

Simplest “Motor”



Purpose: To demonstrate an extremely simple motor.

Location: Room 146; shelf M6

Center the head of the nail on the Neodymium magnet so the nail becomes magnetic. Suspend the nail from the positive terminal of the battery as shown in right photo. One end of the wire should be taped to the top (negative end) of the battery and the other held lightly against the outer edge of the magnet. The battery and nail should start spinning.

This simple “motor” works because the current flows radially outward from the center of the magnet, which is perpendicular to the magnetic field of the magnet. This results in a “ $\mathbf{v} \times \mathbf{B}$ ” force which provides a net torque on the magnet causing it to rotate.