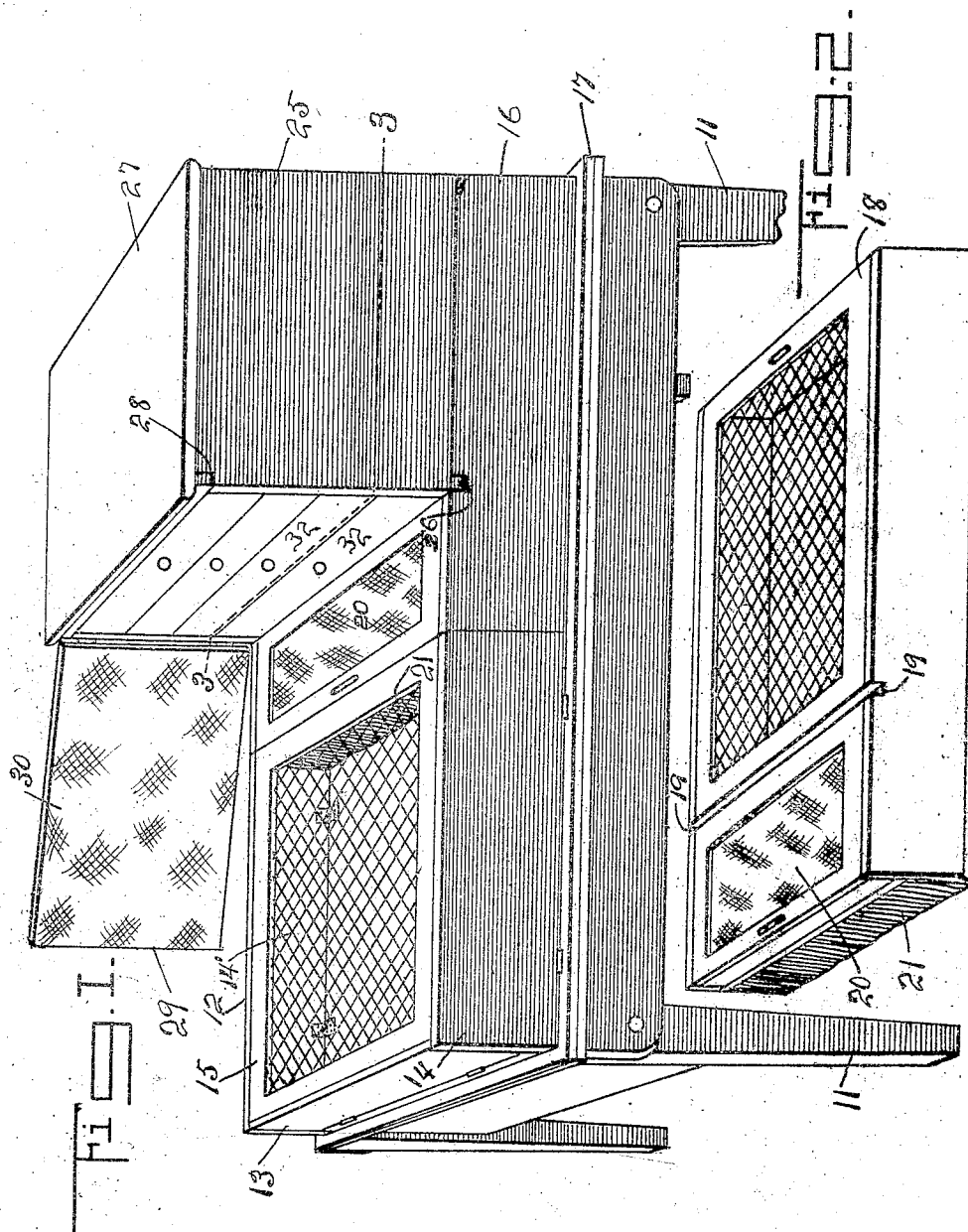


E. W. PHILO:
HEATERLESS INCUBATOR AND BROODER.
APPLICATION FILED JUNE 13, 1911.

1,038,431.

Patented Sept. 10, 1912.

2 SHEETS—SHEET 1.



WITNESSES

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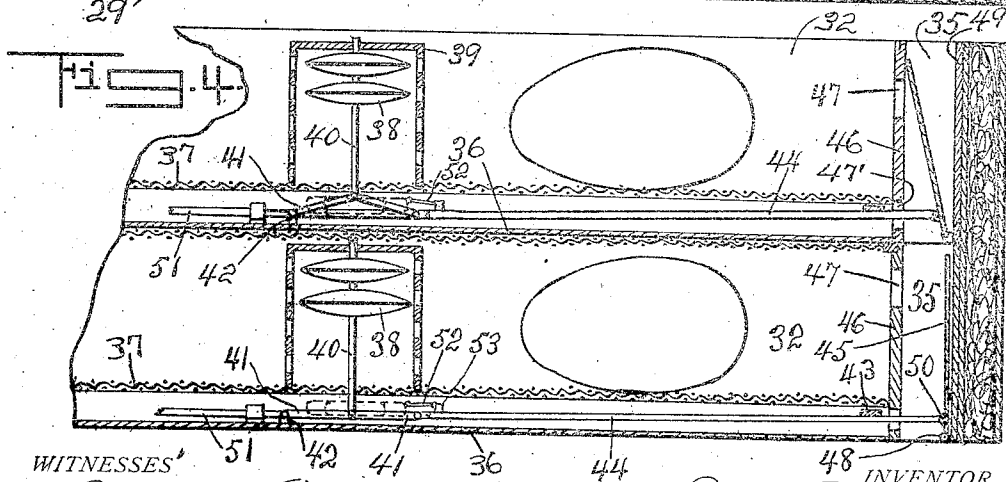
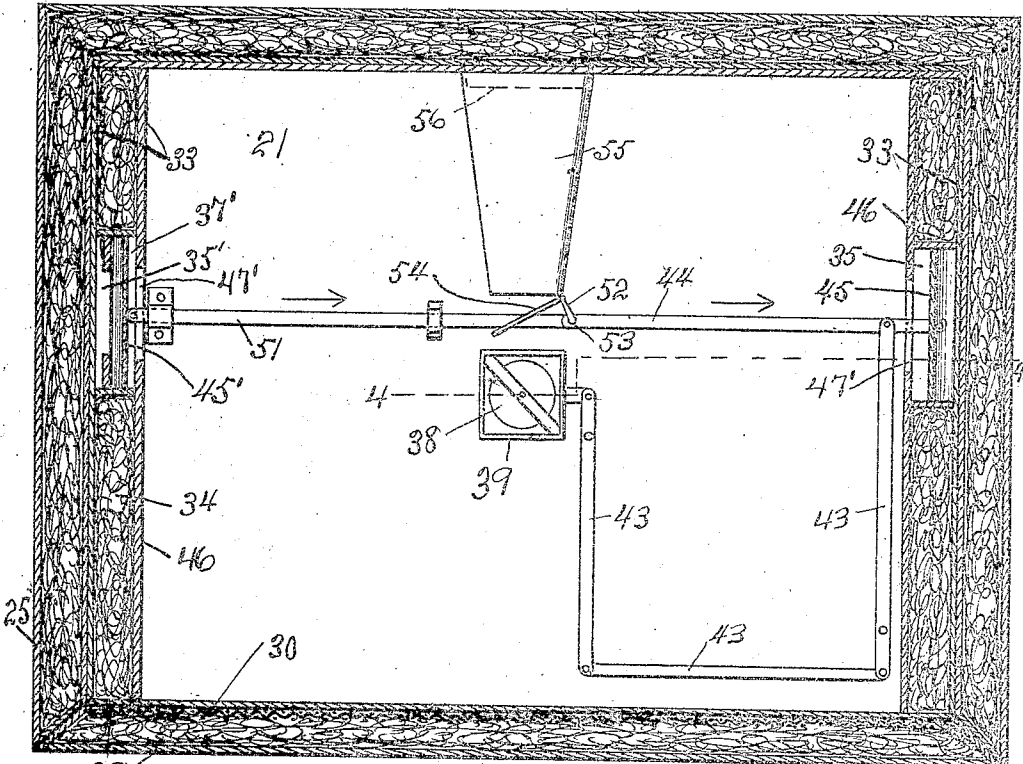
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2 SHEETS—SHEET 2.

FIG. 3.



WITNESSES

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HEATERLESS INCUBATOR AND BROODER.

1,038,431.

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To all whom it may concern:

Be it known that I, EDGAR W. PHILO, a citizen of the United States, and residing at Elmira, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Heaterless Incubators and Brooders, of which the following is a specification.

This invention relates to improvements in combined incubators and brooders and more particularly to a class of the same known as heaterless incubators and brooders.

An object of the present invention is the provision of superposed egg and chick holding elements which by their aggregated heating tendencies produce a sufficiently high temperature to support a complete incubation of eggs.

A further object of the device is to provide such a structure that is composed of separable units easily separated and assembled and which may be provided with a foldable table support and includes not only elements for containing the incubating eggs but also a substantial inclosure for the chicks which have been hatched therein.

A still further object is to provide separate egg trays, each of which is provided with a separate heat regulating device, so that any number of superposed trays may be employed, said regulating device being so arranged as to allow air from any overheated tray to escape therefrom and find its way into any upper tray which is in need of more heat and also at the same time allowing fresh air into the overheated tray.

With these general objects in view and others that will appear as the nature of the invention is better understood, the same consists in the novel combination and arrangement of parts hereinafter fully set forth, illustrated in the accompanying drawings and pointed out in the appended claims.

In the drawings forming a part of this application and in which like numerals of reference designate corresponding parts throughout the several views: Figure 1 is a perspective view of the complete device. Fig. 2 shows the brooder base section of the device detached. Fig. 3 is a transverse horizontal sectional view taken upon line 3—3 of Fig. 1, with the door shown in closed position, and, Fig. 4 is a vertical sectional view of portions of two superposed trays and taken substantially upon line 4—4 of Fig. 3.

Referring more in detail to the drawings, the table 10 will be seen provided with the foldable legs 11 and upon the top of the table and forwardly thereof the inwardly hinged members 12, 13 and 14 are so positioned as to fold downwardly upon each other in a closed position or upwardly to provide a rectangular inclosure 14' which may be inclosed at the top by an open screen work 15 and within which the chicks are provided with a run-way.

At the opposite end of the table and abutting the members 12 and 14 a rectangular section 16 is positioned flatly upon the table top 17. The section 16 is closed by the sliding screen member 18 terminating forwardly in alinement with notches 19 in the opposite sides of said member 16 while forwardly of said notches is positioned a glass door or lid member 20, the notches 19 and the adjacent edges of the screen 18 and door 20 forming a slot for a purpose as will hereinafter more fully appear.

Beneath the front portion of the door member a depending curtain 21 is adapted to be suspended between the sections 14 and 16 when the same are positioned in assembled relations and to allow the chicks within the inclosure 16 to be partially protected from the exposure of the open run-way 14', although the glass member 20 allows sufficient light within said inclosure 16.

Upon the base section 16 a casing 25 of any desired height is employed having a forwardly depending flange or strip 26 along the entire front side thereof and adapted to fit within the notches 19 and in the slot or space between the members 18 and 20 for holding the casing upon said section while a removable cover member 27 is fitted to said casing having a similar depending front strip 28 likewise engaging the casing 25. Either side of this casing may be provided with a door member 29 here shown at the front thereof and having a padded canvas rear face 30 for insuring a substantially heat-tight closure for the casing, it being also intended to have the cover member 27 and the sides of the casing 25 provided with packing or other well known form of heat insulating means.

While the casing may be of any desired height for the accommodation of suitable egg trays 32, the same is shown as adapted to hold four of the same, a plurality of separate casings 25 however being capable of

disposition in superposed relations with the cover 27 for closing the top of the series.

Referring more particularly to the peculiar form of tray herein employed and the individual heat regulating means provided for each of the same, Figs. 3 and 4 will be specifically referred to.

The trays 32 are substantially rectangular and have spaced inner and outer walls with the space between the walls containing a heat insulating packing as 34. At the ends of the trays the same have vertical partitions 33 which are spaced from the inner end walls of the tray and the space between said partitions and the inner end walls of the tray is likewise filled with insulation packing, except at a point intermediate the ends of such space, transverse partitions 33^a being arranged in the space so as to provide vertical air passages 35 at the unpacked points of the space between the partitions 33 and the inner end walls of the tray.

Above the bottom 36 of the trays, which bottom does not extend over the air passage 35 there is positioned the screen or false bottom 37 and upon which the eggs for incubation are placed. A thermostatic member 38 is positioned within each tray and preferably substantially centrally thereof. A perforated casing 39 for protecting the thermostatic member may be opened or closed at the top as desired while the actuating rod 40 adapted to move under the influence of the thermostatic member as the latter is affected by a change in temperature within its respective tray, will move the toggle levers 41. One of said levers being anchored to the post 42, it will be evident that an increase in temperature which expands the thermostatic members will produce a downward movement of the toggle from the position shown in the upper tray in Fig. 4 to that illustrated in the lower tray and which movement being transferred by the connecting arms 43 to the main damper arm 44 will result in an actuation of its respective damper 45 in a direction away from the end wall 46 of the tray and so as to not only uncover and open the air port 47 in the wall 46 but also to remove all obstruction from within the passage 35 and thereby to open the same to the similar communicating passage positioned thereabove and in alignment therewith.

The dampers 45, it will be seen, are pivoted as at 48 near the bottoms thereof to the outer wall 49 of the trays and are connected at a higher point as at 50 with the actuating member 44. Connected with this latter member is a smaller connecting rod 51 which is pivoted similarly to an opposite damper 45 adapted to open and close the air passage 35 at the opposite side of the tray, the operation being that a movement of the rods 44, 51 in the direction noted by the

arrows, is effected upon a rise of temperature which moves both dampers in the same direction and allows air to enter the tray over the damper 45 and through the air port therein corresponding and opposed to the port 47, the rods passing through openings 47' in the tray walls 46. A bottom 37' is provided between the bottom of the damper 45 and the adjacent inner wall 46.

The members 44 and 51 are pivoted to each other and likewise to a link member 52 at the point 53 for the purpose of actuating a fresh air damper 54 connected to said link and which will thereby open the fresh air tube 55 upon a rise of the temperature within the tray and will also automatically close the same upon the lowering of the temperature thereof, all of the same being accomplished through the said thermostatic member and its connecting means. The said fresh air tube 55 aligns with a passage or stub pipe 56 in the rear wall of the casing 25 and feeds fresh air to a point slightly removed from the center of the tray and beneath the wire bottom 37 thereof, it being noted that all of the lever members as well as the fresh air flue are positioned between this wire bottom and the main bottom 36 thereof.

The partial operation of the device having already been described, the complete workings thereof are believed to be now apparent.

With the superposed trays in any desired position as shown in Fig. 4, an excessive rise in temperature within an intermediate tray will open the fresh air inlet beneath the same and simultaneously will also open both of the side hot air dampers for allowing the hot air within the tray to pass outwardly and upwardly to enter any other tray in which additional heat is required and for which reason its respective side dampers as well as its fresh air damper are closed as shown in the upper tray in Fig. 4.

While an outer casing 25 for containing the trays is desirable, it will be evident that any number of superposed trays may be employed without such a casing but with merely a top member positioned upon the uppermost tray, a self-regulating separate tray system being contemplated.

The general operation of the complete device provided with the trays just described is as follows: Without the use of artificial heat, a number of trays 21 will be supplied with partially incubated eggs which will by their natural heat, impart warmth sufficient for incubation to the eggs placed in the other superposed trays. It will be noted that any number of these trays desired may be employed and positioned upon the base section 16 so that whenever the chickens are hatched in the next immediate tray thereabove, these series may after the second day of life be

placed within the section 16 which, aided by the exposed run-way, will be sufficient for brooding the chicks from one or more tray hatchings until it becomes desirable to transfer the same to a separate brooding device.

While the forms of the invention herein shown and described are what are believed to be preferable embodiments thereof, it will nevertheless be understood that changes may be made in the matter of form, proportion and minor details of construction without departing from the spirit and scope of the invention as set forth in the appended claims.

I claim:

1. A heaterless incubator comprising a table support, a rectangular base member mounted thereon, an incubator casing removably mounted on said base member, a plurality of egg trays positioned in superposed relation within said casing, a heat insulated cover member positioned upon said casing, said trays and casing covering but a portion of the top of said base member, a removable glass panel mounted upon the remaining portion of the top of said base member, said base member covering only a portion of the table support, a runway covering the remaining portion of said table support, and a depending curtain secured to the inner end of said base member.

2. A heaterless incubator section comprising a rectangular frame, oppositely-disposed alining notches in the top of said frame, a screen member positioned upon said frame and alining with one side of said notches, a glass panel upon said frame and alining with the opposite side of said notches, a depending curtain over one end of said frame, and an incubator casing mounted on said frame and having a depending strip fitting in said notches.

3. An incubator tray provided with a double wall and an air passage therebetween and one of said walls having an air port communicating with said passage, a false bottom within said tray, a thermostatic member substantially centrally positioned within said tray, a damper within said passage, an air flue beneath said false bottom extending inwardly of said tray, a damper at the mouth thereof, and coupling members beneath said false bottom connecting said thermostatic member and said dampers.

4. In an incubator, a tray provided with double walls, partitions spaced from the end walls of the tray and provided with openings, an egg supporting bottom located above the bottom of the tray, vertical air passages between the partitions and inner end walls of the tray and establishing communication through said openings between the tray and the space below said egg supporting bottom, dampers in said vertical air passages for controlling the admission of air through said openings, a thermostatic member within the tray, and coupling members beneath the egg-supporting bottom connecting said thermostatic member with said dampers.

5. In an incubator, an incubating tray provided with a bottom and open at its top, an egg-supporting bottom arranged above the bottom of the tray, vertical partitions arranged within the tray and spaced from the end walls of such tray to provide vertical air passages at the ends of the tray, said vertical partitions having openings establishing communication between the tray space and said vertical air passages, said air passages communicating with the space between the tray bottom and the egg-supporting bottom, dampers arranged in said vertical air passages, a thermostatic member arranged within the tray, and means between the tray supporting bottom and the bottom of the tray connecting the thermostatic member with said dampers.

6. In an incubator, an incubator tray, vertical partitions arranged therein near each end of the tray and spaced from the walls of the tray to provide vertical air passages, said partitions being of the same height as the walls of the tray and having openings establishing communication between the interior of the tray and said vertical air passages, dampers in said vertical air passages, a thermostatic member mounted in the tray, an egg-supporting bottom spaced from the bottom of the tray, and means within the space between said egg-supporting bottom and the bottom of the tray connecting the thermostatic member with said dampers.

In testimony whereof I affix my signature in presence of two witnesses.

EDGAR W. PHILO.

Witnesses:

WILLIAM W. COX,
WALTER P. AUSTIN.