(No Model.) 2 Sheets—Sheet 1.

D. G. LITTLEFIELD.

OVEN BOTTOM PLATE FOR STOVES OR RANGES.

No. 457,403. Patented Aug. 11, 1891.

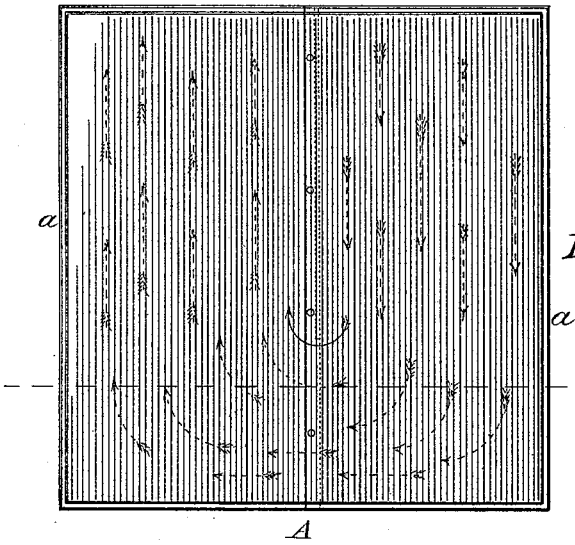

Fig. 1.

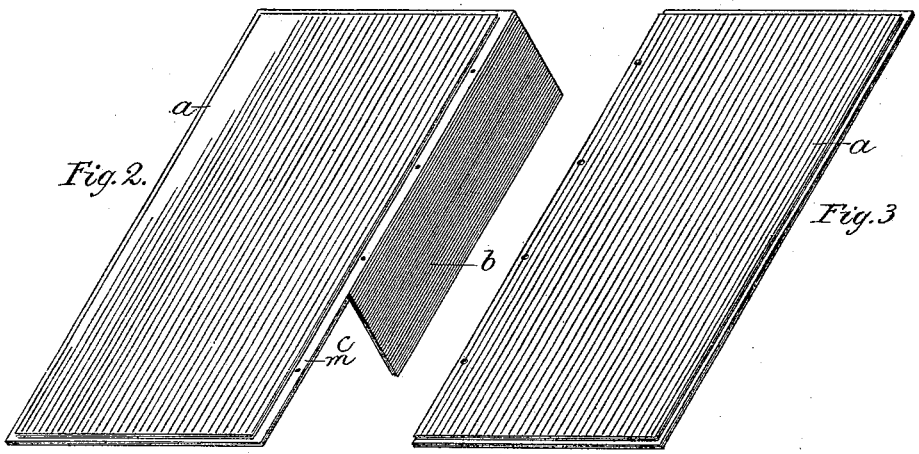

Fig. 2.

Fig. 3

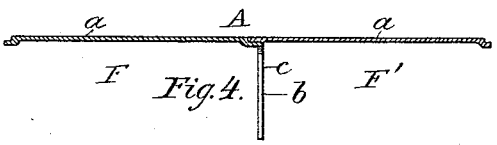

Fig. 4.

Witnesses.
Charles Seekins.
A. Lockwood Jr.

Dennis G. Littlefield.
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by his Attorney
Alex. Lockwood

(No Model.) 2 Sheets—Sheet 2.

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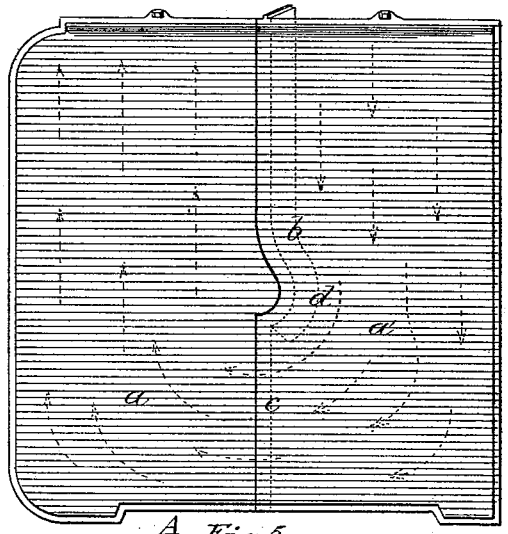

Fig. 5.

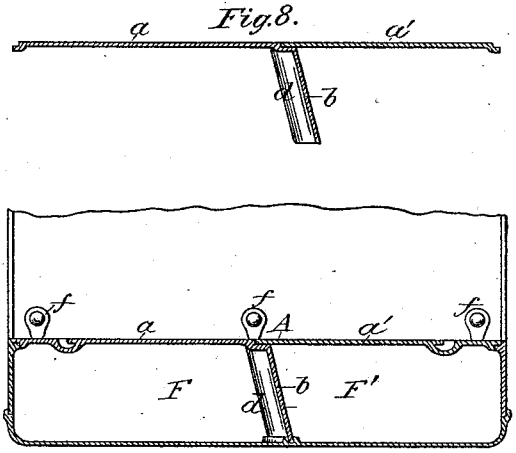

Fig. 8.

Fig. 9.

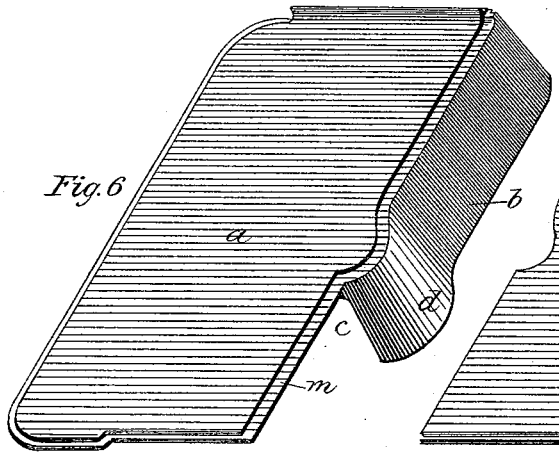

Fig. 6.

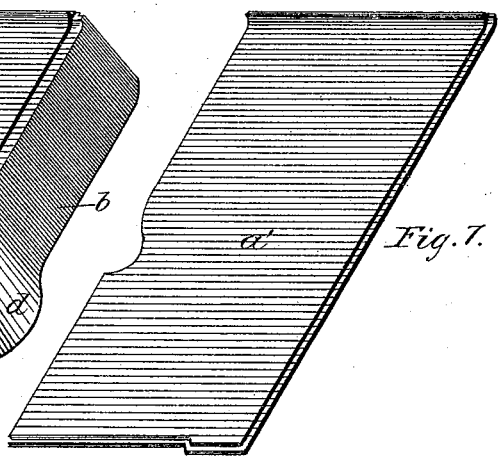

Fig. 7.

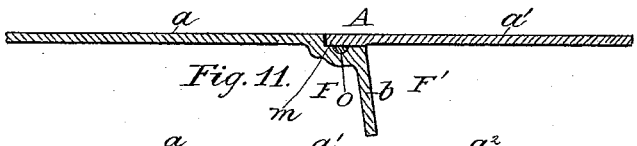

Fig. 11.

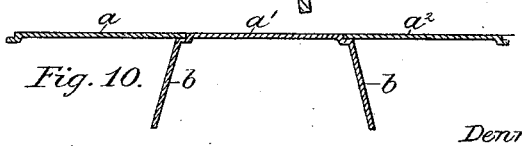

Fig. 10.

Witnesses.

Charles Seekirk

A. Seekirk Jr.

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Inventor.

by his Attorney

Alex. Seekirk

UNITED STATES PATENT OFFICE.

DENNIS G. LITTLEFIELD, OF ALBANY, NEW YORK.

OVEN-BOTTOM PLATE FOR STOVES OR RANGES.

SPECIFICATION forming part of Letters Patent No. 457,403, dated August 11, 1891.

Application filed March 10, 1891. Serial No. 384,476. (No model.)

To all whom it may concern:

Be it known that I, DENNIS G. LITTLEFIELD, a citizen of the United States, residing at Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Oven-Bottom Plates for Stoves or Ranges; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in the bottom plates of ovens of stoves or ranges. Heretofore bottom plates of ovens were usually made in single pieces, each of which extended in one direction, from side to side of the stove or range, and in a transverse direction from the front oven plate or wall to the back oven-plate. These oven-plates are required to be thin and the mold is generally gated at the corners thereof and the molten metal run in at these gates quickly cools or becomes so low in temperature, (owing to the shallowness of the chamber of the matrix,) that its flow becomes comparatively sluggish as it approaches the central portion of the mold, and consequently the plate may be either wholly defective or be thinnest in its central portion. When in addition to the use of the corner gates the mold is also gated at its center, the metal of the plate produced will be thicker in its central portion than in those portions outlying the same. The uneven thickness of the plates produced from these methods of casting the same induces an unequal heating and expansion of the same when the stove or range is operated for baking or roasting. With these single-plate oven-bottoms it is customary to use flue-strips or division-pieces made separate and independent of the oven-bottom plate and arrange them between the latter and the bottom-plate proper of the stove, at about the middle of width of the same, and hold the same in a vertical position by means of a slightly-projected strip of metal and several spuds cast at intervals apart on the under side of the oven-bottom plate and the upper side of the stove-bottom plate.

The usual result attending the operations of the heat with these oven-bottom plates is the buckling of the same at its middle of width or center where it becomes so much more highly heated than at the outer portions as in most cases, to rise away from the upper edges of the division-strip, so as to permit the products of combustion to readily pass from the entrance-flue to the return-flue, instead of passing forward and through the passage-way provided.

My improvements in this invention are designed to remedy these defects; and it consists, primarily, in an oven-bottom plate composed of two pieces, one of which pieces having integral with it a flue-strip for dividing the chamber beneath the oven-bottom into flues for the circulation of the products of combustion beneath said bottom and the other being plain and supported at its inner edge from the first-mentioned piece, and, second, to provide with a sectional oven-bottom plate an element or device by which the products of combustion will be prevented from turning quickly and short from the entrance-flue into the return-flue, and will be made to travel more fully beneath the outer corners of the oven-bottom neighboring the opening from one flue to the other to heat the said corner portions, and, further, to combine with the pieces forming a sectional oven-bottom device by which said bottom may be removed at will.

The objects of this invention are to produce a sectional oven-bottom which will retain its normal condition of a level plane of upper surface when heated, and be provided with means for causing the heat from the products of combustion circulating in the entrance-flue to stimulate the draft on the same through the return-flue, so that a more uniform heating of the oven-bottom will be effected; also, to provide means by which the sections of this improved oven-bottom may be readily removed and replaced. I attain these objects by the means illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a sectional oven-bottom embodying some of the improvements in this invention. Fig. 2 is a perspective view of one of the plates forming the oven-bottom. Fig. 3 is a perspective view of a co-acting plate of the same. Fig. 4 is a cross-sectional view of the oven-bottom plates when together. Fig. 5 is a plan view of an oven-bottom embodying other improvements in

this invention. Fig. 6 is a perspective view of one of the plates in the same. Fig. 7 is a perspective view of a coacting plate. Fig. 8 is a cross-sectional view of the plates formed for a two-flue stove. Fig. 9 is a sectional elevation illustrating the means for making the oven-bottom removable. Fig. 10 is a cross-sectional view of an oven-bottom composed of three sections. Fig. 11 is a sectional view, on an enlarged scale, illustrating the joint.

The same letters of reference refer to like parts throughout the several views.

In the drawings, A is the sectional oven-bottom composed of two or more plates, as *a* and *a'* in Figs. 1, 4, 5, and 8, and as *a*, *a'*, and a^2 in Fig. 10, according to the number of flues intended to be produced beneath the oven-bottom. The plates forming the oven-bottom are made with a length corresponding with the length of the bottom from front to rear, and are made in their aggregate of widths equal to the intended width of the said bottom. When two plates are used for a two-flue stove-oven, the plates *a* and *a'* are of about equal width, and each forms a half of the said bottom, as illustrated in Figs. 1, 4, 5, and 8, and when these plates are used for a three-flue stove or range oven the plates *a*, *a'*, and a^2 will each form substantially a third of the oven-bottom; yet, if preferred, the middle one, as *a*, Fig. 10, may be made with a little greater extension of width than plates *a'* and a^2, so that the capacity of the middle flue beneath will be a little greater than that of each of the coacting side flues. One of these plates, as *a*, has integral with it a downwardly-extended portion *b*, which forms (when the plates constituting the oven-bottom are together in place in the stove) a division-plate for separating flue F from flue F', as illustrated in Fig. 9. This part *b* integral with plate *a* may be at right angles with the horizontal plane of the upper surface of the latter, as illustrated in Figs. 2 and 4, or it may be inclined, as shown in Figs. 6, 8, 9, 10, and 11. The said division-plate is made with a width or vertical extension equal to the depth of the flues which it divides, and it extends from one end of said plate *a* toward the opposite end and terminates within such a suitable distance from the opposite end as to allow a suitable opening *c* to be produced when in place as will serve as a passage for the products of combustion from one flue to the other. Two of these division-plates *b b* may be made with plate *a* when such plate is to be used with plates *a'* and a^2, Fig. 10, for a three-flue stove-oven.

Although the division-plate portion *b* may be made plain in its entire length, yet I prefer to provide with said portion *b* of said plate *a* a device *d* for deflecting the currents of the products of combustion in a lateral direction just before they pass through openings *c* from flue F to flue F'. This deflecting device operates to prevent the hot products of combustion from passing quickly from flue F to flue F', as heretofore, and forces them to move farther forward and more toward the outer side portion of flue F, as indicated by arrows in Fig. 5, than they move in the said flue when this deflecting device is omitted, as in flue in Fig. 1. By this deflection of the current of products of combustion device *d* in a lateral direction, as indicated by arrows in Fig. 5, the bottom of the oven has its forward corner portions heated almost equally with the other portions of the oven-bottom.

When the division-plate portion *b* is made to incline or flare outwardly, as shown in Fig. 9, the products of combustion moving through flue F will more highly heat said portion *b* than they would were the division-plate portion set at right angles with the plane of the plate *a*, and as shown in Fig. 4, and this greater heat of said plate operates to stimulate the draft of the flue F' and induce a more rapid movement of the hot gases through flue F, so that the heat of the said gases will be less absorbed by plate *a'* over said flue and be carried to plate *a* over flue F' to more highly heat the same than they would were the portion *b* made to be vertical, as division-strips have heretofore been made.

This sectional bottom, comprised by two or more plates, as above described, may be built in the stove when it is being mounted, so as to be fixed as immovable as oven-bottoms have heretofore been made; yet I prefer to provide with this sectional bottom means by which the sections may be readily removed for access to the chamber below for clearing the same, as may be required, and for this purpose I provide in each plate any suitable device, as device *e*, for engagement with a lifting-instrument, which may be introduced in a manner similar to that employed for lifting pot-hole covers or hearth-plates; and when provision is made for the ready removal and placement of the plates *a a'*, I provide with the side and end plates suitable ledges or flanges for support of the edges of said plates, and also provide with each end plate of the oven two or more turn-buttons *f f*, which may be turned down to lock the plates *a a'* in place as shown in Fig. 9, and be turned up and away from said plates when they are to be removed. The margin edge portion of plate *a*, where it is joined with the lapping edge margin of plate *a'*, is made with a step-like depression *m*, Fig. 11, and the margin edge portion *n* of plate *a'* is preferably made a little thicker than the body of said plate, and these two plates may be secured together by rivets, if preferred, or a continuous groove or recess *o* may be made in the depressed margin edge portion *m* of plate *a* for receiving a suitable cement for making the joint between the two plates tight.

These improvements are applicable to ovens of all classes of stoves and ranges employing cast-iron oven-bottom plates.

Having described my invention, what I

claim, and desire to secure by Letters Patent, is—

1. An oven-bottom plate which is formed by the combination of two or more plates, one of which having integral with it the downwardly-projected piece or plate *b*, which serves as a division-plate between the flues beneath the oven-bottom, substantially as and for the purposes set forth.

2. In an oven-bottom, the combination, with plate *a*, having integral with it the downwardly-projected and outwardly-flaring piece or plate *b*, which serves as a division-plate between two flues beneath the oven-bottom, of plate *a'*, having one of its edges joined with the neighboring edge of the first-mentioned plate, substantially as and for the purposes set forth.

3. In an oven-bottom, the combination of plates *a* and *a'*, plate *a* having integral with it at the line of joint of said two plates the downwardly-projected piece or plate *b* for service as a division-plate between two flues, and beginning at one end of said plate *a* and terminating at the edge of opening *c*, past which line of edge a portion of said plate *a* is extended, substantially as and for the purposes set forth.

4. An oven-bottom having beneath it a division piece or plate *b* for separation of two adjoining flues, and having with its end portion at opening *c*, between said two flues, the deflecting device *d*, substantially as and for the purposes set forth.

5. In an oven-bottom, the combination of two plates *a* and *a'*, one having integral with it the division piece or plate *b*, which has with its end portion at opening *c* the deflecting device *d*, substantially as and for the purposes set forth.

6. In an oven-bottom, the combination of two plates *a* and *a'*, one having integral with it the division piece or plate *b* for separation of adjoining flues beneath said bottom, and the continuous step-like depressed margin *m*, receiving the margin edge of the conjoined plate *a'*, substantially as and for the purposes set forth.

7. In an oven-bottom, the combination, with plates *a* and *a'*, which are removable at will, one having integral with it the division piece or plate *b* for separation of the adjoining flues beneath said bottom and the continuous step-like depressed margin *m*, receiving a margin edge of the conjoined plate *a'*, of locking devices *ff*, operated at will, between said plates of the oven-bottom and the end plate or plates of the oven, substantially as and for the purposes set forth.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

DENNIS G. LITTLEFIELD.

Witnesses:
ALEX. SELKIRK,
FREDERICK ELZE.