

No. 702,310.

Patented June 10, 1902.

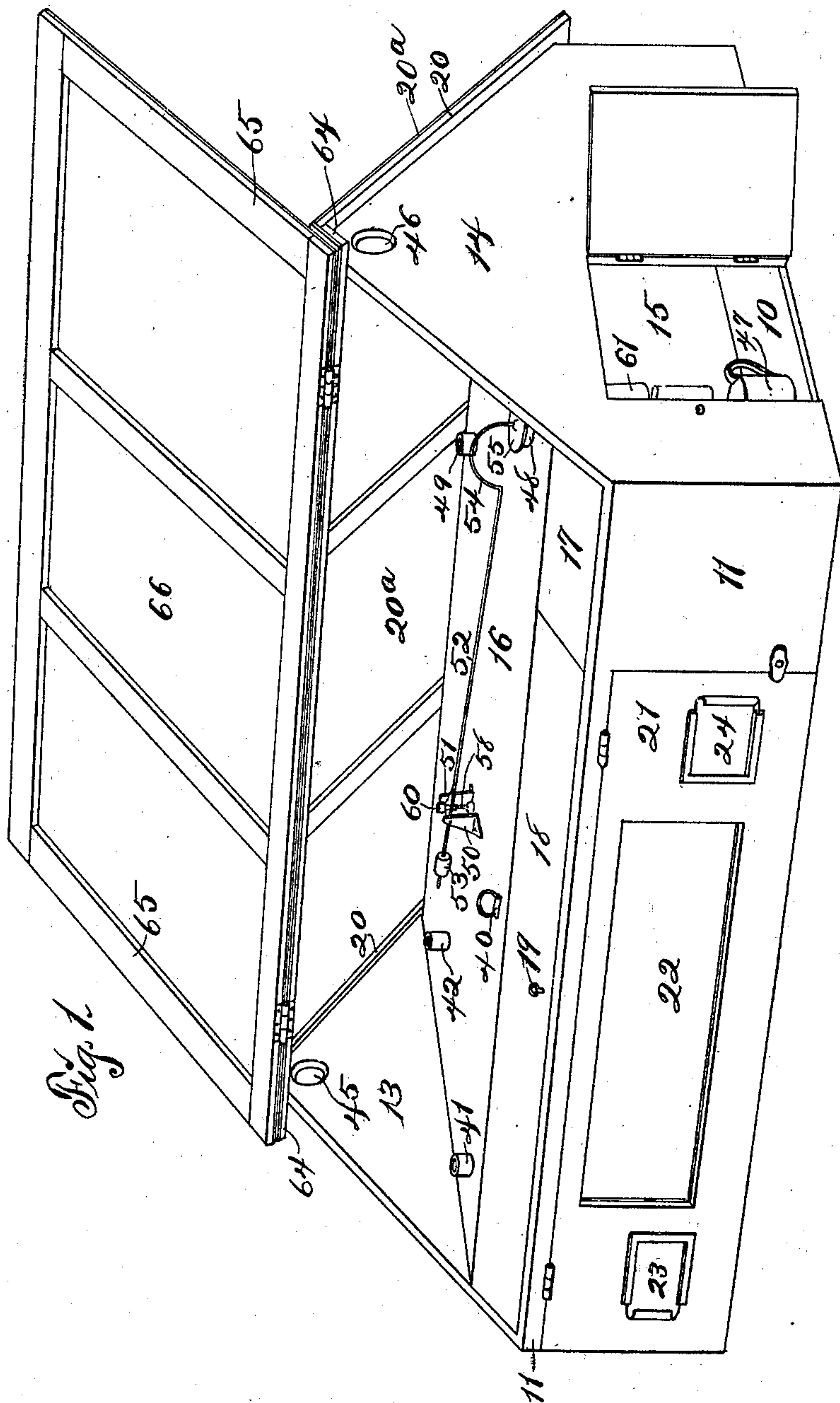
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BROODER.

(Application filed July 16, 1901.)

(No Model.)

2 Sheets—Sheet 1.



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Inventor:
Jethro L. Macy
By J. H. Swarth Att'y

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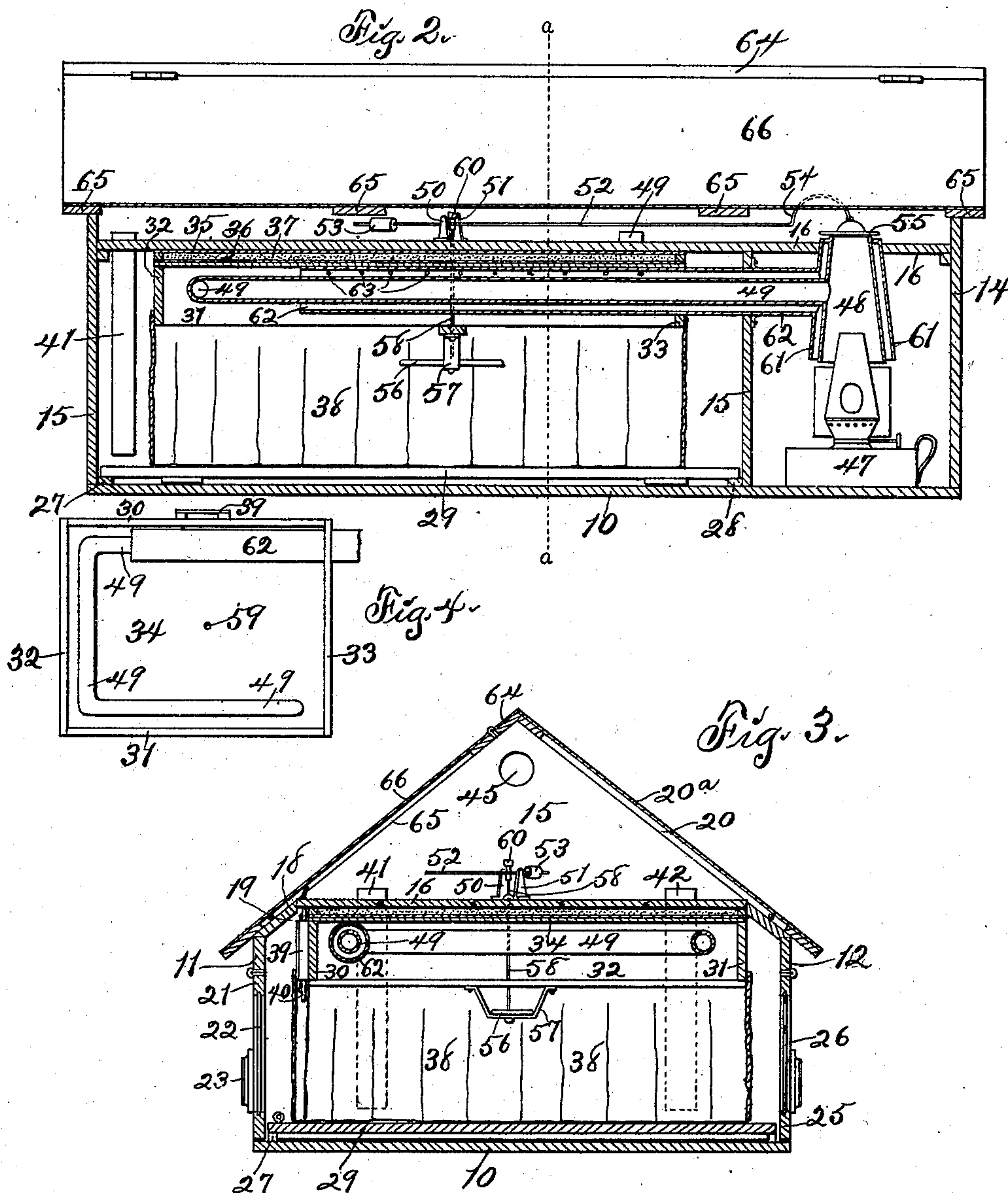
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W. Ellis
J. W. Winter

Inventor:
Jethro L. Macy,
By J. C. Sweet Atty

UNITED STATES PATENT OFFICE.

JETHRO L. MACY, OF DES MOINES, IOWA.

BROODER.

SPECIFICATION forming part of Letters Patent No. 702,310, dated June 10, 1902.

Application filed July 16, 1901. Serial No. 68,529. (No model.)

To all whom it may concern:

Be it known that I, JETHRO L. MACY, a citizen of the United States of America, and a resident of Des Moines, Polk county, Iowa, have invented a new and useful Brooder, of which the following is a specification.

The object of this invention is to provide improved means for brooding or housing chicks and young poultry and maintaining the same at the proper degree of warmth by artificial means.

My invention consists in the construction, arrangement, and combination of elements hereinafter set forth, pointed out in my claims, and illustrated by the accompanying drawings, in which—

Figure 1 is a perspective of the complete brooder, the cover being lifted and the door of the lamp-chamber being opened to reveal the interior construction in part. Fig. 2 is a longitudinal section of the brooder. Fig. 3 is a cross-section of the brooder on the indicated line *a a* of Fig. 2. Fig. 4 is a detail inverted plan of the radiator employed in the device on a reduced scale.

In the construction of the brooder, as shown, the numeral 10 designates the bottom, 11 the front wall, 12 the rear wall, and 13 14 the end walls of a house or casing, the end walls being gabled above the upper edges of the front and rear walls. A partition 15 is mounted transversely of the brooder casing or house nearer the end wall 14 than the end wall 13, and an upper floor 16 is mounted horizontally in the brooder or house and extends from end to end thereof across the top of said partition. The upper floor 16 is located a little above the upper edges of the front and rear walls of the brooder-casing, and hence is of somewhat less width than the widest portion of the casing. The space between the edge of the floor 16 and the front wall of the casing is closed by a board 17 over the smaller chamber and by a board 18 over the larger chamber, the board 18 being removable and replaceable by manual force applied to a screw-eye 19 therein. It is the function of the board 18 to provide access to the larger chamber within the brooder-casing at times. The space between the rear edge of the floor 16 and the rear wall 12 of the casing is closed by a roof member 20. The roof member 20

is formed of a wooden frame fixed to the end walls, rear walls, and upper floor of the casing and overlaid by a sheet 20^a of iron or other sheet metal, and said roof member overlaps the ends and rear wall of the casing and projects therefrom. A door 21 is hinged to and arranged to swing outwardly and upwardly from the front wall 11 of the casing, and a panel 22 of glass is mounted in the central portion of said door. Small openings are formed in the door 21 at either end of the glass panel and normally closed by slides 23 24. A door 25, provided with a panel 26 of glass, is mounted in the rear wall 12 of the brooder and arranged to swing outwardly and upwardly therefrom. It is the function of the doors 21 25 to provide access to the larger chamber within the brooder. Cleats 27 28 are mounted on the floor 10 of the brooder, adjacent to and parallel with the end wall 13 and partition 15, and a subfloor 29 is mounted loosely on said cleats and may be withdrawn and replaced through the doorway of either door 21 25. The floor 29 forms a bed or resting-place for the chicks within the brooder and receives and retains all of the droppings of the chicks.

A radiator is mounted within the larger chamber of the brooder-casing and comprises side bars 30 31 and bars 32 33, fixed thereto, and a sheet-metal plate 34, fixed to the upper edges of said bars. The radiator is mounted with the plate 34 beneath and parallel with the upper floor 16 of the brooder and spaced apart therefrom, and the space between said plate and said floor is filled by plates 35 36, spaced apart and separated by mineral wool 37 or other packing material. The plates 35, 36, and 34 are rigidly connected and fixed to the floor 16 for support and the hovers 38, of fabric cut in strips, are fixed to the lower edges of the bars 30 31 32 33 of the radiator and depend therefrom to the upper surface of the subfloor 29. A slide-bearing 39 is formed in the central portion of the bar 30 and projects outwardly therefrom, and a thermometer 40 is mounted in said bearing and projects through an aperture in registration therewith in the floor 16, the lower ends of the thermometer extending within the space inclosed by the hovers.

Ventilators 41 42, formed of open-ended

pipes, are mounted in the left end of the brooder and extend from a plane immediately above the subfloor 29 through the upper floor 16 and open into the chamber beneath the roof of the casing. Air-vents 45 46 are formed in the upper portions of the gabled ends of the end walls 13 14 of the brooder-casing.

A lamp 47 is mounted loosely on the floor 10 and within the smaller chamber (hereinafter designated the "lamp-chamber") of the brooder-casing. The chimney of the lamp 47 extends within a frustum-shaped flue 48, projecting upwardly through the upper floor 16. A heat-pipe 49 leads laterally from the flue 48 through the partition 15 and end bar 33 of the radiator. The pipe 49 extends along and within the front portion of the radiator nearly to the opposite end thereof, is bent laterally and extends along and within one end of the radiator nearly to the rear thereof, and then is bent laterally and extends along and within the rear portion of the radiator nearly to the bar 33, at which point it is bent upwardly and extended through the plate 34 of the radiator and through the plates 36 35, mineral wool 37, and upper floor 16, opening into the space above said floor and beneath the roof of the brooder. The heat-pipe 49 is imperforate except at its ends and forms a conduit for hot air and gases from the lamp to the upper chamber of the brooder.

Ears 50 51 are mounted on the upper surface of the upper floor 16 of the brooder, and a damper-lever 52 is fulcrumed thereon and provided with a poise 53 on its rear end portion. A gooseneck 54 is formed on the forward end portion of the damper-lever 52, and a damper 55 is suspended on the extremity of said gooseneck in the vertical plane of the upper end of the flue 48. A thermostatic cell 56 is mounted on a bracket 57, fixed to and depending from the bar 31 of the radiator, said cell being parallel with and below the central portion of the radiator-plate 34. An actuating-rod 58 rests on the central portion of the thermostatic cell 56 and extends upwardly therefrom through a hole 59 in the plate 34 and through coinciding holes in the plates 35 36, the packing 37, and the floor 16. The upper end portion of the actuating-rod 58 is received by the tubular end of an adjusting-screw 60, vertically mounted in the damper-lever 52, adjacent the fulcrum thereof. I make no claim in this connection to the thermostatic cell, the damper-lever, adjusting-screw, nor damper, as they are old in the art of incubators. An air-flue 61, also frustum-shaped, is mounted outside of and concentric with the flue 48 and is spaced apart therefrom. The upper end of the flue 61 is sealed to the upper end portion of the flue 48. A ventilating-pipe 62 leads laterally from and communicates with the flue 61, and is mounted around and concentric with the pipe 49 and spaced apart therefrom. The venti-

lating-pipe 62 extends through the partition 15 and end bar 33 of the radiator, and extends along the pipe 48 past the center of the radiator. The inner end of the ventilating-pipe 62 is open within the radiator, and air vents 63 are formed in said pipe near and opening inward below the plate 34. It is the function of the flue 61 and ventilating-pipe 62 to receive air near the lamp 47 and lead the same, under the heating influence of radiation from the flue 48 and pipe 49, into the brooder-chamber, the ventilating-pipes 41 42 leading the foul air from the brooder-chamber into the upper chamber, whence it escapes through the vents 45 46.

The front half of the roof of the brooder-casing is formed of a ridge-board 64 and a frame 65, hinged to the ridge-board and covered by a sheet 66 of iron or other metal. The frame 65 and its covering-sheet 66 are arranged to swing upwardly through an arc, and provide access to the upper chamber of the brooder-casing. When the frame 65 is down, it rests on the front sloping edges of the end walls 13 14 and along the upper edge of the front wall 11 and the upper surface of the boards 17 18.

In practical use the chicks are housed in the space inclosed by the hovers beneath the radiator and rest on the subfloor 29. The chicks may escape through the doorways closed by either of the doors 21 25 or through either of the holes in said doors governed by the slides 23 24. The subfloor 29 may be withdrawn for cleaning or drying. The space beneath the radiator is warmed thoroughly and to the desired temperature by radiation from the pipe 49 and circulation through the pipe 62. The radiation from the pipe 49 is governed by the passage of gas and heated air through said pipe under the control of the damper 55, which damper is raised and lowered by the lever 52, actuated by the thermostatic cell 56 through the rod 58. The adjusting-screw 60 may be set in such a manner that the lever will be raised at any predetermined degree of temperature affecting the thermostatic cell, and the temperature existing at any time in the space occupied by the chicks may be ascertained by raising the thermometer through its slide-bearing into the upper chamber and reading the indications thereon.

The gabled ends of the walls 13 14 and the roof or cover may be omitted when it is desired to employ the brooder indoors, a closure similar to the boards 17 18 being provided for the space at the rear of the floor 16.

It will be observed that the radiator is of less length and width than the chick-chamber and is located centrally, thus forming a hallway and passage between the walls of the chick-chamber and the hovers 38. The air in this passage or hallway is of somewhat lower temperature than the air within the space inclosed by the hovers, and may be utilized as a play-room, exercise-room, or feed-

ing-room by the chicks preferring such temperature to the temperature of the inner space. By extending the air-pipe 49 around three sides of the radiator provision is made
 5 for equalizing the temperature at all points beneath the radiator, thus avoiding the crowding and piling of chicks in any one place. Such crowding and piling of the chicks ordinarily is occasioned by inequalities of temperature; but where the temperature is equalized the chicks scatter throughout the room alone or in small groups under conditions avoiding suffocation.

I claim as my invention—

15 1. In a brooder, the radiator open at its bottom and formed with side and end bars and a top plate fixed thereto, said top plate consisting of plates spaced apart and packed with mineral wool, a slide-bearing for a thermometer on one of the side bars of said radiator, the thermometer extending through an opening in the roof of the chick-chamber,
 20 a flue leading from a lamp, a damper controlling said flue, an air-pipe 49 leading laterally from said flue within and along three sides of the radiator and out through the top plate thereof, a flue surrounding the first flue and spaced apart therefrom and a ventilating-pipe 62, leading laterally from the outer
 25 flue concentric with the air-pipe and extending part way across the radiator and terminating with an open end within the radiator.

2. In a brooder, the radiator open at its bottom throughout its length and width and
 35 formed of side and end bars and a top plate fixed thereto, a slide-bearing for a thermometer on one of the side bars of said radiator, the thermometer extending through an opening in the roof of the chick-chamber, a flue
 40 leading from a lamp, a damper controlling said flue, an air-pipe leading laterally from the flue within and along three sides of the radiator and out through the top plate thereof, a flue surrounding the first flue and spaced
 45 apart therefrom and a ventilating-pipe leading laterally from the outer flue concentric

with the air-pipe and extending part way across the radiator and terminating with an open end within the radiator, said ventilating-pipe being formed with vents opening laterally toward the center of the radiator immediately beneath the top plate thereof, and
 50 hovers fixed to and depending from the sides of the radiator.

3. In a brooder, the chick-chamber, the radiator therein, flanges depending from said radiator, the slide-bearing on one of said flanges, an opening in the top of the chick-chamber and the thermometer mounted for vertical movement in said slide-bearing and
 60 opening in said chick-chamber.

4. In a brooder, the combination of a chick-chamber, a radiator therein, hovers depending from said radiator, a slide-bearing for a thermometer on said radiator, a lamp-chamber
 65 containing a lamp, and a thermostatic-controlled heat-conductor connecting said lamp-chamber with said chick-chamber and the radiator therein.

5. In a brooder, the combination of three
 70 compartments, one a chick-chamber, another a lamp-chamber, and the third an upper chamber, doors opening into each compartment and from the upper compartment to the chick-chamber, a radiator and depending
 75 hovers in the chick-chamber, a thermometer mounted in a slide-bearing on said radiator and extending through the roof of the chick-chamber into the upper chamber, ventilating-pipes connecting the chick-chamber and the
 80 upper chamber, a lamp in the lamp-chamber, a heat-conductor starting in the lamp-chamber traversing the chick-chamber and ending in the upper chamber, and a damper in the upper chamber to control the heat regulated
 85 by a thermostatic cell in the chick-chamber.

Signed by me at Des Moines, Iowa, this 12th day of July, 1901.

JETHRO L. MACY.

Witnesses:

S. C. SWEET,
 N. W. WINTERS.