

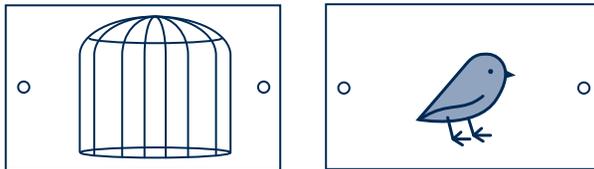
# Motion Picture

Create a thaumatrope—an optical-illusion toy that makes two pictures look like one.



## 1 Get what You need.

- tape • rubber bands • hole punch or pencil
- 3" x 5" index cards • markers or crayons



## 2 Make a thaumatrope.

- Draw a cage in the middle of an index card.
- Draw a bird in the middle of a second index card.
- Tape the cards together with the images facing out.
- Punch a hole on each side of the attached index cards.
- Loop a rubber band through each hole so that they're securely tied to the cards.

## 3 Wind it up and let it go!

- Hold on to each rubber band and have a partner turn the thaumatrope around and around, winding up the rubber bands until they are tight.
- Then, have your partner let go. What do you see? Are both images right side up? If necessary, rearrange the cards so that each image appears right side up as it spins.



## 4 EXPERIMENT.

- Try drawing different pictures. (For example: a fish and a fishbowl; flowers and a vase; a sailboat and an ocean; a surfer and a wave; or come up with your own!) What kinds of pictures work best?
- Make a thaumatrope with words instead of pictures (like "GO" and "FETCH!"). Can you make it work?

### Chew on This!

When the thaumatrope spins, the two pictures move so fast that your brain holds on to each image for a fraction of a second, and you see both together at the same time! This is called the *persistence of vision*.

The more tightly you wind up the rubber bands, the faster and longer your thaumatrope spins! By winding up the rubber bands, you're storing energy (called *potential energy*). When you let go of the rubber bands, energy is released and turned into the energy of motion (*kinetic energy*), and the thaumatrope spins.

# Dig Deeper

**Spin it.** Make another toy that uses the *persistence of vision*. A phenakistoscope (fen-a-KISS-ta-skope) uses a spinning disk with slots to create the illusion of motion. Try this activity at ZOOM: [pbskidsgo.org/zoom/activities/sci/phenakistoscope.html](http://pbskidsgo.org/zoom/activities/sci/phenakistoscope.html)

**Flip it.** A flipbook also creates the illusion of movement—make one from ZOOM: [pbskidsgo.org/zoom/activities/do/flipbook.html](http://pbskidsgo.org/zoom/activities/do/flipbook.html)

## Did You Know?

The thaumatrope (“THAW-ma-trope”) was popular in the 1800s. It’s one of many optical-illusion toys that inspired the creation of moving pictures—movies and cartoons. Like the thaumatrope you made, movies and cartoons also depend on the *persistence of vision*. As a series of pictures flash by quickly, your brain blends them together, and they look like one moving image.



Watch FETCH! on PBS KIDS GO! (check local listings) and visit the FETCH! Web site at [pbskidsgo.org/fetch](http://pbskidsgo.org/fetch).



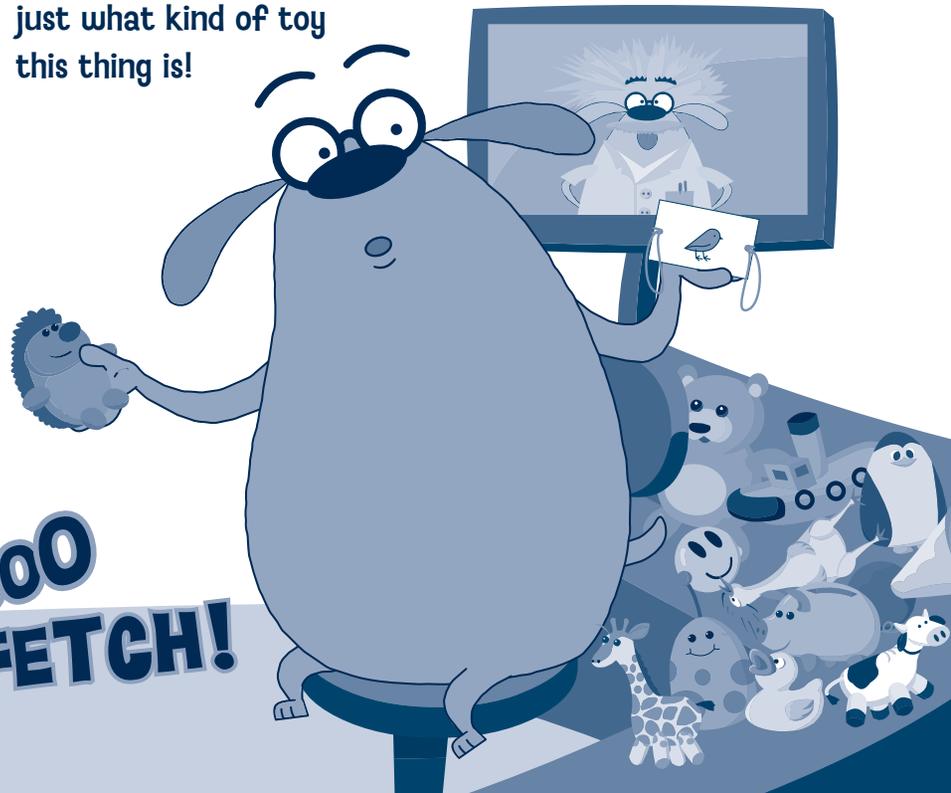
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Fold

# Fetch!

# Motion Picture

I think the squeaky toy is the greatest invention of all time. But my Great Great Great Great Grandfather, Ruffael Ruffmanowitz, would probably disagree. When he was a young pup, he played with something called a thaumatrope. A thauma-WHAT?!?! Help me figure out just what kind of toy this thing is!



## GOOO FETCH!