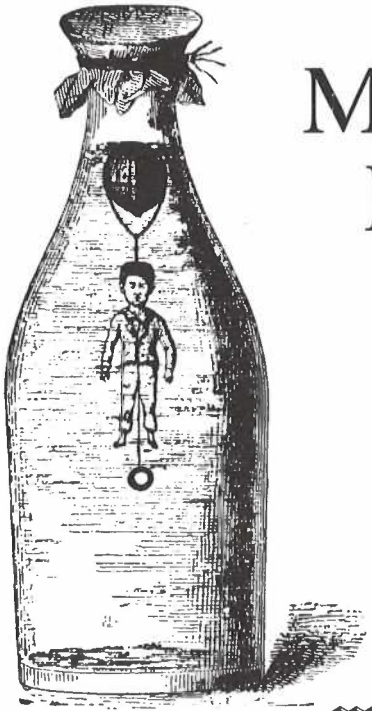


Engraving from the *American Agriculturist*

MINIATURE MAN MAKES MAGIC

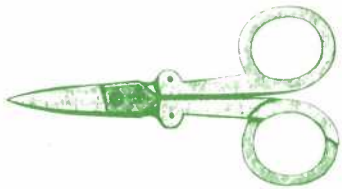
A TOY TO DELIGHT AND SURPRISE YOUR FRIENDS

Digital toys, "gobots," "garbage pail kids," and video games have replaced the simpler toys that children and their families used to make. The "Bottle Imp" was a well-loved trick toy that was popular in the 1880s.

At the owner's command the little figure suspended from a floating ball moves up and down in the bottle. You can try your hand at making this toy. Follow these directions.

YOU WILL NEED:

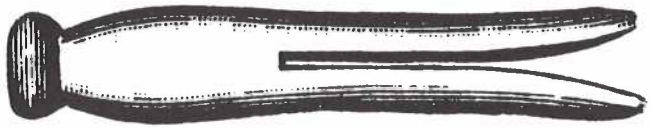
Ping pong ball
Waterproof glue or cement
Medium weight rubber glove
Heavy rubber band
Large glass bottle with a mouth large enough for the ping pong ball to pass through
Assorted metal washers or bolt nuts
String
Clothespin (and waterproof markers or paint to decorate it like a person, if desired)



Scissors
Large sewing needle or fine finishing nail

Washer

1. Use a large sewing needle or finishing nail to make a hole in the ping pong ball. The side with the hole is the *bottom* of the ball.



2. Cut a length of string about 12 inches long. Glue the string over the top and down the sides of the ball. Let the ends hang loose on either side. (Fig. 1) When the glue has dried, tie the two ends of the string to the top of a clothespin so that it hangs close beneath the ball. Cut off any excess string.

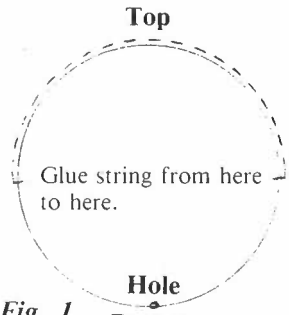


Fig. 1

3. Next tie several metal washers or bolt nuts to the bottom of your figure. These will help to weight it down. Without these weights your figure will float to the surface.

4. Fill your bottle with water to within an inch of the rim. Then drop the ball and clothespin figure into the water. If the weights you tied to your clothespin are just right, the ping pong ball should float near the surface of the water and the figure should hang straight beneath it. The weights are too heavy if the figure pulls the ball down below the surface of the water with it. If the figure floats sideways, it is too light and you need to add more weights.

5. Stretch a rubber glove over the mouth of the bottle and hold it in place with a heavy rubber band.

Now for the "magic." If everything is weighted properly your little figure should move up and down in the bottle at the command of your hand. Press down on the rubber glove with your fingertips. The figure should sink towards the bottom of the bottle. Stop pressing the glove and the figure should rise again.

How does it do it? Remember the small hole you bored in the ball? As you press down on the rubber glove, water is forced into the ball through the hole compressing the air inside. When you stop pressing the glove, the air inside the ball expands, forcing the water back out the hole and letting the ball float back to the surface.

NOTE: If you have trouble making your figure move up and down in the bottle: 1. Add or take away weights; 2. Change the level of the water in the bottle; 3. Slightly increase the size of the hole in the ball; 4. Try a different weight rubber glove.