Feb. 22, 1938. J. E. CARLSON 2,109,163

ELECTRICALLY HEATED BROODER

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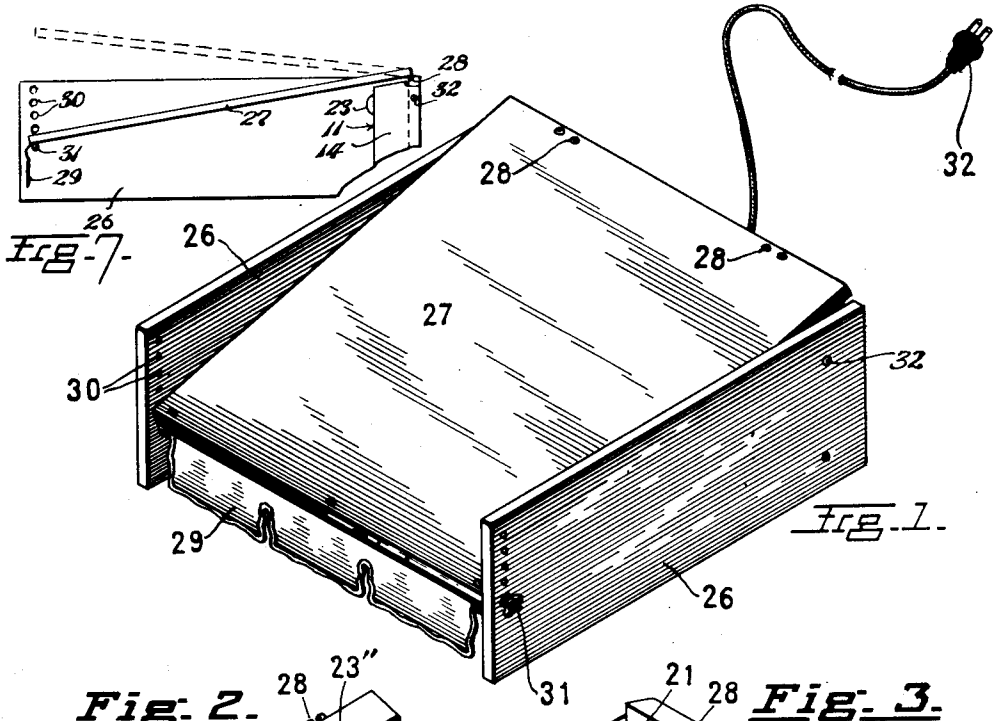


Fig. 7.

Fig. 1.

Fig. 2.

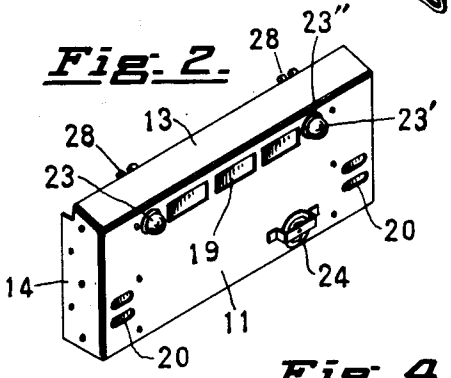


Fig. 3.

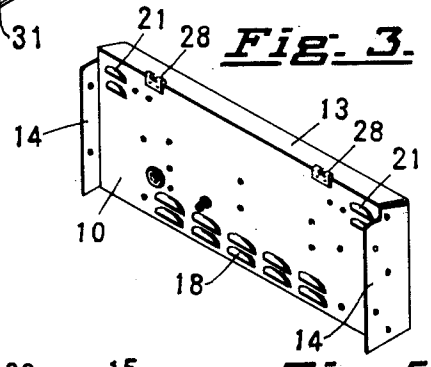


Fig. 4.

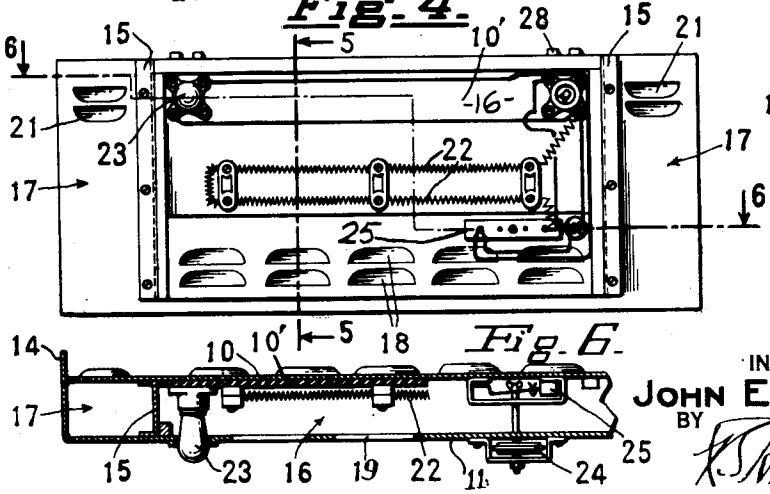
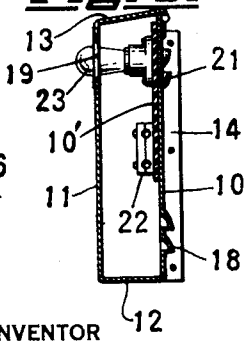


Fig. 6.

Fig. 5.



INVENTOR
JOHN E. CARLSON,
BY
ATTORNEY

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ELECTRICALLY HEATED BROODER

John E. Carlson, Forestville, Conn., assignor to The Trumbull Electric Manufacturing Company, Plainville, Conn., a corporation of Connecticut

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5 Claims. (Cl. 119—33)

My invention relates particularly to devices and apparatus for the care of chickens.

The main object is to provide a brooder which is safe and healthy for the chicks. I have especially sought to provide a construction in which there will be a warm air circulation automatically controlled as to temperature, free from drafts and entirely free from any danger of suffocation due to open flame heating.

One object is to provide a construction which is simple and inexpensive and yet effective.

A special object is to provide a construction the parts of which can be made up and sold in compact units to be erected by the purchaser.

Another object is to provide a heater unit adapted for use as a part of a brooder, the remaining parts to be erected by the purchaser with ordinary boards.

The preferred brooder construction includes a heater unit which forms the back of the housing for the chickens. The sides of the housing and the roof may be formed of ordinary boards. The heater unit includes a resistance heater wire and lamps together with a thermostatic control for the resistance heater and is so constructed as to ensure proper circulation of the warm air. The roof of the brooder is hinged to the heater unit and adjustable so that it can be raised at its outer end as the chickens grow.

Fig. 1 is a perspective view of a brooder construction embodying my invention.

Figs. 2 and 3 are perspective views of a heater unit viewed from the inner side and the outer side respectively.

Fig. 4 is a view of the inside of the heater unit, parts being shown in section.

Fig. 5 is a cross section of the heater unit on the plane of the line 5—5 of Fig. 4.

Fig. 6 is a horizontal section on the plane of the line 6—6 of Fig. 4.

Fig. 7 is a side and sectional view of the brooder showing the hinged roof or top and its support.

In the preferred form of apparatus the heater unit has a box or casing formed of sheet metal with a back plate 10, a front plate 11, a bottom plate 12, a top plate 13 and end plates 14 all united in any suitable manner. This box is provided with upright partitions 15, 15 secured to the front of the back plate 10 and which reinforce the front and back plates and divide the box into a central main chamber or compartment 16 and end chambers 17.

The front plate and back plate are preferably separable so as to permit access to the interior and the end plates are formed as flanges of the front plate.

The back plate has a number of inlet openings 18 for letting cold air into the central chamber near the bottom and the front plate has outlet passages 19 for warm air near the top.

The end chambers have air inlet passages 20 in the front plate near the bottom and outlet air passages 21 near the top of the back plate.

The heating is effected partly by a resistance element 22 located in the center chamber between the level of the air inlets 18 and the outlets 19 and partly by one or more electric lamps 23 and 23' located in the upper part of the box. These heater elements are suitably supported preferably by an insulating plate 10' on the back plate of the box and the lamp sockets are arranged in line with openings 23'' so that the lamp bulbs may be inserted through the front plate and so that the lights will shine into the brooder and thus attract the chicks. The sockets for the lamps 23 and 23' are so connected or wired into the circuit that lamp 23 will burn continuously to attract the birds while lamp 23' is in circuit with the heater so as to indicate when the heater circuit is on and to go out when the heater circuit is automatically interrupted and thus indicate the condition of the circuit.

The temperature is regulated by the action of a thermostatic disc 24 and a connected switch 25 in circuit with the resistance element 22, the parts being designed and adjusted to maintain the desired temperature.

The housing for the birds is formed by the heater unit just described together with the side boards 26, 26, the top or roof 27 and the curtain 29. The side boards may be secured to the end flanges 14 of the heater unit by screws 32 and the roof may be hinged at 28 to the upper edge of the heater unit or may be pivoted to the sides 26 of the housing.

The side boards are provided with a number of openings 30 for receiving a cross bar 31 upon which rests the outer edge of the roof 27. The roof can be readily raised for inspection and cleaning. By adjusting the height of the supporting bar 31 the opening for the birds to enter and leave can be varied and the outer end of the cover may be adjusted to suit the size or height of the growing chicks.

The heater unit may be provided with a suitable attachment plug 32 and cord for convenience in installing the device whenever desired.

When the brooder is in use the outside or cold air enters the heater chamber through the

openings 18 and rises past the heater wire 22 and passes through the outlets 19 into the housing. The warm air striking against the inclined roof 27 is deflected downward away from the heater unit and, of course, some of it escapes from beneath the curtain 29. The warm air circulates in the housing and some of it escapes from the openings 20 into the end chambers 17 of the heater unit and thence out through the openings 21. The heat from the central chamber tends to expand the air in the end chambers, and thus creates a flow of air from the inlets 20 to the outlets 21. The air in the brooder is thus kept circulating slowly and kept at the desired temperature suitable for the protection of the chicks.

It will be seen that this construction provides a very cheap heater unit which is portable and may be set up or moved anywhere, or when not in use may be taken apart and stored away in a very small space. The unit is complete in itself in that it carries all of the electrical fittings and means for directing the flow of the heated air and for properly ventilating the interior of the brooder section without cold drafts.

Obviously this construction lends itself to a wide range of dimensions as the thermostatic switch is adjustable thus permitting the brooder proper to be comparatively wide or it may be of narrower dimensions where space will not permit the larger dimensions. This feature also allows for adjustment of the brooder proper to the number of chicks which it is desired to brood. A commercial size of brooder may be adjusted and arranged to brood from 50 to 150 chicks. Again this novel construction allows for a cheap and practical means for providing a series of brooders for chicks of various sizes.

I claim:

1. A knock-down type brooder including a housing having detachable sides and roof, one of said sides being a double walled unit with a heater secured to the unit between the walls, the wall of the unit between the heater and the outside of the brooder being provided with air inlet openings near the bottom, the wall of the unit between the inside of the brooder and the heater having outlet openings near the top whereby outside air is caused to rise, pass over the heater, and be discharged into the brooder adjacent the top, and a temperature responsive control mechanism for the heater located in the brooder but carried by the unit, the roof of said brooder being pivotally secured to the top of said unit, and the walls of said brooder being provided with means for adjusting the height of the portion of the roof remote from said pivotal mounting.

2. A portable heating and ventilating unit adapted to be detachably secured to the top and side walls for a brooder and including spaced top, bottom, side and end walls, an electrical heater mounted between the walls of said unit, the front and back walls of the unit being provided with ventilating openings arranged to cause outside air to enter between the walls, rise and pass over the electric heater and be discharged into the brooder adjacent the top, at least a portion of said electric heater including a socket secured in the space between the front and back walls and an electric lamp bulb mounted in said socket and located at least partially within said unit to assist in heating the air within the unit, said lamp bulb being readily visible and accessible through a wall of the unit, and a thermostat mounted on the outside of the front of the unit, said thermostat being connected with at least a portion of said electric heater for controlling the same in response to the temperature of the air within the brooder.

3. A knock-down type brooder including a housing having detachable sides and roof, one of said sides being a double walled unit with at least two adjacent compartments, a heater secured to the unit between the walls of one compartment, the outside wall of this compartment being provided with air inlet openings near the bottom, the inside wall of this compartment having outlet openings near the top whereby outside air is caused to rise, pass over the heater and be discharged into the brooder adjacent the top, a second compartment of the unit being provided with an outlet opening near the bottom of its inside wall and an exhaust opening near the top of its outside wall whereby cooler air within the brooder is withdrawn from the floor, is heated by some of the heat from the adjacent heating compartment and the brooder, is caused to rise and exhausts into the outer air, and a temperature responsive control mechanism for the heater located in the brooder but carried by the unit, said roof being hinged to the upper edge of the unit and having a depending curtain at the opposite edge.

4. A heater unit for a brooder formed of two parts of sheet metal with ends, each end having a flange, one part having an outer wall and the other part having an inner wall, one part having a top flange and one part having a bottom flange, vertical partitions secured to one wall and extending to the other wall, the respective walls and partitions forming central and end chambers, the outer wall having air inlet openings near its lower edge and the inner wall having air outlet openings near its upper edge, a resistance heater carried by one wall above the inlet openings and below the outlet openings in the central chamber, the end chambers having inlet openings in the inner wall near the bottom and outlet openings in the outer wall near the top, the end flanges having means for attaching side boards and the top flange having means for supporting a roof for a brooder chamber.

5. As an article of manufacture, a back unit for a brooder formed of sheet metal having outer and inner walls, a top wall and end walls forming a chamber, a heater element secured to one wall within said chamber, thermostatically actuated regulating means carried by one wall and having a temperature responsive member projecting from the inner wall, the outer wall having air inlet openings near the bottom, the inner wall having air outlet openings near the top, means for securing side boards to the end walls of the unit, and means for hinging a roof member to the upper wall of the unit.

JOHN E. CARLSON.