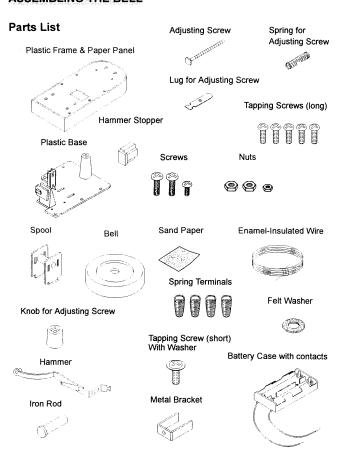
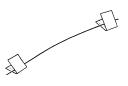
ASSEMBLING THE BELL



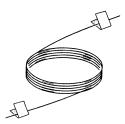
 Cut a 6-inch length of enamel-insulated wire. Use sandpaper to remove about 1 inch of insulation from each end of bout the short wire and the remaining long wire. Set the short wire aside for use in Step7.



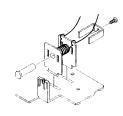
 Carefully wrap the long piece of enamel-insulated Wire around the spool, leaving about 4 inches unwound at the beginning and about 10 inches at the end of the wire.

Route each end of the wire through separate holes on the spool's side, and wrap the ends around the hole once. The wire-wire wrapped spool is the coil of the bell's electromagnet.

 Insert the iron rod and the metal bracket in the spool and fasten with the short screw. Insert the bracket's tabs in the base.





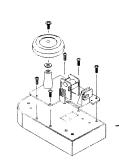


4. Insert the spring terminals to paper panel, Then turn the frame around and connect Battery Case's red wire to "+" spring terminal, black wire to the "-" spring terminal (as shown). Attach the Battery Case to the paper panel with two screws and nuts.

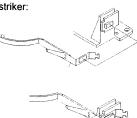


 Fasten the base to the paper panel with the five long tapping screws. Fasten the bell using the felt washer and the short tapping screw with washer.

Note: The felt washer has adhesive material with seal on a side. Remove the seal before affixing it to a post.



- 6. Follow these steps to assemble the bell striker:
 - a. Attach the hammer to the base, aligning the square hole on the hammer with the notch on the base. Slide the hammer stopper over the hammer to keep it in place.



b. Put the adjusting screw on the knob.



 Insert the adjusting screw into the spring.

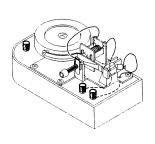


d. Insert the lug over the screw and fasten it with the nut. Slide the nut portion into the slot on the base.



7. Connect one end of the electromagnet's wire to the spring terminal and the other end to the lug on the adjusting screw (as shown). Then, connect the short wire you prepared in Step 1 between the remaining spring terminal and the lug terminal of the hammer (as shown).

Now you have completed the building of your own bell.

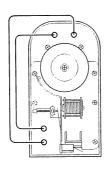


Experiment 1: Operating the Bell

You need:

- Bell
- Wires
- Batteries (AA SIZE)

Install two AA batteries in the battery case as indicated by the polarity symbols (+ and -) on the back of the paper panel. After wiring the experiment as shown, what happened? The circuit is charged with electricity and the electromagnet works to sound the bell.



Note: When the bell won't work even if you adjusted the bell striker, try following steps to resolve the problem.

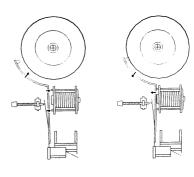
- 1. When the top of the hammer is located under the bell, raise it with your finger to hit the bell.
- Adjust the shape of the hammer by bending it with your finger.



How does it work?

When you connect the circuit with the wire, the electromagnet on the bell is magnetized and attracts the hammer. When the hammer is drawn to the electromagnet, it breaks contact with the adjusting screw, interrupting the flow of electricity. The electromagnet loses its original position. In its original position, the hammer again contacts the adjusting screw, completing the electricity's path. The electromagnet becomes active again and attracts the hammer, and the cycle continues until you release the key.

When you are through with the experiment, remove the batteries from the battery case.



- 3 -

Experiment 2: Operating the Bell using the Generator without Battery

You need:

- Generator
- Bell
- Wires

After wiring the experiment as shown, turn the handle either clockwise or counterclockwise. How does the bell sound? When you turn the handle quickly, the bell sounds louder because more electricity is generated. The large amount of electricity makes the electromagnet stronger, making the bell's sound louder.

