

Focus on Animation

How to Make a Thaumatrope

History

The thaumatrope (literally, “wonder wheel”) was invented in Paris in 1825 by English physician John Ayrton. This was the first time in history that a toy based on the optical phenomenon of “persistence of vision” was sold to the public. As the thaumatrope appeared in stores, Dr. Ayrton published a book explaining the scientific principles underlying the toy.

Materials

- A sheet of white paper
- A sheet of white Bristol board – available in stationery and art supply stores
- A #2 pencil
- A black marker
- Coloured pencils
- $\frac{3}{16}$ " wooden rod (dowelling) cut to 6", – available in hardware stores
- A compass
- A ruler
- Scissors
- A glue stick
- Transparent tape
- A stapler and staples
- An idea for two drawings that could be animated to come together in a single image (example: a bird and a cage, a fish and a bowl).



Construction

Step 1

- a) Lay the sheet of paper on the table with the long side facing you. Divide it into two equal parts by drawing a vertical dotted line through the middle.
- b) Using your compass, ruler and pencil, draw a circle with a 6-cm radius on the left-hand side of the paper. Don't forget to measure this with your ruler.
- c) Inside the circle, with your pencil, make your first drawing (the image that goes “into” the other image). For instance, if you are animating a bird in a cage, draw the bird; for a fish in a bowl, draw the fish. When you're finished, trace over your pencil drawing with the black marker.

Step 2

Fold your sheet of paper in two along the dotted line with your first drawing inside.

Step 3

- a) Place the paper, blank side up (the side with no drawing), in front of you. You should be able to see your drawing through this side of the paper.
- b) Use your pencil to trace another circle over the first circle that you see.
- c) Make a second drawing— the cage for your bird, the bowl for your fish, etc. — inside the circle. When you're done, trace over your pencil drawing with the black marker. CAREFUL! Your first drawing (bird, fish) must be able to fit inside your second drawing (cage, bowl) when the two circles are lined up!
- c) Colour your drawings.

Step 4

- a) Cut out your two paper circles.
- b) With the pencil, draw two circles of the same size as the first ones (6-cm radius) on the Bristol board. Cut them out.
- c) Glue your paper circles to the Bristol board circles with the drawing side up. You now have two illustrated discs.

Step 5

Put the two pieces of transparent tape in the middle of the wooden rod.

**Step 6**

Tape the wooden rod firmly to the back of your second drawing (cage, bowl). It works best if the rod is in the centre of the disc.

Step 7

- a) Place your first drawing (the disc with the wooden rod) face down upon the table.
- b) Line up your second drawing (bird, fish) with your first drawing. DON'T FORGET: If your second drawing (cage or bowl) is right side up, your first drawing (bird, fish) must be upside down.
- c) Staple the two discs together all around the edges.

Step 8

Congratulations — you've just made a thaumatrope! Now twirl the wooden rod between your fingers or hands, and you'll see your two drawings magically come together as one! The bird will be in its cage, the fish in its bowl...

