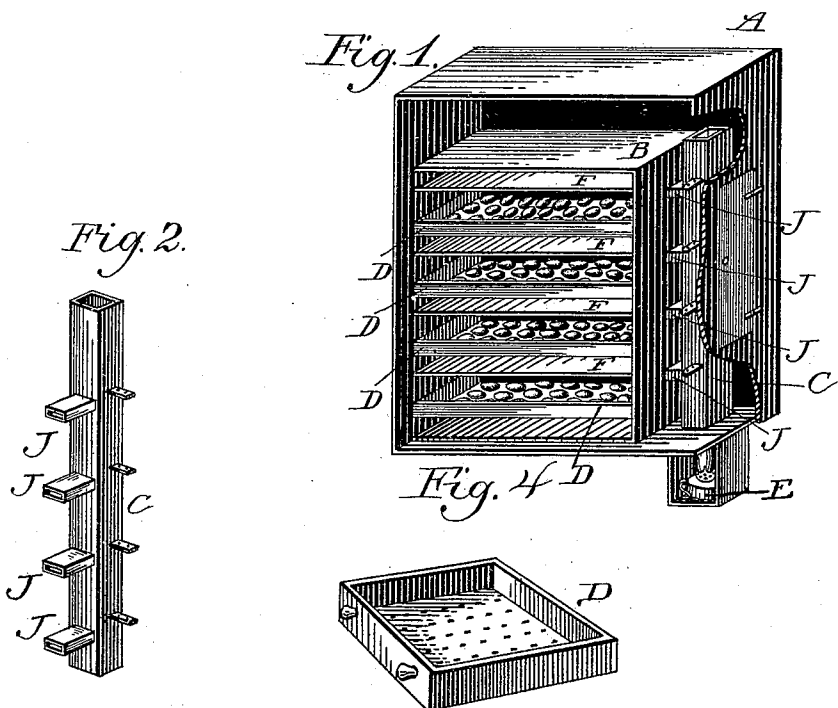


(No Model.)

H. H. UNLAND.
INCUBATOR.

No. 447,453.

Patented Mar. 3, 1891.



Witnesses

Joseph T. Keeney.
Joseph H. Rouze.

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UNITED STATES PATENT OFFICE.

HERMAN H. UNLAND, OF CIMARRON, KANSAS.

INCUBATOR.

SPECIFICATION forming part of Letters Patent No. 447,453, dated March 3, 1891.

Application filed March 7, 1889. Serial No. 302,386. (No model.)

To all whom it may concern:

Be it known that I, HERMAN H. UNLAND, a citizen of the United States, residing at Cimarron, in the county of Gray and State of Kansas, have invented a new and useful Improvement in Incubators, of which the following is a specification.

My invention relates to incubators; and it consists in certain improvements by the means of which it is possible to dispense with the use of a liquid for transmitting the heat and at the same time to retain certain arrangement of the egg-drawers, fully set forth in the following specification, and shown in the accompanying drawings, which forms a part of said specification.

The object of my invention is to provide an incubator that will hatch all fertile eggs placed therein without the use of a liquid for transmitting the heat and at the same time to retain the arrangement of several drawers one above another. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side and rear perspective of the incubator with the one side of both outside and inside cases taken away, exposing the arrangement of the drawers and shelves and a portion of the back of the outside case broken away, showing the position of the hot-air chamber C. Fig. 2 is a view of the hot-air chamber with its projecting conductors and the ends of slides. Fig. 3 is a view of a stop with its slide and opening. Fig. 4 is a view of an egg-drawer. Fig. 5 is a front and side perspective of the incubator when closed.

A in Fig. 1 is a case of any convenient size, usually made of wood. In the back of case A is a door opposite the hot-air chamber C, as shown in the drawings. This door is for the purpose of opening in order to reach the ends of the slides projecting through the sides of the chamber C. In the front of case A are openings through which the drawers D may slide. (See Fig. 5.) There is also an opening in the bottom over which the hot-air chamber C is placed. Within the case A is the case B. The spaces between the sides and top of case A and case B may be from two to six inches to suit convenience; but the front and bottom of case B forms a portion and is fastened to the front and bottom of

case A. The space between case A and case B in the rear is sufficient to allow the hot-air chamber C to be three or four inches distant from the back of case B, so the direct heat from the chamber C may not affect the temperature in the egg-drawers. Within the case B are the egg-drawers D and the shelves F, arranged one above another. The shelves F are made of either wood or metal. They are made to fit closely and fastened to the sides of case B. These shelves are for the purpose of holding down the hot air over the several drawers immediately below them. They also serve to hold the pan placed upon them to hold the moisture for the eggs above. The spaces between the top of the egg-drawer and the shelf above is three inches, and the space between the bottom of the egg-drawer and the shelf below it is two inches.

The hot-air chamber C, Fig. 2, is made of metal. It is a hollow pipe of any convenient size or shape as to the perimeter of its ends. The hot-air chamber C is supplied with conductors J. They are hollow metal pipes or tubes and fit closely in (and one end barely entering) openings cut in the sides of the hot-air chamber C. They pass through and fit in openings cut in the back of case B. The ends may extend within the case B a few inches, if desired. These conductors J are for the purpose of conveying the heat from the hot-air chamber C through the back of case B to the atmosphere over the several egg-drawers. The hot-air chamber C is also supplied with metal stops G, Fig. 3. These stops are adjusted and fit close within the hot-air chamber C directly above the point where the conductors J enter. The stops G are for the purpose of diverting portions of the heated air from its upward course laterally through the conductors J. The stops G are supplied with slides H and openings I. The slides H have perforated projections, which pass through the sides of the hot-air chamber, so the slides may be manipulated from the outside of the air-chamber. The slides H are for the purpose of opening or closing the openings I in order to make the heat uniform in the various parts of the hot-air chamber. The hot-air chamber C may be entirely closed at the top.

The egg-drawers D, Fig. 5, are made to fit

in the case B. The bottom of the drawers are well perforated to admit moisture from the pans on the shelves below them.

5 In preparing the incubator for use I place it upon a trestle high enough to admit the lamp E, which is inclosed in a metal lamp-safe. (See Fig. 1.) The drawers D are taken out and pans of water are placed on the shelves. The egg-drawers are then returned in place
10 and the eggs placed therein loosely, so they may be turned over with the hand. Over the eggs I place a thermometer and spread a thick woolen cloth to hold the moisture around the eggs.

15 In the drawings and specification I have shown and specified the arrangement and use of one hot-air chamber; but two may be used by placing them on the sides instead of the back with a similar arrangement, or three
20 may be used, placing one on each side and

one in the back. I have also shown the arrangement for the use of a four-drawer incubator. A greater or less number of drawers may be used by a similar arrangement.

Having described my invention and the
mode of applying it, what I claim as new, and
desire to secure by Letters Patent, is—

In an incubator, the combination of the casing A, a hatching-chamber B, egg-trays D, arranged a short distance apart in the hatch-
ing-chamber, a vertical hot-air chamber C
30 within the casing A, pipes J, connecting the chamber C with the hatching-chamber just above each egg-tray, and means for heating the air in said chamber, as and for the pur-
pose set forth. 35

HERMAN H. UNLAND.

Witnesses:

HARRY T. W. BRICE,
JAMES FAIRHURST.