(No Model.)

J. K. MESCHTER.

INCUBATOR.

No. 397,016. Patented Jan. 29, 1889.

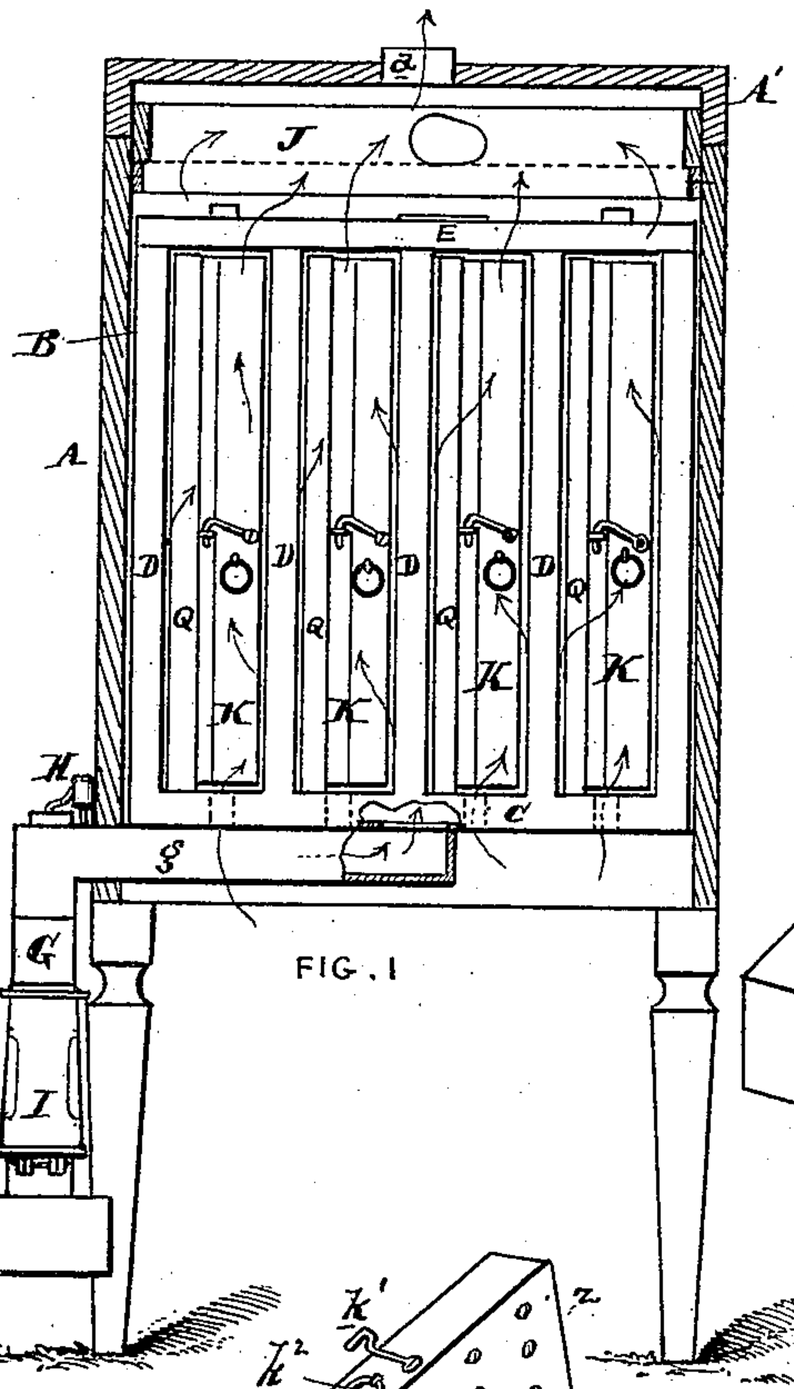

FIG. 1

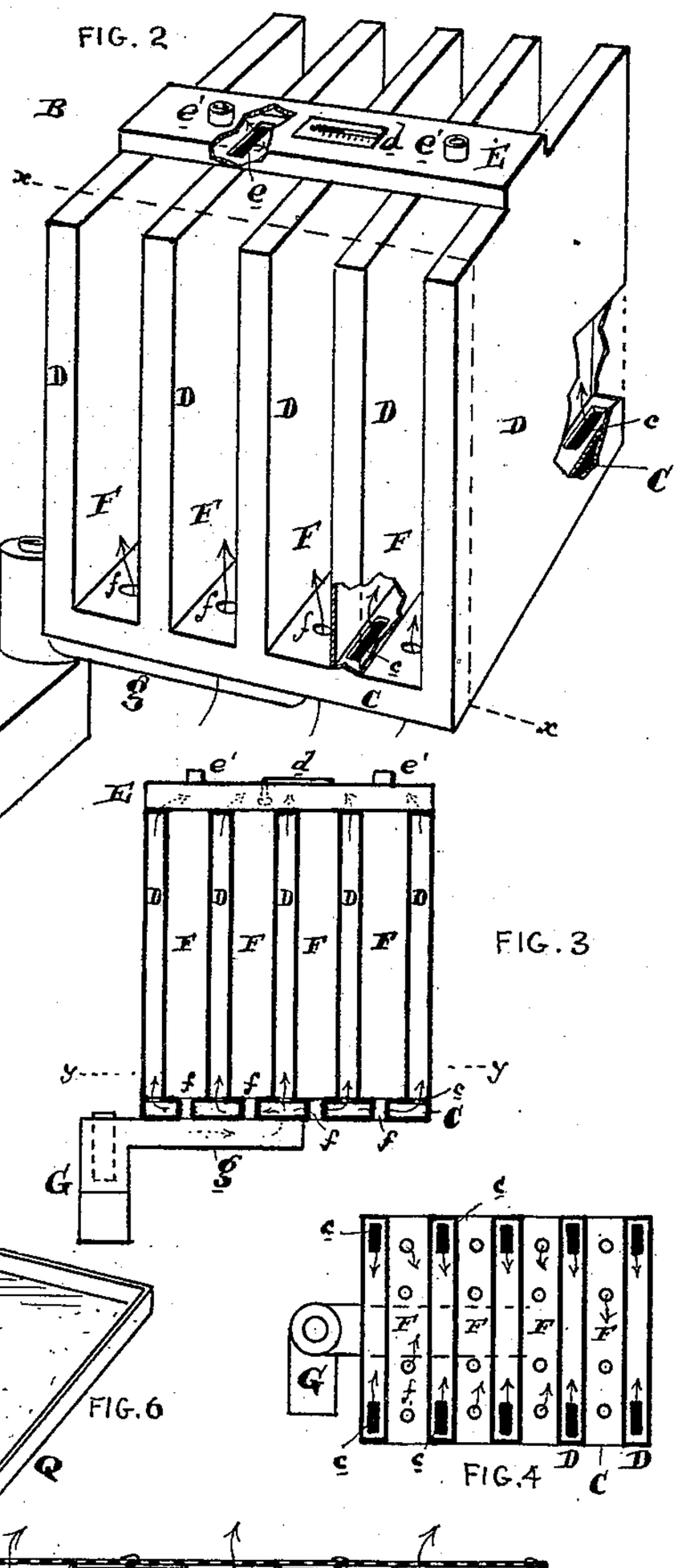

FIG. 2

FIG. 3

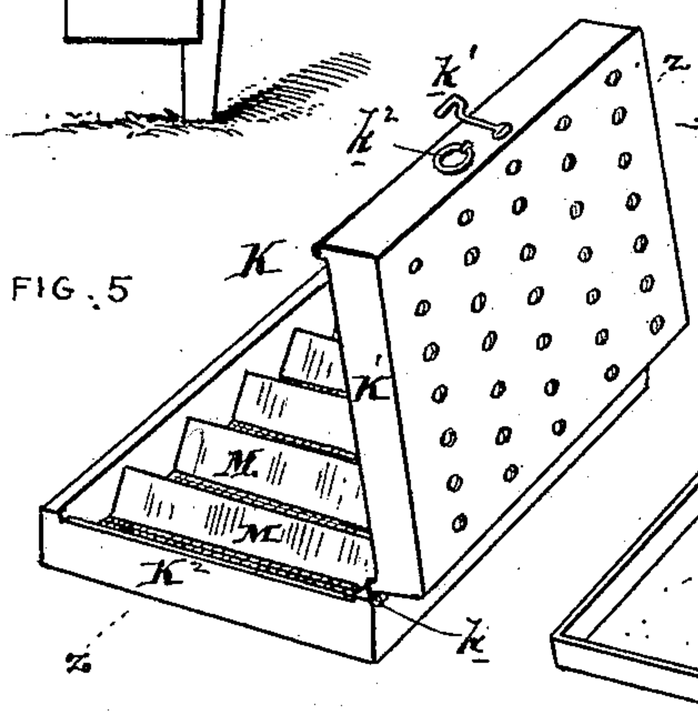

FIG. 5

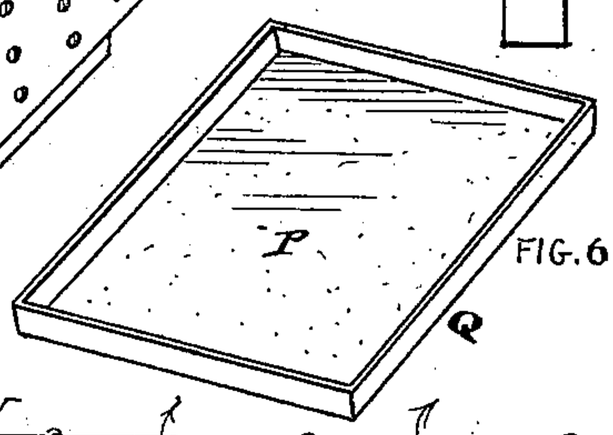

FIG. 6

FIG. 4

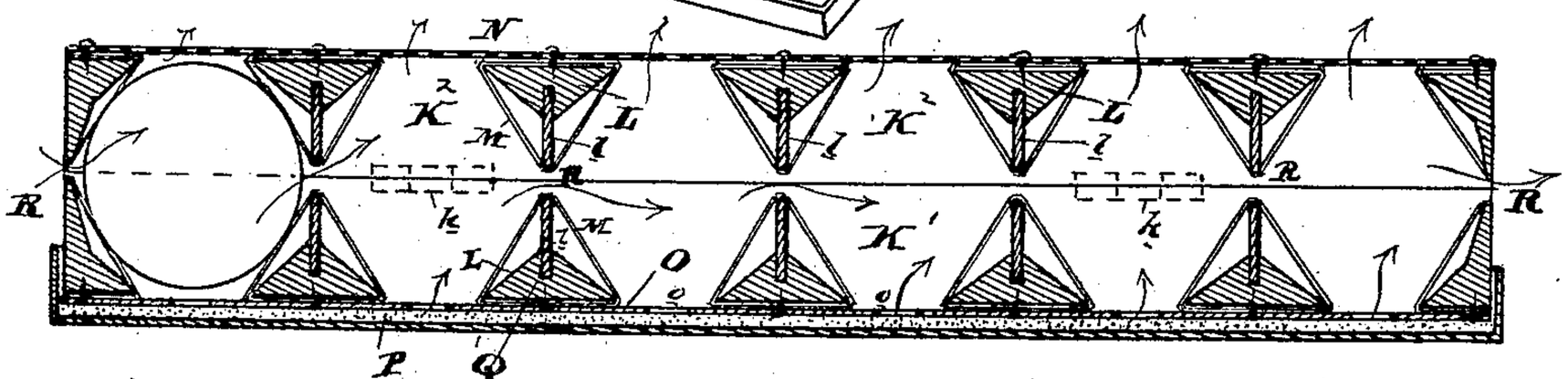

FIG. 7

Attest.

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JACOB K. MESCHTER, OF PHILADELPHIA, PENNSYLVANIA.

INCUBATOR.

SPECIFICATION forming part of Letters Patent No. 397,016, dated January 29, 1889.

Application filed May 29, 1886. Renewed July 5, 1888. Serial No. 279,095. (No model.)

To all whom it may concern:

Be it known that I, JACOB K. MESCHTER, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Incubators, of which the following is a specification.

My invention has reference to incubators; and it consists in certain improvements, all of which are fully set forth in the following specification and shown in the accompanying drawings, which form part thereof.

This invention is an improvement upon an application of mine filed August 25, 1884, Serial No. 141,362, and allowed February 23, 1886.

The essential feature of this invention consists in providing vertical walls and chambers or compartments, through the walls of which hot water circulates, and in the compartments of which are placed suitable trays for containing eggs. These trays are of a peculiar construction, and are provided with an absorbent for holding moisture, and are so made that while supporting the eggs in tiers one above the other they allow of free circulation of air between the eggs, which is so necessary. This construction of incubator is enabled to receive the greatest number of eggs in the smallest space, there being practically no waste space whatever.

In the drawings, Figure 1 is an elevation of an incubator embodying my invention, with the wooden casing shown in section. Fig. 2 is a perspective view of the hot-water circulator, with portions broken out to show the connections between the various parts. Fig. 3 is a cross-section of same on line *x x*. Fig. 4 is a sectional plan view of same on line *y y*. Fig. 5 is a perspective view of one of the egg-trays in a half-open condition. Fig. 6 is a perspective view of the absorbent pad and tray, and Fig. 7 is a cross-section on line *z z* of the egg-tray.

A is the wooden casing or chamber, and is made box-shaped, with the removable lid A′, having a ventilating-aperture, *a*, and may be provided with the usual hinged doors in front, and, if desired, upon the rear also. These doors are not shown in the drawings, they being cut away, but are found on all incubators.

B represents a hot-water circulator, and consists, essentially, of a hollow bottom, C, connecting with the boiler G by a tube, *g*, preferably entering the part C at or near its middle. Secured upon this base C are the upright water-chambers D, connecting with said part C by apertures *c* near the front and rear edges. The upper parts of these chambers are connected by a cross-flue, E, connecting with the middle of said upper edges of the chambers by openings *e*, and have one or more filling-holes, *e′*, and, if desired, a temperature-indicating thermometer, *d*. From this it is seen that the water is caused to circulate by the boiling action which takes place in G and passes in the direction indicated by the arrows. The water is heated by a lamp, I, of any desired construction, and the flame is controlled by any suitable regulating device, H, such as that set out in Letters Patent granted to me June 23, 1885, and numbered 320,490. By this means a uniform temperature of the hot water is maintained.

I do not limit myself to the particular arrangement of the openings *c e*, as the chambers D may open the full length into the bottom and top compartments, if desired, the essential feature being the vertical heating-walls, between which the egg-trays are arranged on end.

f are ventilating-holes in the bottom C of the hot-water circulator, admitting air into the compartments F. In the upper portion of the case A is a removable screen-tray, J, in which eggs from which the chickens are about to emerge are placed. All the warm air which passes through the compartments F is caused to pass through this screen J and escape from the incubator.

K are the egg-trays, and consist, essentially, of the two frames K′ and K², hinged together at *k*, and adapted to be locked by catch *k′* when closed. *k²* is a ring for withdrawing the tray from the compartments F. These parts K′ and K² are provided with wooden cross-bars L, from which project metal strips *l*, and about which cloth M is laid and secured by tacks or otherwise. The eggs, when received between these parts K′ and K², rest upon the cloth, which, from the construction, forms a flexible or elastic cushion. One of these eggs is shown in the left-hand part of Fig. 7. The frame K′ is covered with a cloth, O, of rubber or material impervious to moisture, having a

series of holes, *o*, arranged between the supports for the eggs, and the frame K^2 has its outer surface covered by a metallic or fibrous screen, N. The metal strips *l*, which face each other and are secured to the respective frames K′ and K^2, do not touch, so that free openings R may be had from the bottom of the tray to the top. By this means a free circulation of air or moisture through the egg-tray and between the eggs is insured.

Q is a moisture-pad tray, and is made to fit upon the egg-tray, and supports the moisture-pad P, preferably of asbestus, holding it up against the perforated cloth O on the face of the tray. When this egg-tray is filled with eggs, it is inserted in the compartment F, as indicated in Fig. 1, which it fits snugly, and the screen N is brought close to the heating-walls D. By this it is seen that all of the eggs are brought in close proximity to a moisture-pad and also to the heating-walls, and the openings R come directly over the ventilating-holes *f* and allow the incoming warm air to constantly ascend among the eggs. The heat of the circulator causes sufficient moisture from the pad P to be given off to moisten the said circulating air. From time to time the trays are withdrawn and turned, so that the portion which was on top now becomes at the bottom and the passing currents act on the opposite sides of the eggs, insuring them all being treated alike. This form of incubator enables a larger quantity of eggs to be treated at one time with a given size of incubator and consumption of heating material, and also reduces the time required to hatch the eggs, when compared with the form of incubator using horizontal trays, which has heretofore been the general principle of construction.

I do not limit myself to any particular construction of egg-tray, though I prefer that shown, the details of construction being capable of much modification without in any wise departing from the spirit of my invention.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An incubator consisting of a series of vertical hot-water chambers forming corresponding vertical compartments, in combination with egg-trays adapted to fit said compartments and support the eggs in tiers one above the other, substantially as and for the purpose specified.

2. An incubator consisting of a series of vertical hot-water chambers forming corresponding vertical compartments, in combination with egg-trays adapted to fit said compartments and support the eggs in tiers one above the other, and a moisture-containing pad arranged against one of the faces of the egg-tray, substantially as and for the purpose specified.

3. An incubator consisting of a series of vertical hot-water chambers forming corresponding vertical compartments provided with ventilating-apertures for air at the bottom, in combination with egg-trays adapted to fit said compartments and support the eggs in tiers one above the other, substantially as and for the purpose specified.

4. An incubator consisting of a series of vertical hot-water chambers forming corresponding vertical compartments provided with ventilating-apertures for air at the bottom, in combination with egg-trays adapted to fit said compartments and support the eggs in tiers one above the other, and a moisture-containing pad arranged against one of the faces of the egg-tray, whereby air and moisture freely pass over the eggs in their passage upward, substantially as and for the purpose specified.

5. The hot-water circulator for an incubator, consisting of a hollow base connecting with a boiler, a series of upright hot-water chambers supported upon said base and opening into it, and a cross-flue connecting them at the top, into which they open, the said upright chambers forming a series of narrow egg-tray compartments, substantially as and for the purpose specified.

6. The hot-water circulator for an incubator, consisting of a hollow base connecting with a boiler and provided with ventilating-apertures opening through it, a series of upright hot-water chambers supported upon said base and opening into it, and a narrow cross-flue connecting them at the top, into which they open, the said upright chambers forming a series of narrow egg-tray compartments, substantially as and for the purpose specified.

7. The combination of the boiler G with the base C, upright or vertical hot-water chambers D, connecting therewith by openings *c*, and cross-flue E, arranged upon the top of said chambers and connecting therewith by openings *e*, and provided with one or more openings, *e′*, to fill the circulator with water, substantially as and for the purpose specified.

8. The combination of the boiler G with the base C, upright or vertical hot-water chambers D, connecting therewith by openings *c*, and cross-flue E, arranged upon the top of said chambers, connecting therewith by openings *e*, and provided with one or more openings, *e′*, to fill the circulator with water, and a thermometer, *d*, arranged in said cross-flue E, substantially as and for the purpose specified.

9. The incubator egg-tray consisting of the parts K′ and K^2, the backs of which are of a substance impervious to moisture, and provided with perforations and padded egg-supports upon their inner parts, substantially as and for the purpose specified.

10. The incubator egg-tray consisting of the parts K′ and K^2, provided with perforated backs, and egg-supports upon their inner parts, forming the air-passages R from one end to the other of the tray and entirely through the length thereof, substantially as and for the purpose specified.

11. The incubator egg-tray consisting of the parts K′ and K^2, hinged together at *k* and hav-

ing fastenings to lock them together, provided with perforated backs and egg-supports upon their inner parts, substantially as and for the purpose specified.

12. The combination of parts K′ K², each having the triangular ribbed pieces L *l* and padding M, to support the egg, the said ribbed pieces in each of the parts K′ K² being arranged to face those in the other part and form the air-passages R, substantially as and for the purpose specified.

13. The combination of parts K′ K², provided with perforated backs, and each having the triangular ribbed pieces L *l* and padding M, to support the egg, the said ribbed pieces in each of the parts K′ K² being arranged to face those in the other part and form the air-passages R, tray Q, and moisture-pad P, adapted to fit against one of the perforated faces, substantially as and for the purpose specified.

14. The incubator egg-tray consisting of the parts K′ and K², provided with perforated backs and egg-supports upon their inner parts, in combination with the tray Q and moisture-pad P, adapted to fit against one of the perforated faces, substantially as and for the purpose specified.

15. The incubator egg-tray consisting of the parts K′ and K², forming the air-passages R from one end to the other, provided with perforated backs and egg-supports upon their inner faces, in combination with the tray Q and moisture-pad P, adapted to fit against one of the perforated faces, substantially as and for the purpose specified.

16. The combination of the egg-tray frames K′ K², one of which is provided on its back with a screen, N, and the other with a perforated cover, O, of water-proof material, tray Q, and moisture-pad P, adapted to fit against the water-proof face of the tray, substantially as and for the purpose specified.

17. An incubator consisting of a series of vertical hot-water chambers forming corresponding vertical compartments, in combination with egg-trays adapted to fit said compartments and support the eggs in tiers one above the other, the outer case, H, and upper screen-tray, J, substantially as and for the purpose specified.

In testimony of which invention I hereunto set my hand.

JACOB K. MESCHTER.

Witnesses:
R. M. HUNTER,
RICHD. S. CHILD, Jr.