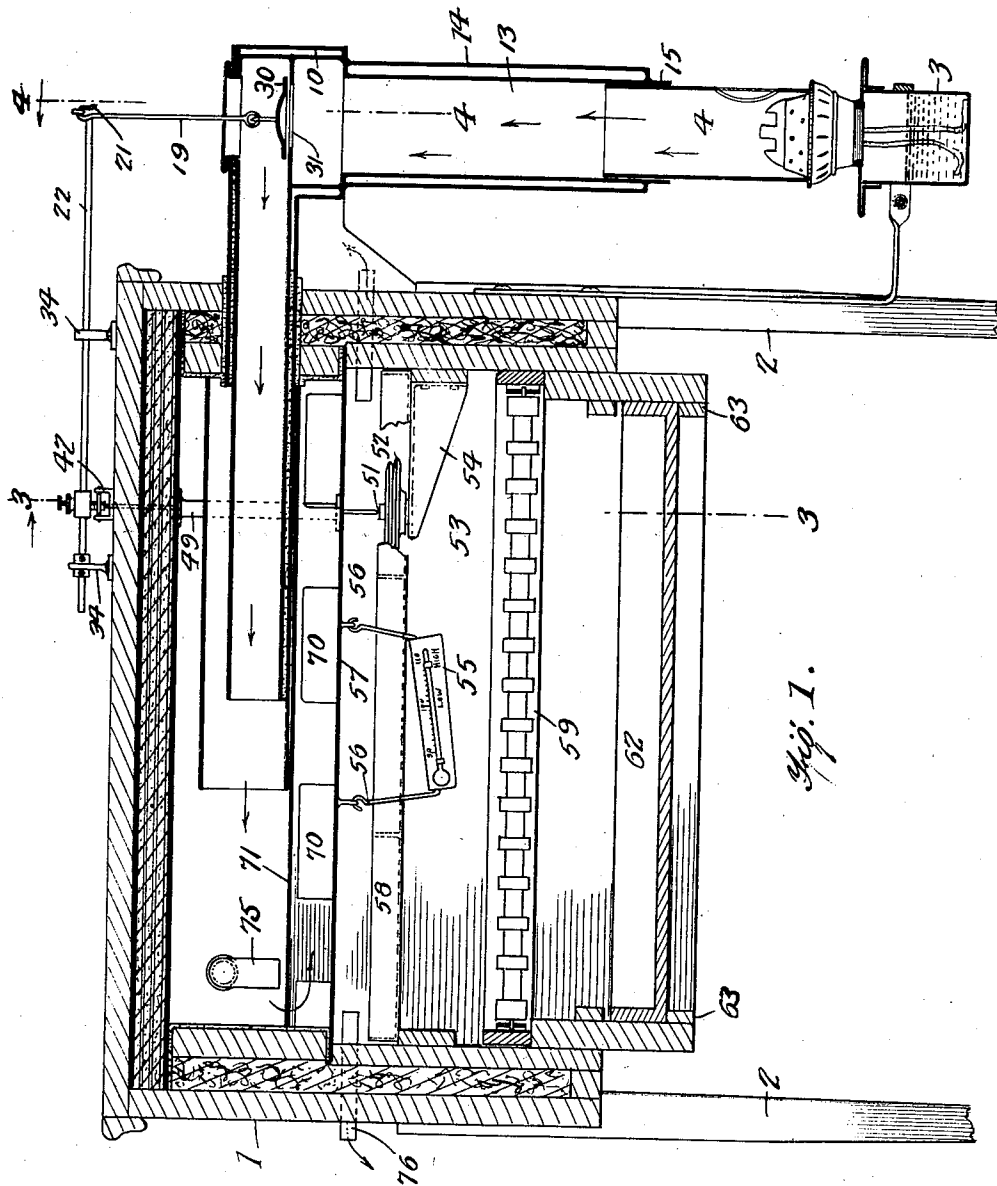


P. H. HERNDON.
INCUBATOR.
APPLICATION FILED APR. 15, 1911.

1,018,192.

Patented Feb. 20, 1912.

3 SHEETS—SHEET 1.



Witnesses

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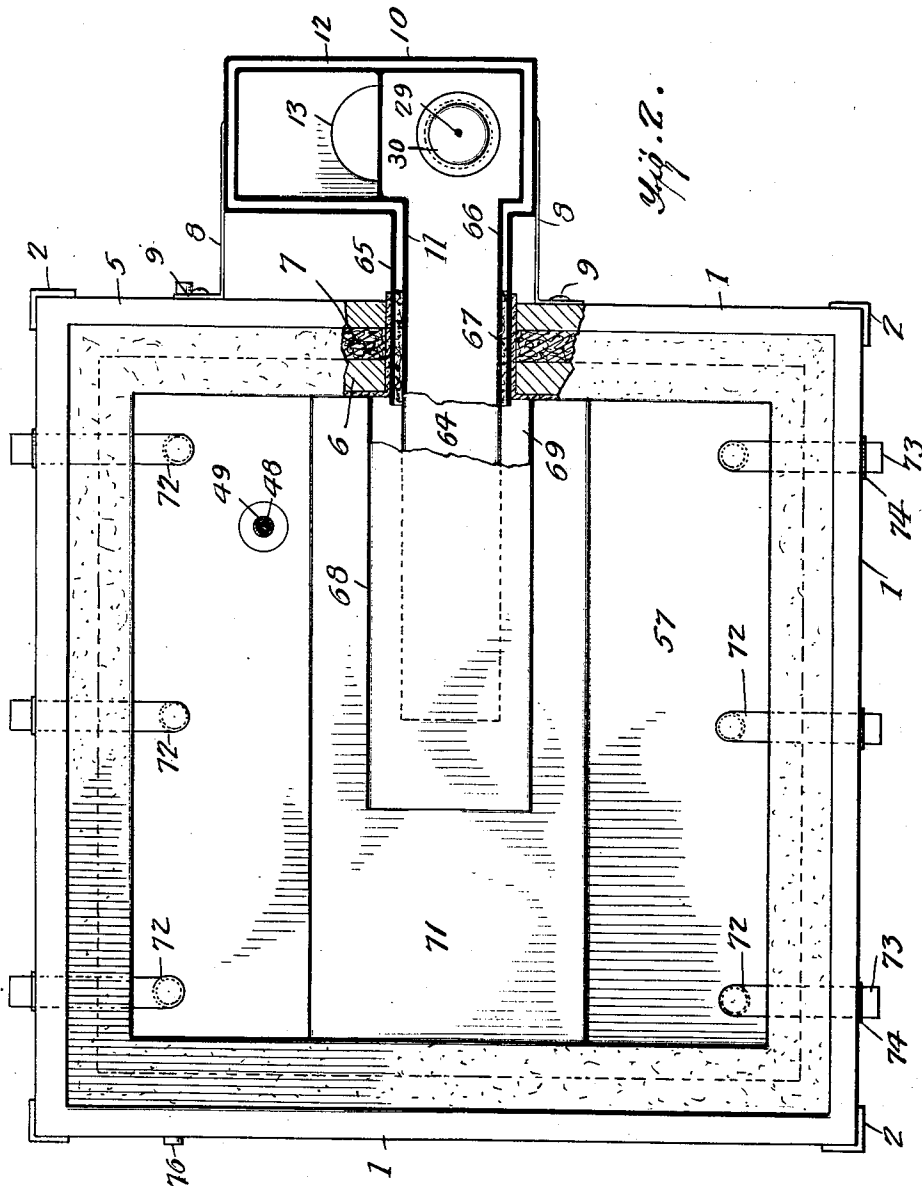
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3 SHEETS—SHEET 3.

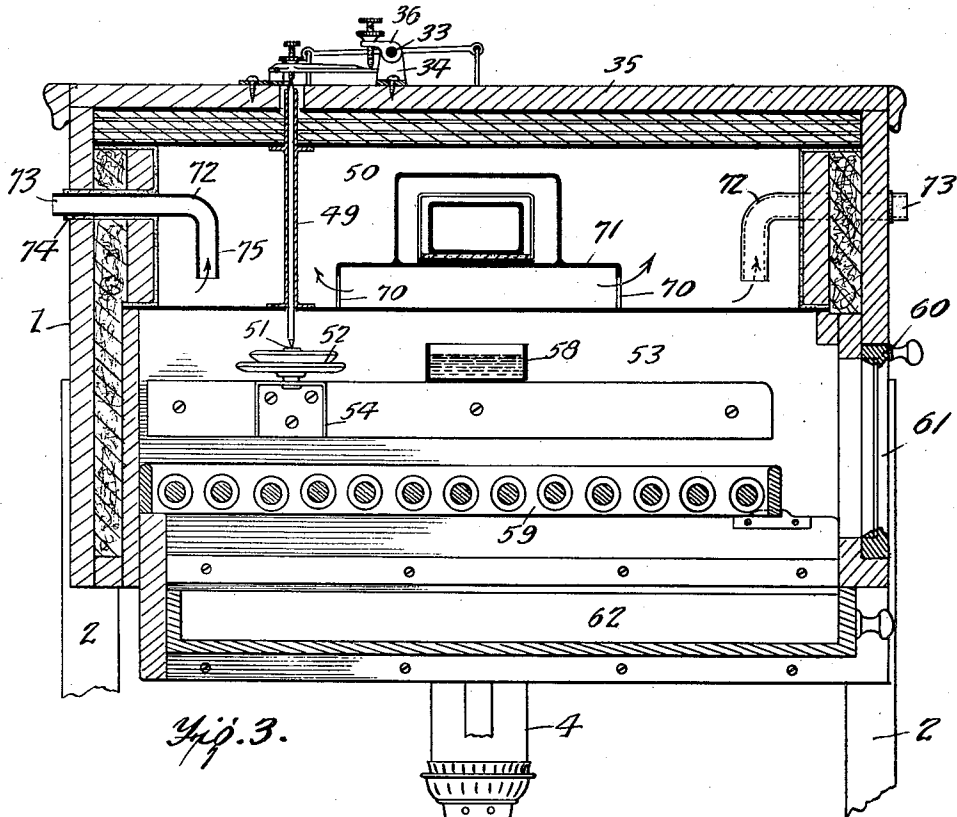


Fig. 3.

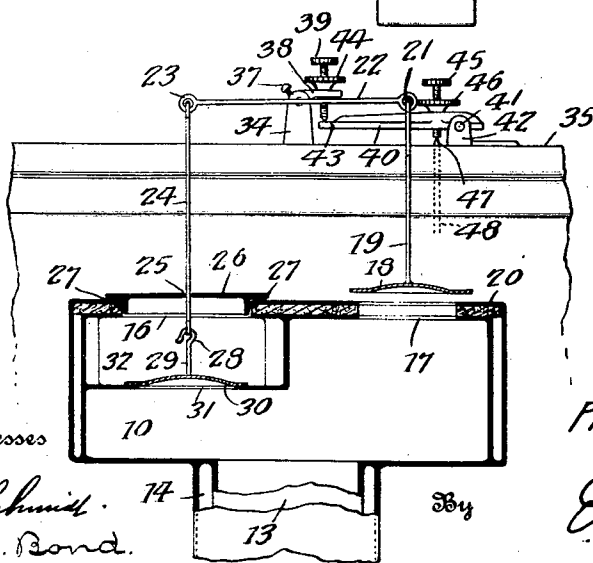


Fig. 4.

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UNITED STATES PATENT OFFICE.

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INCUBATOR.

1,018,192.

Specification of Letters Patent.

Patented Feb. 20, 1912.

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To all whom it may concern:

Be it known that I, PAUL H. HERNDON, a citizen of the United States of America, and resident of Tampa, in the county of Hills-boro and State of Florida, have invented certain new and useful Improvements in Incubators, of which the following is a specification.

This invention relates to certain new and useful improvements in incubators of that class in which heat is maintained within the hatching chamber by means of hot air.

The present invention pertains to an improved incubator of this general class having for its objects among others the following. To provide for the automatic control of the admission of hot air into the hot air chamber and to provide for the equal distribution of the heat throughout the entire chamber. In the present construction I arrange for the control of the heat before its passage into the chamber, not after. Heretofore various means have been provided for the automatic control of the heat after a certain or predetermined temperature is reached. These means permit the entrance of the hot air into the chamber from which it is permitted to escape by automatic control of the escape flue or outlets. By my invention the heat within the chamber is never allowed to go beyond a certain degree. Before it exceeds a predetermined degree, all entrance of hot air is shut off. In other words, my control is disposed between the source of heat and the entrance to the hot air chamber. The results will be obvious and will be more fully hereinafter set forth.

I employ a sectional or chambered moisture pan whereby the moisture may be increased as the hatching proceeds, provision being made for using a small quantity as is required when the heat is first turned on or when the hatch first starts and then filling one or more of the other compartments as the hatching proceeds, it being understood that less moisture is required during the first stages of the hatching than as the hatching proceeds.

I aim further at improvements in the details of construction whereby an improved incubator results and whereby the construction and the assemblage of the parts is facilitated, thereby enabling me to produce an

incubator capable of producing the most satisfactory results at minimum cost.

Other objects and advantages of the invention will hereinafter appear and the novel features thereof will be particularly pointed out in the appended claims.

The invention, in its preferred form, is clearly illustrated in the accompanying drawings, which, with the numerals of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a substantially central vertical longitudinal section through an incubator constructed in accordance with my present invention. Fig. 2 is a top plan with the cover removed, looking directly into the hot air chamber, portions of the air inlet pipes and the chamber of the heating device being shown in section and parts broken away. Fig. 3 is a vertical transverse section on the line 3—3 of Fig. 1, looking in the direction of the arrow. Fig. 4 is a vertical section on the line 4—4 of Fig. 1, looking in the direction of the arrow.

Like numerals of reference indicate like parts throughout the several views.

Referring to the drawings, 1 designates the incubator as a whole, the inclosing casing of which may be supported in any suitable manner, as upon legs or the like 2, which in themselves may be of any suitable form of construction to which, of course, the present invention is in no wise restricted.

While in practice any suitable source of heat may be employed in connection with the other features of the invention, I preferably employ a lamp 3 which may be of any suitable form provided with a chimney 4, the said lamp being supported in any suitable manner and designed to receive its supply of liquid fuel from any suitable source. The walls of the inclosing chamber of the incubator are double, as seen at 5 and 6, said walls being spaced apart and the intervening spaces being filled with any suitable heat retaining medium, as seen at 7, Figs. 1 and 2.

To the end of the casing adjacent the lamp or heater is affixed, in any suitable manner, as by brackets 8, secured as at 9, to the end of the casing, a chamber 10 from which extends a conduit 11 passing through the walls 5 and 6 and the intermediate pack-

ing 7, as seen clearly in Figs. 1 and 2. This chamber is double walled, as seen at 12 in Figs. 1 and 2, the space between the walls forming an air space, while communicating with the bottom of this chamber is the pipe 13 which likewise is double walled, the intermediate space forming an air space 14, which air space, of course, is closed at the top and bottom, as seen clearly in Fig. 1. This pipe or tube 13 has an annular depending flange 15, within which is received the upper end of the chimney 4 of the heating device. This chamber has in its upper wall the two openings 16 and 17, as seen best in Fig. 4. The latter is closed by a valve 18 carried by a vertical stem or rod 19 secured thereto at one end in any suitable manner. The top of this chamber has the space between its walls filled with suitable heat-retaining medium 20, as seen in Fig. 4. The stem or rod 19 is hooked at its upper end or otherwise constructed, as seen at 21, to engage with one end of an arm 22, the other end of which is connected, as at 23, to the upper end of a depending rod or stem 24. This rod or stem 24 passes through an opening 25 in a cap 26 which closes the opening 16 in the top of the chamber 10, as seen in Fig. 4, this cap or cover being preferably provided with a depending flange 27, as illustrated in said Fig. 4. The lower end of this rod or stem 24 is flexibly connected, as at 28, with the stem 29 of a valve 30 which closes an opening 31 in the bottom wall of the chamber 32 which is depressed within the chamber 10, all as clearly illustrated in Fig. 4.

The arm 22 is rigid with a rod 33 extending at right angles thereto and joined thereto at the center of said arm 22, the rod 33 being mounted to rock in suitable bearings in the brackets or the like 34 secured to the top 35 of the inclosing casing. On the rod 33 is a sleeve 36 adjustably held thereon in any suitable manner, as by a set screw 37. This sleeve has rigid therewith an arm 38 in which is adjustably held in any suitable manner, a vertical screw or the like 39.

40 is an arm pivotally mounted, as at 41, in brackets or the like 42 secured to the top of the inclosing casing, the end of said arm farthest from its pivot having a flattened upper surface, as seen at 43, upon which rests the lower end of said adjustable screw 39, as seen clearly in Fig. 4. A set nut 44 may be employed if necessary in conjunction with this vertical screw. This member, 40, has near its pivot a vertically adjustable screw 45 in conjunction with which may be employed a set nut 46, the lower end of said screw 45 receiving the upper pointed end 47 of a rod 48 movable through a suitable inclosing tube or casing 49 within the hot air chamber 50, the lower pointed end 51 of said rod being in contact with and con-

trolled in its up and down movements by a thermostat 52 of known construction, and disposed within the egg chamber 53, the same being supported therein by any suitable means, as, for instance, a bracket 54, as seen best in Fig. 3. Within this egg chamber 53 is a thermometer 55 which may be supported in any suitable manner, as, for instance, by the hangers 56 depending from the bottom 57 of the hot air chamber. Within the egg chamber 53 is a moistening pan 58 supported therein in any suitable manner, as seen in Figs. 1 and 3. This moistening pan is formed with a plurality of compartments, as indicated clearly in Fig. 1. The relative size of the different compartments may be varied as occasion may require, and in use the middle or either one of the other compartments may be filled or partially filled with water, as shown in Fig. 3, as at the beginning of the hatch but little moisture is required. As the hatching proceeds, more moisture is necessary, when the other compartments may be filled one at a time, or both partially filled, as may be found most expedient, so that the moisture may be increased as may be necessary.

It is to be understood that the casing at some suitable point, preferably at the front opposite the egg tray 59, is to be provided with a suitable door 60 whereby access to the interior of the egg chamber may be had at any time. This door may be provided with glass panels 61, so that the interior of the egg chamber may be viewed at any time when desired.

62 is a drawer mounted to slide on suitable guides 63 within the casing beneath the egg tray, as seen in Figs. 1 and 3, into which the chickens fall after they are hatched out from the eggs. The chamber 10 has its conduit 11, which extends through the wall of the casing as above described, extended, as seen at 64, the outer wall 65 of this conduit terminating at a point just within the hot air chamber and the inner wall 66 spaced from said outer wall leaving a surrounding space 67, as seen best in Fig. 2. This extension 64 extends substantially one half the distance across the hot air chamber, as indicated, and this, in turn, is disposed within the outer tube 68 secured to the inner wall of the chamber, leaving an air space 69 thereabout. This outer casing 68 extends beyond the end of the extension 64, as indicated in said figure, as well as in Fig. 1. By this means I insure an equal distribution of the hot air over the floor of the hot air chamber and thus all parts of the chamber are kept at the same temperature, a greater portion of the heat being radiated in all directions from the outer casing 68. The hot air entering through the conduit and the means just described is caused to be deflected downward against the floor by 130

means of the depending walls of the outer casing and the hot air passes outward through openings 70 in the metallic plate 71 upon which the outer casing 68 is supported, as seen clearly in Fig. 3.

72 are ventilating pipes, as many in number as may be desired having their horizontal portions 73 extending through the opposite walls of the hot air chamber, being incased within suitable asbestos or other inclosures 74. The inner ends of these ventilating pipes are extended downwardly, as seen at 75, terminating at a short distance above the floor of the hot air chamber, as seen best in Fig. 3. By thus having the inlets to the ventilating pipes disposed in proximity to the floor, I obtain the full benefit of the heat and yet provide for the automatic ventilation, so as to keep the temperature uniform throughout the entire device.

76 are ventilating pipes for the egg chamber. As shown clearly in Fig. 2, they are disposed at the back of the chamber.

The closure or damper 18 is made slightly heavier than the closure or damper 30 so as to slightly overbalance the latter, so that under normal conditions, that is when the proper amount of heat is within the incubator, the damper or closure 18 will be closed and, consequently, the damper 30 open. This same effect might be obtained by reason of the weight of the arm 36 which is upon the slide of the pivot 33 nearest the end which carries the rod 19 connected with the closure or damper 18. In fact, these two features of construction may be combined, if desired. It is to be understood that when the valve 18 is in its closed position, the valve 30 is open to its utmost limit and vice versa. Consequently, when the damper 18 is partially open, the damper 30 is moved toward its seat a corresponding distance.

It is to be noted that by the construction hereinbefore described, I prevent accumulation of heat in the central or any other one portion of the device and provide for such an equal distribution thereof throughout the heating chamber as to keep the egg chamber practically at all times of a uniform temperature.

The operation will be clearly apparent from the foregoing description when taken in connection with the annexed drawings and a detailed explanation thereof further than has been hereinbefore given does not seem necessary.

From the foregoing it will be seen that I have devised a most efficient, yet simplified form of incubator and while the structural embodiment of the invention as hereinbefore disclosed is what I at the present time

consider preferable, it is evident that the same is subject to changes, variations and modifications in structure, proportion and arrangement of parts and I, therefore, do not intend to restrict myself to the particular construction as hereinbefore set forth, but reserve the right to make such changes, variations and modifications as come properly within the scope of the protection prayed.

What is claimed as new is:—

1. In an incubator, a hot air chamber, a source of heat, an outer chamber communicating with said source of heat and having an outlet in its top, said outer chamber having formed therein an inner chamber communicating with said hot air chamber and having an opening in its bottom communicating with said outer chamber, a rocking member and valves carried by said rocking member for alternately opening and closing the opening in the bottom of said inner chamber and the outlet in the top of the outer chamber.

2. In an incubator, a hot air chamber, a source of heat, an outer chamber intermediate said source of heat and hot air chamber and communicating with said source of heat, said outer chamber having formed therein an inner chamber communicating with said hot air chamber and having an opening in its bottom communicating with said outer chamber, the outer chamber having an outlet in its top, a rocking member, valves carried thereby for alternately opening and closing said outlet and opening, and thermostatic means for actuating said rocking member.

3. In an incubator, a source of heat, a hot air chamber, a conduit extending from the source of heat, an outer chamber into which said conduit discharges, and having an outlet in its top, said outlet chamber having formed therein an inner chamber communicating with said hot air chamber and having an opening in its bottom communicating with said outer chamber, a thermostatically controlled rocking member, valves carried thereby for controlling said outlet and opening, a conduit extending from the inner chamber into said hot air chamber and a conduit extending within said hot air chamber surrounding the first-named conduit and extending well into the hot air chamber.

Signed by me at Tampa, Fla., this 12th day of April, 1911.

PAUL H. HERNDON.

Witnesses:

W. H. JACKSON,
A. V. RAY.