

(Model.)

2 Sheets—Sheet 1.

E. E. BISHOP.
INCUBATOR.

No. 245,121.

Patented Aug. 2, 1881.

Fig. 1.

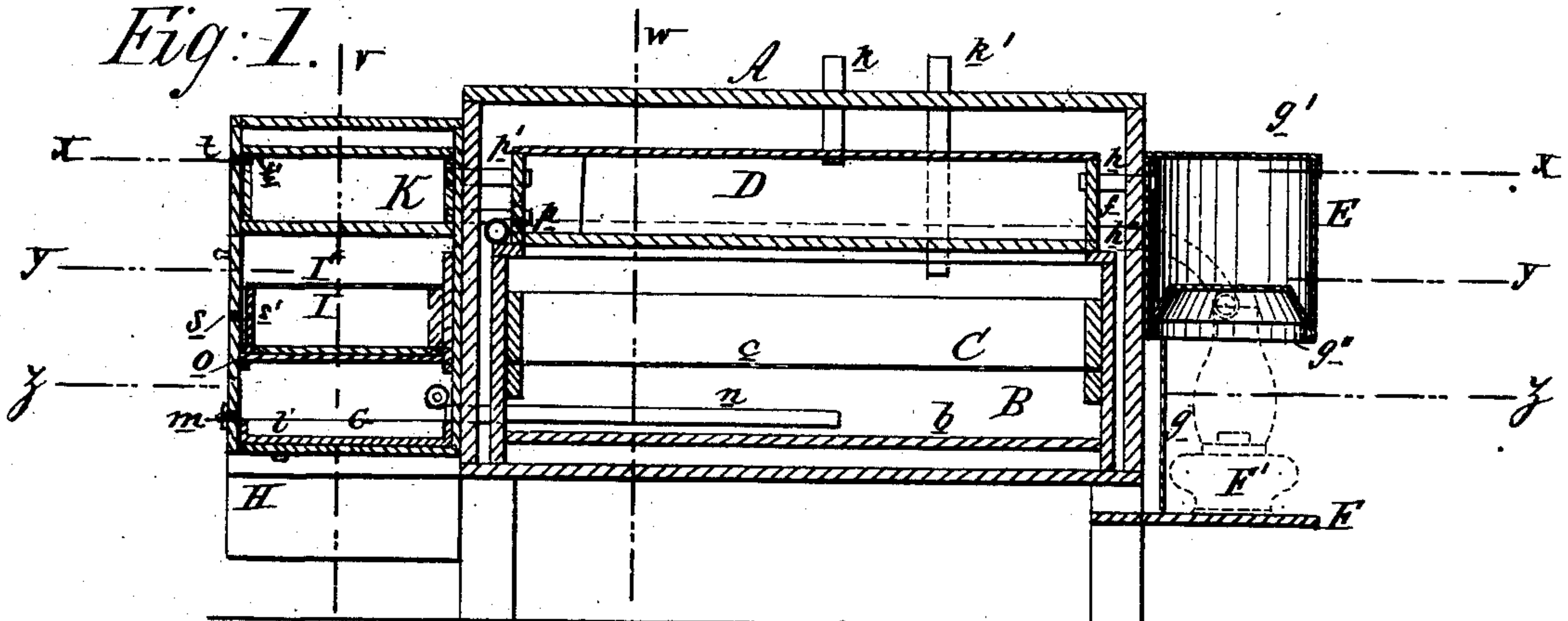


Fig. 2.

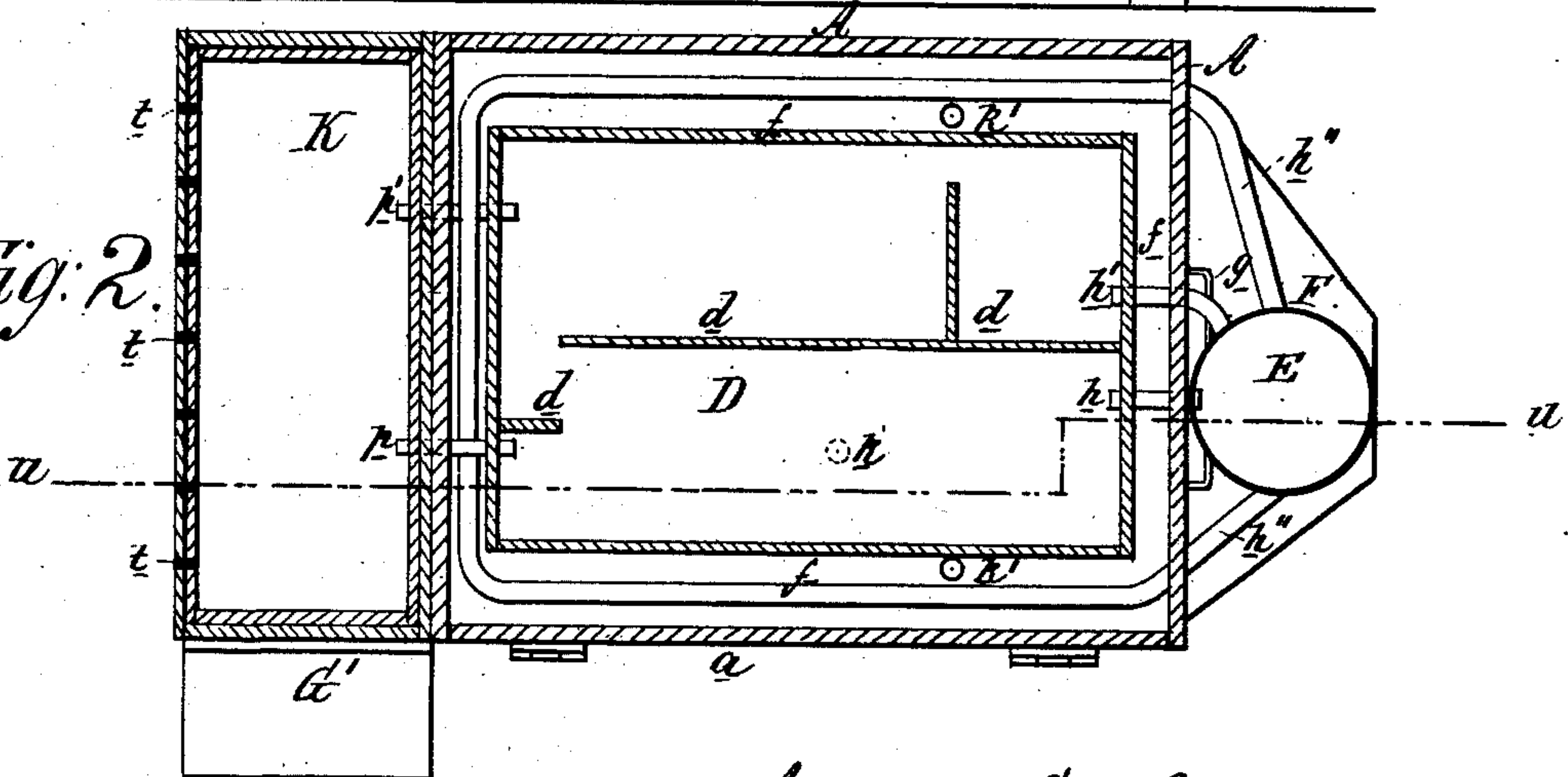
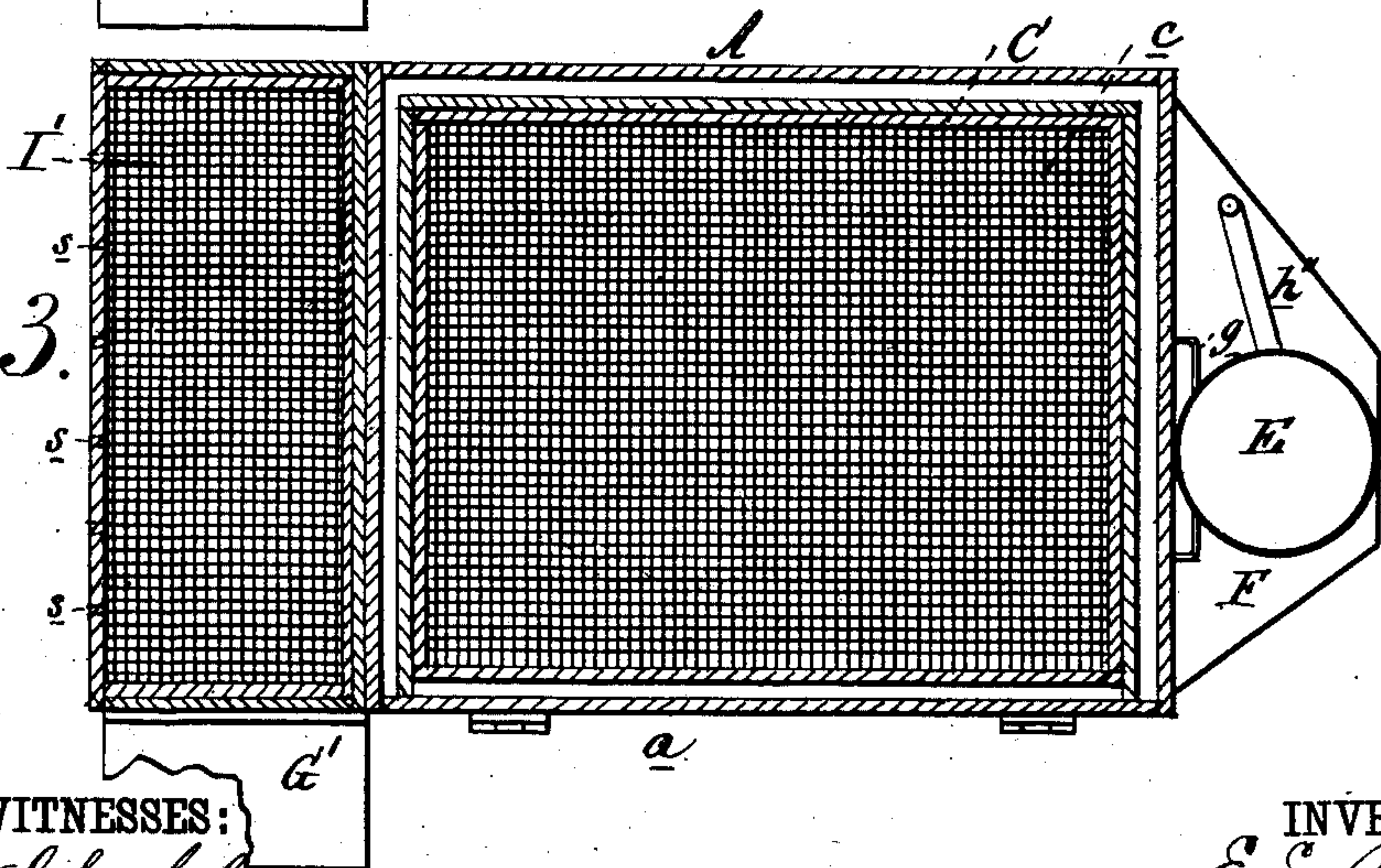


Fig. 3.



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Fig. 4.

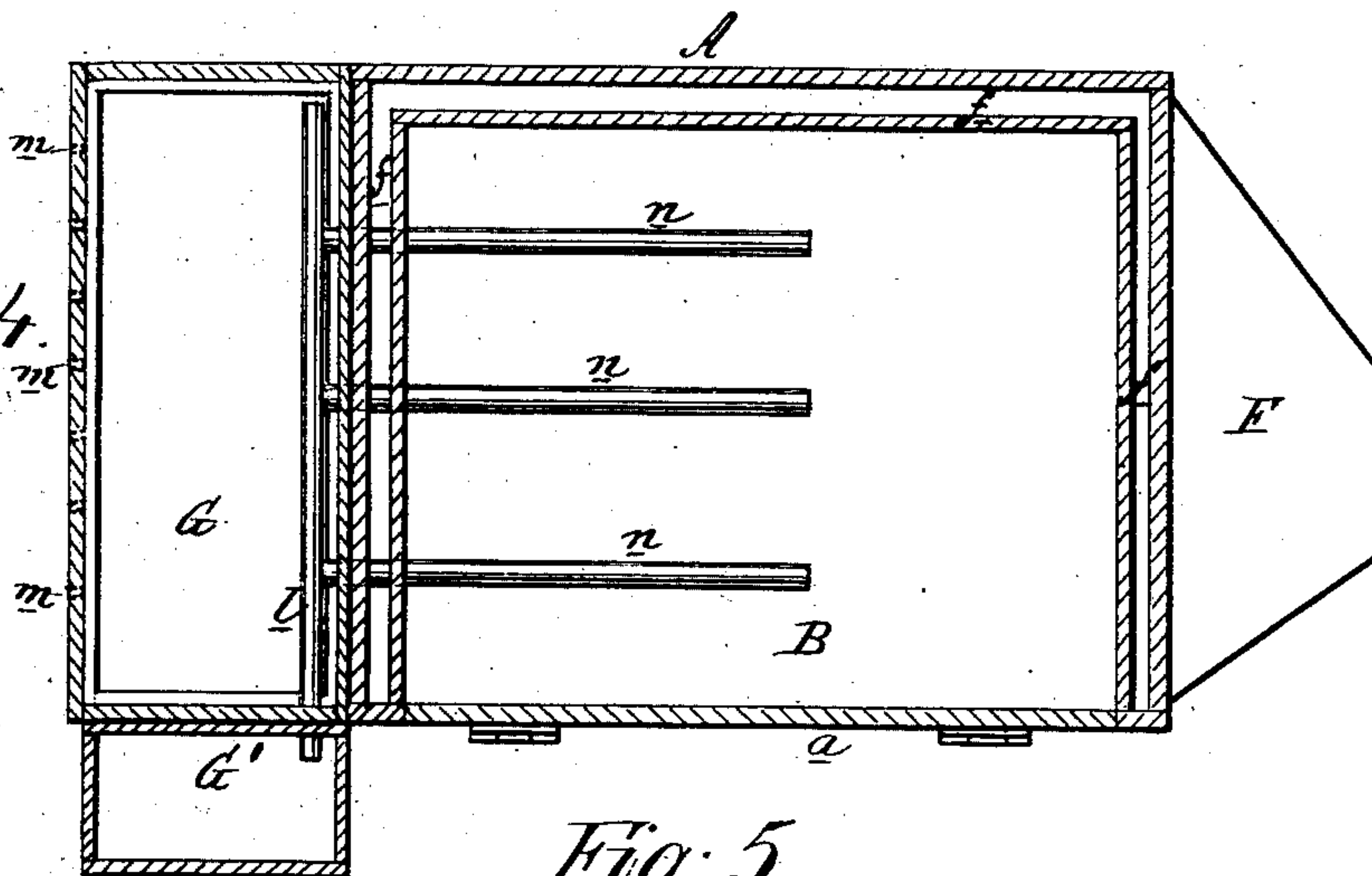


Fig. 5.

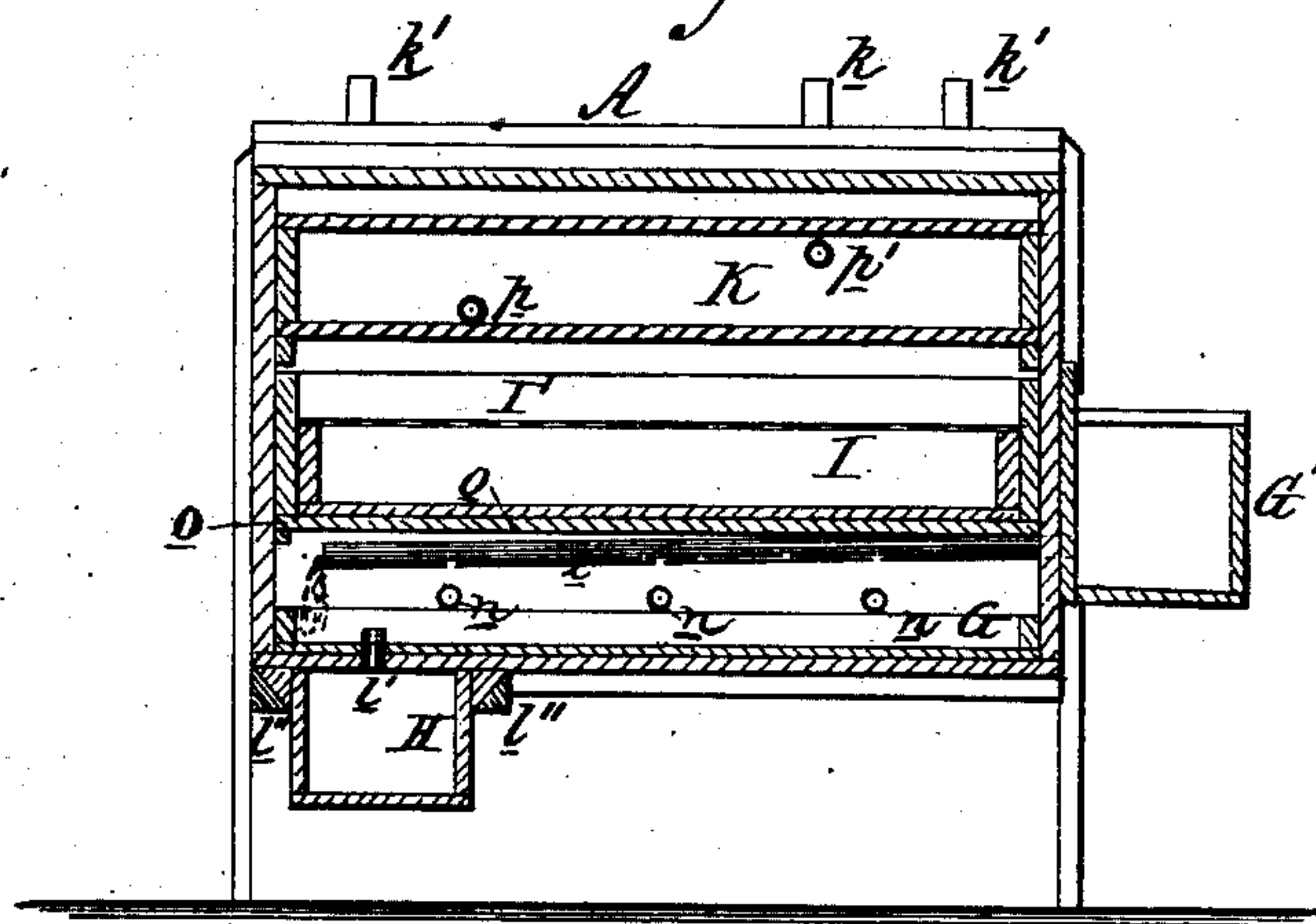


Fig. 6.

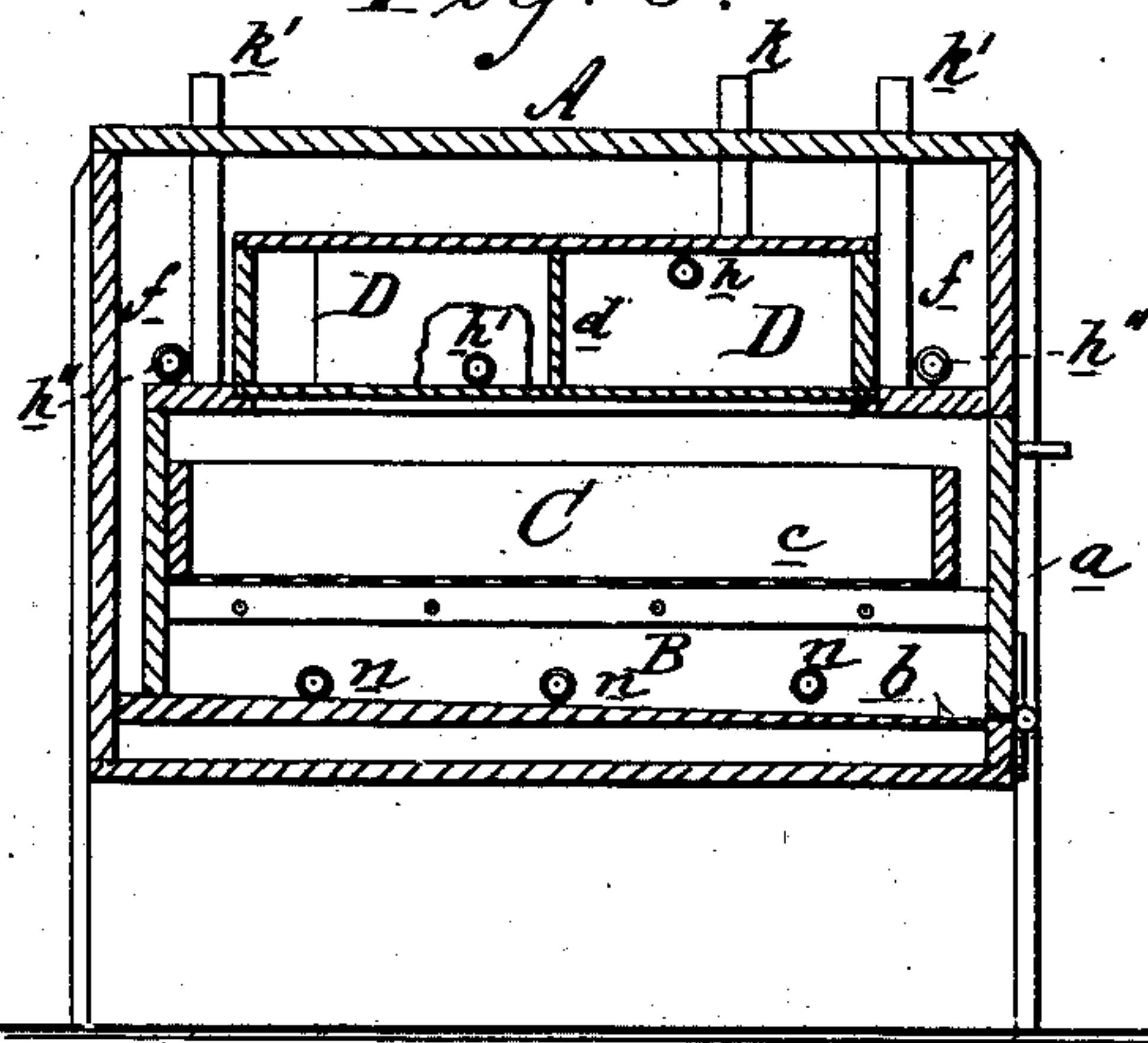
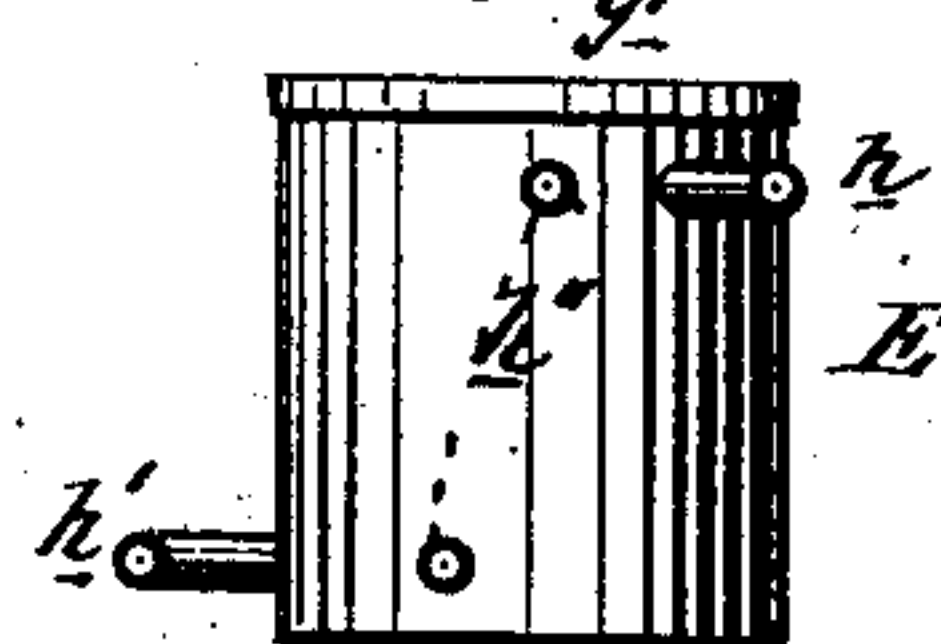


Fig. 7.



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UNITED STATES PATENT OFFICE.

EDWARD E. BISHOP, OF LITTLETON, NEW HAMPSHIRE.

INCUBATOR.

SPECIFICATION forming part of Letters Patent No. 245,121, dated August 2, 1881.

Application filed August 21, 1880. (Model.)

To all whom it may concern:

Be it known that I, EDWARD E. BISHOP, of Littleton, in the county of Grafton and State of New Hampshire, have invented a new and Improved Incubator, of which the following is a specification.

The object of this invention is to construct an incubator that will operate with a maximum of efficiency and economy.

Figure 1 is a sectional side elevation of the incubator on line *u u*, Fig. 2. Fig. 2 is a sectional plan view on line *x x*, Fig. 1. Fig. 3 is a sectional plan view on line *y y*, Fig. 1. Fig. 4 is a sectional plan view on line *z z*, Fig. 1. Fig. 5 is a vertical sectional elevation on line *v v*, Fig. 1. Fig. 6 is a vertical sectional elevation on line *w w*, Fig. 1. Fig. 7 is an elevation of the boiler.

Similar letters of reference indicate corresponding parts.

In the drawings, A represents the outer case of the incubator lined with some non-conducting material, preferably with roofing-paper secured with tacks.

In the front of the case A is a door, *a*, which opens from the egg-chamber B, that is located in the bottom of said case A, and is lined or covered on the outside preferably with building-paper. The floor B of said egg-chamber B is made to slope toward the door *a*, so that carbonic acid or other heavy gases generated within said chamber B may readily flow out when said door *a* is opened, and thereby prevent the air in said chamber from becoming or remaining impure.

C is the egg-drawer, provided with a woven-wire bottom, *c*, set within the egg-chamber B, for holding the eggs to be hatched.

Above the egg-chamber B is the main tank D, for containing hot water for maintaining a suitable temperature within the egg-chamber B. This tank D is provided with partitions *d*, that are designed to make the water flow evenly over the entire surface of the said tank D. The water in this tank D is designed to be kept at a depth of three inches, or more, so that the temperature in the incubator shall not be affected by sudden changes of temperature.

Between the egg-chamber B and tank D and the case A is an air-space, *f*.

Outside the case A, secured on a suitable

support, *g*, is a boiler, E, having a cover, *g'*, that is removed for filling said boiler, and having a concave bottom, as shown at *g''*, that the heating-surface of the boiler may be thereby increased.

Beneath the boiler E is a lamp-rest, F, on which is placed a lamp, (shown in dotted lines at F',) for heating the water in said boiler E, and the boiler-support *g*, which is a broad plate of corrugated metal extending upward from the lamp-rest F, serves to prevent the flame of the lamp F' from burning the case A.

The main tank D, before described, is supplied with hot water from the boiler E through a pipe, *h*, leading from the upper part of said boiler E, and the water, after traversing said tank D, returns to the lower part of the boiler E through the pipe *h'*, whereby a constant circulation of heated water is maintained. A pipe, *k*, designed for the insertion of a thermometer, whereby to determine the temperature of the tank D, extends upward from said tank through the top of the case A.

The air space or chamber *f* around the tank D and egg-chamber B is kept at a suitable temperature by the hot-water pipe *h''*, that enters said chamber *f* from the upper part of the boiler E, and, making a circuit of said chamber *f*, returns to the lower part of said boiler E.

From the top of the egg-chamber B ventilating-pipes *h'* extend upward at the sides of the tank D, through the top of the case A.

Attached to one end of the case A, and forming part of the incubator, are certain auxiliary parts, consisting of a water or moisture pan, G, extending the whole width of the incubator, and supplied with water from an attached supply-tank, G', through a pipe, *l*, that extends above said pan G nearly to its opposite end. Pipe *l* also extends above the open ends of horizontal pipes *n*, which pipes commence in the casing above pan G and extend into the interior of egg-chamber B. In bottom of pipe *l*, and exactly above each one of the pipes *n*, is an orifice to allow the water to drop in front of pipes *n*, so as to more thoroughly moisten the air; and in the bottom of this pan G is a raised tube, *l'*, for the escape of the water, when it rises above a certain depth, into a receiving-tank, H, that is set beneath said tube *l'* and slides in grooved guides *l''*, so that it may be

easily removed and replaced. In the front of the casing of said pan G are a series of orifices, *m*, that are designed to admit air that passes over the water in the pan G, and through the pipes *n* into the egg-chamber B, supplying moisture to the eggs therein, and thence passes through the ventilating-pipes *k'* into the open air. This arrangement of the water or moisture pan G outside of the incubator proper prevents, in a great measure, the warping to which wooden incubators are liable, and from this pan G there is supplied moisture sufficient for the eggs until they are removed from the chamber B to the drier-drawer I, where they must be sprinkled.

Immediately above the water-pan G is a drier-drawer, I, having on its top a wire screen, I', which screen is designed to receive eggs which are placed there to be warmed before being placed in the chamber B, which is very desirable when fresh eggs are every day or two placed in the chamber B. This drawer I is designed also to receive eggs that are within two or three days of being hatched, as it is very injurious to other eggs to have chicks hatched and dried off in contact with them. Consequently this drawer I increases materially the capacity and effectiveness of the incubator. This drawer I rests upon a removable board, *o*, which board is provided with suitable rests, and can be easily removed for the purpose of being cleaned.

Above the drawer I is the tank K for warming said drawer I. Said tank K is supplied with a circulation of hot water from the main tank D by means of the pipes *p p'*, through the latter of which the water flows into, and through

the former of which the water flows from, said tank K. The casing of said tank and drawer is provided with perforations *t* and *s*, registering with perforations *t'* in tank and *s'* in drier-drawer, respectively, for the purpose of ventilation. The tank K is stationary, and is to be reached by removing the top of its casing.

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

1. In an incubator, an egg-chamber, B, having drawer C, and provided with horizontal moisture-communicating pipes *n*, and vertical ventilating-pipes *k'*, substantially as shown and described, and for the purpose set forth.

2. In an incubator, the auxiliary hot-water tank K, having perforation *t'*, registering with perforations *t* in casing, and parallel pipes *p'* and *p*, for receiving and discharging hot water, respectively, in combination with the main tank D, substantially as shown and described.

3. In an incubator, a moisture-pan, G, having tube *l'* in its bottom, in combination with chamber B, having moisture-pipes *n* and ventilating-pipes *k'*, substantially as shown and described, and for the purpose set forth.

4. In an incubator, the reservoir G', having pipe *l*, in combination with pan G and pipes *n*, said pipe *l* extending above the ends of pipes *n*, and having perforations underneath for allowing water to drop in front of said orifices, substantially as and for the purpose set forth.

EDWARD EVERETT BISHOP.

Witnesses:

LOREN E. BOWMAN,
CHARLES EATON.