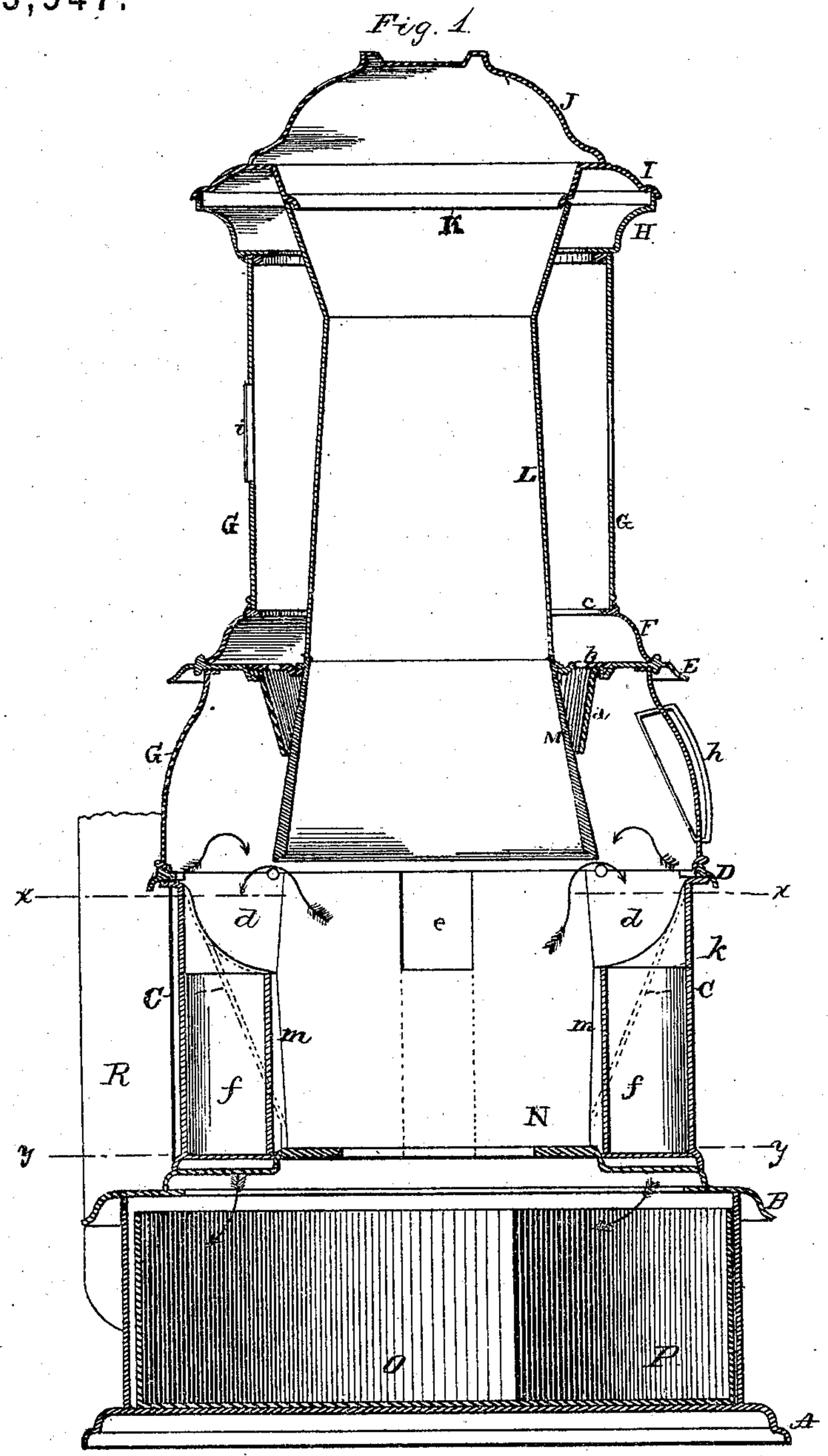
2 Sheets--Sheet 1.

F. WARRINER.

Extensions for Stove-Flues.

No. 143,547. Patented Oct. 7, 1873.

Fig. 1.



WITNESSES.

Jas W. Graham

Saml. R. Turner

INVENTOR.

Francis Warriner

by P. J. Grew Atty.

2 Sheets--Sheet 2.

F. WARRINER.

Extensions for Stove-Flues.

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Fig: 2.

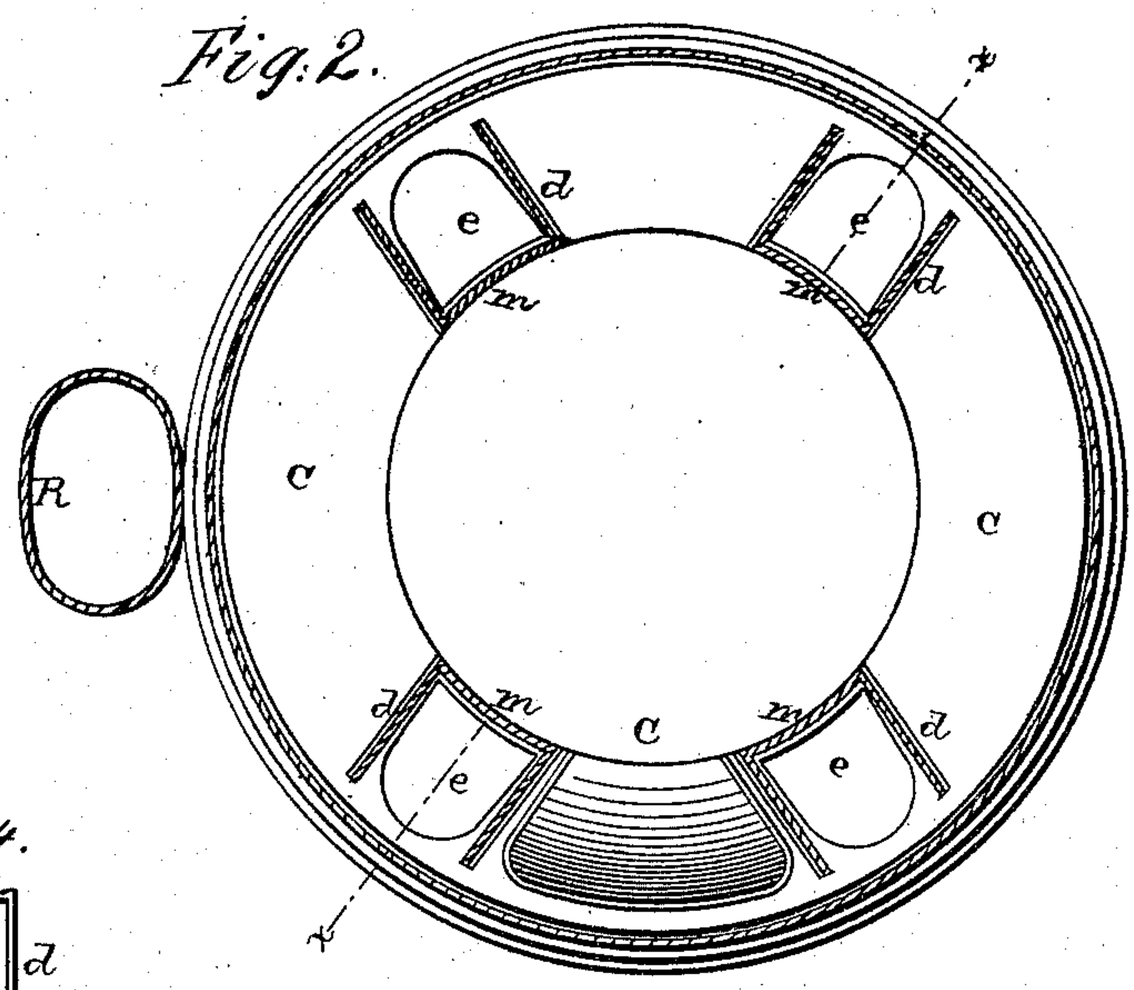


Fig: 4.

Fig: 5.

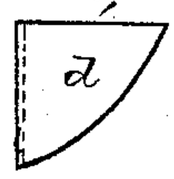


Fig: 3.

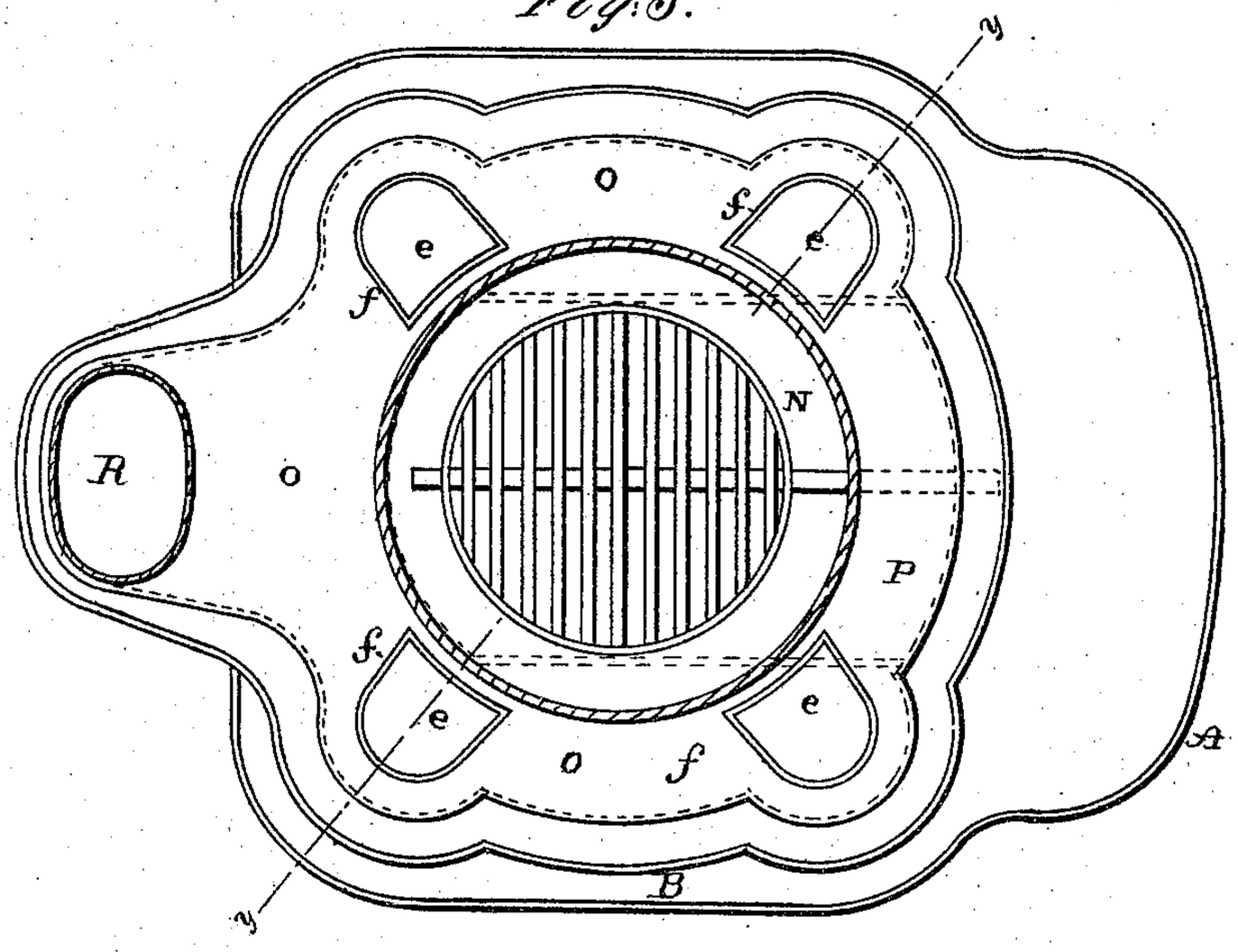
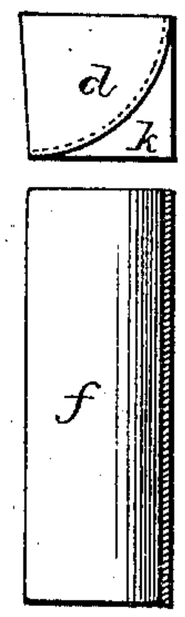


Fig: 6.



Witnesses
Jas W. Graham.
Saml. R. Turner

Inventor
Francis Warriner
by P. D. Green Atty

UNITED STATES PATENT OFFICE.

FRANCIS WARRINER, OF TROY, NEW YORK, ASSIGNOR TO SUSAN S. HUNTINGTON, OF SAME PLACE.

IMPROVEMENT IN EXTENSIONS FOR STOVE-FLUES.

Specification forming part of Letters Patent No. **143,547**, dated October 7, 1873; application filed August 27, 1873.

To all whom it may concern:

Be it known that I, FRANCIS WARRINER, of the city of Troy, county of Rensselaer and State of New York, have invented certain Improvements in Coal-Stoves for burning bituminous and other coal, of which the following is a specification:

My invention relates to the construction of coal-stoves so that more perfect combustion is obtained in burning bituminous and other coal, and so constructing the fire-pot as to admit the expansion of such bituminous or other coal when heated or ignited, and to enlarge the surface of the burning coal outside of the lower end of the coal-reservoir; also, to keep the coal in the fire-pot about level with the lower end of the tube or reservoir without liability of the coal falling into the descending flues. The tops of these descending flues are loose or detachable, and are held in their place by flanges or lugs, and are fitted to the top and inside of the fire-pot, over and above the lower part of such flues, and can be easily replaced when worn out by the action of the fire without taking out the fire-pot or dismounting the stove.

For a more full and exact description of my improved coal-stove, reference is hereby made to the annexed drawings, and letters of reference marked thereon, making a part of these specifications, in which—

Figure 1 is a vertical cross-sectional view of my improved stove, showing detailed connections and construction in various parts. Fig. 2 is a cross-sectional view and a line through Fig. 1 at *x x*, looking downward. Fig. 3 is a cross-sectional view, and shows a line through Fig. 1 at *y y*, looking downward. Fig. 4 is a plan of the detachable piece that forms a portion of the top of the descending flues, looking downward. Fig. 5 is a side view of said detachable piece. Fig. 6 is a side view of the lower section of the descending flues *f*, also the loose or detachable piece *d;* it also shows the connection of said top piece *d* with the fire-pot C.

Like letters refer to like parts in all the figures.

I construct my improved stove as follows: A is the bottom plate of the stove in Figs. 1 and 3. O is the side bottom flue or space, which receives the products of combustion after they pass down through the flues *f* on their way to the exit-pipe R. The sides of the base or bottom flues may be of any form of configuration. P is an ash pan or drawer, and is shown by the dotted lines in Fig. 3. The top plate B of the base of the stove is about five inches above the bottom plate A. On this plate B are moldings to receive the flue plates or columns and fire-pot C, Fig. 1, as shown by the dotted lines. Said plate has openings, *e*, for the flues. The grate and grate-frame N may be of any desirable construction. A line taken through Figs. 1 and 3 at *y y* shows the flues *f* and openings *e*, or inside of the flues *f*. The fire-pot C, Fig. 1, is beveled or curved outward and upward from the bottom, or is bell-shaped, as indicated by the dotted lines, in order to allow of enlargement or swelling of the coal when heated or ignited; also, to enlarge the surface of the burning coal outside of the coal-reservoir. That part of the fire-pot C that is inside of and adjacent to the flues or columns *f* is nearly perpendicular, as at *m*, Figs. 1 and 2, or is jogged in so as to permit the columns or flues *f* to stand about perpendicular, and from and above the line of union *k* of the columns or flues *f* and the fire-pot C is the detachable piece *d*, as shown in Figs. 1, 2, 4, 5, and 6, and is for the purpose of continuing upward the descending flues *f* to a point about on a line with the lower end of the reservoir M. Said loose or detachable piece or parts should be so made that their upper edges or top parts may be maintained at a fixed point or distance from the lower end of the conical cylinder *a* and tube M, so that the gases arising from the burning coal will come in contact and unite with the jets or sheets of air which come from the chamber above the fire-chamber, and are emitted into the fire-chamber (in a heated state) at or near the lower end of said cylinder *a*, which will cause an agitating or rotary motion of such gases, and will supply ogygen to unite with the carbonaceous gases from the burning coal, thereby obtaining more perfect combustion and increasing the degree of heat. Said detachable

pieces will prevent the coal from falling into the flues *f*. This piece *d*, as exhibited in Figs. 1, 2, 4, 5, and 6, should be made thicker at the top than at the bottom, the better to withstand the action of the heat; and when they are burned or melted off at the top, they may be easily replaced by new ones without removing the fire-pot or dismounting the stove. These top pieces *d* are fitted to the top and inside of the fire-pot C, as shown in Figs. 1, 2, and 6. A line taken through the stove at *x x*, Figs. 1 and 2, intersects the flue-spaces *e*, also the top and bottom of the fire-pot, and the detachable piece *d* in position on said fire-pot. D is a plate and molding that sits upon and is attached to the fire-pot C. E, F, G, H, I, and J are plates and moldings, and are parts of the outside wall of the stove. They may be of any desirable shape or configuration. *h* is a mica-frame or stove-window, for the purpose of admitting light from the burning coal into the room; also, to admit jets of air through apertures in said frame into the space between the outer wall of the stove and the reservoir, and there mingles with the gases arising from the burning coal, which aids combustion. L and M is a reservoir for coal, and so constructed as to make a self-feeding stove. It is tubular and conical in shape, the largest end downward. This reservoir is made in two or more parts or sections. The lower part, M, is greater in diameter, and thicker at the bottom end than at the upper end. It tapers upward and inward, and is attached to and suspended from the plate *b*, and so constructed as to be readily detached therefrom by turning it a part of the way around, so that the lugs on the tube M may come over slots or holes in the plate *b;* it will then drop down, and may be replaced at pleasure when rendered unfit for use. This plate *b* rests upon and is attached to the plate E, as shown in Fig. 1. *a* is a conical cylinder, which rests upon and is attached to plate E, as shown in Fig. 1. This cylinder is greater in diameter at the top than at the lower end. This cylinder extends downward and inward to within about three inches of the lower end of the tube M, and leaves a space or opening between the tube M and the lower end of the conical cylinder *a* of about one-eighth of an inch. This space or opening may be divided off into any desirable number of parts by partitions. In the wall-plate G is placed a register, *i*, which is for the purpose of letting air from the room into the chamber or space between the wall-plate G and the coal-reservoir L, and from there it passes downward through openings in the plates *c* and *b* into a chamber formed by the tube M and cylinder *a*, and is then heated and brought close to the tube M by the cylinder *a*, and is admitted into the fire-chamber at the bottom end of said cylinder *a* in a thin sheet or jets, and then and there mingles with the gases from the burning coal, as and for the purposes hereinbefore described.

The top part or edge of the loose or detachable piece or pieces, being maintained at a proper height and at a fixed distance from the lower ends of the tube M and cylinder *a*, and where the air is admitted into the fire-chamber from the chamber formed by the tube M and the cylinder *a*, is a combination of great importance in producing the most perfect combustion in such coal-stove.

That part of the coal-reservoir from the molding J down to plate *b* may be made of any desirable form, and may be either of cast or wrought iron. I prefer making said reservoir in the form shown in Fig. 1, so that when using bituminous coal, if there should be an expansion of the coal in the reservoir by heat, such coal will not adhere to said reservoir, but will always be free and settle down by its own weight. There is a cover, K, at the top of the reservoir to prevent the coal in the reservoir from igniting.

This stove is put together in the usual way, and is held together by bolts and rods.

Having thus described my improved stove, what I desire to secure by Letters Patent is—

1. The detachable piece or pieces that form the inner and top part of the descending flue or flues of a coal-stove, that may be put in position or replaced whenever desirable without removing the fire-pot or dismounting the stove, substantially as and for the purposes described and set forth.

2. The combination of the detachable piece or pieces *d*, that form the top part of the descending flue or flues, with a fire-pot, C, and the descending flues *f*, substantially as and for the purposes hereinbefore described and set forth.

FRANCIS WARRINER.

In presence of—
JACOB SHAVOR,
J. C. HENDERSON.