

Bizarre Stuff

You Can Make in Your Kitchen

Pinhole cameras, page 1

A simple camera



Almost any box or container that can be made light tight can be used to make a pinhole camera. A fairly good camera can be made using an empty cardboard oatmeal container (the cylindrical type). It should be empty and clean. First cut a small hole in the front center. The hole should be about half an inch (13mm) across. Paint the inside of the oatmeal container flat black. Also paint the inside of the lid. The pinhole itself is made in a piece of metal foil. Aluminum freezer foil works well. Regular aluminum foil is thinner and difficult to work with. Very thin shim brass is excellent for pinholes, as it is rigid

and durable. Place a piece of the foil on a resilient surface such as cardboard. The foil should be big enough to cover the hole in the oatmeal carton with some overlap. Use a #10 sewing needle and begin to drill a hole. The hole should be approximately centered in the foil. You don't want to punch the hole, as this will leave burrs and an irregular shape. Drill the needle in slowly until it just punctures the foil. Turn the foil over, and lightly sand with 00000 or 000000 finishing paper. Drill the hole a bit more, turn back over and repeat. You want to eventually be able to insert the needle just up to the taper of the point. You should end up with as smooth and round a hole as possible. Check it with a magnifying glass, if possible. Sand off any burrs that remain, and dust.

Tape the foil with the pinhole over the hole in the oatmeal box. The pinhole should be as centered as possible from top to bottom. Electrical tape works well to secure the foil in place. Ideally, the foil should be taped inside the camera, but this is not critical. A shutter will also need to be devised. A piece of opaque black paper taped over the hole is good enough. It will need to be easily removed or flapped open for the exposure. Don't tape it directly to the foil, as it will rip when you try to remove the shutter.

This article assumes no working knowledge of processing black and white photographic papers. If you don't have access to a darkroom, check with your local photo supply house, and let them know that you are doing some simple pinhole photography. They should be able to point you toward the few chemicals and pieces of equipment you need. The basic equipment for pinhole photography (besides the camera) are as follows:

- Black and white photographic paper, fiber based, single weight. A small 8x10 inch pack should be enough to get things started. It is better to use a medium grade of graded papers, not the variable grade papers (this has to do with the paper's contrast... ask at the photo supply store).
- Developer for photographic papers (not for films!) ex. Kodak Dektol
- Optional: acid stop bath mix.
- Fixer for photographic papers (hypo).
- 4 cheap non metallic trays, big enough to hold an 8x10 sheet.
- Tongs
- The cheapest, most basic screw-in type of safe light you can find.
- A graduated measuring cylinder

Some of this equipment can be found inexpensively second hand. Garage sales quite often have old darkroom equipment for sale that will work quite well. Buy an inexpensive book on the basics of processing black and white prints. It will also be helpful to have a piece of thick, heavy unscratched glass slightly larger than the largest print you intend to make (tape the edges!) Remember that the chemicals used for photographic prints are toxic and caustic. Heed all package warnings.

The darkroom should be as light tight as possible. A bathroom

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works well if all of the outside light can be blocked. Using only the safe light, remove a piece of photographic paper, and cut it so that it is the right size to fit into the back of the oatmeal container. It isn't essential to use a safelight if you are experienced enough to load and process in absolute darkness, but I wouldn't recommend this for beginners. The emulsion side of the paper (usually shinier) must face the pinhole. The paper should be centered directly behind the pinhole. Close up the rest of the paper, put the top on your camera, and seal it with opaque tape. Make certain that the shutter is firmly in place, and you are safe to venture out into the world.

Start by making images outdoors. You will need to use the trial and error method, but the exposures will be fairly long, even on sunny days. Try 2 to 5 minutes for a sunny scene, or 10 to 15 minutes for a cloudy day. These are times to start out with. Exposures are going to vary widely depending on the camera, paper, and amount of light. Set the camera up somewhere where it won't be disturbed for several minutes. Put a small rock on top to keep it from blowing over. It is important that the camera be kept perfectly still while the exposure is made. Remove the shutter. After the allotted exposure time, replace the shutter and take the camera back to the darkroom to process the image.

Basically the processing follows these steps:

- Prepare four trays of chemistry for processing. The first contains developer, mixed and diluted according to manufacturer directions. The second contains plain water (or dilute acid stop bath mix... water will work just as well), and the third contains fixer. The fourth contains plain water. The first 3 trays should each have their own tongs (avoid cross contamination).
- Once the exposure is made, bring the camera to the darkroom, turn out the lights, and unload.
- Place the paper in the first tray. Agitate constantly for app. 1 1/2 minutes. Remove using tongs, and allow to drip into tray.
- Place into the second tray. Agitate for about 30 seconds, remove, drip.
- Place in third tray, agitate for 6 minutes (the lights can go on after 3), remove, drip, and place in last tray of plain water.
- Once you are finished for the day, take all of the prints to the sink to wash for at least 20 minutes in gently flowing water (you can use the last tray to wash in).
- Allow the prints to dry. You can use window screens for this, or hang them from a string with clips or clothespins.

When evaluating the image, remember that it is negative. If it appears too dark, then the exposure time should be shorter; too light, then longer. Any black streaks you may see are probably the result of light leaks. Make sure there are no stray holes in the camera.

Once you get a negative that you like, you can turn it into a positive image, if you wish. Do this (in the darkroom) by placing the negative face down onto an unprocessed piece of paper that is emulsion (shiny) side up. Set them on a flat surface, and place the heavy glass over them to keep them flat. Using a regular light source (or, better, a photographic enlarger, if you happen to be in a fully equipped darkroom) make an initial exposure of a few seconds. If you are using an enlarger, it is best to make a "test strip" of timed exposures.

Experiment with different types of containers in making pinhole cameras. The only requirement is that they can be made light tight.

Currently, there are two other pages to this section. One deals with [basic pinhole theory](#), and the other with [optimization](#). There is a page on design in the works as well.

Related books available from Amazon.com

[The Hole Thing; A Manual of Pinhole Photography](#)
[The Beginner's Guide to Pinhole Photography](#)
[Pinhole Photography : Rediscovering a Historic Technique](#)



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