THINGS TO TRY

Scribbling Machines

Inspired by the Modesto Bug

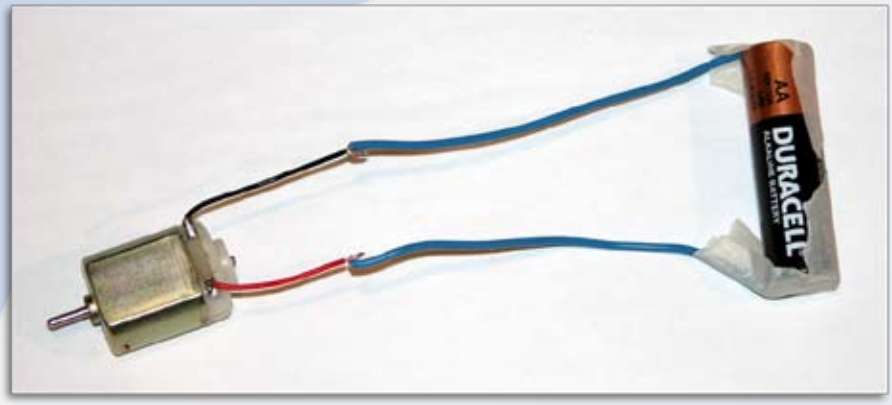
Modesto Tamez, a teacher at the Exploratorium, showed us how to make a bouncing bug using a battery, an offset motor, and scrap art materials.

A Scribbling Machine is a motorized contraption that moves in unusual ways and leaves a mark to trace its path. It's made from simple materials and is based on the idea of motion created by an offset motor.

TRY IT! Collect these things:

Motor (1.5v-3v), battery (AA or AAA), electrical wire, wire stripper masking tape, art scraps (cardboard, milk carton, strawberry basket) hot melt glue stick, markers or pens.

PIE Institute shares a playful and inventive approach to teaching science, art, and technology.

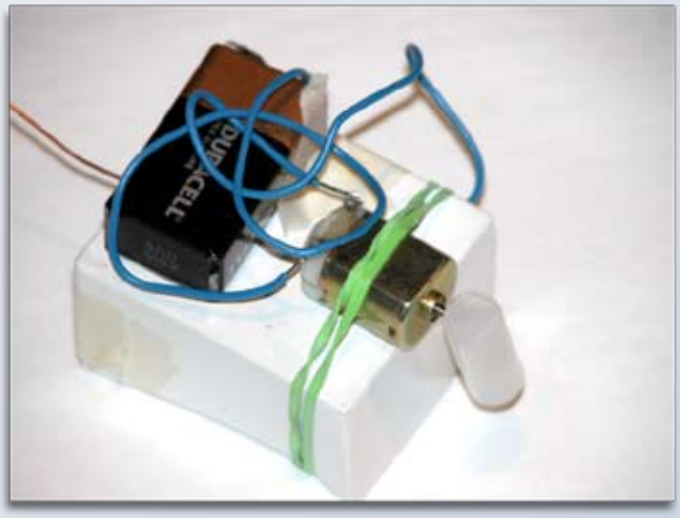


Strip the ends of the electrical wire and connect the motor to the battery using masking tape to secure the wires.

Experiment with ways to offset the motor (try clay, wood, or a hot melt glue stick)

What happens if:

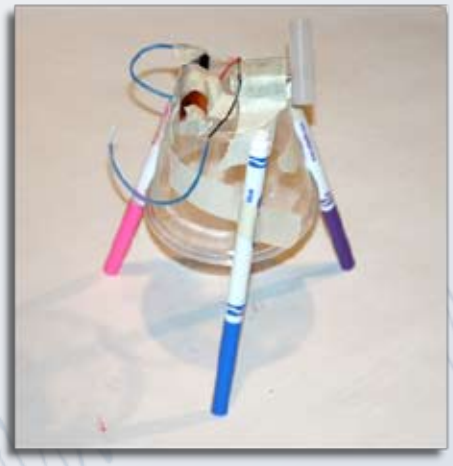
- you change the weight on the offset motor?
- you change the length of the arm on the motor?

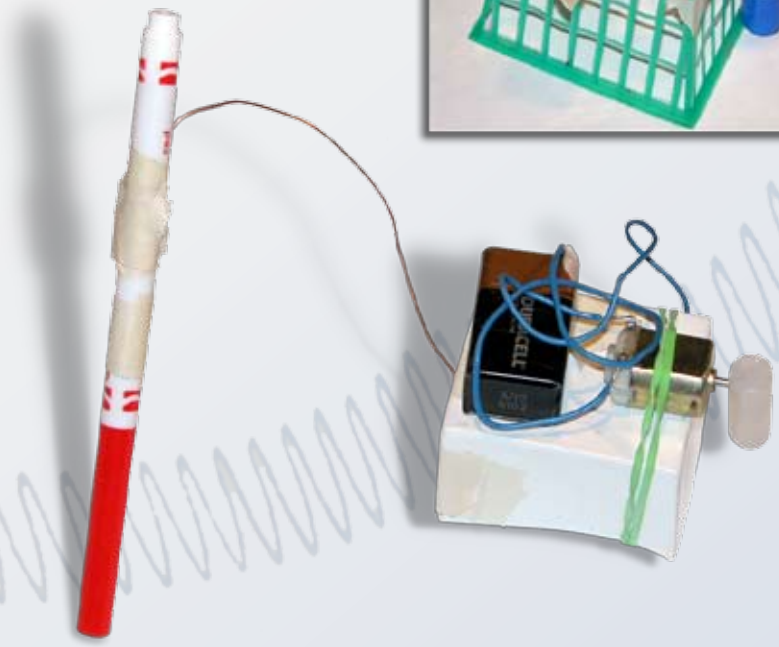


Build a base and attach the offset motor (try foam board, a milk carton, a strawberry basket, or other things.)

Tip: Make sure there is enough clearance for your offset motor to spin.

Attach a marker to trace the jittering movement of your Scribbling Machine.

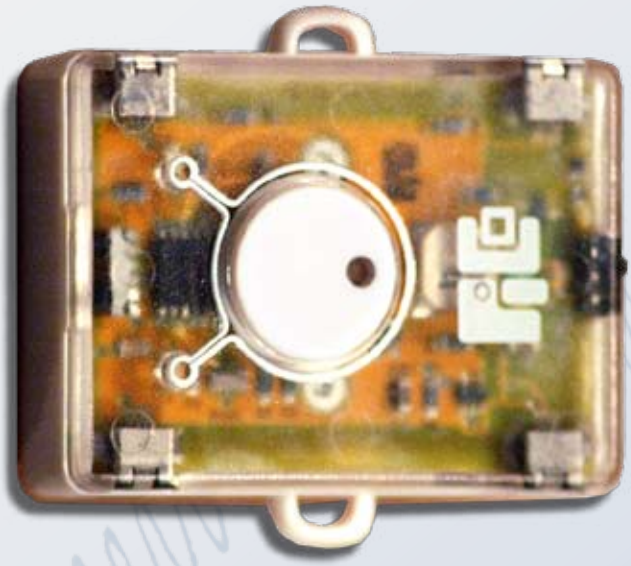




Tip: We like to use a steel wire to attach the pens because it makes them more responsive to the movement. You can experiment with your own designs.

Let it go! Make some scribbles.

TAKING IT FURTHER



Use a PicoCricket (www.picocricket.com) to make your Scribbling Machine more intelligent.

Try adding: A touch switch to turn your machine on and off.

A light sensor to respond to the sun, a flashlight, or shadows.

A sound sensor to make a drawing when you clap your hands or sneeze.

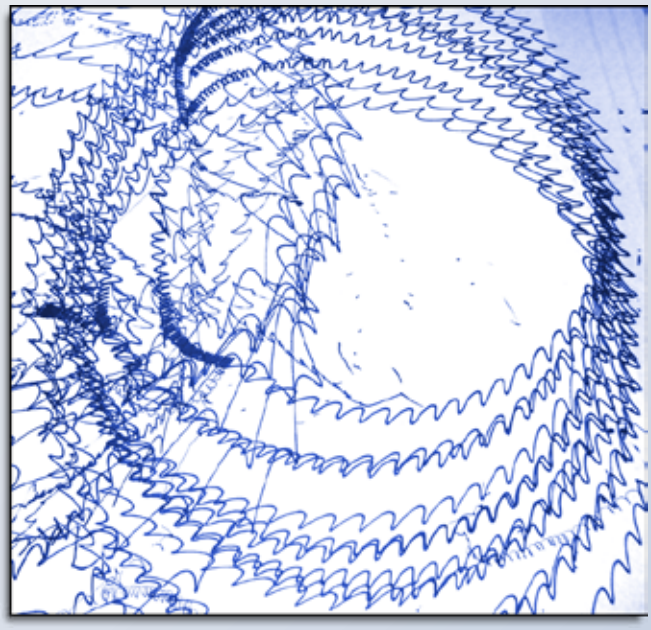
WHY IS THIS A PLAYFUL AND INVENTIVE EXPLORATION?

New use for the everyday object

This is a playful and inventive way of using harvested motors and switches from discarded toys and electronics.

Exploring variables

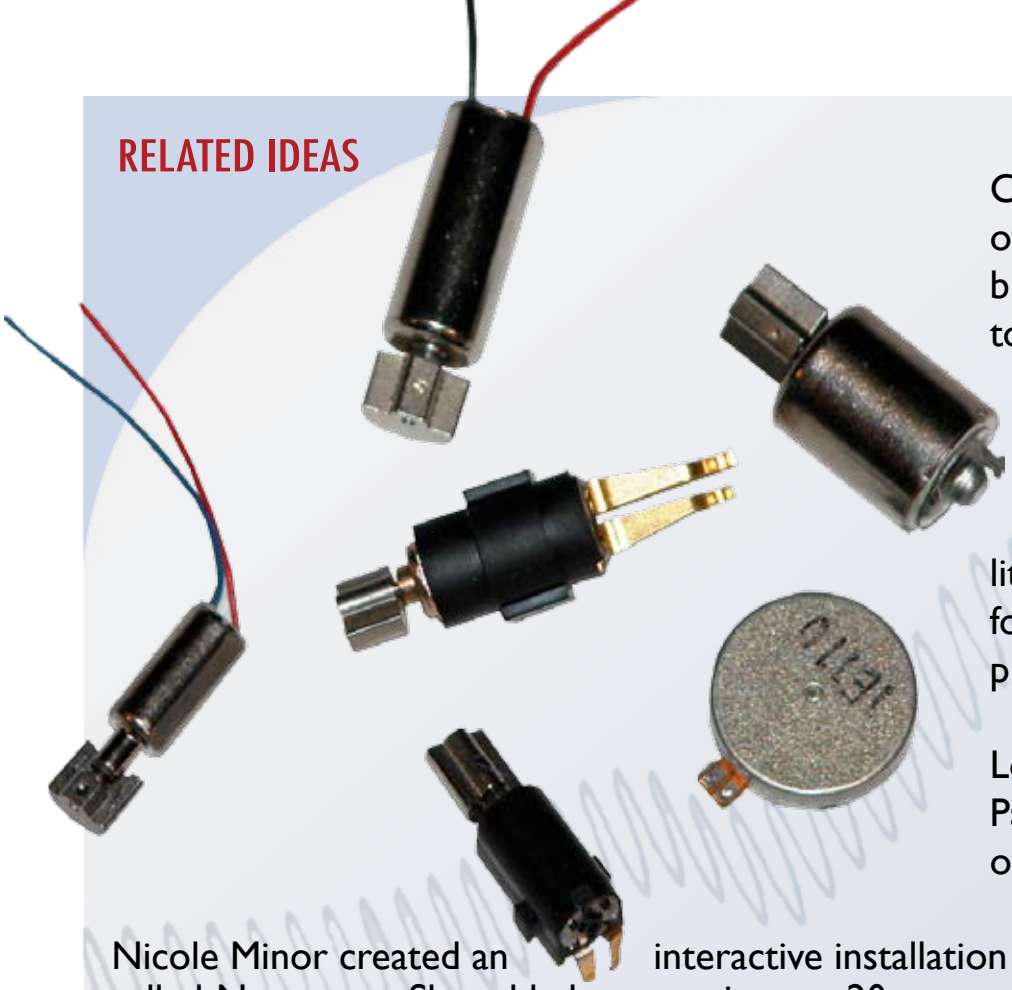
Although everyone is exploring similar ideas (eccentric motion and circuits), the outcomes vary widely because everyone is investigating differentmethods for changing the variables (the length and weight of the eccentric motors, methods of drawing, materials used for the base, the speed of the motors etc.).



High tech/Low tech

This exploration is a good example of a low-tech activity that works well on its own, but can be made more complex and interactive utilizing the PicoCricket and sensors.

RELATED IDEAS



Cell phones and pagers use offset motors when they vibrate. You can harvest a motor from a discarded phone or pager, then connect it to a battery the same way you did for your Scribbling Machine. These little motors could be used for all kinds of interesting projects.

Look for the Pager Motor Inspiration on the PIE website.

Nicole Minor created an interactive installation at the Exploratorium called Nocturnus. She added paper wings to 20 pager motors, then connected them to light sensors so they would flutter or buzz when the random light from a film was projected on them.

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