

Simple Machine: Dual Motion

Supplies Needed:

1 Box
1 green wire
2 pipe cleaners
1 Bead
Colored Tape
Ruler
Pencil
Push pin
Paper
Markers
Glue

Steps:

1. Open and fold the box into shape.



2. Alongside the lid of the built box are two flaps. Cut off both flaps.



3. Taking a ruler, measure the width of the narrow (smaller) side of the box. Mark the center.



4. With the ruler, measure the height of the narrow (smaller) side of the box. Mark the center.

5. Find where the two marks intersect; this marks the center of the side of the box. Mark it.

6. Over the center mark, carefully make a hole with a push pin.



7. After making a hole with a push pin, widen that hole by using the point of a pencil.

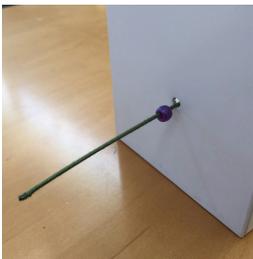


8. Repeat steps #3-7 with the opposite side of the box (the other narrow [small] side).

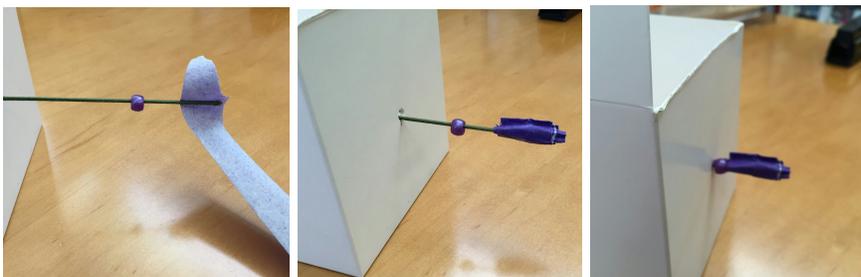
9. Take the green wire and push it through one hole and out of the other hole.



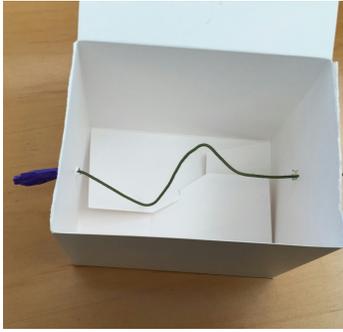
10. Choose one end of the wire. On the end of the wire, slide a bead onto the wire.



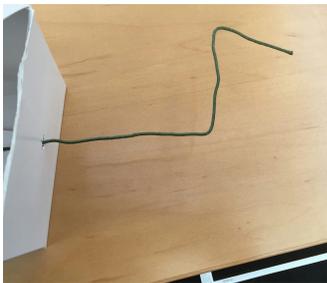
11. Between the end of the wire and the bead, wrap a piece of tape repeatedly over the wire. Make sure to cover the end of the wire. The tape should be wrapped thick enough so that the bead is trapped between the box and the layers of tape.



12. Take the portion of the green wire that is inside the box, and bend it into a sideways Z shape. Make sure that the angles of the Z are deep.



13. Take the remaining portion of wire that is sticking out of the box (the one not covered in tape and marked with a bead), and bend it into the shape of a crank handle, which looks a bit like an “L” shape.



14. Cover the end of the wire handle with tape.



15. On the lid of the box, mark a spot that is 1 ½ inch away from the edge of the short side of the box and 2 ¼ inch away from the edge of the long side of the box.



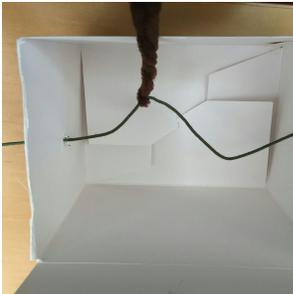
16. Over the new mark, carefully make a hole with a push pin.
17. After making a hole with a push pin, widen that hole by using the point of a pencil.
18. Repeat steps #15-18 with the opposite end of the box, where the other side hole is.

19. Take one pipe cleaner, and bend it in half.

20. Open the box, and slip the pipe cleaner around one of the Z shape's peaks. The corner of the peak should rest between where the two sides of the folded pipe cleaner meet.



21. Making sure that the pipe cleaner is wrapped around the green wire, twist the two edges of the pipe cleaner together and up.



22. Repeat steps #20-22 for the other pipe cleaner and the remaining Z shape's peak.

23. Once both pipe cleaners are twisted and pointing up, take one twisted pipe cleaner and push it through one hole in the lid.



24. Repeat step #24 for the remaining pipe cleaner.

25. Once both pipe cleaners are poking through the lid, close the lid. You should have two pipe cleaners sticking out of the top.



26. Turn the handle. Do both of the pipe cleaners move up and down? If a pipe cleaner doesn't move, open the lid, and adjust the placement of the pipe cleaner on the Z. If a pipe cleaner doesn't move smoothly

through the holes in the lid, you might need to widen the holes in the lid further with a pencil. Adjust the pipe cleaners until they move smoothly up and down.

27. Using paper, markers, and glue, design two items to decorate the top of the pipe cleaners. Some examples include ships sailing, people running, rabbits jumping. Glue the two items to the pipe cleaners when finished.

28. Using paper, markers and glue, decorate the box.



29. Turn the handle and watch your creation move!