Hey! Miss Leah here, and I'm excited to teach you how to make a motor out of batteries! That's right. With a few household supplies, you'll create a motor while learning about electromagnetism.

For this fascinating STEAM project, you will need:

AA Batteries

Copper wire (16-18 gauge)

Pliers or wire cutters

1/2 x 1/8 inch disc magnets

But first, a few precautions…

-The neodymium magnets are STRONG and should be kept away from small children. Adult supervision is highly recommended for this.

-These magnets might interfere with electronic devices, so I recommend keeping them a safe distance apart.

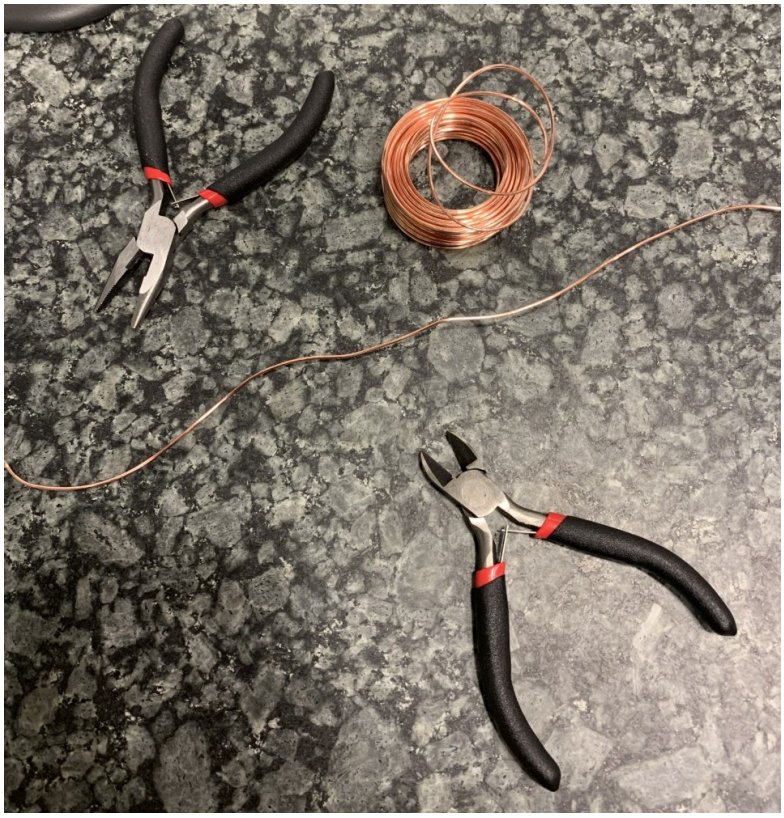
-Once these motors are working, they will heat up. If you notice the battery getting hot, remove the magnets and let it cool down. If the battery overheats, I recommend using a new one. Do not let the battery overheat!

-Monitor the battery as it spins. Make sure there are no small holes that could potentially leak.

Step 1

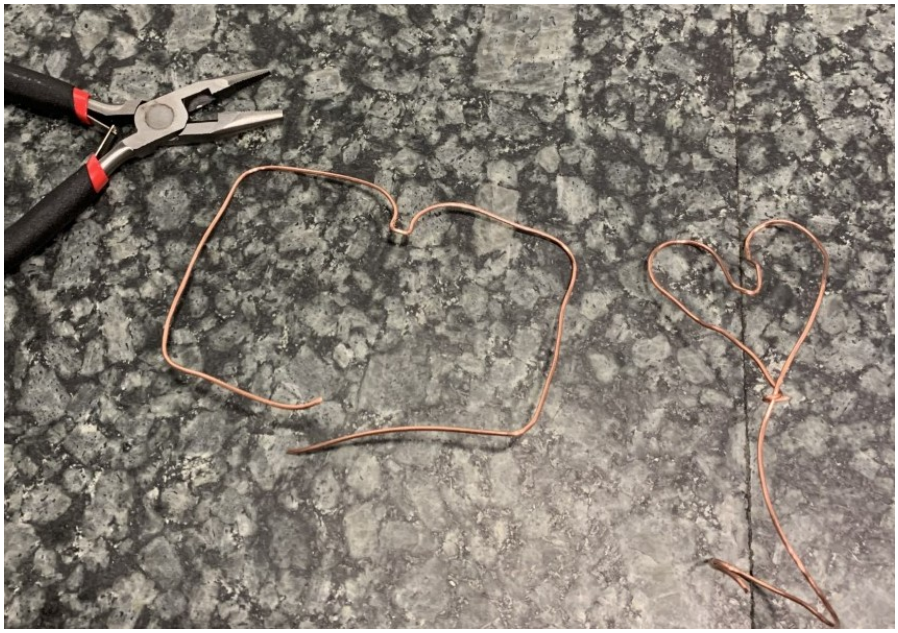
Cut a piece of wire about 10 inches.

Use the pliers to bend it into a symmetrical shape (meaning each side looks about the same).



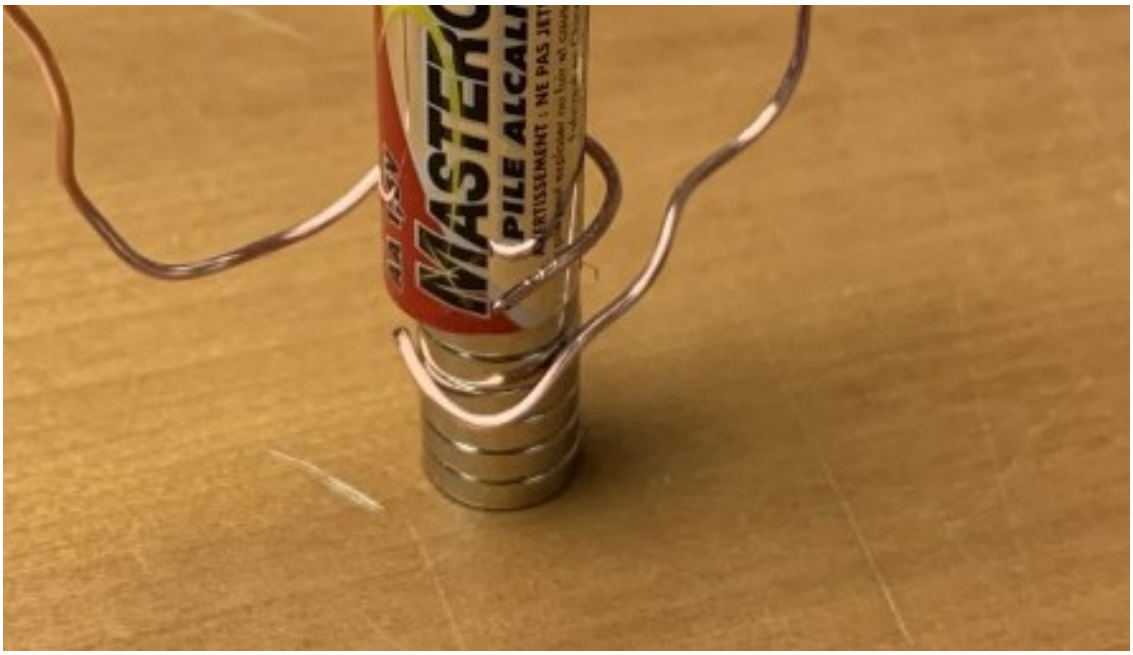
Shaping the wire can be tricky, so it may take some time.

Keep working with it, and you'll get it!



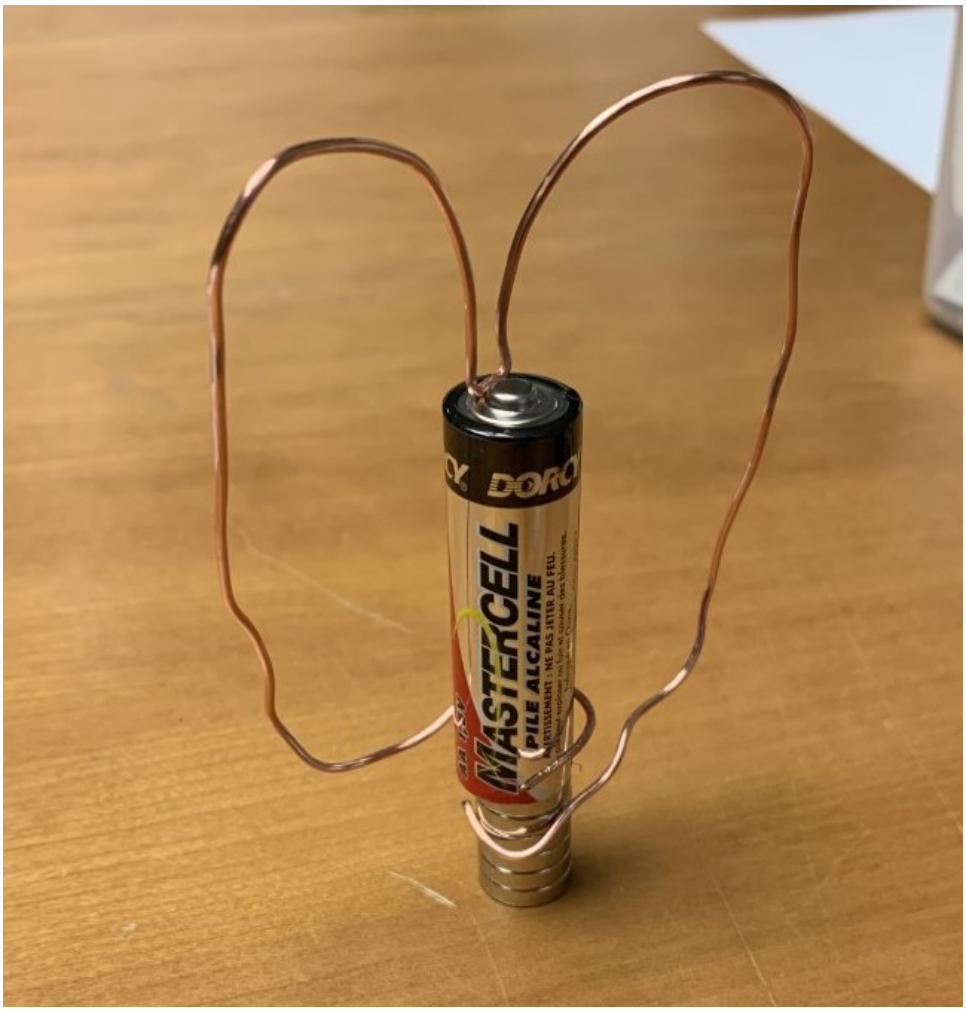
Step 2

It’s time to wrap the wire around the base of the battery (the negative end). Don’t wrap it tightly; make sure there’s enough space so the wire will be able to move around the battery. Place the neodymium magnets at the base of the battery.



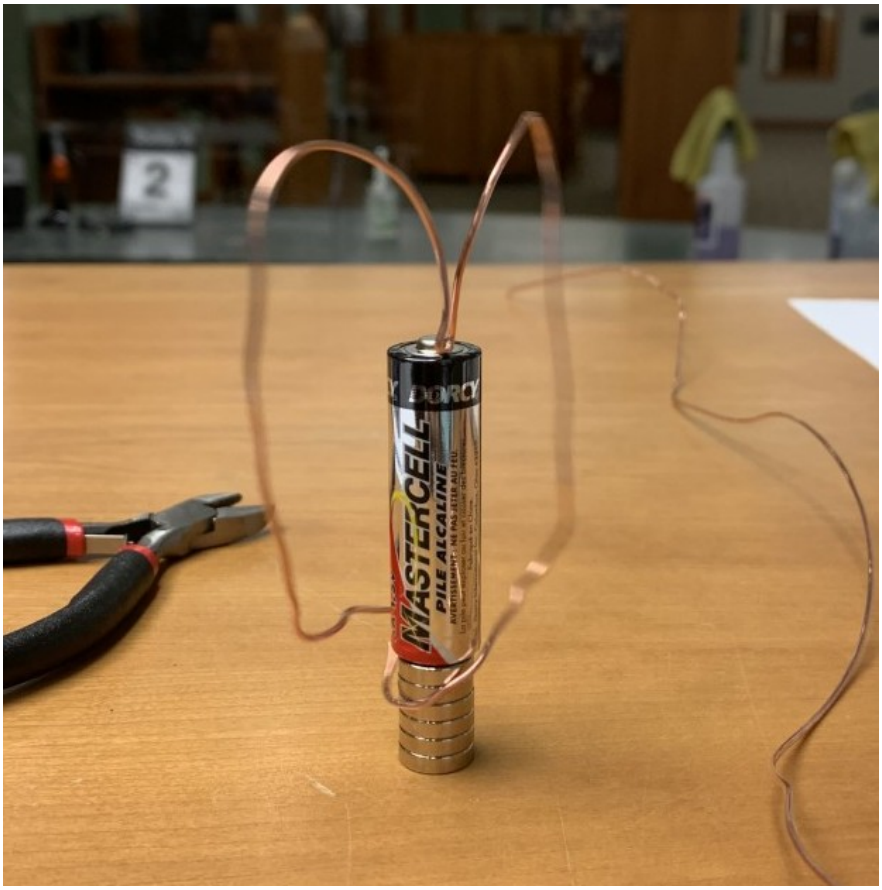
Step 3

Make sure the wire is touching both ends of the battery and the magnets. This also requires some time to tweak. The more symmetrical your wire is, the easier it will be. Remember to keep the wire loose enough.



Ready?!

Watch what happens!

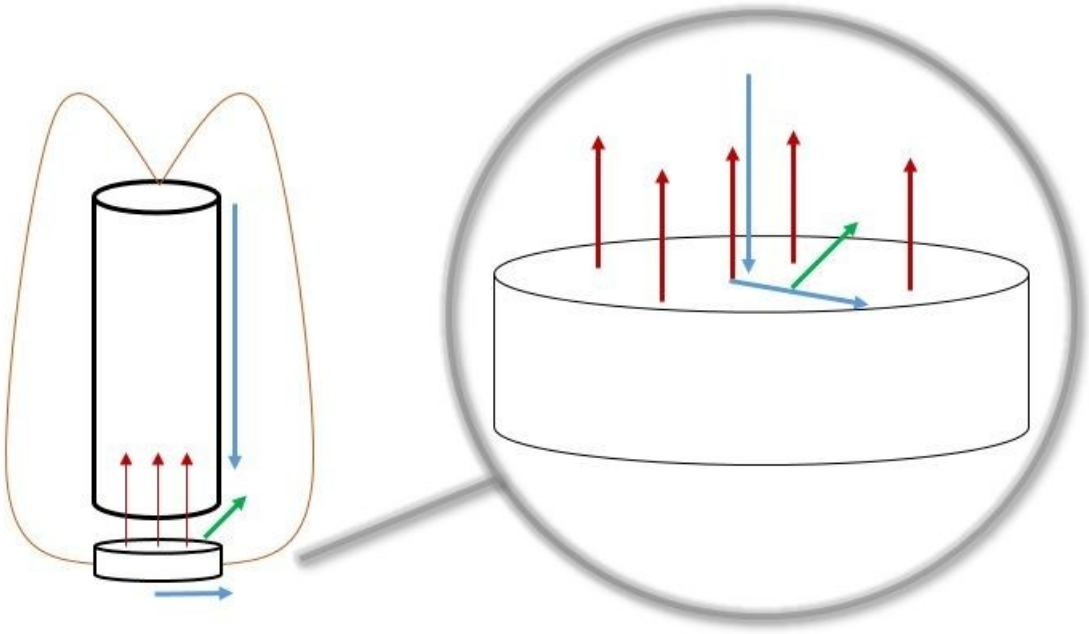


The wire will begin to spin. This is all because of electromagnetism.

Speaking of which...

Let's talk STEAM

What exactly is electromagnatism? There is a force called the Lorentz Force that is generated when electricity moves through a magnetic field. The copper wire we used conducts electricity from one end of the battery to the other, which creates the force that causes the motor to spin.



Tips and Pointers

The battery might burn out quickly once the motor gets going. If this happens, replace the battery.

Don’t wrap the wire too tightly around the magnets or else the wire won’t be able to spin freely.

If the motor isn’t working properly, try turning the magnets upside down.

Refer back to the safety guidelines as needed.

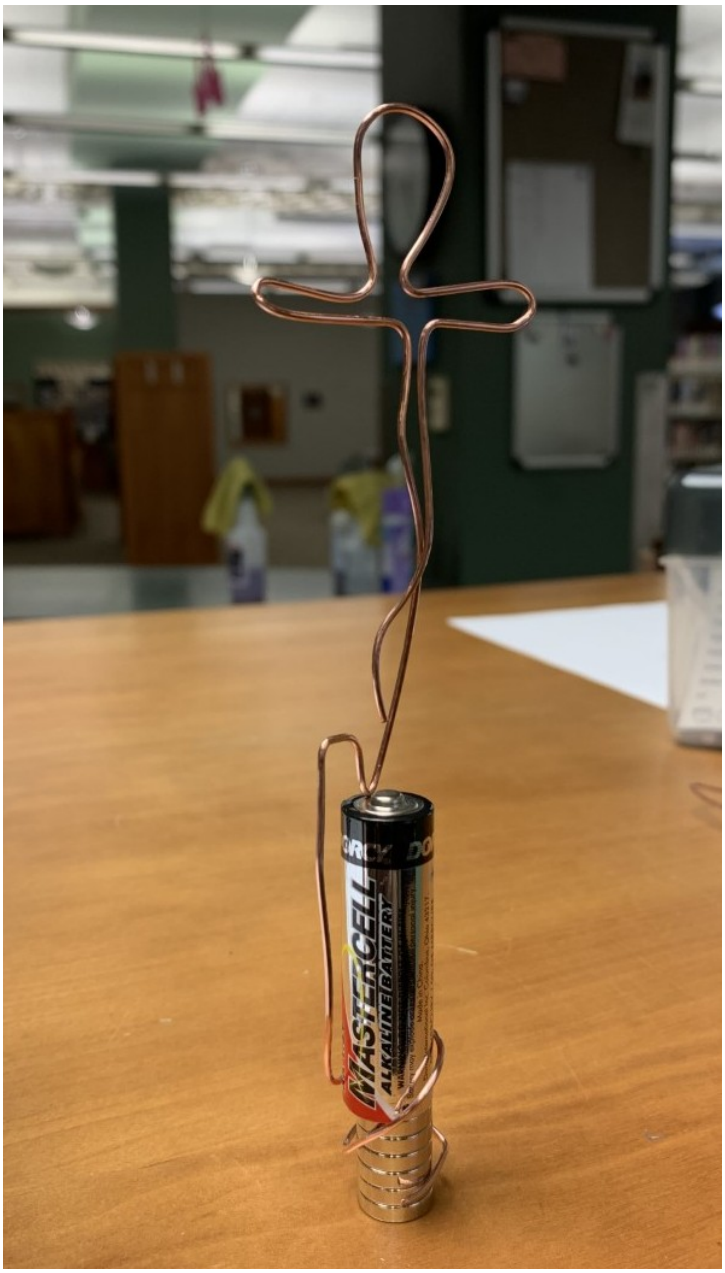
Another thing…

If the wire motor is too asymmetrical, it won't be able to balance atop the battery. Though it does not have to be perfect, the more symmetrical it is, the better!

This happened to me countless times...

This one was really cool! I hope you enjoy doing these projects as much as I enjoy making them. Be sure to stay up-to-date with all of our virtual events! Be safe, everyone!

Miss Leah



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