

A. T. BENNETT.
FIRE-PLACE HEATER.

No. 174,656.

Patented March 14, 1876.

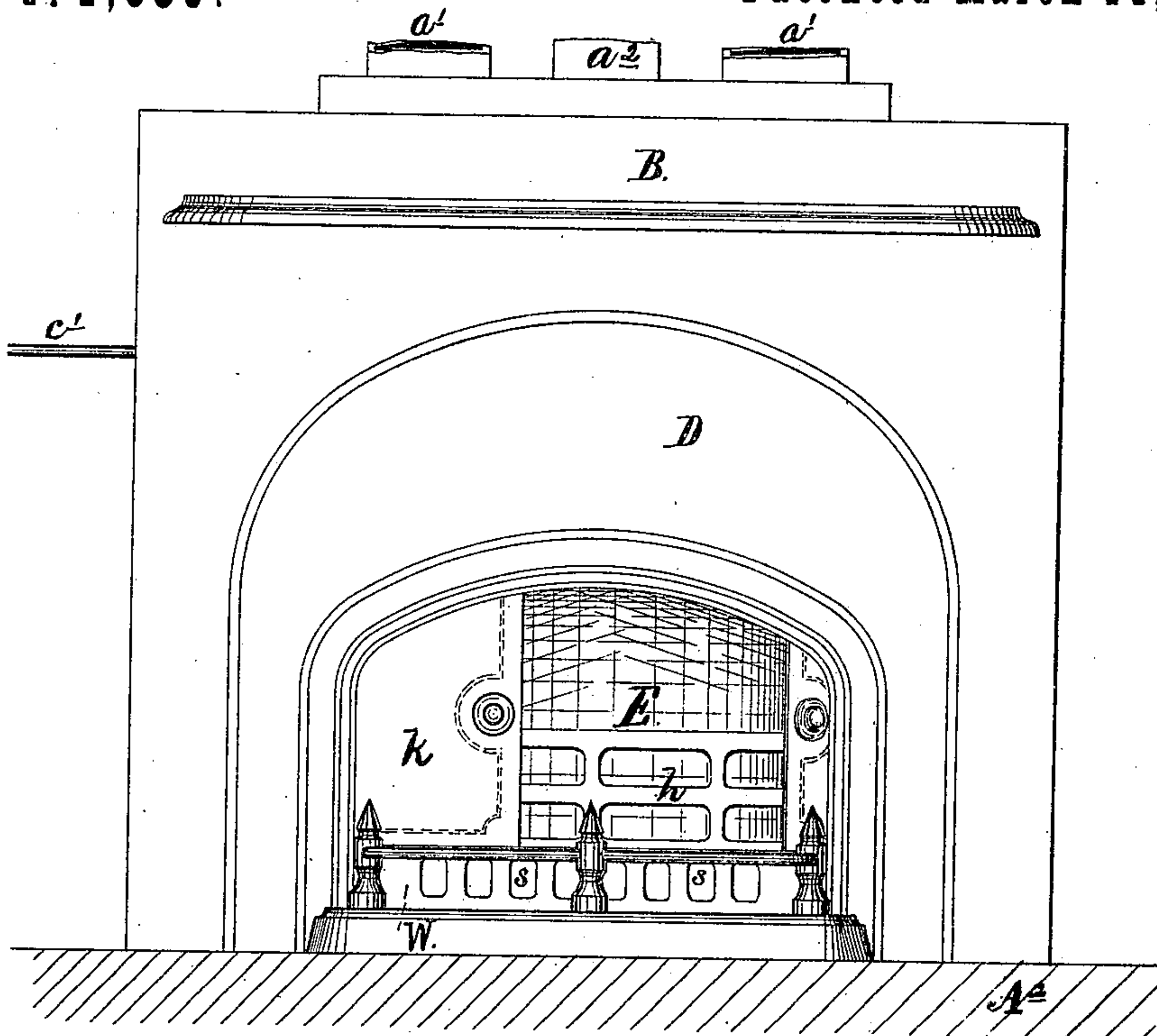


FIG. 1.

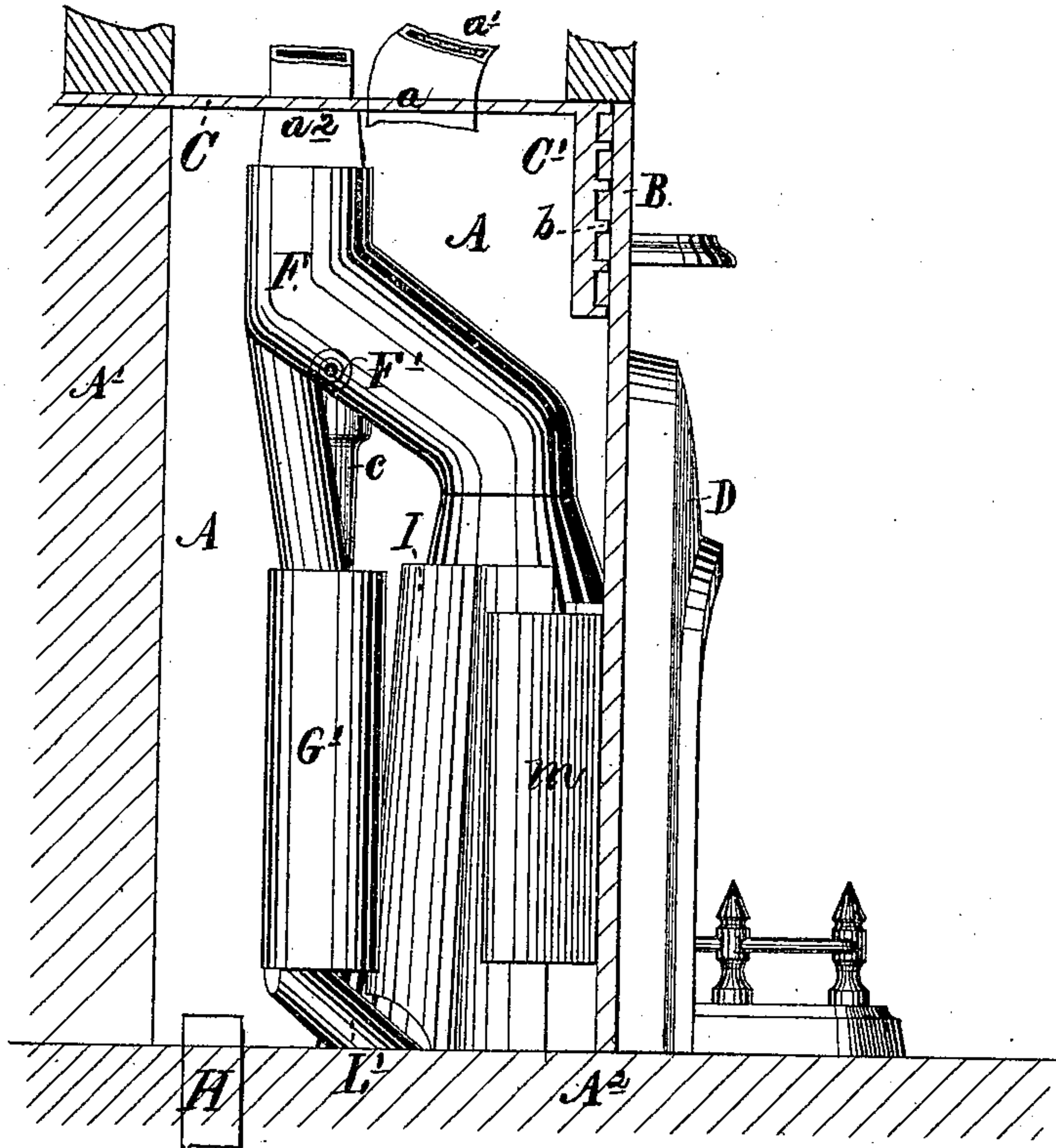


FIG. 2.

WITNESSES

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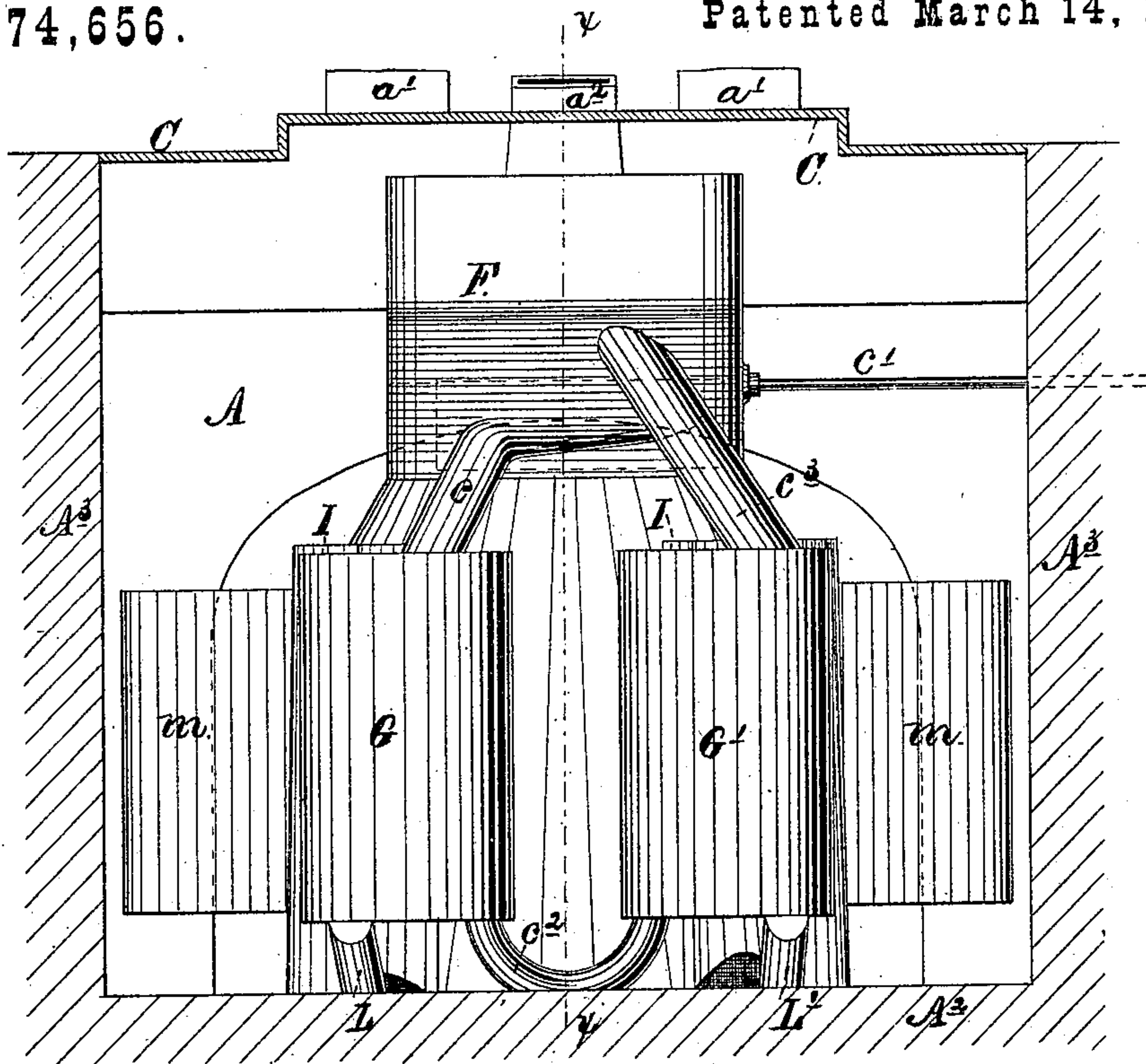


FIG. 3.

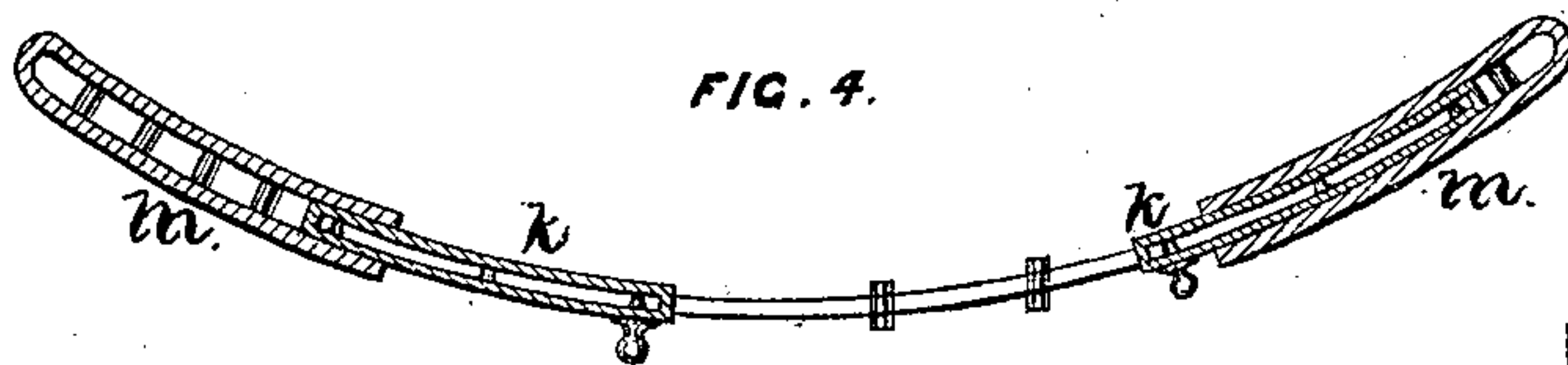


FIG. 4.

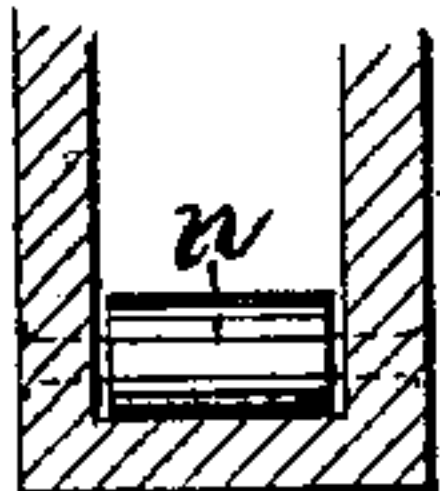


FIG. 7.



FIG. 8.

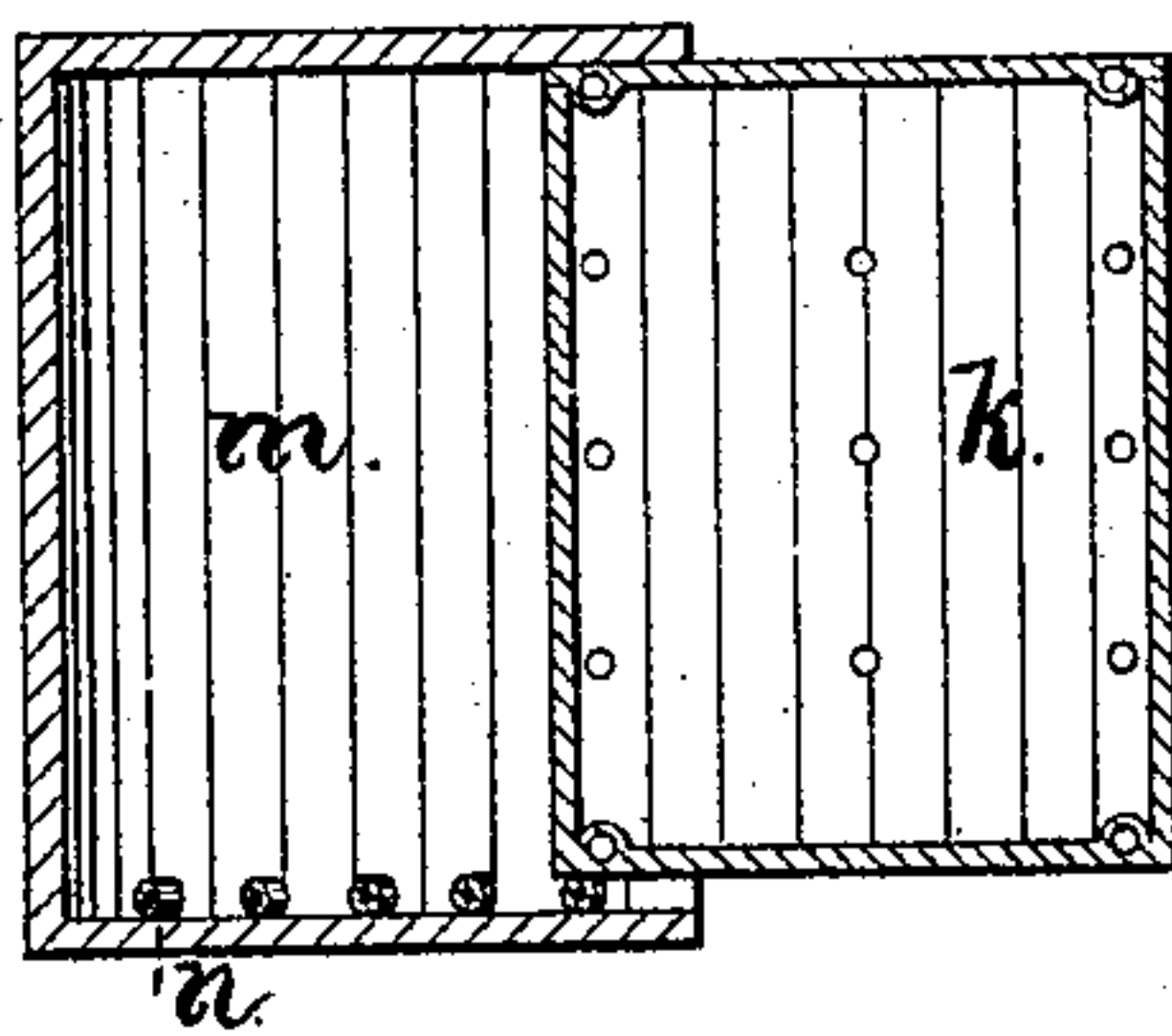


FIG. 5.

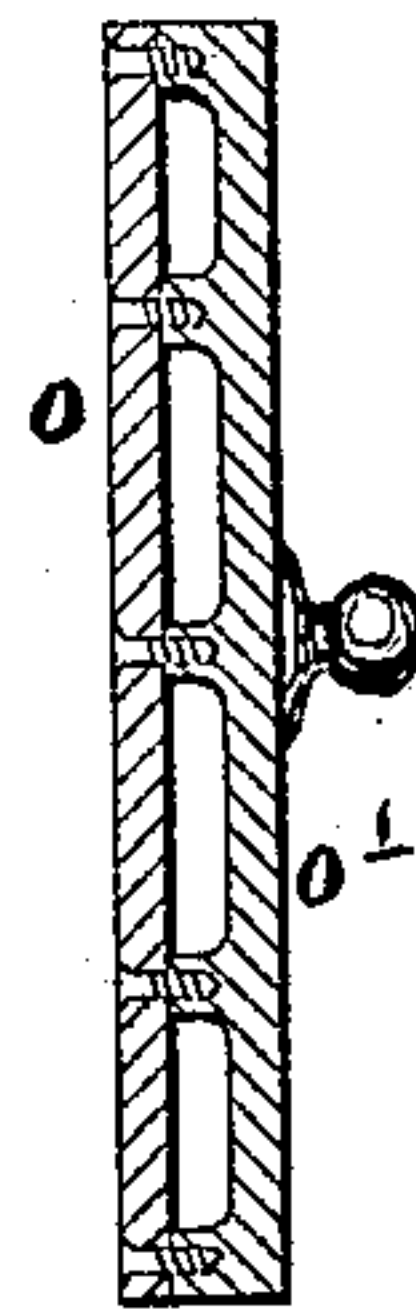


FIG. 6.

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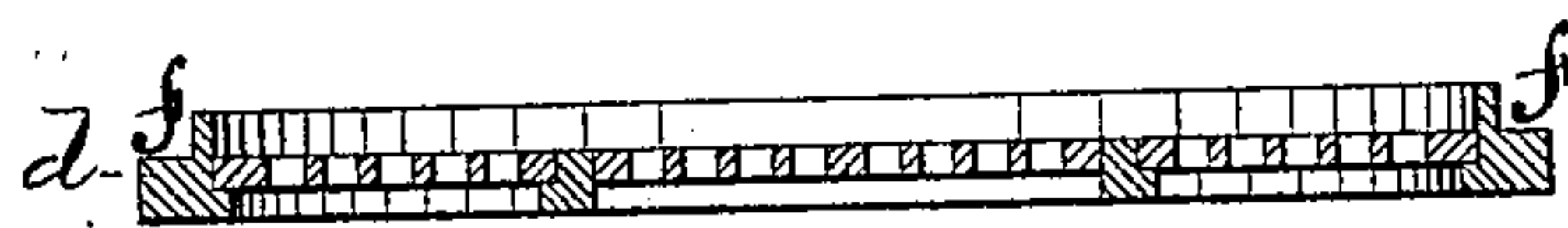
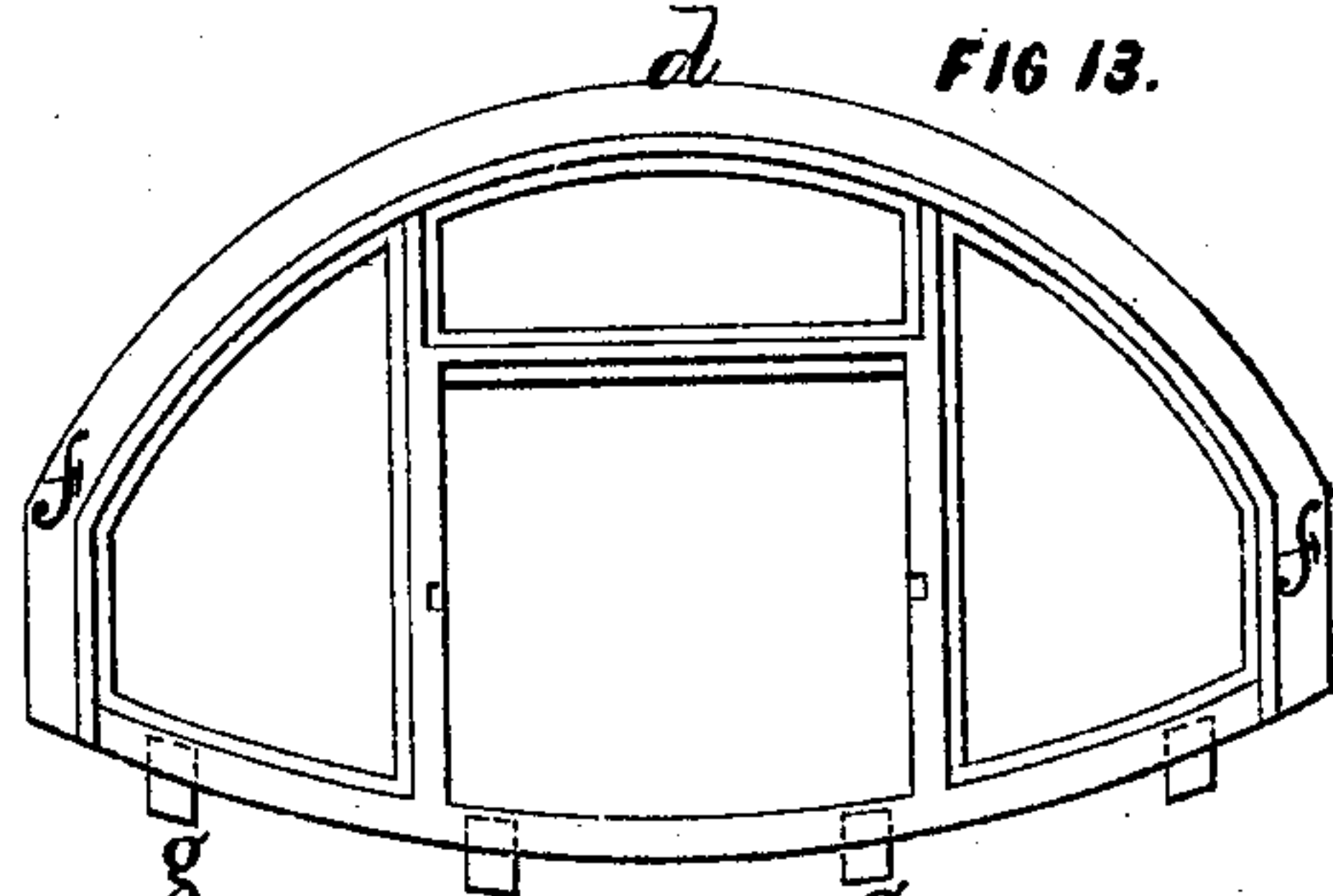
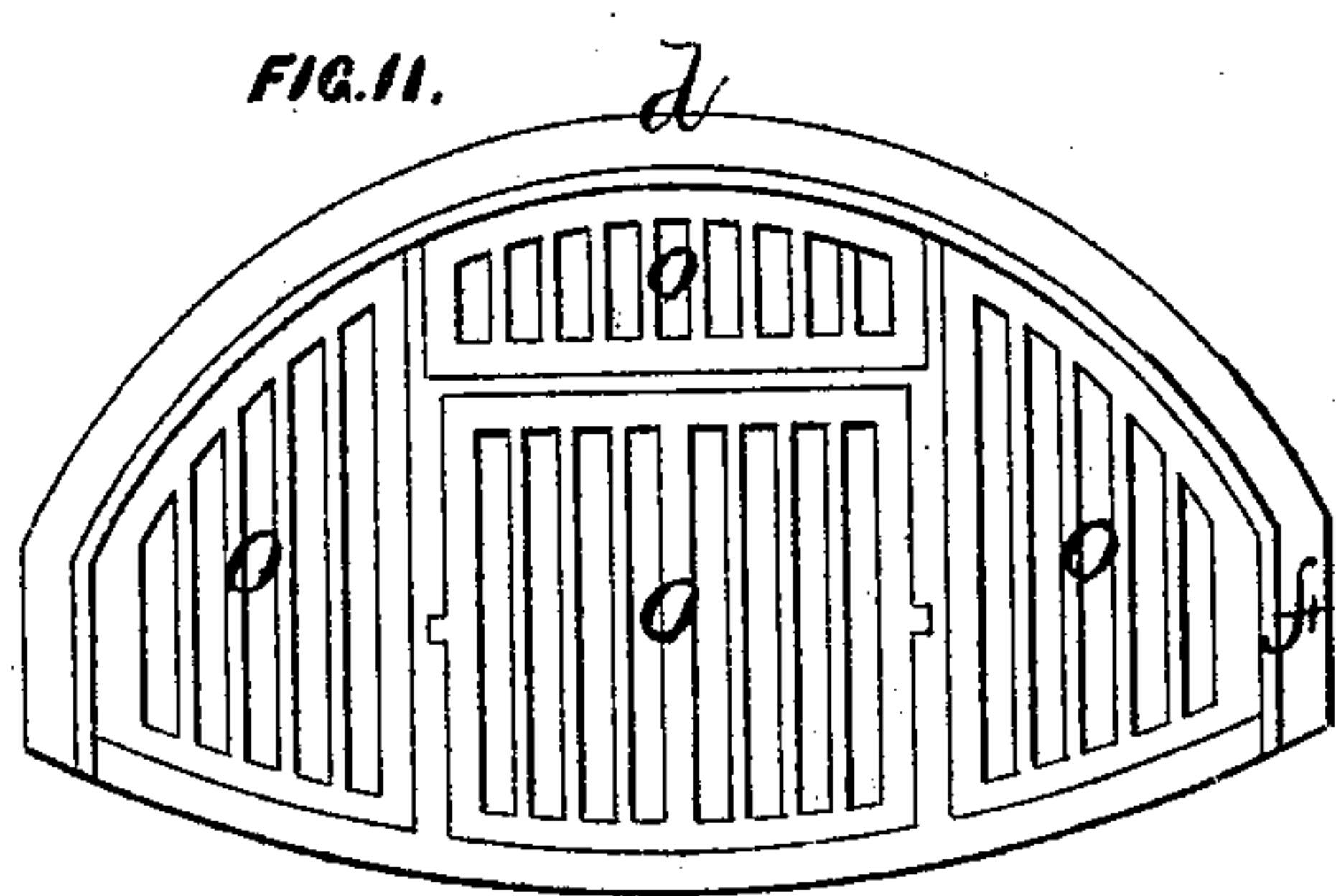
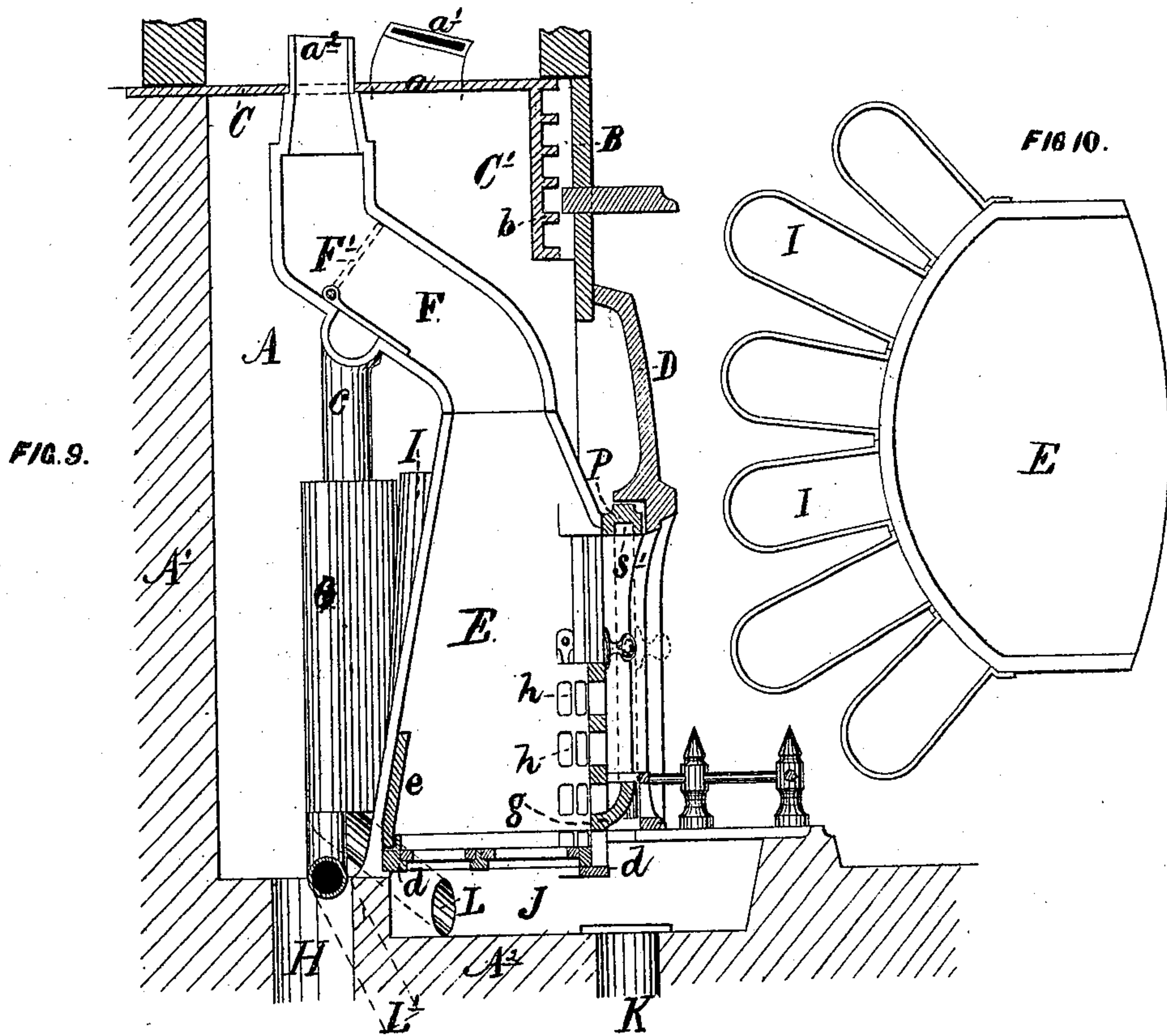


FIG. 12.

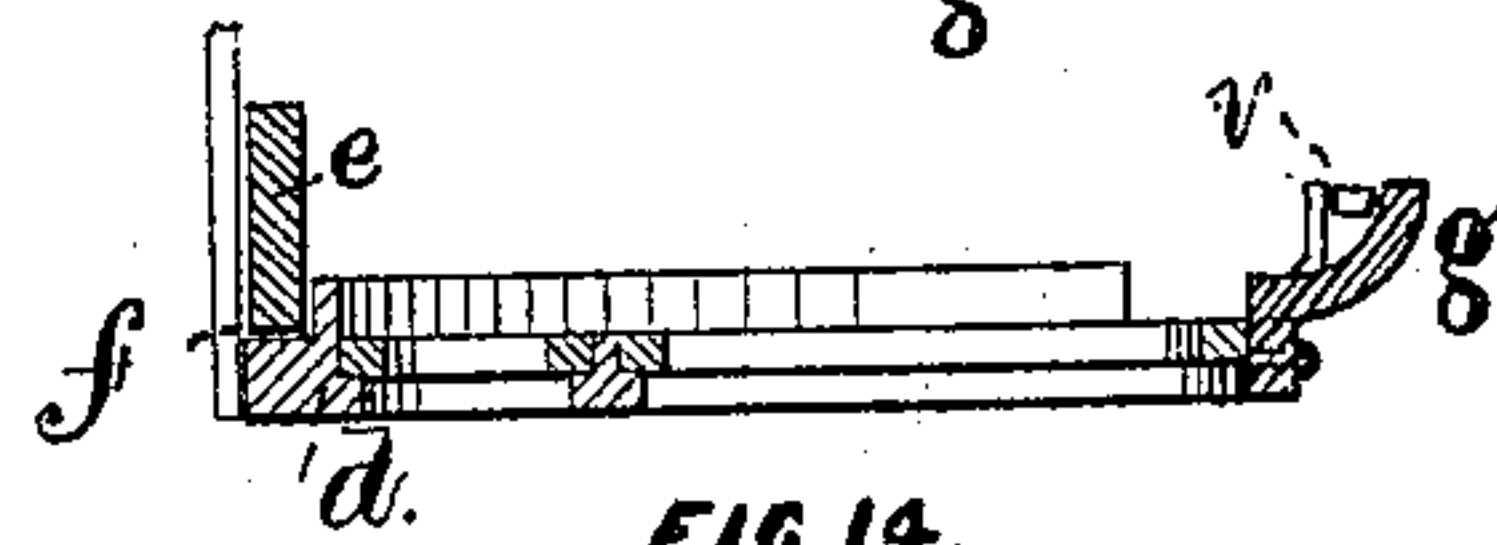


FIG. 14.

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UNITED STATES PATENT OFFICE.

ALLAN T. BENNETT, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN FIRE-PLACE HEATERS.

Specification forming part of Letters Patent No. **174,656**, dated March 14, 1876; application filed February 11, 1876.

To all whom it may concern:

Be it known that I, ALLAN T. BENNETT, of the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Open Fire-Place Heaters, of which the following is a specification:

This invention relates to that class of heaters in which the heating devices are inserted in the usual fire-place in the chimney; and it consists in adding to the ordinary grate, and in the rear of the fire-pot or chamber, suitable heat-radiating devices extending into a suitably-formed air-chamber supplied with air from below, or from any exterior source, which is therein heated, and conducted therefrom to the chamber or chambers above. It also consists in certain arrangements for covering the air-chamber, and devices for closing the front of the grate, and for preventing the escape of dust or ashes into the room—all of which will be hereinafter fully pointed out and described.

In the drawings, which form an essential part of this specification, Figure 1 is a front elevation of a fire-place in which is contained my invention. Fig. 2 is an end view of the same with a portion of the chimney and flooring removed. Fig. 3 is a rear view, showing the arrangement of the heat-radiating devices. Fig. 4 is a detached plan view of the draft-doors, pockets, and summer pieces. Fig. 5 is an elevation of one side of the same. Fig. 6 is an enlarged cross-section of one of the draft-doors. Figs. 7 and 8 are detached sectional views of a portion of the base of one of the draft-door pockets. Fig. 9 is a cross-section taken on line *xx* in Fig. 3. Fig. 10 is a detached view of a portion of the heat-radiating devices shown in Figs. 2 and 9. Fig. 11 is a detached view of the grate-frame and grates. Fig. 12 is a longitudinal section of the same. Fig. 13 is a detached view of the grate-frame and fire-brick holder. Fig. 14 is a section of the same.

The object of my invention is to construct an open fire-place heater, which shall present the appearance of an ordinary low-down-grate fire, yet be capable of heating and supplying hot air to the rooms above in a similar manner as by the use of the well-known

hot-air furnaces. It is so adapted and arranged that either hard or soft coal, or wood, may be used.

It will be understood that the same letters of reference appearing in the various figures of the drawings will locate corresponding parts.

A represents an open chamber in the chimney, similar in form to that of the fire-place in all chimneys, the place of which it takes. A^1 is the rear wall of the chimney, A^2 the foundation, and A^3 the side walls of the same, all constructed substantially in the ordinary manner. B represents the ordinary marble or slate mantel, or the face of the chimney-wall, as the case may be. C is a cap or cover made from cast metal of suitable thickness. It serves for the purpose of an air-tight cover to the chamber A, and base for the chimney proper and its flues. It has formed therein ports or openings *a a*, to which are attached suitable conducting-pipes $a^1 a^1$, by means of which the heated air is conducted from the chamber A to the rooms above. It also has another port, a^2 , through which passes the pipe which takes the smoke and products of combustion from the smoke-flue and conducts it to the flue in the chimney. This top cover or cap C on its front end is turned down at right angles, as at C' , and on its face is provided with a series of projections, *b b*. The object of this front is to provide a suitable backing against which to set the mantel, the spaces between the projections *b* receiving the mortar by means of which the mantel is held in position. The brick-work of the chimney proper, above the chamber A, is set upon the surface of the cap C, as shown plainly in Figs. 2 and 9. Thus the chamber is practically made air-tight, excepting at the openings provided for the proper exit of the heated air. D is the usual ornamental iron frame or face inserted on the front of the mantel, after the grates &c., are set into position in the chamber A.

E is the fire pot or chamber, in the base of which the grates are set. This fire-chamber is cast from metal, of suitable thickness, in the form as shown best in Fig. 9, and is set into the foundation A^2 above the ash-pit, substantially in the usual manner. Attached to

its top is the smoke-flue F, shown plainly in Figs. 2 and 9, to which, in turn, is attached the smoke-pipe a^2 , leading to a suitable flue in the chimney. Directly in the rear of the fire-pot or chamber E is placed a heat-receiving radiator, G, and a discharging heat-radiator, G'. Entry from the smoke-flue F into the radiator G is made by means of connecting-pipe c , the heat and smoke being directed therein, when desired, by means of the damper F', (see Fig. 9,) which is operated by a rod or lever, c^1 , passing through the side of the chimney-wall. The heat, smoke, and products of combustion then pass, by means of connecting-pipe c^2 , at the base of radiator G, to the radiator G', and make their exit therefrom by means of pipes c^3 in the top of radiator G', and are again inducted into the smoke-flue F above the damper F'. The connecting-pipe c^2 may have an opening at the center of its base, through which to remove any soot or ashes that may accumulate therein. It will thus be seen that all the products of combustion in the fire-chamber can at will be thrown through the two radiators G and G', or cut off therefrom by means of the damper described, thus regulating the heating capacity of the apparatus.

It is obvious that the air contained in the air-chamber A will be quickly heated by the radiation from the back of the fire pot or chamber E and the radiators G and G', and that this heated air may be drawn therefrom by any suitable conducting-pipes, $a^1 a^1 a^1$, and distributed to the rooms above, as desired. It is also evident that a supply of cold air may be inducted into the chamber A from exterior sources by means of an inlet-pipe, H, in its base.

For the purpose of increasing the heat-radiating surfaces in the chamber A I attach to the back of the fire-pot or chamber E a series of sheet-metal radiators, I, so arranged as not to interfere with the radiators G and G'. They are formed into shape, as shown distinctly in Fig. 10, and are provided with flanges by which they are bolted to the cast-iron back of the fire-pot E. Suitable lugs or flanges may also be cast on the back of the fire-pot, to which they may be attached. These radiators I are open from top to bottom, thus permitting the air to circulate freely through, as well as on all sides of them, thus increasing the heat-radiating surfaces.

In some cases it may be found desirable to dispense with the radiators G and G', (in case soft coal is used,) and to make use of the sheet-metal radiators I only, in which event they will be extended into the air-chamber A to such distance as may be found necessary, substantially in the form as shown in Fig. 10.

J is the ash-pit, cast from metal, and inserted in the base or foundation, substantially in the usual manner, as shown in the drawing. It is provided with an ash-discharging pipe, K, which may be connected with a proper receiving-vessel, located in the cellar be-

neath, or this may be omitted, and the ashes removed direct from the ash-pit. A suitable dust-flue, L, connects the ash-pit J with the radiator G, drawing any dust that may arise therein into the radiator, and thence to the smoke-flue. A dust-flue, L', also connects the ash-receiver in the cellar with the radiator G' for similar purposes. These dust-flues may be provided with dampers of ordinary construction.

In Figs. 11, 12, 13, and 14 I have shown detached views of the grates and grate-frame. d is the base grate-frame, which is fitted into the base of the fire pot or chamber resting on a suitable flange or flanges therein provided to receive it. It has a flange, f , which forms a seat, into which the fire-brick e are inserted between it (when in place) and the wall of the fire-pot E. On its front are projecting lugs g turned upwardly. These lugs serve as rests for the blower-doors when open, as will presently be fully described. They also form a rest at the base for the front grate-bars h , and also serve to close the air-openings $s s$ in the crown W, (see Fig. 1,) and may be increased in number for that purpose, thus throwing the air directly to the burning fuel underneath instead of passing over it. These lugs may be cast as a part of or bolted to the grate-frame. The various grates O O are inserted in the frame, as shown in Fig. 11, and are of the ordinary form of construction. The front grate-bars are set in channels formed in the sides of the fire-pot, but not shown in the drawings.

K, in Fig. 1, represents a combination blower and summer front, which is a permanent part or fixture in the apparatus. In Figs. 4 to 8 inclusive are shown detached views and details of the construction of the same. $m m$ are two air-tight pockets, which may be cast into the shape as shown, and then bolted to the sides of the fire-pot, extending laterally into the chamber A, as shown in Figs. 1 and 3. In the base of these pockets are inserted a series of rollers, $n n$, upon which the doors or blowers k roll when they enter the pockets. These doors, forming the blowers and summer pieces, are formed in two parts, o and o' , as shown in Fig. 6, the rear part o being of ordinary cast-iron, the front piece o' being the same, but on its front face dressed smooth and nickel-plated or otherwise ornamented. The two parts are bolted together, leaving an air-chamber between them, which keeps the front piece cool, and prevents the heat from injuring its ornamentation. P is a guide, provided with a channel, S', which is attached to the front of the fire-pot E directly in the rear of the ornamental front or frame D, which rests against and conceals it. As the two doors k of the blower are withdrawn from the pockets m they enter the groove s' , and at their base rest on the rollers v attached to the lugs g , extending up from the grate-frame d , as will be seen by referring to Fig. 14.

In lieu of inserting the rollers in the pockets they may be attached to the base of the blower-doors, but ordinarily I prefer the previously-described construction.

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

1. In combination with the cast-iron fire-back E, the grate-frame and fire-brick holder *d*, provided with flange *f* and curved projecting lugs *g*, arranged and applied substantially as and for the purposes as herein shown and set forth.

2. In combination with the fire-pot E and heat-radiators attached thereto, the metal cap C, forming an air-tight cover to the air-chamber A, provided on its top with smoke and air ports *a*¹ *a*², and on its face with ribbed projections *b b*, arranged and applied substantially as and for the purposes as herein shown and set forth.

3. In combination with the cast-iron fire-pot E, the sheet-iron radiators I I, open from their apex to their base, and secured to the back of the fire-pot by bolting to flanges cast thereon, arranged, applied, and operating substantially as herein shown and set forth.

4. In a fire-place heater, in combination with the cast-iron fire-pot E, provided with the sheet-iron radiators I I attached to its rear, as described, the cast-iron receiving and discharging radiators G and G', the whole operating in unison, as and for the purposes as herein shown and set forth.

5. The combination, in a fire-place heater, of the cast-iron fire-pot E, provided with grate-frame *d*, sheet-iron radiators I I, heat receiving and discharging radiators G and G', contained in an air-chamber, A, covered with the cap C, arranged, applied, and operating substantially as herein shown and set forth.

6. In a fire-place heater, in combination with the cast-iron fire-pot E, provided with grate-frame *d*, sheet-iron radiators I I, and radiators G G', the cast-iron pockets *m m*, and combined blower and summer front *k*, arranged, applied, and operating substantially as herein shown and set forth.

In testimony whereof I have hereunto set my hand this 8th day of February, 1876.

ALLAN T. BENNETT.

In presence of—

A. L. MUNSON,

F. H. GALPIN.