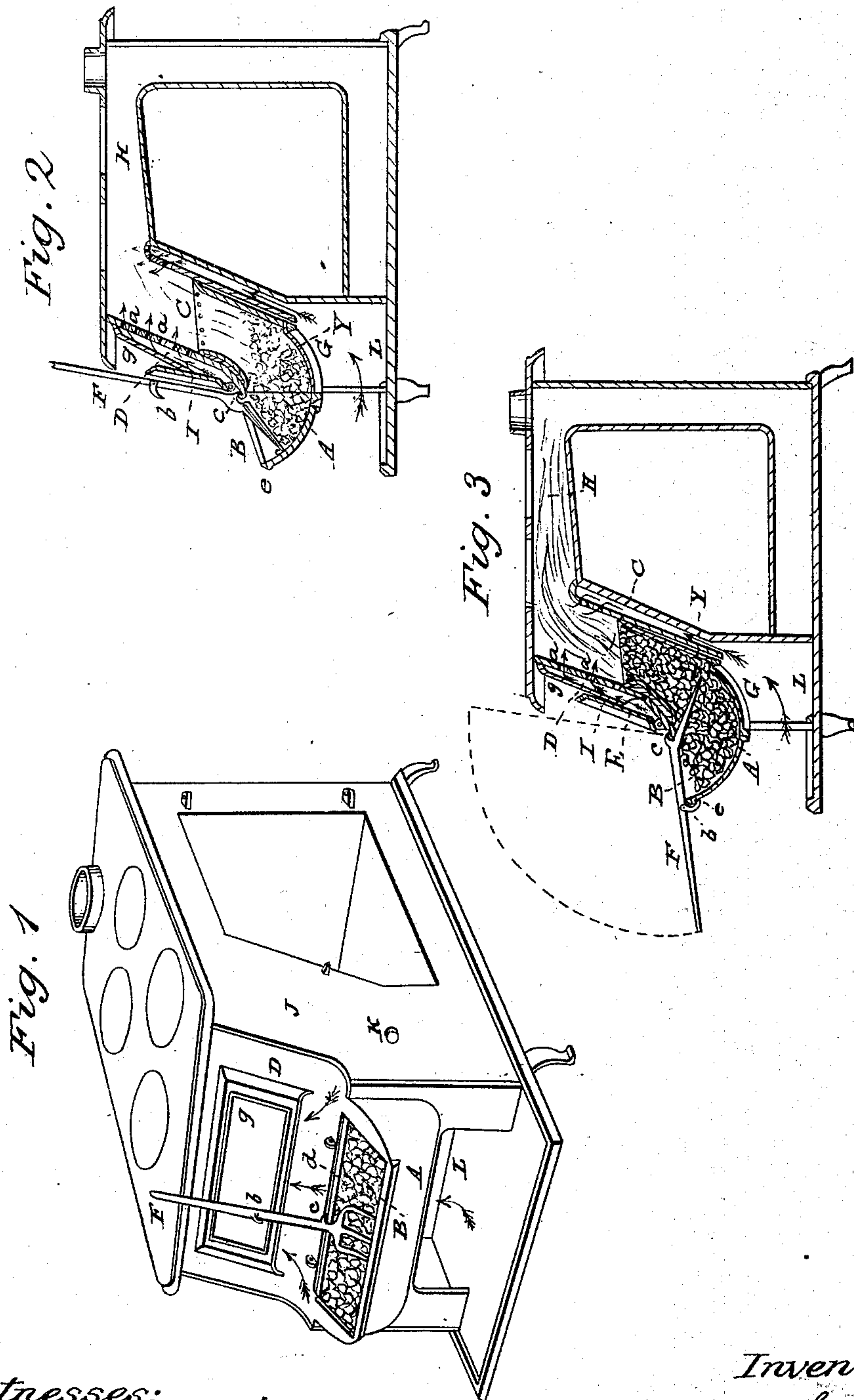


J. J. SAVAGE.
Cooking Stove.

No. 61,956.

Patented Feb. 12, 1867.



Witnesses:
Wm A Greene
Austin F. Park

Inventor:
J. J. Savage

J. J. SAVAGE, OF TROY, NEW YORK.

Letters Patent No. 61,956, dated February 12, 1867.

IMPROVEMENT IN COOKING STOVES.

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, J. J. SAVAGE, of Troy, in the county of Rensselaer, and State of New York, have invented certain new and useful Improvements in Cooking-Stove Furnaces; and I do hereby declare that the following is a full and exact description of the same, reference being had to the annexed drawings, and to the letters of reference marked thereon, making a part of this specification, in which—

Figure 1 is a perspective view of a cooking stove with my improvements added thereto.

Figure 2 is a vertical longitudinal sectional view of fig. 1; and

Figure 3 is a similar view of fig. 1, and showing the manner of feeding fresh fuel into the fire-box.

The same letters refer to like parts in each of the said figures.

The object of this invention is to produce a more perfect combustion of bituminous coals in stove furnaces, especially in cooking-stove furnaces, and thereby prevent the formation of carbonaceous smoke, with its consequent fouling of oven flues by accumulations of soot therein, which destroys or seriously impairs the ability of ovens to bake properly.

The principle of operation of this invention is to introduce the fresh fuel without passing it through any combustion-chamber or through any other intermediate conveying device, directly into the fire-box, below and between a body of ignited fuel or coke, thereby causing the combustible gases evolved from the fresh fuel to become highly heated as they pass upward through the live coke into the combustion-chamber of the furnace; and, also, causing an even temperature of heat in said chamber.

The above principle of operation is put into practice by my invented improvements in stove furnaces, the same substantially as now to be set forth, to wit:

The first part of my said invention consists in the location of the fuel doorway or feed-mouth of the furnace of stoves below and forward of the combustion-chamber of the same, and in immediate position to the fire-box, such, that all fresh fuel may be cast directly into it without passing into or through the combustion-chamber of the furnace or through any other interposed conveying device to reach the said fire-box, substantially as hereinafter fully described. By this part of my said invention the casting of fresh fuel into and through the combustion-chamber to reach the fire-box is avoided, and with it the consequent cooling of the combustion-chamber from fresh fuel lying within it or next it, which cooled the combustible gases rising therein below the inflammable degree; hence, they failed to ignite or continue ignited until consumed, and in consequence would pass off in the form of carbonaceous smoke. But by this peculiar manner of feeding the fire there is maintained in the combustion-chamber of the furnace a sufficiently high degree and uninterrupted temperature of heat, that, together with a properly introduced supply of atmospheric air, produces a perfect combustion of the inflammable gases rising from the igniting fuel below, and no fuliginous flame or smoke is formed.

The second part of my said invention consists in the construction and employment, to operate in combination with the aforesaid located fuel doorway of the furnace, of a lever feeder for the purpose of feeding backwards and upward towards the combustion-chamber the fully ignited coke from the fire-box below, in manner substantially as hereinafter fully described, thereby making room in the fire-box below and between the live coke, to introduce through the aforesaid located fuel doorway fresh charges of coal in the usual quantities, and from time to time, as is commonly required in operating cook-stove furnaces.

The third part of my said invention consists in the arrangement of a fire or guard plate, in direct combination with a front plate of cook-stove furnaces, and in position above the fuel doorway and nearly opposite the combustion-chamber, in manner substantially as hereinafter described, and for the purpose of protecting said front plate from the intense heat of the fire. By this part of my said invention the front plate of the furnace is made more durable, and the said fire or protection plate when worn out is easily removed from its place and a new plate is substituted without displacing the said front plate.

The fourth part of my said invention, when combined with the aforesaid located fuel doorway of the fire-box, consists in the arrangement of the front plate, provided with air orifices of stove furnaces in an inclined or slanting position, such as to overhang, more or less, the combustion-chamber and fire-box of the furnace, in manner substantially as hereinafter fully described. By this part of my said invention the orifices for admitting atmospheric air into the combustion-chamber are placed, for that purpose, in a better position to the said chamber, and the incoming air is more intimately and quickly mixed with the rising gases therein, thereby better promoting the combustion of the same.

To enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

In the following description, the words "combustion-chamber," wherever written, are to be understood as

denoting that part of the furnace wherein are consumed the rising combustible gases from the fuel below, and such part is marked C on the annexed drawing; and wherever the word "fire-box" is written, it is always to be understood as denoting that part of the furnace wherein the solid portions of the fuel are consumed, and such part is marked on said drawing by the letters A and Y. I cause the front part A of the fire-box to project forward of the front plate D, and combustion-chamber C, by a manner of construction substantially the same as shown in figs. 1 and 2 of annexed drawings. The top of said projecting part is inclined or sloped downwards about as shown in figs. 1 and 2. In this top part is located the fuel doorway or feed-mouth B, which extends nearly the entire length of the fire-box, and it is closed by a hinged door, I, or by a removable cover. The front upper plate D of the furnace extends the whole width of the stove; its lower part is curved outwards and downwards so as to join with the projecting top aforesaid, substantially as shown in said figs. 1 and 2. Upon said front plate is placed or constructed a chamber or hood, g, open at its bottom end for admitting a free supply of atmospheric air, and through the said plate D are made a series of apertures, *a a*, which admit jets of said air into the combustion-chamber C. Said front plate D is arranged in an inclined or slanting position relatively to the stove furnace, and such as to overhang more or less the combustion-chamber C of the same. This position is given to said plate in order that the air apertures *a a* may be brought into a better position for quickly and intimately distributing or intermixing the incoming air jets with the rising combustible gases in said combustion-chamber, thereby causing a more perfect combustion of said gases. Arranged in combination with said plate D is a fire or guard plate, E, and in position about opposite the combustion-chamber C, and above the fuel doorway B. This fire-plate is supported or held in its proper position for use by the other fire-plates or linings of the fire-box, as shown in fig. 2, or it may be directly secured to said plate D by bolts or in any other known way, which admits of its convenient removal, when worn out, from said front plate D, and the substitution of a new fire-plate without displacing said front plate D. G is the fire-grate; and L is the ash-chamber; K are poker-holes; and H is the main direct flue; F is a lever feeder for feeding the fuel or coke in the fire-box backwards and upwards towards the combustion-chamber C. This feeder is constructed with a fulcrum-hook, *c*, and a catch, *b*, and with two or more prongs as shown. Either upon the inner or upper edge of the aforesaid fuel doorway B is a fulcrum-edge, *d*, extending the length of said doorway; and on the outer opposite edge of said doorway is a projecting ridge, *e*, substantially as shown, and being respectively for the purposes of supporting said lever feeder while in operation, and for holding the same in position while fresh fuel is cast into the said fire-box. The oven flues and oven of the stove may be constructed in the usual manner. The arrows in the annexed drawings indicate currents of air moving into the fire-box and combustion-chamber of the furnace.

This improved stove furnace is operated in manner as follows: Fire being kindled in the fire-box A Y, and coal thrown on the same and ignited and soon converted into coke, which fills the fire-box in manner substantially as shown in fig. 2 of annexed drawing. The fuel doorway B is now opened and the live coke loosened and broken up if necessary with the feed lever F, which is then placed in position for feeding, having its fulcrum-hook *c* resting upon the fulcrum *d*, as shown in said figure. The handle of the feed lever is now turned downwards so as to touch the front edge of the fuel doorway, and is held down or hooked down by a hook or catch, *b*, hooking on the catch-ridge *e*. This operation lifts the live coke backwards and upwards towards the combustion-chamber C, thereby leaving vacant room in the fire-box below the live coke, and above a light bed of live coals which fall between the prongs of the feed lever. Into this vacant place is cast the fresh supply of coal, in manner substantially as shown in fig. 3 of annexed drawing. When the space is filled, the feed lever is easily withdrawn and applied in like manner and by like operation to feed the whole length of the fire-box; two or three successive applications and operations of the feed lever being sufficient to feed with fresh fuel the whole extent of said fire-box. By this peculiar manner of feeding the fresh fuel into the furnace, the casting of the same into, or through, or next, the combustion-chamber is avoided, and with it all liability to disturb or lessen the high degree of temperature required to be had in said combustion-chamber to perfectly consume said gases, from the fact that there may be maintained in the lower part of or facing said chamber, while operating the stove, a bed of live coke, which together with a proper introduction of a due supply of air into said chamber and the passing of the combustible gases evolved from fresh fuel up through said bed of live coals, so that they shall enter the combustion-chamber highly heated, and therein, from the sloping position of the front plate of said chamber with its air apertures, the heated gases are quickly and intimately mixed with air, which causes them to inflame and be perfectly consumed, thereby preventing any fuliginous flame with its carbonaceous smoke from being formed; consequently the oven flues of the stove do not become fouled with soot.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. I claim the location of the fuel doorway or feed-mouth B, below and forward of the combustion-chamber C of stove furnaces, and in such immediate position to the fire-box A as to operate in manner substantially as herein described for the purposes set forth.
2. When operated in combination with and through said located fuel doorway B, in manner as and for the purpose described, I claim the lever feeder F, constructed substantially as set forth.
3. In combination with the front plate D of stove furnaces, I claim the arrangement of a fire or guard plate E, in position above the fuel doorway B of the fire-box, and about opposite the combustion-chamber C, substantially in manner and for the purpose as set forth.
4. In combination with the fuel doorway B, when located substantially as described, I claim the arrangement of the front plate D of stove furnaces, in an inclined or slanting position, such, as to overhang the fire-box and combustion-chamber of the furnace, substantially in manner and for the purpose as herein set forth.

J. J. SAVAGE.

Witnesses:

WM. A. GREENE,
AUSTIN F. PARK.