

Cardboard Box Eclipse Viewer



A simple and safe way to watch a solar eclipse is to use a box pinhole projector. This eclipse viewer is easy to make from a cardboard box and ordinary household items.

When a solar eclipse happens, we see the moon's shadow completely blocking the sun. The sun's corona is briefly visible while the moon is directly between the sun and us on earth. Before you get too much further in making your own viewer, it's important to **remember that you should never look at the sun directly without safety equipment that is designed for looking at the sun. Sunglasses are not enough protection for your eyes.**

Check out this eclipse map to check if your area will have visibility during the August 21st eclipse.

I'll be in San Francisco for this year's eclipse, which means I'll only see a partial eclipse. Partial eclipse begins at 9:05 am, with full eclipse happening at around 10:15 am Pacific Time. If you're lucky enough to live in Oregon you'll get to see a total eclipse of the sun.

I think the last time I had the opportunity I was able to view an eclipse like this in person, I was about 5 years old, this is a rare cosmic treat to observe.

Step 1: Materials



- a long cardboard box - I pulled one out of the recycling bin, so it was a little rough.
- I used gaff tape, but any opaque tape like duct tape or electrical tape should work.
- an empty pop can
- a thumbtack
- a box knife or scissors
- a sheet of white paper

Step 2: Cutting Holes in the Box

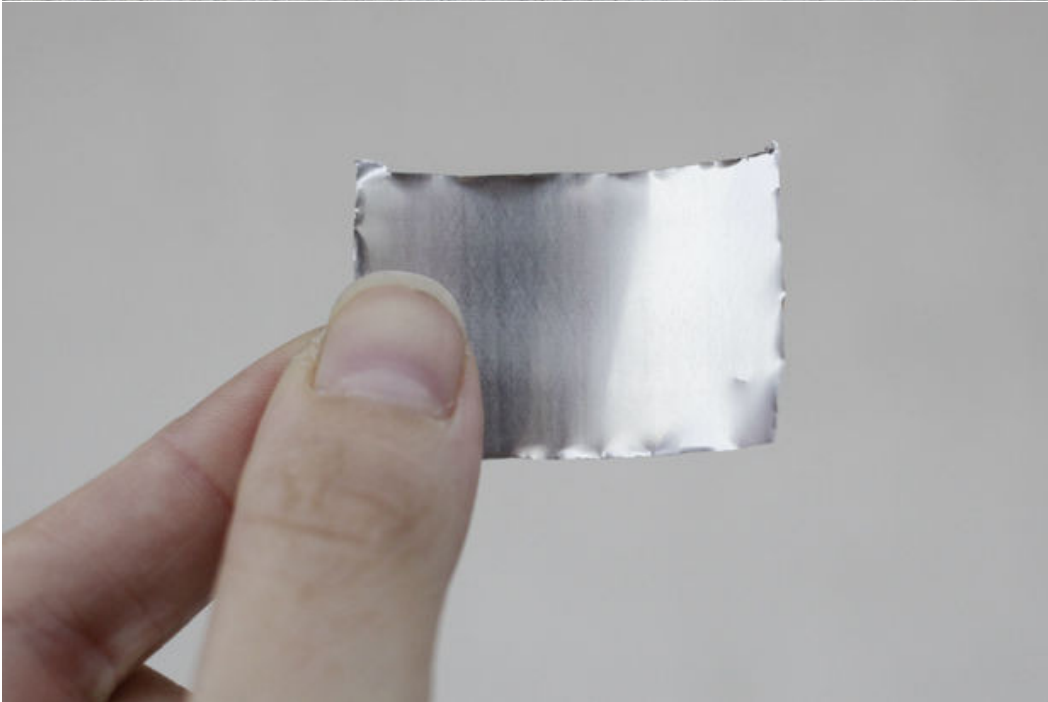


Cut a rectangular hole in the box that's just above center on the short side of the box, this will be where we attach the 'lens' of the viewer.

Next, add a hole for your head. The hole should be about the diameter of your head, but if you cut it too small (like we did) you can add some flaps. I think this also may have helped the viewer be more light tight.

The longer your projection is, the larger the projected image will be. If you can find a somewhat long box that's the big enough to stick your head in, you'll have great results!

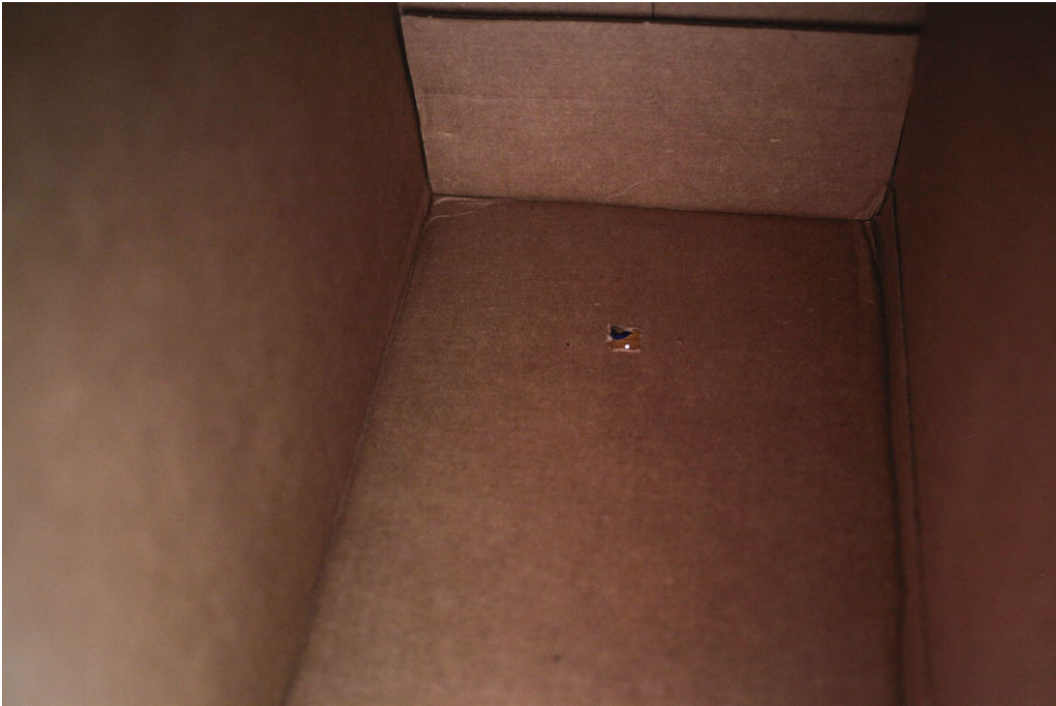
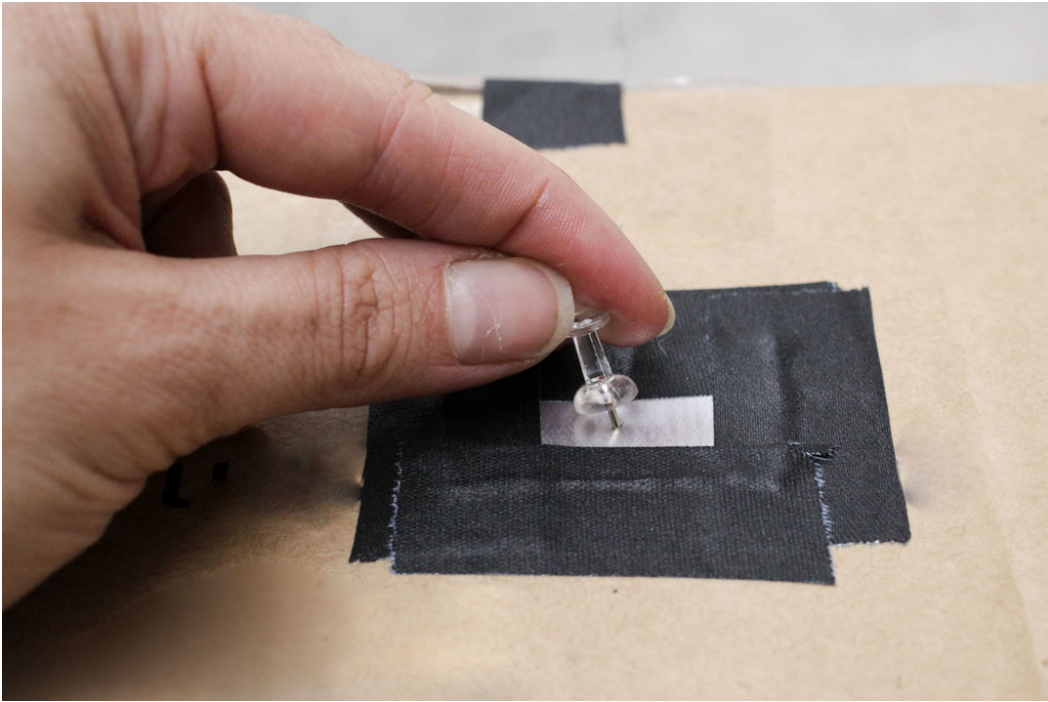
Step 3: Making the Viewer's 'Lens'



Show All Items

Using a box knife, I cut out a piece of the aluminum from the can that was larger than the square hole I had cut in my box. Do this **VERY CAREFULLY**, this is a careful cut job that should be made by an adult wearing cut proof gloves.

You can do this with aluminum foil and scissors if you like, but I find that the lens is too delicate and flimsy when using foil. If you do use foil, try and get it as taught and flat as you can.



After the lens was finished being cut, I taped the aluminum over the rectangular hole in my box.

Using a thumb tack, I poked a hole a hole in the aluminum. You can see in the second picture, the hole is super teeny.

Step 4: Fix Light Leaks



When you have the viewer on your head, you won't want any light leaks ruining your view. I was able to block all the light leaks with gaff tape, but you can use electrical tape or duct tape. Any completely opaque tape can help solve your light leaks.

In the first picture, you can see all the small gaps where the light is flooding in.

I blocked off all the corners of the box, and one of the side seams had a sizeable gap that needed to be taped over.

Step 5: Create a Viewing Plane



Show All Items

By taping a sheet of paper on the inside of the projection side of the box we create a clearer viewing plane than just the regular brown cardboard.

Think of it like how films are projected at the movie theater. They aren't projecting on a soft, dark surface, they use a plain white background.

Step 6: Go Sun Seeking!



Show All Items

Slip your head into the box and stand with your back to the sun. Position the viewer until the bright dot of the sun comes into view on your paper!

In the bottom image, you can see the shadow of the roof of my house on the right and the blueish tint of the sky.

This is essentially a rudimentary pinhole camera, except your eyes are the film.

Again, **NEVER EVER look directly at the sun without out proper eye protection.** If you have access to welding hoods, set them to the highest setting on the shade to view the eclipse.