

No. 824,665.

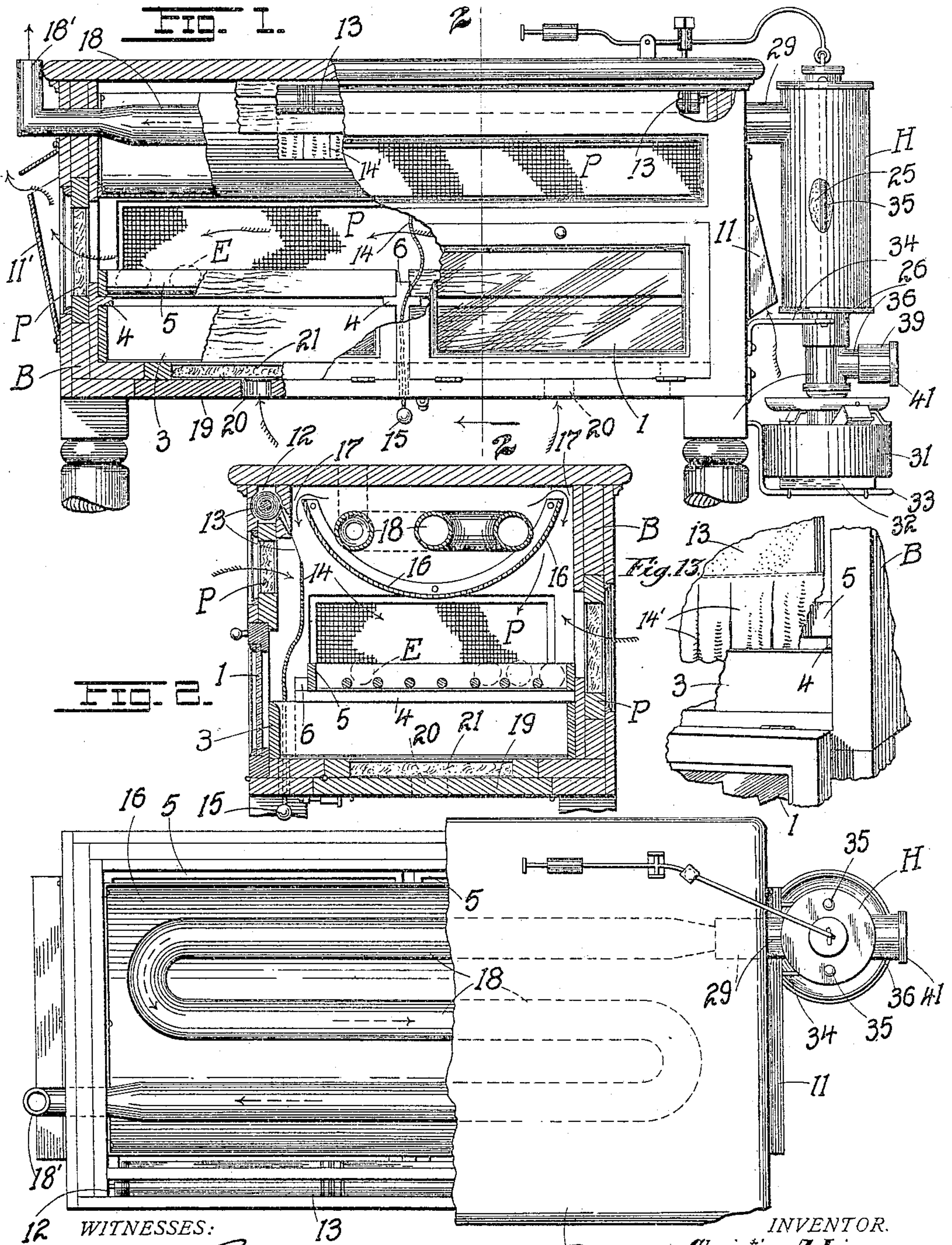
PATENTED JUNE 26, 1906.

C. A. LINGEMANN.

INCUBATOR.

APPLICATION FILED FEB. 14, 1903.

2 SHEETS—SHEET 1.



WITNESSES:
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FIG. 3.

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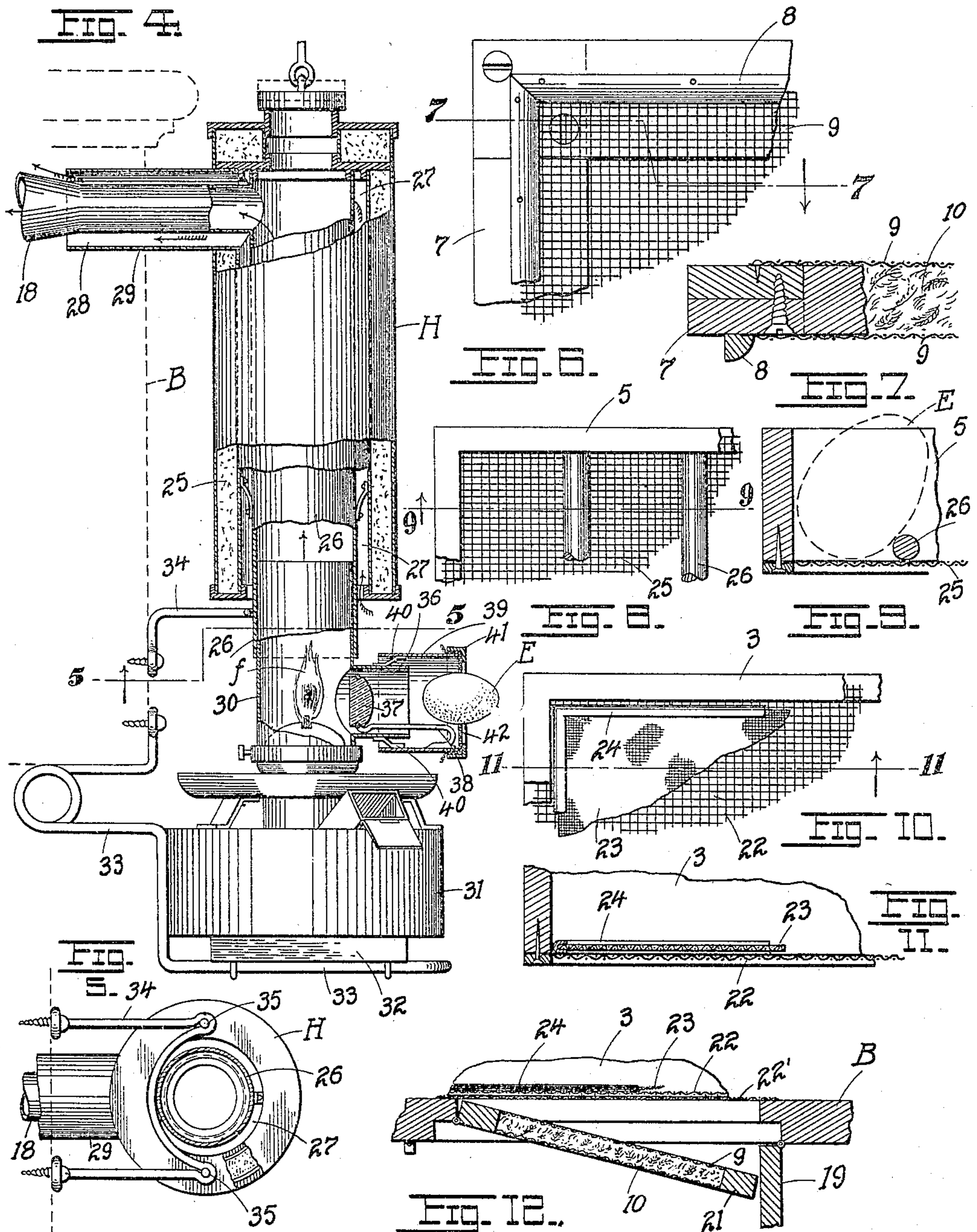
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WITNESSES:

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UNITED STATES PATENT OFFICE.

CHRISTIAN A. LINGEMANN, OF ST. LOUIS, MISSOURI.

INCUBATOR.

No. 824,665.

Specification of Letters Patent.

Patented June 26, 1906.

Application filed February 14, 1906. Serial No. 301,045.

To all whom it may concern:

Be it known that I, CHRISTIAN A. LINGEMANN, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Incubators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in incubators; and it consists in the novel construction and arrangement of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a front elevation of the incubator with parts broken away. Fig. 2 is a longitudinal vertical section on the line 2 2 of Fig. 1. Fig. 3 is a top plan with top wall partly broken away. Fig. 4 is a combined section and elevation of the heating-drum and egg-tester. Fig. 5 is a horizontal section on line 5 5 of Fig. 4. Fig. 6 is an enlarged detail face elevation showing the construction of any one of the feathered panels. Fig. 7 is a horizontal section on line 7 7 of Fig. 6. Fig. 8 is an enlarged detail plan of one corner of the egg-tray. Fig. 9 is a vertical section on the line 9 9 of Fig. 8. Fig. 10 is an enlarged detail plan of one corner of the nursery-tray. Fig. 11 is a vertical section on line 11 11 of Fig. 10. Fig. 12 is a sectional detail showing the double door at the bottom of the incubator-box and showing the nursery-tray supported over the inner feather-paneled door, and Fig. 13 is a perspective detail showing the curtain used to exclude the air during the testing of the eggs.

The object of my invention is to construct an incubator in which the air can be positively retained at a constant temperature, one in which an influx of fresh air will not in any wise affect the constancy and uniformity in the temperature, one in which cold air shall be excluded from the bottom of the egg-tray, one in which the heated air may be evenly distributed over the eggs in the egg-tray, one in which the chickens may find ready access to the nursery-tray, one provided with a special egg-tester which will exclude the heat from the egg during the process of testing, one from which the cold air may be excluded in the withdrawal of the eggs from the tray for the purpose of inspection, one in which the quantity of cold air admitted may be carefully regulated, and

one possessing further and other advantages better apparent from a detailed description of the invention, which is as follows:

Referring to the drawings, B represents a wooden box or inclosure having front lower hinged glass-paneled doors 1 1 disposed on either side of the center of the box, the said doors being directly in front of the nursery-trays 3. The latter slide in and out between the ledges 4, the same ledges serving to support the egg-trays 5. The ledges 4 are formed, respectively, in the side walls of the box and in the central bottom partition-wall 6, though, of course, any equivalent mechanical construction would answer the same purpose.

The vertical walls of the box are provided with feathered panels P, all of substantially identical construction, the details of such panel being shown fully in Figs. 6 and 7. The panel comprises an outer frame 7, a bead 8, wire screens 9 9, and a filling of feathers 10. Preferably (though not necessarily) there are located metal shields 11 11' opposite the side panels, Fig. 1, for guiding and directing the cold air into the box through the panels. It will be noticed that in no instance does the bottom of a feathered panel extend below the bottom of the egg-tray, so that the danger of any cold air striking the egg-tray bottom is entirely eliminated.

Disposed in a suitable casing 12 in the top of the front wall of the box B is a spring-actuated roller-shade 13, which may be pulled down by a cord 14, the bottom of the cord being provided with a knot or head 15, by means of which it may be seized. The cord passes through an opening in the bottom of the box, as shown. The lower edge of the shade 13 is formed into a series of slit ends 14', the slits affording access to the eggs in the tray, serving as means for the passage of the hand and arm, the ends 14' enveloping the hand sufficiently to exclude cold air from the egg-tray, as is obvious. To remove an egg from the tray for purposes of examination, the operator first draws down the shade or curtain 13, then opens the door 1, inserts his hand through the slit end of the shade and withdraws the egg. Upon conclusion of the examination the door 1 is closed and the shade is allowed to roll up, as shown in Fig. 2.

Disposed within the box B across the egg-trays is a concave shield 16, whose front and rear edges are removed a suitable distance

from the corresponding vertical walls of the box, leaving contracted passages 17 for the flow of the heated air-currents to the space between the egg-trays and the shield, Fig. 2.

5 The air above the shield is heated by a coil of piping 18, through which pass the products of combustion from a heating-drum or heater presently to be specifically described. The pipe 18 terminates in an escape-flue 18' outside the box B, Figs. 1, 3.

At the bottom of the incubator is a solid hinged door 19, provided with openings or air-passages 20, over which is a feather-paneled hinged door 21, constructed on the order of

15 the feather panels heretofore described, said feather-paneled doors 21 serving to admit air into the nursery-trays supported immediately thereover. The bottom of the nursery-tray is provided with a wire screen or floor

20 22, Figs. 10, 11, resting on a screen 22' at the bottom of the box B. Over the tray-floor 22 is laid a canvas or equivalent mat 23, kept flat by a metal border or frame 24. The egg-trays are likewise provided with a wire-screen

25 bottom 25, over which are disposed a series of rods 26 for the support of the eggs E, Fig. 9.

The operation of the incubator so far described may be summarized as follows: The feathered arrows show the influx and passage

30 of cold air into and through the box B, through the feathered panels P. The feathers act as a sieve, allowing fresh air to enter the box above the eggs without creating a draft and without disturbing the constancy of the

35 temperature acquired by the layer of air immediately over the trays 5 and between said trays and the shield 16. The plain arrows show the course of the heated air above the shield, descending through the narrow pas-

40 sages 17 around the shield, and there commingling with the fresh air and retaining the latter at a uniform temperature. The passages 17, being constricted, naturally cause the currents passing through them to flow at

45 an increased velocity, and thus thoroughly commingle with the fresh air beneath and around the shield. The latter, on the other hand, having curved walls, serves to gradually dissipate the commingled currents with-

50 out creating any perceptible draft, and hence uniformity of temperature is assured for the air over the eggs. Once the eggs are hatched the chicks find their way over the sides of the egg-trays into the nursery-trays below,

55 where they may be supplied with the necessary quantity of air either through the openings 20 of the door 19 or by opening the latter, through the feathered door 21 and through the wire-screen floor 22 and canvas

60 23 of the nursery-tray. The amount of air can thus be regulated to the newly-born chicks, as is apparent. The use of the curtain 13 has already been explained and need not be here reviewed.

65 The heater or drum H, as best shown in

Fig. 4, is composed of an enveloping mineral-wool casing or wall 25 and an inner pipe or flue 26 for the passage of the combustion products, said flue connecting to the piping 18, previously described. Between the flue 70 26 and casing 25 is an annular air-space 27, which leads to an annular air-space 28 between the piping 18 and an enveloping pipe 29. These heated fresh-air currents enter the box B above the shield 16 and contribute 75 their share to the heating of the air within the box in addition to the heat radiated from the walls of the flues or piping 18. The lower projecting portion of the flue 26 receives the lamp-flue 30, the lamp being pro- 80 vided with an oil-receptacle 31, resting on a block 32, supported or secured to a bracket 33 of any approved design. The flue 26 is partially encompassed by a wire bracket 34, which is bent in such a way as to afford 85 guide-bearings for the lower ends of the vertical stay-rods 35, which secure the opposite ends or heads of the drum to the body thereof. In this way the drum becomes well secured to the box B. The lamp-flue has a 90 laterally-projecting tube 36, at the base of which, opposite the flame *f*, is a lens 37, held in position by a wire rod 38, soldered to a thimble 39, slipped over the resilient arms 40, disposed about the periphery of the tube 95 36. The outer end of the thimble 39 is closed by a cap-piece 41, between which and the end of the tube is held a sheet of canvas 42, the canvas and cap-piece having registering openings for receiving an egg E for purposes 100 of inspection before placing the same into the egg-tray. The lens 37 intercepts the heat-rays from the flame, but not the light-rays, so that an egg may be tested without danger of being affected by the heat previous to its 105 being placed in the incubator.

In lieu of the feathers in the feather panels I may of course substitute any equivalent material for filtering the air and reducing its velocity on the verge of its entry into the in- 110 cubator.

Such features of construction as are shown, but to which no reference has been made, are well known and fully understood in the art and form no part of my present invention. 115

Having described my invention, what I claim is—

1. An incubator comprising a suitable box or inclosure, means for supporting an egg-tray therein, a shield located above the tray, 120 means for heating the air above the shield, means for admitting fresh air above the tray, the shield being spaced from the walls of the box to form passages for permitting a union between the heated air and the air above the 125 egg-tray, substantially as set forth.

2. An incubator comprising a suitable box or inclosure, means for supporting an egg-tray therein, a shield located above the tray and forming contracted passages with the 130

walls of the inclosure, heating-pipes disposed above the shield, and a series of feather panels for delivering fresh air above the trays, substantially as set forth.

5 3. An incubator comprising a suitable box or inclosure, means for supporting an egg-tray therein, a nursery-tray located beneath the egg-tray and accessible to the chicks hatched in said egg-tray, a curved shield dis-
10 posed within the inclosure above the egg-tray, heating-pipes located above the shield, contracted passages between the shield and inclosure-walls for the flow of the heated air below the shield, a series of feather panels
15 disposed in the inclosure-walls above the egg-tray, a feather-panel door below the nursery-tray, and a solid door having openings contiguous, and below the feather-panel door, substantially as set forth.

20 4. In an incubator a suitable inclosure, and a series of panels disposed along the walls thereof, and comprising each a frame, a net-

ting of wire, and a filling of feathers, substantially as set forth.

5. An incubator having a series of feather 25 panels for filtering the fresh air admitted thereto, substantially as set forth.

6. An incubator having a nursery-tray comprising a frame, a wire-netting bottom, and a canvas mat, substantially as set forth. 30

7. In an incubator, an inclosure or box having means of access to the interior thereof, a shade adapted to be drawn in the path of said means of access, and formations in the shade for the insertion of the hand whereby 35 drafts of air are excluded from the interior of the inclosure, substantially as set forth.

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

CHRISTIAN A. LINGEMANN.

Witnesses:

EMIL STAREK,
JOS. A. MICHEL.