



#FontanaTogether

Tiny Dancers (A Homopolar Motor)

Because harnessing refers to making use of resources to produce energy we decided to try making a homopolar motor. A homopolar motor is probably the simplest DIY motor you can make. You need just a few easy to obtain items and it's FAIRLY simple to construct. Homopolar motors are not useful motors in anything but science experiments but they do demonstrate some interesting concepts and are fun to watch! They are also a great introduction to electricity and electromagnetism.



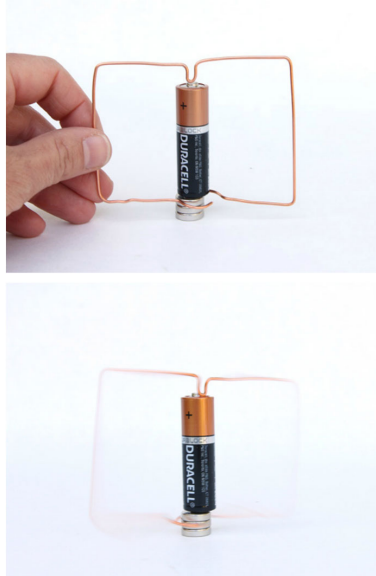
Materials:

- Copper Wire- THIS is the gauge we used
- 1/2" x 1/8" Neodymium Disc Magnets
- AA Battery
- 3 in 1 Combination Tool or pliers/wire cutters
- Template
- Crepe Paper (optional for skirt)
- Hot Glue (optional)

Instructions

1. Cut a long piece of wire off your spool, I started with about a 10" long piece. Lay it on the template of your choice and bend as shown using 3-in 1 tool or pliers. No need to be perfect HOWEVER try and keep your form as symmetrical as possible.
2. To create the base section of wire that wraps the magnets, I recommend bending the end of the wire around the battery. Remove the battery and gently widen the circular wire form with your fingers.
3. Place three neodymium magnets on the negative side of your battery.
4. Place the motor on top of the battery so that it touches the positive pole. The round section at the bottom of the motor must be low enough to encircle the magnets!
5. Let it go. If properly constructed it should start to spin. If it doesn't see our tips below.

- Optional- to make a skirt for your dancer cut a small circle of crepe then cut a slit in the center of the circle. Slide it up onto the dancer and secure in place with a dab of hot glue.



What's happening?

I'm going to keep this as simple as possible because let's face it, electromagnetism is hard to explain! Basically homopolar motors demonstrate something called a Lorentz Force. This is a force that is generated when electricity moves through a magnetic field. Our copper wire is conducting electricity from one end of the battery to the other. As it moves through the magnets on the negative side of the battery, it creates a force which causes the wire to spin.