H. H. STIMPSON.

Cook Stove.

No. 4,516. Patented May 16, 1846.

Fig: 2.

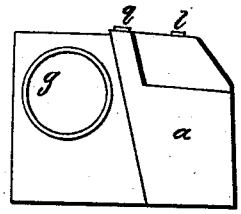


Fig: 1.

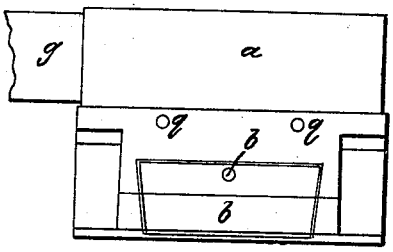


Fig: 3.

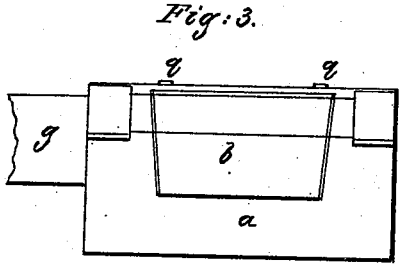


Fig: 4.

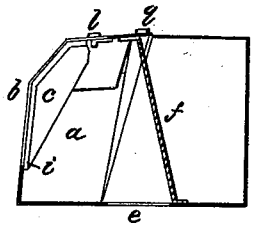


Fig: 6.

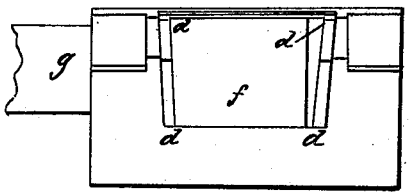
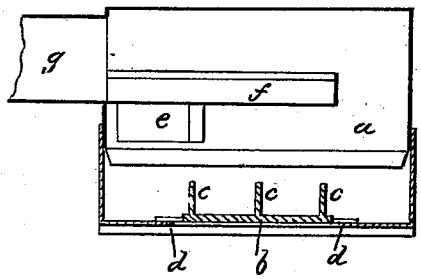


Fig: 5.



UNITED STATES PATENT OFFICE.

H. H. STIMPSON, OF BOSTON, MASSACHUSETTS.

BACK OF COOKING-RANGE.

Specification of Letters Patent No. 4,516, dated May 16, 1846.

To all whom it may concern:

Be it known that I, HERBERT H. STIMPSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Hot-Air Backs of Cooking-Ranges or other Fireplaces, and that the object of my invention and the manner in which it is constructed and operated are duly set forth and represented in the following description, accompanying drawings, letters, figures, and references marked thereon.

The hot air back to which I have above alluded consists of a rectangular or other proper shaped cast iron box inserted in the brickwork in rear of the fire grate or fireplace of a cooking range the front side and a part of the top of the box constituting as it were the back of the fireplace or that part of it against which the fire acts with the most intensity. Cold air is admitted within the box and as it comes into contact with the heated part thereof it becomes warmed. From the box it is carried by a pipe to any apartment into which it may be desirable to introduce it. The action of the burning fuel upon the front of the hot air back soon destroys the same either by burning it or causing it to expand unequally and crack so as to admit more or less unpleasant gas or combustible products into the interior of the back. The ends of this air box or chamber are also cast with the front and part of the top and bottom, to prevent the expansion of the front and top from opening the seams which would admit gas into the box or chamber and vitiate the air therein. When a back becomes so injured, it becomes necessary to tear away the brick work and insert another at great expense. My improvement is intended to obviate the above difficulties and is as follows.

Figure 1 denotes a top view of one of my improved air backs; Fig. 2 is an end elevation of it; Fig. 3 is a front elevation; Fig. 4 is a vertical and central transverse section, and Fig. 5, a horizontal section of the same.

My invention consists in providing the front or the front and part of the top of the air chamber (*a*, Figs. 1, 2, 3, and 4) with a false back (*b*) which consists of a plate of metal of the shape to correspond with that intended for the back of the fireplace and having a series of vertical ribs or flanches (*c*, *c*, *c*) cast upon its rear side in order to strengthen it. The said false back is to be made somewhat larger than the portion of the hot air back which is generally exposed to an intense and injurious heat of the fuel and it is to be fitted and adapted to cover a corresponding opening or space (*d*, Fig. 6 which denotes a front elevation of the air back having the false back removed) formed through the front side and top of the hot air back and is to be supported therein by suitable flanches or projections cast around the edge of the space or opening. And the said false back when applied to the hot air back or box may be confined in place by a flanch (*i*) at the lower edge which fits inside, and one screw or other proper contrivance passing through the top lap joint at (*l*) and at the middle of the length which will admit of its ready removal at any time and of its expansion by heat without fracture in consequence thereof, for as the union of the two is by lap joints the surfaces can be kept tight and yet be free to slide on each other.

The hot air back being thus provided, with a false back whenever the latter becomes injured so as to require separation or the substitution of another and similar false back there being no necessity of tearing down the brickwork and removing the whole air back as all that will be required will be to take out the injured false back and replace it by another and second one. The cold air to be heated passes into the interior of the air back though an orifice or opening (*e*) formed through the bottom of the same. It thence by means of a vertical or inclined partition (*f*) (which extends between the top and bottom of the air box, and from the end at which the air enters rearward or toward the opposite end of the box terminating at a few inches distant therefrom) is made to pass into direct contact with the rear side of the false back thence courses around the end of the partition and passes into the opposite part of the box and escapes through an opening (*g*) or pipe inserted in the upper part of that end of the box at which the air was received.

The making of cooking ranges with a hot air chamber at the back of the fireplace has heretofore been attended with much difficulty in consequence of the cracking of the front plate of the air chamber which at the same time constitutes the back of the fireplace the unequal expansion of which

under the influence of the heat causes it to crack and to admit gas that vitiates the heated air, and renders it unwholesome. And when the front plate of the air box is made separate from the rest of the box and attached thereto by the edges the unequal expansion not only tends to crack it, but to separate the joints so as to admit gas. To avoid this difficulty I make the front plate of the air chamber or a part of the front and top, the bottom, and the ends of the air chamber cast in one piece with a large aperture in the front and part of the top to which I fit by rabbet or lap joints another plate that forms the fire back, and this I secure by a bolt at the middle of its length so that all the parts of the plate can expand in any direction without the liability of cracking, which would not be the case if the whole front plate of the air chamber or fire back were made in one piece. By this arrangement the movable plate receives the action of the most intense heat, and expands and contracts freely the lap joints sliding on the surrounding plate to which it is secured and which does not receive so much heat.

I am aware that the fire backs of fireplaces have been made separate to admit of removing them when burned out, but I am not aware that that part of the front plate of the air chamber of a range which constitutes the fire back has been made separate from and to cover the hole in the front plate of the air chamber which is cast in one piece with the ends and part of the top and bottom. It will be obvious that a different result is attained by this arrangement, for the fire back as heretofore made is attached all around to the fireplace so that when the middle, which is subjected to the greatest range of heat, expands and contracts, the plate is much strained and necessarily cracks in the middle or opens the joints, results entirely avoided by my improvement. I do not therefore claim simply making the fire back of a separate plate for this would not attain the end contemplated; but

What I do claim as my invention and desire to secure by Letters Patent is—

Making that part of the front and top plate of the air chamber which constitutes the fire back separate from and attached to the front plate of an air chamber cast with the ends, top, and bottom, substantially in the manner and for the purpose specified.

H. H. STIMPSON.

Witnesses:
CHAS. M. KELLER,
A. P. BROWNE.