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F. HEILMAN.

INCUBATOR.

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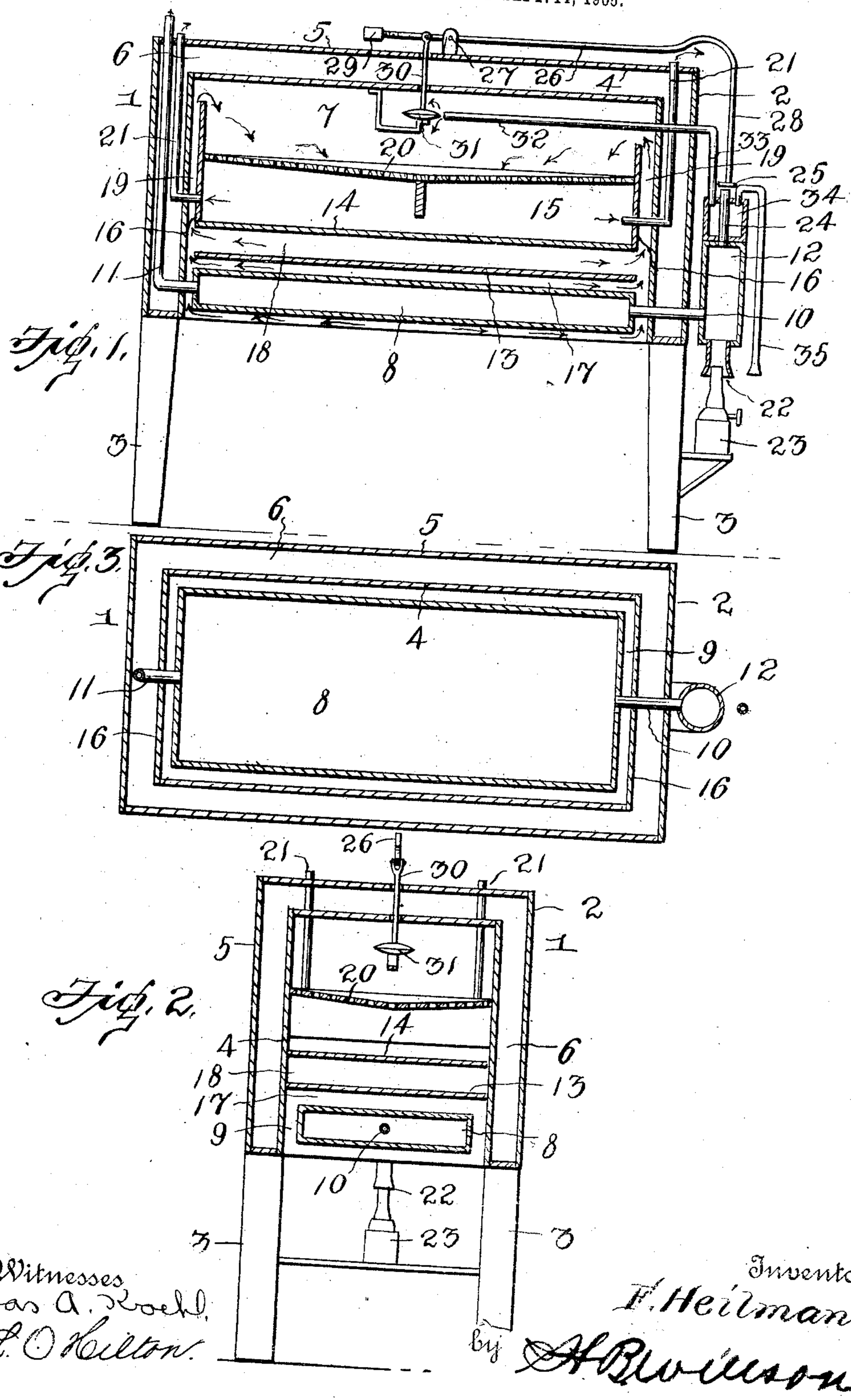

Fig. 1.

Fig. 3.

Fig. 2.

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INCUBATOR.

No. 826,722. Specification of Letters Patent. Patented July 24, 1906.

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To all whom it may concern:

Be it known that I, FREDERICK HEILMAN, a citizen of the United States, residing at Johnstown, in the county of Cambria and State of Pennsylvania, have invented certain new and useful Improvements in Incubators; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in incubators; and it consists in the novel features of construction, combination, and arrangement of parts hereinafter described and claimed.

The object of the invention is to improve and simplify the construction and operation of machines of this character, and thereby render the same more reliable and efficient in use and less expensive to manufacture.

The above and other objects, which will appear as the nature of my invention is better understood, are accomplished by means of the construction illustrated in the accompanying drawings, in which—

Figure 1 is a vertical longitudinal sectional view through an incubator constructed in accordance with my invention. Fig. 2 is a vertical transverse sectional view through the same, and Fig. 3 is a horizontal sectional view.

Referring to the drawings by numeral, 1 denotes my improved incubator, which comprises a body 2, preferably of rectangular form and mounted upon suitable supporting-legs 3. As shown, the body 2 is formed of inner and outer spaced walls 4 5, between which is a space 6, which may be used as a dead-air space or which may be filled with any material that is a non-conductor of heat. The body 2 is without a bottom, and in one or more of its sides or ends I may provide openings closed by suitable air-tight doors or covers to permit of the insertion of the eggs and the removal of the chicks. The space or chamber 7 within the body 2 is partially closed at the bottom or lower end of the latter by a heater 8, which is in the form of a flat hot-air drum of less length and width than the chamber 7, so that a surrounding space 9 will be formed between the sides and ends of said heater and the inner wall 4 of the body to permit of the passage of heated air into said chamber. The heater 8 may be supported within the open bottom of the chamber 7 as shown in Fig. 3 of the drawings or in any other suitable manner and has at its opposite ends hot-air inlet and outlet pipes 10 11. The latter extends through the wall 4 at one end, then vertically through the space 6 at said end, and has its open upper end projecting through the outer wall 5 of the top, as clearly shown in Fig. 1. The hot-air-inlet pipe 10 extends through the walls of the opposite end of the body and opens into a hot-air drum 12. Disposed horizontally above the top of the heater 8 and spaced therefrom and from the sides and ends of the chamber 7 is a partition 13, which is adapted to serve as a baffle to prevent the direct radiation of heat from said heater against the floor or bottom 14 of the egg-chamber 15. The latter is formed by the bottom 14, which is secured to the inner side walls 4 of the body, but spaced from its inner end walls, and by upright ends 16, which terminate a short distance above the inner wall of the top, as shown, so that the air passing upwardly from the heater 8 through the surrounding space 9 may pass through the spaces 17 18 below and above the partition or baffle 13 and upwardly through the spaces 19, as clearly indicated by the arrows in Fig. 1. Within the egg-chamber 15, which is without a top, may be mounted one or more open or foraminous shelves or trays 20, upon which the eggs to be hatched are supported. A circulation of heated fresh air is maintained in the egg-chamber by providing outlet-pipes 21, which are preferably four in number and arranged at the four corners of the chamber, as shown. These pipes have their inlet ends disposed adjacent to the bottom 14 and extend through the spaces 19 and the spaces 6 at the ends of the body, their open discharge ends projecting through the top of the body, as shown.

The heating-drum 12 is suitably mounted upon the outer face of one end of the body 2 and has in its bottom an opening 22, through which are discharged the heat and products of combustion from an oil-lamp or any other suitable form of heater 23, which may be mounted as shown or in any other manner. At the top of the drum 12 is provided a discharge pipe or flue 24, which has its open upper end controlled by a damper 25. The latter is operated automatically by a tempera-

ture-regulating device which comprises a lever 26, pivoted at 27 upon the top of the body and having its long arm connected, as at 28, to said damper. The short arm of said lever 26 is provided with an adjustable weight 29 and is loosely connected to a stem or rod 30, which extends through an opening formed in the top of the body. At the lower end of the rod 30 within the top of the egg-chamber is mounted a thermostat 31, which as it expands and contracts is adapted to automatically close and open the damper 15 to permit more or less of the heat to discharge through the flue 24 directly from the drum 12 instead of passing through the pipe 10 and the heater 8. This thermostat 31, which may be of any suitable form, is disposed centrally in the egg-chamber 15 and in line with the discharge end of a fresh-air-inlet pipe 32. The latter has its opposite end 33 projecting through one end of the body and opening into a drum 34, which rests upon the top of the drum 12 and surrounds the pipe or flue 24. Fresh air is admitted into the drum 34 through a pipe 35, which is preferably arranged as shown.

The construction, operation, and advantages of the invention will be readily understood from the foregoing description, taken in connection with the accompanying drawings. It will be seen that by mounting the heater 8 as shown and providing the partition or baffle 13 fresh heated air will be discharged into both ends of the top of the egg-chamber at a mild and uniform temperature, while air of the same kind will be discharged into the center of the egg-chamber through the pipe 32. Owing to the arrangement of the outlet-pipe 21 the air will circulate downwardly through the eggs, causing them to be heated evenly on all sides, and thereby rendering it unnecessary to turn them, the continuous circulation of air in the egg-chamber through the pipes 21 rendering it unnecessary to open the doors or admit fresh air, and thereby chill the eggs, as is frequently done with similar machines now on the market. The temperature within the egg-chamber will be regulated automatically by the thermostat which controls the damper 25.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An incubator comprising a body having a chamber formed therein and having an open bottom, means for supporting eggs in the chamber in said body, and a heater adapted to partially close the open bottom of said body.

2. An incubator comprising a body having a chamber therein and having an open bottom, means for supporting eggs in the chamber in said body, and a heater disposed in the open bottom of said body and of slightly less size than the same, to form a surrounding air-passage, substantially as described.

3. An incubator comprising a body having a chamber provided therein and having an open bottom, means for supporting eggs in the upper portion of the chamber in said body, a heater disposed in the open bottom of said body and spaced from the walls thereof, and a baffle disposed between said heater and the egg-supporting means, substantially as described.

4. An incubator comprising a body having a chamber formed therein and having an open bottom, a heating-drum disposed in the open bottom of said body and spaced from the walls of the chamber formed in said body, a baffle disposed above said heating-drum and spaced from the walls of said chamber, a flooring in said chamber above said baffle, end walls at the ends of said flooring and spaced from the walls of said chamber, said end walls and flooring forming an egg-chamber, and an air-outlet leading from the said egg-chamber, substantially as described.

5. An incubator comprising a body having a chamber formed therein and having an open bottom, a heating-drum disposed in the open bottom of said body and spaced from the walls of the chamber of said body, a baffle disposed above said heating-drum and spaced from the walls of said chamber, a flooring in said chamber above said baffle, end walls at the ends of said flooring and spaced from the walls of said chamber, said end walls and flooring forming an egg-chamber, an outlet leading from said egg-chamber, and means for discharging heated fresh air into the central portion of said egg-chamber, substantially as described.

6. An incubator comprising a double-walled body having a chamber formed therein and having an open bottom, a flat drum disposed in said open bottom and spaced from the inner walls of said body, inlet and outlet pipes at the opposite ends of said heating-drum, a horizontal baffle disposed in the chamber of said body and spaced from said heater and the inner end walls of said body, a flooring in said body, spaced from said baffle and the inner end walls of said body, vertical walls at the ends of said flooring and spaced from the inner end walls of said body and the inner top wall of the same, means for supporting eggs in the egg-chamber formed by said vertical walls and said flooring, outlet-pipes leading from the lower corners of said egg-chamber, a hot-air drum disposed without said body and connected to said inlet-pipe, the latter-mentioned drum having an inlet-opening in its bottom and an outlet-flue at its top, a heater disposed beneath the last-

mentioned heating-drum, a damper controlling said flue, a thermostatic operating means for said damper, and a second heating-drum surrounding said flue and having inlet and outlet connections, the latter discharging into the central portion of said egg-chamber, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FRED. HEILMAN.

Witnesses:
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