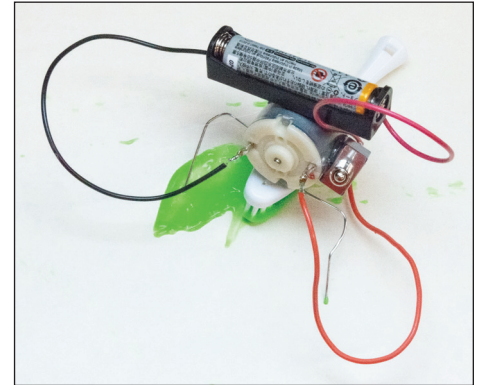




Brushbots

What is a brushbot?

A brushbot is a small mechanism made to paint and amuse. It is composed of a simple circuit, containing a battery, switch, and motor. You can dip it in any color, and watch it run around the page, creating a beautiful masterpiece!

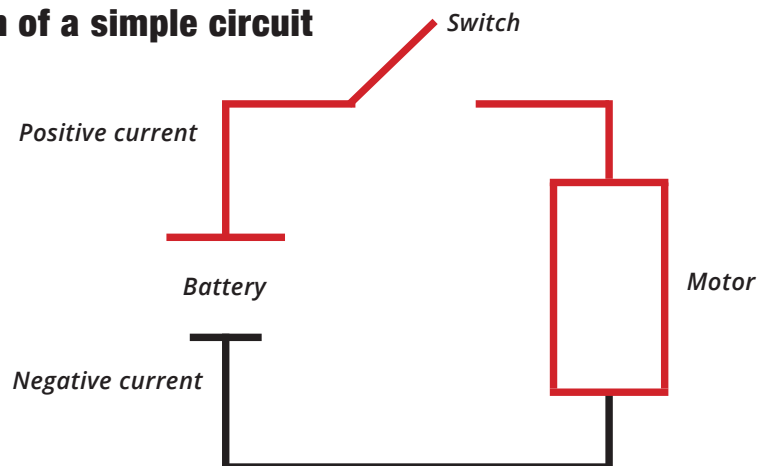


How a brushbot works

An electrical circuit consists of a power source (battery) connected by wires to one or more elements such as switches, motors, resistors, lightbulbs, etc. When the switch is closed, electrons flow out of the negative end of the battery, through the switch, through wire coils inside the motor, and back into the positive end of the battery. The motor turns because the electrical current creates a magnetic field, which interacts with a permanent magnet that is also part of the motor. The motor vibrates instead of turning smoothly because of a small off-center mass attached to its shaft. When the switch is opened, current cannot flow and the motor stops turning.

The paper clips are used to stabilize the brushbot and keep it upright, so that it can paint without hinderance! Changing the angles of the paperclips makes the brushbot move in different patterns.

Diagram of a simple circuit



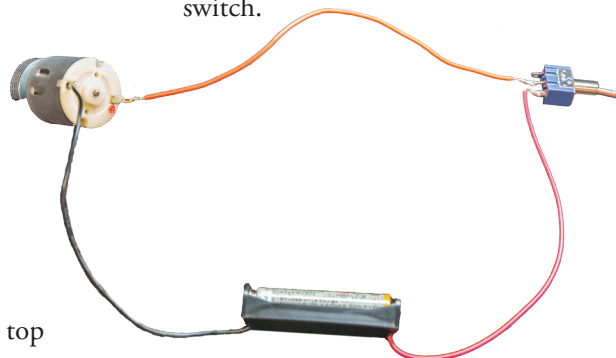
How to make a brushbot

Materials

- Paperclips
- Toothbrush head
- Toothbrush motor
- AA or AAA battery holder
- AA or AAA battery
- 2- or 3-prong switch
- 22-28 AWG spare wire
- Wire strippers
- Hot glue gun
- Hot glue
- 60-40 solder (optional)
- Soldering iron (optional)

Steps

1. Strip the wire from the negative end of battery holder and attach to one pin of the motor.
2. Strip both ends of a piece of scrap wire and attach one end to the other pin of the motor and the other end to one pin of the switch.
3. Strip the wire from the positive end of the battery holder and attach to the other pin of the switch.
4. Bend paperclip and glue it onto the toothbrush head.
5. Glue switch onto the other side of the toothbrush motor.
6. Glue the toothbrush motor on top of the toothbrush head.
7. Glue battery holder on the side of the toothbrush motor.

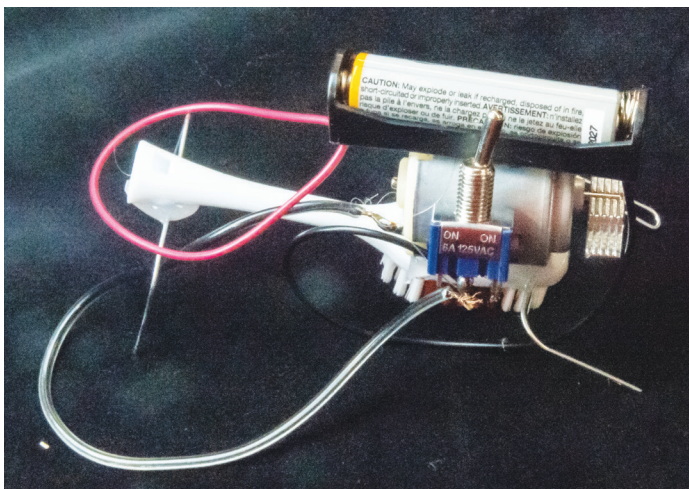


Product of steps 1, 2, and 3

Tips and Tricks!

- Separate wires and twist together after to get good connection
- Solder the wires together (optional, but highly recommended. Use 60-40)

Results—Give ‘em a name, dip in paint, and watch ‘em skitter!



Finished product



Brushbot in action