetism to cause the machine to develop sufficient current to "pick up" on the start.

264. The Electric Motor. The purpose of the electric motor is to transform the energy of the electric current into mechanical motion. Its construction is similar to that of the