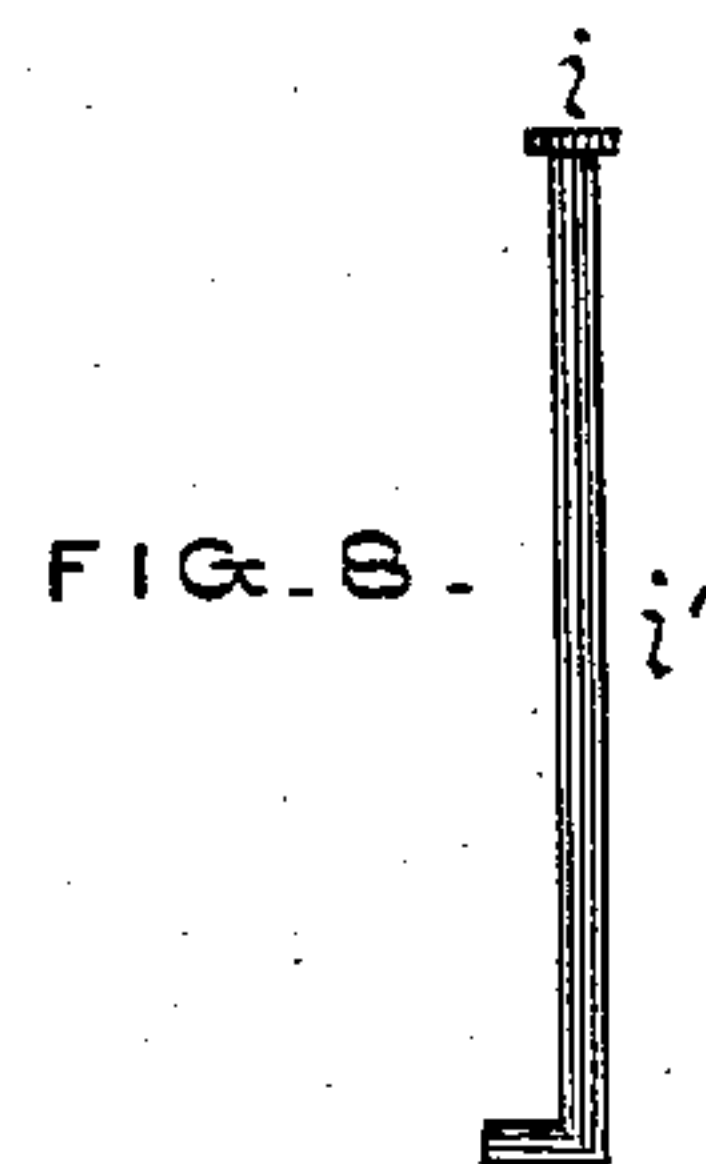
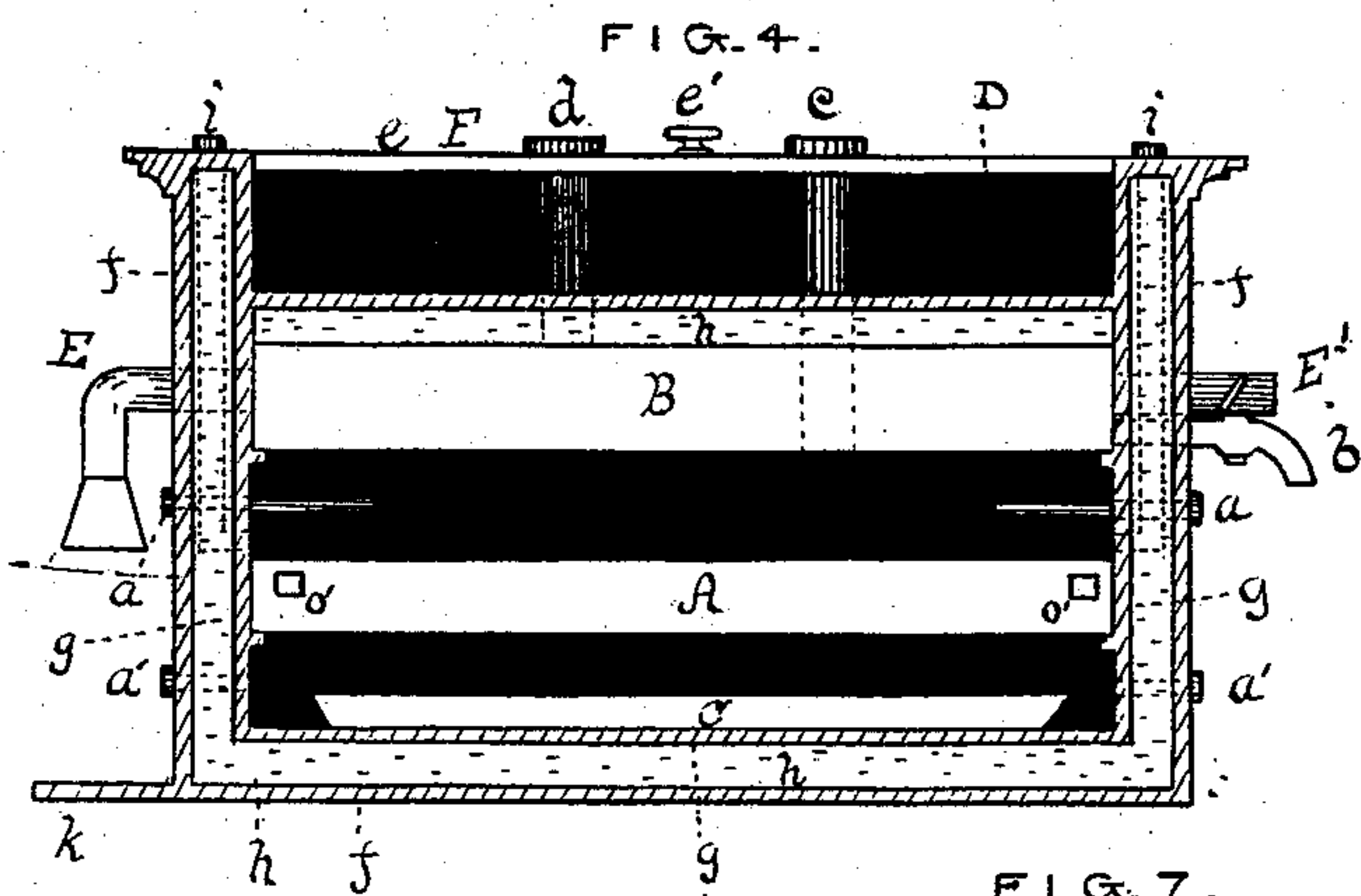
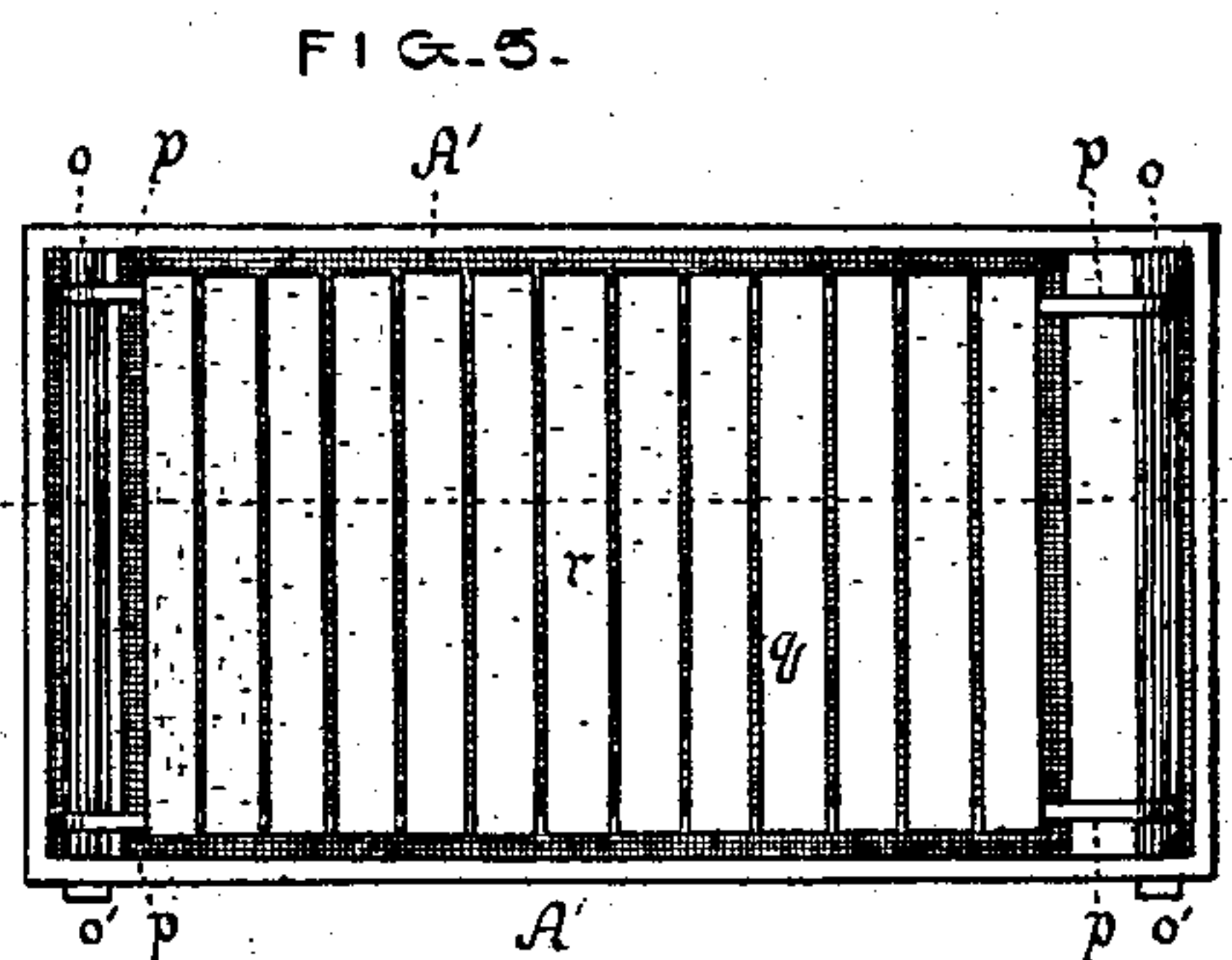
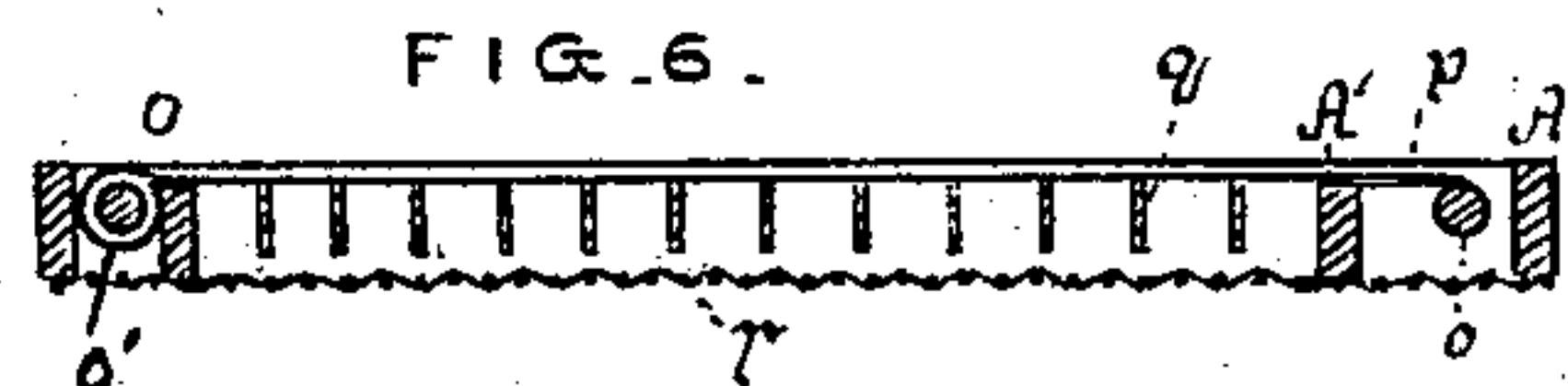
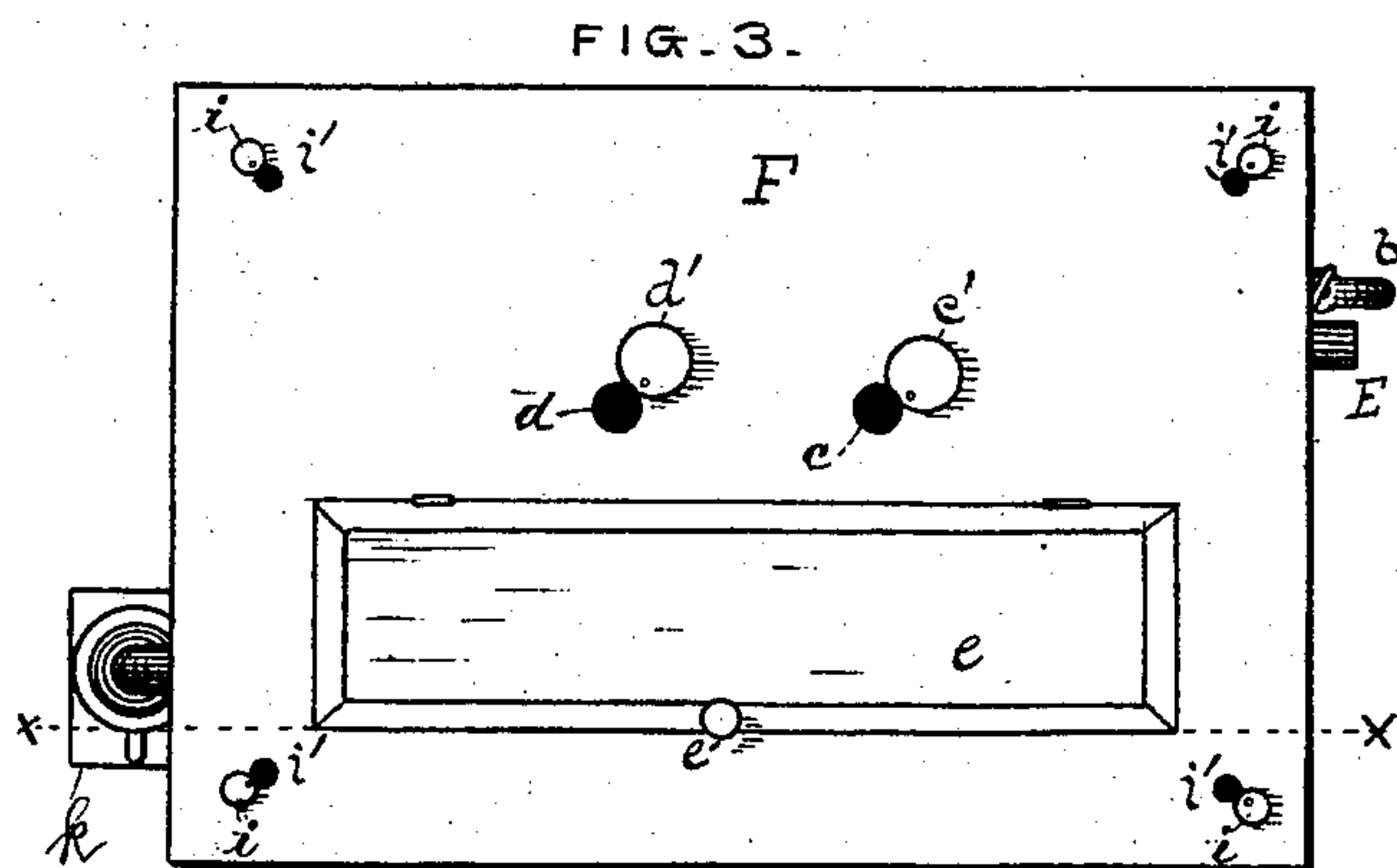
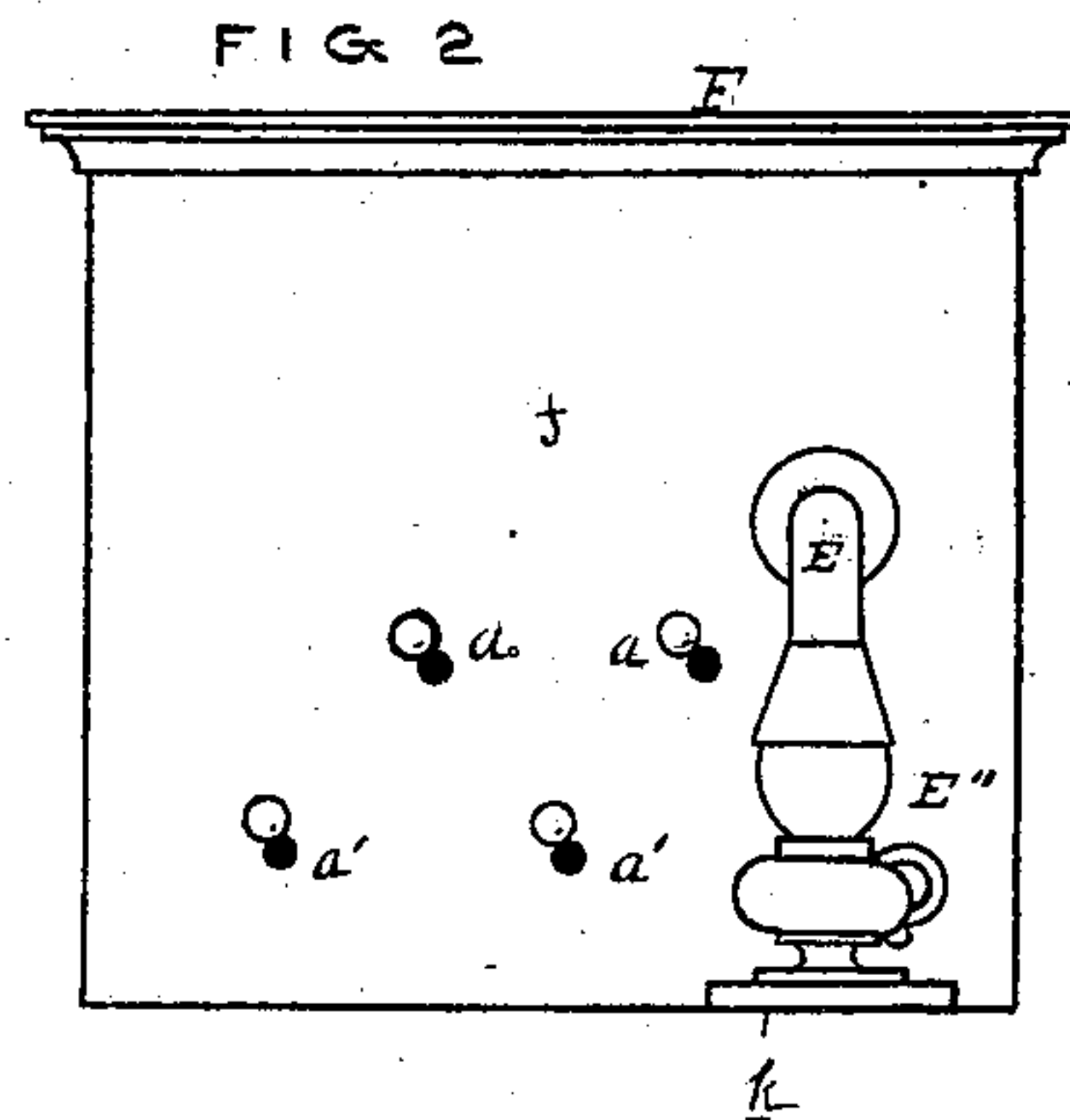
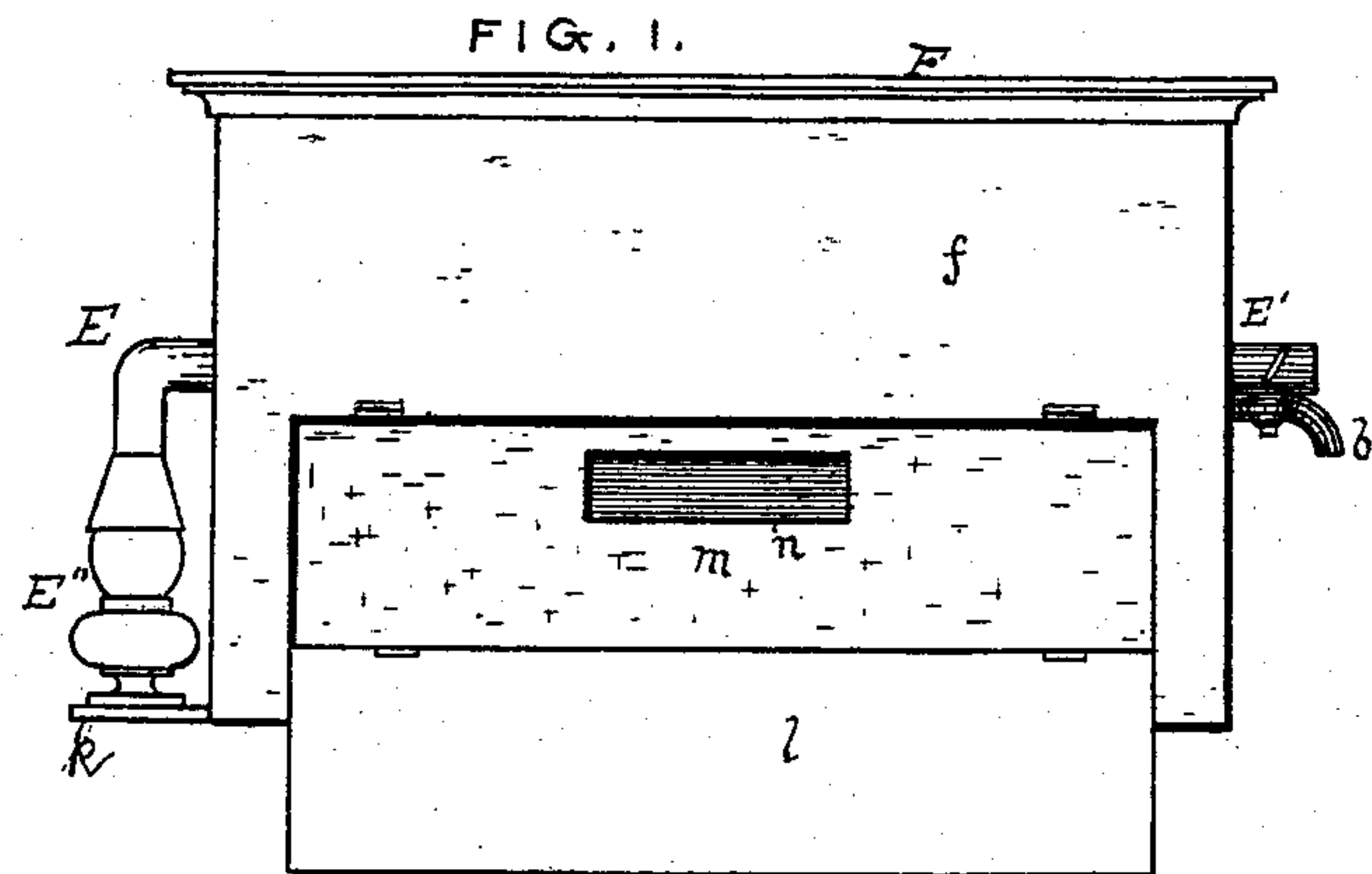


(No Model.)

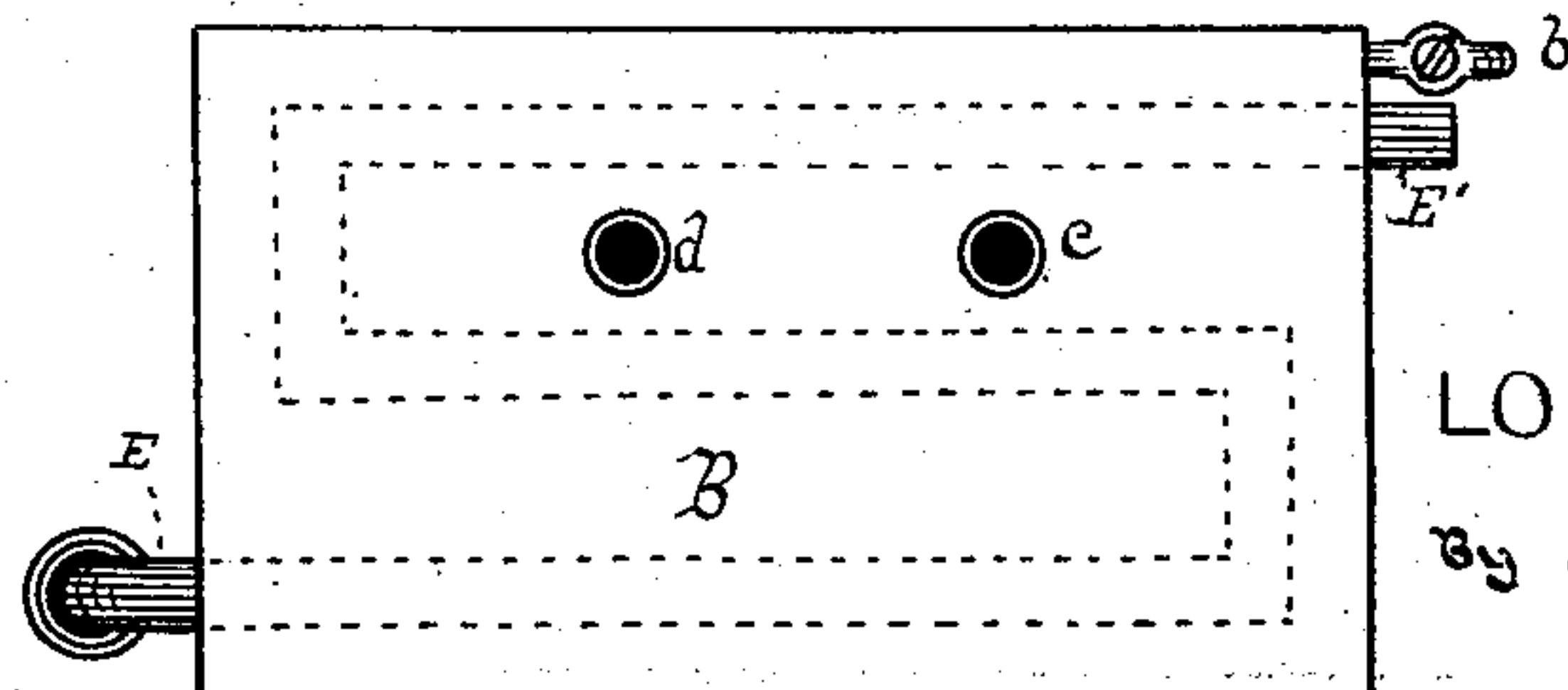
L. KUHNER.
INCUBATOR.

No. 324,390.

Patented Aug. 18, 1885.



Witnesses
C. C. Clark
J. A. Pills.



Inventor.
LOUIS KUHNER
by L. P. Graham
att'y.

UNITED STATES PATENT OFFICE.

LOUIS KUHNER, OF DECATUR, ILLINOIS.

INCUBATOR.

SPECIFICATION forming part of Letters Patent No. 324,390, dated August 18, 1885.

Application filed June 20, 1884. (No model.)

To all whom it may concern:

Be it known that I, LOUIS KUHNER, a citizen of the United States, residing at Decatur, in the county of Macon and State of Illinois, have invented certain new and useful Improvements in Incubators, of which the following is a specification.

In the drawings accompanying and forming a part of this application, Figure 1 is a front elevation of my device. Fig. 2 is a side elevation of the same. Fig. 3 is a top view of the incubator, and Fig. 4 is a vertical section on dotted line *xx* in Fig. 3. Fig. 5 is a plan of the egg-drawer, and Fig. 6 is a vertical section of the same on dotted line *Y* in Fig. 5. Fig. 7 is a plan of the water-tank, showing the manner in which the hot-air pipe traverses the same. Fig. 8 represents one of a series of outlet ventilating-pipes, the use of which will be hereinafter explained.

A is the egg-drawer, which is provided with an open bottom covered by a wire-netting, *r*. In the sides of the drawer, at each end thereof, is mounted a roller, *o*, which rollers are connected by bands *p*, of a length sufficient to allow either one of the rollers to make about one revolution. As shown at *o'*, Fig. 6, the bands *p* are wound around one of the rollers, and secured to said bands *p* are slats *q*, the lower ends of which are located a slight distance from the wire bottom of the drawer A. Secured to the bands *p*, in any suitable manner, are cross-strips *A'*, the ends of which are located a slight distance from the sides of the drawer A, so that they can be moved with the bands *p*, said strips being secured to the bands *p* a slight distance from the rollers *o*.

B is the water-tank. C is a moisture-pan. D is the brooding-compartment. E is the hot-air pipe. E' is a damper in the hot-air pipe. F is the top of the incubator.

a are a series of inlet-pipes for ventilating purposes, extending into the egg-chamber near the top of the same, as shown in Fig. 4.

a' are a series of inlet ventilating-pipes located near the bottom of the egg-chamber. *b* is a faucet for drawing the water from tank B.

c represents a pipe extending upward from the egg-chamber, said pipe being adapted to be closed at its upper end by a valve of any suitable construction, in the present case a

pivoted disk, *c'*, adapted to be turned to close the upper end of the pipe being shown.

d represents a pipe extending upward from the water-tank, its upper end being adapted to be closed by a valve, *d'*, similar to that of pipe *c*. *e* is a glass door opening into brooder D. *e'* is a knob on door *e*. *f* represents the outer casing of the incubator. *g* represents the inner casing of the same. *h* is a sawdust-filling interposed between the two casings.

i i' are pipes having the bent lower ends and valves *i*, of any suitable construction, at their upper ends in the present case the valves being similar to those employed on pipes *c d*.

k is a platform for supporting lamp E". *l* is the outer door of the egg-chamber shown open in Fig. 1. *m* is the inner door of the egg-chamber, provided with glass panel *n*, which is hinged to the box. By the employment of the glass pane the condition of the contents of the incubator can be readily seen, while by providing the outer door the glass pane is protected from breakage.

o o are rollers located in the ends of the egg-drawer and connected by bands *p* with the egg-turning rollers.

o' o' are knobs on rollers *o*, that project from the tray or drawer in front and provide a ready means of operating the egg-turning frame.

r represents a wire-netting of which the bottom of the egg-drawer is composed.

In operation the tank B is filled with hot water through pipe *d* and the doors and valves all closed. When a thermometer in the egg-tray A indicates the proper temperature, the eggs are placed in position on the wire-netting between partitions *q*. Lamp E" is placed in position under the funnel-formed termination of pipe E. The damper E' is adjusted, water placed in moisture-pan C, and the valves of the ventilating-pipes *a a' i' c* given proper attention.

The degree of heat in the egg-chamber can always be determined by examining the thermometer placed therein through the open door *l* and glass panel *n*.

The degree of heat can be regulated by adjusting either the lamp E", the damper E', the ventilating-pipes *a a' i' c*, or all of them combined.

I prefer to furnish the inlet ventilating-pipes *a a*, near the upper portion of the egg-chamber, with inwardly-projecting extensions, as shown in Fig. 4, and the lower series may be
 5 made to project inwardly in a lesser degree with a good effect, as the fresh air will be better circulated thereby.

The outlet-pipes *i'*, Fig. 8, pass from the egg-chamber through the sawdust-packing,
 10 and, as before stated, are provided with valves *i*.

The hot-air pipe *E* traverses the water-tank in the direction indicated by dotted lines in Fig. 7, and is located about the vertical cen-
 15 ter of the same.

To turn the eggs, a projecting knob, *o'*, is rotated until the bands *p* bring frame *A* against the roller, the partitions *q* meanwhile pressing against the sides of the eggs and causing
 20 them to turn on the wire-netting *r*. On the next occasion the knob at the opposite end of the drawer is rotated in a reverse direction and the eggs carried back to their original position.

The distance between the end of the frame *A'* and the roller (see space at the right-hand side of Fig. 5) should be approximately equal to the semi-circumference of an egg, and the
 25 space between slats *q* should not much exceed the diameter of the same.

30 The general operation of my device, as re-

gards the degree of temperature to be maintained, the importance of keeping the egg-chamber supplied with moisture, of turning the eggs at regular intervals, &c., is necessa- 35
 rily similar to incubators in successful operation by other parties, and needs no description from me.

Having thus described my invention, I claim as new and desire to secure by Letters Patent— 40

1. The combination with the drawer *A*, having the bottom of netting, and rollers journaled in said drawer at the ends thereof, of bands connecting said rollers, slats *q*, secured to the bands and extending downwardly there- 45
 from, and the strips *A'*, secured to the bands *p* adjacent to the rollers *o*, as set forth.

2. The incubator herein described, comprising a casing, a moisture-pan resting on the floor of said casing, an egg-drawer supported 50
 above the moisture-pan, inlet and outlet pipes controlled by valves and communicating with the egg-chamber, a water-tank, *B*, a hot-air pipe traversing the same, a brooder located above tank *B*, pipes *c d*, controlled by valves 55
 and communicating with the tank and brooder, and the valve-controlled pipes *i'*, located as shown, substantially as set forth.

LOUIS KUHNER.

Attest:

I. D. WALKER,
 L. P. GRAHAM.