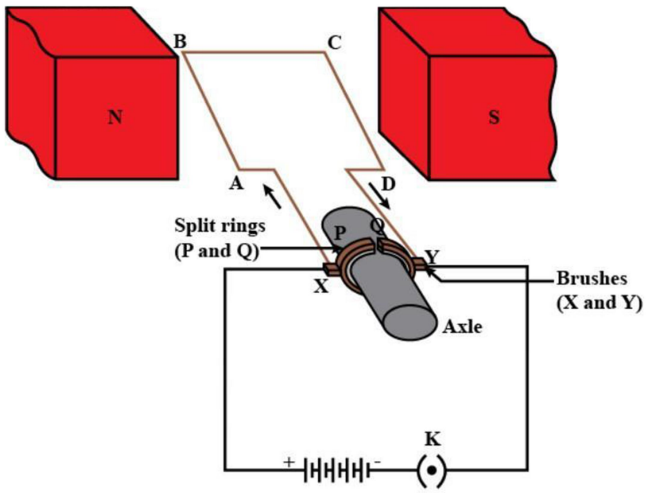
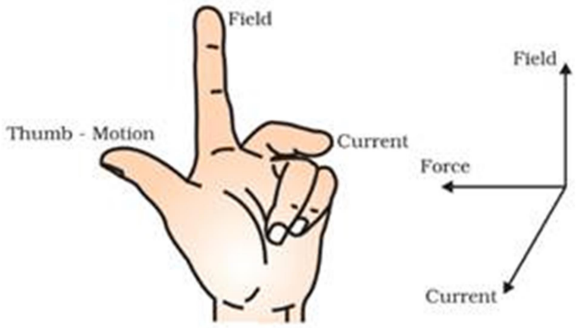
SIMPLE DC MOTOR

An electric motor is a device that converts electrical energy into mechanical energy and **it works on the principle of the magnetic effect of current and Fleming's left-hand rule.**



A simple electric motor



Principle of Working

When current is allowed to flow through the coil ABCD by closing the switch, the coil starts rotating in the anticlockwise direction due to downward force acting on the length AB and upward on length on CD simultaneously. As a result, the coil rotates in the anticlockwise direction.

Current in the length AB flow from A to B and the magnetic field act from left to right normal to the length AB. So according to Fleming's left-hand rule, a downward force will act along with the length AB

Similarly, when the current flow through C to D along the length CD, upward force will act on it. Due to these two forces, the coil rotates anti-clockwise. After half a rotation, the position AB and CD interchange. The half-ring P comes in contact with brush X and the half-ring Q comes in contact with brush Y. Hence the direction of the current in the coil ABCD gets reversed.

The reversal of current reverse the direction of force acting on the two arms AB and CD so the arm AB was earlier pushed downwards is now pushed upwards and the arm CD earlier pushed up is pushed down. The reversing of current is repeated at each half rotation and gives rise to continuous rotation of the coil.