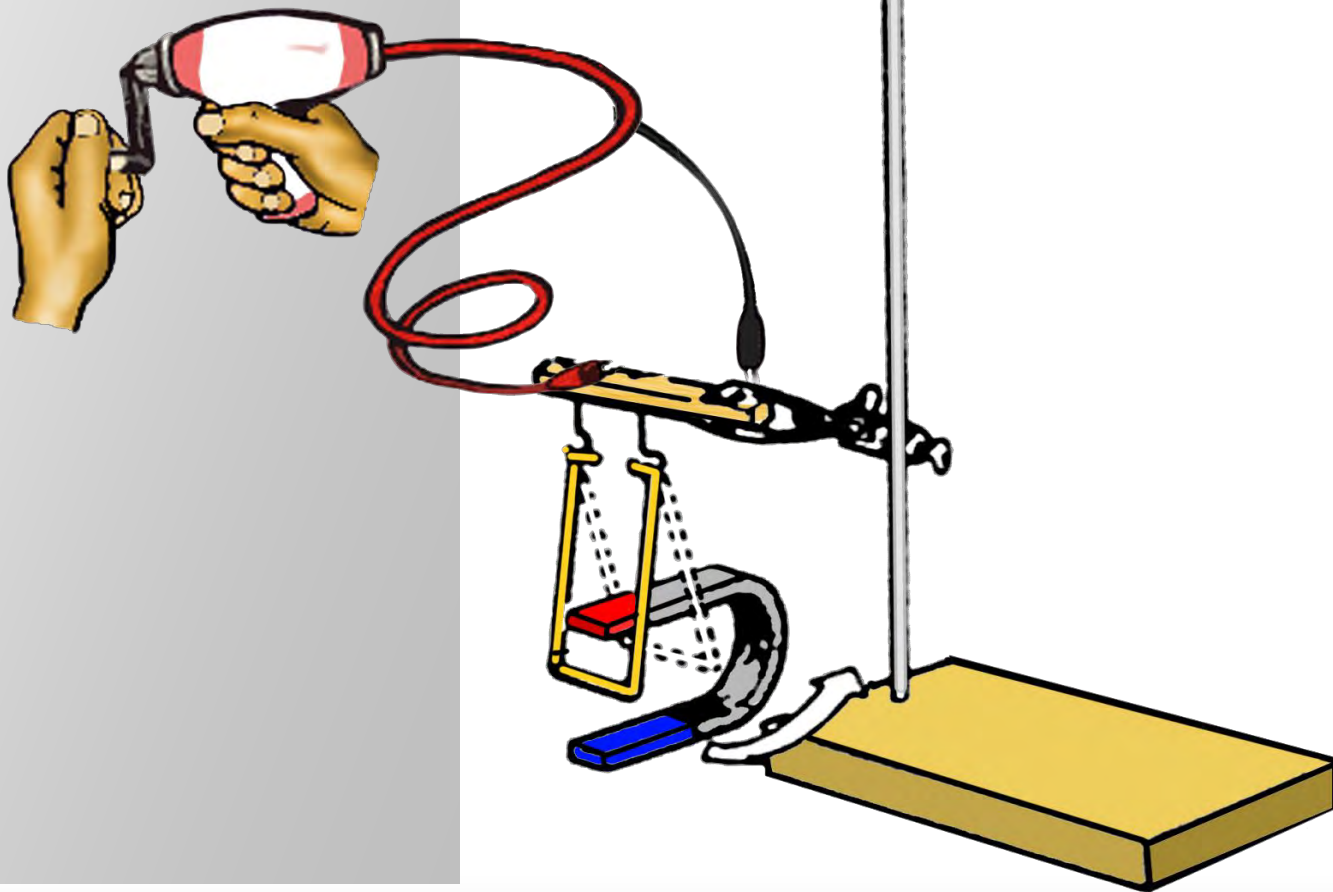


Materials

- GENECON with output cord
- Electric Swing Apparatus
 - o Ring-stand with clamp

Procedure

1. Set up the apparatus as in the sketch below. The height of the clamp should be adjusted so that the bottom of the swing is exactly between the poles of the U-shaped magnet.
2. Make sure that the swing can move freely. Connect the leads of the GENECON to the terminals on the wooden swing mount.
3. Rotate the handle of the GENECON rapidly but only about $\frac{1}{4}$ to $\frac{1}{2}$ turn. What direction did the swing move?
4. Now reverse the handle rotation—again only about $\frac{1}{4}$ to $\frac{1}{2}$ turn. Result?
5. Change the polarity of the electric current going through the swing by reversing the GENECON connections on the wooden swing mount. Result?
6. Finally, rotate the horseshoe magnet so that the opposite pole is within the swing. Result?

**Key Concepts**

1. A current passing through a wire produces a magnetic field around the wire (**Oersted's Law**).
2. A magnetic field exerts a force on a movable wire carrying an electric current (the motor effect).
3. Changing the polarity of either the magnet or the electric current moving through the wire (the swing) results in changing the direction of the motion of the wire.

Teaching Tips

1. Depending on the sophistication of the students, you may wish to discuss the "**left-hand rule**" which relates the direction of the current and the magnetic field to the direction of the resulting force.
2. The best rocking action of the swing can be obtained by alternating $\frac{1}{4}$ rotations of the GENECON.