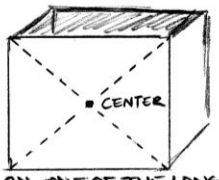
Pinhole Camera Construction and Usage Instructions

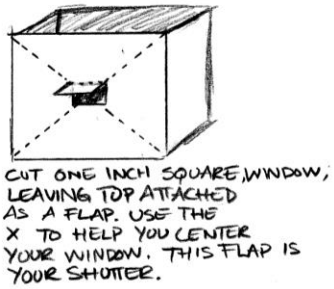
Supplies needed

- Container to be turned into camera—shoebox, metal tin, coffee can, quaker oats box, cardboard jewelry box, anything that has a lid.
- Coke Can or small piece of pliable metal
- Flat black spray paint
- Needle
- Fine grit sand paper
- Ruler
- Black sharpie
- Black duct tape
- Soft cardboard
- Hot glue
- Exacto knife
- Newspaper to lay down while spray painting

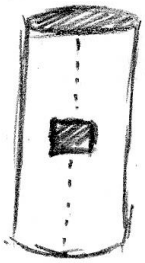
Create the shutter

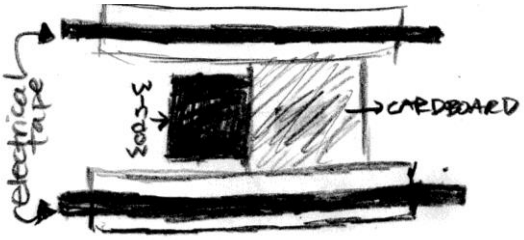
1. For a shoebox: use a sharpie to mark the center of one of the long sides of the shoebox by drawing an x (joining opposite corners)
2. For boxes, use an exacto knife, cut a 1x1 inch hole over the center of your box, leaving the top portion of the cardboard attached in order to create a flap that closes and opens over the hole. This flap is your shutter.

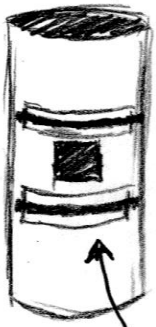


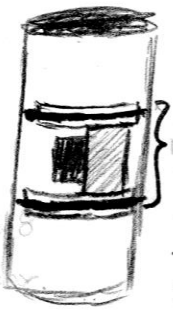


3. To create a shutter of a quaker oats box, follow the instructions below.

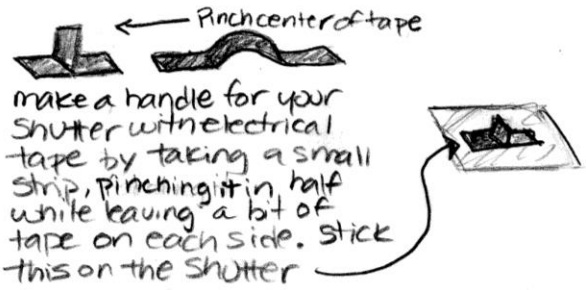






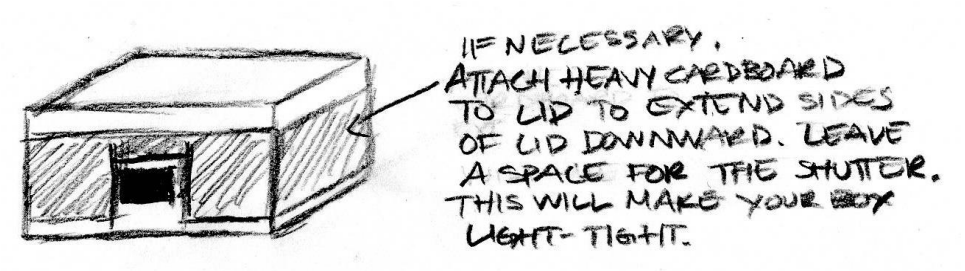


4. Attach a piece of tape to your shutter to open and close it as needed.



Make the container light-tight

1. Fortify any joints in the box with duct tape and/or hot glue, including all corners and the lid.
2. If using a quaker oats box, cover the lid with either duct tape or black cardboard. Use hot glue to reinforce the seam at bottom of the lid on the inside.
3. For shoeboxes, extend the lid downward using cardboard and hot glue.



4. Spray paint the inside of your container with black spray paint.

Create your pinhole

You can create your pinhole while your paint dries.

1. Cut a piece of heavy aluminum (from a coke can or aluminum flashing) to a size of 1.5”x1.5”. It should be slightly larger than you window.
2. Very gently, push the very tip of the needle through the center of the metal. POKE ONLY THE VERY TIP OF THE NEEDLE!
3. Sand the hole with fine sand paper
4. Turn the metal over and repeat steps 2 and 3 two more times. In other words, poke the metal four times total, twice on each side, and sand in between. As before, POKE ONLY THE VERY TIP OF THE NEEDLE THROUGH for sharpest images
5. Wash the metal and dry with a lint-free cloth. Do not touch the hole, as the grease in your hands can clog the hole.
6. Attach the metal to the center of the window in your box by using either electrical or duct tape. Tape it to the inside of the box, careful not to cover the hole and making sure that no light will leak through the edges.

Creative pinholes

For your second camera, experiment with your pinhole or with the position of the paper in the box

- You can put multiple pinholes in your metal-piece
- Create a pattern with your multiple pinholes
- Try changing the shape of your pinhole
- Curve the paper in a variety of ways when you load it. Secure it with tape so it retains its shape.
- You can create several windows in your box, each with a pinhole. Do one exposure at a time but stay within a theme or series. You’ll have multiple images on one paper.

Using your pinhole camera

You must load and unload the pinhole camera under safe (red light) only. Regular light will ruin your photographic paper.

Making sure your box is light-tight

1. Go to the darkroom
2. Cut a piece of photographic paper into a strip about 2 inches tall. This is your test strip.
3. Figure out which side of the paper is light-sensitive, lick your finger and touch a corner of the paper. The light-sensitive side will feel sticky.
4. With a pen or sharpie, draw an arrow on the back of the photographic paper indicating which side of the paper will be facing up.
5. Tape the photographic paper to the wall opposite the pinhole (use masking tape). Make sure the light-sensitive side is facing the pinhole and that your arrow is pointing up.
6. Close your shutter, if it is open. Use a piece of tape to make sure it stays closed.
7. Go outside for thirty seconds and walk around.
8. Go back inside the darkroom and process your paper. If the paper looks grayish or black, then your box is not light-tight. Pay attention to where the light and dark areas are on the paper, as this tells you what areas of the box need to be fortified.

Figuring out your shutter speed

Once your box is light-tight, you can figure out your shutter speed.

1. Cut the photographic paper to size and write down exposure # and date on back with pen or sharpie.
2. Load photographic paper in your camera. Make sure your shutter is closed.
3. Go outside, to a sunny spot and place the camera on a flat surface. Place something heavy on top the camera so it won't move.
4. On a piece of paper (your pinhole log), write down the exposure number, lighting conditions, and shutter speed being tested. Do this for every exposure.
5. Open the shutter and count to twenty in this manner, "one-one-thousand, two-one-thousand, three-one-thousand," and so on. Close the shutter when you reach twenty.
6. Develop your paper. Your image will be a negative, where dark areas will be light and light areas will be dark. Wherever light hit the paper, it will turn dark.
7. Once the paper is dry, write down the exposure time on the back.
8. Determine if your image is properly exposed and correct accordingly. Keep track of all your exposures in your log.
    a. If your image has a range of tones, including both white and black, then you have a correct exposure. Write it down!
    b. If your image is too light, it is UNDEREXPOSED, meaning not enough light hit the paper. Increase the shutter speed by leaving the shutter open for ten MORE seconds than before.
    c. If your image is too dark, it is OVEREXPOSED, meaning too much light hit the paper. Decrease the shutter speed by leaving the shutter open for ten LESS seconds than before.
9. Keep adjusting the time and doing tests until you have a correct exposure. Keep all your attempts and make sure you label all the information on the back, including the failures.
10. Once you figure out your correct exposure for your camera, write it down on the bottom of your camera with a marker for future reference. Now go out and shoot!

Create a positive image from your negative

1. Scan your negative
2. Using Photoshop, create a duplicate layer by right clicking on the layers palette and choosing, "Duplicate Layer"
3. Name the new layer as "positive"
4. Select the "positive" layer and go to Image> Adjustments> Invert (on the menu).
5. You now have a positive image!