2 Sheets—Sheet 1.

W. J. KEEP.

Cooking Stove.

No. 90,850. Patented June 1, 1869.

Fig: 1.

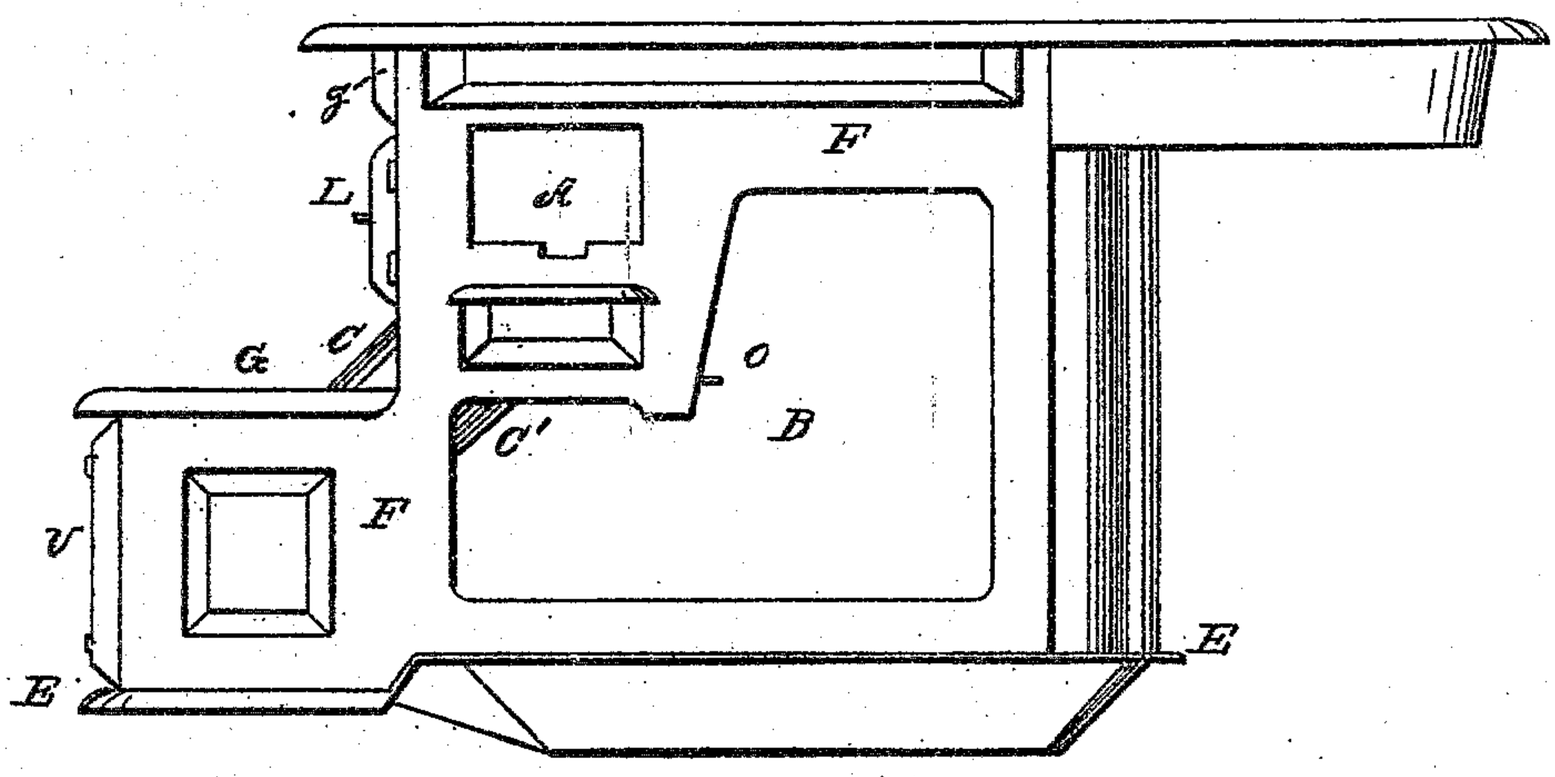
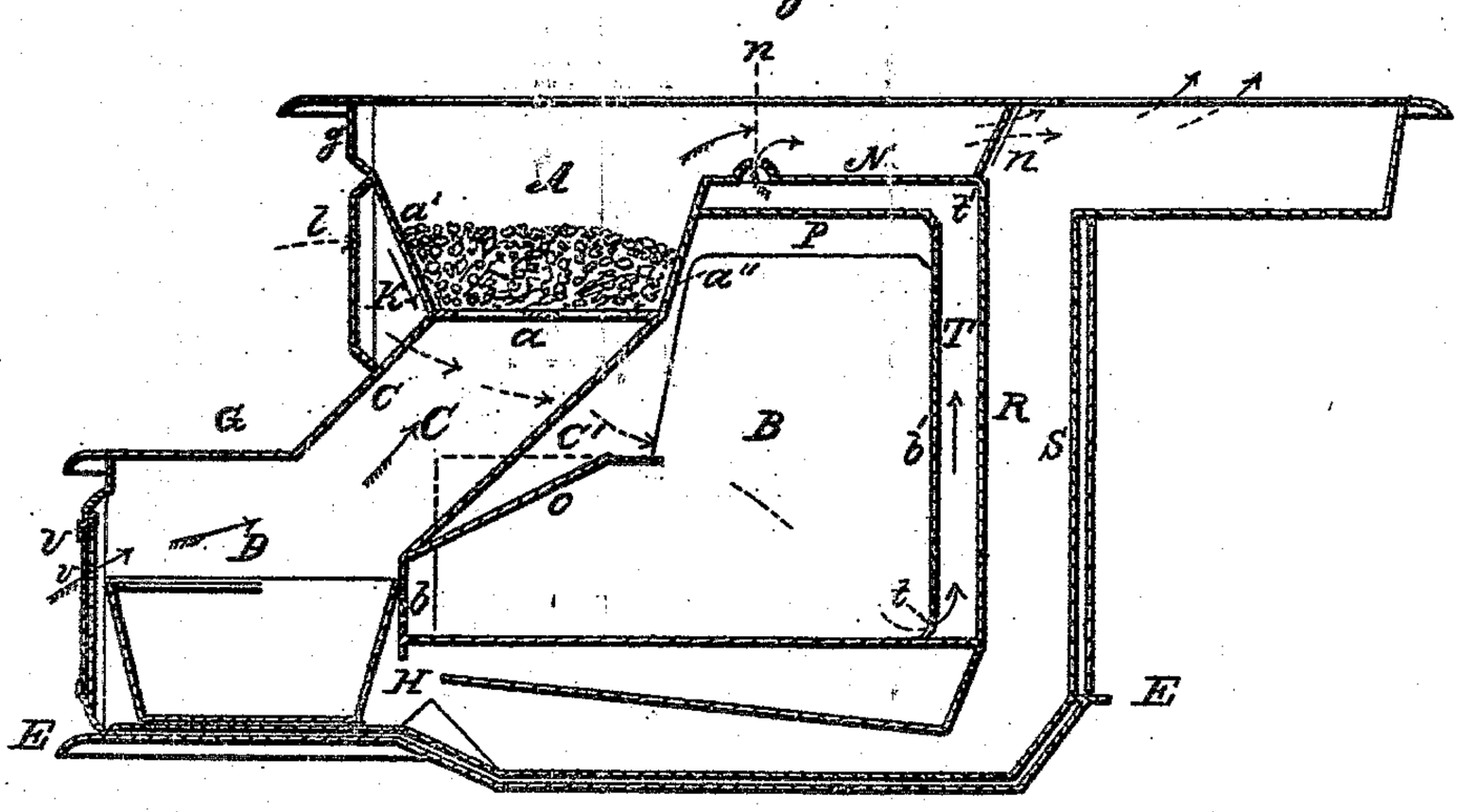


Fig: 2.



Witnesses:

James C. Fitch

William Fitch

Inventor.

W. J. Keep,

by Prindle and Dyer Attys.

N. PETERS, Photo-Lithographer, Washington, D. C.

2 Sheets—Sheet 2.

W. J. KEEP.

Cooking Stove.

No. 90,850.

Patented June 1, 1869.

Fig: 3.

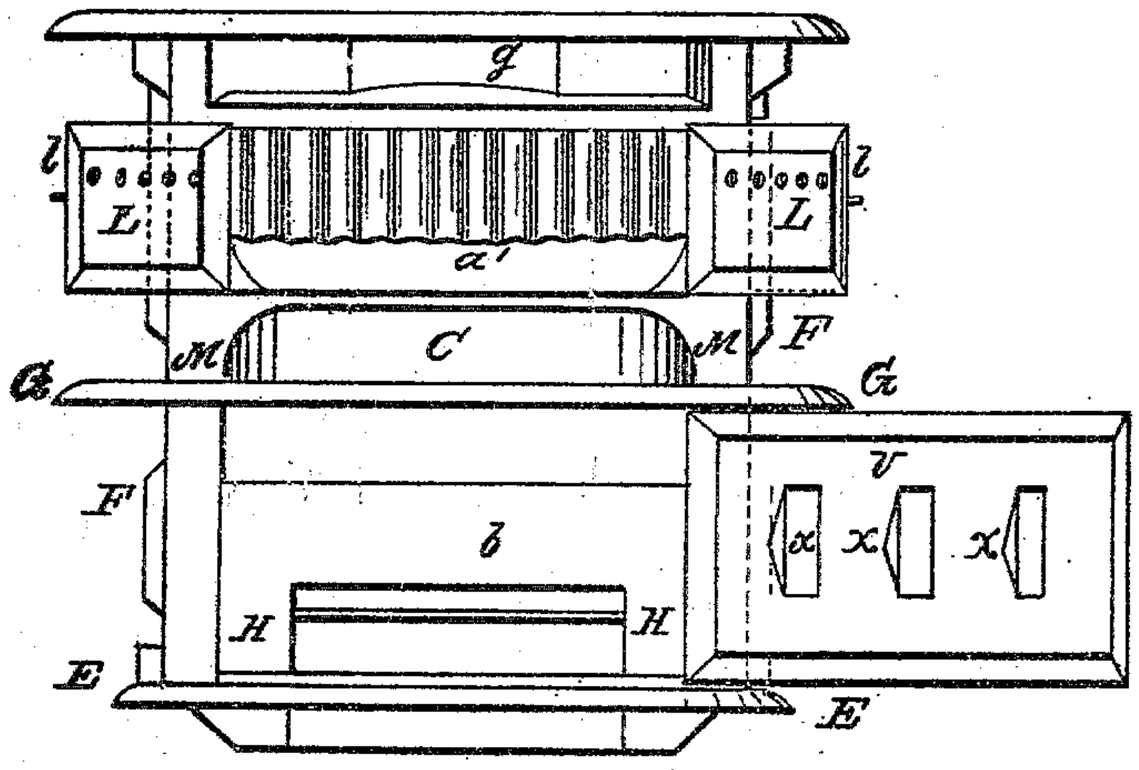


Fig: 4.

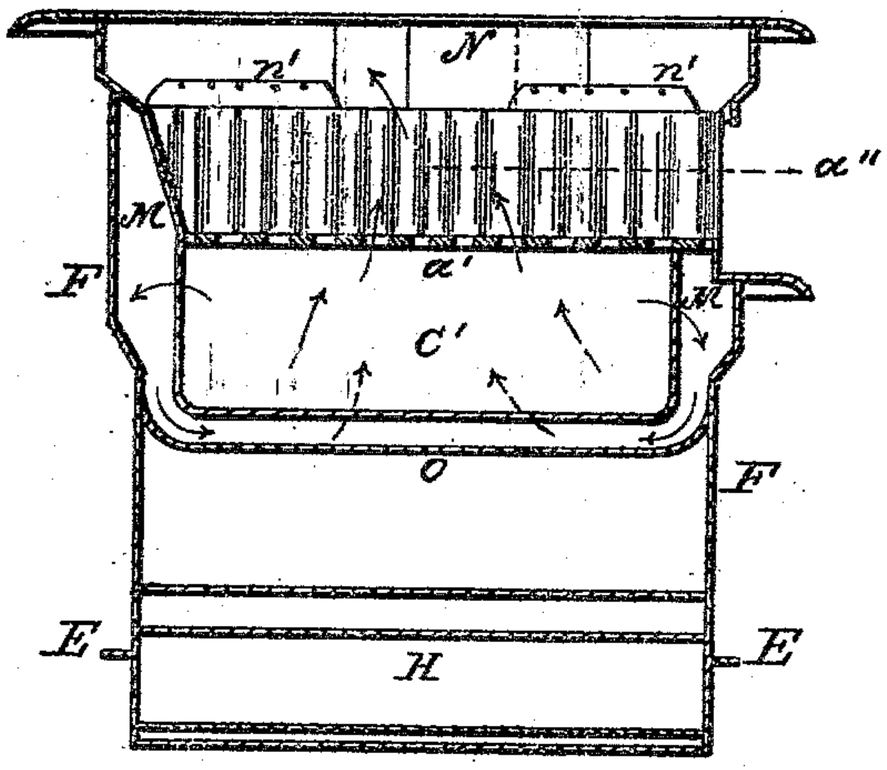
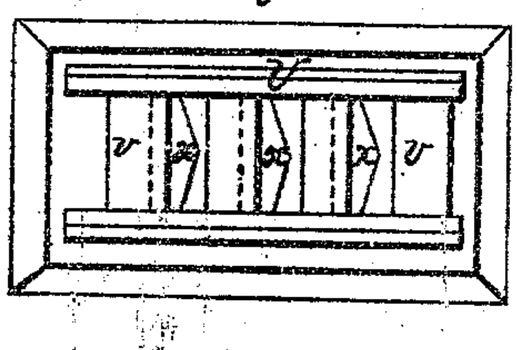


Fig: 6.



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James E. Fitch

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United States Patent Office.

W. J. KEEP, OF TROY, NEW YORK.

Letters Patent No. 90,850, *dated June* 1, 1869.

COOKING-STOVE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, W. J. KEEP, of Troy, in the county of Rensselaer, and in the State of New York, have invented certain new and useful Improvements in Cooking-Stoves; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation of a cooking-stove as improved;

Figure 2 is a vertical longitudinal section of the same, showing the internal arrangement of the different parts;

Figure 3 is a front elevation with the doors in front of the fuel-chamber and ash-pit open;

Figure 4 is a vertical cross-section of the same on a line passing through the centre of the fuel-chamber; and

Figure 5 is a front elevation of the ash-pit door, showing the construction and arrangement of the damper and aperture through which air is admitted to the fuel-chamber.

Letters of like name and kind refer to like parts in each of the figures.

This invention is an improvement upon the patent of P. P. Stewart for a cooking-stove, issued April 12, 1859, and reissued May 17, 1864, and again April 7, 1868; and

It consists in the employment and arrangement of flues upon either side of the ash-tube, which extend from the space between the front doors and the front plate of the fuel-chamber downward and backward into the space between the bottoms of said fuel-chamber and ash-tube and the shield-plate, and, in combination with said shield-plate, furnish a passage into the oven for a current of air heated by contact with the front plate of said fuel-chamber, substantially as and for the purpose hereinafter described.

It also consists in the employment and arrangement of a shield-plate beneath and in rear of the ash-tube and fuel-chamber, for the purpose of protecting the oven from the intense heat radiated from said ash-tube and fuel-chamber, and also to furnish a passage or flue in combination with the aforesaid flues upon either side of the ash-tube for the admission into the oven of heated air from the space between the front plate of said fuel-chamber and the front doors, said air being further heated by contact with the surfaces of said fuel-chamber and ash-tube, as will be fully set forth hereafter.

It also consists in the employment and arrangement of a double-back oven-plate within the back centre flue, for the purpose of preventing the radiation of heat from the oven into said flue, and in combination with a double-top oven-plate, to furnish a passage or flue through which the current of air which enters from the front of the stove, may pass into the combustion-flue, and also to prevent ashes from falling into the oven through the air-jets or passages, substantially as and for the purpose hereinafter shown and described.

It also consists in the employment and construction of solid front plates for the fuel-chamber and ash-tube, and of a solid hearth, so that no air shall enter said fuel-chamber from in front, or through the grate, except such as may be admitted from beneath said hearth, whereby the openings into said fuel-chamber are reduced to the smallest possible number, substantially as shown and for the purpose set forth.

It also consists in the employment and arrangement of an opening for the admission of air to the fuel-chamber beneath, and in combination with a solid hearth, in the manner and for the purpose substantially as hereinafter specified.

It also consists in the form of the openings through the damper and door of the ash-pit, whereby the quantity of air admitted to the fuel-chamber, can be readily graduated, from the largest amount required to just a sufficient quantity to keep the fire alive, said openings being rectangular in one plate, while in the other plate one side of each opening is extended forward in the form of an obtuse angle, as is hereinafter fully described.

It also consists in dropping the bottom plate in front of the stove, for the purpose of giving increased depth to the ash-pit and a larger opening for the removal of ashes from the bottom flues, substantially as herein set forth.

It also consists in the employment and arrangement of suitable doors communicating with the space in front of the fuel-chamber, in combination with the high, solid hearth, substantially as hereinafter shown and for the purpose set forth.

In the annexed drawings—

A represents the fuel-chamber, extending across the front end of the stove, and suspended within the front and upper corner of the oven B, the lower part of which extends forward and below said fuel-chamber to or beyond the front plate thereof.

The fuel-chamber contains a grate, *a*, which may be of any suitable construction, immediately below which is an ash-tube, C, secured to said fuel-chamber, and extending forward and downward into an ash-pit, D, so that the ashes which fall through said grate shall be deposited within a suitable receptacle placed within said ash-pit.

The ash-pit D is formed by extending the bottom and side plates E and F, and raising the hearth G; but in order that the depth of said ash-pit may be increased, and, at the same time, the proper incline maintained in the ash-tube, the bottom plate E is dropped downward about three inches, or thereabouts, from a point in a line with the front edge of the stove.

This arrangement serves also to increase the depth of the opening H for the removal of ashes from the bottom flues, and much facilitates their removal.

The front plate of the fuel-chamber *a'* is solid, and joined or secured at its upper edge to the front plate of the stove I, from whence it extends downward and backward to the bottom of said fuel-chamber, where it is joined to the front plate of the ash-tube *c*, leaving a chamber between the front of said fuel-chamber and the front of the stove, which chamber is for the purpose of receiving, containing, and heating such air as may be admitted thereto before it enters the oven.

L L represent two doors, hinged to the front plate I, through which access may be had to the chamber K, said doors being provided with apertures *l l*, of sufficient capacity to admit the necessary quantity of air to said chamber.

The ash-tube C corresponds in width to the bottom of the fuel-chamber, to which it is joined, and, as the length of the bottom of said fuel-chamber is less than the width of the stove, it will be seen that a space, M, is left between each side plate F and the end of said fuel-chamber and edge of said ash-tube, which space extends from the chamber K downward and backward into the oven, and forms a flue for the passage of heated air from said chamber into said oven.

The inclined back plate of the ash-tube *c'*, back plate of the fuel-chamber *a''*, and the plate forming the under side of the combustion-flue *n*, constitute and form the upper portion, covering, or plate of the oven B; but as the heat radiated from said ash-tube and combustion-flue would prove too great in some parts of the oven, unless intercepted and properly diffused, provisions are made for the accomplishment of this object, as is hereinafter fully described.

Secured to the front plate of the oven *b*, or to the bottom plate of the ash-tube *c'*, near the point where said plates are united, is a shield-plate, O, which extends upward and backward at a less angle of inclination than said plate *c'*, so as to leave a space between the upper side of said shield-plate and said ash-tube plate.

The edges of the shield-plate O are joined to the side plates of the stove F, so that air entering through the flues M M, is compelled to pass upward beneath the lower side of the ash-tube *c'*, before it can escape into the oven, by which means it becomes highly heated. It will be seen that the shield-plate O not only prevents the direct radiation of heat from the lower plate of the ash-tube *c'*, but also prolongs the flues M M, and largely increases the heating-surface over which the air, entering through said flues, is compelled to pass before being admitted to the oven.

Secured near the top of the oven B, directly beneath the plate *n*, forming the bottom of the combustion-flue N, is an additional top oven-plate, P, which extends backward from the back plate of the fuel-chamber *a''*, to or near the back oven-plate *b'*, and crosswise to or near the side plates of the stove F, so as to prevent radiation of heat from the combustion-flue N, and also to prevent ashes from falling into the oven through the air-jet apertures *n'*.

R represents an additional back oven-plate, placed within the back centre-flue S, near to and in rear of the back oven-plate *b'*, so as to leave an air-space, T, between the oven B and said back centre-flue S, and prevent radiation of heat from said oven into said flue.

If now an opening, *t*, be made through the back oven-plate *b'* into the air-space T, at or near the bottom of the oven B, and another opening, *t'*, be made through said plate, near the top of the oven, so as to connect said air-space T with the space between the top oven-plates *n* and P, a flue will be formed through which the air admitted to the oven through the flues M M, will be drawn into the combustion-flue N, (as indicated by the red arrows in fig. 2,) and, as the ascending column of air through the space or flue T will have nearly or quite as high a temperature as the descending currents through the back side flues, it will be evident that the oven will be more easily heated, and a uniform temperature more readily maintained than if dead air or any other non-conductor were contained between said double backs *b'* and R.

The hearth G is solid, and being joined to the front plate of the ash-tube *c*, and that in turn to the front plate of the fuel-chamber *a'*, both of which, as before stated, are solid, no air can enter said fuel-chamber A above said hearth, the only means of access for such air as may be required for the purposes of combustion, being from beneath the grate *a* through the ash-tube C, which is only open at its lower end, where it enters the ash-pit D, so that it will be easy to regulate or entirely cut off the supply of air, as but one opening into said ash-pit will be required, which opening will serve for the double purpose of the admission of air and the removal of ashes.

Directly beneath the hearth G, in the front of the ash-pit D, is a door, V, through which access is had to said ash-pit, and also to the lower flues, for the purpose of removing ashes by means of the opening H.

A slide or damper, *v*, is arranged in or upon said door in the usual manner, and serves to regulate the supply of air to the fuel-chamber.

The openings *x x x* are rectangular in form, or with parallel sides in either the damper *v* or door-plate V, while, in the opposite plate, one side of each corresponding opening is extended forward in the form of an obtuse angle, so that when said damper is nearly closed, the openings assume a triangular shape, and may be diminished in size until capable of admitting sufficient air only to keep the fire alive or burning, thus allowing the fire to be regulated with greater exactness and ease than by any other form of openings. Although the form of opening described is believed to be most advantageous, it will be readily seen that any other arrangement of the openings in the slide and plate, by which their front or rear edges respectively shall be at an angle with, instead of parallel to each other, will produce the same result, and be substantially the same, so that I do not confine myself to the particular form described, but claim the construction and use of any openings which are their equivalent.

Having thus fully set forth the nature and merits of my invention,

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

1. The employment and arrangement of the flues M M, in combination with the heating-space or chamber K and shield-plate O, for the purpose of supplying a continual current of highly-heated air to the oven, substantially as herein shown and described.

2. Also, the employment and arrangement of the shield-plate O beneath and in rear of the fuel-chamber A, and ash-tube C, for the purpose of protecting the oven from the intense heat radiated from said fuel-chamber and ash-tube, and also in combination with the hot-air chamber K and flues M M, to furnish means whereby the air admitted to the oven through said flues shall be compelled to pass over the front and end plates of the fuel-chamber and the entire outer surface of the ash-tube, and become highly heated by contact with the surfaces of said fuel-chamber and ash-tube before entering the oven, substantially as herein specified.

3. Also, the employment and arrangement of the additional top oven-plate P, near the top of the oven B, for the purpose of protecting said oven from the heat radiated from the combustion-flue N, and to prevent ashes from falling into said oven through the air-jets or passages *n'*, substantially as herein shown and described.

4. Also, the employment and arrangement of the additional back oven plate R within the back centre-flue S, for the purpose of preventing radiation of heat from the oven B into said flue, and also, in combination with the double-top oven-plates *n* and P, and openings *t* and *t'*, through the back oven-plate *b'* and openings *n'*, through the plate *n*, to furnish a flue for the escape of air from said oven into the combustion-flue N, substantially as and for the purpose herein specified.

5. Also, the employment and arrangement of the solid raised hearth G, which, in combination with the solid front plates of the ash-tube *c* and fuel-chamber *a'*, prevents the entrance of air to said fuel-chamber above said hearth, substantially as herein shown and described.

6. Also, the employment and arrangement of an opening for the admission of air to the fuel-chamber beneath and in combination with the solid hearth G, in the manner and for the purpose substantially as herein set forth.

7. Also, the employment and construction of a damper or slide for the admission of air to the fuel-chamber, in which the openings are so arranged as that their front or rear edges shall be at an angle with, instead of parallel to the front or rear edges of the corresponding openings in the plate beneath said damper, substantially as and for the purpose shown.

8. Also, dropping or offsetting the bottom plate E at or near the front of the stove, for the purpose of giving increased depth to the ash-pit, which is situated entirely or principally forward of the front plate of said stove, substantially as herein shown and described.

9. Also, the combination and arrangement of the extended and dropped or offset bottom plate E, extended side plates F F, solid raised hearth G, and front plate or door V, for the purpose of producing an ash-pit, substantially as shown and specified.

10. Also, the employment and arrangement of suitable doors, communicating with the hot-air space K, in front of the fuel-chamber A, in combination with the high solid hearth G, substantially as herein shown and for the purpose set forth.

In testimony that I claim the foregoing, I have hereunto set my hand, this 9th day of March, 1869.

W. J. KEEP.

Witnesses:
GEO. S. PRINDLE,
EDM. F. BROWN.