Activity Guide

Electric Air Suspension Ball

Topic: Maker **Level:** Intermediate **Duration:** 120 mins **Age Range:** 12+

ACTIVITY DESCRIPTION

The foam ball can be suspended in the air by using Bernoulli's principle, that is, the pressure exerted by the plane where the flowing air is at right angles to its direction of movement. The air blower makes the air pressure around the foam ball less than the top air pressure, because the top air is static.As a result, the atmospheric pressure from the bottom of the sphere suspends the table tennis ball in the air. Even an airplane made of steel, which is much heavier than air, can fly in the air. The air passing over the wing exerts less pressure than under the wing, so the air pressure under the wing provides buoyancy for the airplane to make it fly up!

LEARNING OUTCOMES

Young People Will:

- ➔ Research the flow of electricity and report findings back to the group
- ➔ Create test circuits and learn how to adopt a tinkering mindset
- ➔ Create prototype plans and discuss with group for feedback
- ➔ Learn how to customise the visual design of the machine

COMPETENCIES

Young People Will Develop 21st Century Skills:

- ➔ Collaboration
- ➔ Communication
- ➔ Creativity and innovation
- ➔ Critical thinking and problem solving

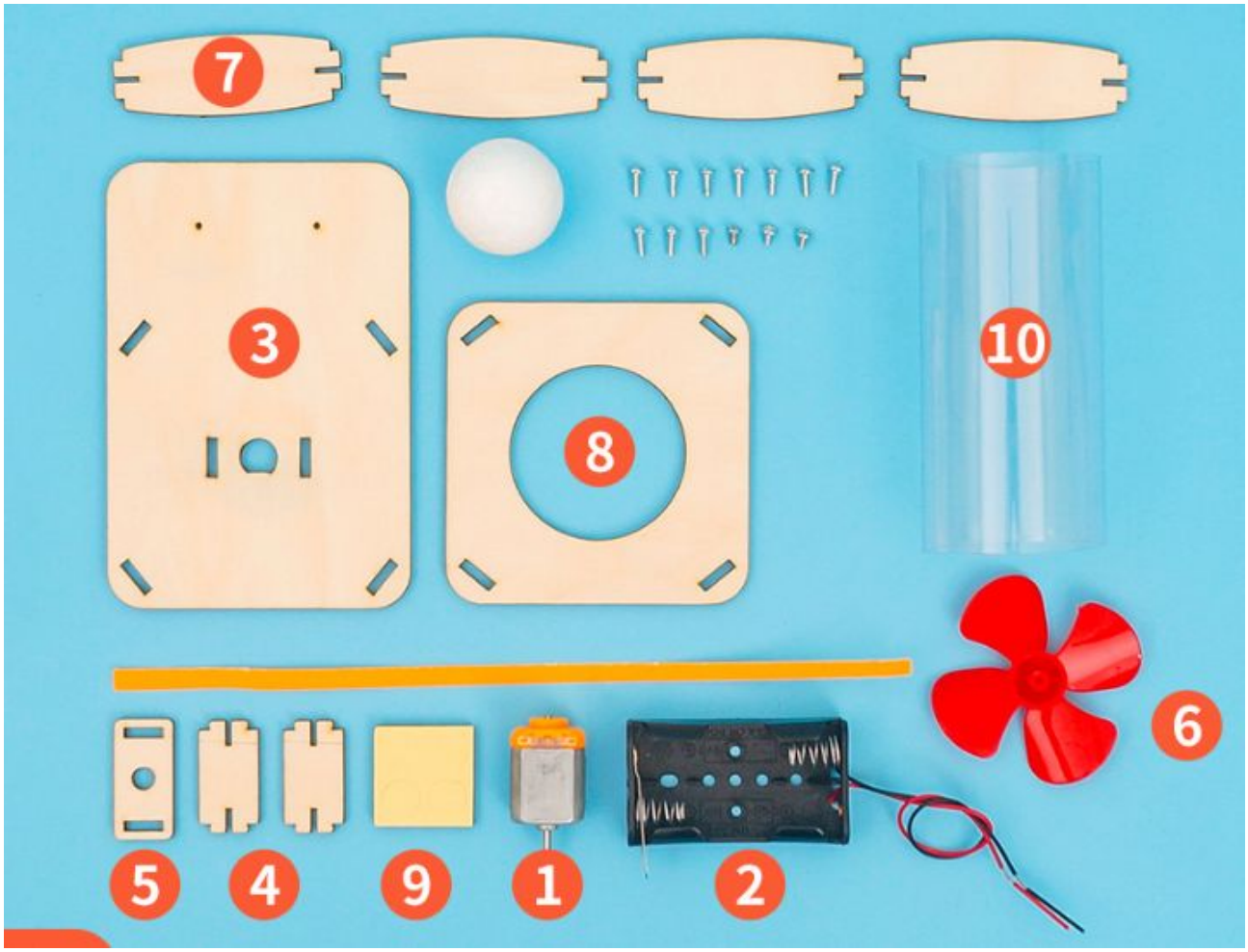
EQUIPMENT

Components

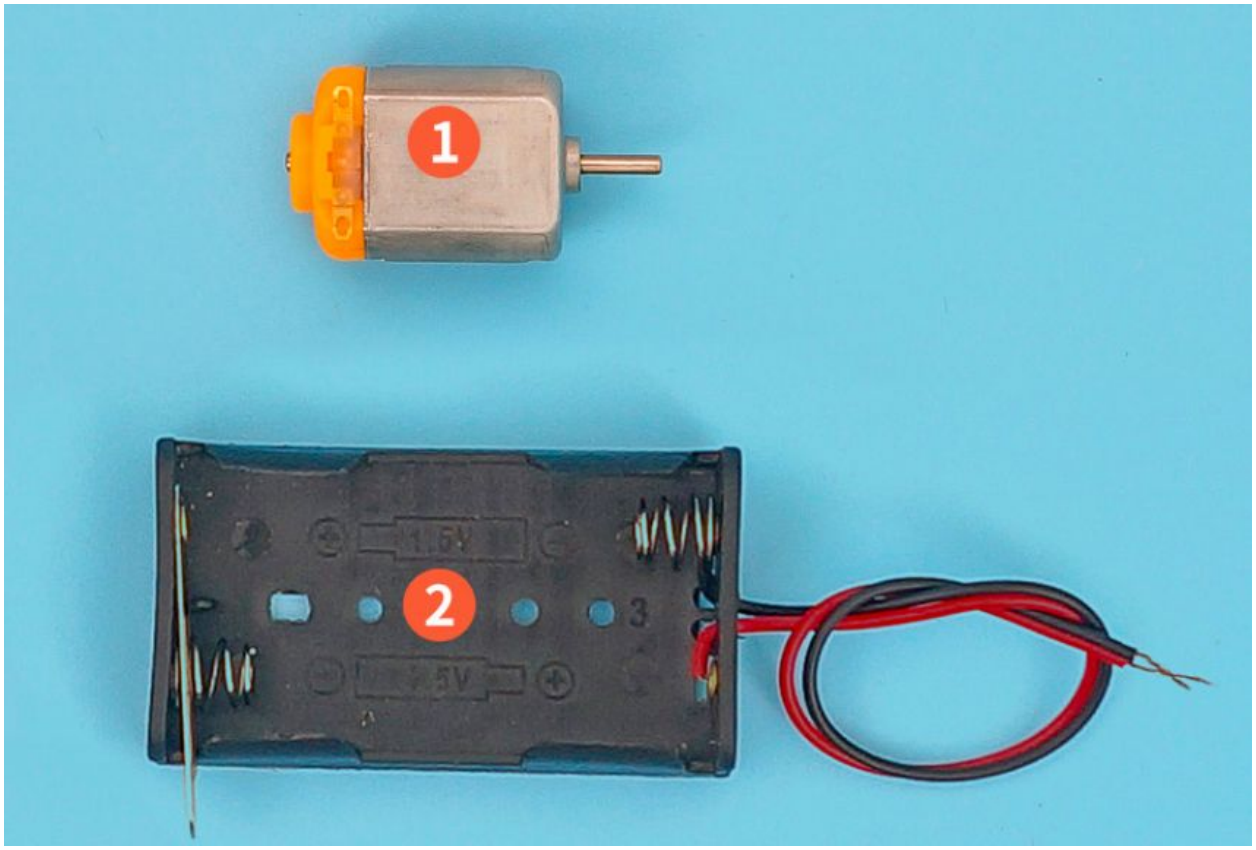
- ➔ All equipment is included in pack

Step-by-Step Instructions

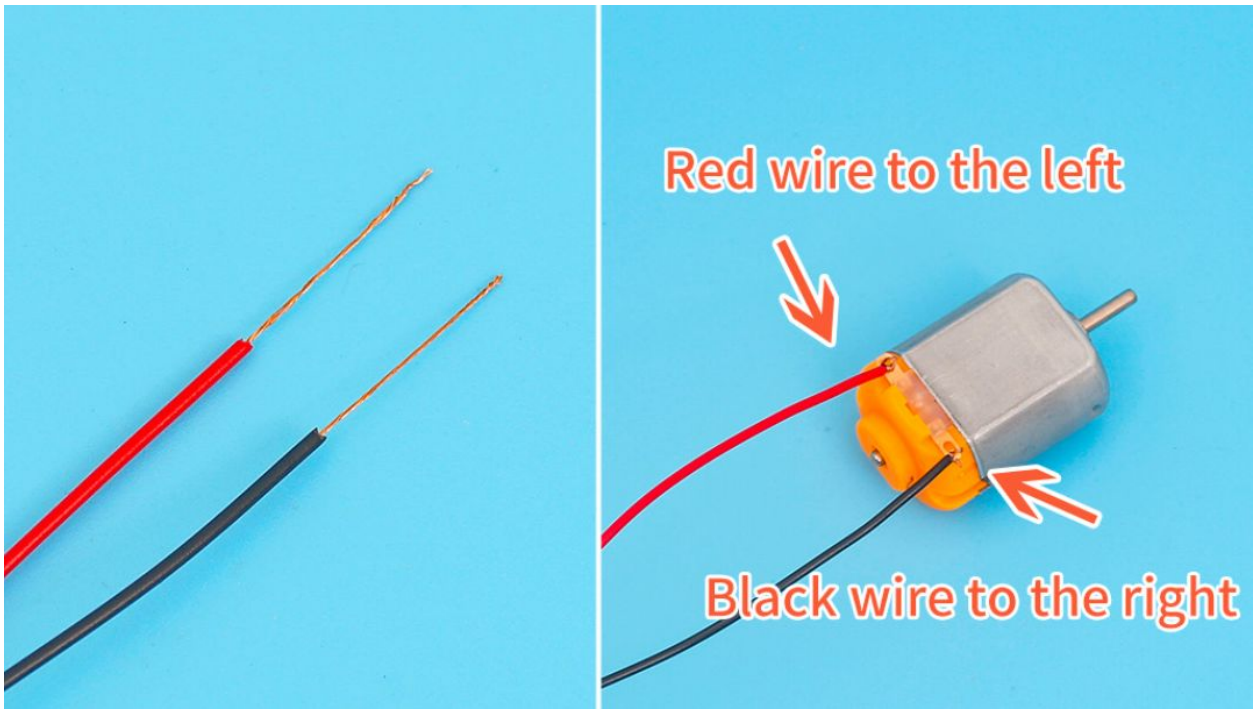
Step 1: Prepare all the assembly materials.



Step 2: Locate the motor No.

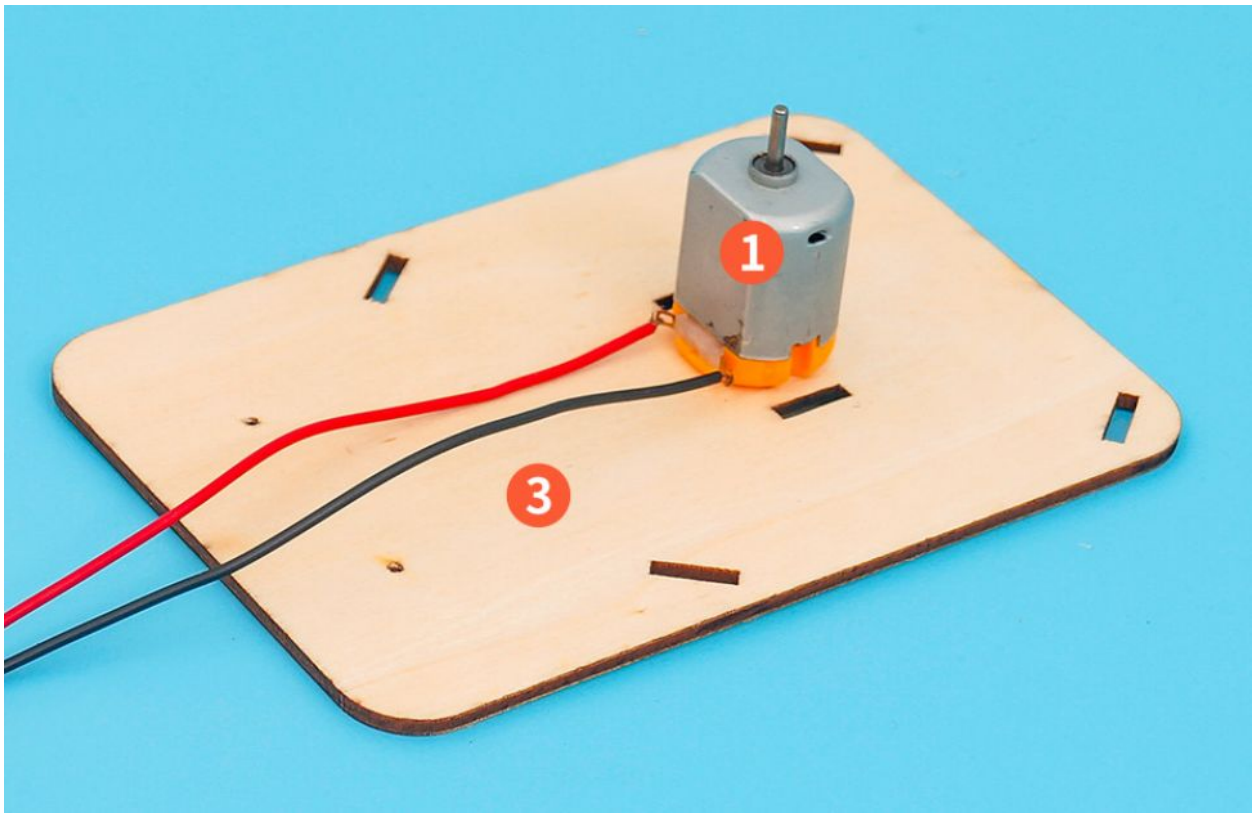


Step 3: Motor Connection



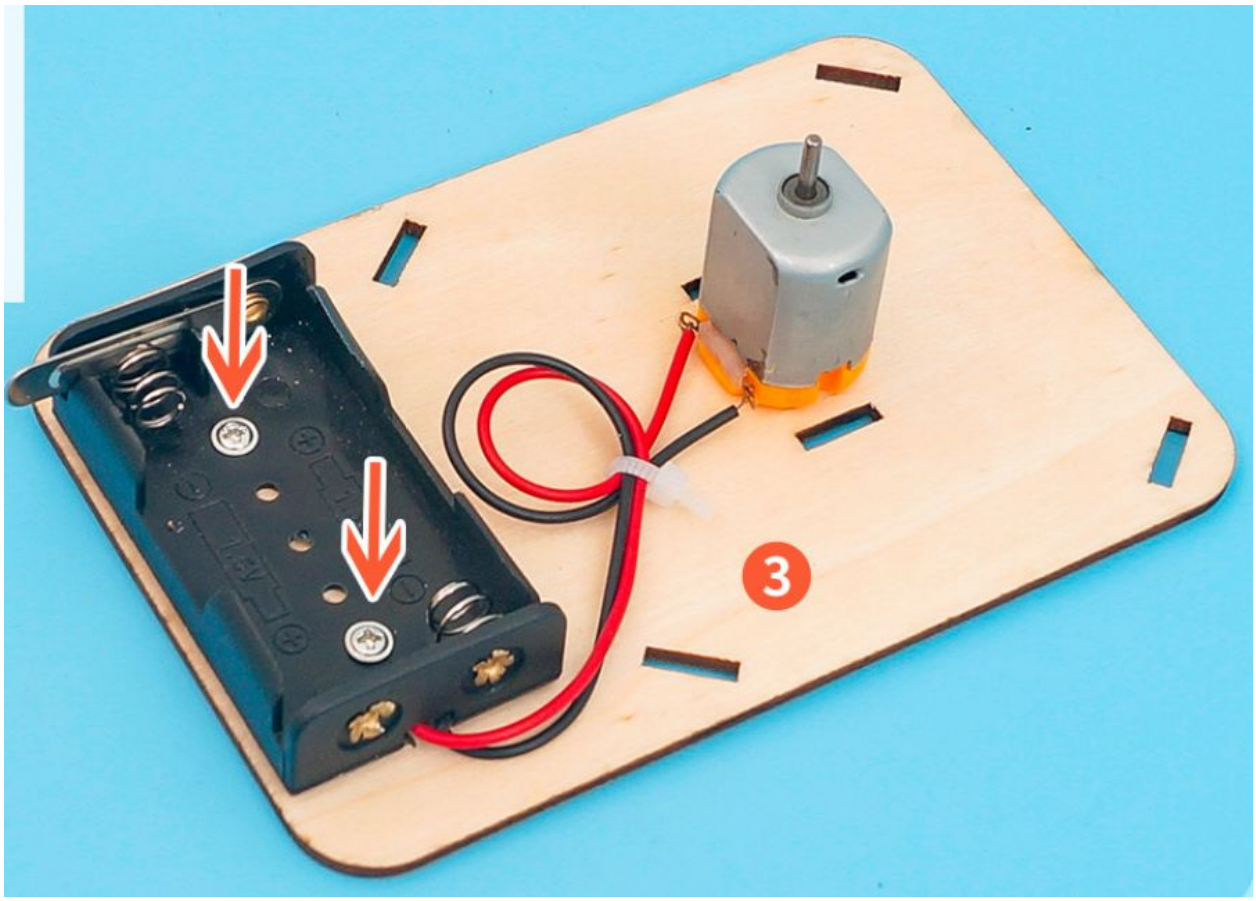
First twist the metal wire core into a spiral shape, then pass the Q Insert the motor @ into the slot of the base plate (3). metal wire core through the small hole of the motor connection copper sheet, and twist it 3-4 turns. Note: The red wire is connected to the copper sheet on the left side of the motor, the black wire is connected to the copper sheet on the right side of the motor, and the excess core is cut off with scissors.

Step 4: Motor setup



Insert the Motor(1) into the slot of the base plate (3)

Step 5: Battery Box Connection

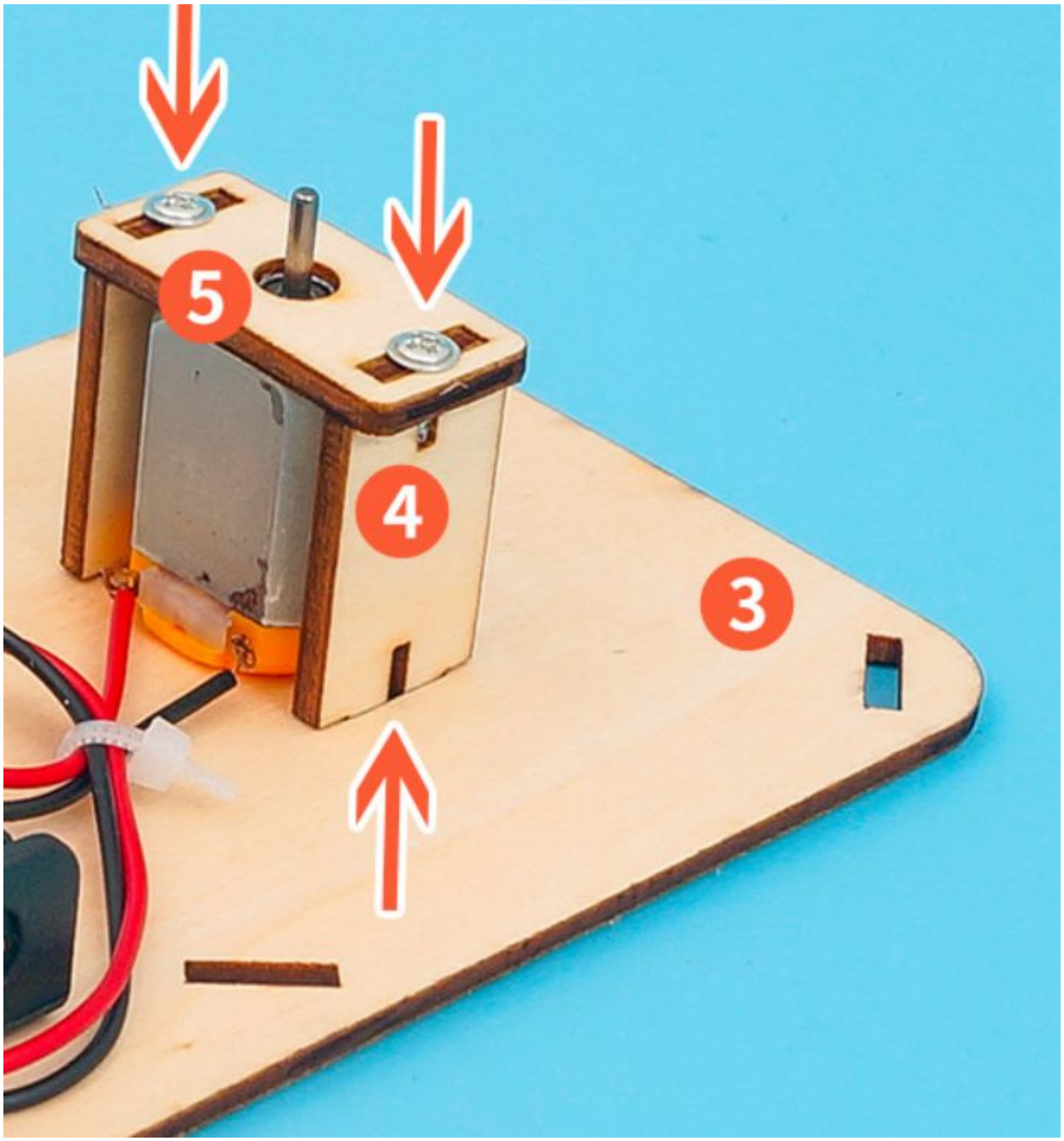


Use 4mm Coarse Screw

Fix the two battery boxes of size (2) on the base plate of size (3) with 4mm screws, tie the wires that grow out with cable ties, and cut off the excess cable ties with scissors.

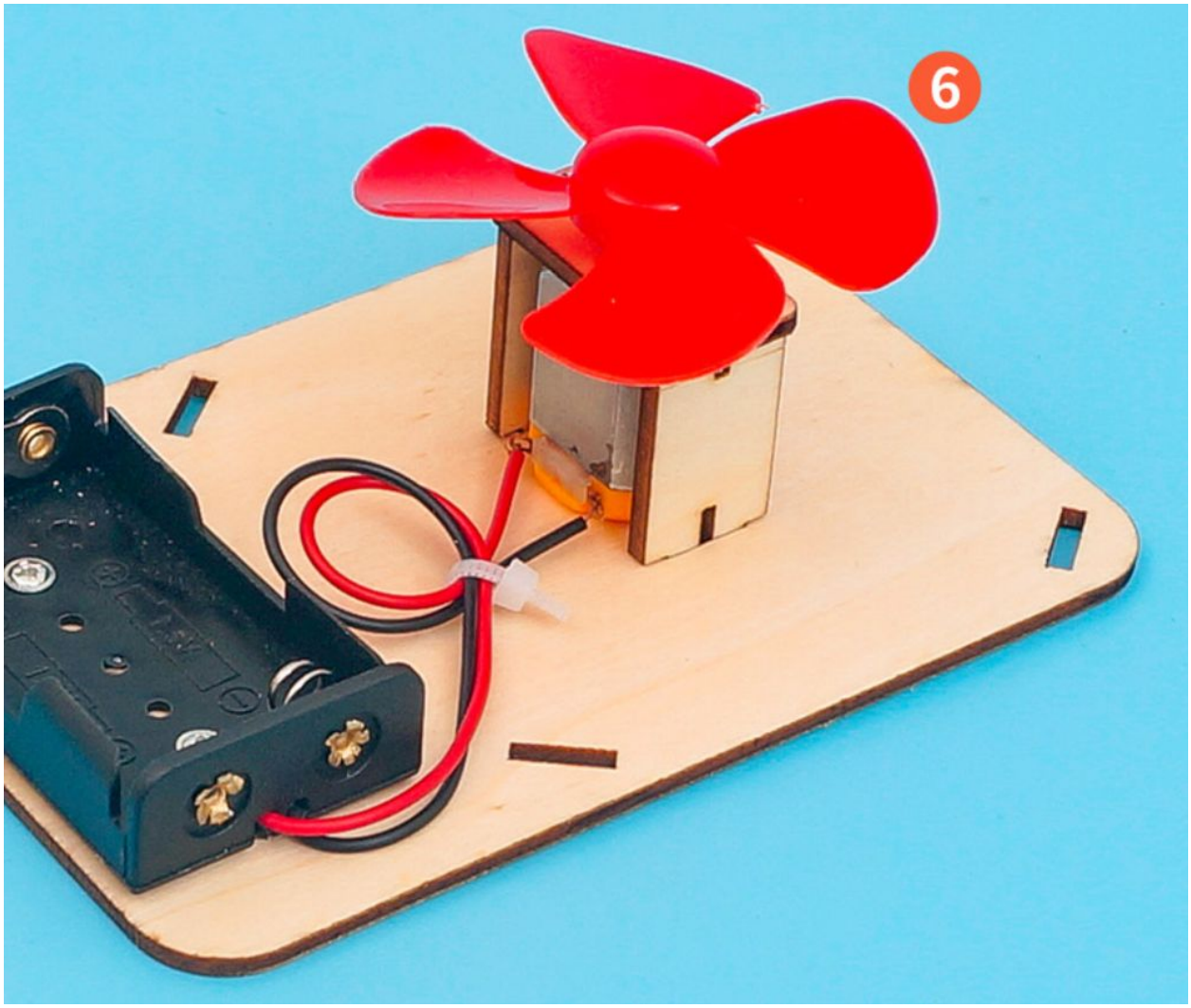
Step 6: Motor Housing

Length 7mm Coarse Thread Screw



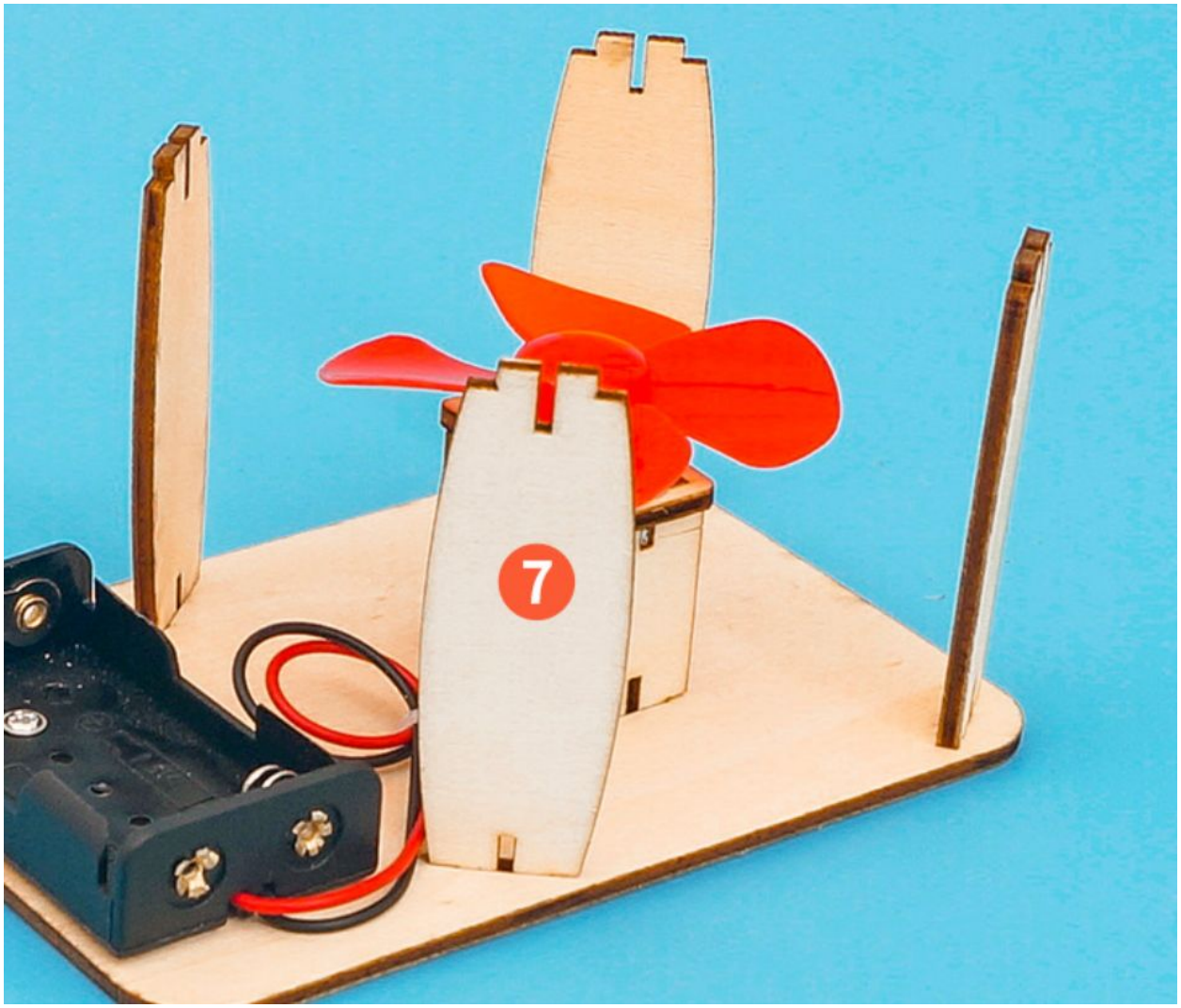
First install the two wooden blocks on the (3) base plate, then install the (5) wooden block on the C4) wooden block, and then fix the upper and lower joints with 7mm screws.

Step 7: Turbine Connection



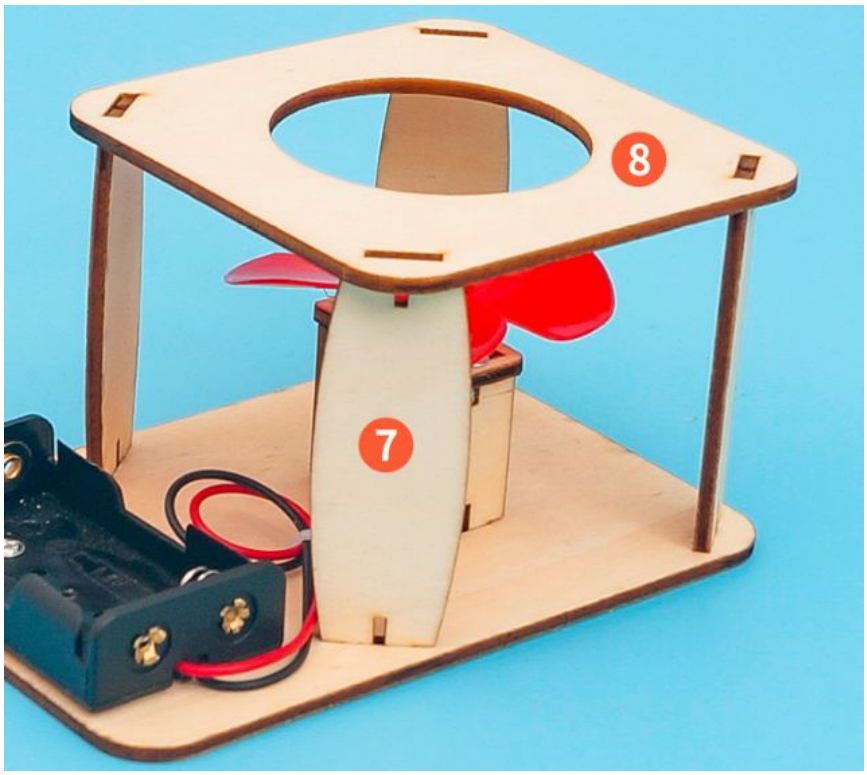
Installs No. (6) red propeller on the shaft of No. (1)motor.

Step 8: Wind Tunnel Pillars



Install the four planks (7) on the base plate (3)

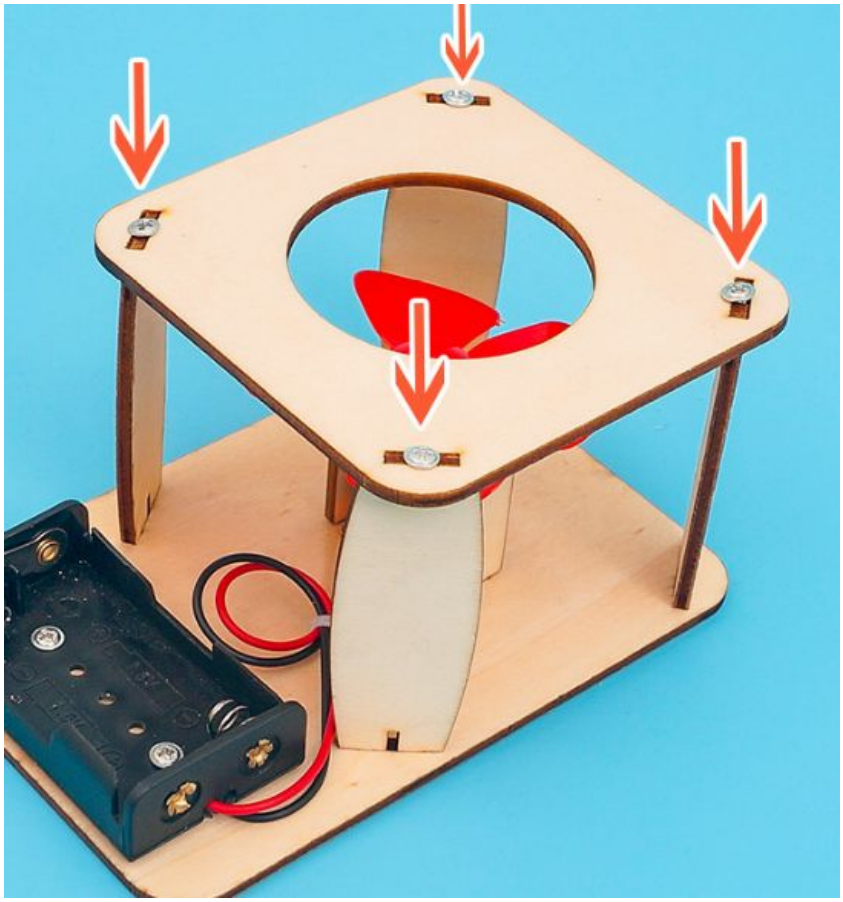
Step 9: Wind Tunnel Platform



Install wood Block (8) on wood block (7)

Step 10: Wind Tunnel Platform (ctnd.)

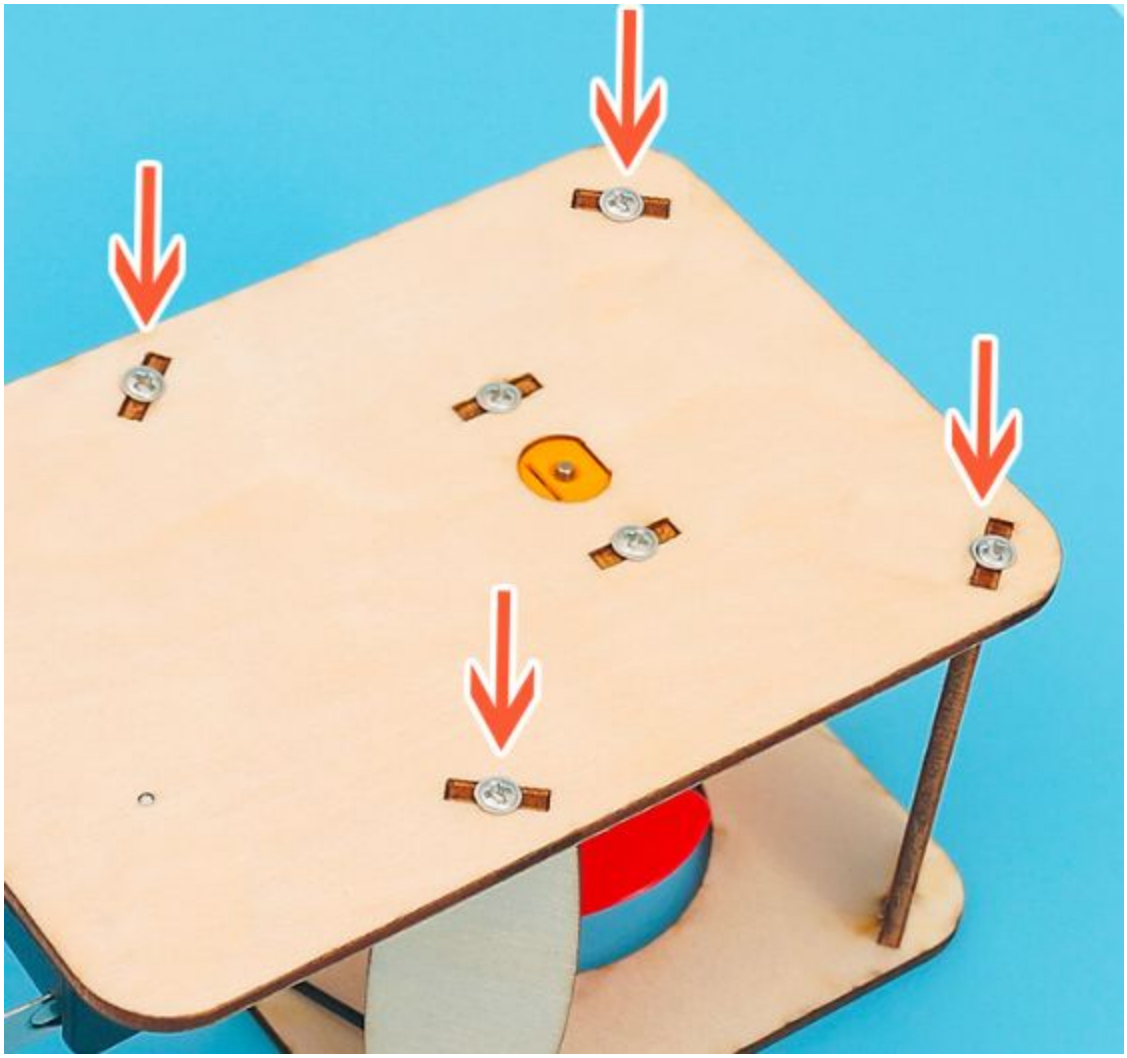
Length 7mm Coarse Screw



Fix the wood with 7mm screws

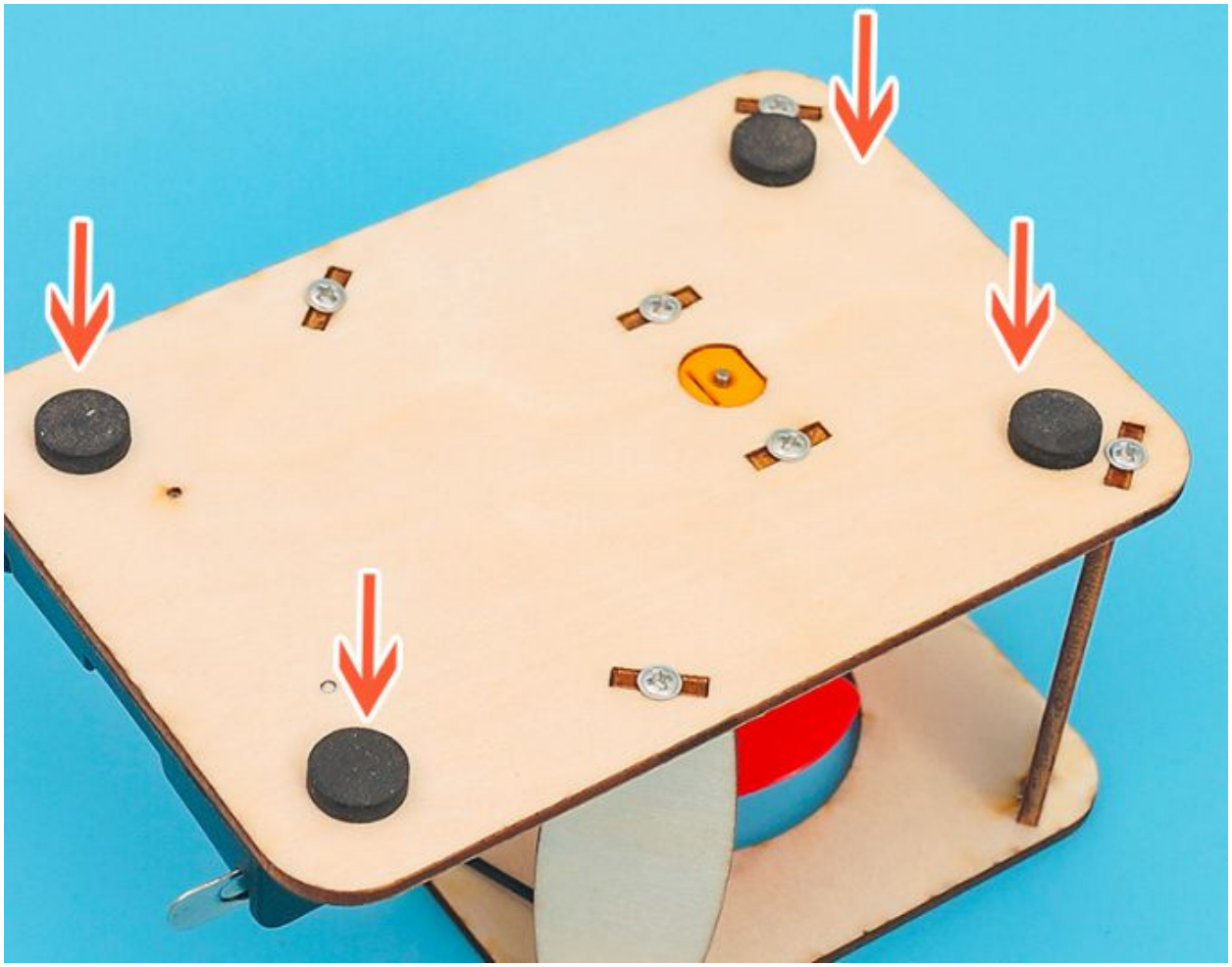
Step 11

Length 7mm Coarse Screw



Turn the model over, and fix the base plate (3) and the wood (8) with 7mm screws

Step 12: Footpads

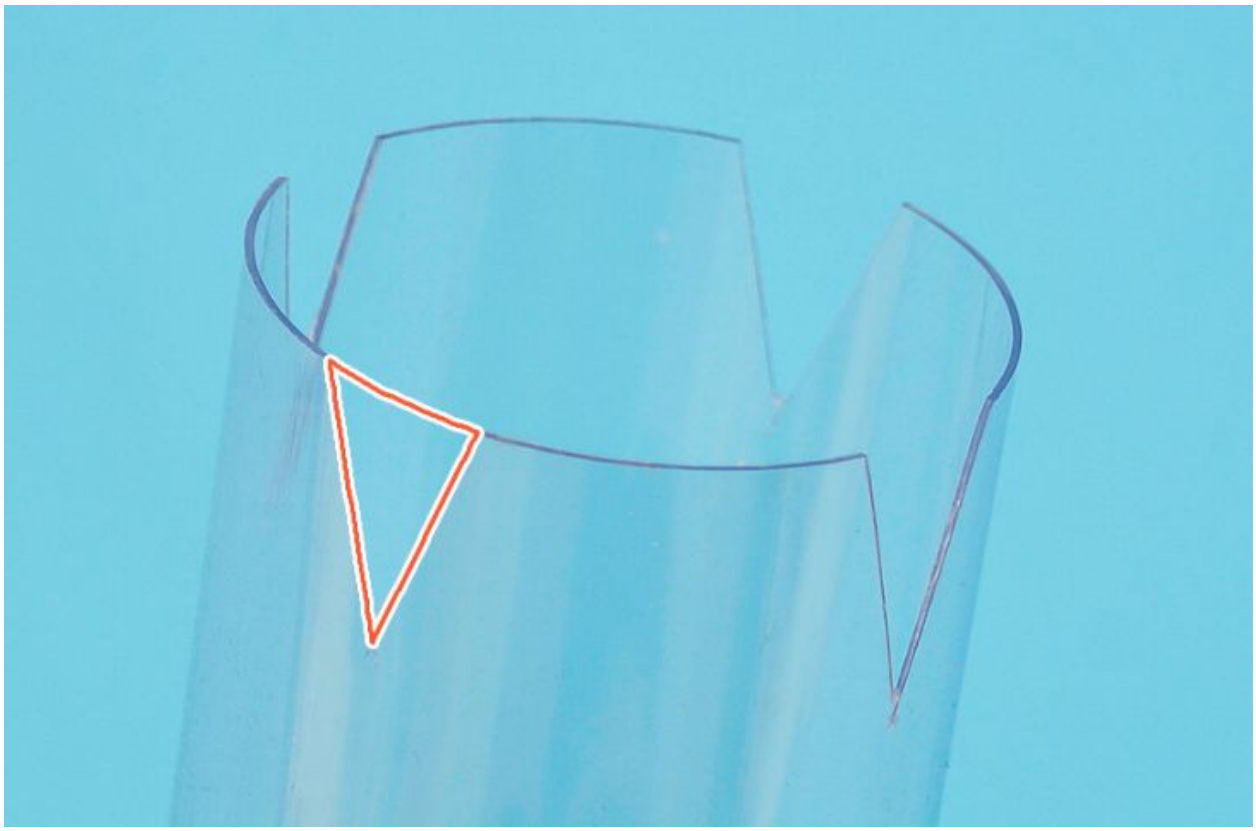


Paste the black footpads No. (9) on the four corners of the base plate

Step 13

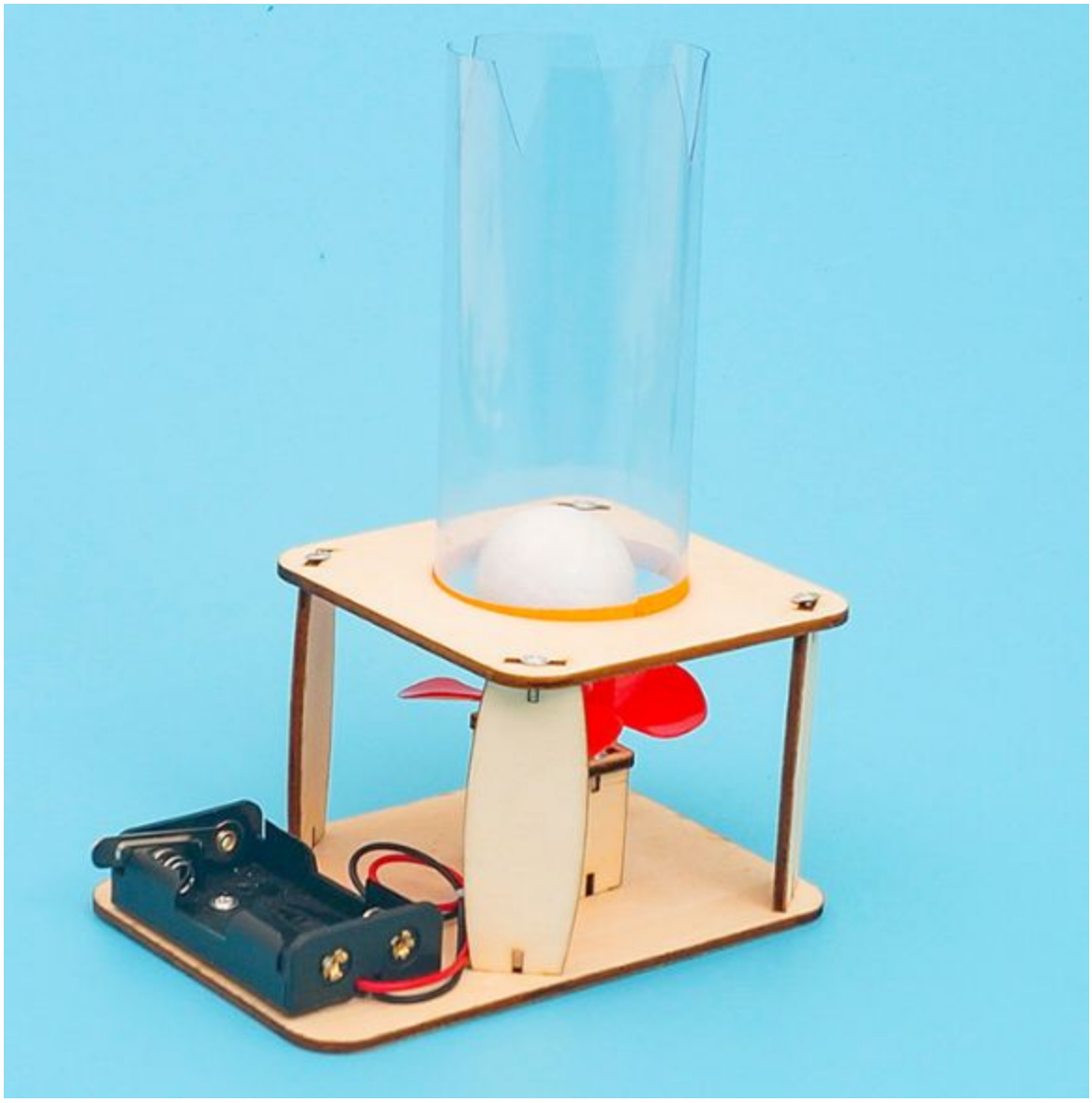
Stick the yellow tape on the bottom of the transparent cylinder No. (10)

Step 14



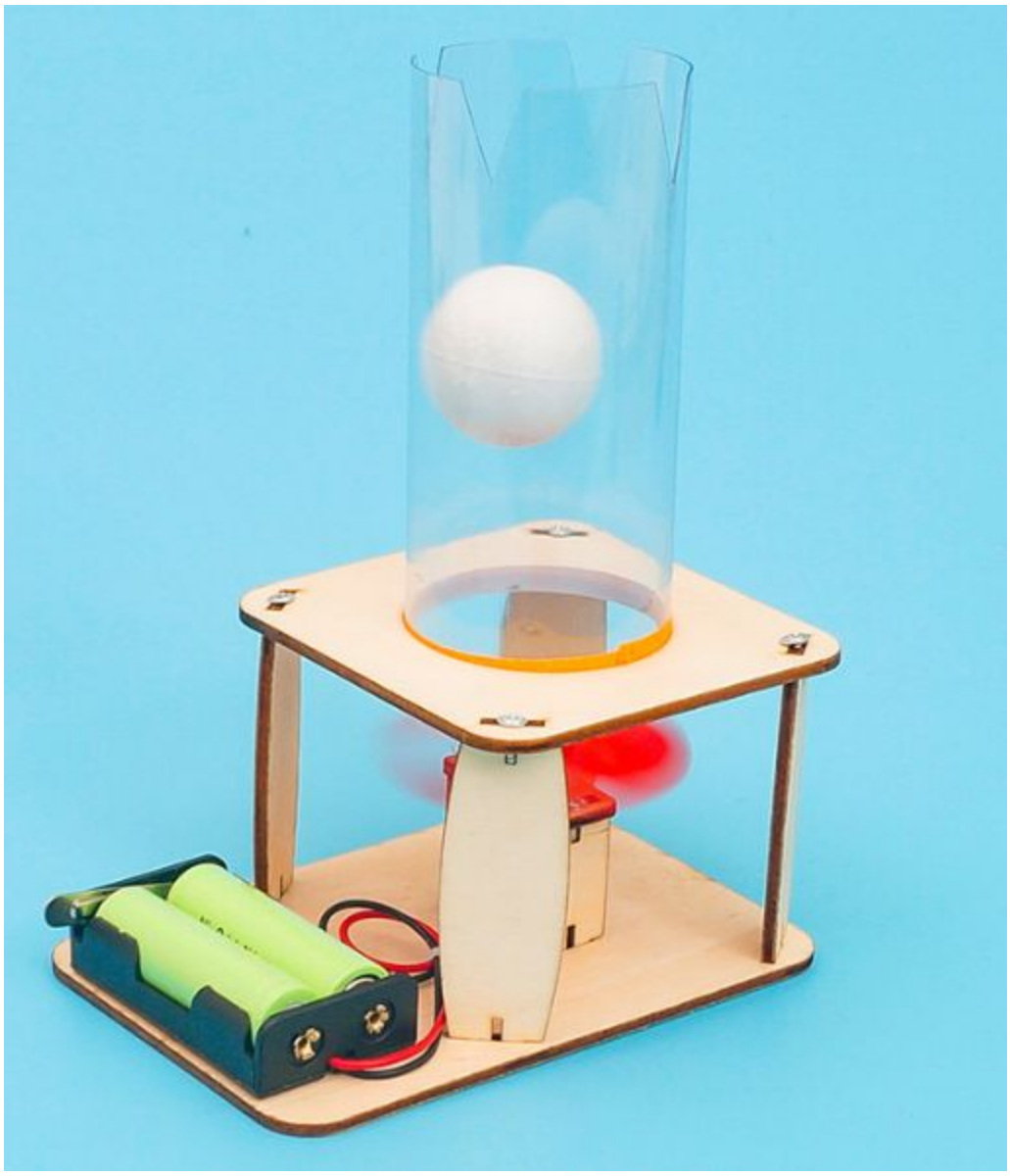
Use scissors to cut the other end of the transparent cylinder (10) into four triangles.

Step 15



Connect one end of the transparent cylinder with yellow tape to the wood block (8) and finally put the foam ball into the cylinder.

Step 16



The electric air suspension ball is finished. After installing the battery and closing the knife switch on the battery box, the foam ball can be suspended.

How to use the battery box knife switch: The knife switch is closed to open and the knife switch is open to close