

(154.)

2 Sheets--Sheet 1.

FERDINAND E. CHATARD, Jr.

Heating Stove.

No. 122,812.

Patented Jan. 16, 1872.

Fig. 1.

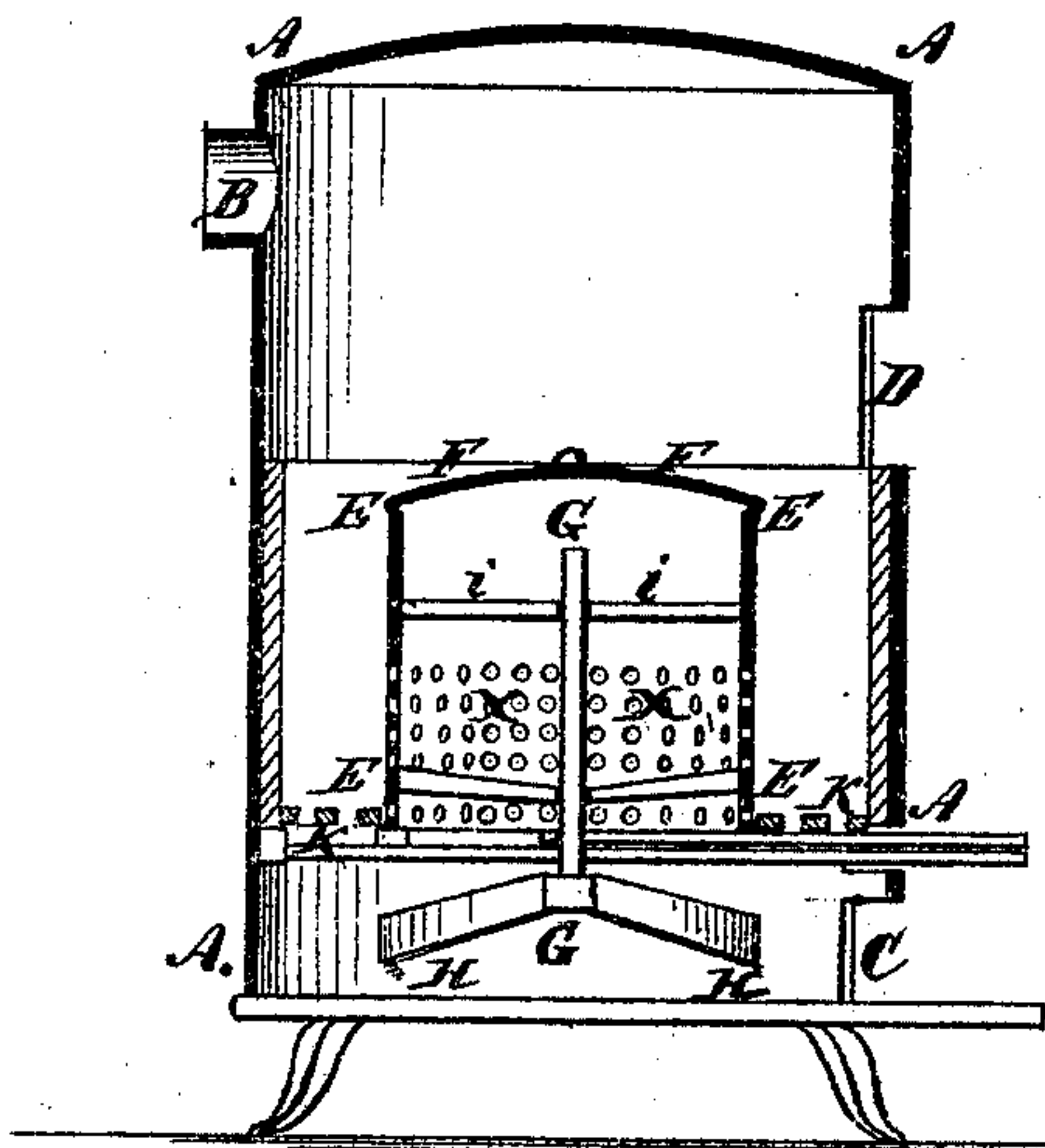


Fig. 4.

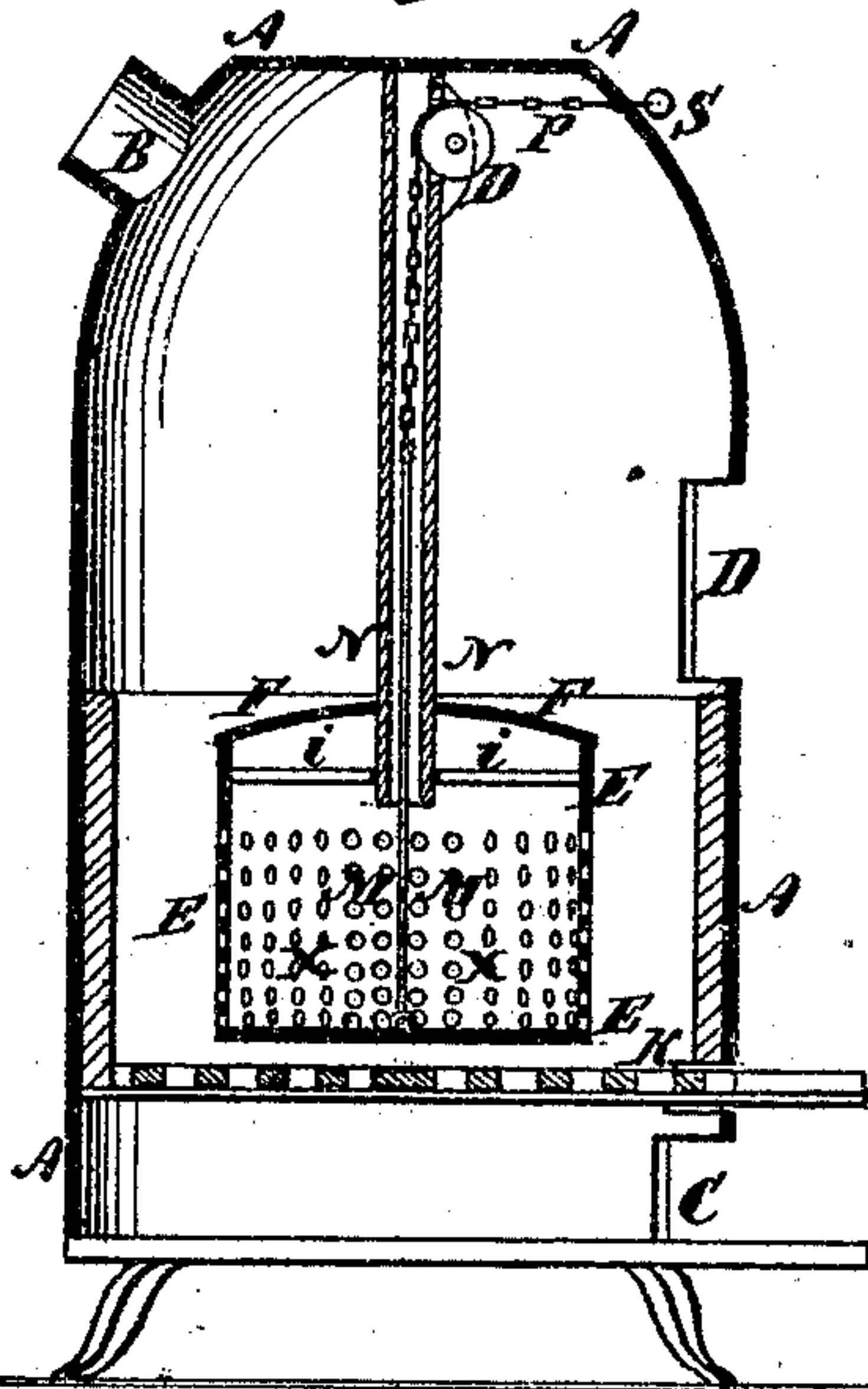


Fig. 2.

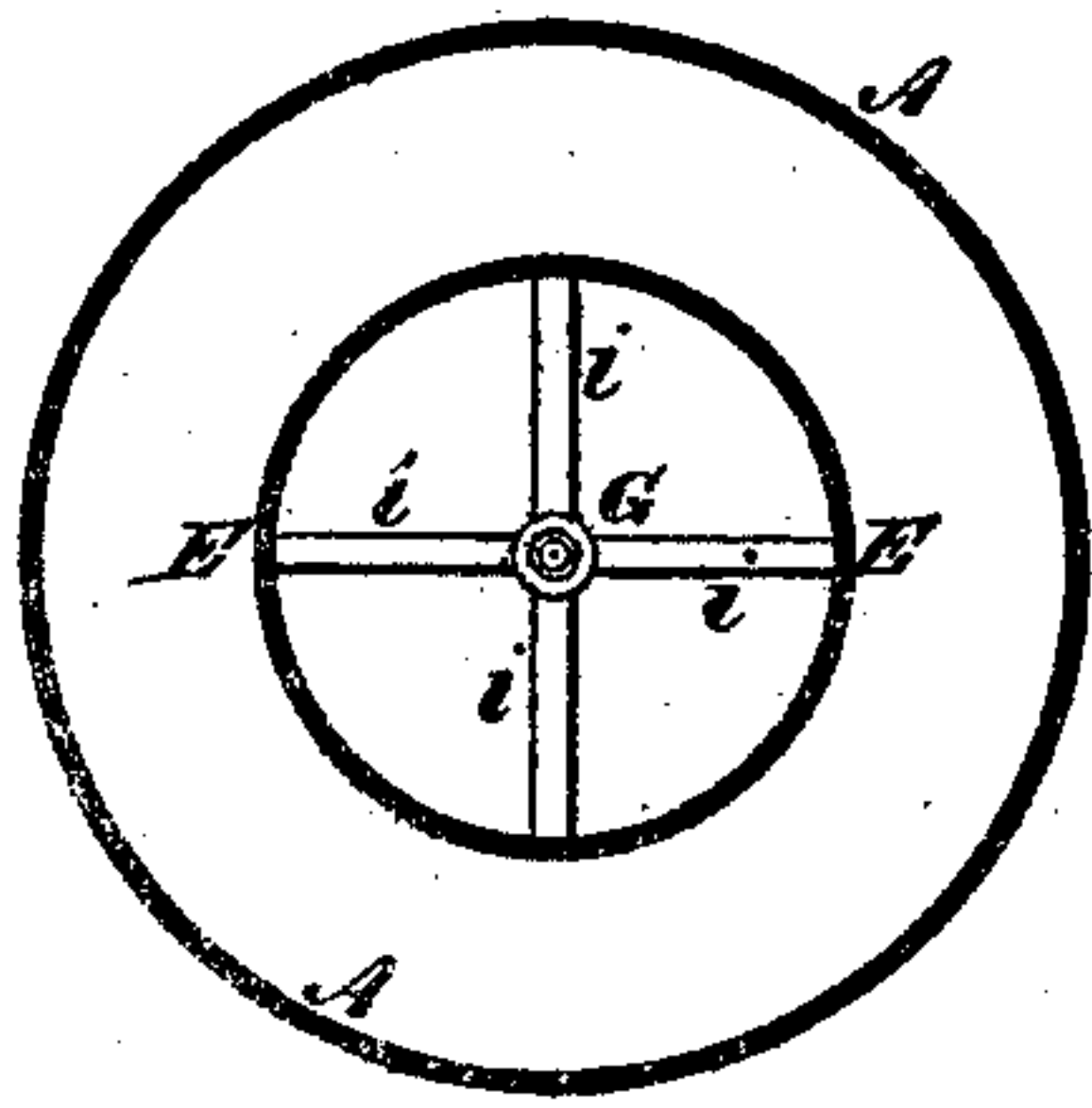
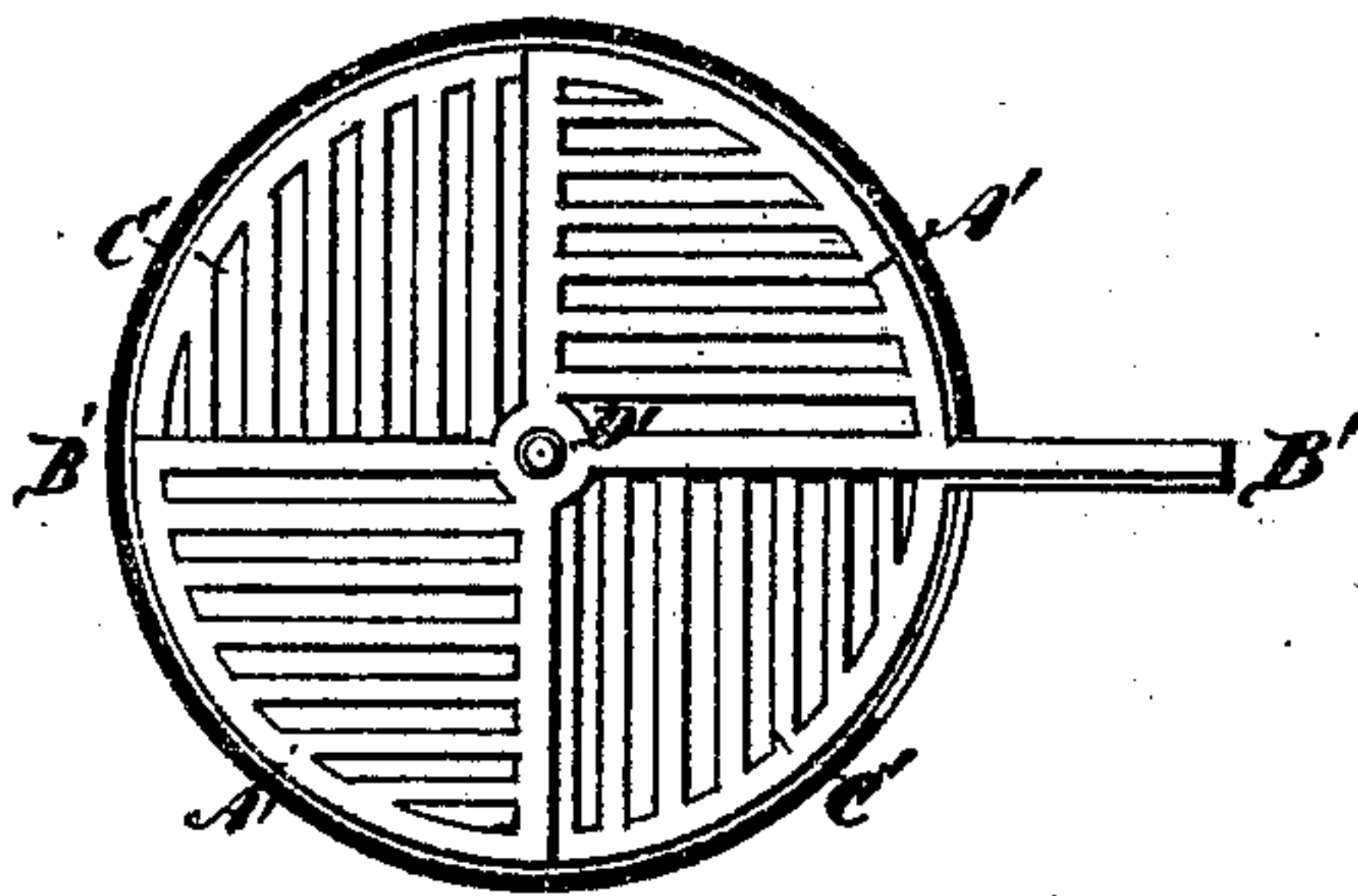


Fig. 3.



WITNESSES.

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2 Sheets--Sheet 2.

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Fig. 5.

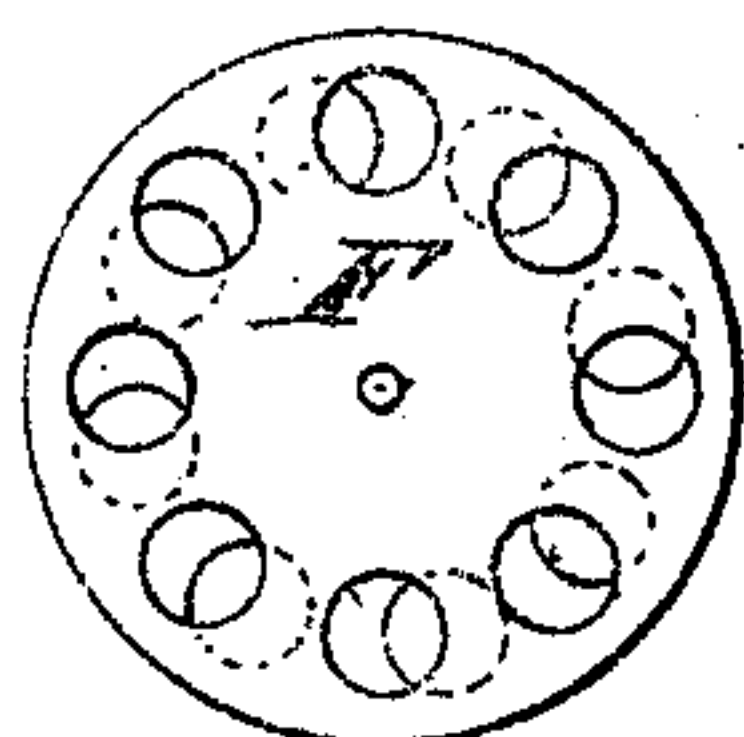


Fig. 6.

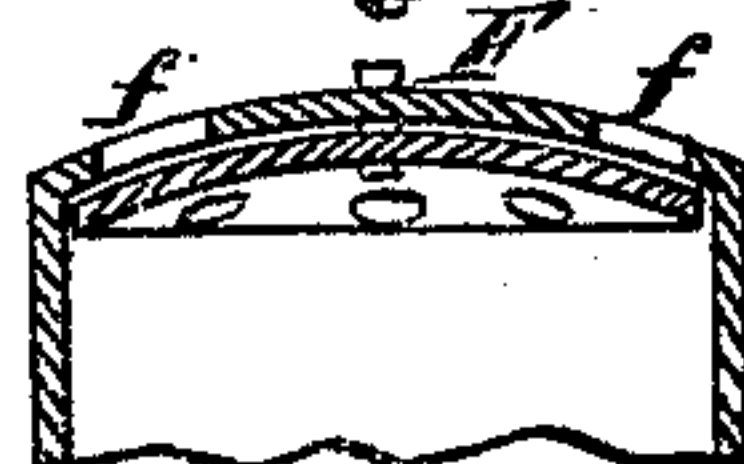


Fig. 7.

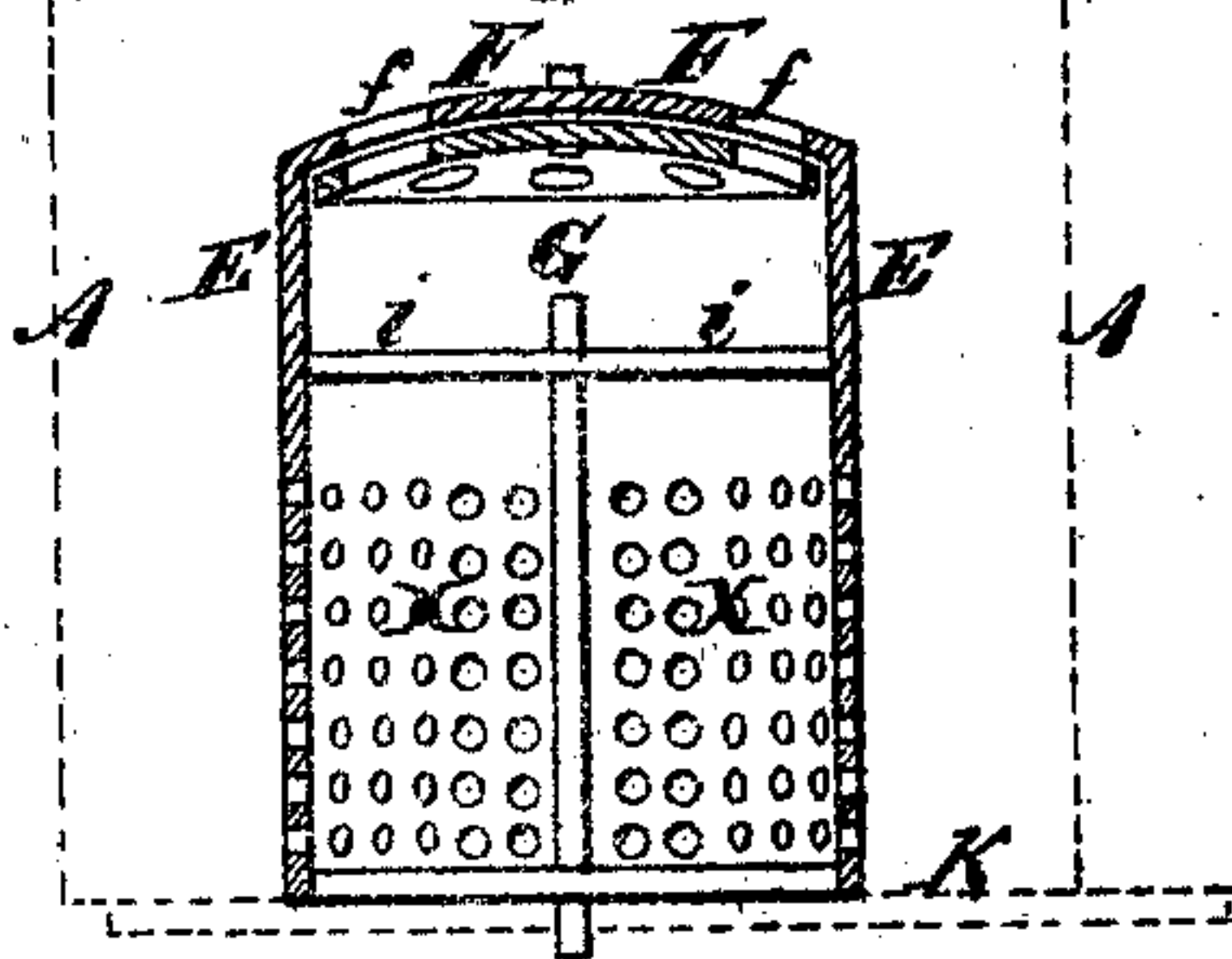


Fig. 8.

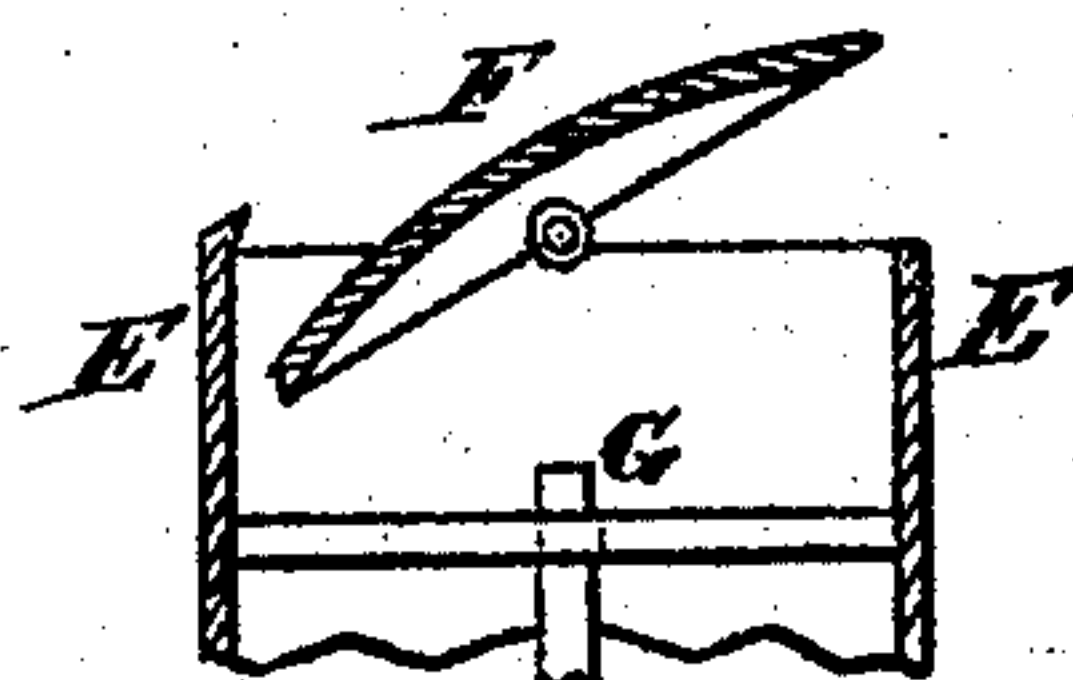


Fig. 9.

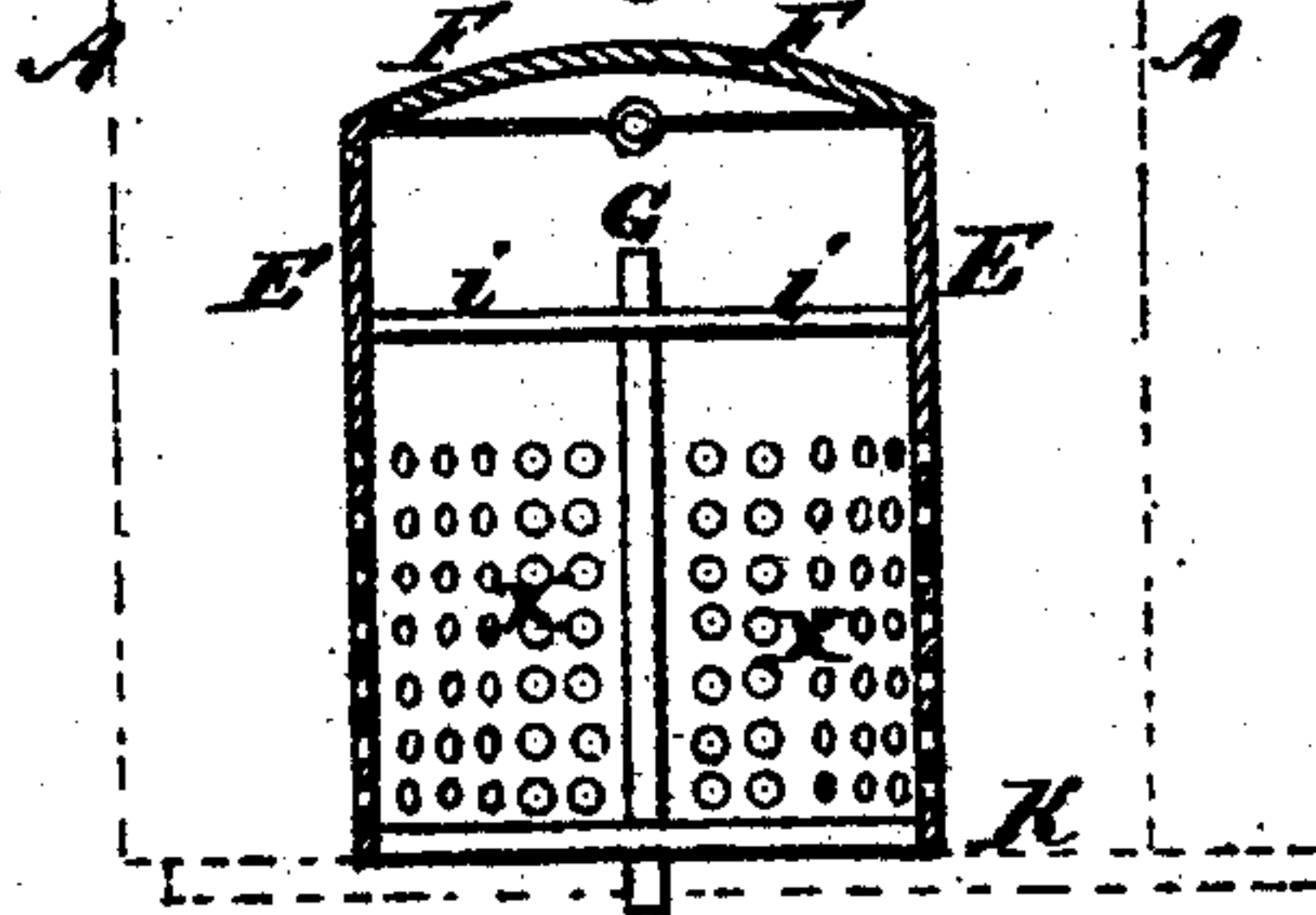


Fig. 10.

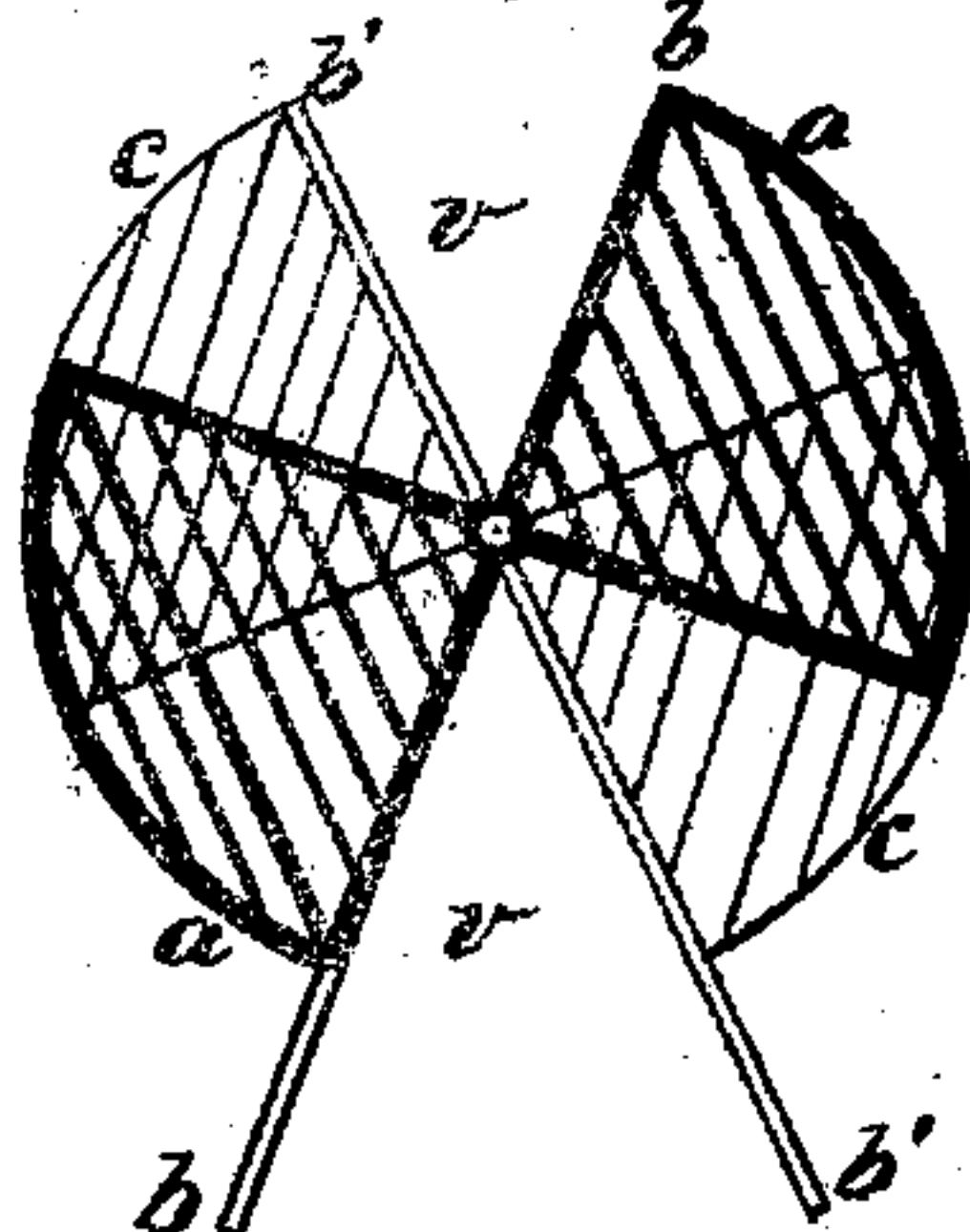
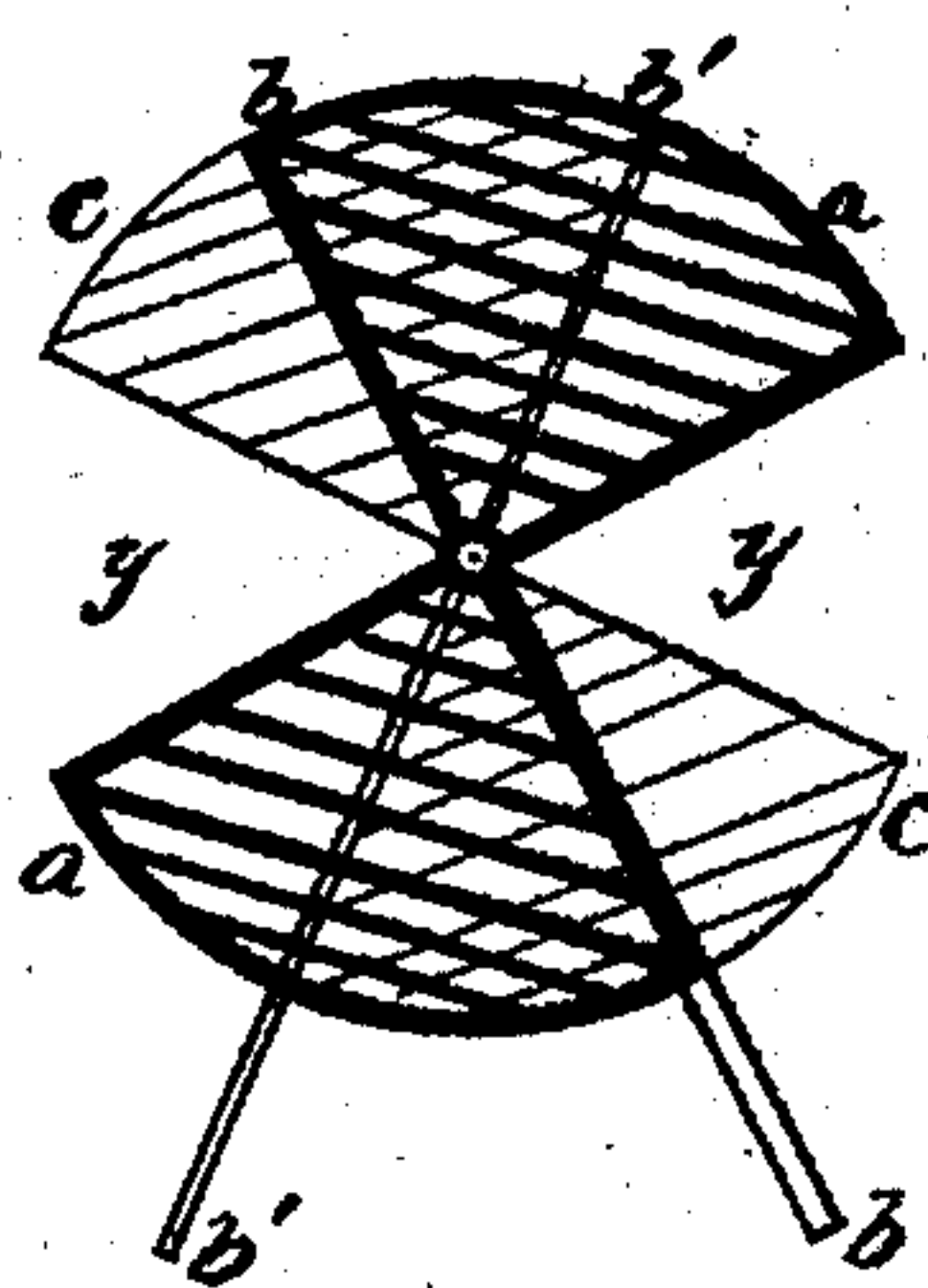


Fig. 11.



WITNESSES.

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UNITED STATES PATENT OFFICE.

FERDINAND E. CHATARD, JR., OF BALTIMORE, MARYLAND.

IMPROVEMENT IN HEATING-STOVES.

Specification forming part of Letters Patent No. 122,812, dated January 16, 1872.

I, FERDINAND E. CHATARD, Jr., of Baltimore, in the county of Baltimore and State of Maryland, have invented certain Improvements in Furnaces and Stoves employed for heating purposes, of which the following is a specification:

Nature and Objects of the Invention.

The first part of my invention relates to an arrangement of a hollow cylinder open below, but provided with a top or cap, which cap is perforated with openings capable of being closed by a suitable arrangement; or it may be made movable on trunnions or otherwise; or it may be constructed solid, but capable of being lifted up and removed from its cylindrical support. The hollow cylinder is placed within the fire-pot, and is of such less diameter than the interior of the fire-pot as to leave between the outer surface of said cylinder and the inner surface of the fire-pot a space of sufficient cubic contents in all directions as to admit of the free combustion of the fuel, the air being supplied in the usual manner through the grate-bars below and through lateral openings in the hollow cylinder. The object of this arrangement is, while furnishing air freely to the burning fuel in any part, to so regulate the draught by the perforated or movable cap that the fuel may be kept in a condition of active combustion by closing entirely the upper part of the cylinder, preventing all passage of air upward to the smoke-pipe except it has passed through the fuel. If, however, it be desired to limit the combustion it may be perfectly regulated by opening more or less the top or cap of the cylinder, either by opening the perforations, by swinging it on its bearings, or by removing it bodily; thus a larger or smaller amount of the draught passes up through the cylinder up to the smoke-pipe without passing through the fuel, affording a simple and perfect damper. In the construction of this damper the internal cylinder may be either stationary or movable. In the former case it is retained in position by a central supporting-bar or rod, which prevents any lateral motion or upsetting; or it may be attached to the grate-bars by suitable clamps. If the cylinder is to be movable, in which case it may be used with any form of grate, it is constructed to slide up and down on a central tube of

wrought iron or other material, which tube is firmly attached to the upper internal surface of the furnace or stove. Within the tube passes a rod, connected at its lower extremity with the lower part of the cylinder. At the upper end of the rod is attached a chain, which passes up within the tube, then through an opening in the side of the tube at its upper part, over a pulley to the outer side of the furnace or stove at its top, when the cylinder is drawn up. Any of the usual forms of grate-bars can be used, and cleaned in the accustomed manner. The second part of my invention relates to the form and arrangement of grate to be used in connection with a stationary central cylinder. By my arrangement the grate can be shaken and even cleaned out as thoroughly as any ordinary grate without disturbing the cylinder. This is accomplished by making the grate in two parts, turning on the central supporting-rod as a center when the fire is being shaken, but separating in four places when it is desired to clean out the fire-pot or remove the fire.

Description of Accompanying Drawing.

Figure 1 is a vertical section of a stove or furnace with my improvements, showing the internal cylinder and supports and central supporting-rod. The action is through the center of the fuel-opening. Fig. 2 is a horizontal section of fire-pot and central cylinder, showing central supporting-rod and supports from it to walls of central cylinder. Fig. 3 is a plan of a grate to be used with stationary internal cylinder. Fig. 4 is a vertical section of a furnace or stove with the internal cylinder movable, showing hollow tube, chain, and pulley. Fig. 5 is a plan of the top or cap of the cylinder, seen from below, showing perforations *ff* and the metallic plate, which acts as a valve to open or close the perforations in the cap. Figs. 6 and 7 are sections of the cylinder and cap, showing openings *ff* closed in No. 6, but open in No. 7. The metallic valve-plate is shown in section. In Fig. 7 are shown the lateral openings of the cylinder *xx* and the supporting-rods *G* and *I*. Figs. 8 and 9 represent same parts, but the cap is not perforated; it works upon trunnions, being represented open in Fig. 8. Figs. 10 and 11 represent the two positions

of the grate, Fig. 3, in the process of cleaning out, *v v* showing the antero-posterior openings when center bar *b b* is moved to the left and *b' b'* is moved to the right; *y y* showing lateral openings resulting from reversing the action of the center bars.

A A represent the walls of a furnace or stove. The part below the level of the fuel-opening *D*, being the fire-pot, is made thicker or lined with fire-brick. *B* is the smoke-pipe. *C* is the ash-box or drawer; *E E*, the walls of the internal hollow cylinder; *F F*, the movable cap or top of the same. *G* is the central supporting-rod, which is retained in position by the lateral supporting-bars *H H* below the grate, which bars are attached at their outer extremities to the walls of the ash-box, but meet in a central portion, which is perforated for the passage of the lower end of the central supporting-rod *G*. Below them the rod *G* is secured by a nut or other means. The bars *I I* pass from the walls *E E* to the center supporting-rod, thus retaining the whole in an erect position and preventing any moving or falling to the side. The movable top or cap *F F* may be constructed either without openings or with openings, and a secondary piece to slide up and close these openings; or it may be constructed to operate on trunnions, by which means the top may be opened to any desired degree. *K K* is the grate, situated in the cylinder immediately below the central cylinder. *X X* are lateral openings. In Fig. 4 *M M* is the metal rod, which is attached below to the bars *I I*, passes up within the metallic tube *N N*, and at its upper extremity is connected with the chain *P*, passing over the pulley *O*. From *O* the chain passes through the walls of the

furnace or stove, and at *S* ends in a stirrup or other suitable device by which the chain can be drawn out and the cylinder drawn up. The upper bars *I' I'*, gliding along *N N*, guide the cylinder in drawing up and letting down. When the cylinder is drawn up a grate of the usual construction can be upset and cleaned out.

In Fig. 3, *A' A'* are two or more sections of a grate cast in connection with the center bar *B' B'*. *C' C'* are two or more other sections of the grate, which are cast with a center-bar exactly similar to *B' B'*, but which cannot be seen in this plan, as it is situated immediately beneath it. When these two center-bars are exactly superposed the four sections complete the grate. At the center point *D'* an opening is cast in each bar, through which passes the center supporting-rod *G*, which thus serves as a center on which the grate revolves when shaking.

If it be desired to clean out the furnace the center-bars are moved one to the right the other to the left, by which means the sections *A'* and *C'* separate in the line of the bars. By reversing the action of the bars the separation takes place laterally.

I claim as my invention—

1. The cap or top *F F*, whether perforated or not, in connection with the cylinder *E E*, when constructed and arranged to operate substantially as shown.

2. The grate *A' B' C'*, when constructed and arranged to operate substantially as shown.

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Witnesses:

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(154)