ALTOIDS PINHOLE

Step 1: What You Will Need

Here is a list of materials you will need for this project:

-Altoids box

-A soda can (empty!)
-A needle
-Opaque tape
-Black matte paint or a black marker

Here is a list of tools you will use in the project:
-Drill
-Drill bit (1/8 in.)
-Scissors
-Craft knife or shears
-Ruler
-Pencil

Step 2: Wash the Inside of the Altoids Tin

Wash out the tin. It will help later on in the painting.

Step 3: Paint the Inside of the Tin

The interior of the tin must be black. This is to prevent light from reflecting and ruining the film. I used a matte black spray paint to get the job done. Be sure that it is a matte or flat finish and not the glossy kind, because that will reflect light as well

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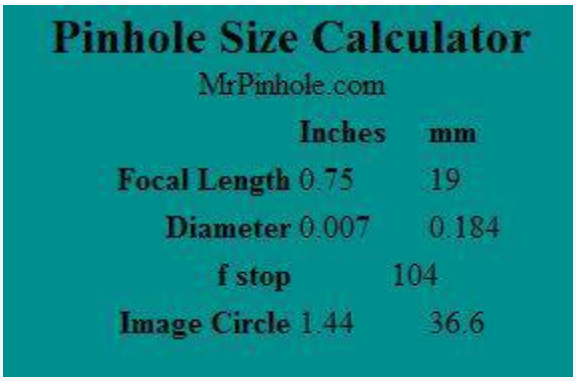
Step 4: Find Your Focal Length and Pinhole Size



This is the critical step in the making of the camera. The pinhole must be exact, or the camera will not function at the best of its ability. To find your focal length, measure the depth of your container or tin. for an Altoids tin, the depth is 0.75 in. That results in a pinhole of diameter 0.007 in. To achieve a hole like this I recommend using a thumb tack or a pin. To find the information about your pinhole size, visit this website: http://mrpinhole.com/holesize.php

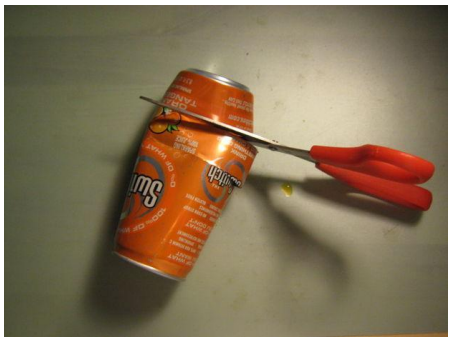
Step 5: Drilling the Hole

Find the center of the Altoids tin by measuring with a ruler. Mark the center with the pencil, and drill the hole carefully. Make sure that the hole is straight through and vertical. Wear safety goggles and follow all teacher directions!

Step 6: Cut Up the Soda Can

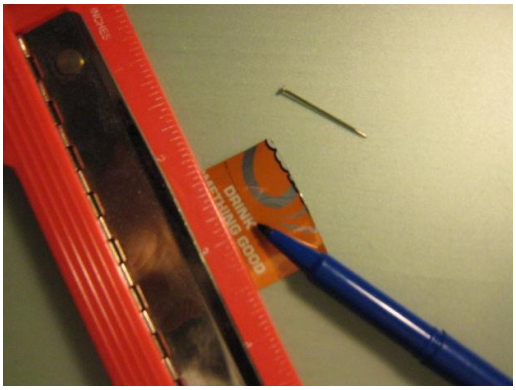
The soda can will provide the material for the pinhole. The advantage of this is that you can make different pinholes and swap them out of the camera body. Different hole sizes will produce different effects. Also, making the edges of the pinhole jagged will create a "rough edged" photo you take with the camera. Also, if you mess up, you can have a second chance.

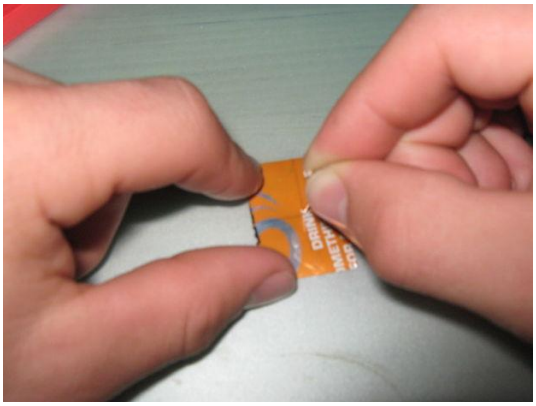
Cut a small square out of the soda can (can be any dimension, but must cover the 1/8 hole in the tin), and find the center of the square using the ruler. Use care! The edges will be sharp!



Step 7: Making the Pinhole

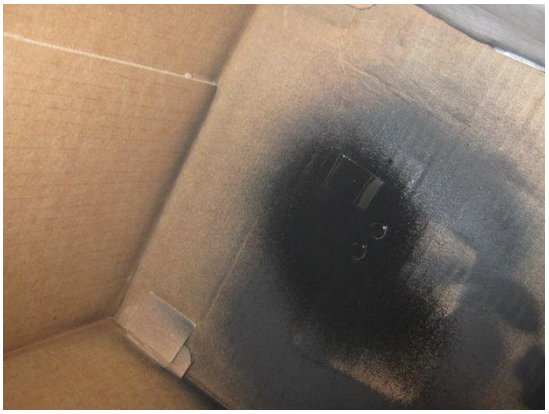
To make the critical pinhole for the camera, take the small square of metal, and the pin or thumb tack. Gently, gently push the pin through the metal at the center. I recommend spinning the pin like a drill to create a smoother hole. If you want a jagged effect, you do not have to spin the needle.





Step 8: Paint!

Paint the sheet of metal with the pinhole black to prevent light from reflecting off the shiny metal.



Step 9: Assembling the Camera Body

To assemble the camera body, tape the pinhole piece to the Altoids tin. Secure the pinhole so it is centered over the hole in the Altoids tin. Be sure to check for any light leaks in the tin. You can cover the pinhole with a piece of tape to form a shutter.

Step 10: Load the Camera

Open your brand new amazing camera. You can load the camera with either 35 mm film, or with film paper. We're going to use photo paper. Cut the film or paper to fit in the Altoids tin. Center the film under the pinhole/shutter of the camera on the wall opposite the pinhole. Make sure that there is a loop of tape on the back of the photo paper to help keep it from moving around in the camera. Seal the camera with electrical tape to prevent any light from entering the camera after you have loaded it.

BE SURE TO LOAD AND UNLOAD YOUR CAMERA IN COMPLETE BLACKNESS! (OTHERWISE YOUR PHOTO PAPER WILL BE RUINED BY LIGHT!)