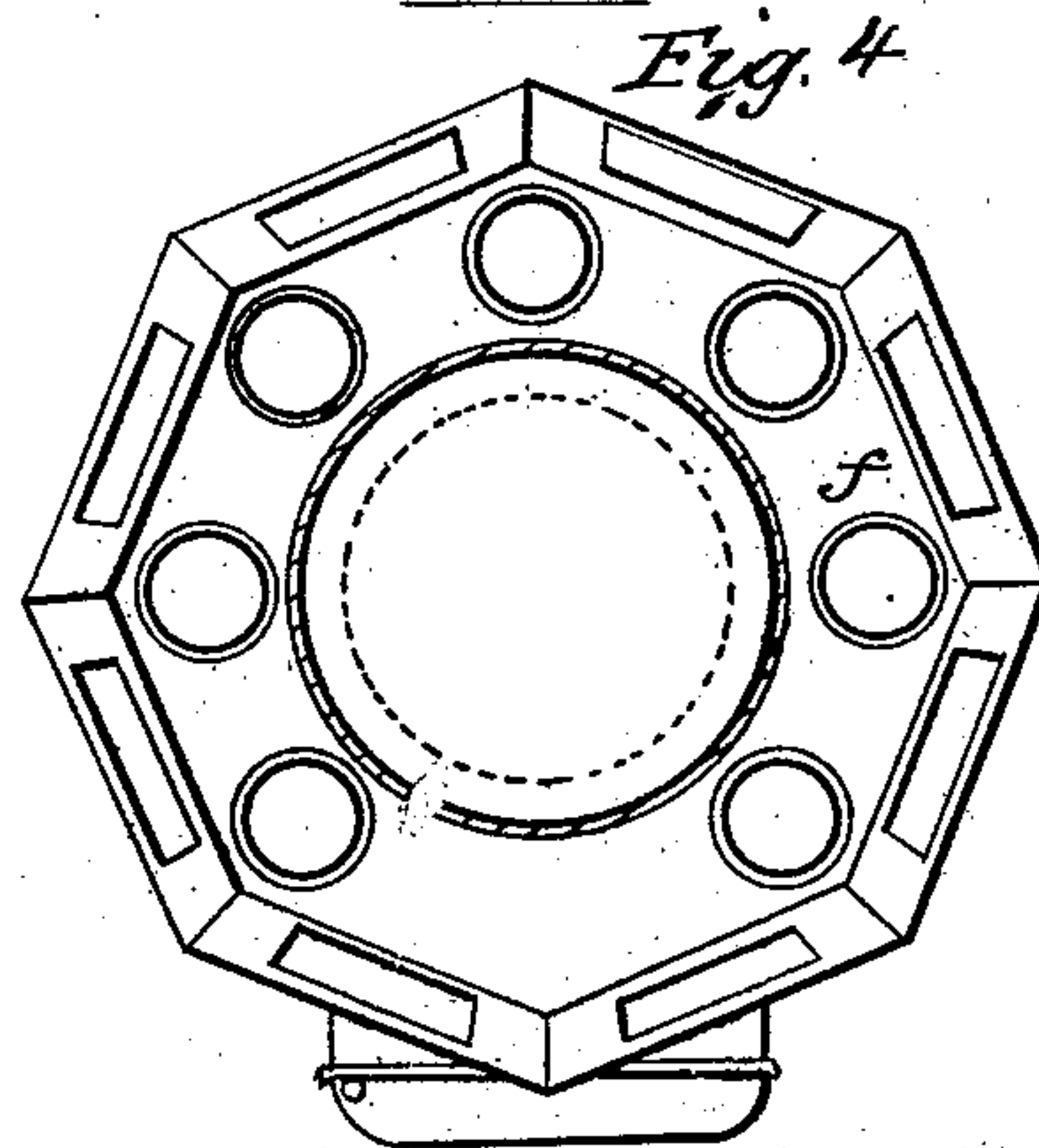
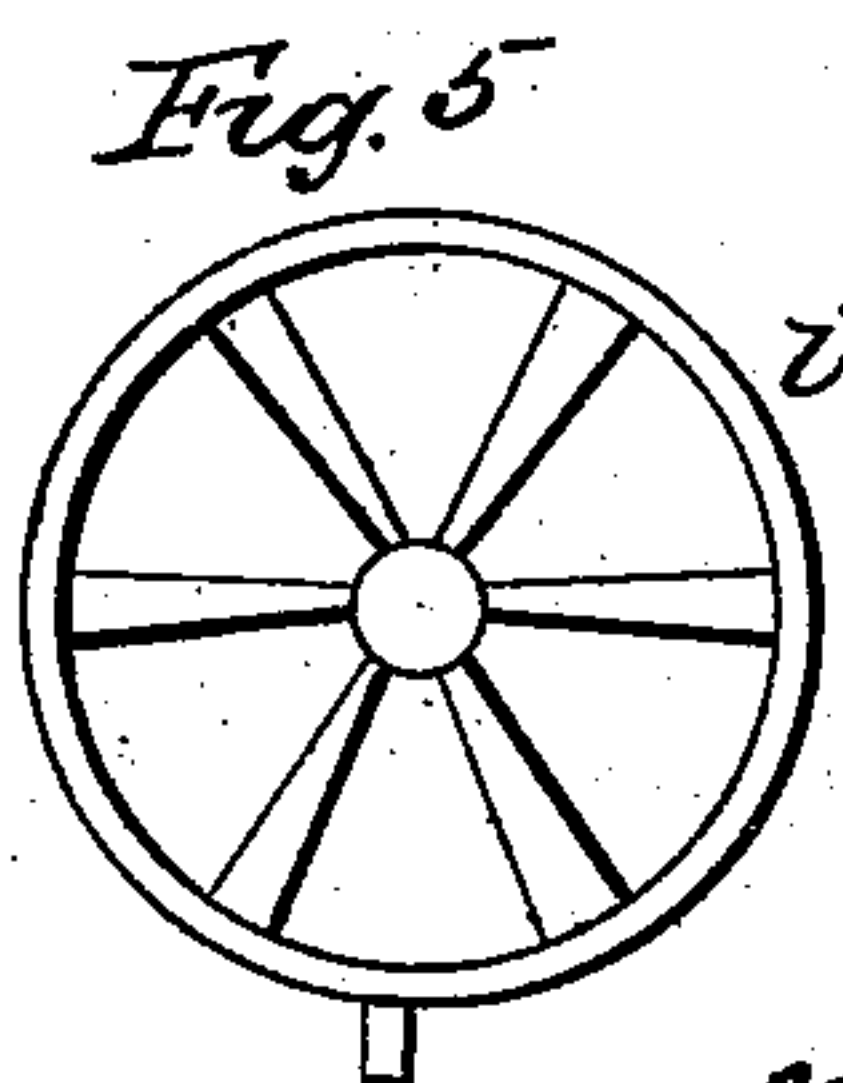
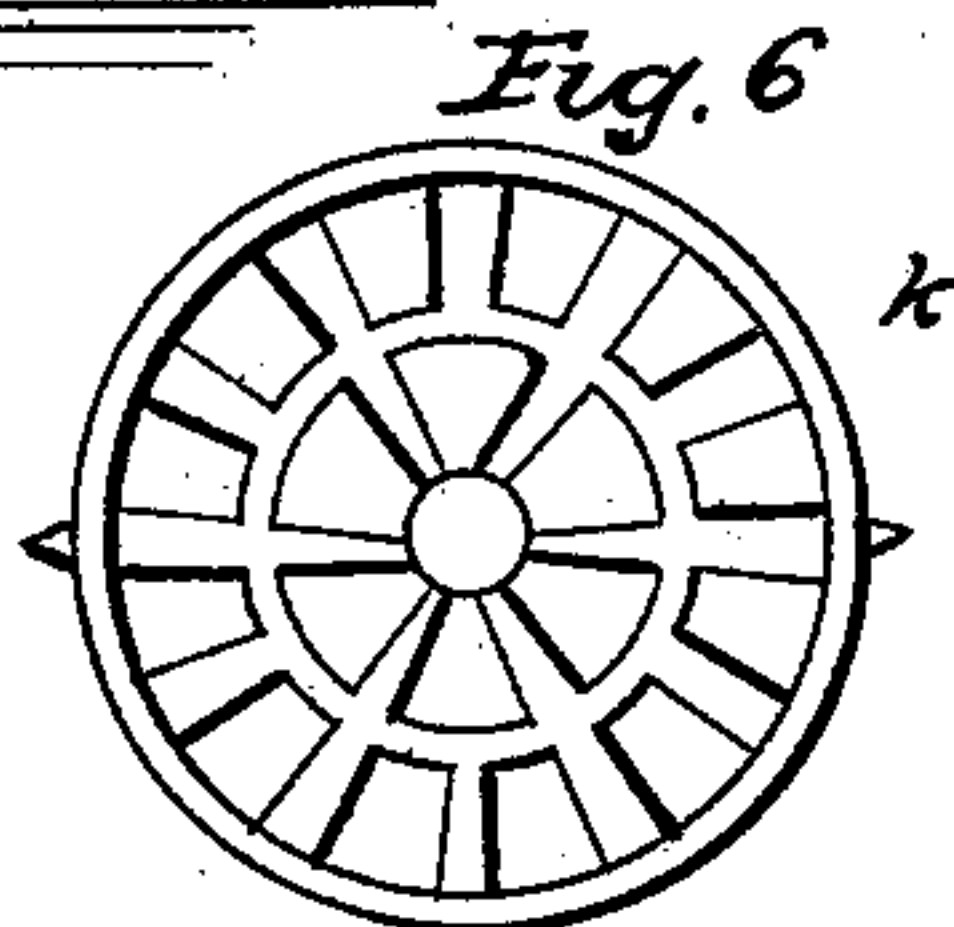
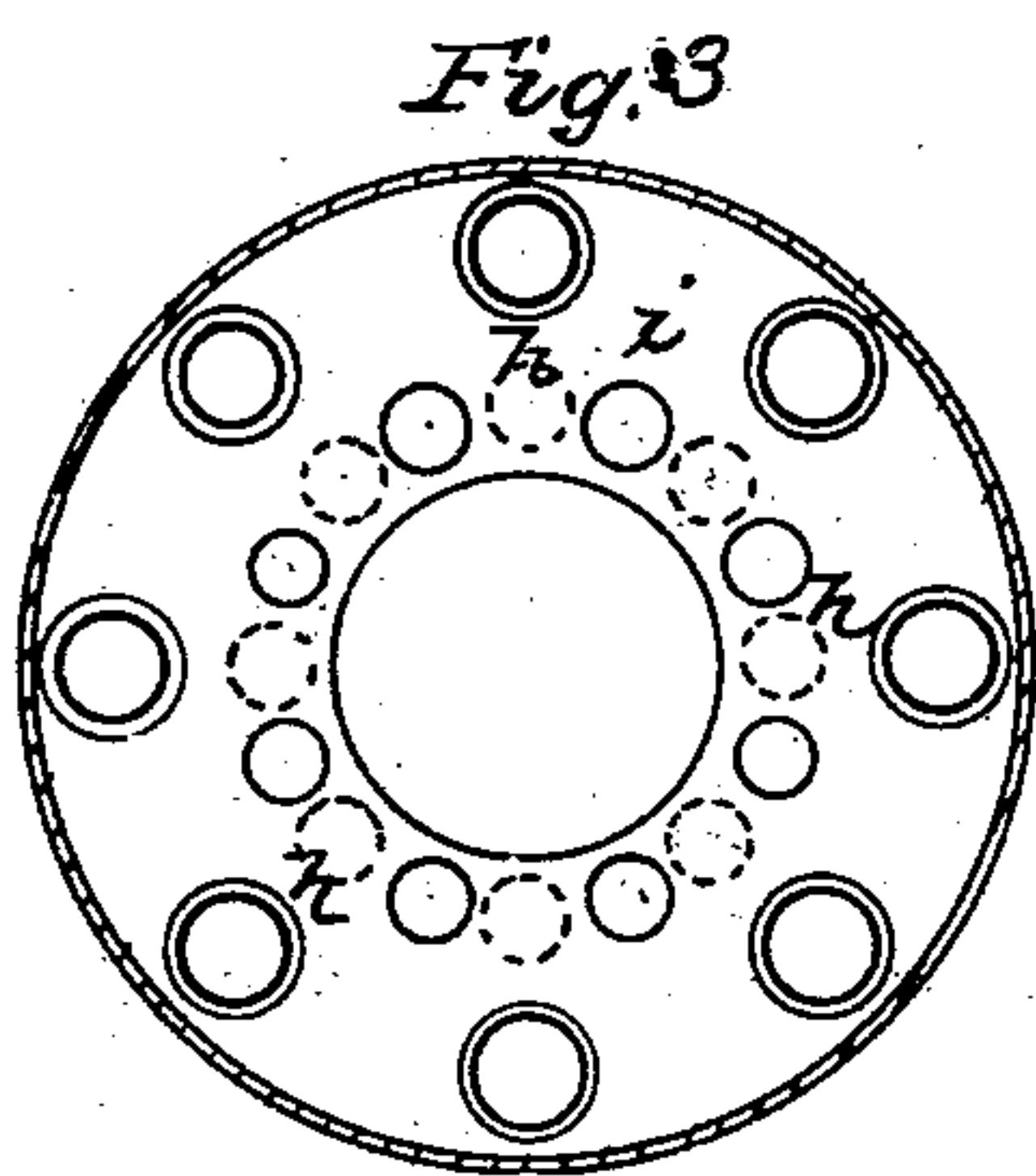
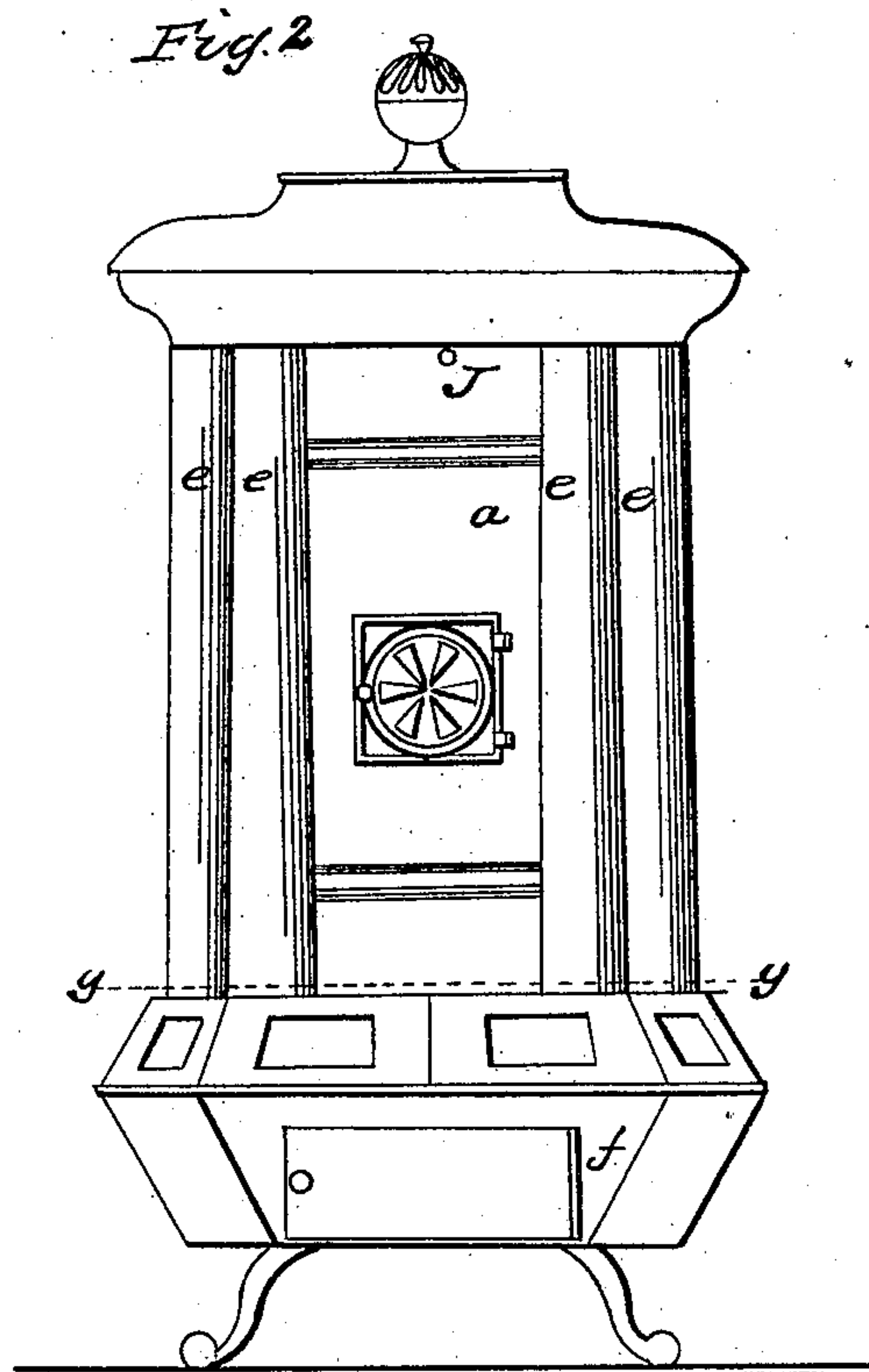
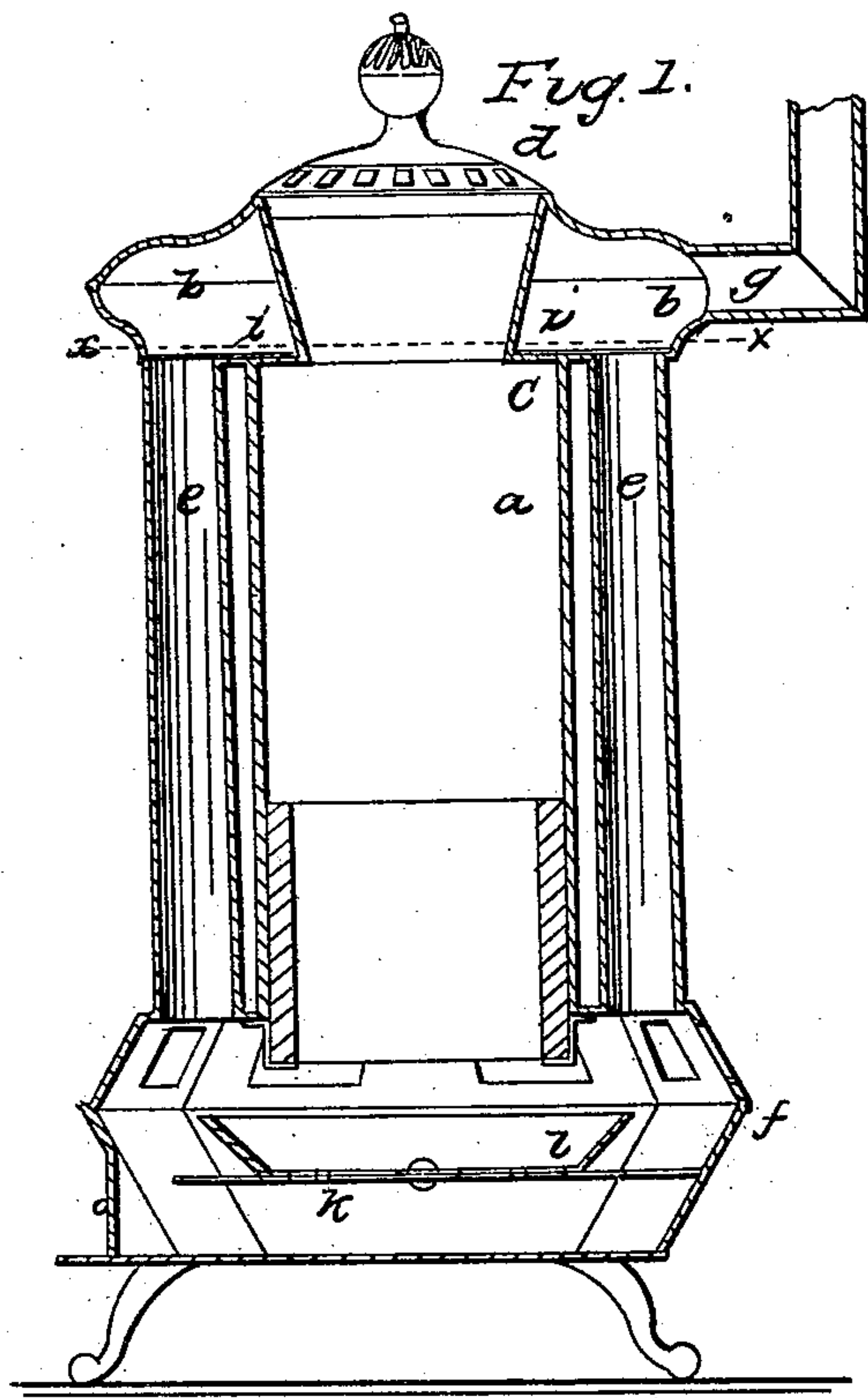


C. H. FROST.
Base Burning Stove.

No. 67,283.

Patented July 30, 1867.



witnesses
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UNITED STATES PATENT OFFICE.

CHARLES H. FROST, OF PEEKSKILL, NEW YORK.

BASE-BURNING STOVE.

Specification forming part of Letters Patent No. 67,283, dated July 30, 1867.

To all whom it may concern:

Be it known that I, CHARLES H. FROST, of Peekskill, in the county of Westchester, in the State of New York, have invented a new and useful Improvement in Base-Burning Stoves; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which drawing—

Figure 1 is a vertical central section of a stove made according to my invention. Fig. 2 is an elevation. Fig. 3 is a horizontal section in the plane of the line *x x*, showing a plan of the register-plate *i*. Fig. 4 is a horizontal section of the stove in the plane of the line *y y*. Figs. 5 and 6 are plans of the top and bottom sections of the horizontal portion of the grate.

Similar letters of reference indicate corresponding parts.

My invention relates to the class of stoves known as "base-burners."

The letter *a* designates a central cylinder, the lower part of which is lined with a wall of fire-brick, or other suitable material which will resist destruction by fire. The fire-brick wall is placed around the inner side of said cylinder, and is held in place by angle-irons, whose upper ends can be fastened to the lower edge of the cylinder, or to any other convenient part of the stove, their lower ends being so shaped that a lip or flange extends beneath the wall of the fire-brick. This device for supporting the fire-brick is shown in Fig. 1 in outline; but it forms no part of my invention, and any other device preferred by the maker may be adopted instead thereof.

The upper part of cylinder *a* extends past or through a flue-passage, *b*, and its top is closed by a movable cover, *d*, which contains a register—that is to say, a series of openings that can be shut at pleasure by a sliding ring, for the purpose of admitting air to the fuel in the stove. That part of the cylinder which passes or is surrounded by the flue-passage *b* is made to taper from its top downward to the place where it meets the bottom plate *c* of the said flue-passage. The cylinder *a* widens out below that place, so that the inner edge of said

flue-passage (which, in this example, is annular) projects a little distance over the cylinder toward its center at all points of its circumference. The bottom plate of the flue-passage *c* is perforated to receive the pipes of ascending flues *e*, which rise from the top of the base *f*, being arranged in circular order outside of the cylinder, as shown in the drawing. The lower ends of the flue-pipes *e* open into the top of the base *f*, and take the products of combustion from said base and discharge them into the flue-passage *b*, from whence they go to the exit-flue *g*. The bottom of said flue-passage *b* has, within the circle of the flue-pipes *e*, a series of perforations, *h*, which form so many openings between said flue-passage and cylinder *a*. The perforations *h*, and also the upper ends of the flue-pipes *e*, are closed in alternation by means of a perforated annular plate or register, *i*, placed over the bottom *c* of said flue-passage, and so arranged that it can be revolved by means of a handle, *j*, which projects downward from said register through an elongated slot made in the bottom *c*. The perforations of register *i* are arranged in the same circular lines with the flue-pipes *e* and openings *h*, and are further arranged in such an order that the solid parts of the register cover the openings *h* at the times when the perforations near its outer rim coincide with the flue-pipes *e*, and vice versa, whereby communication between the base *f* and the flue-passage *b* is closed during the time direct communication is established between the cylinder *a* and said flue-passage, such direct communication being closed when the register is so placed as to uncover the flue-pipes *e*. The interior of the base *f* forms a single chamber, in which is suspended, by means of bars or brackets or other convenient devices, a grate, *o*, whose sides flare outward a little distance beyond the line of the inner circumference of cylinder *a*, as shown in Fig. 1. The bottom of the grate, or its horizontal portion, is made in horizontal sections, (shown in detail in Figs. 5 and 6,) said sections being laid one upon another, and connected at their centers in such a manner as to allow them to be moved upon their axes independently of each other. When they are so connected and placed in the stove they form a combined body, which is sup-

ported upon or from the fixed sides of the grate, or in any other manner preferred by the maker. In this example I have provided for their support upon the lower edge of the fixed sides of the grate by means of projecting lugs placed on opposite sides of the lower horizontal section *k* of the grate, a little distance at one side of its diameter, which lugs rest in socket-bearings provided in said fixed sides. If preferred, a bar extending across beneath said section may be substituted for said lugs.

The upper section *l* is laid upon the lower one, their centers being connected in any convenient manner, so that the former can be revolved while the lower one remains unmoved, the said upper section having on its front edge a socket, *m*, which receives a shaking-bar, that is inserted through the door of the base *f*, or through a perforation in the base. The extent of movement of the upper section is determined by a pin which projects downward from one of its radial bars, and comes against the slotted adjacent bars *n n* of the lower section. When the upper section has been moved up to either the right or left slotted bars *n n*, its bars will coincide with and cover the same number of radial bars of the lower section, so that the two sections then form, in effect, one horizontal grate-surface. When it is desired to clean the grate of ashes, the upper section is vibrated or turned upon its center from right to left and back again as often as may be necessary to shake out or remove the ashes, the bars of the sections operating like shears to cut in two or break clinkers which may be caught between adjacent bars. When the grate is to be dumped, both sections are turned down together upon the lugs or journals of the lower section.

If preferred, the lower section can be made capable of vibration from left to right, and vice versa, instead of the upper one, in which case the lugs or journals on which they turn to be dumped are placed on the edges of the upper section. The same principle of construction can be used in the fixed or inclined side bars of the grate.

The cylinder and grate are independent of each other, the grate being isolated or separated from the bottom of the cylinder or its lining, as shown in Fig. 1.

The flaring sides of the grate can be made in the form of upright bars, connected at their upper ends, or disconnected, as may be preferred; and, if desired, said bars can be continued up to the bottom of the cylinder, provided said bars are not brought too near to each other, it being desirable that the sides of the incandescent fuel be left uncovered as much as possible.

The flaring sides of the grate prevent the fuel from falling over its edge; and in order to increase the tendency of the fuel to crowd toward the center of the grate, the bottom of the grate may be made concave, if desired.

The base *f* is made, in this example, of polyg-

onal form, each side being made with a projecting angle, the upper side of which is provided with openings for windows of mica or other suitable transparent material, so as to enable the fire to be seen by persons surrounding the stove. The lower sides of the projecting angles of the base, inclining inwardly toward the bottom of the stove, will radiate heat downward toward the floor, so that those who sit around the stove may warm their feet without raising them from the floor toward the higher parts of the base.

The base *f* constitutes the ash-chamber of the stove, and is also part of the fire-chamber, the fuel being burned partly in it and partly in cylinder *a*. When the grate is shaken the ashes fall upon the bottom of the said ash-chamber or base *f*, whence they are removed through a doorway provided in said base.

The fuel is supplied through the top of the cylinder by taking off the cover; or, if preferred, a door, as shown in outline in Fig. 2, may be placed in the wall of the cylinder, and a register for supplying air for combustion be made in said door. If such a door is preferred, the register in the cover may be omitted. Either of these plans may be adopted without departing from the principle of my invention, provided that a register for supplying air to the fire be provided above the body of the fuel, or at any point above the bottom of the cylinder where the fuel is burned.

When a fire is to be kindled the register-plate *i* is so turned as to open the perforations *h* and shut the flue-pipes *e*, at the same time opening the ash-door, or a register therein, to allow air to come below the grate. The products of combustion will, in that case, go up through cylinder *a*, thence through the perforations *h* into the flue-passage *b*, and thence to the exit-pipe. After the fire has been kindled the register-plate *i* is turned so as to close the perforations *h* and open the pipes *e*. The ash-door and its register are also closed, and the register in the cover of the stove, or in the door at the side of the cylinder, is opened, whereby the course of the draft is turned, so that it descends through cylinder *a*, penetrates the mass of fuel at its top, and, after going through the mass, is discharged into the vacant space of the base or ash-chamber *f*, which consequently constitutes a combustion-chamber. The products of combustion are taken from the base *f* by the flue-pipes *e* and discharged into the flue-passage *b*, whence they pass into the exit-flue. The fuel, after the fire is kindled, is supplied in such quantity as to last for many hours, fresh fuel being constantly added as the lower part of the mass wastes away.

In the operation of my stove, when the draft is established downward through cylinder *a*, as herein set forth, the gases generated from the fuel are carried downward through the mass or body thereof, and are turned when passing through the incandescent portions, so

that the combustible gases are not lost by escaping to the chimney unconsumed.

What I claim as new, and desire to secure by Letters Patent, is—

So arranging the cylinder *a* and the direct and indirect draft openings and passages that the said cylinder becomes an ascending channel for the escape of the products of combus-

tion when the draft is direct, and a descending channel for the supply of air to the fire when the draft is indirect, substantially as set forth.

CHAS. H. FROST.

Witnesses:

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J. VAN SANTVOORD.