

The experiments also show that an increase in the number of lines of force passing through a closed circuit causes an induced current to flow in one direction through the circuit, while a decrease in the number passing in the same direction through the circuit causes a current to flow in the opposite direction.

259. The Principle of the Dynamo. The preceding experiments on the production of induced currents have been introduced mainly to help us to understand the principle of the dynamo. In its simplest form, a dynamo is a coil of wire rotated about an axis in a magnetic field. The principle may be illustrated by connecting to the galvanometer the coil used in the experiments on current induction and rotating it about a vertical axis between the poles of a horse-shoe magnet. Continuous rotation in one direction is prevented by the twisting of the connecting wires about each other. In a working dynamo this difficulty is overcome by joining the ends

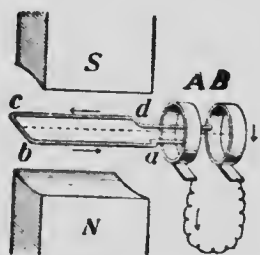


FIG. 263.—Principle of the dynamo.

of the wires to rings, from which the current is taken by brushes bearing upon them. A study of Figs. 263 and 264 will show how the current is generated in the coil and how

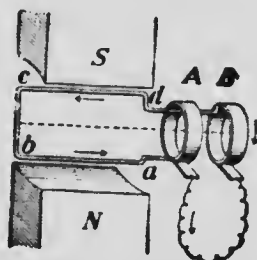


FIG. 264.—Principle of the dynamo.

it is made to flow from brush to brush through the external conductor.

Let *abcd* be a coil of wire, having one end attached to the ring *A* and the other to the ring *B*; and suppose the coil to rotate about a horizontal axis between the poles *N* and *S*.

Now the maximum number of lines of force pass through the coil when it is in the position shown in Fig. 263 and