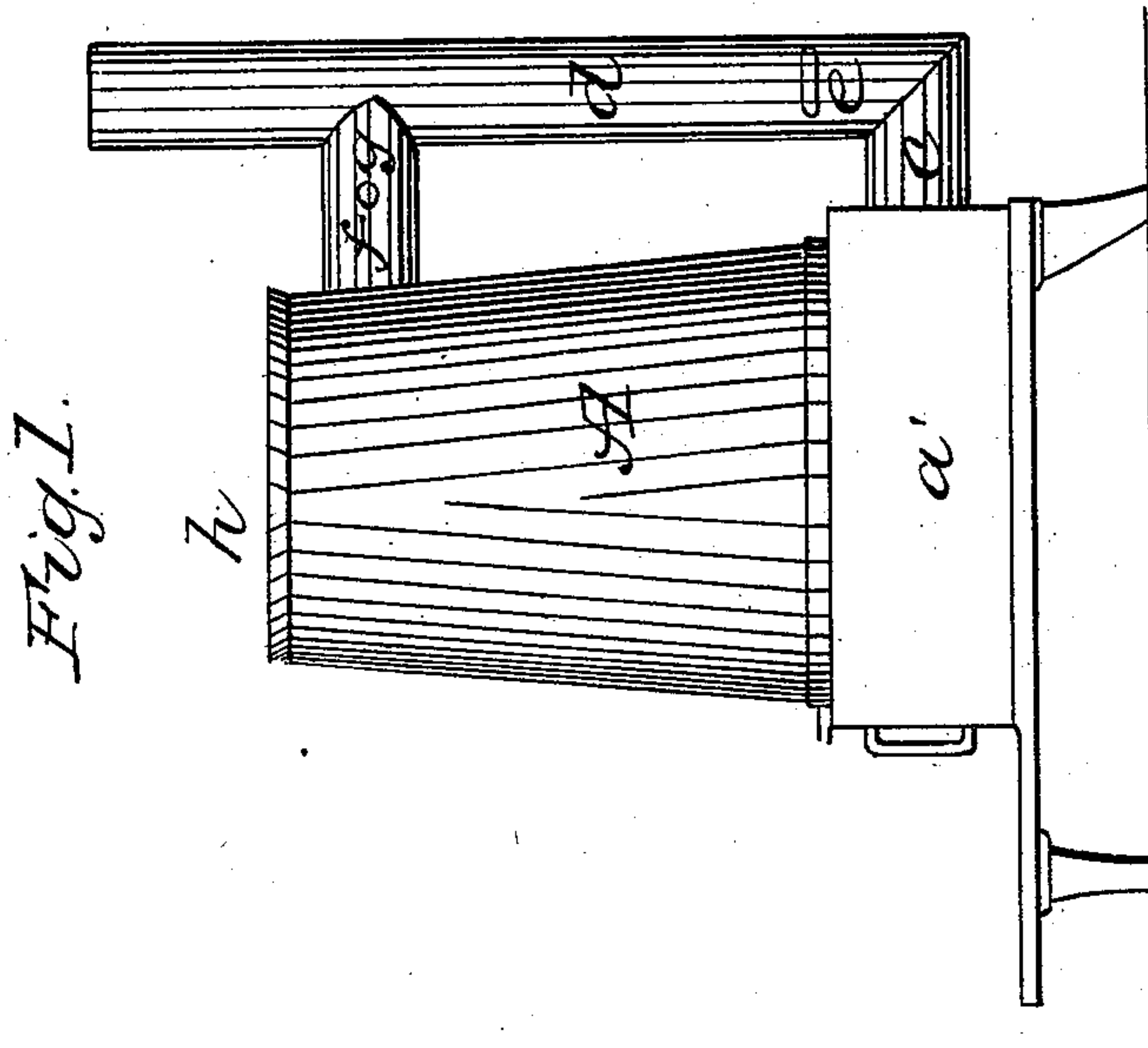
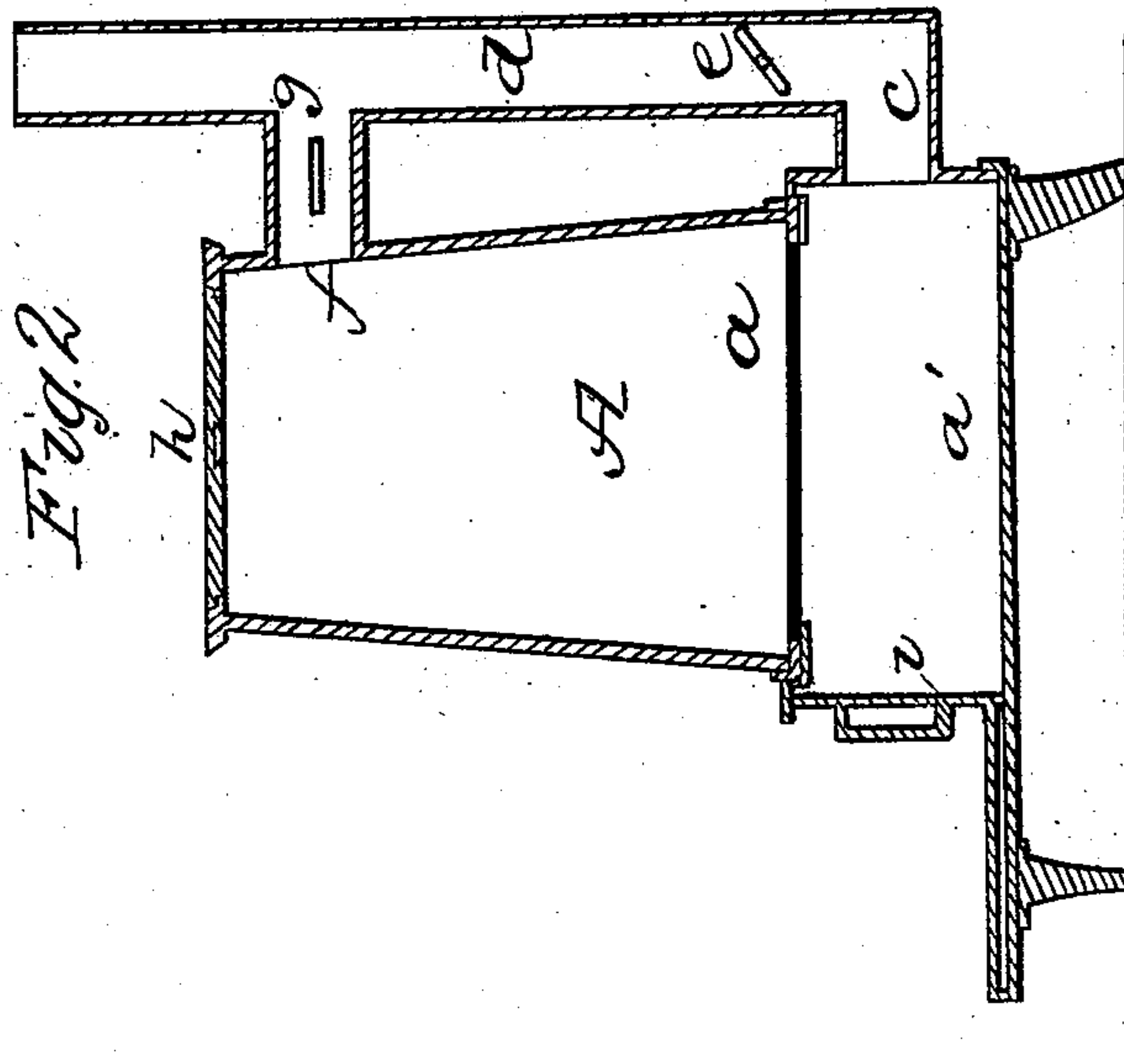


H. SLADES.

Stove.

No. 4,559.

Patented June 6, 1846.



UNITED STATES PATENT OFFICE.

HENRY SLADE, OF CHELSEA, MASSACHUSETTS.

STOVE.

Specification of Letters Patent No. 4,559, dated June 6, 1846.

To all whom it may concern:

Be it known that I, HENRY SLADE, of Chelsea, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Stoves for Heating Apartments; and I do hereby declare that the nature of the same is fully set forth in the following specification, accompanying drawings, letters, figures, and references thereof.

Of the aforesaid drawings Figure 1, represents a side elevation and Fig. 2 a longitudinal, central, and vertical section of my improved stove.

The nature of my improvement consists in applying to the stove a certain combination of eduction flue passages and dampers, by means of which I am enabled to cause the draft to pass either upward or downward or both upward and downward through the coal or fuel in the state of combustion. For this purpose I take a common cylinder stove such as is represented at A in the drawing, and into and through the side of the ash box *a'* which is situated below the fire grate *a*, I insert an auxiliary eduction pipe *c* which I open at one end into the ash box, and at the other end into the discharge pipe *d*, which I extend downward a sufficient distance therefore as seen in the drawing.

Within the tube *c*, or just above it and in the tube *d*, I insert a common damper or flue valve *e*. The ordinary escape passage or flue is represented at *f*, as extending out of the stove at or near the top and above the fire grate *a*, and chamber of combustion. The said tube *f* I connect with and open into the pipe *d*, and I place a damper or flue valve *g* within it. Both dampers *g*, and *e*, should be made to so fit the interior of the respective tubes *d* and *f*, as when closed not to permit the escape of smoke or gas from the chamber of combustion. The opening for the admission of fuel, I make in the top of the stove as at *h*. I also make another one at *i*, and in the front side of the ash box, the same being for the removal of ashes. Both of said openings *h* and *i* should be provided with doors or covers by which each may be wholly or partially closed, as occasions may require. If desirable, the said covers may each have small openings and a register adapted to it for the admission of air to the stove; although such will not be necessary, generally speaking, as the admission of said air may be regulated by the

covers, by causing either of them to partially close the opening, to which it is adapted, to the extent desirable.

The process of using the aforesaid stove is as follows. The fuel is passed into the stove through the opening *h*, and deposited on the grate *a*. This being done the damper *e* and the opening *h*, are to be closed and the damper *g*, and induction passage *i* opened. The fuel is next to be fired where it rests on the grate; or in other words at the bottom of the mass thereof in the stove. The air for supplying it with oxygen will enter the ash box through the openings in its front and will rush through the grate and thence upward through the fuel and out of the exit pipe *f*; and will act upon the fire or fuel as it does in a common stove, having an upward draft through the fuel. When the fuel has become sufficiently ignited the damper *g* and opening *i*, should be closed, and the damper *e* should be opened, and the cover of the opening *h* partially or entirely removed therefrom. This will cause the air, for supplying the fuel, to enter the stove through the opening *h*, and to descend and pass through the fuel and thence through the grate *a*, and into the ash box, from whence it will escape together with the smoke and volatile products of combustion, through the pipe *c* and into the discharge pipe *d*. As the fire continues to consume the coal or fuel it will slowly progress upward, while the draft is downward through it. The ashes as made will fall through the grate or be blown through it by the downward current of air, passing between the bars thereof. It will thus be seen that, by means of the grate and the downward current of air, the coal will be divested of its ashes to a considerable extent and combustion greatly facilitated or improved thereby. As the combustion is made to progress upward while the draft is downward through the mass of coal or fuel, the operation of burning the fuel is very different from what it is in any other stove.

I am aware that a stove has been patented (see Letters Patent No. 4031, granted to Samuel Utter) wherein the downward draft is employed to aid the process of combustion. In such a case the coal is first lighted at the top of the mass, and burns downward in the direction in which the draft rushes through it, whereas, in my improved stove the fire is first lighted at the bottom of the

mass of coal and will slowly progress or burn upward, after the draft has been turned downward as above described. As I employ a grate in my stove, the said grate admits
5 the fire, dust and ashes to be blown into the ash box and this prevents it from impeding combustion. Thus, by means of the downward draft and the grate and the manner of burning the fuel at first on the grate, the
10 process of combustion is found to be greatly improved. By means of the two dampers and the valves or covers, to the two induction openings, the draft may be thrown upon the top and bottom parts of the mass of
15 fuel, at the same time, so as to burn it both at the top and bottom. The same being effected by opening both dampers and so

regulating the size of the induction openings as to equalize the quantity of air made to rush through each.

Having thus described my improved stove what I claim therein is—

The combination with the chamber of combustion and its grate and ash box, of the two induction passages *c* and *f* and dampers *e* 25 and *g*, and two induction passages *h* and *i* and their valves or covers; the whole being arranged and made to operate together substantially as specified.

HENRY SLADE.

Witnesses:

R. H. EDDY,
CALEB EDDY.