

(No Model.)

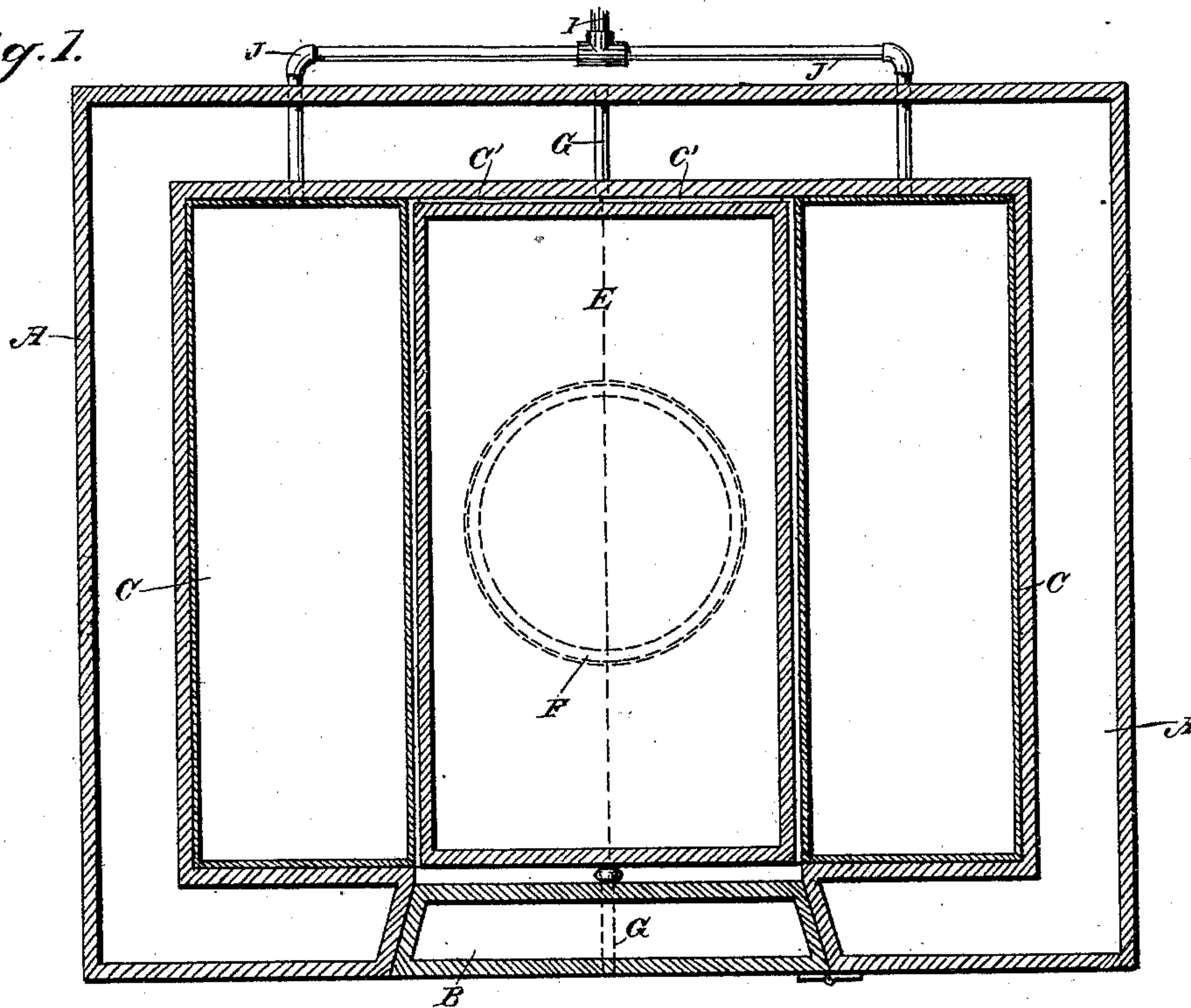
2 Sheets—Sheet 1.

E. HARRISON.  
INCUBATOR.

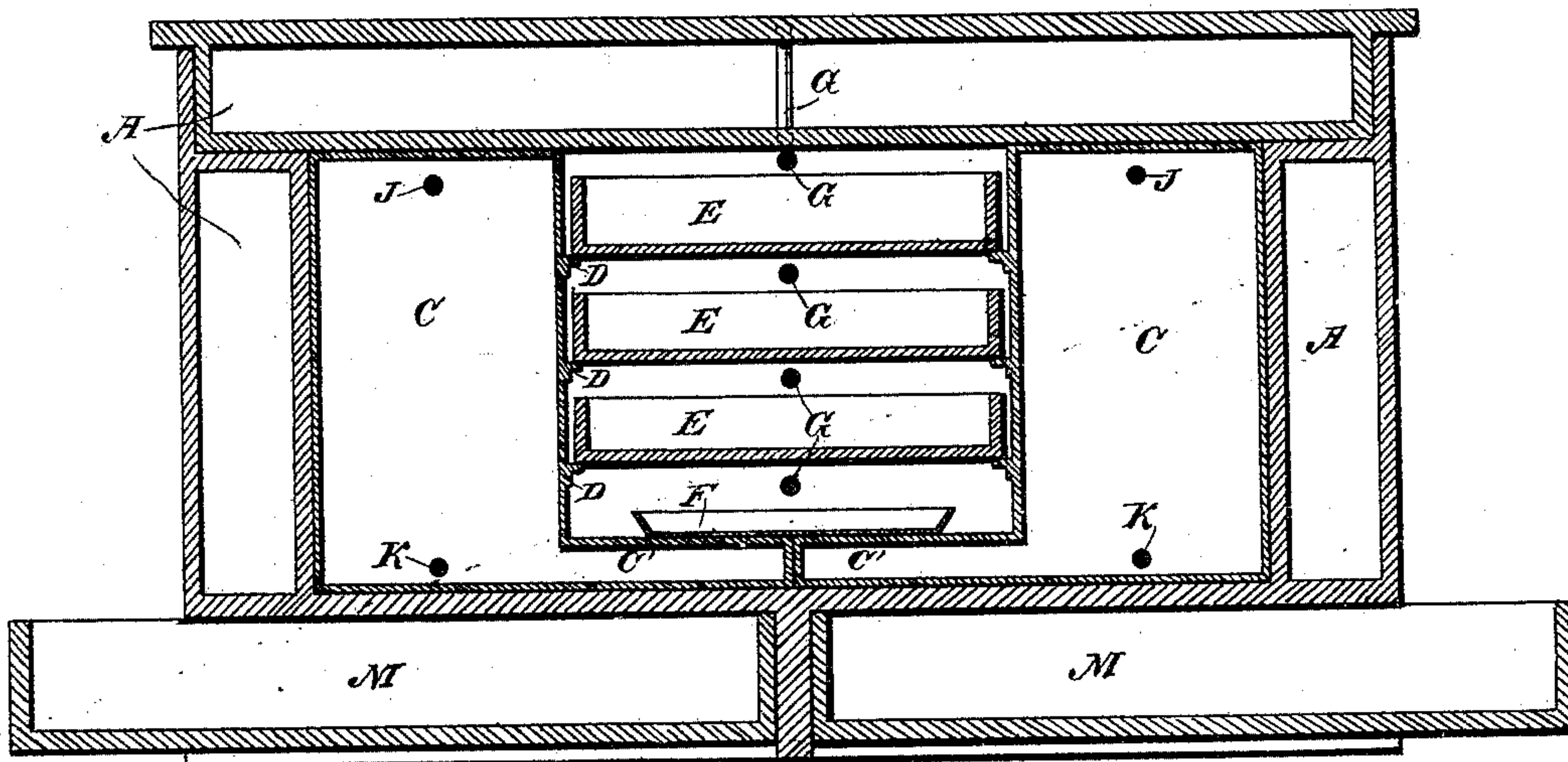
No. 473,664.

Patented Apr. 26, 1892.

*Fig. 1.*



*Fig. 2.*



Witnesses,  
*J. H. House*  
*H. F. Aschbeck*

Inventor,  
*Edmund Harrison*  
*By Dewey & Co* attys

(No Model.)

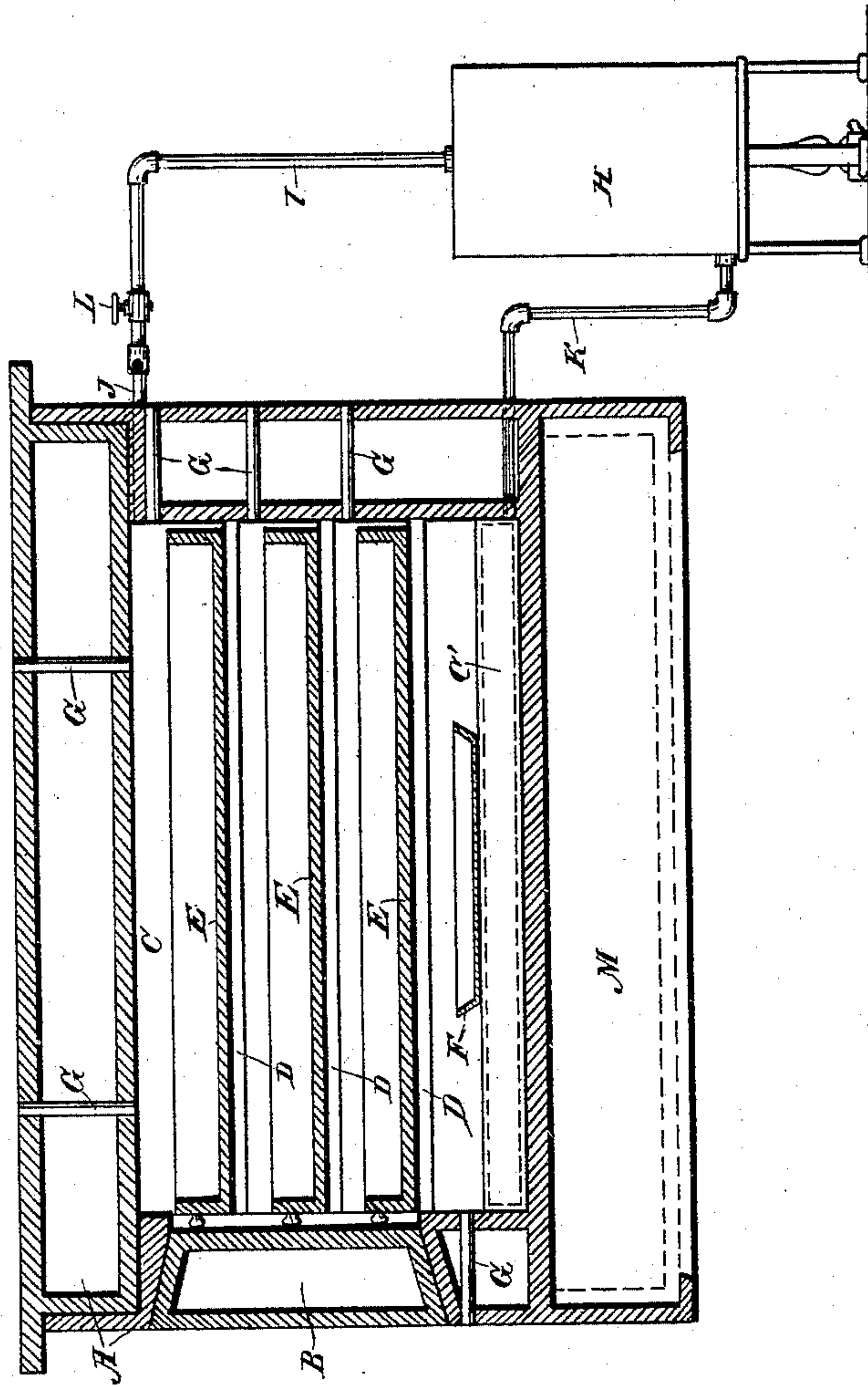
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Fig. 3.



Witnesses,  
J. H. Hourse  
H. F. Aschbeck

Inventor,  
Edmund Harrison  
By Dewey & Co. atty



# UNITED STATES PATENT OFFICE.

EDMUND HARRISON, OF TULARE, CALIFORNIA.

## INCUBATOR.

SPECIFICATION forming part of Letters Patent No. 473,664, dated April 26, 1892.

Application filed September 26, 1891. Serial No. 406,940. (No model.)

*To all whom it may concern:*

Be it known that I, EDMUND HARRISON, a citizen of the United States, residing at Tulare, Tulare county, State of California, have  
5 invented an Improvement in Incubators and Brooders; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to certain improvements in incubators and brooders.

It consists in certain details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

15 Figure 1 is a horizontal section of the apparatus. Fig. 2 is a transverse vertical section. Fig. 3 is a longitudinal vertical section taken at right angles with Fig. 2.

20 A is an exterior case of any suitable or desired size for the apparatus. This case is made with double walls, and the space between these walls and top is filled with sawdust or other non-conducting material.

25 B is a door through which access is obtained to the interior of the apparatus, the door being made, also, with double walls and a beveled casing with packing to make a tight joint.

30 C C are water tanks or chambers of metal, adapted to fit within the walls of the case A upon each side, so as to extend from one end to the other and from top to bottom within the sides, as shown. At the bottom each of these chambers is continued, so as to make a shallow space C' in each. These extensions meet  
35 in the center and thus form a bottom, which is continuous with the sides, and the chambers may be easily removed whenever desired for cleaning or other purposes. Upon the inner vertical sides of the chamber C are fixed  
40 cleats or supports D, and upon these supports the trays E are adapted to slide in and out through the door B whenever it is open. A little space is left on each side between the trays and the tanks above the cleats for the  
45 circulation of air. These trays are fitted to contain the eggs which are to be hatched. In the bottom of this inner chamber, resting upon the extension C', is a water-pan F, the evaporation from which maintains the atmosphere  
50 within the incubator in a proper state of moisture. Suitable openings G are made

through the sides and top of the apparatus for the purpose of ventilation.

H is a heater of any suitable shape or description, preferably cylindrical, to which the  
55 heat of a lamp of any kind may be applied, so that when filled with water the temperature of the contained water may be raised to any desired degree.

I is a pipe leading from the boiler and connecting with the branches J, one of which  
60 leads to the top of each of the chambers C.

K K are pipes leading from the bottom of the heater H to the bottom of the chambers C.

L is a valve or cock by which the supply of  
65 water is cut off between the heater and the chambers and the circulation is stopped. By this construction it will be manifest that the temperature of the water in H may be raised to the required degree for hatching purposes,  
70 thermometers indicating the temperature of the water, and also the temperature of the air within the incubator in the usual manner. When by circulation the water has reached the proper temperature, the cock L is closed,  
75 and the circulation ceases, the lamp being extinguished.

By reason of the capacity of water for retaining heat for a long time I have found that when the temperature is once raised to the  
80 proper degree in the large chambers C C' it will remain at approximately that degree for ten or twelve hours, and I am thus enabled to leave the apparatus entirely unattended for a long period after having once raised the  
85 temperature to the proper degree and extinguished the lamp. When the temperature has fallen a few degrees, it is only necessary to open the cock L and light the lamp and let it burn for a short time until the temperature  
90 of the water is again raised to the proper degree. The bottom of the case A is made of only a single thickness of board, and the extensions C' of the chambers C, resting upon this bottom, produce a sufficient heat to be  
95 conveyed through the bottom of A, and thus heat the space beneath, the thickness of the wood reducing the temperature somewhat and also making an even heat in this space. The sides of the case A are extended down-  
100 ward to inclose the space beneath the case, and within this are placed drawers M, con-



taining sand and having in the upper part wool or other suitable material to serve as brooders for the young chickens, which are placed in these compartments or drawers after they have been hatched. By reason of the continuous interior walls of the chambers C the heat is reflected or thrown out very evenly to the interior space containing the incubating shelves or boxes E. I have found this construction very superior to any use of pipes, overhead heaters, or direct heat applied to the water-chambers within the incubator itself.

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

1. In an incubator, the exterior case having the double walls and a side door, each adapted to contain an intermediate filling of non-conducting material, the metallic water-chambers C, extending along the inner sides of the casing and having the shallow continuations extending horizontally inward from the bottom and meeting in the center of the case, a heater exterior to the case, supply-pipes I J J, with a cock L, and the return-pipes K, substantially as herein described.

2. In an incubator, the exterior case with double walls, top, and door, each adapted to contain an intermediate filling of non-conducting material, separate water-chambers extending along the sides and having the horizontal L-shaped extensions meeting in the center of the box and forming a bottom of the

interior chamber, an exterior water-heater having the pipes I J J, connecting its top with the upper part of the chambers C, and the pipes K K, connecting the lower part with the bottom of said chambers, cleats or supports fixed upon the inner vertical side of the chambers C, sliding trays E, supported upon said cleats and adapted to contain eggs, and ventilating-openings G, made in the walls and top of the exterior case, substantially as herein described.

3. In an incubator, the exterior case having its double walls, top, and door adapted to contain an intermediate non-conducting filling, and a single bottom, the independent water-chambers C, extending along the sides of the chamber, with cleats upon their inner faces, said chambers having shallow L-shaped extensions at the bottom of the chambers meeting in the center and covering the floor of the case, egg-trays adapted to slide upon said cleats, and compartments formed below the floor of the case and deriving heat through it from the shallow extensions of the interior chambers, said compartments adapted to contain brooding devices, and means for supplying heat to the water-chambers C, substantially as herein described.

In witness whereof I have hereunto set my hand.

EDMUND HARRISON.

Witnesses:

S. H. NOURSE,

H. F. ASCHECK.