Christmas Circuit Spinner

SCIENCE ALIVE

Predict:

Get ready to bring a little Christmas magic to life with electricity!

But first, lets make some predictions!

1. Which way do you think your copper creation will spin — clockwise or anticlockwise?
2. What do you think makes it move?
3. What role might the magnets play in making it spin?

What you will need:

- AA battery
- Small, circular magnets (strong ones like neodymium work best)
- Copper wire (about 30cm)
- Wire cutter
- Lightweight paper
- Cellotape
- Scissors

Instructions:

1. Place the magnets on the flat end of the battery (the negative end).
2. Cut a 30 cm length of copper wire ans bend it using the shape on the next page as a guide.
3. On a piece of lightweight paper, draw and cut out a small Christmas decoration.
4. Rest the top point of your wire structure on the positive end of the battery. Then gently adjust the wire so it lightly touches the sides of the magnets. Keep adjusting the wire until it can balance and rotate freely.
5. Once your wire can spin freely, tape your Christmas decoration to the top of your wire structure.
6. If everything is balanced and touching in the right places, your copper creation should start to spin on its own, powered by electromagnetism!

Make sure an adult is actively supervising during this activity — small magnets are exciting, but they can also be a choking hazard.

Extra for Experts!

- Try bending the copper into different shapes — coils, loops, or zig-zags — to see which spins best.
- Experiment by using more or fewer magnets, or flip the magnets. How does that change the speed or direction of movement?

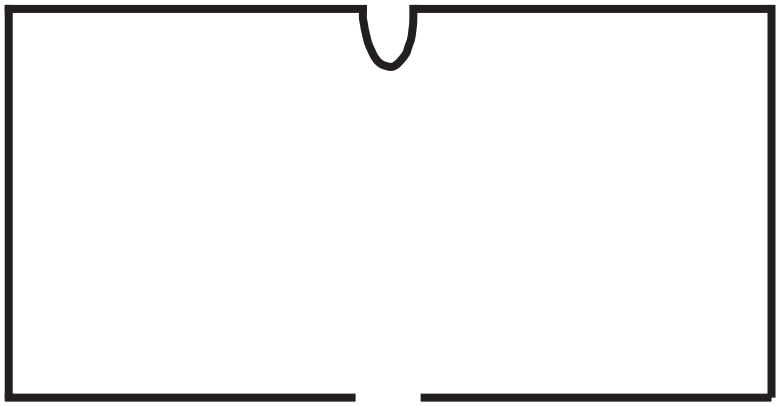
Reflect:

- Where else in real life do you think motors like this might be used?
- What might happen if the wire didn't touch the magnets properly?

How does it work?

A battery is full of power, tiny charged particles with energy to give! Some materials, like the copper wire used in this experiment, are really good at carrying this power from the battery.

The magnets create a magnetic field at the base of the battery, so when the power flows through the copper wire and enters this area it creates a small electro-magnetic force - which pushes sideways on the wire and makes it spin.



Take your 30cm piece of wire and bend it into the shape above.