

Z. HUNT.
Magazine Stove.

No. 43,155.

Patented June 14, 1864.

Fig. 4.

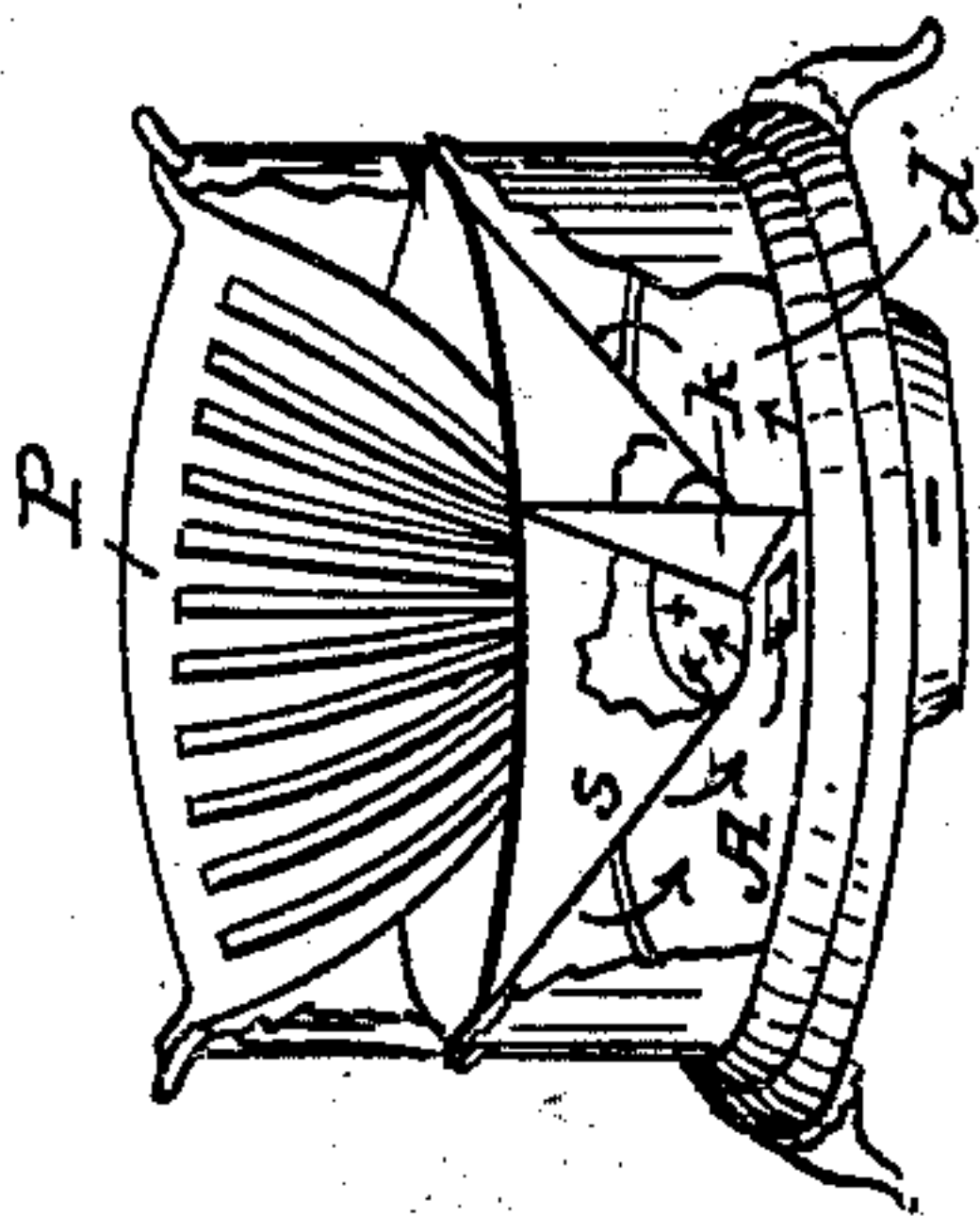


Fig. 3.

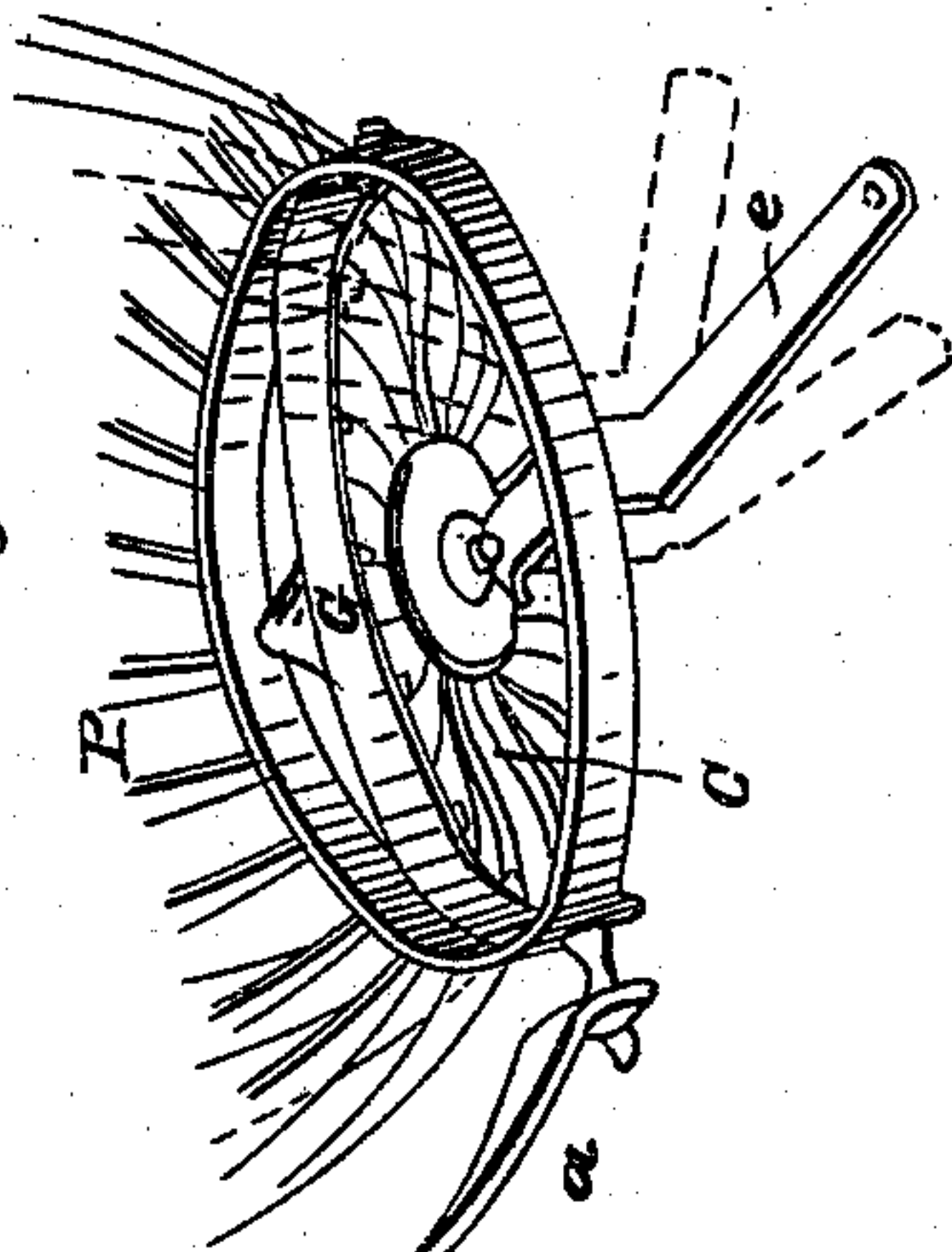


Fig. 2.

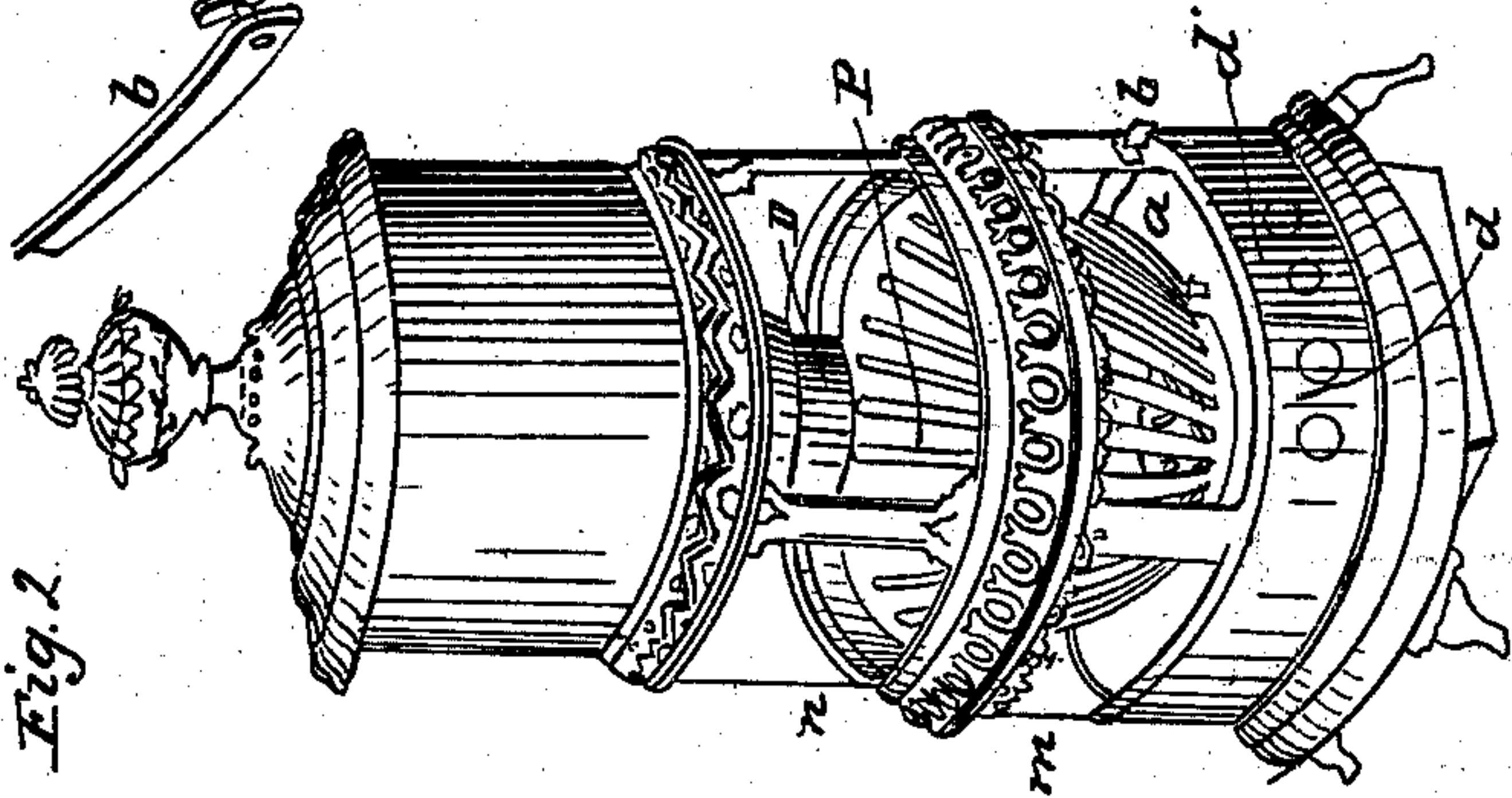
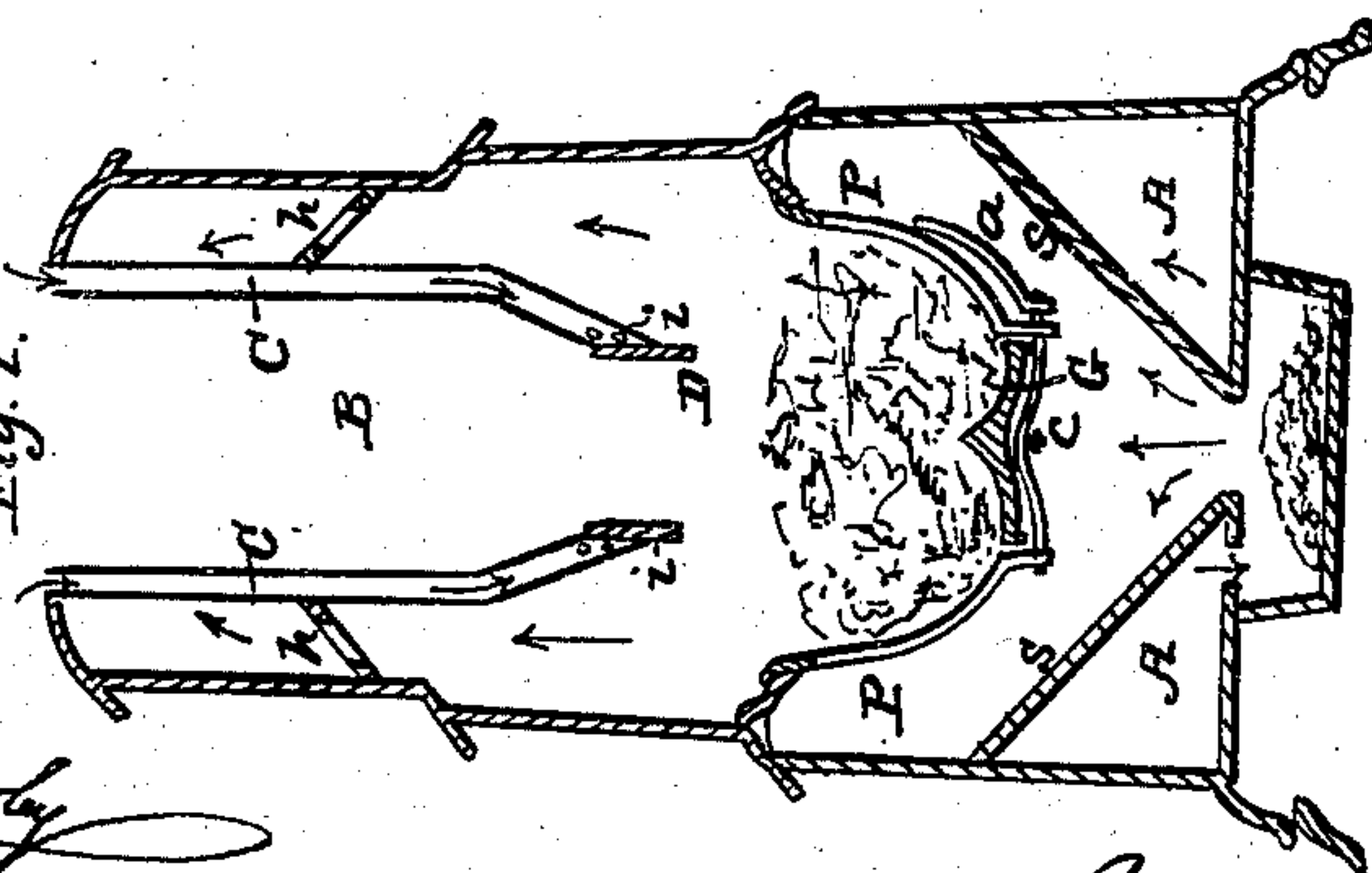


Fig. 1.



Witnesses:

Alfred Rowley
William Starn

Inventor:

Zebulon Hunt.

UNITED STATES PATENT OFFICE.

ZEBULON HUNT, OF HUDSON, ASSIGNOR TO HIMSELF AND WILLIAM J. MILLER, OF GREENPORT, NEW YORK.

IMPROVEMENT IN RESERVOIR-STOVES.

Specification forming part of Letters Patent No. 43,155, dated June 14, 1864.

To all whom it may concern:

Be it known that I, ZEBULON HUNT, of the city of Hudson, in the county of Columbia and State of New York, have invented new and useful Improvements in the Construction of a Vertical-Draft Coal-Burning Stove; and I do hereby declare that the following is a clear, full, and exact description of the construction and operation of the same, reference being had to the annexed drawings and letters of reference marked thereon, making part of this specification, in which—

Figure 1 is a vertical section of the whole stove. Fig. 2 is a perspective view of the same. Fig. 3 is a perspective view of the grate tipping, with its accompanying devices for shaking and dumping. Fig. 4 is a view of the grate G in its proper or horizontal position, showing its pins or cogs on the under side of its rim, so arranged that any two of them will embrace the shake-bar *e*. Fig. 5 is a view of the interior of chamber A, showing the truncated funnel or circular hopper *s s*, the partition *k*, which divides the hot-air from the cold-air draft, the square aperture in bottom of chamber A (which is also the bottom of the stove) through which the warm-air current descends into the ash-pit, and also the circular open bottom of funnel or hopper *s s*, through which it ascends to the grate and fire-pot. The darts indicate the course of this warm air current or draft.

Letter A is the bottom draft-chamber; B, coal-reservoir; C, air chamber surrounding the reservoir; D, cast-iron ring to protect chamber; *a*, curved crank attached to grate-shaft; *b*, handle to operate this crank; *d*, left-hand direct and cold-air draft; *d'*, right-hand circuitous and hot-air draft; *e*, shaker; *c*, grate-pin or center; *h h*, roof to fire-chamber; *i i i*, apertures for passage of atmospheric air into air-chamber C and out of the same into the fire-chamber; *m m*, two tiers of mica plates. G is the bottom grate, (partly tipped in Fig. 3,) exhibiting the pins or projections on the under side of rim; P, fire-pot.

My improvements consist in constructing the fire-pot of curved slats or bars so as to exhibit, with the aid of a double tier of mica plates, as much of the fire, or nearly so, as an open grate, and in combining therewith the funnel shaped hopper and chamber A for heat-

ing the air which enters the bottom draft before it comes in contact with the fire, whereby its brightness is preserved; in so arranging and constructing the bottom grate with its accompanying devices (see Fig. 3) that it may be both rotated and tipped; in admitting atmospheric air through small apertures in the top of the stove into a chamber surrounding the coal-reservoir, and thence through similar apertures in the bottom into the fire-chamber, so as to consume the gases arising from the burning coal; and, also, in supplying the lower extremity of the reservoir with a cast-iron ring as a protector, which is movable and easily replaced with another when required.

I construct my stove in cylindrical form similar to other coal-burners, but I provide it with two stories or tiers of transparent mica-plates, so that the fire may be seen almost as much as if in an open grate. (See Fig. 2.) The fire-pot P is made of cast-iron bars or strips arranged either in funnel or basket form, (see Fig. 2,) bound together by a rim of cast-iron at top, all converging or terminating in a band or rim at bottom, the whole being cast together. It is supported by means of a rim or flange at top resting on a corresponding shoulder or projection from the inside of that section of the stove. (See Fig. 1.) This rim is inclined, so that coal and ashes may not lodge there. Within the bottom band or rim of the fire-pot is the grate G. The bars of this grate all radiate from an elevated conical center to the rim. This rim is provided with notches or projections on its under side in or between which the shake-bar *e* operates. The inner end of this bar is forked or slotted, so as to embrace the center pin, *c*, of the grate as a fulcrum, while it allows the grate to be tipped and its contents discharged into the ash-pit by means of the crank *a* and handle *b*, which also serve by the help of a catch or a notch to hold the grate in its place. Both these devices are within the stove and comparatively out of sight, but easily operated outside. Near the bottom, and separating it from the fire, is a truncated funnel or circular hopper, *s s*, which also forms the top to the bottom warm-air draft-chamber. This conveys all the coal and ashes that fall through the fire-pot into the ash-pit. The bottom draft is divided into direct or cold air and circuitous or

warm air. The former is employed to kindle the fire, and the latter to keep it steady and bright. The heated air coming in contact with the bright fire in furnace and grate does not deaden or diminish its brightness.

The cast-iron ring D at bottom of reservoir B is removable and can be replaced with another whenever required. It is provided with a flange around its upper end, resting on a corresponding one on the inside of the lower extremity of the coal-reservoir. The chamber C, surrounding reservoir B, is designed to admit atmospheric air into the fire-chamber, so that becoming heated it may combine with and consume the gases arising from the burning coal. Small holes in the top of the stove *i i i* serve to admit the air into the chamber C, and similar holes through the bottom of this chamber admit it after becoming heated into the fire chamber. Doors are placed in front in the second story for supplying coal when but little fire is required, and also in the base or first story for more convenient access to the grate. An ash-pan is placed beneath to receive the ashes falling from the grate and furnace, and which also serves, when partly drawn, as a direct draft. The course of the draft is indicated by the darts on Fig. 1.

The cold air entering at the left-hand bottom draft, *d*, passes down through an aperture in the bottom into the ash-pan, and thence directly to the grate and fire-pot. This kindles the fire. When it enters the right-hand bottom draft, *d'*, the left being closed, it circulates in chamber A, coming in contact with the truncated funnel or circular hopper which forms the top or covering of draft-chamber A, and thereby becoming heated until it passes entirely round the stove, and then down through the aperture in the bottom, and thence up through the circular bottom of funnel or hopper *s s* to the grate and furnace or fire-pot P, both of which operate as a grate.

The hopper *s s* or roof of chamber A terminates at the margin of circular opening in bottom of stove and coincides with it, so as to make the chamber perfectly tight.

To the axis of the grate is attached the curved crank *a*, having for a handle to operate it the bar *b*, Fig. 3, which projects through the shell of the stove, and which also, by means of a notch and catch or notch alone, (see Fig. 2,) holds the grate in place, or, when desired, as employed to cant or tip the same so as to deposit its contents into the ash-pan below. The shaker or lever-bar *e* also projects through the shell of the stove, and operates horizontally in a slot; but no dust or ashes can escape through these apertures.

The pipe-hole is separated from the fire-chamber by a collar or roof which has aper-

tures in front for the free passage of the smoke and unconsumed gases, if any, while the pipe-hole is on the back of the stove and near the top. This retards the escape of the heat until it is all expended in and through the stove, and more of it economized than with any other stove now in use.

I contemplate lining the rim and upper part of the fire-pot P with fire brick.

The pins or projections on the under side of the rim of the grate, (see Fig. 3), since the grate itself can be revolved on its center pin *c*, enables it to be shaken at any point of its revolution—that is to say, whatever may be the position of the grate, if the shake-bar *e* is embraced by any two of these pins, it (the grate) may be shaken. All other grates must and can only be shaken and tipped when in one and the same position.

I am aware that a grated fire-pot, but of very different construction from mine, has been used by D. G. Littlefield and others in a base-burning coal-stove. Mine is a grated fire-pot of peculiar form and construction, used and designed for vertical or upright draft, and not for horizontal-draft or base-burning stoves. The admission of cold air directly to these grated fire-pots or furnaces will disappoint and defeat the object of their construction, if that object be the pleasing exhibition of a bright fire. This can only be attained by heating the air before it strikes the bright coals in the furnace. My arrangement for heating the air which enters the bottom draft, *d'*, and for preserving the brightness of the fire is, I believe, novel, and will effect the object desired.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. Employing the circular inclined partition or hopper *s s* for the combined purpose of forming the hot-air chamber or flue A A, of conducting the coals and ashes into the ash-pan, and of preserving the brightness of the fire by shielding it from the cold air, substantially as and in the manner set forth.

2. The shake-bar *e*, crank *a*, and handle *b*, when used in combination with the revolving grate G, having projections on its lower edge, substantially in the manner and for the purpose set forth.

3. The combination of fire-pot P with grated sides and base, suspended within the ash-pit, as shown, with the flue reservoir B, substantially as described.

ZEBULON HUNT.

Witnesses:

ALEX. S. ROWLEY,
WILLIAM SHANE.