

(No. Model.)

2 Sheets—Sheet 1.

E. W. WICKEY.  
INCUBATOR.

No. 436,467.

Patented Sept. 16, 1890.

Fig. 1.

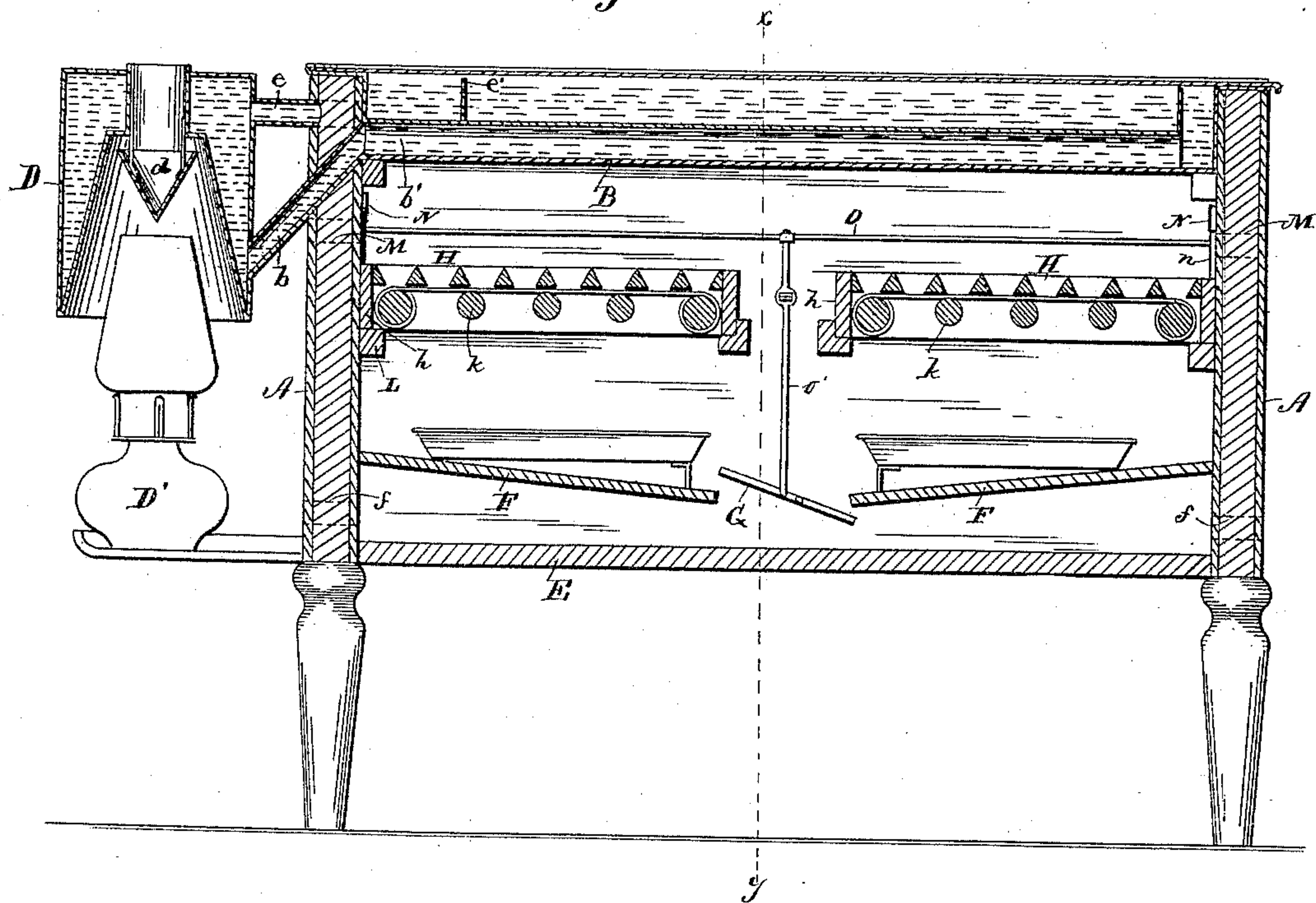
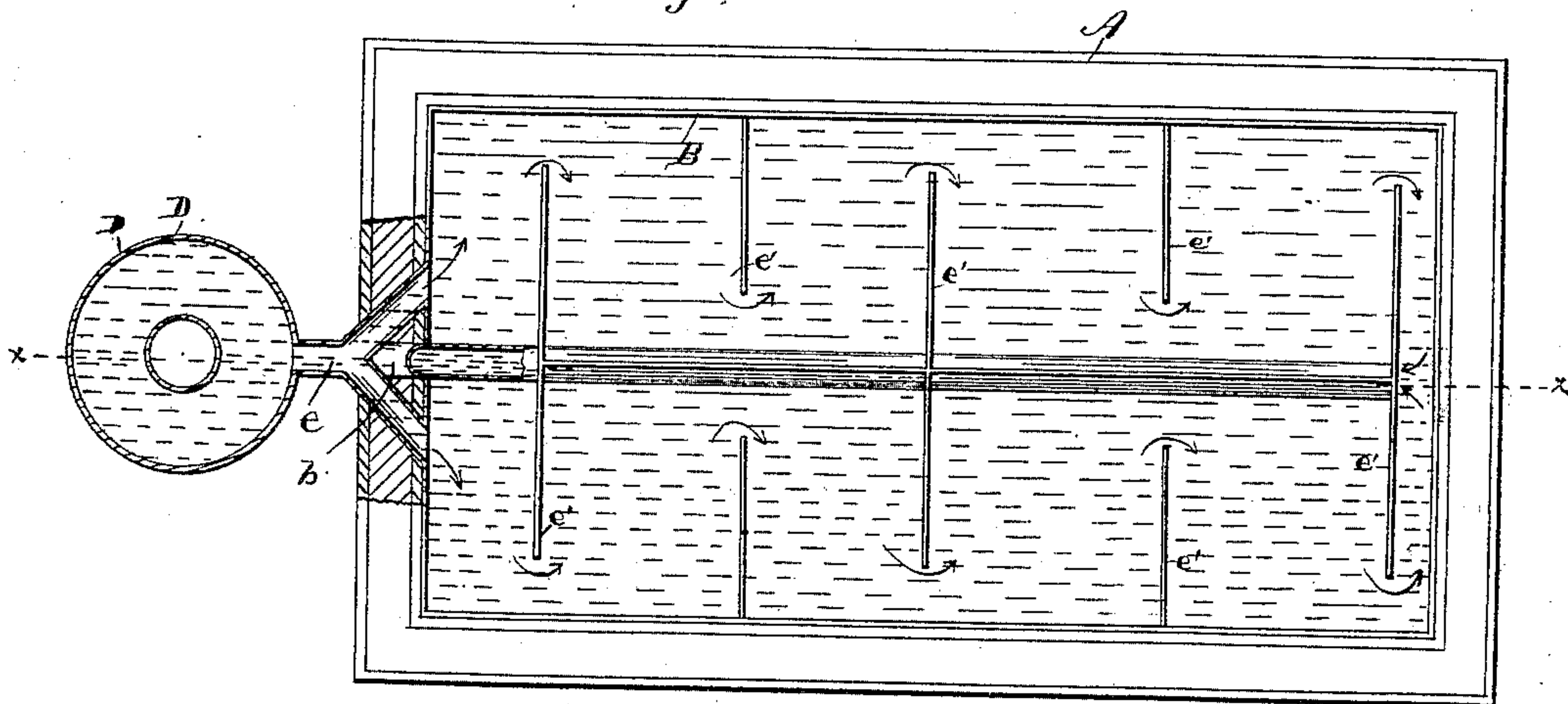


Fig. 2.



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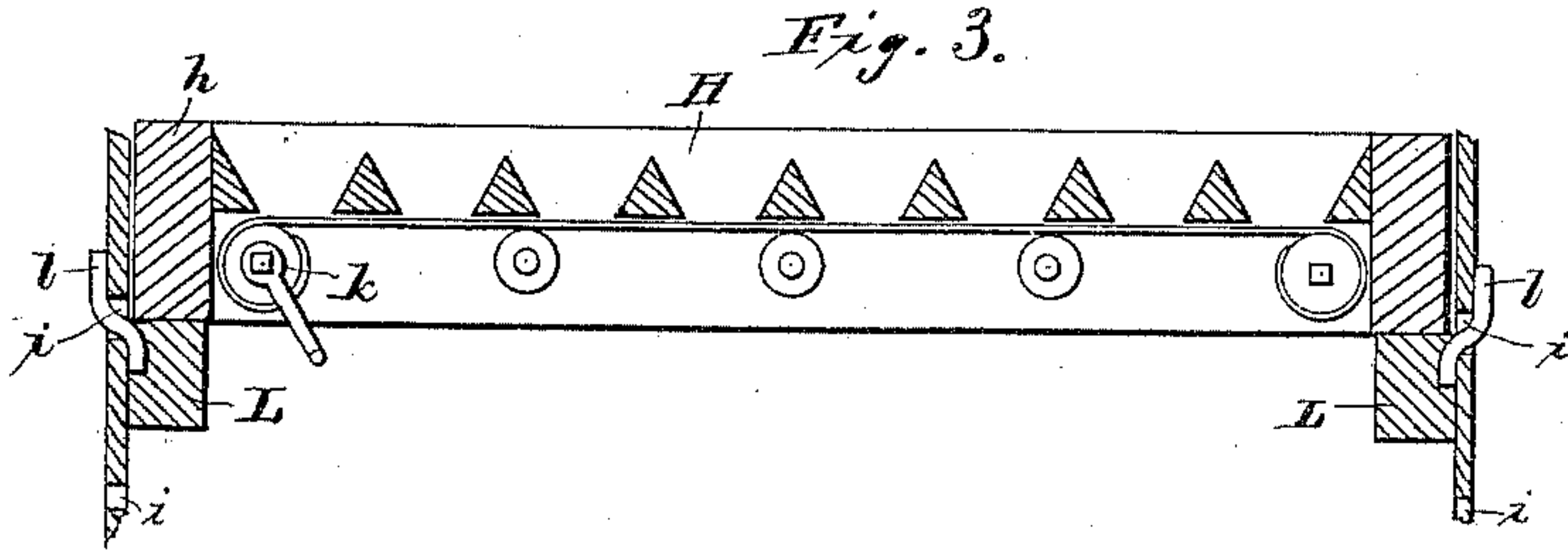
(No Model.)

2 Sheets—Sheet 2.

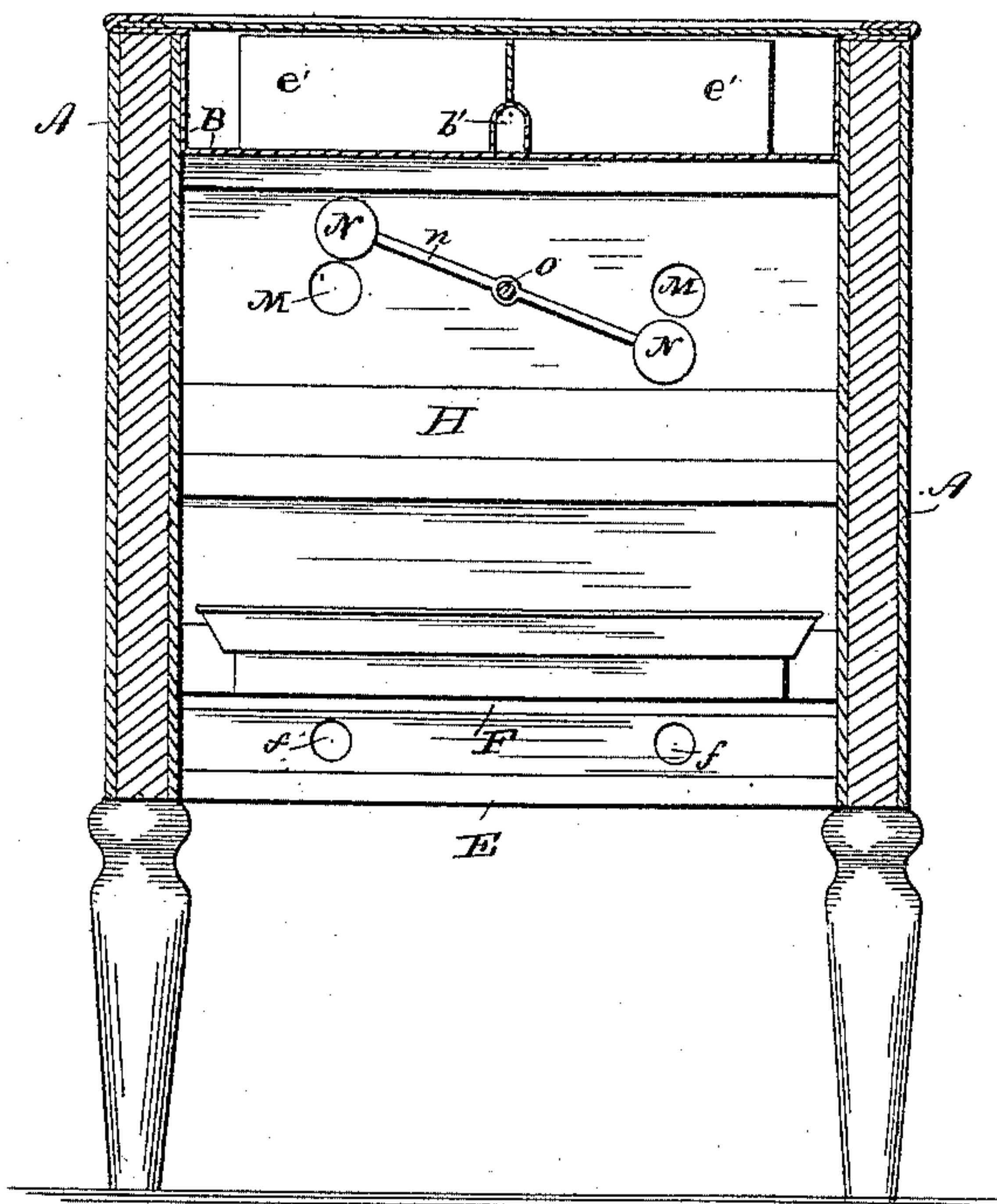
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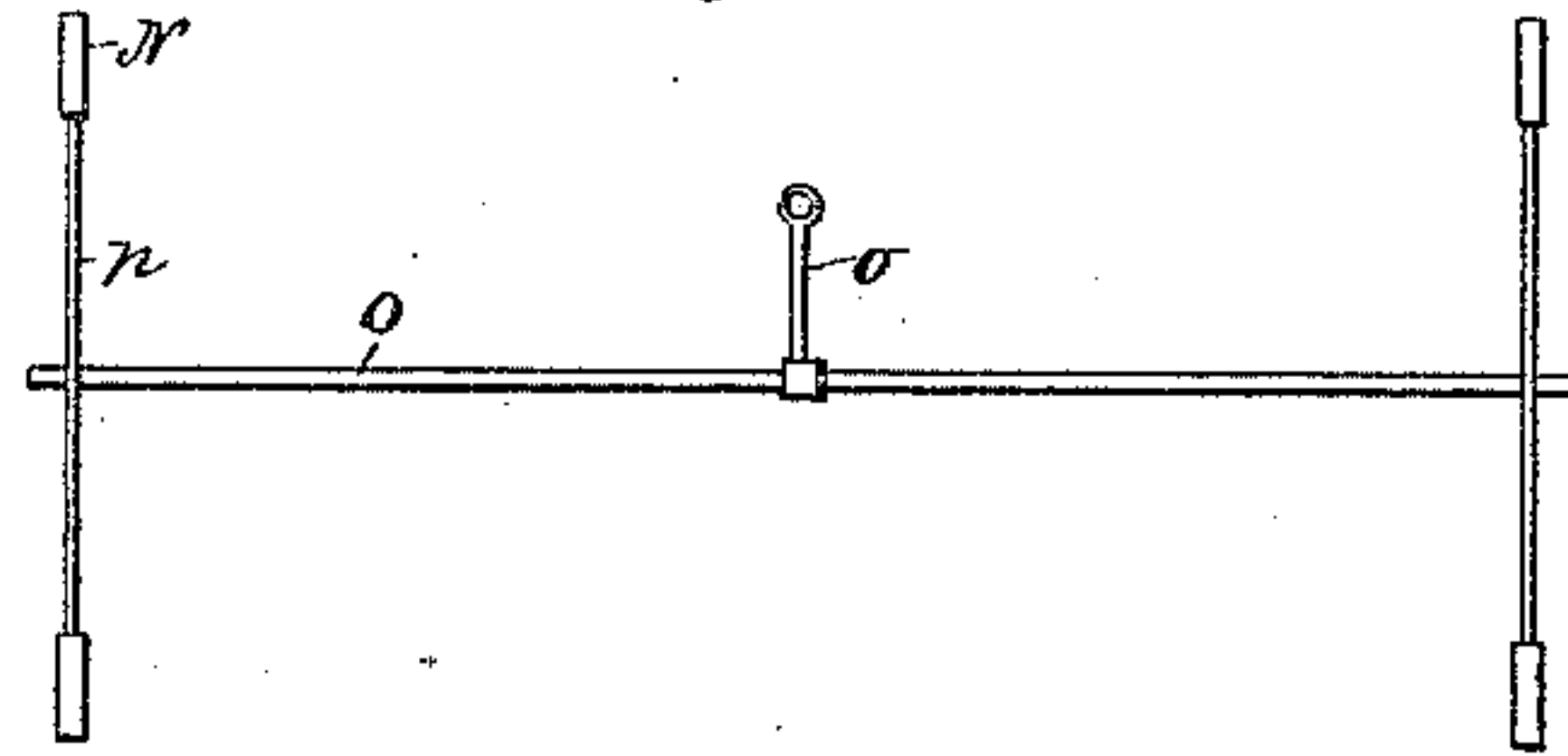
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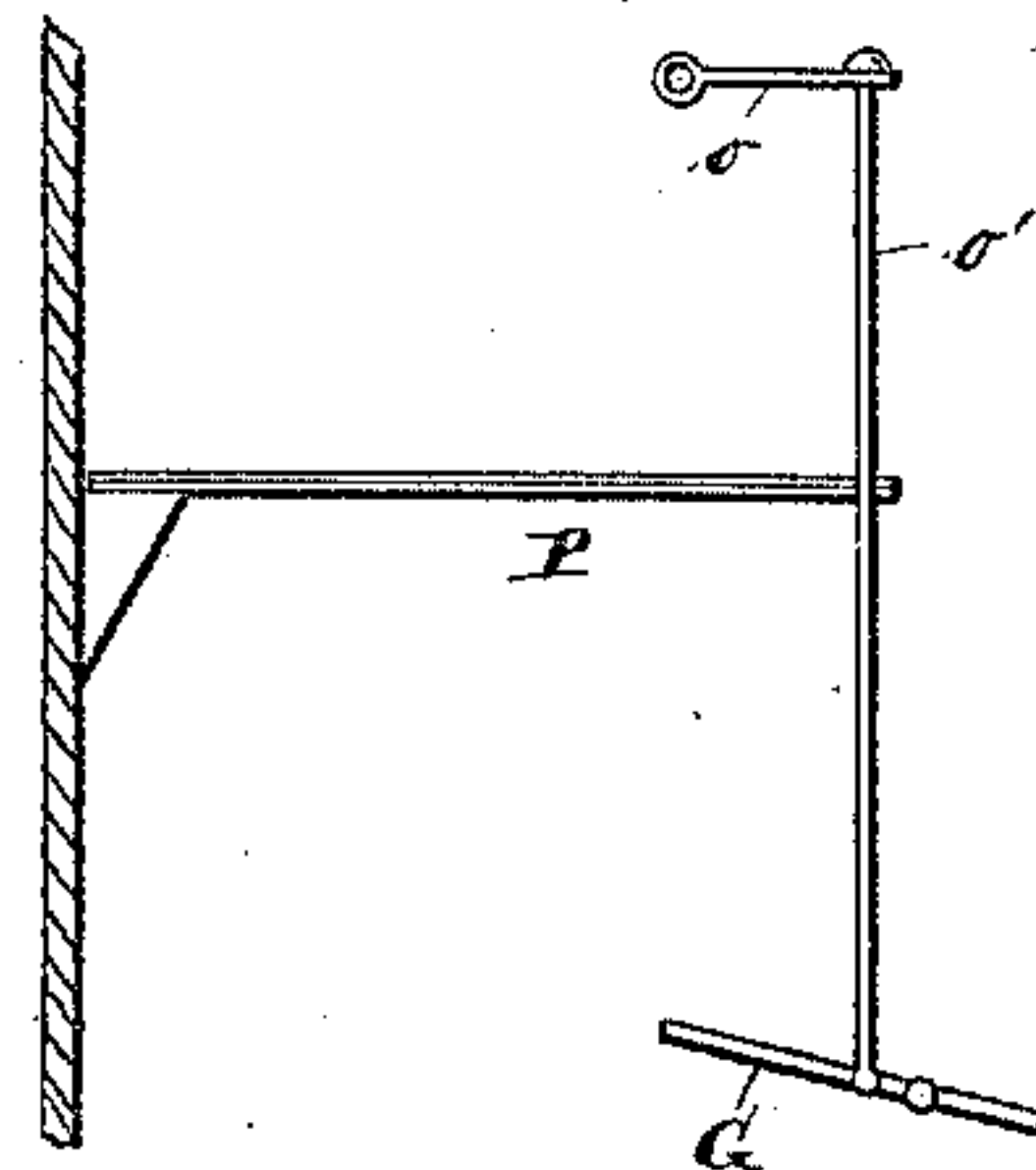
*Fig. 4.*



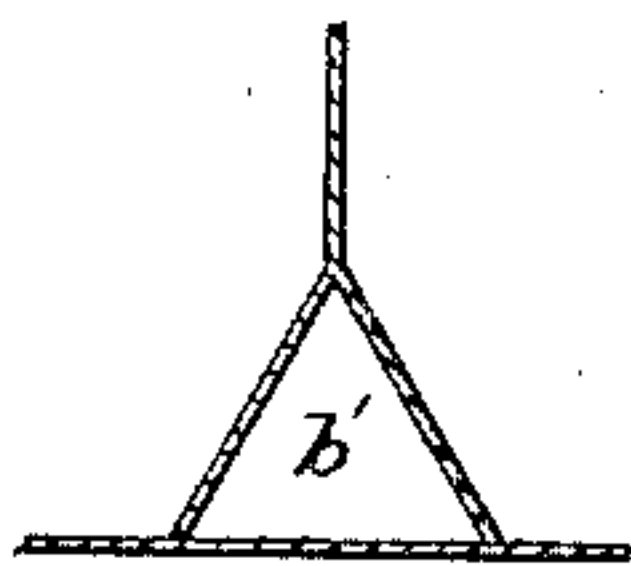
*Fig. 5.*



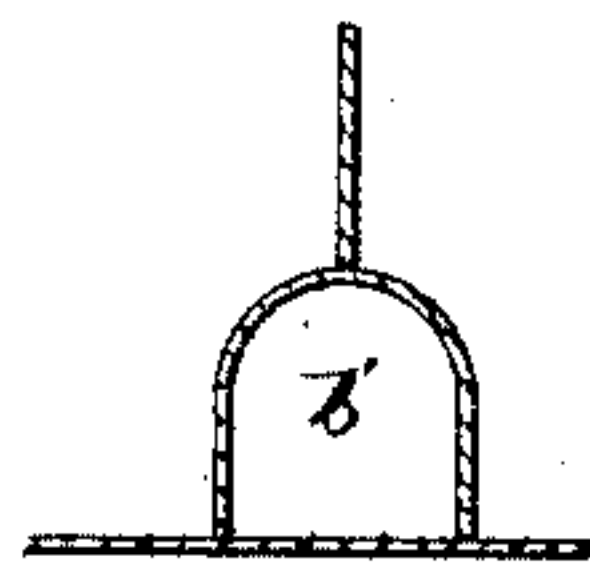
*Fig. 6.*



*Fig. 7.*



*Fig. 8.*



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# UNITED STATES PATENT OFFICE.

EDWARD W. WICKEY, OF QUINCY, ILLINOIS.

## INCUBATOR.

SPECIFICATION forming part of Letters Patent No. 436,467, dated September 16, 1890.

Application filed October 24, 1887. Serial No. 253,238. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD W. WICKEY, of Quincy, in the county of Adams and State of Illinois, have invented certain new and useful  
5 Improvements in Incubators; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the let-  
10 ters of reference marked thereon.

My present invention has for its object to improve that class of incubators or warm-boxes used for hatching, by artificial heat, various kinds of poultry; and the said invention consists in an improved water-pan for  
15 the water employed for maintaining the requisite temperature, as well as in certain details in the construction of the egg-chamber, whereby the same may be auto-  
20 matically maintained at an even temperature, the impure and injurious gases allowed to escape, and the eggs turned without having to be handled, all as will be hereinafter described, and pointed out particularly in the  
25 claims at the end of this specification.

In the accompanying drawings, Figure 1 is a sectional view taken longitudinally through my improved incubator on  $x x$ , Fig. 2. Fig. 2 is a top plan view of the water-pan with its  
30 top removed, the water-heater and connecting-pipes being shown in section. Fig. 3 is a view of the egg-tray and its supports. Fig. 4 is a cross-sectional view on the line  $x x$ , Fig. 1. Figs. 5 and 6 are views of the ventilator-  
35 valve-operating mechanism. Figs. 7 and 8 are sections of different forms of conduits for the return of the cold water to the heating-chamber.

Similar letters of reference in the several  
40 figures indicate the same parts.

The outer casing A is made double, and may be packed with any suitable non-conducting substance in order to prevent any liability of the outer temperature being com-  
45 municated to the interior of the chamber through the walls. A shallow water-pan B is located at the top of the chamber, the water therein being maintained at the desired uniform temperature by a heater D outside the  
50 casing.

The water-heater D is preferably cylin-

dricul, with a flue through its center for the passage of the heat and products of combustion of the lamp D' beneath the same. The lower portion of the flue is made conical and  
55 the upper part cylindrical, a horizontal step preferably uniting the two sections, a conical deflector  $d$  being located at this point for deflecting the hot air and products of combustion over against the walls of the conical flue  
60 beneath the horizontal step. (See Fig. 1.)

The pan and heater are connected by two conduits or pipes, one of which  $b$  passes from the bottom of the heater up to the end of the  
65 pan, where it joins a conduit  $b'$ , running to the opposite end of the pan. The other conduit or pipe  $e$  leads from the top of the heater to the pan, it being divided into pipes entering the pan on either side of conduit  $b'$ .

As before stated, the conduit  $b'$  extends to  
70 the far end of the pan, and it divides the same into two sections, each one of which constitutes an outward passage for the water entering the pan through the pipe  $e$ , the said conduit  $b'$  serving as a return-passage, which  
75 leads to the bottom of the heater.

Cross partitions or interceptors  $e'$  are located in the sides or outward passages of the pan for the purpose of causing the water to pursue a sinuous course, first to the outer  
80 edge of the pan, then into the central partition or conduit, and so on, keeping the whole pan at a uniform temperature.

Above the bottom E of the casing is a second or false bottom F, the sides of which  
85 slope down toward an opening leading into the space between the two bottoms, having therein suitable apertures  $f$ , communicating with the outer air. The opening in the false bottom is closed by a pivoted damper or valve  
90 G, operated by a thermostat, as will be presently explained.

Water-pans can be placed on the false bottom and above them the egg-trays H, consisting of a frame H, Fig. 3, having a series  
95 of triangular partitions therein, and beneath them a series of rollers  $k$ , over which passes an oil or wire-net cloth, constituting the bottom of the tray, the ends of the cloth being secured to the outside rollers. These latter  
100 rollers are provided with crank-arms (which can, if desired, pass outside the casing) for



moving the cloth in one direction or the other and turning the eggs which lie thereon.

Cleats or steps L, having metal projections 7 thereon for insertion in any of the series of  
5 holes *i* in the inner wall of the casing, support the trays at either end. The aforesaid projections, it will be observed, are bent into a shape somewhat similar to the letter S, one end being secured to the cleat and the other  
10 passed through the holes in the casing, thus forming a strong and secure fastening, but at the same time one that can be readily detached and shifted from one hole to the other.

Above the egg-trays, and immediately below the water-heater, are openings M, usually  
15 two at each end of the casing, governed by valves N, located on opposite ends of rods *n*, pivoted at the center, in order that one valve may balance the weight of the other. The  
20 valve-rods *n* at each end are connected by a long rod O, having thereon at approximately its center or in position over the valve in the false bottom a short arm *o*. Connecting this arm *o* and the damper G is a rod *o'*, which  
25 engages a thermostat P, preferably such as is shown in Fig. 6—that is to say, one which, when fastened rigidly at one end, will bend in one direction or the other as the temperature changes.

30 The connecting-rod may, if desired, be made screw-threaded at either end or in the middle where it joins the thermostat, for the purpose of changing the distance the top and bottom valves will open at a given temperature.  
35 When now the device is in position and properly adjusted, and the temperature gets too high, the thermostat will open both the upper and lower valves, and permit both the hot air and the heavy impure gases to escape, (the  
40 inner or false bottom being, as before stated, sloped toward the opening therein, to facilitate the escape of all of said gases,) and as soon as the temperature falls to the proper degree the valves will be again closed by the  
45 reverse action of the thermostat.

It is obvious that the water-pan may be somewhat varied from the construction described without departing from the spirit of my invention—as, for instance, the conduit  
50 leading from the top of the water-heater may empty into a single chamber at the near end of the pan, and the water be thence distributed on either side; and, further, different forms of return-conduits may be employed—  
55 such, for instance, as shown in Figs. 7 and 8, in which it will be seen that the conduit is entirely below the general level of the water, and has a partition on its top to separate the two outward passages. These conduits have  
60 their mouth or entrance-openings below the surface of the water, in order that the colder water may be first drawn off and returned to the heater. The thermostat may also be changed, or, with the arrangement of rods  
65 shown, a simple expansion and contraction bar may be employed, for when the rod *o'* is drawn toward the thermostat it will, besides

turning the rod connecting the upper valves, be moved downward by the short arm *o*, thus closing the lower valve, and vice versa. 70

Having thus described my invention, what I claim as new is—

1. In an incubator, the combination, with the incubator-chamber having ventilating-apertures at the top, and a sloping false bottom having an opening at its lowest point, 75 through which communication is established with the external air, of a valve controlling said opening in the bottom, and valves controlling the ventilating apertures in the top 80 of the chamber, substantially as described.

2. In an incubator, the combination, with the incubator-chamber having ventilating-apertures at the top, and a sloping false bottom having an opening at its lowest point, 85 through which communication is established with the external air, of a valve controlling said opening in the bottom, valves controlling the ventilating-apertures in the top of the chamber, rods connecting said valves, 90 and a thermostat controlling the movement of the same, whereby all the valves may be moved simultaneously, substantially as described.

3. In an incubator, the combination, with 95 the incubator-chamber having ventilating-apertures at the top at both ends and a ventilating-opening at the bottom, through which communication is established with the external air, of valves controlling the apertures at 100 the top, a rod connecting said valves, a valve controlling the opening at the bottom, a rod connected thereto and also connected to the rod connecting the valves at the top, and a thermostat engaging said rod, substantially 105 as described.

4. In an incubator, the combination, with the incubator-chamber having two ventilating-apertures at each end of the same, of 110 balanced valves controlling the said apertures connected by a cross-rod, and a thermostat connected to said rod for operating the said valves, substantially as described.

5. In an incubator, the combination, with the casing heating devices and ventilating- 115 apertures at top and bottom, of a rod connecting the valves controlling the upper apertures having an arm thereon, a rod engaging said arm extending downward and engaging both the thermostat and valve for 120 controlling the lower aperture, substantially as described.

6. In an incubator, the combination, with the double outer casing, the inner wall of which has a series of holes therein and trays 125 for carrying the eggs, of supports for said egg-trays consisting of strips having substantially S-shaped projections thereon for insertion in the said holes in the inner wall of the casing to hold the strips in adjusted position, substantially as described. 130

7. The combination, with the incubator-chamber, of a water-pan for keeping the same at a uniform temperature having an independ-



ent water-heating chamber, outward passages for the water, one in either side of the pan, having partitions therein, (for causing the water to pursue a sinuous course alternately toward the outer edge of the pan and toward its center,) communicating with the top of the heating-chamber and a passage located between said two outward passages for the return of the water to the bottom of the heater, substantially as described.

8. The combination, with the incubator-chamber, of a water-pan for keeping the same at a uniform temperature having an independent water-heating chamber communicating therewith, outward passages for the water, one on either side of the pan, in communication with the top of the water-heater, and a passage located between said first-named passages for the return of the water to the bottom of the heater, the opening or mouth of which is below the level of the water in the pan, as set forth.

9. The combination, with the incubator-chamber, of a water-pan for keeping the same at a uniform temperature having an independ-

ent water-heating chamber, outward passages for the water, one on either side of the pan, in communication with the top of the water-heater and a return-passage located between said first-named passages extending to the far end of the pan, its opening or mouth being below the level of the water therein, said passage being in communication with the bottom of the water-heater, whereby the cold water is taken from the bottom of the pan at the far end and returned to the bottom of the heater, substantially as described.

10. In an incubator, the combination, with the heating-pan, of an independent cylindrical water-heater therefor having a conical flue in its lower portion and a straight flue in its upper portion united by a horizontal step and a conical deflector in said conical flue for directing the heated air and products of combustion against the side walls below the said step, substantially as described.

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Witnesses:

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