

No. 770,366.

PATENTED SEPT. 20, 1904.

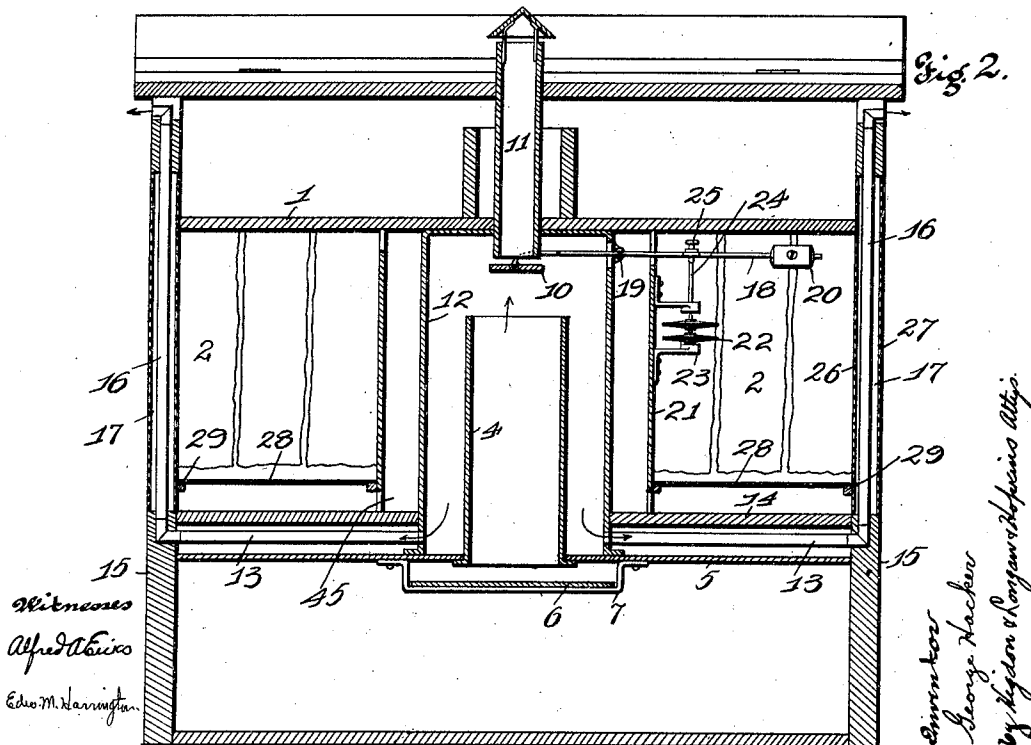
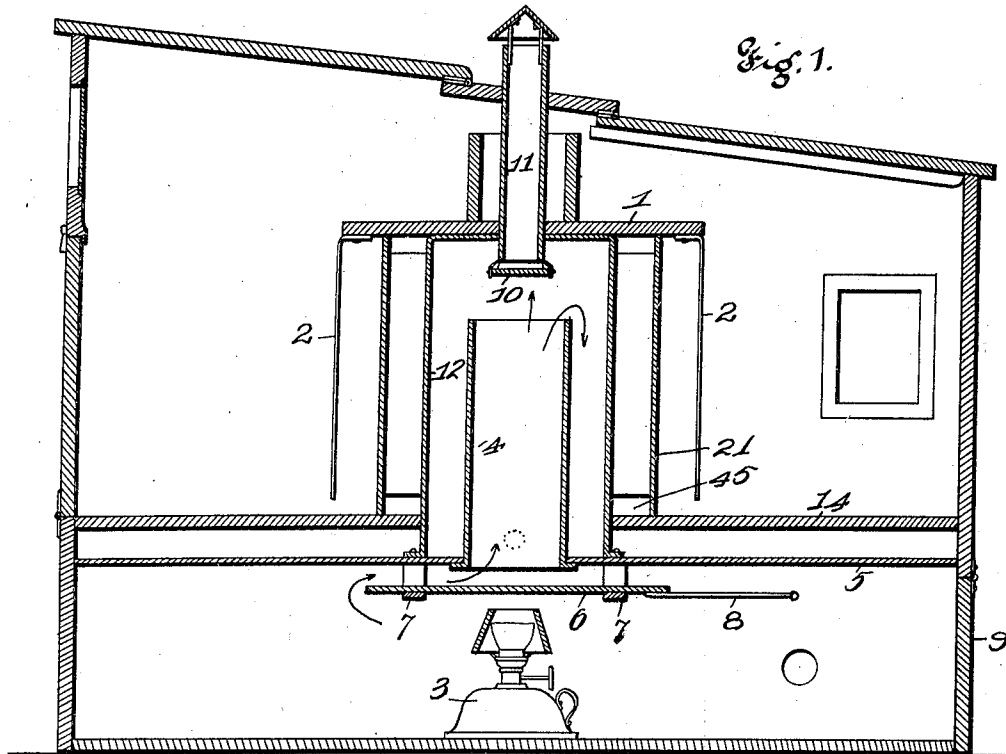
G. HACKER.

SYSTEM OF HEATING AND VENTILATION FOR BROODERS.

APPLICATION FILED MAR. 3, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses
Alfred Thies
Edw. M. Harrington

Inventor
George Hacker
by Hyden & Rogers Attorneys

No. 770,366.

PATENTED SEPT. 20, 1904.

G. HACKER.

SYSTEM OF HEATING AND VENTILATION FOR BROODERS.

APPLICATION FILED MAR. 3, 1904.

NO MODEL.

2 SHEETS—SHEET 2.

Fig. 3.

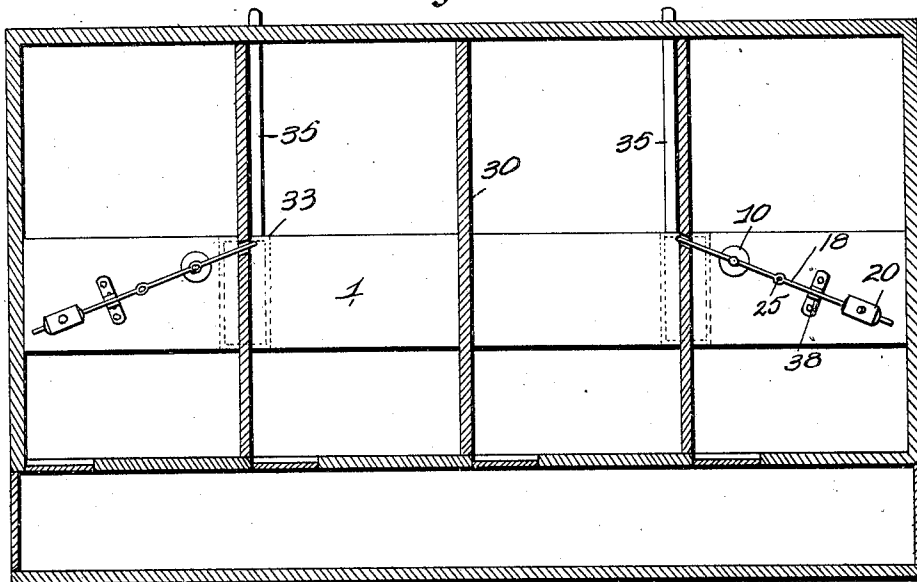
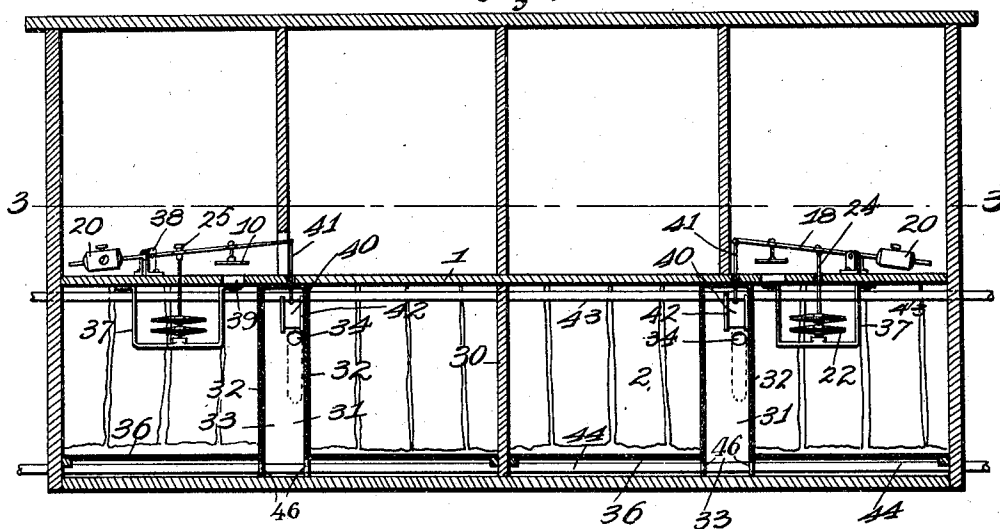


Fig. 4.



Witnesses

Alfred A. Cline

Edw. M. Harrington

Inventor

George Hacker

By Higdon & Longan & Hopkins Attys

UNITED STATES PATENT OFFICE.

GEORGE HACKER, OF ST. LOUIS, MISSOURI.

SYSTEM OF HEATING AND VENTILATION FOR BROODERS.

SPECIFICATION forming part of Letters Patent No. 770,366, dated September 20, 1904.

Application filed March 3, 1904. Serial No. 196,446. (No model.)

To all whom it may concern:

Be it known that I, GEORGE HACKER, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Systems of Heating and Ventilation for Brooders, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to an improved system of heating and ventilation for brooders, and has for its object to provide brooders and brooding-houses with a constant and adequate supply of fresh air suitably and adequately heated.

In the drawings, Figure 1 is a transverse mid-sectional view of a lamp-heated brooder embodying my invention. Fig. 2 is a longitudinal mid-sectional view of the same. Fig. 3 is a horizontal sectional view of a steam-heated brooding-house embodying my invention, taken along the line 3 3 of Fig. 4. Fig. 4 is a vertical longitudinal mid-sectional view of the same.

In the drawings the hover-top is indicated by the numeral 1. From the sides of the hover-top 1 the cloth strips 2 are suspended to form the outer walls of the hover. A lamp 3 is seated in the bottom of the brooder immediately below the vertical flue 4, which is mounted in the false bottom 5. Beneath the flue 4 a metallic sheet 6 is slidably mounted upon the bearers 7. The function of the sheet 6 is to cause diffusion of the heat generated by the lamp 3 and to prevent the direct ascension of said heat to the flue 4 when the sheet 6 is in the position shown in Fig. 1. When desired, the sheet 6 may be laterally withdrawn by means of the cord 8, so that the heat from the lamp 3 may ascend directly into the flue 4. When it is desired to again replace the sheet 6 in the position shown in Fig. 1, the door 9 is opened and the sheet 6 thrust back into position upon the bearers 7.

The heat admitted to the flue 4 when the valve 10 is seated in the bottom of the flue 11

is forced outwardly into the drum 12, from which it passes into the tubes 13 at each side of the drum 12, the tubes 13 being mounted between the false bottom 5 and the floor 14 and extending into the walls 15 at each side of the brooder. The tubes 13 are connected at their ends with the vertical tubes 16, which extend vertically through the window-openings 17 in the walls 15 and are bent outwardly at their tops to extend to the outer sides of walls 15. The valve 10 is mounted on the inner end of the bar 18, which extends through the wall of the drum 12 and is pivotally mounted thereon at the point indicated by the numeral 19. The bar 18 is also provided at its outer end with a counterbalancing-weight 20. On account of the danger of overheating the drum 12 and consequent injury to the chicks by coming in contact therewith the drum 12 is surrounded by the auxiliary drum 21, through the wall of which the bar 18 extends. Upon the outer side of the drum 21 a thermostat 22 is mounted on brackets 23, the upright 24 being slidably mounted in the upper of the brackets 23 and its base being rigidly mounted upon the top of the thermostat 22. The upright 24 passes through the bar 18 and upon the upper side thereof is provided with the thumb-screw 25. The thermostat and its connection being adjusted in the manner well known in the art, when the heat beneath the hover rises above the desired point the upward movement of the upright 24 permits the valve 10 to be thrust downwardly away from the opening of the flue 11, whereupon the heat in the drum 12, together with that arising directly from the flue 4, is permitted to escape vertically through the flue 11 and out of the brooder. As shown in Fig. 2, the window-openings 17 are covered by sheets 26 and 27, which are of any suitable perforate and pervious material. The direct admission of fresh air to the hover is accomplished by the use of the said sheets 26 and 27 and is further effected by means of a secondary floor 28, which is of non-metallic foraminous material and which is slightly ele-

vated above the floor 14 and has its outer ends supported upon strips 29, which extend across the width of the window-openings 17, so that fresh air is admitted beneath the floor 28, passing through the sheets 26 and 27 and under the strips 29.

In Figs. 3 and 4 I have presented a modified form of my invention, in which form it is peculiarly adapted to the requirements of brooding-houses which are heated by hot water or steam. In the structure shown in Figs. 3 and 4 the hover is divided into sections by means of the walls 30, and intermediate of these walls are ventilation-boxes 31, having non-metallic foraminous walls 32 and a front wall 33, which last wall is provided with the opening 34, into which the inner end of the air-pipe 35 extends, the outer end of the pipe 35 extending through the outer wall of the brooder into the outer air. The hover is provided with a non-metallic foraminous floor 36, beneath which the air-supply is admitted from the bottom of the air-chamber 31. The thermostat 22 is suspended beneath the hover-top 1 by means of a bracket 37, and the bar 18 is pivotally mounted on the upper side of the hover-top 1 in the bracket 38. The valve 10 in this form of my device is used to close or open the flue-opening 39, and the bar 18 is extended beyond the valve 10 to a point immediately above the opening 34. From its end the valve 40 is suspended by means of the wire 41, the valve 40 being slidably mounted in bearings 42 to open or close the opening 34. The heating-pipes are indicated in Fig. 4 by the numerals 43 and 44.

The mode of operation of the form of my invention shown in Figs. 3 and 4 is substantially identical with that of the form illustrated in Figs. 1 and 2, with the difference that when the valve 10 is opened by the elevation of the bar 18 the valve 40 is simultaneously raised to uncover the inner ends of the opening 34, thus admitting fresh air from the exterior of the brooding-house to reduce the temperature within the hover by passing into it through the walls 32.

The auxiliary drum 21, as shown in Figs. 1 and 2, is cut away at its sides adjacent to the secondary floor 28 to form the openings 45 in order that the heated air from the drum 21 may circulate freely beneath and through the secondary floor 28.

The walls 32, as shown in Fig. 4, are cut away at their meeting-points with the floor 36 to form the openings 46 in order that the air admitted to the ventilation-boxes 31 may pass directly to and through the floor 36.

The function of the hover-floors 36 and 28, arising from their construction of non-metallic foraminous material, is to supply fresh air to the chicks from beneath in order that

the weaker chicks crowded to the floor by the stronger may not be injured by want of fresh air.

The cloth strips 2 are of soft material and dangling around the chicks as they pass to the floors 28 and 36 take the place of the mother-hen's feathers.

The floors 28 and 36 are of soft loosely-woven cloth that will effectually check drafts and currents of air and will at the same time allow the passage of sufficient fresh air to keep the chicks in good health. The walls 32 are also formed of cloth which will allow fresh air to pass. I have found by actual practice that this feature of incorporating cloth into the floors and walls of the hover is of great importance.

I claim—

1. In a brooder: a suitable hover; a floor of non-metallic foraminous material; and means of ventilation whereby fresh air passes upwardly through the floor; substantially as specified.

2. In a brooder: a suitable hover; a floor of non-metallic foraminous material in the hover; means of heating and ventilating the hover; and thermostats for regulating the heat and ventilation; substantially as specified.

3. In a brooder: a hover; a floor within the hover of non-metallic foraminous material; a ventilating-outlet; a valve controlling the ventilating-outlet; and a thermostat whereby the valve is regulated; substantially as specified.

4. In a brooder: a hover having window-openings covered with sheets of perforate and pervious material, a ventilating-outlet; a valve controlling the ventilating-outlet; and a thermostat whereby the valve is regulated; substantially as specified.

5. In a brooder: a hover having a floor of non-metallic foraminous material; and means for conveying air from the exterior of the brooder to the hover through said floor; substantially as specified.

6. In a brooder: a hover having window-openings extending from the exterior to the interior of the hover, and sheets of perforate and pervious material, whereby said window-openings are covered; substantially as specified.

7. In a brooder: a main floor; a false bottom mounted below the main floor; a drum mounted upon the false bottom and extending upwardly through the main floor and closed at the top; a secondary drum mounted upon the main floor around the first drum, there being an air-passage through the bottom of the secondary drum; a flue mounted through the false bottom within the first drum; a plate slidably mounted below the first flue; means

of heating said plate; and a hover having non-metallic foraminous floors in position for the air to pass outwardly through the openings in the bottom of the secondary drum and
5 upwardly through the floor; substantially as specified.

10 8. In a brooder: a hover having cloth floors, there being window-openings in the brooder communicating with the hover, and sheets of cloth covering said window-openings, so that the fresh air may pass through said window-

openings to the hover, and so that the fresh air may pass upwardly through the cloth floors; substantially as specified.

In testimony whereof I have signed my name 15 to this specification in presence of two subscribing witnesses.

GEORGE HACKER.

Witnesses:

ALFRED A. EICKS,
JOHN C. HIGDON.