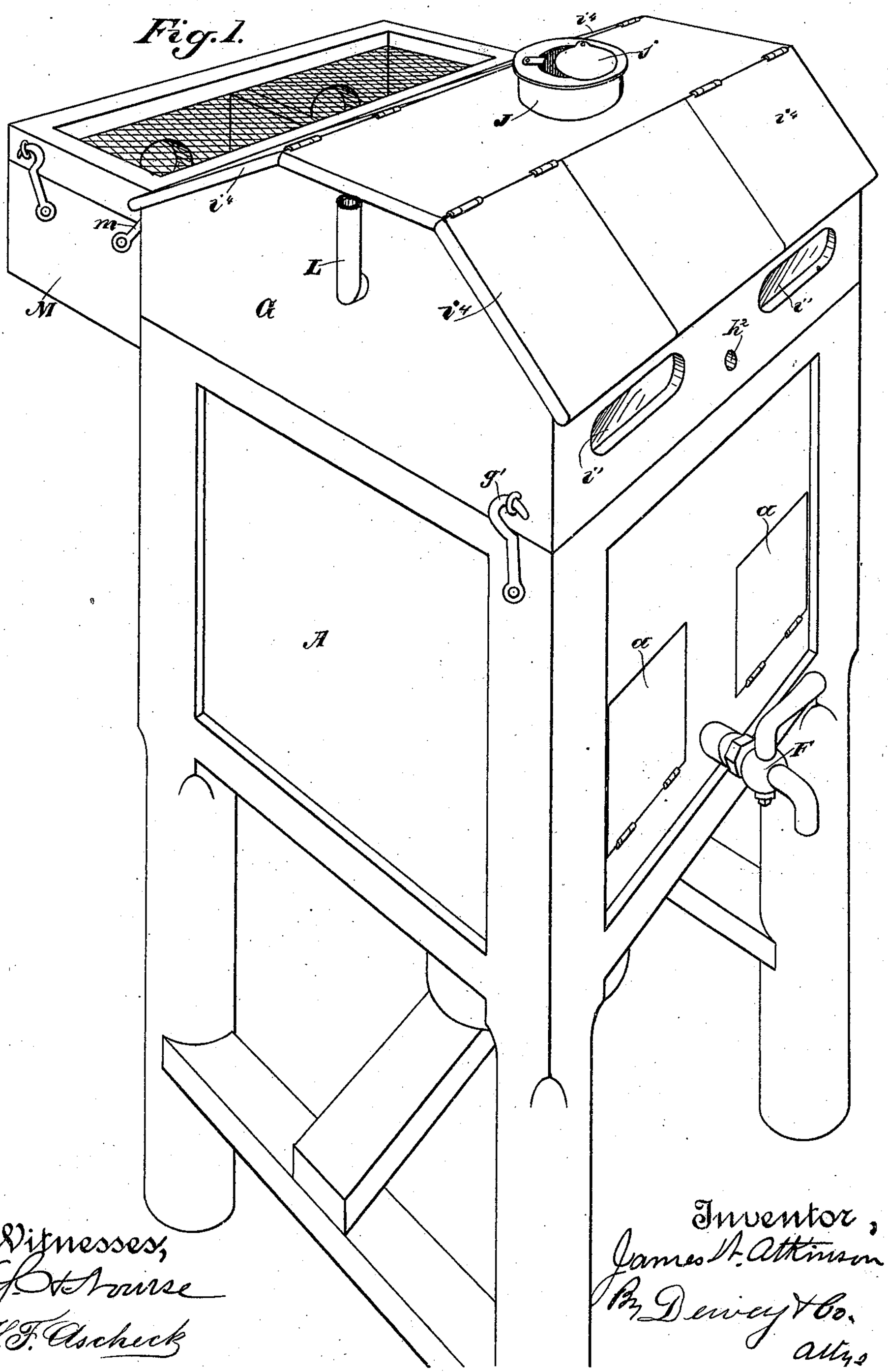
(No Model.) 3 Sheets—Sheet 1.

J. W. ATKINSON.

COMBINED INCUBATOR AND BROODER.

No. 502,900. Patented Aug. 8, 1893.

Fig. 1.



Witnesses,
J. C. Howse
H. F. Ascheck

Inventor,
James W. Atkinson
By Dewey & Co.
Attys.

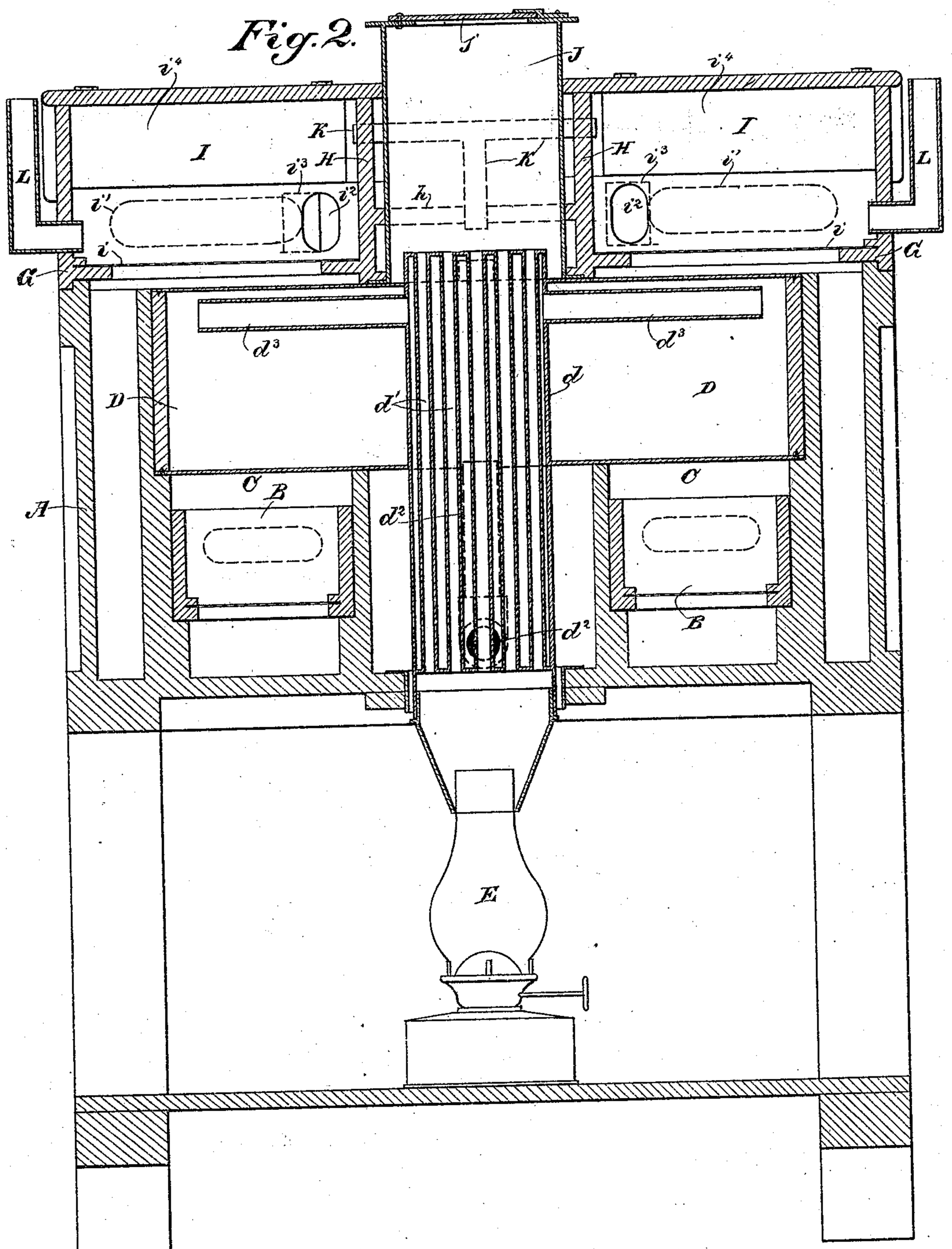
(No Model.) 3 Sheets—Sheet 2.

J. W. ATKINSON.

COMBINED INCUBATOR AND BROODER.

No. 502,900. Patented Aug. 8, 1893.

Fig. 2.



Witnesses,
L. Stowe
F. F. Ascheck

Inventor
James W. Atkinson
By Dewey & Co.
Attys

(No Model.)

3 Sheets—Sheet 3.

J. W. ATKINSON.

COMBINED INCUBATOR AND BROODER.

No. 502,900. Patented Aug. 8, 1893.

Fig. 3.

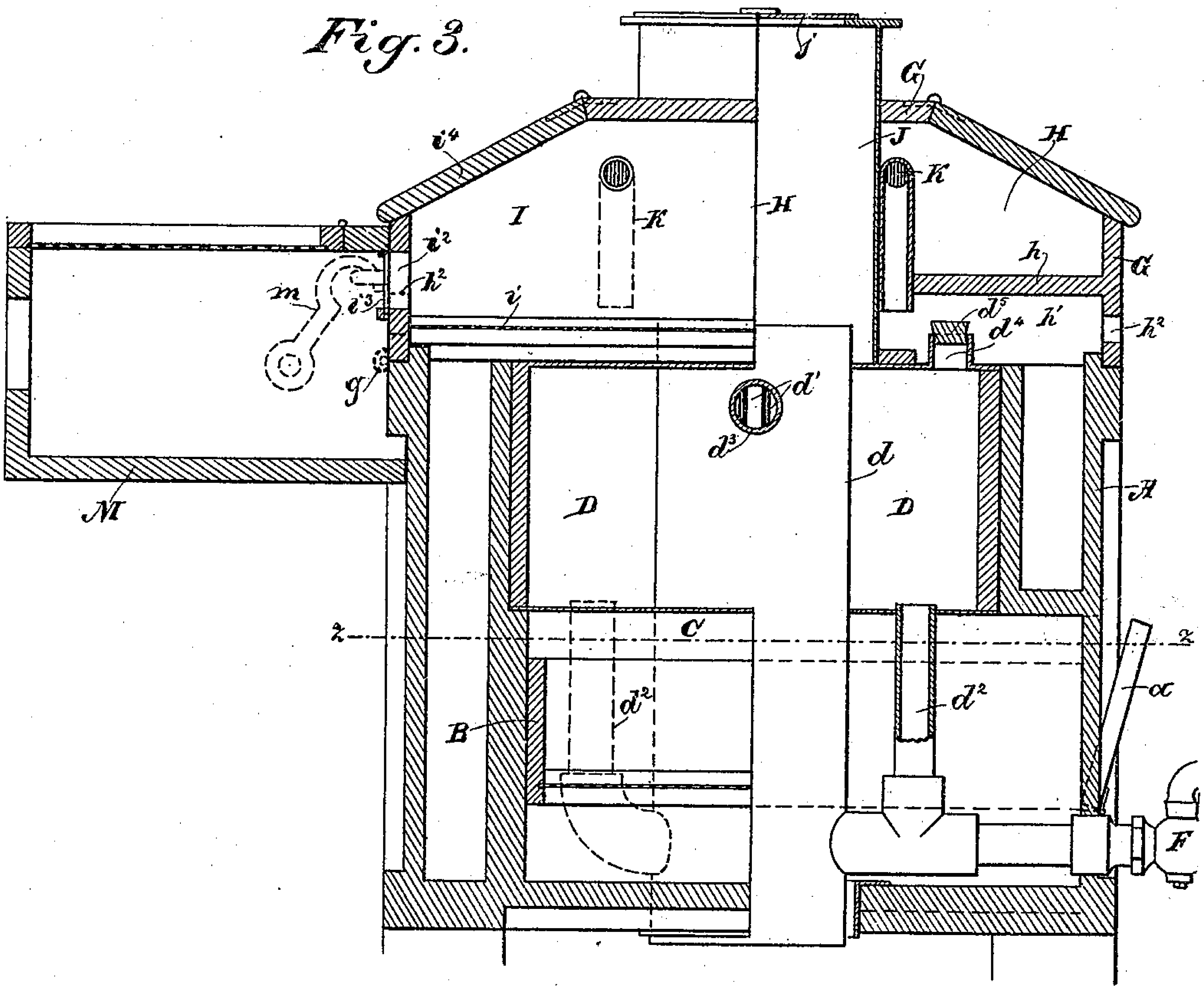
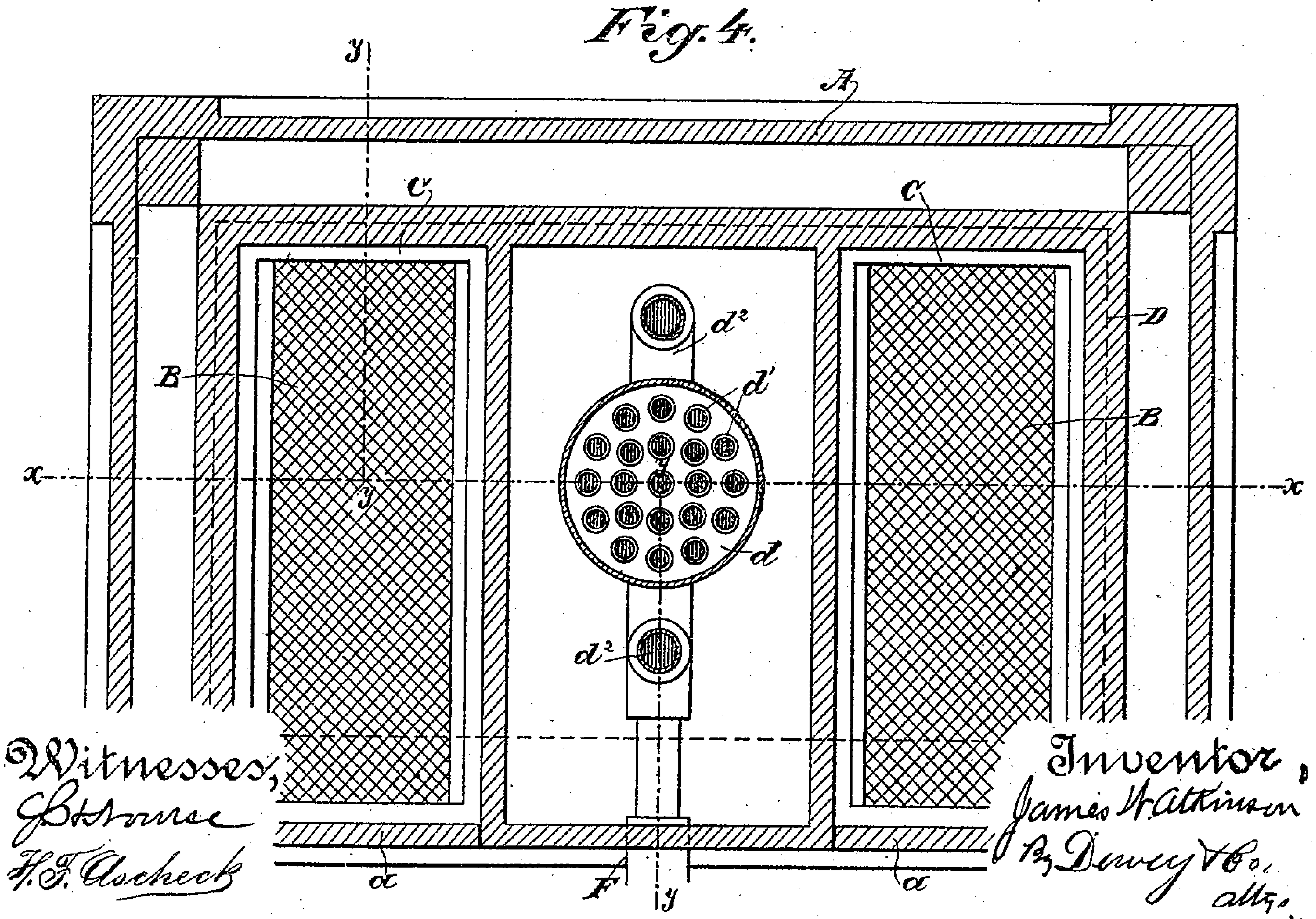


Fig. 4.



Witnesses,
G. H. Strong
H. F. Ascheck

Inventor,
James W. Atkinson
By Dewey & Co.
attys.

UNITED STATES PATENT OFFICE.

JAMES W. ATKINSON, OF SAN JOSÉ, CALIFORNIA.

COMBINED INCUBATOR AND BROODER.

SPECIFICATION forming part of Letters Patent No. 502,900, dated August 8, 1893.

Application filed April 17, 1893. Serial No. 470,723. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. ATKINSON, a citizen of the United States, residing at San José, Santa Clara county, State of California, have invented an Improvement in a Combined Incubator and Brooder; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to that class of incubators in which the upper portion of the frame is formed into a brooding chamber which derives its necessary warmth from the heater of the incubator.

My invention consists in the novel construction and arrangement of the brooding chamber, and in connection therewith of the removable heater which serves the double purpose of furnishing the required heat for hatching the eggs and the necessary warmth for the hatched chicks.

The object of my invention is to provide a simple, compact and effective brooder in direct and intimate connection with the incubator, and so arranged as to permit of the ready removal of the heater.

Referring to the accompanying drawings for a more complete explanation of my invention,—Figure 1 is a perspective view of my combined incubator and brooder. Fig. 2 is a vertical section on the line *x*—*x* of Fig. 4. Fig. 3 is a vertical section on the line *y*—*y*—*y*—*y* of Fig. 4. Fig. 4 is a horizontal section on the line *z*—*z* of Fig. 3.

A is the frame of the incubator, having egg drawers B, accessible through doors *a* in the front. These drawers are seated in the lower portion of an inside case C, and directly above them, in the upper portion of the case, is the heater D, which consists of a water containing vessel, the metal top and bottom of which are exposed, to form a good conductor of heat. Through the center of this heater passes a drum *d* having a number of heat tubes *d'* extending through it and open below to the action of the flame and the passage of the products of combustion from the lamp E. Opening downwardly from the heater D are pipes d^2 which enter the water space of the drum *d* below. With one of these pipes a draw off faucet F is connected, said faucet passing in through the front wall of the frame A, and being screwed into pipe d^2, whereby it can be removed when necessary as I shall presently explain.

From the water space of drum *d*, in the upper portion of the heater, issue the horizontal pipes d^3 which open out into the heater near its ends.

Water is supplied to the heater through a pipe d^4, which is closed by a plug d^5. Thus a circulation of water is provided for, and these parts of the heater, it may be well to state, are substantially similar to those shown in my former Letters Patent, No. 467,285, dated January 19, 1892. In the present instance, however, it must be noted that the whole heater consisting of the water vessel, and its attached drum and pipes, is so placed within frame A, that it can be readily removed therefrom and replaced, a result which is made possible upon the unscrewing of faucet F, by the arrangement of the brooder, which I shall now describe.

The lid or cover G of frame A is a chambered one and constitutes the brooder. It is hinged at *g*, Fig. 3, to the frame, and is adapted to be thrown open, to expose the whole top of the frame or to be closed down over it, in which latter position it is secured by latches *g'*. The lid G, which is somewhat like the compartment cover of a trunk in general shape, has two separated cross partitions H, between each of which and the adjacent end of the lid is formed a brooding chamber I, having a suitable bottom, such, for example, as the wire cloth *i* here shown; though thin boards or other material may be used according to the amount of bottom heat which it may be desired to receive from the top plate of the heater which lies directly below said bottoms.

Through the space between the cross partitions H, passes the chimney flue or outlet J, the lower end of which fits over the top of drum *d* and thence extends upwardly through the lid G and has a controlling damper *j* on its top. Between the cross partitions H are secured horizontal partitions *h* which form below them the fresh air heating chambers *h'* in direct communication with and lying immediately above the top plate of heater D. These chambers have a communication front and rear through passages h^2 with the outer air, and they are also connected by the pipes

or passages K with the upper portions of the brooding chambers I, said pipes opening through the partitions *h* and H, and being adjacent to the chimney flue J. Issuing from the lower portions of the opposite walls of the brooding chambers are the outlet pipes L. In the front walls of the brooding chambers are the glazed openings *i'*, in their back walls the openings i^2 for the chicks, said openings being controlled by gates i^3, and in the tops of the brooding chambers front and rear are the hinged flaps i^4 by which access is had to said chambers for the insertion and removal of the chicks.

M is an outer cage adapted to be removably connected, as by means of the hooks *m*, with the back of the brooder, and into this the chicks may pass from the brooder chambers through openings i^2.

The use of this combined incubator and brooder is as follows:—The eggs are placed in the drawers B and subjected to heat in the usual manner until the chicks are hatched. The newly hatched chicks are then placed in the brooding chambers I, by opening the top flaps i^4. The lid G being closed down on frame A, the brooding chambers I receive warmth from the underlying heater. A portion of this warmth may or may not ccme directly up through the chamber bottoms, according to the material of which said bottoms are composed. But it is the main design to draw in through passages h^2 and collect pure fresh air in chambers *h'* and to heat this fresh air from the top plate of the heater. From these chambers, the heated fresh air will pass through the pipes K into the brooding chambers I. The foul air will pass out through outlet pipes L. Thus a constant supply and circulation of pure fresh heated air are maintained in the brooding chambers and upon this depends the main success of the raising of artificially hatched chicks. The heater thus serves the double purpose of hatching the eggs and properly warming the brooder. The lights *i'* are placed in front to attract and induce the chicks to return to the brooding chambers at night. This construction of the brooder, forming it in a hinged or removable lid or cover for the incubator serves also, as before intimated, the purpose of permitting the ready removal of the entire heater from the top of the frame A. This is of importance, in that it enables the operator to readily take out his heater for necessary repair of leaks, and other repairs, without having to dismember or tear to pieces the frame, and to this end the heater is fitted and supported loosely in its seat, whereby upon throwing back the lid G, it may be removed by simply lifting it out.

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

1. In an incubator having a heater, a brooding chamber and a passage contiguous and exposed to said heater and communicating with said brooding chamber and with the outer air, whereby fresh air is heated and supplied to the brooding chamber, substantially as herein described.

2. In an incubator having a heater, a brooding chamber, a passage contiguous and exposed to said heater and communicating with the brooding chamber and with the outer air for supplying warm fresh air to the chamber, and an outlet from said brooding chamber for the foul air, substantially as herein described.

3. In an incubator, a brooding chamber in the upper portion, an underlying heater for furnishing the necessary hatching heat, and a passage connecting said chamber with the outer air, said passage being exposed in its course to the heater whereby fresh warm air is supplied to the brooding chamber, substantially as herein described.

4. In an incubator, a brooding chamber in the upper portion, an underlying heater, a chamber directly above and exposed to said heater, a passage connecting said chamber with the outer air and a passage connecting said chamber with the brooding chamber, substantially as herein described.

5. In an incubator, a brooding chamber in the upper portion, an underlying heater, a chamber directly above and exposed to said heater, a passage connecting said chamber with the outer air, a passage connecting said chamber with the brooding chamber, and an outlet passage from said brooding chamber, substantially as herein described.

6. In an incubator, the combination of its frame having an egg drawer below, and a brooding chamber above, an intervening heater, a chamber directly above and exposed to said heater, a passage connecting said chamber with the outer air and a passage connecting said chamber with the brooding chamber, substantially as herein described.

7. In an incubator, having a suitable frame with contained heater, the brooding chambers formed in the cover of the frame above said heater, the chambers *h'* in said cover exposed to the heater, the passages connecting said chambers with the outer air and the pipes connecting them with the brooding chambers, substantially as herein described.

8. In an incubator, the combination of the frame having a cover, and a contained heater, with a chimney flue passing up through the cover, the brooding chambers formed in the ends of the cover above the heater, the chambers in the cover exposed to the heater, the passages connecting said chambers with the outer air, and the pipes adjacent to the chimney flue of the heater and connecting said chambers with the brooding chambers, substantially as herein described.

9. In an incubator, the combination of the frame having the egg drawers below and the cover above adapted to close and open its top, the heater seated loosely in the frame under the cover and above the egg drawers, the heating drum of the heater passing down through

the base of the frame and projecting above the heater, and the chimney flue in the cover fitting over the projecting upper end of the heating drum, substantially as herein described.

10. In an incubator, the combination of the frame having the egg drawers below and the cover above adapted to close and open its top, the heater seated loosely in the frame under the cover and above the egg drawers, the heating drum of the heater passing down through the base of the frame and projecting above the heater, the chimney flue in the cover fitting over the projecting upper end of the heating drum, the circulatory pipes of the heater and drum and the removable drain faucet connected with one of said pipes and extending outwardly through the frame, substantially as herein described.

11. A combined incubator and brooder consisting of a frame having suitable egg receivers in its lower portion, and a heater above them freely fitted therein, whereby it can be easily removed, a hinged cover or lid for said frame adapted to open its top to permit the removal of the heater, said cover having brooding chambers formed in it above the heater, and passages in said cover or lid exposed to the heater and connecting the brooding chambers with the outer air, substantially as herein described.

In witness whereof I have hereunto set my hand.

JAMES W. ATKINSON.

Witnesses:
S. H. NOURSE,
WM. F. BOOTH.