How To Make A Simple Motor Powered By Static Electricity

You can quickly make a simple motor that is powered by the static electricity that is on the surface of your TV (or computer monitor). The motor will run as long as the TV provides static electricity to the motor.

You need:

- **Two pop cans**
- **Two straws , one with a bendable elbow**
- **A non-conductive base, such as a DVD case**
- **Small sewing needle and some fine thread**
- **Aluminum foil**
- **Some thin insulated wire**
- **Two small screws**
- **A sheet of sand paper**
- **A TV or computer monitor (tube type, not LCD!)**
- **Scissors, tape, etc**

It will be very easy to modify the motor to use different components based on what you may have available. These instructions are only a very general guide to illustrate the principals involved. Refer to the pictures of the motor at the bottom of the page to see how it is built, it is a very simple device and the directions below should make sense when you view the pictures.

First, sand a strip of paint off each can. You should have bare metal about one inch wide for the height of the can.

Now bend the straw at the elbow, and mount it on the base. You can mount it with tape, glue, or whatever is convenient. For a sturdier motor, you may want to drill a hole in the base, and glue the straw in the hole.

Cut a small strip of aluminum foil and wrap it around the other straw. If the foil wants to unroll, gently lick the last bit of the edge to help it stick. I used a piece of foil about 2 inches wide by 2 inches long.

Cut the straw at the edges of the foil so you have a small foil covered cylinder. Use the needle to poke a hole near the top, and pull the thread through. Tie the thread in a loop. Tape the other end to the bent straw that you mounted to the base.

Screw the two screws into the corners of the base. Remove the insulation for about one inch from each end of a short piece of wire, and attach one end of it to the pull tab on a can. Attach the other end to the screw. Do this for both cans.

Place the cans on the base, so that the bare part you sanded on each can faces the other can.

Now take a long piece of wire, remove the insulation for about one inch on each end, and attach it to one of the screws that also has a wire from a can attached to it. Attach the other end to a good ground, such as a metal water pipe. The reason we used screws to attach the wires to, rather than attaching the wires directly to the cans, is so that the weight of the wire won't pull the cans over.

Make sure the TV is turned off for this next bit!

Tear off a large piece of aluminum foil, and tape it to the TV. Don't go right to the edges, there should be about a one inch border of uncovered TV tube between the edge of the foil and the TV case (see the pictures below). This is so the foil doesn't ground on the case, if the case is conductive.

Now attach a piece of wire from the other screw terminal on the motor and tape the other end to the foil on the TV. Again, don't forget to remove an inch of insulation from each end.

You are done! Turn the TV on and watch the motor run. On some TVs, the static charge is only present when you turn the TV on or off. If your TV is like this, the motor may only run for a few seconds while the TV provides a charge. On other TVs, the motor will run as long as the TV is on, and even after you turn it off, until the charge is used up.

The motor works like this: when the TV is turned on, a static charge builds up on the surface of the picture tube. This charge travels through the foil and wire, and charges one of the cans. The charge attracts the tube hanging in the center until it touched the can. When the tube touches the can, the tube becomes charged to the same voltage as the can.

Because similar charges will repel each other, the tube is now pushed away from the charged can. When it hits the other (uncharged) can, the charge on the tube drains away through the ground wire.

Now the tube swings back, and is again attracted to the charged can. The cycle continues as long as there is an electrical charge to run the motor.