No.27

Let's Make Simple Electrostatic Motor

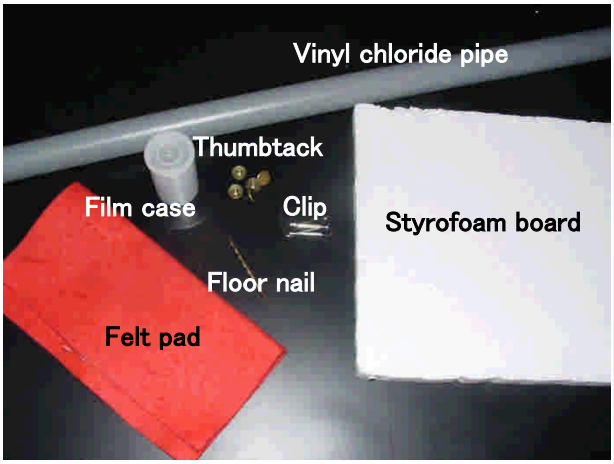
•Let' s make rotating motor using electric charge property.

Point

Two positive charges or two negative charges repel each other.

Materials

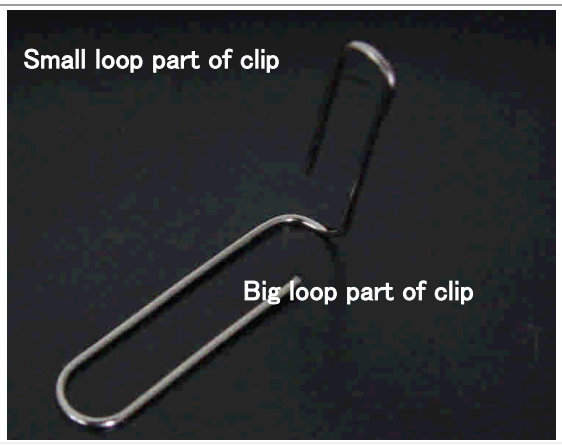
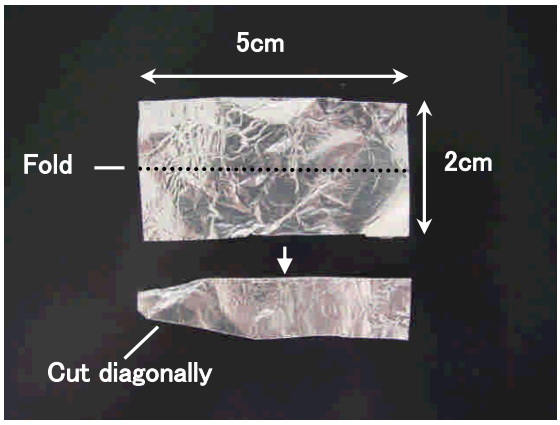
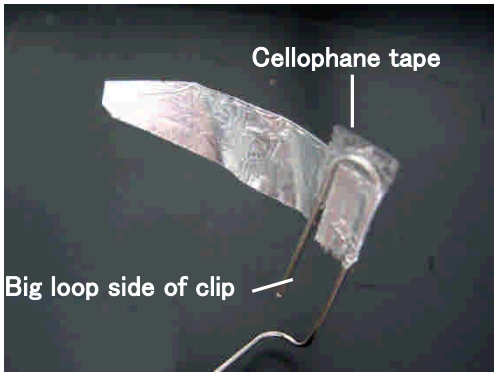
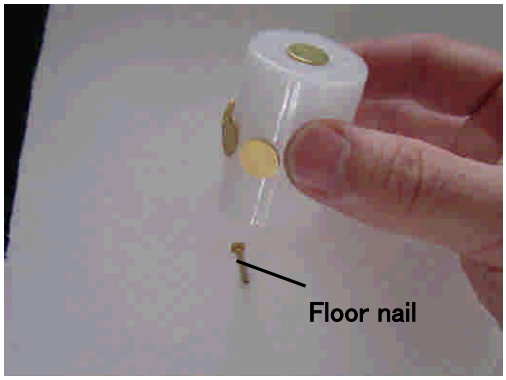
Film case
Thumbtack(nine pieces)
Floor nail
Aluminum foil(5cm long×2cm wide:2 sheets)
Paper Clip
Cellophane tape
Styrofoam board
Polyvinyl Chloride pipe–PVC (a water pipe etc…)
Felt pad (a sheet of calligraphy)



✻Method✻

Prepare for an experimentation　Make a motor

1	Prick the thumbtack from outside into the center of the film case bottom.	

2	Prick 8 thumbtacks with the same interval around the film case and 2cm from its mouth, as shown in the photo.	
3	Pull up vertically the small loop part of the clip as shown in the photo.	
4	Fold the aluminum foil that is 5cm long and 2cm wide into half, so that it will be 5 cm long and 1cm wide.	
5	Tape the aluminum foil (procedure no. 4) in the big loop part of the clip (procedure no. 3) as shown in the photo.	
6	Prick floor nail into Styrofoam boards' center. The thumbtacks' tip from procedure 1(pricked at the bottom of film case)should touch the head of the floor nail so the film case could turn around freely.	

7	Tape procedure5's clip to Styrofoam board using cellophane tape. The tip of the aluminum foil should be at least 2mm away from the pricked thumbtacks.	

Experiment: Try to make the film case rotate!

Charge the PVCpipe by rubbing the felt pad to the pipe many times. Touch one of the paper clips with your finger then place the rubbed PVCpipe near the other paper clip.

 Rub the PVC pipe many times!	 Place rubbed PVC pipe near the paper clip gently.

Develop

"Quick turn", "long turn" is what I wonder. What if we use another object other than PVC? Let's experiment with many different objects.

Information

Repulsive force makes it turn!

- Static electric charge from the PVC pipe passed through the aluminum foil to the thumbtack. Since the aluminum foil and the thumbtack have the same charge, they repel each other making the film case with thumbtacks to rotate. The repulsive force makes the motor rotate. In addition, the motor rotates in either direction.
- PVC pipe, nails, etc., can be purchased at home center shops。