



# Whimsical Whirligigs



Lesson Plan by Teresa Audet

The development of this lesson was supported by 5 Purple Oranges

Wood is a material that artists use for a variety of utilitarian and decorative purposes. From hand-carved sculptures and furniture to picture frames, and more, wood provides a blank canvas for many artists to express themselves. Follow along with artist Teresa Audet as she teaches you how to create a simple whirligig with wood or cardboard inspired by her own art practice and the work of environment builders Albert and Louise Zahn.

## Essential Questions

- Why is learning how things work important for artists?
- Why would an artist create an interactive or kinetic artwork?
- How might it change the meaning or use of the work?

## Materials

- 4 pieces of wood or cardboard for the box—2" wide by 5" long. Pre-drill or make holes: top and side pieces have  $\frac{1}{4}$ " holes in the center; top and bottom pieces have  $\frac{1}{16}$ " holes in the corners for nails.
- 1 cam—2" or smaller diameter round or oval cam with a  $\frac{1}{4}$ " hole drilled off-center
- 1 cam follower—2" or smaller diameter round or any shape—heavier wood or cardboard
- 1 handle— $\frac{1}{2}$ " x 2" with a  $\frac{1}{4}$ " hole on each end
- 1 stopper—a round ball with a  $\frac{1}{4}$ " hole drilled into it, or similar, for gluing onto end of a dowel
- 3 pieces of  $\frac{1}{4}$ " dowel, one 5- $\frac{1}{2}$ " long (the horizontal), one 4" long (vertical), and one 1- $\frac{1}{2}$ " long (handle)
- School or wood glue
- $\frac{3}{32}$ " drill bit
- $\frac{1}{16}$ " drill bit
- Hammer
- Hot glue
- $\frac{1}{4}$ " drill bit
- Small nails

For cardboard:

- Extra cardboard for reinforcements in the corners and for thickness in the hole in the top
- $\frac{1}{4}$ " metal washers to weigh down the vertical pieces (optional but helpful)
- Plastic straws or clear tape for bearings if needed

For the top:

- Paper, toothpicks, wooden shims, wire, fabric, cardboard, etc. Lightweight materials that are activated with motion



Albert Zahn, untitled, c. 1924–c. 1950; wood, paint, and metal; 22  $\frac{1}{4}$  x 39 x 10  $\frac{1}{2}$  in. John Michael Kohler Arts Center Collection, gift of Diane Hiatt and Kohler Foundation Inc.

Suggested Grade Level: 6–12

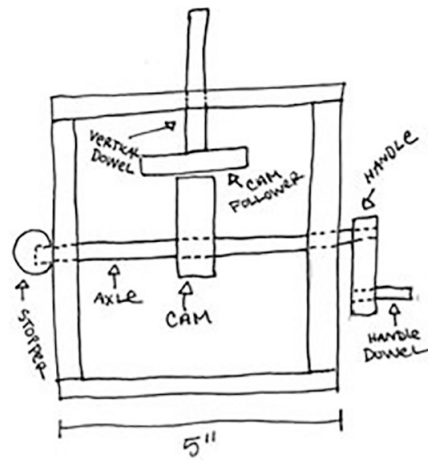
## Key Vocabulary

Whirligig  
Cam  
Crank  
Axle  
Kinetic  
Utilitarian  
Decorative  
Whimsical  
Automaton  
Movement

## Create:

Follow a video tutorial for this lesson at [jmkac.org](http://jmkac.org).

1. Create or find your box (approx. 5" x 5" x 2").
  - a. Wood—start with a piece of wood that is  $\frac{1}{2}$ " thick and 2" wide. Cut into four lengths of 5" and label the top, bottom, and sides. In the top and side pieces, drill a  $\frac{3}{32}$ " hole in the very center, both width and length. In the top and bottom pieces, drill a  $\frac{1}{16}$ " hole in each of the four corners, about  $\frac{1}{2}$ " in from the side and in  $\frac{1}{4}$ " from the edge. These  $\frac{1}{16}$ " holes will help to place the nails that hold the wood together but are optional if inaccessible. Glue and nail your box together.
  - b. Cardboard—fold or glue together a cardboard rectangle 5" x 5" x 2", use double-walled cardboard or reinforce the corners with extra cardboard and hot glue. Add a few extra layers of cardboard to the top for stability of the vertical dowels. Drill  $\frac{3}{32}$ " holes in the center of the top and sides.
  - c. Found—You can use almost any found box object as long as the cam can spin around the axle without hitting the sides of the box. Just make sure to drill your  $\frac{3}{32}$ " holes evenly across the top and sides so that your axle runs evenly and is aligned with your cam follower.
2. Glue your cam follower onto your vertical dowel (4") and let rest.
3. Glue your handle dowel into your handle and let rest.
4. Insert the vertical dowel through the top hole from the inside of the box and ensure that it can travel up and down freely. Weigh down the cam follower or add a bearing if needed. It may be helpful to hold the box upside down so that the cam follower does not fall out during the next step.
5. Assemble your axle by taking the remaining dowel and sliding it through the hole in one side of the box. Then slide the cam on, pushing it about halfway down the axle to the center of the box underneath the cam follower, and then slide the axle rod through the hole in the opposite side of the box.
6. Check that the mechanism works by spinning the axle. The cam follower should rest on top of the cam and move up and down, and the cam should spin irregularly on its off-center hole. Adjust the weight of the cam follower or add a bearing such as a piece of a straw or paper around the shaft of the vertical dowel if that piece is being sticky.
7. Once ready, glue the handle onto the axle rod, with a spacer between the box and the handle if necessary.
8. Adjust the motion by moving the cam to the left, center, or right, or the cam follower's center. Glue the cam in place if necessary.
9. Create your whimsical figure for the top of your mechanism using wooden balls, shims, cardboard, paper, straws, or anything else! Think about the movement of the automaton and what type of materials can best interact with the type of motion coming from your mechanism.



## Discuss

- How does the shape and size of the cam affect the motion of the whimsical figure on top? How could it change?
- Albert and Louise Zahn often created sculptures of birds and humans with wings to display on the outside of their home. What sculptures would you create for your home? Why?



Teresa Audet. Photo courtesy of the artist.

## Artist Bio

Teresa Audet is an artist and educator who combines woodworking, fiber arts, and social practice. She received her BFA in Furniture Design from the Minneapolis College of Art and Design in 2011, a certificate in woodworking from the Mount Fuji School of Fine Woodworking in 2016, and is currently working towards an MFA from the University of Wisconsin-Madison. Audet teaches art-making workshops, exhibits her work in galleries, and participates in artist residencies around the world.

Audet uses wood, rattan, handmade paper, and mixed media to create sculptures that utilize the language of furniture, basketry, and the human body. She is interested in the nature of utility, the object as vessel for unexpected and emotional interaction, and using humor and absurdity to point to collective social concerns.