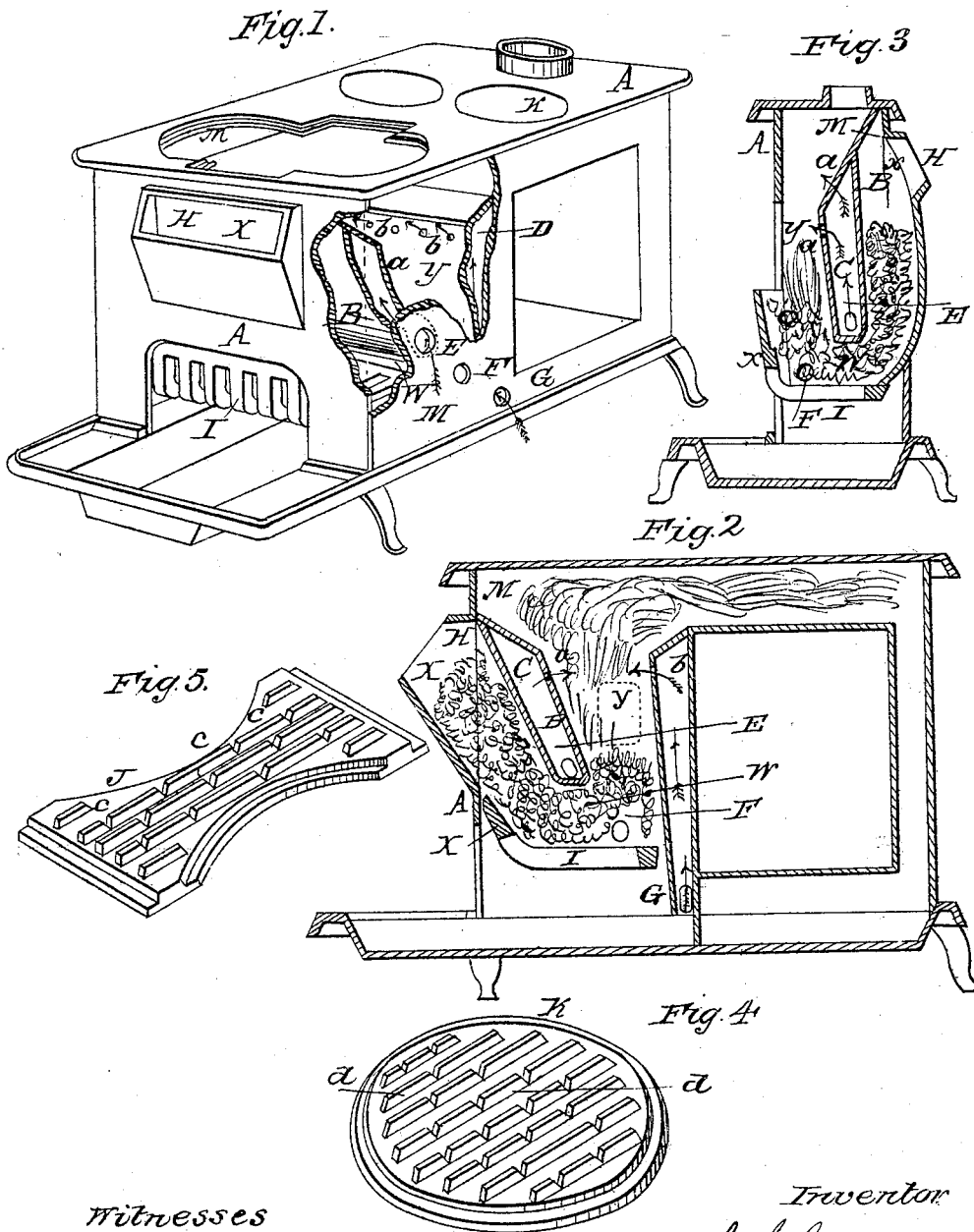


J. J. SAVAGE.  
Cook Stove.

No. 51,224.

Patented Nov. 28, 1865.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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

## IMPROVEMENT IN COOK-STOVES.

Specification forming part of Letters Patent No. 51,224, dated November 28, 1865.

*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 Stoves; and I do hereby declare that the following is a 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 a part of this specification, in which—

Figure 1 is a perspective view of a stove with portions of one side and front removed, so that the improved construction of the fire-chamber may be seen. Fig. 2 is a vertical sectional view of Fig. 1. Fig. 3 is a view of a modification of the arrangement shown in Figs. 1 and 2, in order to apply the improved fire-chamber to heating-stoves. Figs. 4 and 5 are views of an improved center piece and boiler-hole cover for stoves.

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

The object of my improvement is to produce a better combustion of the coals and of the combustible gases arising from the burning fuel, especially when using bituminous coals for fuel. This is done by so constructing the fire-chamber of the stove as to cause the smoke and other products of combustion from the igniting coals to pass through the fully ignited or live coals, thus heating the smoke and gases up to inflammable degrees by the time they arise into the combustion-chamber of the stove and come in contact with heated jets of air issuing from air-draft chambers arranged therein, so that they readily inflame and are to a great extent consumed.

The nature of my invention consists in dividing the upper part of the fire-chamber of stoves and heaters into two portions by means of a partition-plate or its equivalent device, and in such a manner that each portion shall communicate freely with the lower part of the fire-chamber containing the grate, and also form respectively a fuel-chamber on one side and a combustion-chamber on the other side of the fire-chamber space, in the manner substantially and for the purposes as hereafter fully described and shown.

It also consists in constructing and using, in combination with said partition-plate or its equivalent device, an air-heating chamber

which supplies impinging jets of heated air to the arising inflammable gases and products of combustion, in the manner substantially and for the purposes as hereafter fully shown and set forth.

It also consists in arranging said air-heating chamber and said combustion-chamber, as above mentioned, and a second air-heating chamber, hereafter described, in reference to each other in such a manner that the products of combustion shall pass between said chambers in the manner substantially and for the purposes as hereafter specified.

It also consists in constructing the under or fire surface of center pieces or division-plates and boiler-hole covers of stoves with a series of short severally projecting flanges or webs, arranged in parallel lines or rows or in concentric circles, with a suitable distance between them, and so to as "break joints," in the manner substantially as hereinafter shown and described.

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

A A represent a cooking-stove constructed with the usual arrangement of oven, and with flues around the same, but having a larger fire-chamber than usual. Extending across from side M to side M, and about two-thirds (more or less) of the depth from the top of this fire-chamber, is arranged and secured the partition-plate B, which thus divides the upper portion of the fire-chamber into two portions, and forming respectively on one side of the same a feeding or fuel chamber, X, for replenishing the fire, and on the opposite side a combustion-chamber, Y, wherein the heated smoke and combustible gases, after passing through the live coals, arise and are consumed. This partition-plate B is so arranged in reference to the bottom part W of the fire-chamber containing the grate I that there is free uncontracted communication at all times between that part and the fuel and combustion-chambers, in the manner substantially as shown in Fig. 2. The lower edge of the partition-plate B is curved and extended backward so as to form a bottom side to it, and it should in all cases be higher than the blank portion *x* of the grate I, and also be so arranged in reference to the grate-bars as to have about equal portions of

them on each side, all in the manner substantially as shown in Fig. 2, in order that the force of the air-draft through the grate-bars may be greater in the direction of the combustion-chamber.

C is an air-heating chamber, which is constructed upon the partition-plate B, and extends the whole length and width of the same. The cold or external air enters this chamber through the supply-openings E E, in manner as shown by the arrows in Fig. 2, and, arising within the chamber, is heated, and issues from thence through the apertures *a a a* in jets into the combustion-chamber, and, there intermingling with the heated combustible gases arising within the combustion-chamber, causes them to inflame and be consumed. This air-chamber C also serves another very important purpose—that of protecting the bottom side and adjacent parts of the partition-plate B from rapid wear or “burning out” by the intense heat to which it would be subjected if a steady current of cold air were not allowed to enter, circulate, and moderate the same, as is done in this arrangement.

D is a second air-heating chamber, constructed and arranged opposite to the air-heating chamber C, and on the opposite side of the combustion-chamber, in the manner as shown in Fig. 2. Cold or external air is admitted to this chamber through the openings G in the sides of the stove or through openings into the chamber from the ash-pit of the stove, as may be deemed best, and, arising within the chamber, becomes heated, and issues thence into the combustion-chamber through the apertures *b b*, thus supplying the arising combustible gases with air in a manner similar and for the same purposes as is done by the air-heating chamber C.

H is the door or opening to the fuel-chamber X.

F is a poker-hole, there being one on each side of the fire-box W.

K, Fig. 4, represents an improved construction of the under or fire surface of a boiler-hole cover or stove-lid, it being formed with a series of short flanges or webs, *d d d*, severally projecting from its surface and arranged in parallel rows, with suitable distances between them, and so as to break joints with each other, in the manner substantially as shown in Fig. 4; or the said series of projecting flanges or webs may be arranged in concentric circles, and still carry out the same principle of construction.

J, Fig. 5, represents an improved construction of the fire-surface of a stove center piece or division-plate, which is constructed with a series of short flanges or webs, *c c c*, severally projecting from its fire-surface, and arranged in reference to each other and breaking joints the same as on the boiler-hole cover, as above described.

The object of this improved construction of cover and center pieces is to prevent the same from springing or warping out of their original true shape by the continued extreme heat to which they are subjected when in use.

The operation of this improved stove is as follows: Fire having been started in the fire-box with kindlings, coals are then placed thereon through the door H until the fuel-chamber is nearly full. The door is then closed. The igniting coals soon take the place of the kindlings and occupy the whole grate and fire-box, and are then raised sufficiently into the combustion-chamber by means of a poker operated through the poker-holes F F as to keep the live coals up to and about the lower side of the division-plate B, in manner substantially as seen in Fig. 2, so that the smoke and gases from the igniting coals shall be made, by the aid of a free draft of air admitted through the grate I, to pass through the live coals, and arising thence into the combustion-chamber heated to such a degree that they, on coming in contact and intermingling with air-jets from the air-chambers before described, readily inflame and are consumed, thus effecting a more perfect combustion of the coals, and preventing to a great extent the accumulations of soot in the stove-flues from condensed or cooled smoke, as also preventing the inconvenience of crooked kettles and pans.

Having fully described my invention, what I claim as new therein, and desire to secure by Letters Patent, is as follows:

1. A divided fire-chamber for stoves and heaters, substantially the same as herein described, and for the purposes as set forth.

2. The partition-plate B, or its equivalent device, constructed and arranged in the fire-chamber with its bottom side in proper position to the grate thereof, in the manner substantially as herein fully described, and for the purposes as set forth.

3. In combination with the partition-plate B, the air-heating chamber C, constructed and arranged substantially in the manner as herein shown and set forth, and for the purposes as specified.

4. Arranging the air-heating chamber D, the combustion-chamber Y, and air-heating chamber C with reference to each other in such a manner that the products of combustion shall pass between said chambers in the manner substantially as herein shown, and for the purposes as set forth.

5. The method of constructing the under or fire side of stove center pieces or division-plates and boiler-hole covers, in the manner substantially as herein shown and described, and for the purposes as set forth.

J. J. SAVAGE.

Witnesses:

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