

Track the Sun with a Solargraph pin-hole camera

A pin hole camera is the perfect tool to show the world how the sun moved through the sky where you live and even give an indication of how much cloudiness and good weather you had during the time of the capture. The pinhole camera is designed to allow an open shutter for ½ a year. Yes, not a few seconds but a long time.

When the Sun shines it will project a small dot onto the photo sensitive paper inside a can and trace the arc it makes through the sky. In addition, the oh so faint reflection of the trees and buildings in front of the camera will also project onto the paper and over the time of 1/2 year they will brighten up and can be recognized on the Solargraph.

Here is the way we construct our pin-hole cameras.

The first picture shows what we need. Not shown is the photo sensitive paper that goes inside the can, the glue to attach the ring to can, and a boy scout can opener.

So in the picture you see:



A tall and skinny 16oz beverage can, can be soft drink or beer. This is the body of the camera

A small soup can the same diameter as the soda or beer can. This will become the bottom.

A 0.3mm drill bit (see below for alternate tool)

A drill to drill the “lens” or pinhole in the can

A pair of metal shears to cut the soup can to size

Duct tape to assemble the pieces.

Following a description of how we go about to create the camera.

We use a “boy scout’s can opener” to carefully cut the center out of the top of a beverage can without deforming the round ridge at the top of the can

We remove the remaining ring of the opened soup can with a can opener that lifts the side of the ring around the top. This is not a normal can opener that cuts inside the rim of the can, but it lifts the outside.



Now we can lift off the ring that was used to attach the top of the soup can to the can itself.

Next we use the metal sheer to cut the soup can to size. The height is not very important, but I cut it down to about 1” height from the bottom.



We now glue the soup can top ring to the top of the beverage can so it forms a tight sleeve, with the smaller diameter to the top so the soup can, can slide on top of this.

The cut soup can will fit snugly on this ring to form a tight bottom of the camera.

Both the reduced soup can and the beverage can should be spray painted inside black matt to reduce glare.



Next we need to drill the 0.3mm hole in the body of the camera, about 3/4 inch off the top of the can. Make sure to cover the hole with a small piece of dark tape, and mark where the hole is, so at the end of the project it can be taped up again to remove the camera.



Now comes the phase where the photo paper is loaded in the can. A 5"x7" sheet of photo paper nicely fits inside the can. The 5" side is used to reach the end of the can (height) and the 7" covers the sides (round) and leaves a small area open where the "lens" or the pin-hole is. When loaded, make sure the pin-hole is not covered by the paper. Than take the low soup can and slide it tightly over the sleeve created by the ring of the soup can. Now tape the bottom to the camera body with duct tape or other tape making sure that no light can slip in from the bottom. (also needs to be weather proof)

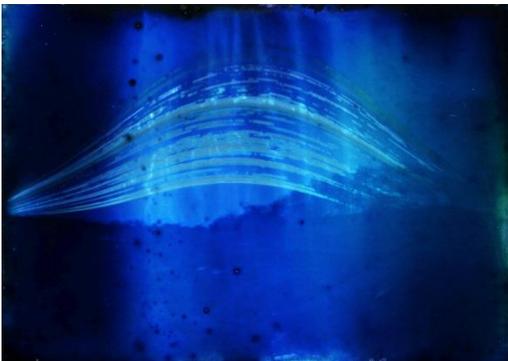
camera.

Congratulations you now have created the Solargraph pin-hole

This can be installed (taped) with the pin-hole to the top, facing south on a tree, wall, steady pole, or other means, away from access for nosy individuals. Once it is securely fastened, you can start the exposure by removing the tape that covered the pin hole.



At the end of the project, you close the lens or pinhole with tape again and take the camera inside. Now comes the tricky part to show the Solargraph. The paper is exposed and needs to be taken out of the camera body. Go to a relative dark or shaded room where you have a scanner. (Most printers today have scanning capability) A dark room would be best, but a relative dark room in the evening will do too. Open the bottom of the camera keeping it out of bright light and move it immediately to the scanner bed and scan the image into your computer. (Once the paper is exposed to the light in the room, it will react to the light, so time is very important) Once it is digitized in your computer, you'll see that it is inverted (Left/Right and Up/down).



The Sun's arcs are dark on a white background like a negative. However this can be corrected and enhanced with different software programs. When you like the result, print your Solargraph and share it with friends, family and the rest of the world.

Good luck!