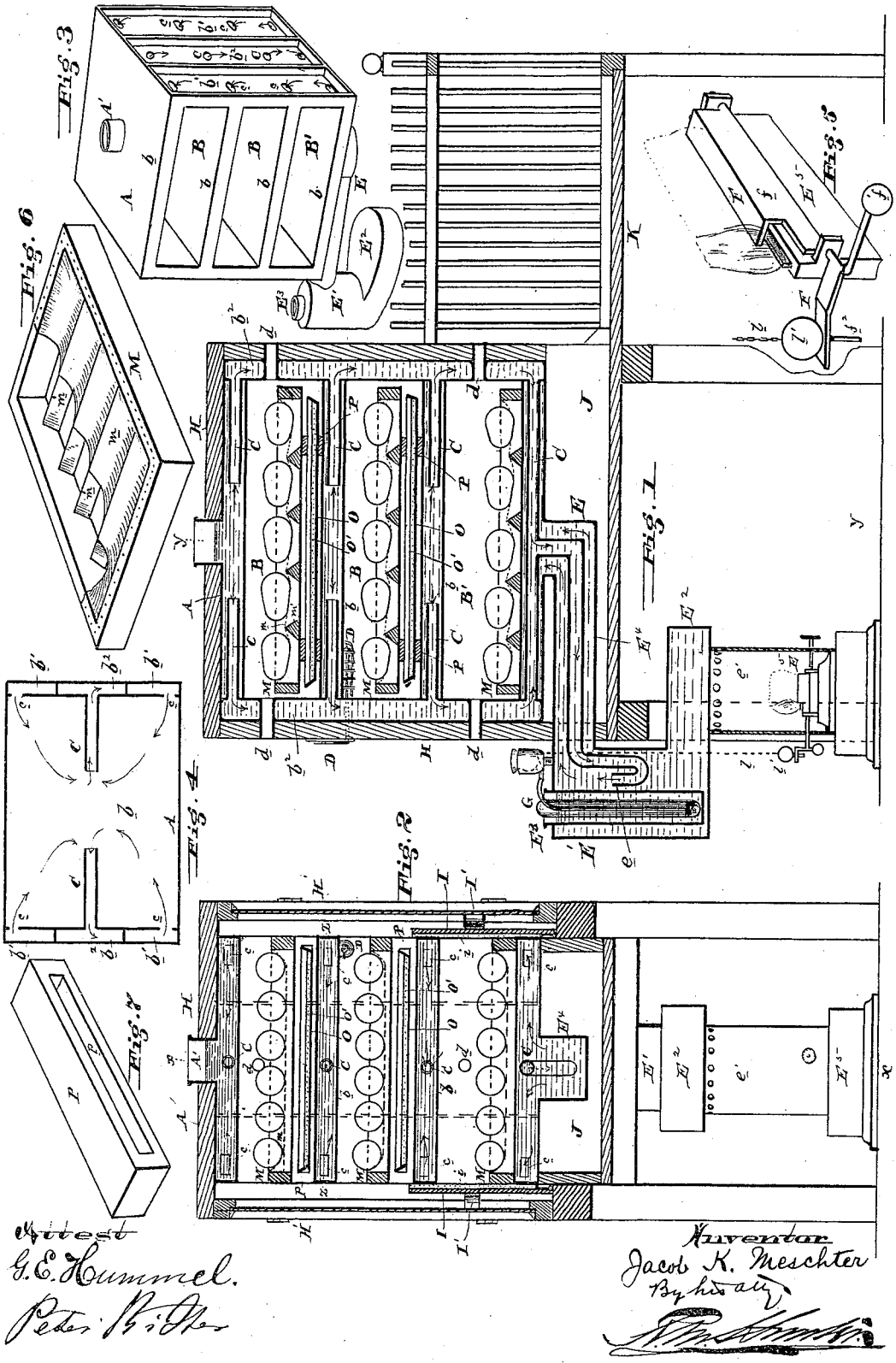
(No Model.) 2 Sheets—Sheet 1.

J. K. MESCHTER.

INCUBATOR.

No. 347,946. Patented Aug. 24, 1886.



Witnesses
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(No Model.) 2 Sheets—Sheet 2.

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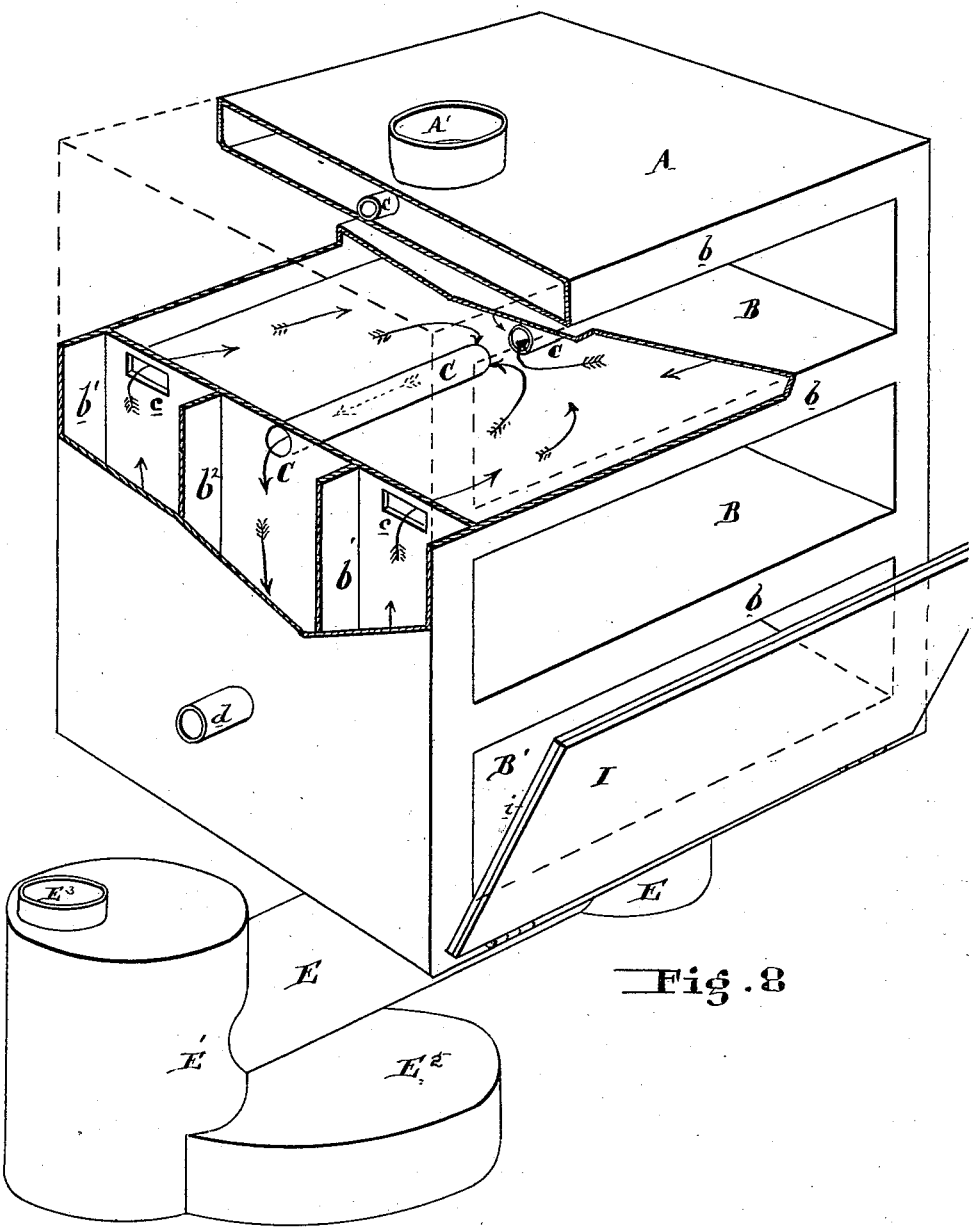

Fig. 8

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UNITED STATES PATENT OFFICE.

JACOB K. MESCHTER, OF PHILADELPHIA, PENNSYLVANIA.

INCUBATOR.

SPECIFICATION forming part of Letters Patent No. 347,946, dated August 24, 1886.

Application filed August 25, 1884. Serial No. 141,362. (No model.) Patented in England June 23, 1885, No. 7,653, and in France June 23, 1885, No. 169,730.

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 new and useful Improvements in Incubators, of which the following is a specification.

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

This invention has been patented to me in Great Britain on June 23, 1885, and numbered 7,653, and in France on June 23, 1885, and numbered 169,730.

The object of my invention is to provide an incubator embodying all the constructions necessary for the most perfect hatching of the eggs, to the end that there shall be as few failures and breakages as possible.

This application is upon the construction of the incubator proper, and does not embody the means of regulating the temperature of the heating-water, as that forms subject-matter of another pending application, filed February 28, 1884, Serial No. 122,286, and allowed November 29, 1884.

In the drawings, Figure 1 is a sectional elevation of my improved incubator on line *x x*, Fig. 2. Fig. 2 is a similar view on line *y y*, Fig. 1. Fig. 3 is a perspective view of the hot-water circulating-boiler with one end removed to show how the water-currents are produced. Fig. 4 is a sectional plan view of same on line *z z*, Fig. 2. Fig. 5 is a perspective view of the lamp-burner and the regulating-valve. Fig. 6 is a perspective view of one of the supporting-trays for the eggs, with part of the flexible or soft covering cut away; and Fig. 7 is a perspective view of one of the wooden supports for the moistening-trays, which are also adapted to support the egg-trays over said moistening-trays. Fig. 8 is a perspective view of the hot-water circulator, with part broken away.

A is the hot-water circulator, and consists of hollow partitions *b*, which form the chambers B B and B′. The side walls are supported from the horizontal walls or floors, and are further divided vertically into spaces *b′ b′* and b^2, from the former of which apertures *c* open into the interior of the horizontal floors, and from the latter of which tubes C extend into the space of said horizontal floors, as shown in Figs. 4 and 8.

E is a tube opening into the bottom floor, *b*, from below and connects with the heater E′ and boiler E^2. The two pipes C in the space of the lower floor are united and terminate in a pipe, E^1, which passes through pipe E, and has an upwardly-turned nozzle, *e*, in the heater E′. The water is placed in the above specified apparatus by a pipe, A′.

E^5 is a lamp, preferably inclosed with a sheet-metal chimney, *e′*, and is arranged under the boiler E^2, and heats the circulating-water, causing a circulation, as indicated by arrows, the upwardly-turned nozzle *e* facilitating said circulation. This hot-water circulating apparatus is inclosed within a wooden case or covering, H, provided with one or more doors, H′, preferably of glass, and said case forms on the bottom a chamber, J, the ceiling of which is the bottom of circulator A, whereby said chamber is kept warm. One end of said chamber opens into the brooding-yard K, which may be of any desired size and shape, and is preferably covered with earth.

The two upper chambers, B B, of the circulator proper are open on each side, and may have ventilating-tubes *d* opening into the atmosphere to allow of a proper circulation of air; but the lower chamber, B′, is closed on each side by hinged doors I, having their faces *i* covered with felt, and kept closed by springs I′, which are pressed upon by doors H′. Any other suitable fastening may be used, if desired. While this lower compartment is comparatively tight, it may also be provided with ventilating-tubes *d*, to carry off impure air.

D is a thermometer to indicate the temperature of the air in chamber B.

The heater-lamp E^5 is provided with a cut-off valve, F, hinged at F′, and having a notch, *f*, so that when closed it still leaves a small part of the wide wick e^2 exposed, as shown in Fig. 5. This valve is normally kept thrown back, but may be closed by hand or automatically by apparatus controlled by the temperature

of the water, one form of which apparatus is fully set forth in another application, hereinbefore referred to. This cut-off valve may be modified in various ways—for instance, it may be made to slide.

The trays for the eggs consists of frames M, having cross-slats m', and covered with coarse or open canvas m, or other soft material, which hangs as shown in Fig. 6. The eggs N are laid upon canvas m, between the slats m', as shown in Fig. 1.

O are the evaporating-pans, and carry the pads O', of asbestus or other absorbent material, and are supported within the chambers B by wooden supports P, having slots p, through which the pans or trays are placed, so that they shall not interfere with the radiation of heat from the floors b.

Heretofore it has been the custom to use moist earth to impart the requisite moisture to the atmosphere in the chamber B; but there was always liability of getting too much water or not enough, and the use of earth was dirty and objectionable. By my method of using an absorbent pad of a given size, when saturated it will always take up the same quantity of moisture, neither more nor less than required.

In the lower chamber, B', the frames M rest upon the floor b; but in the chambers B the frames rest upon the supports P, above the water-trays O.

The eggs are first placed in the chamber B', where they must be kept dry, no other moisture than that contained in the egg itself being required, and, in fact, if more moisture be added it would destroy the hatching quality of the eggs. After being treated in chamber B' for some time they are then placed above the trays O in chambers B, where additional moisture is required, and when hatched the chickens are placed in chamber J and allowed to run free in the yard K.

In practice there are three sets of eggs in the incubator all the time, and it is evident that by varying the capacity of the incubator more than three sets of eggs could be simultaneously treated.

By the use of the soft bottoms to the egg-trays I am enabled to place two trays together, and by turning them over transfer the eggs from one tray to the other and at the same time turn them, a feature very necessary to the proper hatching of chicken eggs.

Instead of water any other heating-fluid may be used—as oil, glycerine, &c.—and in place of an oil-lamp a gas-burner may be used to heat the circulating-boiler, and the valve F may control the flow of gas.

While I prefer the construction shown, it may be modified in various ways without departing from my invention.

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

1. In an incubator, the hot-water circulator A, having chambers B and B', and consisting of hollow floors and walls b, vertical passage-ways b' b^2 at each end and connecting with said floors, the passage-ways b' by apertures c, and passage-ways b^2 by pipe C, and means to heat the water to cause a circulation of the hot water up through passage-ways b' and back through the floors, pipe C, and passage-ways b^2, substantially as and for the purpose specified.

2. In an incubator, the hot-water circulator A, having chambers B and B', and consisting of hollow floors and walls b, vertical passage-ways b' b^2 at each end connecting with said floors, the passage-ways b' by apertures c, and passage-ways b^2 by pipes C, pipe E connecting with the bottom of passage-ways b', pipe E', having nozzle e, and connecting with the bottom of passage-ways b^2, and means to heat the water to cause a circulation of the hot water up through passage-ways b' and back through the floors, pipes C, and passage-ways b^2, substantially as and for the purpose specified.

3. The heated hatching-chambers B B, exposed to the atmosphere, the heated hatching-chamber B', closed to the atmosphere, doors I, to close the entrances of said chamber B' alone, egg-trays in each of said chambers, and moistening-pads located under the trays in each of the chambers B, but not in the closed chamber B', the inclosing-case H, loosely covering all of said chambers to prevent quick drafts of air, and tubes d, connecting one of the open chambers B and the closed chamber B' with the atmosphere, substantially as and for the purpose specified.

4. A frame to support the eggs in an incubator, consisting of a rectangular frame, M, having cross-bars m', made triangular in cross-section, and a soft flexible bottom, m, supported over said bars, whereby the eggs are held in rows and each row is separated from the next, substantially as and for the purpose specified.

5. The combination of the pad-tray O, the porous water-holding pad O' therein, the slotted frames P, through the slots of which the tray is placed, and egg-frames M, having soft bottoms and supported upon said frames P, above the pad O', substantially as and for the purpose specified.

6. The hot-water circulator having chambers B B B', in combination with doors I, having springs I' and pads to close the chamber B', case H, and doors H' thereto, which when closed press upon the springs I' and cause the doors I to tightly close the chamber B', substantially as and for the purpose specified.

In testimony of which invention I hereunto set my hand.

JACOB K. MESCHTER.

Witnesses:
R. M. HUNTER,
WILLIAM C. MAYNE.