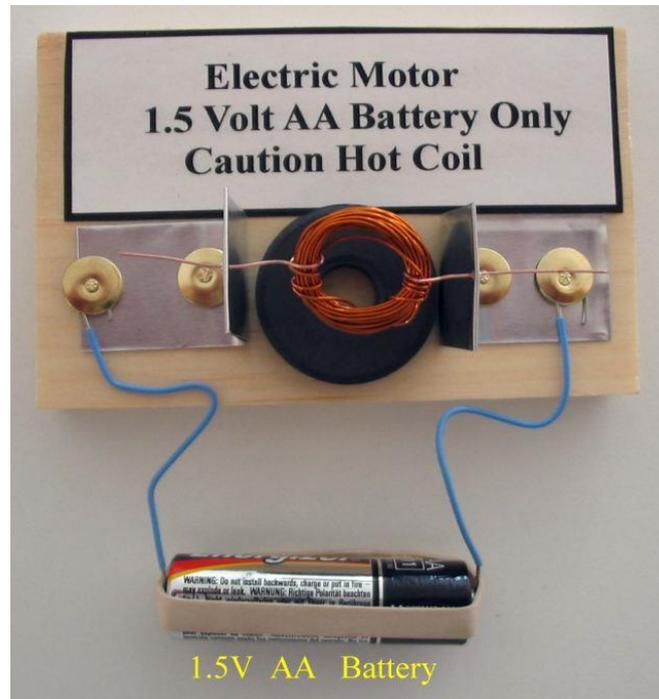# Workshop Project: Simple Motor

It is important that your coil is as symmetrical as possible.

Make sure the two wires extend from the coil on opposite sides.

Disconnect your battery for 1 minute before touching the coil.
The coil might be hot.

Electric motors are used in tape recorders, toys, robots and thousands of other appliances and tools. A typical battery operated electric motor uses both permanent magnets and electromagnets. The magnets are arranged such that one magnet "chases" the other magnet in a circular motion.

Supplies:

- 2 pieces 2 cm X 6 cm of thin aluminium

- 1.5 meters of magnet wire (24 or 25 gauge, Radio Shack #278-1345)

- 2 metal tacks

- 2 lengths copper wire, 15 cm

- 1 ring magnet (Radio Shack #64-1885)

- 1 AA battery (Do not use any battery rated above 1.5 volts, overheating of coil will result)

- 1 block of wood, 6 cm x 15 cm

- Small piece sandpaper, 1 elastic band.

Procedure:

Wind the magnet wire to form a ring. Leave 6 cm of each end extended.

Sand the insulation off the ends of the magnet wire.

Bend aluminum strips.

Push a pin through the folded end to make a "pin hole" for the magnet wire.

Use thumb tacks to fix the two aluminium brackets to the wood block.

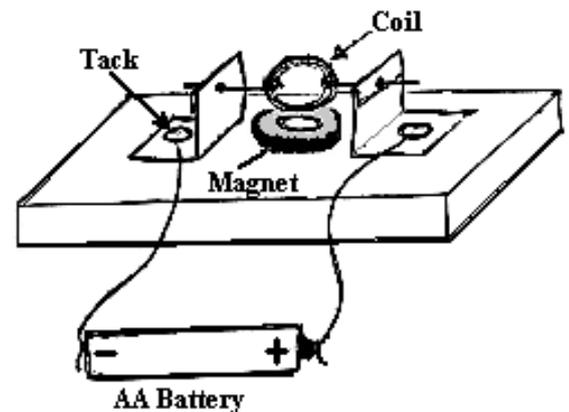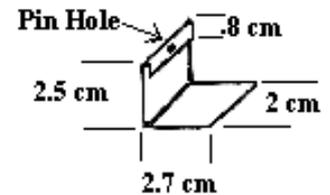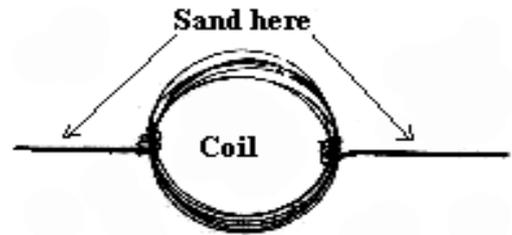Put the magnet between the brackets.

Connect the two battery wires.

Put the coil wires into the pinholes in the aluminum brackets.

Put magnet underneath coil.

Connect battery to wires.

The coil should turn, if it doesn't give it a spin to help start it.

The coil will get hot, disconnect battery and let it <u>cool</u> before <u>touching.</u>

My motor doesn't work! What can be wrong?

1. Make sure your coil is <u>balanced</u> and that your <u>brackets</u> are solid.
2. If your coil is not hot then:
   a. Check the sanding on your coil wires. Both wires should be bare metal.
   b. The battery wires are not connected properly.
   c. You need a new battery or

- A freshly charged battery is important.

Going Further: - Experiment with adding more magnets to your motor. Does this improve it's performance?