

No. 731,649.

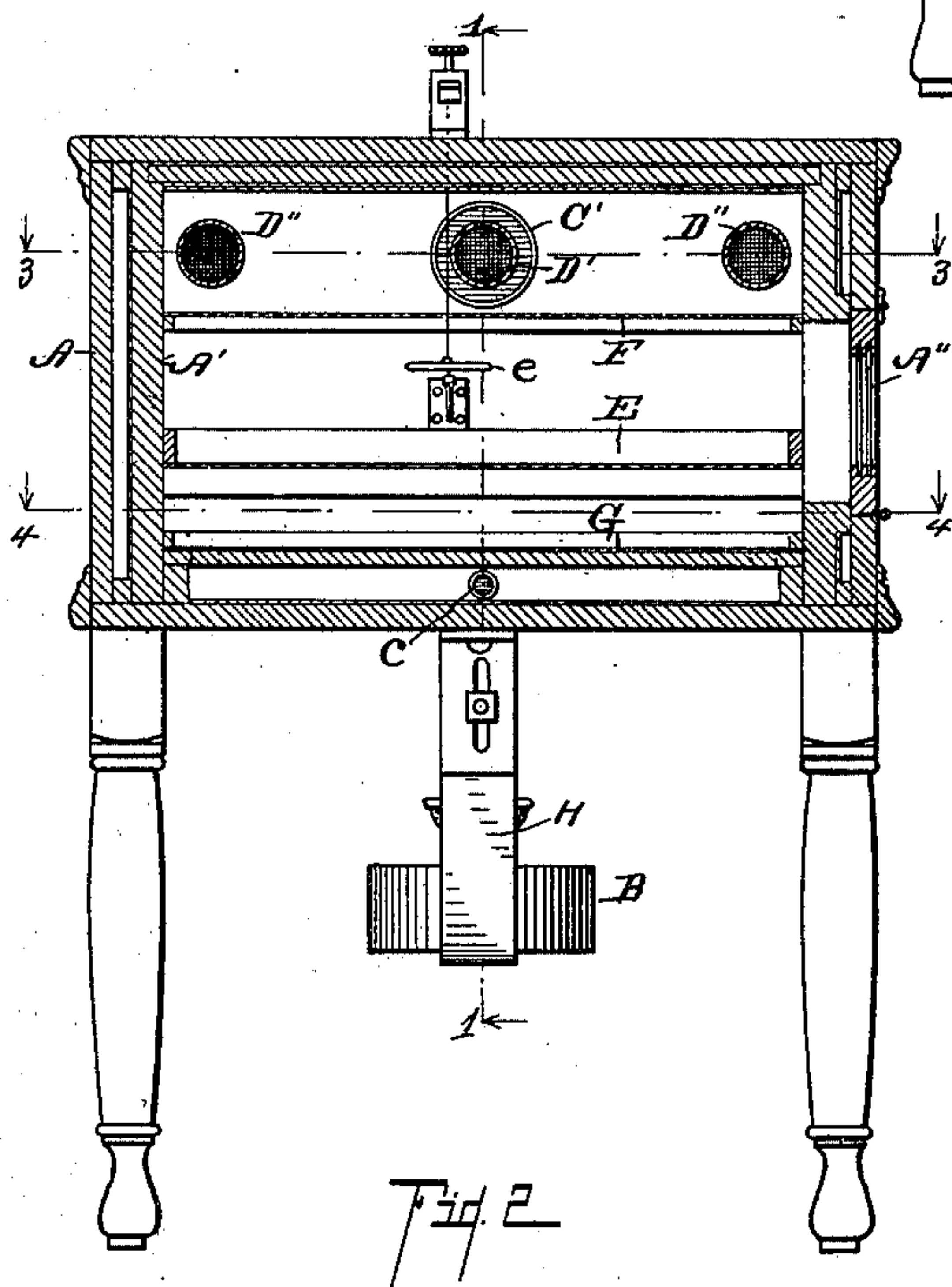
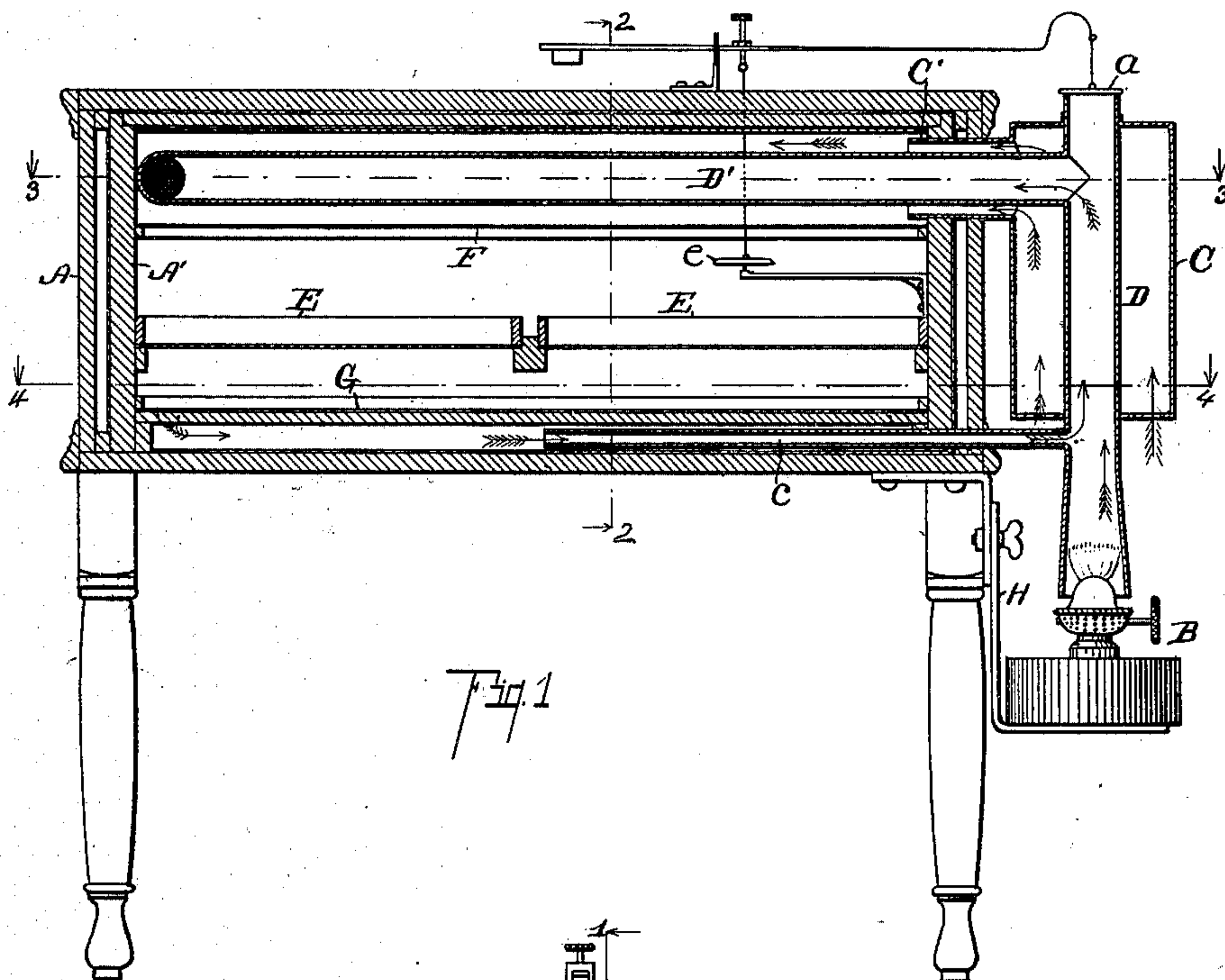
PATENTED JUNE 23, 1903.

W. N. YEAGER.
INCUBATOR.

APPLICATION FILED OCT. 26, 1901.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:

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Inventor,

William N. Yeager
By *Fred L. Chappell*
Att'y.

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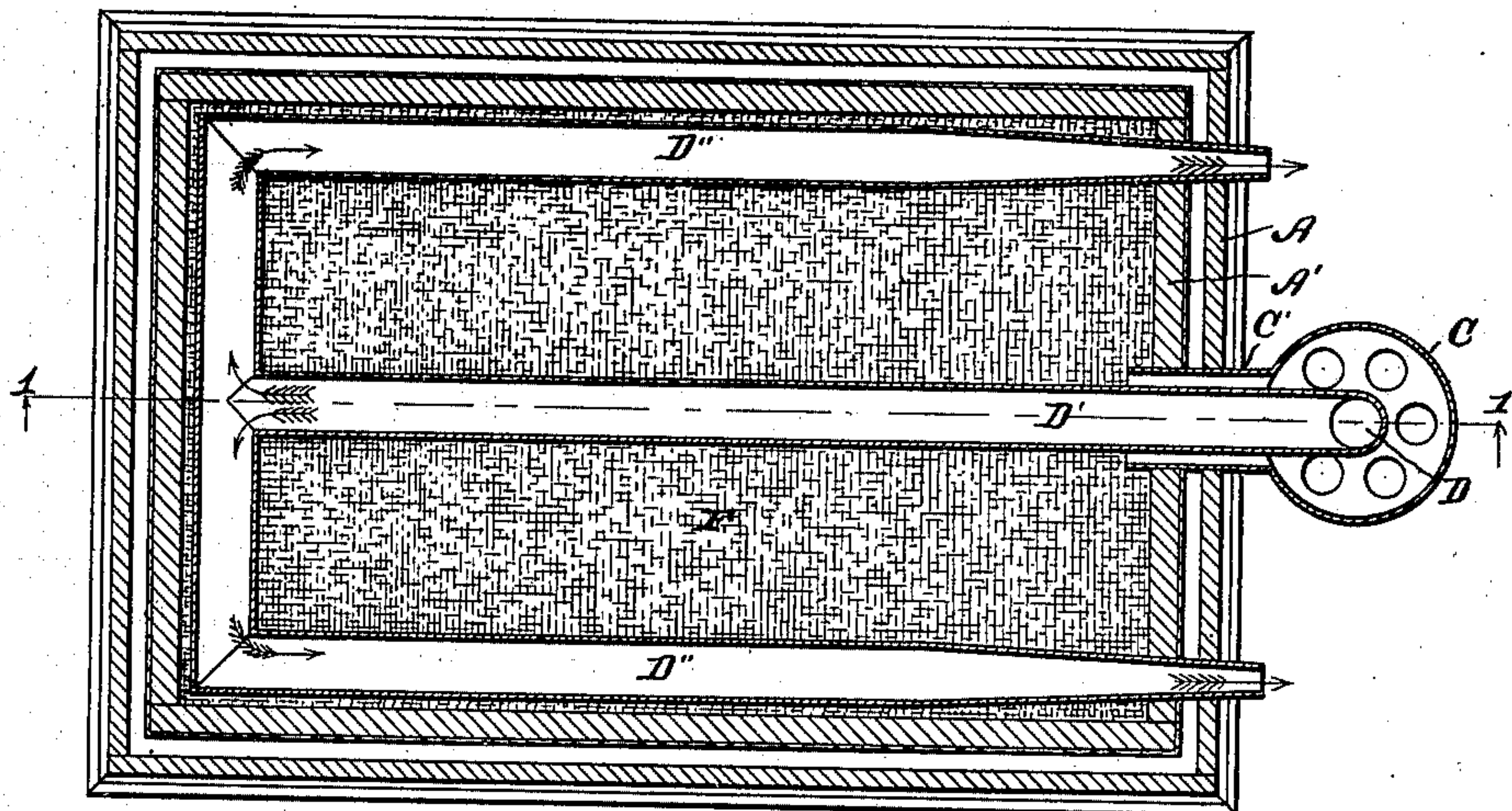


Fig. 3

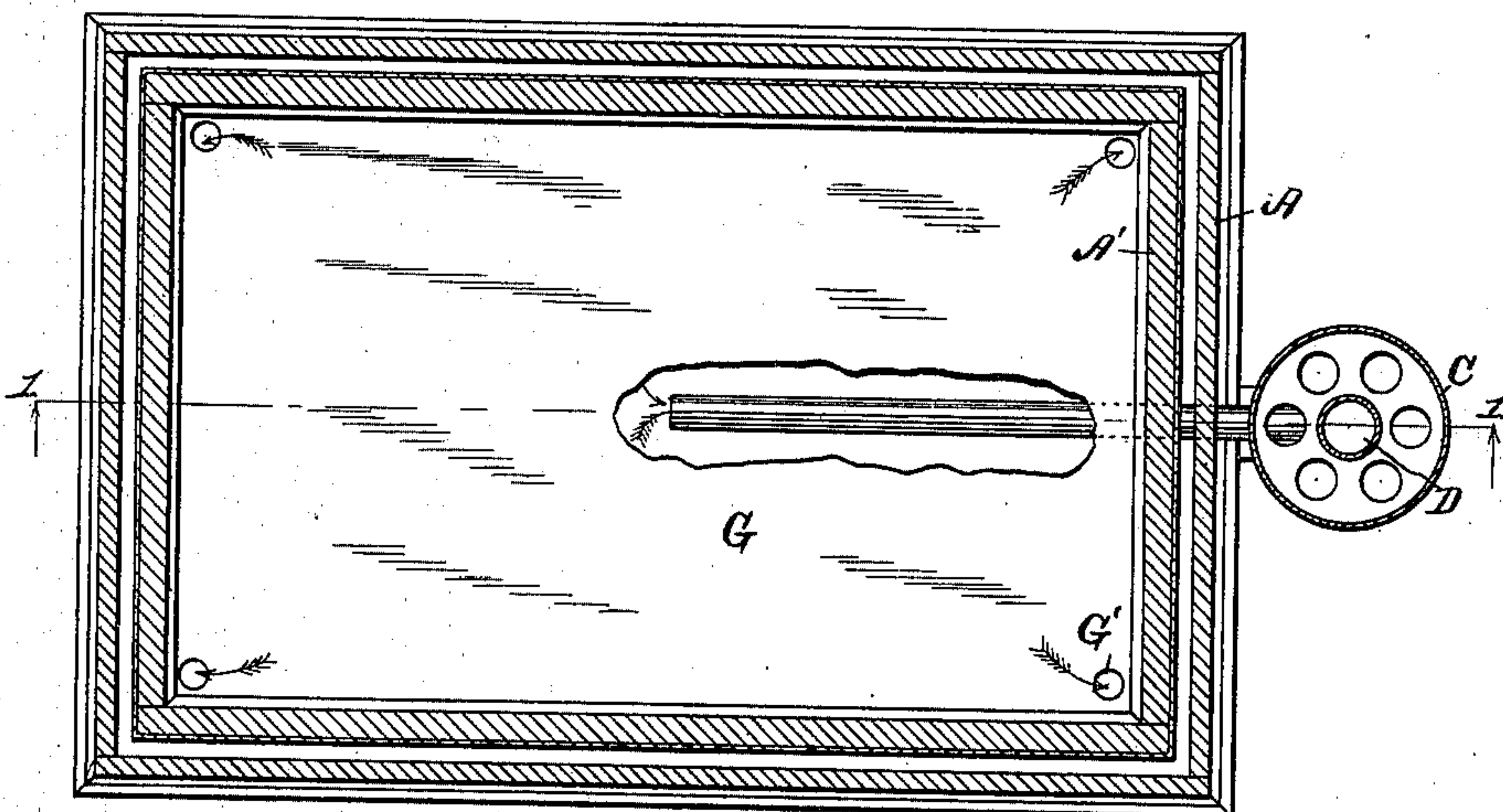


Fig. 4

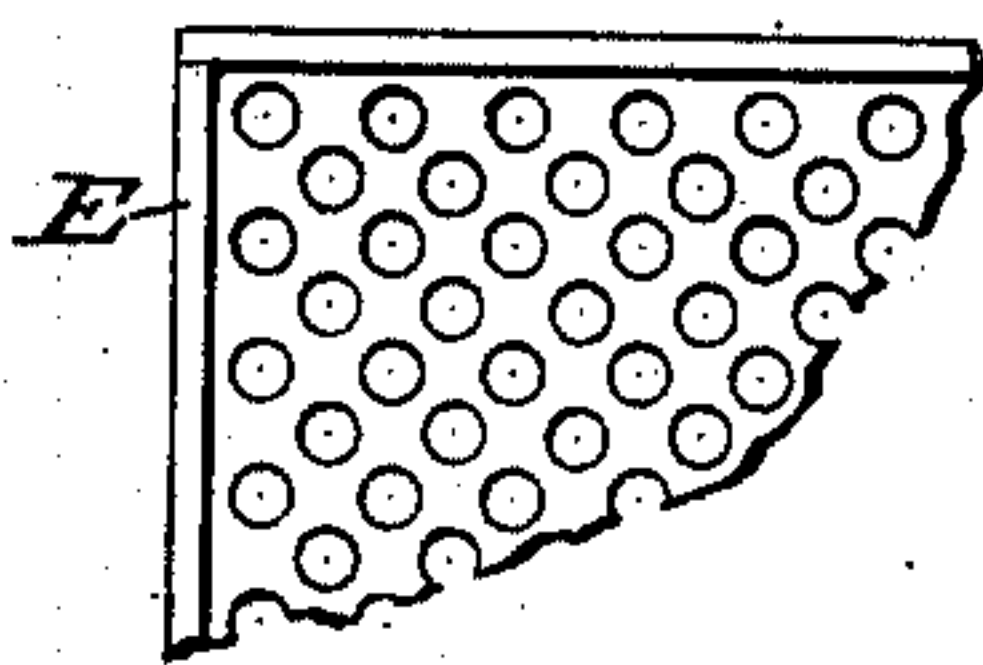


Fig. 5

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UNITED STATES PATENT OFFICE.

WILLIAM N. YEAGER, OF BATTLECREEK, MICHIGAN.

INCUBATOR.

SPECIFICATION forming part of Letters Patent No. 731,649, dated June 23, 1903.

Application filed October 26, 1901. Serial No. 80,090. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM N. YEAGER, a citizen of the United States, residing at the city of Battlecreek, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Incubators, of which the following is a specification.

This invention relates to improvements in incubators.

The objects of this invention are, first, to provide an incubator which shall be effective and practical in its operation, in which the temperature shall be maintained at the proper point evenly throughout the entire interior of the incubator; second, to produce an incubator in which the heated air will be delivered and distributed in such a manner as to maintain the proper amount of moisture within the same without the necessity of supplying the same independent of that found in the atmosphere; third, to provide means of inducing an even circulation of air through an incubator; fourth, to provide an incubator which is simple and economical to operate.

Further objects will definitely appear in the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in this specification.

The invention is clearly defined, and pointed out in the claims.

A structure embodying the features of my invention is clearly illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a detail vertical longitudinal sectional view through an incubator embodying the features of my invention, taken on a line corresponding to lines 1 1 of Figs. 2, 3, and 4. Fig. 2 is a detail transverse vertical sectional view on line 2 2 of Fig. 1, showing details of construction. Fig. 3 is a detail horizontal sectional view taken on a line corresponding to line 3 3 of Figs. 1 and 3. Fig. 4 is a detail sectional view taken on line 4 4 of Figs. 1 and 2. Fig. 5 is a detail view of the corner of one of the egg-trays E.

In the drawings similar letters of reference refer to similar parts throughout the several views and all of the sectional views are taken looking in the direction of the little arrows at the ends of the section-lines.

Referring to the lettered parts of the drawing, A is the main casing, which is shaped like an elongated rectangular box supported on four legs similar to table-legs. The side walls of the structure are made double by an inner board or casing A' A'. (See Figs. 2, 3, and 4.) There is a false bottom G within the same which has suitable apertures G' in each corner. It is covered with tin, so that it can be easily cleansed. Supported above this bottom are the egg-trays E E, one or more, depending on the size of the same. A door A'' with double glass is at one side, so that the incubator can be opened for inserting and removing the trays. A horizontal partition F, of burlap or other suitable fabric, is supported above the egg-trays, and the chamber formed above this partition receives the heated air, which is distributed downwardly through the fabric partition F evenly over the eggs. The air is heated by means of a lamp B, which is supported on an adjustable bracket H on the casing. The chimney D of the lamp is surrounded by a casing C, which forms a suitable drum for the heating of air. A tube c extends from the center of the incubator beneath the false bottom G out through the side, wherein it is fitted snugly, and at its outer end it connects with the chimney D. The drum C is connected by a large pipe C' to the chamber above the diaphragm or partition F, and the lower end of the drum C is perforated, as indicated by the arrows in Fig. 1 and by the sectional views in Figs. 3 and 4, which permits a current of outside air to pass upwardly and be heated by the chimney and be delivered into the incubator above the diaphragm F. A pipe D' connects to the upper part of the chimney D and extends inwardly the entire length of the chamber and then branches laterally toward each side, extending substantially to the corners and then turning backwardly in close proximity to the sides, and then extends out of the side of the incubator, as clearly appears in Fig. 3. A thermostat e is connected by suitable connections to a lid a on the top of the chimney D. The thermostat e is within the egg-chamber and is set to maintain the proper temperature within the incubator. The egg-trays E are made of perforated metal. (See Fig. 5.)

The incubator operates as follows: The

burner is lighted, when the heated gas and products of combustion pass up through the chimney D, and owing to the rarefying of the air a draft is created through the pipes D' and D'', which induces a circulation within the incubator. The heated gases pass up, as indicated by the arrow in Fig. 1, and then out around, as indicated by the arrows in Fig. 3, so that none of the gases and products of combustion from the lamp pass into the egg-chamber. When the chimney becomes heated, a current of air passes up through the drum C and into the chamber above the diaphragm F, and this upward tendency of the heated air induces a slight pressure within the chamber, which induces the air to pass readily down through the cloth or diaphragm F onto the eggs. The heating of the air in this way insures a moisture, which secures the proper humidity within the egg-chamber. The air passes on down through the egg-chamber and is drawn down through the apertures G' at each corner, whence the air passes at equal distance from the center through the chamber beneath the false bottom G, where the air is drawn out through the tube c and is then discharged out through the top of the chimney or out through the pipes D' D'' D'', as before stated. As the cold and foul air naturally settles to the bottom, it will be observed that it is constantly being drawn off and that it cannot find a lodgment in any part of the machine. When the temperature within the egg-chamber exceeds the desired point, the thermostat acts and through its connections lifts the lid a from the top of chimney D, so that the heated air from the lamp no longer circulates through the incubator and the temperature consequently rises no higher and immediately begins to fall; when the thermostat will close or tend to close the lid or damper a on the top of the chimney, thereby securing the most perfect control of the temperature.

I have described my invention in what I consider the form best adapted for its uses. I desire to remark, however, that the form can be greatly varied. The materials of which it is constructed might be varied and other means of generating the heat might be employed in connection with my improved ventilating system. The method of taking the cold and foul air from the incubator, causing an even circulation through the same, might be used in connection with other devices. The form of thermostat is immaterial, and while it is preferred to have the lamp supported on an adjustable bracket H the bracket could of course be a fixed one. From what I have remarked numerous variations will no doubt occur to those skilled in the art to which my inventions pertains.

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

1. The combination of a box-like casing A having double side walls; a false bottom G within the same perforated at the corners at

G'; an eduction-pipe c leading from the center of the chamber below the false bottom outward; egg-trays supported within the chamber above the bottom G; a diaphragm of cloth or suitable porous material F above the egg-chamber; a lamp B supported on a suitable bracket and provided with a chimney D to which is connected the eduction-pipe c; a pipe D' from said chimney passing into the chamber above the diaphragm F; laterally and outwardly extending branches D'' from the inner end of said pipe D' returning along the outer sides of the incubator and discharging into the open air; a thermostat, a lid or damper a to the chimney connected to the thermostat; a drum surrounding the chimney D with an enlarged passage embracing the pipe D' and extending and discharging into the chamber above the diaphragm F, the said drum C being perforated at the bottom to admit a current of fresh air, all coacting substantially as described, for the purpose specified.

2. The combination of a box-like casing A; a false bottom G within the same perforated at the corners at G'; an eduction-pipe c leading from the center of the chamber below the false bottom outward; egg-trays supported within the chamber above the bottom G; a diaphragm of cloth or suitable porous material F above the egg-chamber; a lamp B supported on a suitable bracket and provided with a chimney D to which is connected the eduction-pipe c; a pipe D' from said chimney passing into the chamber above the diaphragm F; laterally and outwardly extending branches D'' from the inner end of said pipe D' and returning along the outer sides of the incubator and discharging into the open air; a thermostat, a lid or damper a to the chimney connected to the thermostat; a drum surrounding the chimney D with an enlarged passage embracing the pipe D' and extending and discharging into the chamber above the diaphragm F, the said drum C being perforated at the bottom to admit a current of fresh air, all coacting substantially as described, for the purpose specified.

3. The combination of a box-like casing A; a false bottom G within the same perforated at the corners at G'; an eduction-pipe c leading from the center of the chamber below the false bottom outward; egg-trays supported within the chamber above the bottom G; a diaphragm of cloth or suitable porous material F above the egg-chamber; a lamp B supported on a suitable bracket and provided with a chimney D to which is connected the eduction-pipe c; a pipe D' from said chimney passing into the chamber above the diaphragm F and discharging into the open air; a thermostat, a lid or damper a to the chimney connected to the thermostat; a drum surrounding the chimney D with an enlarged passage embracing the pipe D' and extending and discharging into the chamber above the diaphragm F, the said drum C being perfo-

rated at the bottom to admit a current of fresh air, all coacting substantially as described, for the purpose specified.

4. In an incubator, the combination of a
5 suitable casing; a false bottom therein perforated at its corners; an eduction-pipe leading from the center of the space below the false bottom outward; an egg-chamber above the
10 false bottom; a diaphragm of cloth or suitable porous fabric above the egg-chamber; a pipe for a heated medium passing into the chamber above the diaphragm and branching to distribute the heat evenly therethrough; a chimney connected to the outer end of said
15 pipe for heated air or other medium to which the said eduction-tube extending from the center of the chamber below the false bottom is connected; a drum perforated at its bottom surrounding the said chimney having a
20 passage delivering into the chamber above the diaphragm whereby heated fresh air will be delivered through the drum into the chamber above the diaphragm and will then circulate downward through the porous dia-
25 phragm into the egg-chamber and be drawn off by an eduction-tube and pass out through the chimney into the pipe D', thence out of the incubator, for the purpose specified.

5. In an incubator, the combination of a
30 suitable casing; a false bottom therein perforated at its corners; an eduction-pipe leading from the center of the space below the false bottom outward; an egg-chamber above the false bottom; a diaphragm of cloth or suitable porous fabric above the egg-chamber; a
35 pipe for a heated medium passing into the chamber above the diaphragm and branching to distribute the heat evenly therethrough; a chimney connected to the outer end of said
40 pipe for heated air or other medium to which the said eduction-tube extending from the center of the chamber below the false bottom is connected; a lid or damper for the top of the said chimney controlled by a suitable ther-
45 mostat within the egg-chamber; a drum perforated at its bottom surrounding the said chimney having a passage delivering into the chamber above the diaphragm whereby heated fresh air will be delivered through the

drum into the chamber above the diaphragm 50 and will then circulate downward through the porous diaphragm into the egg-chamber and be drawn off by an eduction-tube and pass out through the chimney into the pipe D', thence out of the incubator, for the purpose specified. 55

6. In an incubator, the combination of a casing; a false bottom therein perforated at the corners or toward its outer edges; an eduction-pipe leading from the center of the chamber below the false bottom outward; an egg- 60 chamber above the said false bottom; a porous diaphragm above the egg-chamber; means of delivering heated air into the chamber above the diaphragm whereby the circulation of heated air is distributed evenly over the 65 entire egg-chamber, for the purpose specified.

7. In an incubator, the combination of a suitable casing; a porous diaphragm across the same above the egg-chamber a pipe lead- 70 ing into said chamber, then branching and leading out of the said chamber for the conveyance of the heated medium thereto; a drum surrounding the said chimney perforated at its bottom and opening into the said chamber to deliver warm fresh air thereto and suit- 75 able ventilating-passages for the escape of said air, for the purpose specified.

8. In an incubator, the combination of a suitable casing; a porous diaphragm across the same above the egg-chamber; a pipe lead- 80 ing into said chamber, then branching and leading out of the said chamber for the conveyance of the heated medium; a chimney connected to the said pipe for delivering the heated medium thereto; a lid or damper for 85 the top of the said chimney controlled by a suitable thermostat within the egg-chamber; a drum surrounding the said chimney perforated at its bottom and opening into the said chamber to deliver warm fresh air thereto and 90 suitable ventilating-passages for the escape of said air, for the purpose specified.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

WILLIAM N. YEAGER. [L. S.]

Witnesses:

A. W. LANE,

FRANCES STARKEY.