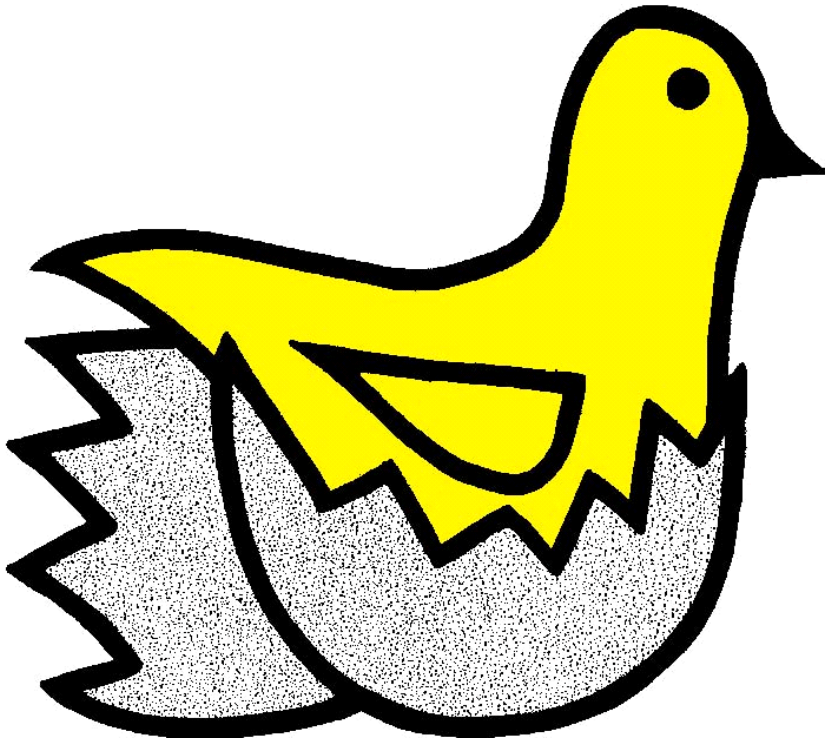
Styrofoam Incubator and Construction Details

adapted from “Incubating Eggs of Domestic Birds” Clemson University Extension



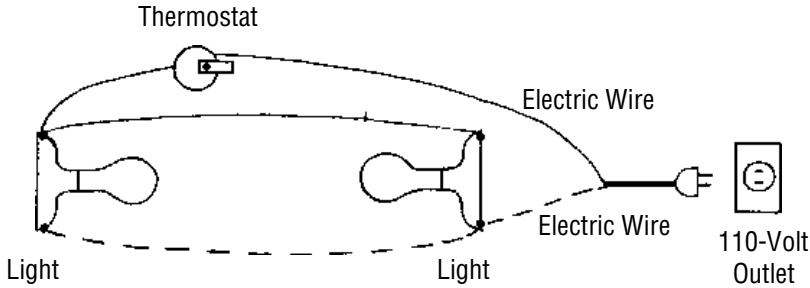
A simple inexpensive still-air incubator can be constructed from a Styrofoam ice chest. The exact size of the ice chest to be used will depend on the number of eggs to be incubated at one time and the size of chest available.

Heat

Heat is provided by two 40-watt light bulbs mounted in porcelain sockets. The amount of heat is controlled by a wafer-type thermostat with a snap-action switch. This thermostat can be purchased from GQF Manufacturing in Savannah (www.gqfmfg.com)

One porcelain socket is mounted inside each end of the ice chest about 3" below the top edge. The thermostat is mounted on one side of the chest about 2" below the top edge with the wafer on the inside and the adjuster on the outside. Using large diameter washers on the screws or bolts for mounting the porcelain sockets will help prevent breaking the styrofoam.

The porcelain sockets are wired in parallel, not series, so that each light will burn independently of each other (see wiring sketch). All wire contacts should be covered for safety.



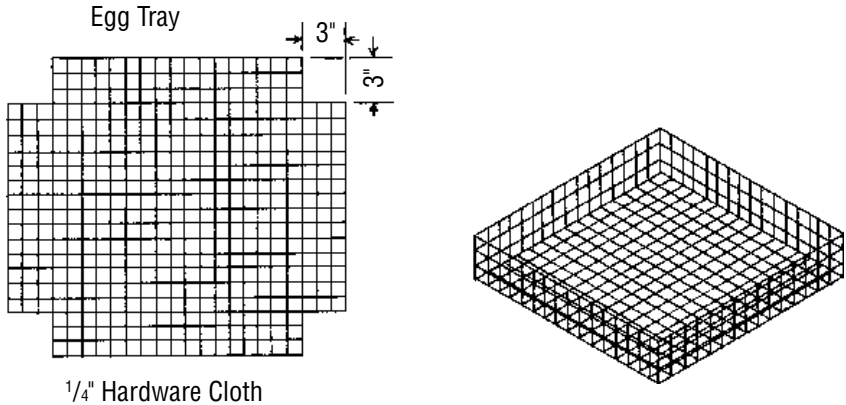
Wiring Sketch

Humidity

Humidity can be supplied from a pan of water placed in the bottom of the ice chest. A cake pan approximately 1½" deep is sufficient. The dimensions of the cake pan should be somewhat smaller than those of the ice chest so that it may be easily removed.

Egg Tray

A simple egg tray or platform can be made from ¼" hardware cloth or welded wire. Cut a piece of hardware cloth so that its dimensions are 6" longer and 6" wider than the **inside** dimensions of the bottom of the ice chest. Cut a 3" square out of each corner of the hardware cloth and bend the projecting pieces so they form legs. Trim the rough edges and cover them with tape so they will not puncture the styrofoam. The platform should fit loosely over and around the water pan so it may be easily removed. Do not allow room for chicks to get out of tray into water pan, as they will drown.

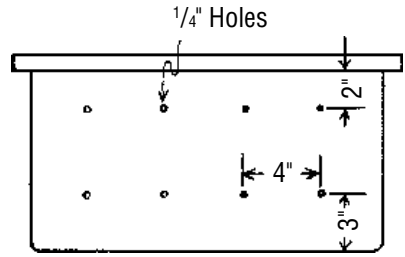


Egg Tray

Ventilation

Ventilation can be provided through small holes in the sides of the ice chest. A sharp round instrument, such as a pencil, will be satisfactory for making the holes. Twist the instrument and push gently through the styrofoam being careful not to break the sides of the chest. To prevent the styrofoam from flaking and filling the holes, heat a large nail and sear the surface.

Make a total of 16 holes approximately 1/4" in diameter. On each side of the chest make four holes approximately 2" from the top and four holes approximately 3" from the bottom. Space the holes approximately 4" apart.

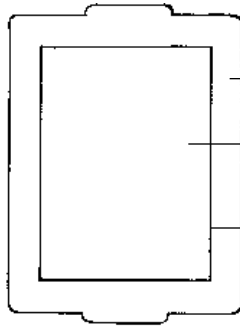


Styrofoam Ice Chest

Window

A window is not necessary, but it will allow you to make observations without removing the top and causing a change in temperature and humidity.

Step 1



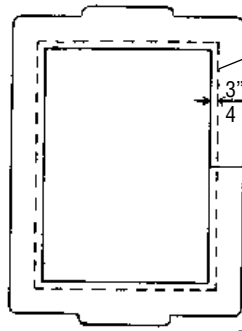
Top of styrofoam ice chest

Glass

Make cut 1/4" deep around the outside edges of the glass

Step 2 Remove Glass

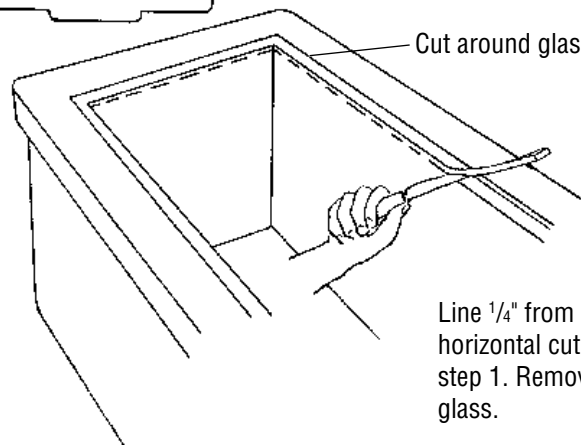
Step 3



Cut around glass from step 1

Line drawn 3/4" inside of the cut made around the glass. Cut along this line all the way through the top and discard the piece cut out.

Step 4



Cut around glass from step 1

Line 1/4" from top. Make horizontal cut to original cut in step 1. Remove strip and insert glass.

Place a piece of glass on top of the ice chest. Make a cut 1/4" deep around the outside edges of the glass – **do not cut through the top of the chest.** Remove the glass and draw a line 3/4" inside of the cuts. Following this line, cut all the way through the top of the chest and discard the piece cut out. Around the inside edges of the opening, draw a line 1/4" from the top of the chest. Cut along this line to a depth (about 3/4") that meets the original cut and a strip can be lifted out. Place the glass in the recessed area and secure it with strips of tape around the edges of the glass.

Test the Incubator

The ice chest is now an incubator. Fill the water pan approximately half full with warm water and place it in the bottom of the incubator. Place the egg tray over the water pan. An incubator thermometer can be placed on the egg tray or attached to the inside of the incubator so that the bulb is about 1" above the egg tray. Place the top on the incubator and plug the lead cord into a 110-volt outlet. Adjust the temperature control bolt until the lights go on. Continue to adjust the temperature control bolt until the thermometer indicates the desired temperature.