

H. W. LUHMANN.
INCUBATOR.
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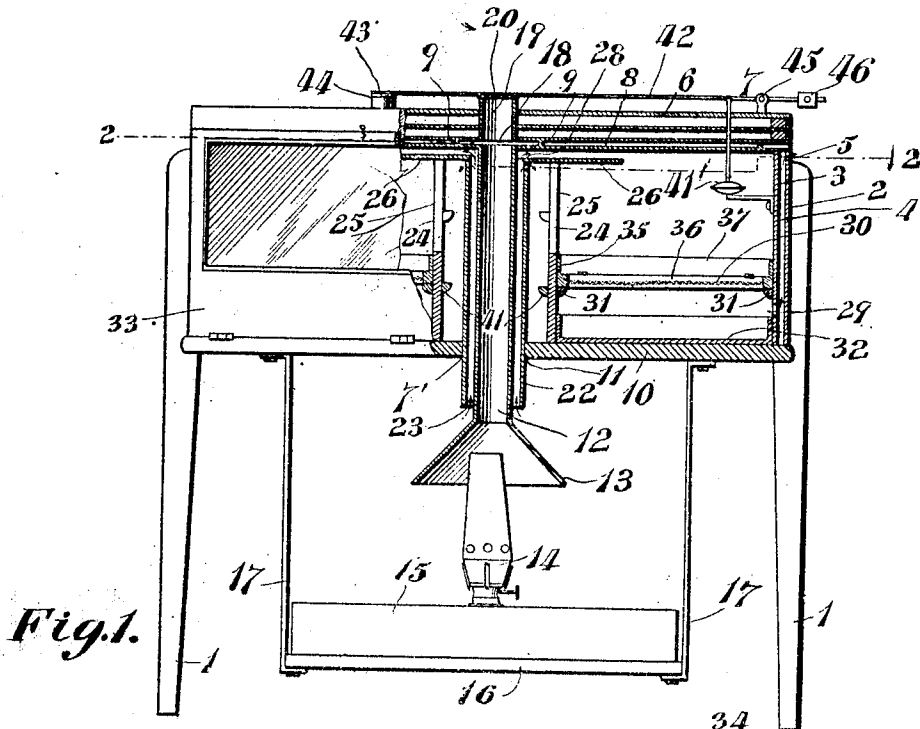


Fig. 1.

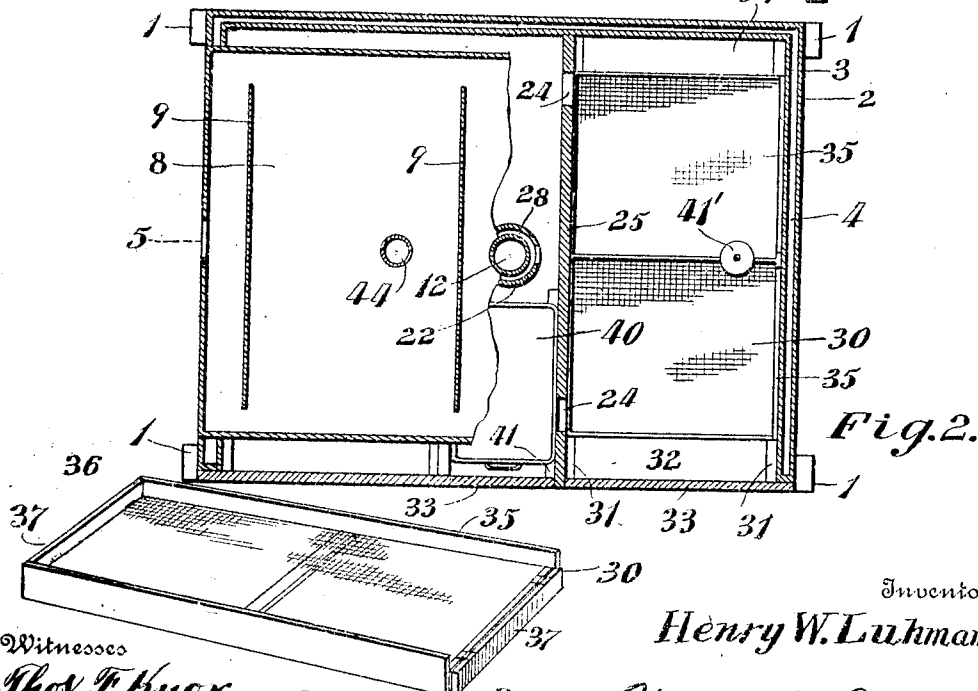


Fig. 2.

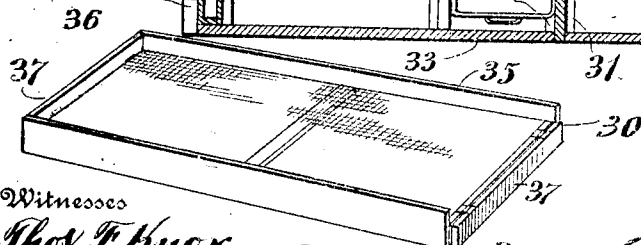


Fig. 3.

Witnesses

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36

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HENRY W. LUHMANN, OF SAN JOSE, CALIFORNIA.

INCUBATOR.

1,035,885.

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To all whom it may concern:

Be it known that I, HENRY W. LUHMANN, a subject of the Emperor of Germany, residing at San Jose, in the county of Santa Clara and State of California, have invented new and useful Improvements in Incubators, of which the following is a specification.

This invention is an incubator, and my object is to so construct the same that the hot air passes over the egg chambers while the warm air passes into their upper portions and descends therein through the egg trays and nurseries, whence it finally passes into an outer upright flue and to the exhaust.

This and other objects are accomplished by the construction described below and shown in the drawing wherein—

Figure 1 is a central longitudinal sectional view of this machine, partly in elevation toward the left end of the view. Fig. 2 is a plan view on the broken line 2—2 of Fig. 1. Fig. 3 is a perspective detail showing a portion of one of the egg trays.

In the drawings the numeral 1 designates legs supporting the body, which latter has double upright end walls 2 and 3 forming an outlet flue 4 between them leading to an exhaust 5 through the outer wall 2 near its top. The top of the body comprises a removable cover 6 which may be of wood, next beneath it a metal plate 7 spaced some distance from the cover so as to leave a dead air space between them, and next beneath the plate a flat and shallow heater tank 8 through which the section line 2—2 cuts at the left end of Fig. 1 and which is therefore shown interiorly in Fig. 2. Within this tank are two transverse baffles 9 which extend nearly across it as shown in the last named view, one near the exhaust 5 and the other near the inlet which rises through the center of the body as will presently be explained. The bottom 10 of said body is by preference a solid board, pierced at its center with a hole 7' for the passage upward therethrough of two concentric tubes. The innermost of these, numbered 12, is for hot air, and its lower end has a flaring mouth 13 standing over a lamp 14 whose font 15 rests on a shelf 16 supported by hangers 17 from the bottom 10 as shown. The font is preferably of sufficient size to contain enough oil for a complete hatching, and therefore the lamp and its wick needs no attention throughout the entire period of incubation

except perhaps that the wick may have to be raised occasionally and trimmed. The heat from the lamp rises through its chimney and draws in cold air through the mouth 13 which mixes with the products of combustion, and the mixture rises through the inner tube 12 and communicates at the point 18 with the heater tank 8. Above this point the tube 12 continues to and through the exhaust 19 at the center of the top of the body, which exhaust may be regulated by a damper 20 or other suitable device so as to cause more or less of the hot air to pass outward through the tank and the lateral exhausts 5. An auxiliary exhaust pipe 44 extends parallel to the exhaust 19 and has a damper 43 connected to the damper 20, by means of the damper lever 42, fulcrumed as shown at 45, and provided with an adjusting weight 46. The outermost of said concentric tubes, numbered 22, fits through the hole 11 and surrounds the innermost tube 12 at some distance therefrom so as to leave an annular passage between them for warm air which is admitted through the mouth or lower end 23 of this outer tube. At either side of this tube 22 and disposed a little distance from it is located a partition 24 extending completely across the interior of the body, and above each partition is a shield 25 extending about half way across the interior of the body so as to be open at both ends, and rising nearly to the top of the body as shown. Plates 26 extending completely across the interior of the body rest upon the upper edges of the shields 25, their outer edges extending outward for some distance into the egg chambers at either side of said partitions 24, and their inner edges extending inward to points 28 above the upper end of the outer tube 22 with which, however, they do not contact. Finally, outlets 29 are formed through the inner end walls 3 at rather low points therein as shown. This causes the cold air drawn in at the mouth 23 of the outermost tube 22 to pass up the same around the inner tube 12 and become heated considerably thereby, then passing out the upper end of this tube 22 at the point 28, part of it descends around said tube 22 into the moistening chamber as will be described below and the balance of the warm air passes over the plates 26 downward through the egg chambers and outward through the outlets 29 into the outlet flues 4, up which it rises until reaching the exhausts 5 when it

passes into the outer air. The warm air is therefore following the course designated by the arrows at the right of Fig. 1 and is forced to descend from above the plates 26 to the outlet 29. I have found this to be advisable, because the fresh air while it is warm strikes the eggs which lie upon the trays 30 which are mounted upon the cleats 31, and when it is cooler it strikes the young chicks within the nursery drawers 32 which lie upon the bottom 10 of the body. It is to be understood that the front of said body is closed by hinged doors 33, preferably having glass panels as usual and provided with buttons or other devices (not shown) so that when the doors are opened the trays and drawers may be withdrawn at will.

As shown in Fig. 3, each tray has at each end a stationary section 36 rising a short distance above the screen bottom, and to which section is hinged a second section 37. These two sections are of such width that when stood upright they are of equal height with the edges 35 of the sides, but when the eggs begin to hatch the hinged section 37 is let down as shown in this view so that the fully hatched chicks can pass over these two sections 36 and 37 and drop through the space 34 into the nursery drawer below, but the eggs which have not hatched or those which are in the process of hatching cannot roll through said space by reason of the presence of the stationary section 36. I consider this an important detail of my invention.

The parallel partitions 24 extending across the interior of the body, with the shields 25 above them although of less length, make what might be called a hallway across said body intercepted at the center of its length by the upright tubes 12 and 22 as above described, although the larger of these tubes is not sufficient in size to completely close this passage or hallway. One end of the latter, as the front, may contain the moisture pan 40 resting upon cleats 41, and access to this pan may be had through a door hinged in the front of the body. The thermostat 41' connected to the damper lever 42 operates the dampers 21 and 43 simultaneously to liberate the heated air when the temperature in the casing rises to a certain point. Access to that end of the hallway may be had through another hinged door at the rear of the body. As the air ascends within the outer tube 22 and passes out of its upper end at the point 28, some of it passes under the plate 26 and descends into this hallway and therefore becomes to an extent moistened by reason of the moisture within the pan 40; and, flowing around the ends of the shields 25, it passes in mois-

tened condition into the egg chambers in a manner which will be clear. Meanwhile, the air which passes over the plates 26 and descends through said chambers has not been moistened in this manner. I find this division of the inflowing fresh air extremely beneficial in an incubator of substantially the proportions illustrated. However, it is clear that the size and shape of parts might be amplified or altered considerably without departing from the spirit of my invention. There might, in fact, be more than one egg tray in each chamber, or the chambers could be made relatively larger and two of the heaters employed, though I prefer that the font shall be of sufficient size to supply all the necessary oil for one hatching.

What is claimed as new is:

1. An incubator whose body has egg chambers at its ends and a transverse hallway between them formed by parallel partitions, shields superimposed upon the partitions and extending partway across the body and rising nearly to its top, a heater tube rising through the center of the length of said hallway, a heater tank in communication therewith and extending across the tops of the egg chambers, a moistening pan in one end of said hallway, and means for admitting fresh air around said tube to the hallway and moistening it and then passing it around the ends of said shields into the egg chambers.
2. An incubator whose body has egg chambers at its ends and a transverse hallway between them formed by parallel partitions, shields superimposed upon the partitions and extending partway across the body and rising nearly to its top, a heater tube rising through the center of the length of said hallway, a heater tank in communication therewith and extending across the tops of the egg chambers, a moistening pan in one end of said hallway, means for admitting fresh air around said tube to the hallway and moistening it and then passing it around the ends of said shields into the egg chambers and over the upper edges thereof beneath said tank, plates extending completely across the body and resting upon said upper edges, and double end body-walls forming an air space between them, the innermost having perforations near its bottom for air outlets and the outermost having exhausts near the top of the body.

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

HENRY W. LUHMANN.

Witnesses:

DE LANCEY LEWIS,
BLANCHE FULLAGAR.