

(No Model.)

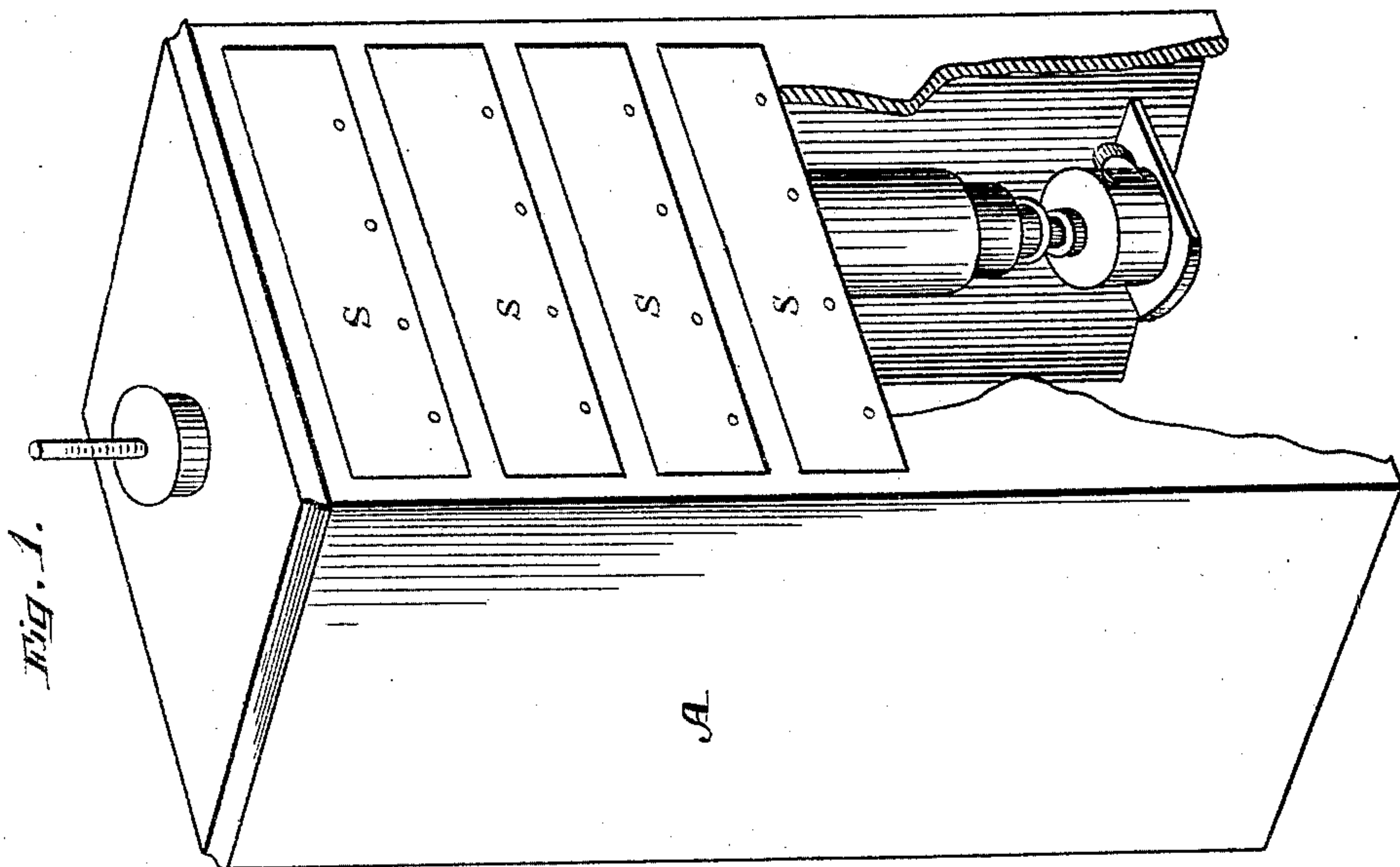
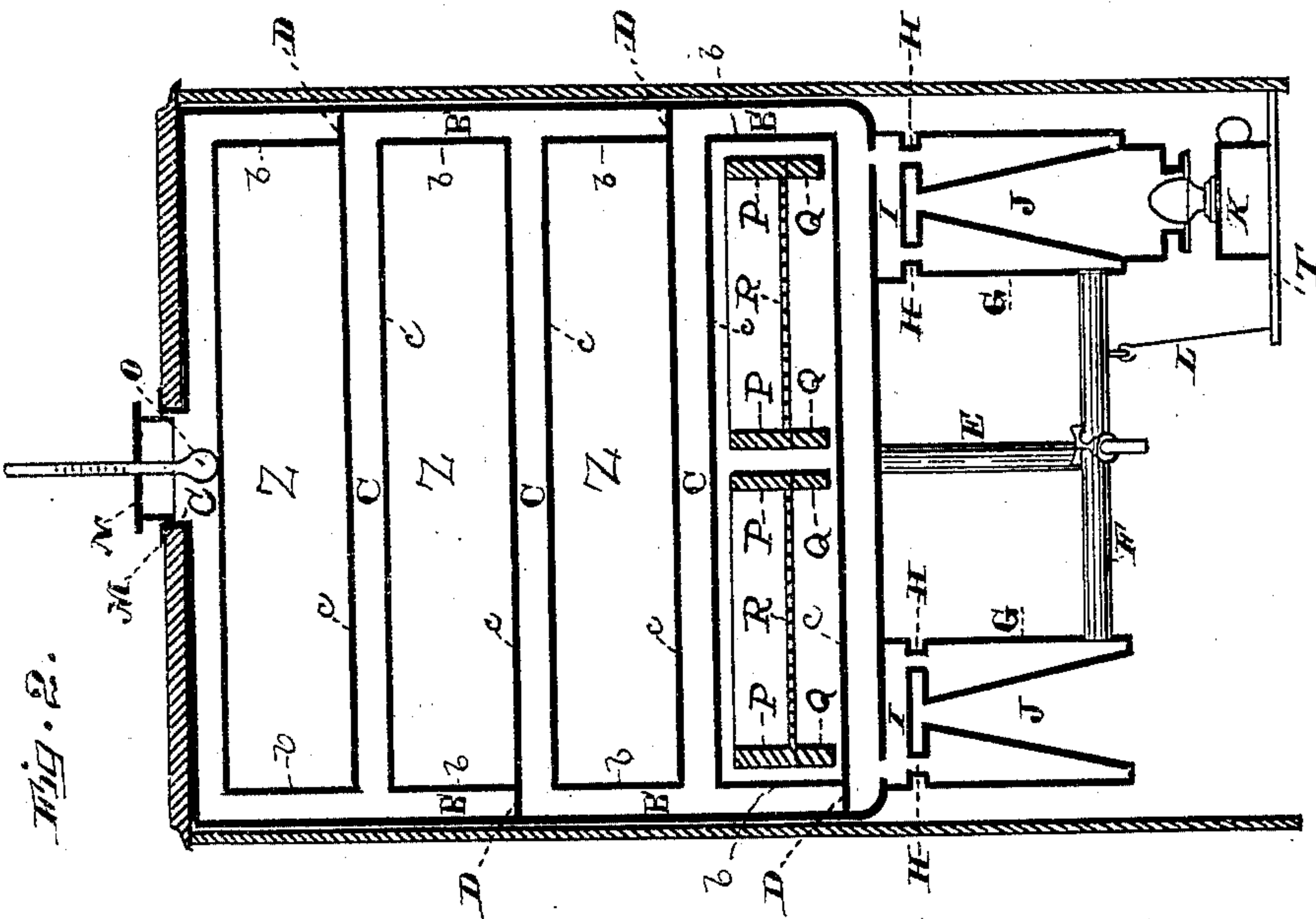
2 Sheets—Sheet 1.

J. PETERSON.

INCUBATOR.

No. 271,355.

Patented Jan. 30, 1883.



Witnesses,
Geo. H. Strong.
S. H. House

Inventor
John Peterson
By Devey & Co.
Attorneys

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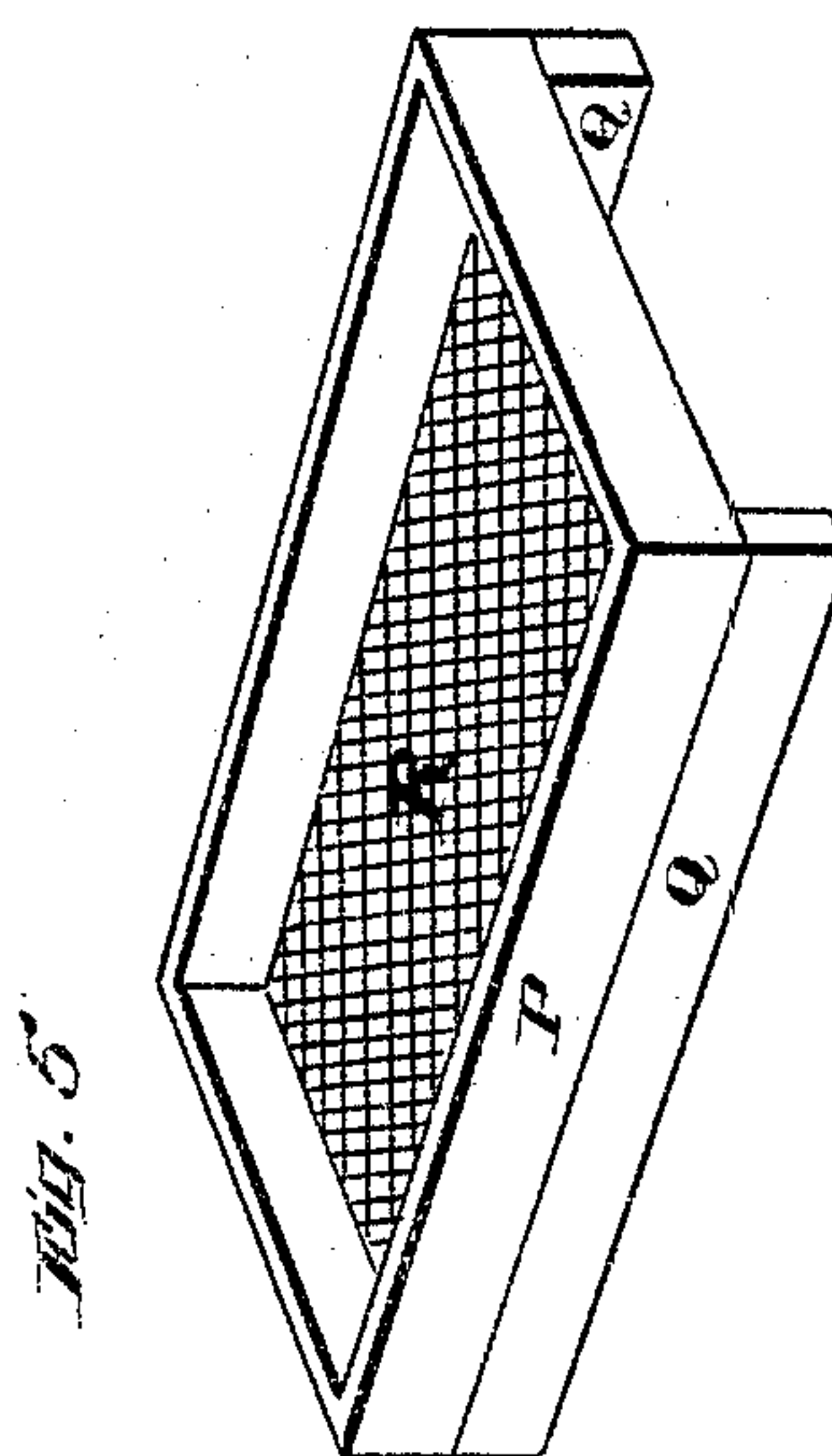
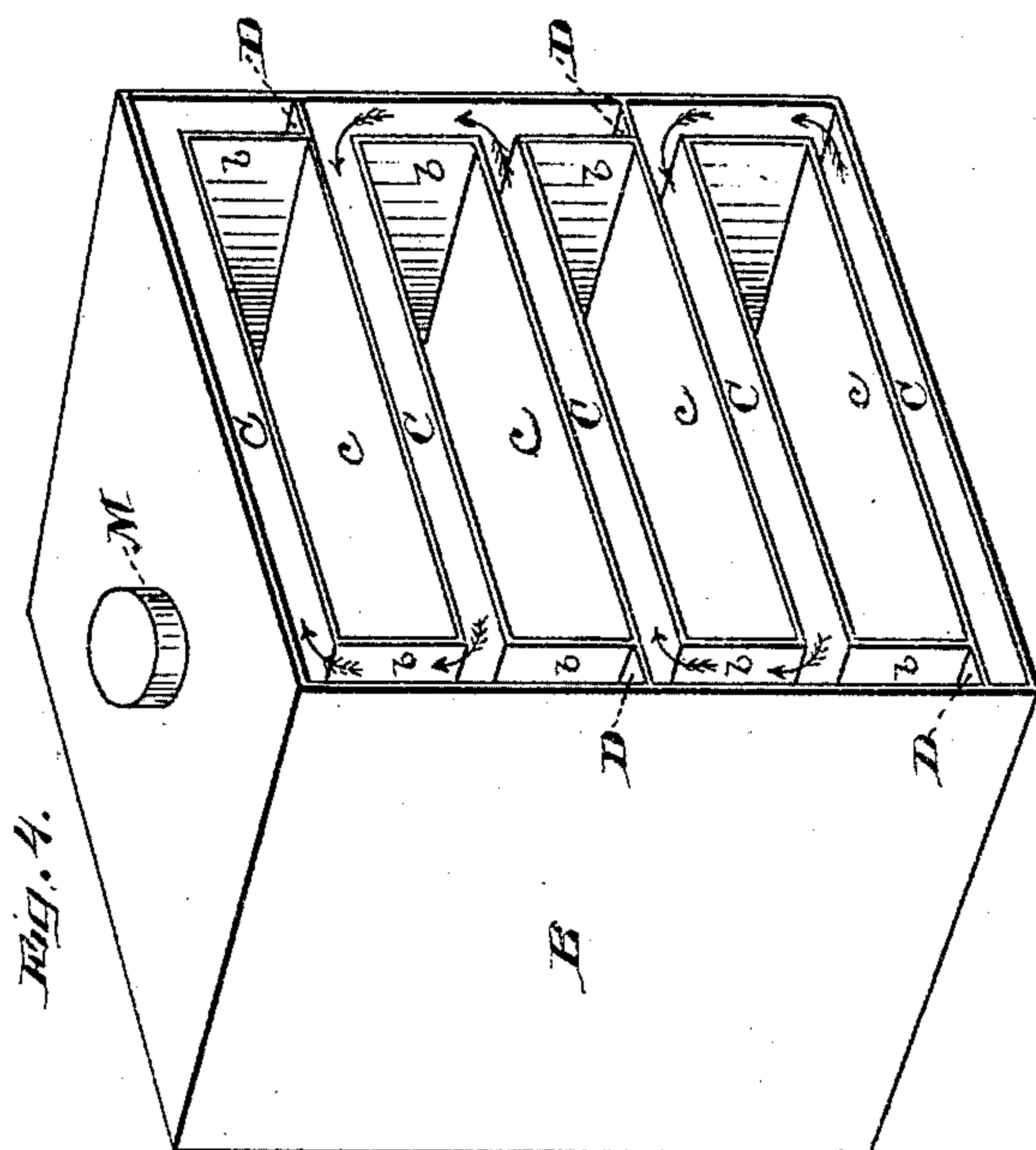
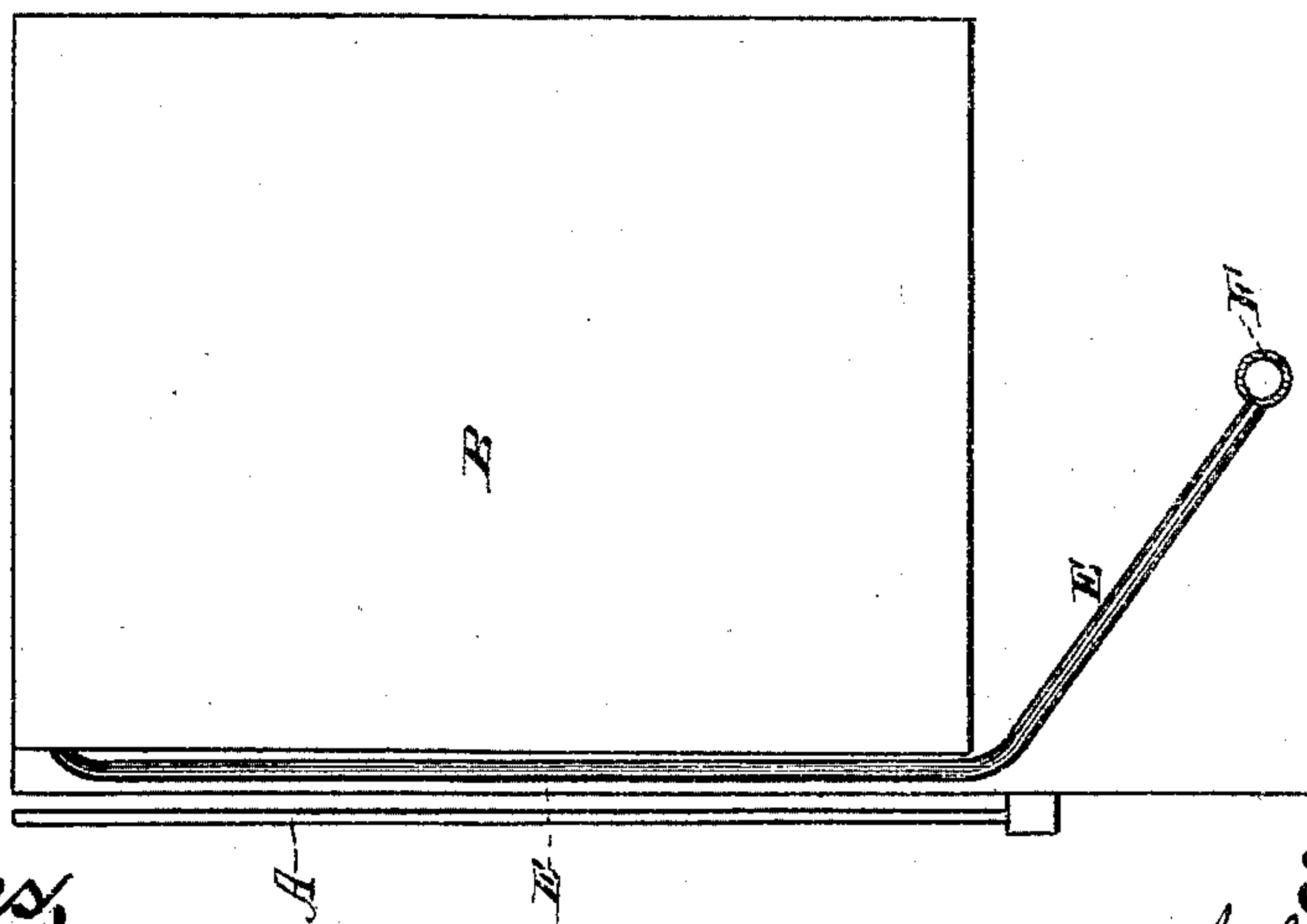


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN PETERSON, OF OAKLAND, CALIFORNIA.

INCUBATOR.

SPECIFICATION forming part of Letters Patent No. 271,355, dated January 30, 1883.

Application filed July 10, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN PETERSON, of Oakland, county of Alameda, State of California, have invented an Improved Incubator; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to certain improvements in incubators, and to a means for maintaining a regular and equable temperature; and it consists of a series of water-containing chambers so formed as to surround the receptacles for the eggs and radiate heat upon the eggs from above, and of certain other details of construction, all of which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a perspective view of my apparatus with a part of the front broken away to show the lamp and heater. Fig. 2 is a vertical section in a plane parallel with the front. Fig. 3 is a vertical transverse section with interior portions of case B removed. Fig. 4 is a view of the hot-water chamber, showing the direction of the circulation. Fig. 5 is a view of an egg-tray.

A is a case of any suitable shape or material, it being usually made of wood, and standing high enough to admit the heaters near the bottom and the water-chamber above, with their inclosed egg-trays. Within this case is fitted the water-chamber B. This is made of galvanized iron or other sheet metal, its outside just fitting within the case, and it forms the outside wall of vertical water-spaces B'. These spaces on each side are connected by horizontal water-spaces C, whose partitions *c* extend across the chamber between interior walls, *b*, of vertical spaces B'.

Diaphragms D are fixed across the vertical spaces B', just above the spaces C, at alternate ends, as shown, so that when the water is heated it will pass from the boilers or heaters into the lower part of the chamber, thence up one side to the first horizontal space C, then across this space to the opposite side, up that side to the next horizontal space C, then across again to the opposite side, and so on to the top of the chamber. This insures a perfect circulation throughout the chamber at all times. From the rear of the upper horizontal space C a pipe or passage, E, returns the water down behind the chamber or case into a cross-pipe, F, which unites the lower part of

the two boilers G. These boilers are situated below the chamber B, at each side. They are cylindrical in external shape, and of a height greater than the diameter. At the top they are closed, and are connected by short pipes H with short flat cylinders I, which are fixed to the lower part of the chamber B, and have passages through which the water may circulate from them into the lower part of the chamber B. The boilers or heaters G have a conical open space, J, extending up through them, the larger opening being at the bottom and the smaller at the top.

K are lamps, having any suitable burner and an inclosing screen around the flame to confine it and direct it into the conical openings J of the boilers. By this shape I provide a large heating-surface, having but a small quantity of water around it, and the tapering shape tends to concentrate the heat upon the side of the cones J until it escapes through the small upper ends and strikes upon the flat bottoms of the shallow cylinders or chambers I, where the remainder of the heat is expended. These openings J also serve as chimneys to produce a proper draft for the lamps. The oil-chambers of the lamps are supported upon hinged tables T, the outer ends of which may be suspended by wires or cords L from the pipe F or other convenient point. When it is desired to remove the lamps to fill or trim them the tables may be let down. The water is thus heated with great regularity and evenness, and the circulation is such as to keep a very even temperature throughout the whole of the spaces B' C and tray-chambers Z. An opening, M, is made at the top, with a cover, N, perforated to receive the stem of a thermometer, O, and hold it upright, the bulb resting within the upper horizontal water-space C. This gives a very correct register of the temperature, and is much better than putting a thermometer among the eggs, because it shows the actual heat.

The egg-trays P are simple frames of wood, having side bars, Q, fixed to the lower part of each side, so that they may be easily run in and out. The bottoms are made of wire-screen material, R. These trays occupy each of the spaces between the walls *b* and the partitions *c*.

A flooring of wood may be placed upon each of the lower partitions *c*, which form the floor

of the tray-chambers Z, to protect the eggs from too great a heat from below; but the portion of these tray-chambers which is over the egg-trays is left naked, so that the heat may be thrown down upon the eggs in the manner of natural incubation.

The front of the case has hinged doors S closing each of the spaces in which the egg-trays are contained, and these may be opened more or less to secure a reduction of temperature or ventilation when necessary.

There is no automatic regulator needed, as the lamps may be adjusted to heat the water to the proper temperature, and by observing the apparatus two or three times a day the heat can be most accurately maintained on account of the perfect circulation obtained for the water.

The construction of the heaters is such that a large surface is exposed to the flame, and but a small quantity of oil is necessary.

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

1. In an incubator; and in combination with the water-spaces B' C, surrounding the egg-trays, and having the directing-diaphragms

D, as shown, the flat cylindrical water-chambers I, projecting beneath the lowermost horizontal space C, and having a connection with it, together with the vertical heaters G, having passages extending entirely through them, and having their upper ends connected with the bottoms of the cylinders I by short pipes H, substantially as herein described.

2. In an incubator, the water-spaces B' C, surrounding the egg-trays, one above the other, and having the directing-diaphragms D, the flat cylinders I, the vertical heaters G, placed below and connected with the cylinders I by pipes H, and having the vertical openings J extending vertically through them and conveying the heat of the lamps K, in combination with the transverse pipe F, uniting the bottoms of the heaters, and the return-pipe E, extending from the upper horizontal space C to the center of pipe F, to circulate and distribute the water, substantially as herein described.

In witness whereof I hereunto set my hand.
JOHN PETERSON.

Witnesses:

MATHEW DUNN,
J. R. CAPELL.