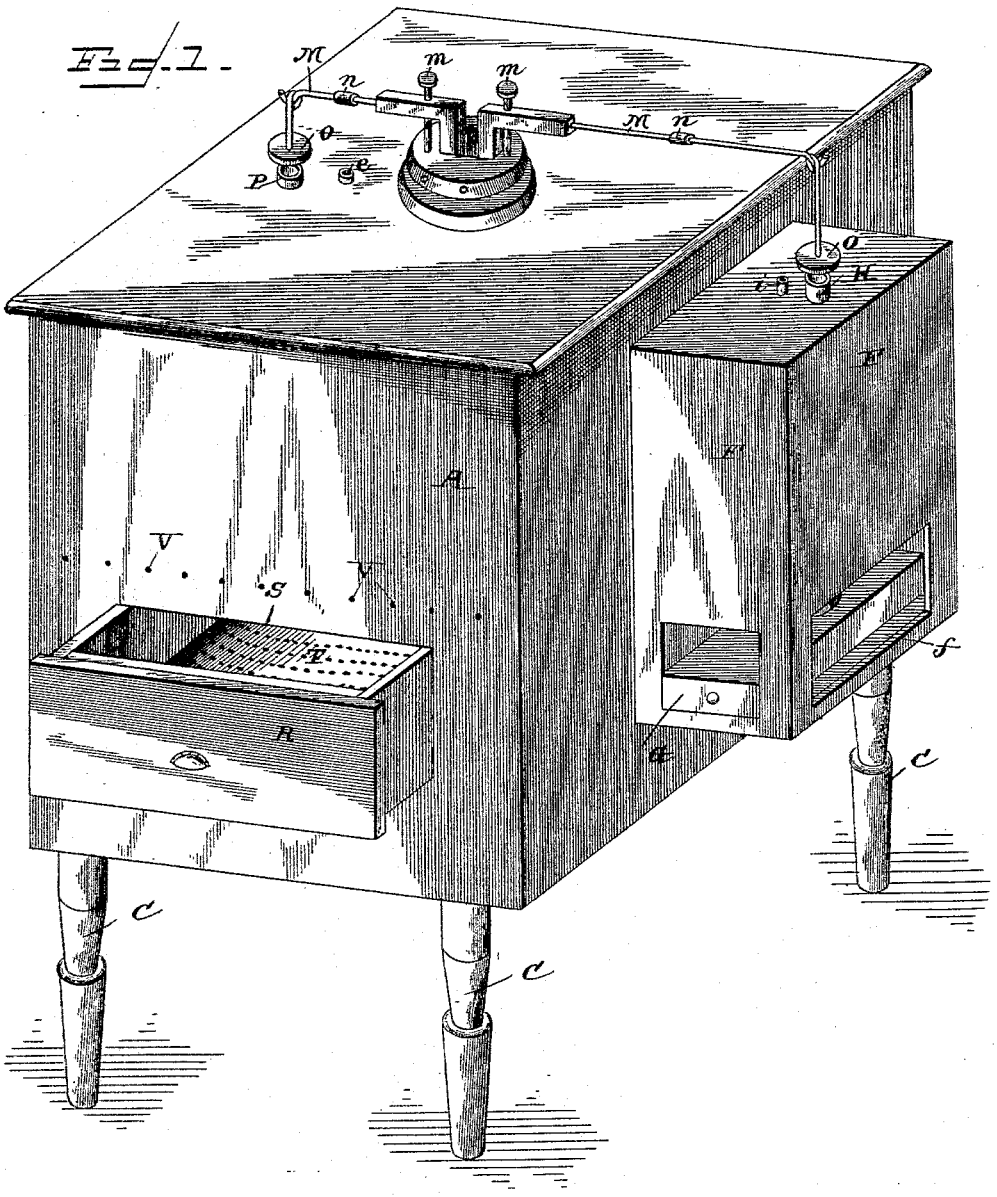
(No Model.) 2 Sheets—Sheet 1.

F. MINTER.

INCUBATOR.

No. 490,298. Patented Jan. 24, 1893.

Fig. 1.



Witnesses
E. K. Stewart.
D. P. Wolhaupter.

Inventor
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By his Attorneys,
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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

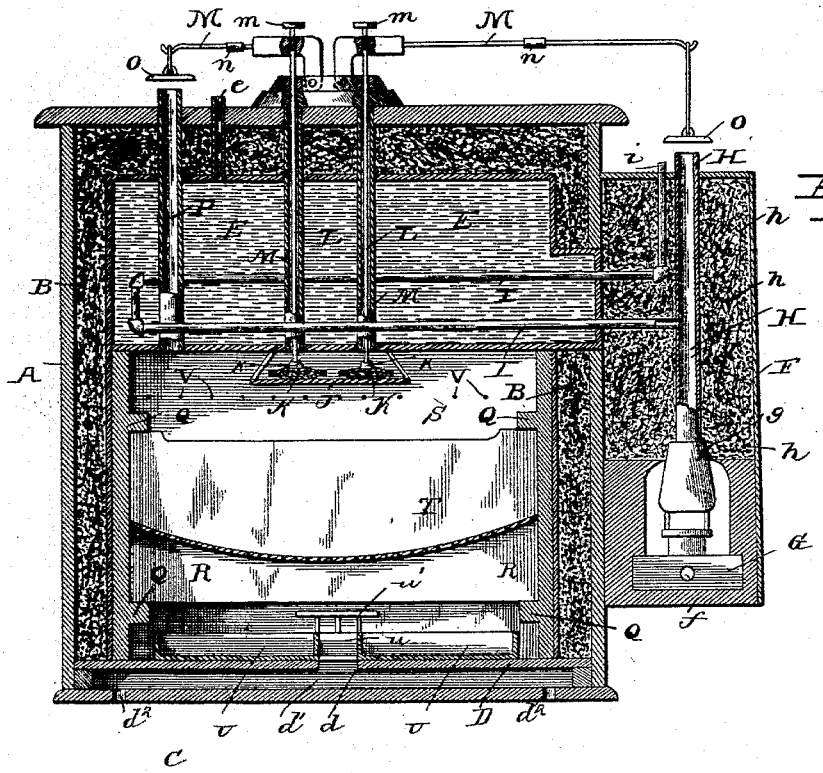
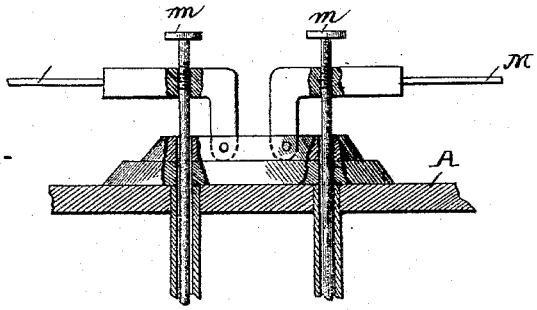


Fig. 3.



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UNITED STATES PATENT OFFICE.

FRANK MINTER, OF CORNING, KANSAS.

INCUBATOR.

SPECIFICATION forming part of Letters Patent No. 490,298, dated January 24, 1893.

Application filed August 5, 1892. Serial No. 442,259. (No model.)

To all whom it may concern:

Be it known that I, FRANK MINTER, a citizen of the United States, residing at Corning, in the county of Nemaha and State of Kansas, have invented a new and useful Incubator, of which the following is a specification.

This invention relates to incubators; and it has for its object to provide certain improvements in incubators whereby the temperature thereof to a certain degree is more easily secured and accurately regulated than in ordinary incubators.

To this end the main and primary object of the invention is to generally improve upon the construction of incubators.

With these and many other objects in view which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

In the accompanying drawings;—Figure 1 is a perspective view of an incubator constructed in accordance with this invention. Fig. 2 is a vertical longitudinal sectional view. Fig. 3 is an enlarged detail sectional view of the lower half of the incubator.

Referring to the accompanying drawings;—A represents the casing of the incubator, which is constructed of double walls, between which non-conducting packing B of any suitable material is placed for the purpose of maintaining as nearly as possible an even temperature in the incubating-chamber. The said casing is supported upon suitable legs C, and is provided with the inner false bottom D, centrally perforated at *d*, so as to communicate with the bottom air space *d'*, through which the air is circulated through the air holes or openings d^2, suitably arranged in the bottom of the incubator in order to supply the same with the requisite air circulation as will be readily apparent.

Suitably supported in the top of the incubator casing A is the inner water heating tank E, which tank is provided with a top filling and emptying tube *e*, by means of which the tank may be filled with and emptied of water as desired. Arranged at one side of the incubator casing A is the heating box F, having the lower lamp shelf *f*, upon which is supported the heating lamp G. The said heating lamp G is of the ordinary construction and accommodates the ordinary chimney *g*, which opens directly into the vertical heat flue H, extending vertically through the heating box F and inclosed therein by suitable non-conducting packing *h*, surrounding the same within said box F to prevent the loss of heat. The said heat flue H projects above the top of the heat box F and has connected centrally therewith and within said box, the horizontal heat circulating pipe I, which extends longitudinally through the entire length of the hot water tank E and returning through the same projects back into the heating box F and terminates in an escape pipe *i*, extending through the top of the heating box F.

It will be readily seen that when the top of the flue H is closed, the heat and other products of combustion from the lamp must necessarily pass through the circulating pipe I, arranged in the water in the tank E, and thereby heats the water in the said tank which raises the temperature of the incubator chamber to a sufficient degree, which degree of temperature is regulated by the devices hereinafter described.

Centrally supported from the bottom of the heating tank E in the incubator is the shelf J, which shelf accommodates the thermostats K, constructed as described in my pending application filed July 5, 1892, Serial No. 438,983. The said thermostats K actuate the regulating rods L, which rest upon the concaved contact buttons *k* and pass therefrom and through the inclosing rod tubes M, extending vertically through the hot water tank E to protect said rods from contact with the water, and said rods have their upper ends outside of the incubator loosely engage the perforated horizontal regulating levers M. The said regulating levers M are fulcrumed to the top of the incubator casing by means of the set screws *m*, engaging the perforations thereof and working over the ends of rods L, and the same are further regulated by the sliding weights *n* which constructions are partly set forth in the application above referred to. The regulating levers M carry upon their outer ends

the heat regulating valves O, one of which works over the open upper end of the heat flue H in order to regulate the heat which passes through the circulating pipes I, while the valve at the end of the other lever works over the open upper end of the heat escape tube P, extending through the hot water tank E, and the top of the incubator casing, and is designed to provide means for the escape of surplus heat in the incubator chamber below the heating tank. The regulating devices can be arranged so that the valve over the surplus heat escape tube will open after the other valve over the heat flue, which when the incubator reaches a certain degree opens said flue and allows the heat to pass out and not through the circulating pipes, but should the water in the tank fail to cool the incubator sufficiently rapid, the other valve over the escape tube will open and cause the heat from the incubator to pass out through the top of the same.

Arranged upon the false bottom D of the incubator casing are a series of suitable tray supports Q, upon which are designed to be slid and rest the egg tray R, working through the opening S in the front of the incubator casing. The said egg tray R is constructed of suitable material and is provided with a concaved perforated zinc bottom T, which thus forms a bottom approximating the shape of a nest which better adapts the tray for holding the eggs therein for the purpose of incubating the same.

Directly under the egg tray R and the spaced supports thereof is located the flat moistening pan U which is adapted to supply the incubating chamber and the eggs directly above the same with the requisite moisture. The pan U is provided with a central circular tube *u*, registering with the central perforation *d*, in the false bottom D, and open at its upper end and above the top of the moistening pan U is supported the horizontal deflecting cap or plate *u'*, which is arranged above and over the upper open end of said tube to direct the current of air from the bottom air space *d'* laterally under the entire egg tray, so that the same will pass through the perforated bottom thereof, together with the moisture from the pan U in order to secure the proper conditions for incubating.

It will be apparent that the heat within the incubating chamber will cause a circulation of the air through the bottom air space and moistening pan as indicated, and in order to provide for the proper ventilation of the incubator, the same is further provided directly under the top heating tank E with a series of ventilating openings V as illustrated.

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

In an incubator, the combination of the casing, a closed heating tank arranged in the top of said casing, a heating box at one side of the casing, the heating lamp supported by said box, an open hot air flue leading from said lamp through the top of said heating box, packing inclosing said hot air flue within said heating box, a circulating pipe leading from said hot air flue through said heating tank and back through the top of the heating box, a heat escape tube extending through said tank and the top of the casing, and automatically controlled valves working over the top of said escape tube and said hot air flue, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

FRANK MINTER.

Witnesses:
JACOB JACOBIA,
JANE E. JACOBIA.