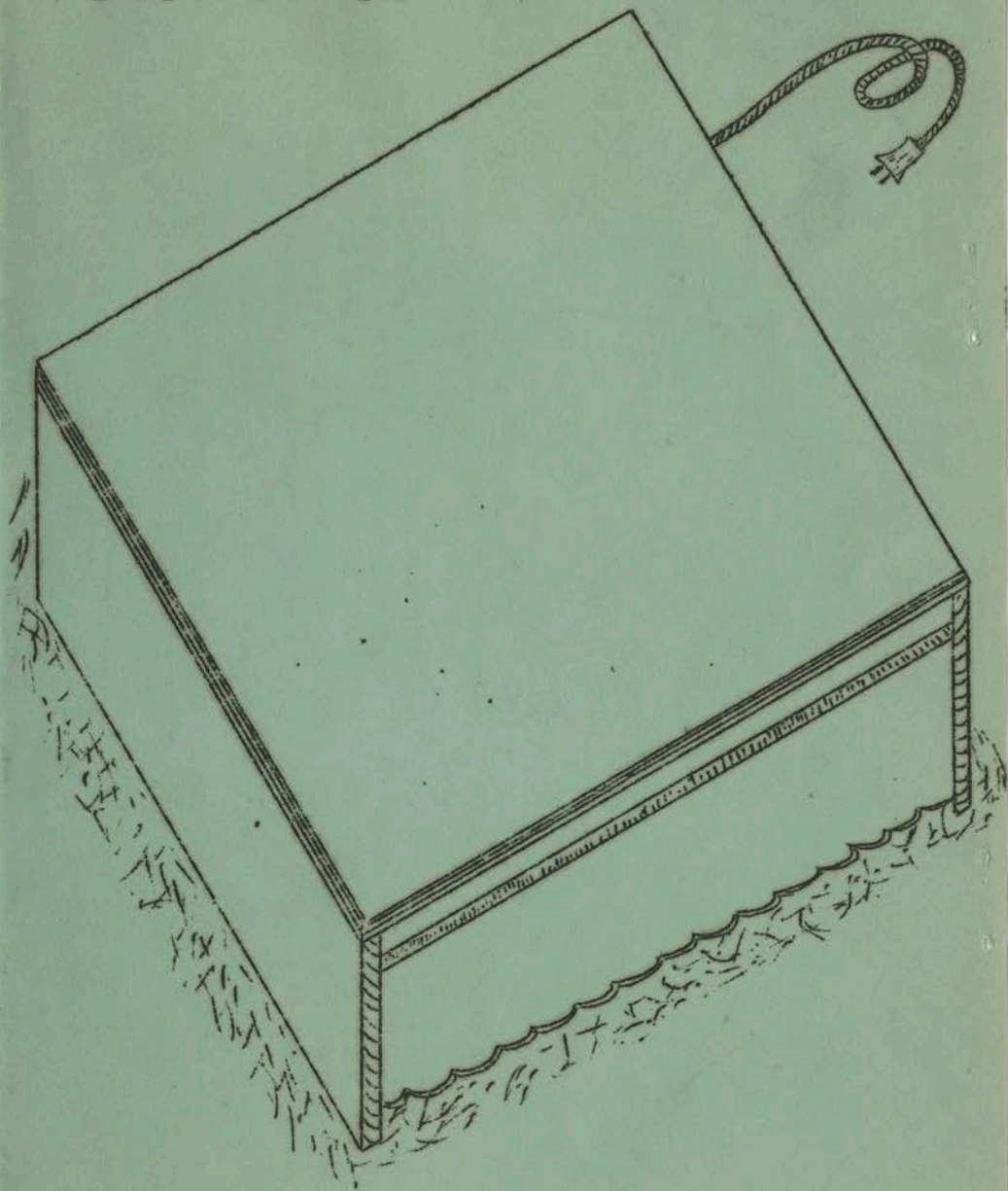


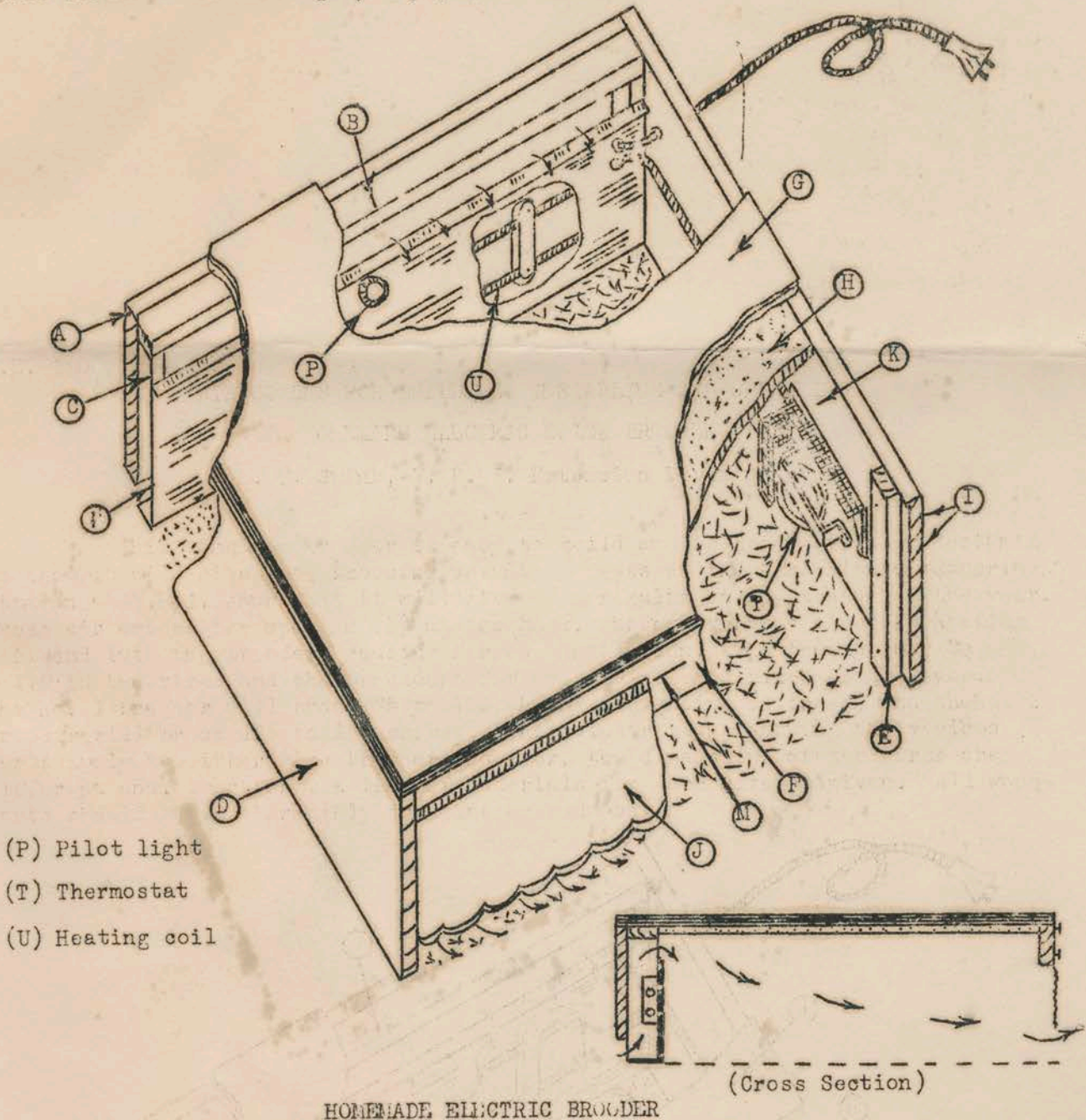
HOMEMADE ELECTRIC BROODER - A.E.140



INSTRUCTIONS FOR BUILDING, INSTALLING AND OPERATING
A HOMEMADE ELECTRIC CHICK BROODER

E. T. Swink, V. P. I. Extension Division

This homemade brooder is easy to build and is scientifically designed so that it will give good brooding results. Tests at the Agricultural Experiment Station at V.P.I. show that it will give good results at any season of the year. Fresh air enters the opening (I) at the back, passes over the electric heating coil and into the brooder, causing forced ventilation. The brooder may be built in two sizes and the procedure for assembling both sizes is the same. The No. 1 brooder will brood 75 to 100 chicks (depending on breed) and the No. 2 brooder will brood 125 to 150 chicks. The illustrations showing the various parts apply to either size brooder; however, the dimensions of the parts are different and, therefore, a list of materials for each size is given. All wood parts should be of thoroughly dry pine or redwood.



No. 1

No. 2

- | | |
|---|---|
| (A) Back: 28 $\frac{1}{2}$ " x 7 $\frac{1}{2}$ " x 3/4" (1) | 34 $\frac{1}{2}$ " x 9 $\frac{1}{4}$ " x 3/4" (1) |
| (B) Back top piece: 28 $\frac{1}{2}$ " x 1 $\frac{1}{2}$ " x 3/4" (1) | 34 $\frac{1}{2}$ " x 1 $\frac{1}{2}$ " x 3/4" (1) |
| (C) Back cleats: 7-3/4" x 1 $\frac{1}{2}$ " x 3/4" (2) | 9 $\frac{1}{4}$ " x 1 $\frac{1}{2}$ " x 3/4" (2) |
| (D) Sides: 28 $\frac{1}{2}$ " x 8 $\frac{1}{2}$ " x 3/4" (2) | 32" x 10" x 3/4" (2) |
| (E) Front cleats: 8" x 1 $\frac{1}{2}$ " x 3/4" (2) | 9 $\frac{1}{2}$ " x 1 $\frac{1}{2}$ " x 3/4" (2) |
| (F) Front top piece: 28 $\frac{1}{2}$ " x 2-3/4" x 3/4" (1) | 34 $\frac{1}{2}$ " x 2-3/4" x 3/4" (1) |
| (G) Top plyboard: 28 $\frac{1}{2}$ " x 30" x 1/4" (1) | 32" x 36" x 1/4" (1) |
| (H) Celotex Ins.: 25 $\frac{1}{2}$ " x 28 $\frac{1}{2}$ " x 1/2" (1) | 29" x 34 $\frac{1}{2}$ " x 1/2" (1) |
| (I) *Baffle: 24 gauge tin, 28 $\frac{1}{2}$ " x 8" (1) | 34 $\frac{1}{2}$ " x 9 $\frac{1}{2}$ " |
| (J) Curtain: 30" x 6" wide (1) | 36" x 8" wide |
| (K) 1 piece of 1/4" or 3/8" mesh hardware cloth for box around thermostat | |
| (M) Curtain support: piece 9/32" screen door spring and soft wire | |
- 1 pound 6 penny nails
 36 - 1 $\frac{1}{2}$ " #6 flat head wood screws
 4 - 3/4" #6 round head wood screws
 1/2 pint metallic aluminum paint
 1/2 pint gray flat paint

ELECTRICAL MATERIALS FOR BROODER

Note: THE COMPLETELY ASSEMBLED ELECTRICAL PARTS CAN BE PURCHASED FROM MANUFACTURERS AT APPROXIMATELY \$4.75 FOR THE NO. 1 AND \$5.50 FOR THE NO. 2. IF IT IS DESIRED TO BUY AND ASSEMBLE THE INDIVIDUAL PARTS, THEY WILL COST ABOUT \$4.25 FOR THE NO. 1 AND \$5.00 FOR THE NO. 2 AND THE COMPLETE LIST OF PARTS NEEDED IS AS FOLLOWS:

No. 1

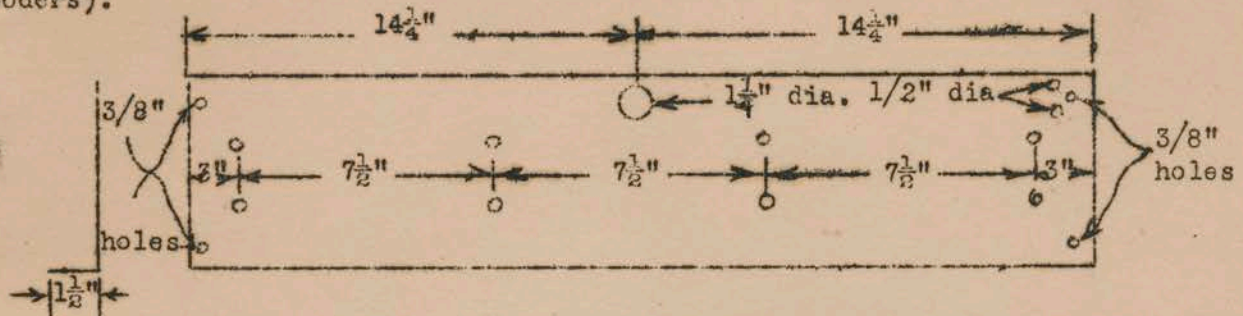
No. 2

- | | |
|--|--|
| Heating element: 220 watt, 110 volt low temperature coil | 330 watt, 110 volt low temperature coil |
| Thermostat: 5 amp., 110 volt wafer type with 1 $\frac{1}{2}$ " adjustment screw for side wall mounting | 5 amp., 110 volt wafer type with 1 $\frac{1}{2}$ " adjustment screw for side wall mounting |
| Pilot Light: 1 porcelain sign socket and 7 $\frac{1}{2}$ watt bulb | 1 porcelain sign socket and 7 $\frac{1}{2}$ watt bulb |
| Insulators: 4 pair small flat porcelain cleats
2 small porcelain bushings | 5 pair small flat porcelain cleats
2 small porcelain bushings |
| Wire: 8 ft. 2 wire #18 rubber covered cord
2 ft. asbestos insulated #18 wire for pilot light
2 ft. of loom
2 ft. 2 wire #18 cord for thermostat circuit | 8 ft. 2 wire #18 rubber covered cord
2 ft. asbestos insulated #18 wire for pilot light
2 ft. of loom
2 ft. 2 wire #18 cord for thermostat circuit |
| Bolts: 8 - 3/16" x 1 $\frac{1}{2}$ " long round head stove bolts for mounting insulators
2 - 3/16" x 1 $\frac{1}{2}$ " round head stove bolts for heater terminals (2 extra nuts) | 10 - 3/16" x 1 $\frac{1}{2}$ " long round head stove bolts for mounting insulators
2 - 3/16" x 1 $\frac{1}{2}$ " round head stove bolts for heater terminals*
(2 extra nuts) |

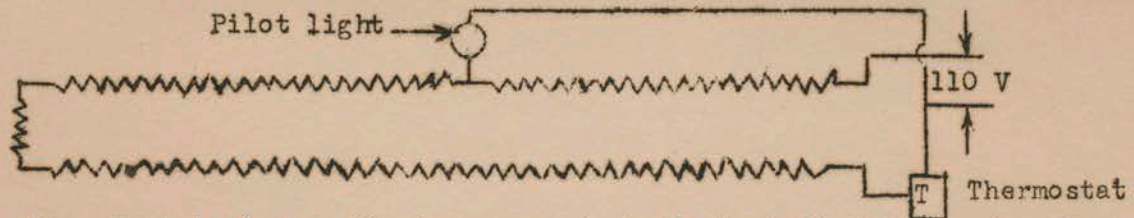
* If the electrical equipment is purchased already assembled, it will come mounted on this baffle.

INSTRUCTIONS FOR ASSEMBLING ELECTRICAL EQUIPMENT WHEN INDIVIDUAL PARTS ARE PURCHASED

Bend the tin baffle to L shape so that the short side will be $1\frac{1}{2}$ " wide. The $1\frac{1}{2}$ " side will form the bottom of the heating chamber and the other side will support the heating element and pilot light. Measure in three inches from each end of the tin baffle and lay off $\frac{3}{8}$ " holes for mounting the insulators, $1\frac{1}{4}$ " hole for sign socket and $\frac{1}{2}$ " holes for the porcelain bushings according to the following sketch. (Same general arrangement for both size brooders).



Mount insulators loosely, placing two stove bolts in grooves of the pair and insulators on the end of baffle nearest the thermostat. Carefully stretch the heating coil around the insulators and fasten the two ends to the two terminal bolts in the end insulator. The coil should be taut and should not touch the tin baffle. Next, mount the sign socket, round insulators and connect the thermostat according to the following wiring diagram.



The electrical assembly is now ready to be installed in the brooder as the brooder is assembled.

ASSEMBLING THE BROODER

It is suggested that six penny nails be used for fastening the wooden parts together in order to hold them in place accurately and then use $\frac{1}{2}$ inch #6 wood screws to hold them rigidly and permanently. Fasten piece (B) to back board (A) and then attach cleats (C) to these two pieces. (Refer to Fig. 1 to be sure the various parts are properly placed). Next, fasten cleats (E) to sides (D), leaving a $\frac{3}{4}$ " space in front of the cleats for front piece (F) later. Next, fasten sides (D) to the ends of the unit formed by (A), (B), and (C). The front piece (F) is then fastened securely in place. Measure in eight inches from the front and up three inches from the bottom of right side (D) and bore a $\frac{1}{4}$ " hole for the adjustment screw of the thermostat to extend through to the outside. The assembled electric heating unit is then fastened in place and the

thermostat mounted over the hole inside (D). Bore another 1/4" hole through right side (D) near the end of the heating unit for the rubber cord to come through to plug into electric convenience outlet for power supply. Mount the wires to the thermostat (in loom) to side (D) with staples or mounting clamps to hold it rigidly in place. Bend a piece of 1/4" or 3/8" mesh hardware cloth to form a protective cage around the thermostat to protect it from being damaged. Next, screw the 7 $\frac{1}{2}$ watt bulb into the sign socket. Carefully check all electrical connections and then plug in the brooder to see that it heats properly.

Fasten the piece of plywood top on the brooder and then turn the brooder upside down and prepare to install the insulating board. Carefully lay off the corners of the insulating board to be cut out so it will fit around the cleats on the sides of the brooder. The insulating board can be fastened to the top by either a good grade of glue or cement or with 1" x 3/8" stove bolts or both. Measure down from the top front of the brooder 1/2" and 2", respectively, on each side and mount 3/4" #6 round head screws (L) for supporting the curtain and hang the brooder curtain on a piece of soft wire, using the screen door spring to keep it taut. Paint the insulating board with metallic aluminum paint and the rest of the brooder with gray flat paint mixed with linseed oil.

INSTALLATION OF THE BROODER

Brooder House:

This brooder will operate satisfactorily in any type room, provided a few simple rules are followed. The No. 1 brooder should have a room with a floor area of at least 80 square feet and the No. 2 should have at least 110 square feet. The two other important requirements are a tight floor and plenty of window space on the front side for room ventilation. It is preferable to provide a double floor under the brooder and if the room or brooder house has a concrete floor, a false wood floor of 2" x 4" pieces on edge and tongue and grooved boards should be built over the concrete.

Wiring:

The size wire for the circuit from the main switch box or source of power to the brooder depends on the distance between the two points. For operating one brooder, the following wire sizes should be used:

Distance up to 500 ft.	2 #10 weatherproof wires
Distance 500 to 900 ft.....	2 #8 weatherproof wires
Distance 900 to 1500 ft.....	2 #6 weatherproof wires

The circuit should be fused with a 5 ampere fuse and the wiring should be installed by someone qualified to do the work or should be checked by a qualified person before the current is turned on the circuit. The electric service organization rural representative will gladly check the wiring and give advice on proper wiring for the brooder installation.

Location of Brooder in the Brooding Room:

This type brooder should be placed in the back center of the room with the back side of the brooder (heating chamber) next to the brooder house wall. Two or three inches of space should be allowed between the brooder and the wall to allow a free flow of fresh air to the opening at the heating unit. This space should be closed to prevent chicks from getting behind the brooder and no litter should be placed on the floor behind the brooder because it might close up the air slot at the heating unit, affecting the operation of the brooder.

Litter:

Any type of litter that will absorb moisture, such as peat moss, crushed corn cobs or stalks, chopped straw or peanut hulls may be used. Place $1\frac{1}{2}$ " or 2" of dry litter over the floor.

Adjusting the Brooder Thermostat:

The brooder should be turned on and the thermostat properly adjusted several hours before placing baby chicks under the hover to thoroughly dry and warm the brooder and floor under it. Plug in the brooder and turn the adjustment screw on the thermostat in a counter clockwise direction until the pilot light burns dimly (the light burns bright when the current is off the heating element). Keep the current on until the temperature at the thermostat is 100° F and then slowly turn the adjustment screw in a clockwise direction until the pilot light burns brightly. Turn the lock nut on the adjustment screw until it is tight, holding the setting at this point.

SUGGESTIONS FOR OPERATING THE BROODER

The three important points in operating the electric brooder are: (1) keep the brooder temperature so that the chicks are comfortable and do not crowd (100° F to start with), (2) always keep the windows or ventilators in the front of the house open to allow plenty of fresh air to enter the house, (3) change the litter often enough to keep it clean and dry. The top of this brooder may be kept clean by either placing layers of wrapping or newspaper over it, removing a layer as it gets dirty or by putting a $1\frac{1}{2}$ " wood rim around the top of the brooder and placing litter on the brooder top. The chicks will get on the brooder and either of these methods will be found satisfactory. As the chicks grow larger, the brooder can be raised on 1" strips to allow more head room inside. Ask the electric service organization for further suggestions and advice on the installation and operation of the brooder. His services are free and he wants to help.

Note: THERE ARE SEVERAL OTHER TYPES OF PROVEN AND DEPENDABLE BROODER UNITS AVAILABLE FOR HOMEMADE HOVERS AT FROM \$2.50 TO \$15.00. JUST BUILD THE HOVERS ACCORDING TO THE INSTRUCTIONS THAT COME WITH THE UNIT AND FOLLOW THE SUGGESTIONS GIVEN IN THIS CIRCULAR FOR INSTALLING AND OPERATING THE FINISHED BROODER.

Virginia Agricultural and Mechanical
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Agriculture, Cooperating
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John R. Hutcheson, Director
Blacksburg, Virginia

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