2 Sheets—Sheet 1.

E. EDWARDS.

Hot-Air Furnace.

No. 107,347. Patented Sept. 13, 1870.

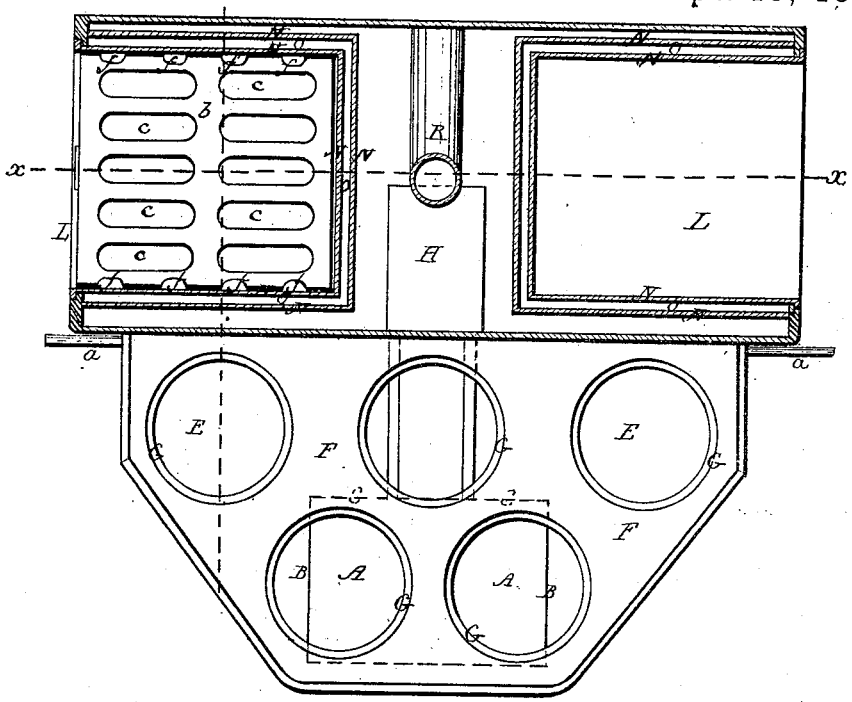
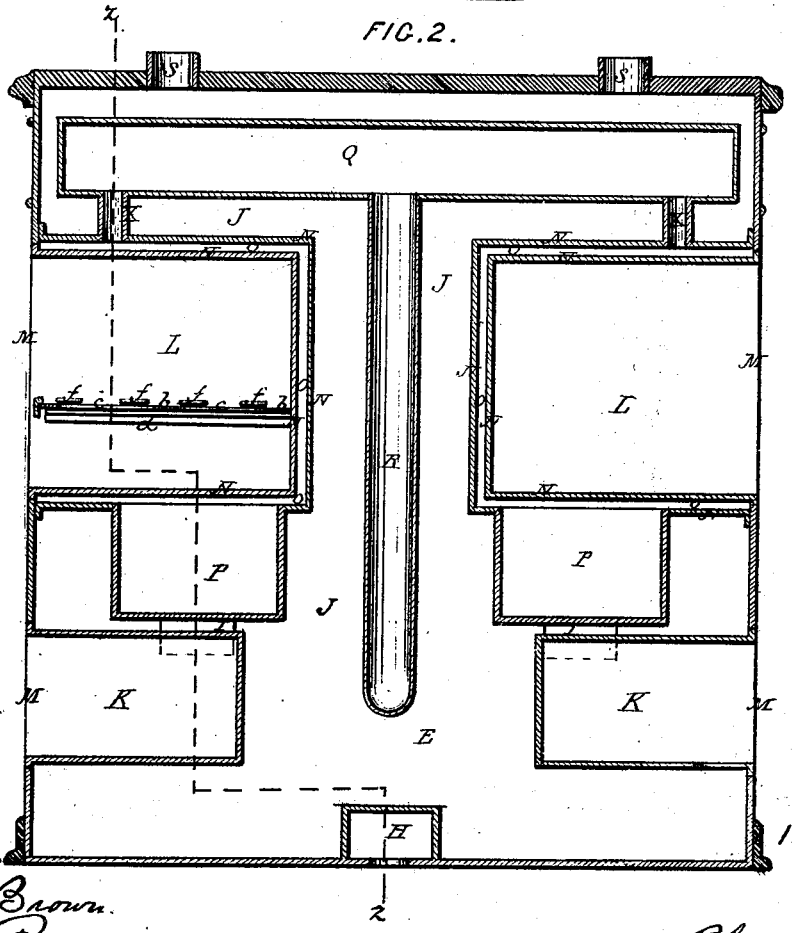


FIG. 2.



WITNESSES.

Edwin W. Brown.

Albert H. Burr

INVENTOR.

Ebenezer Edwards

2 Sheets—Sheet 2.

E. EDWARDS.

Hot-Air Furnace.

No. 107,347. Patented Sept. 13, 1870.

FIG. 3.

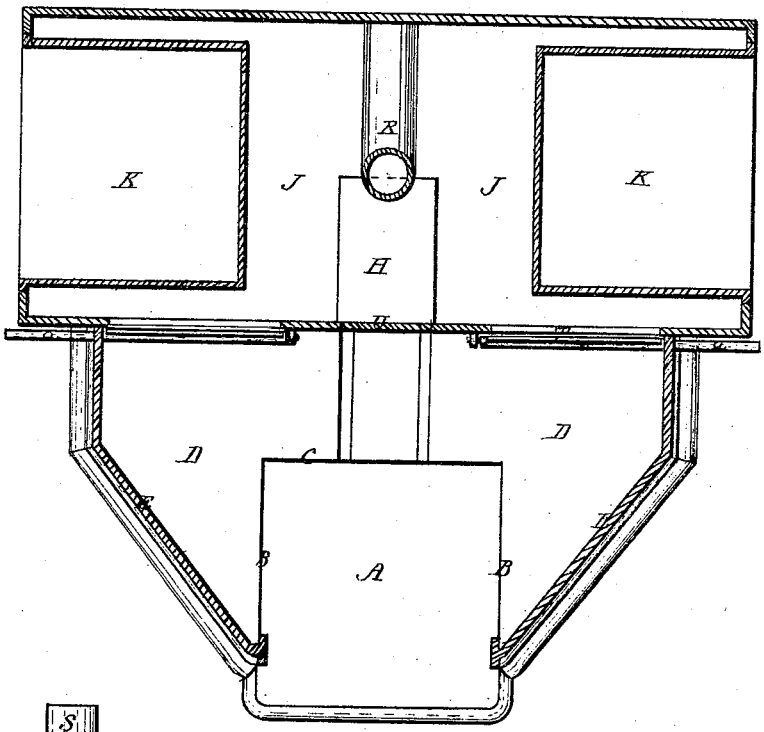
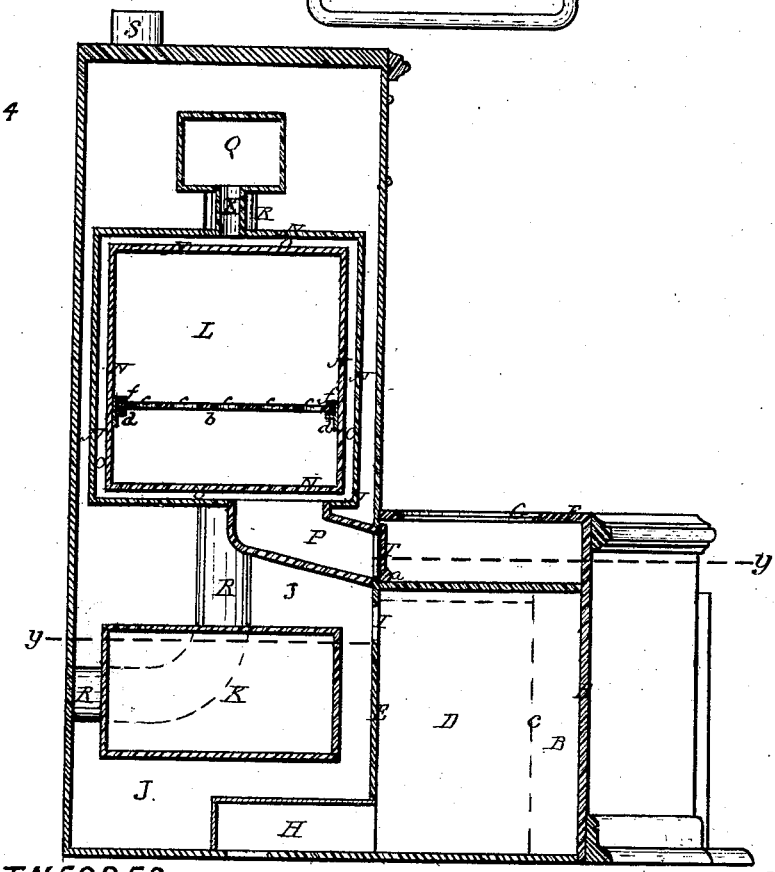


FIG. 4



WITNESSES.

Edwin M. Brown

Albert W. Brun.

INVENTOR.

Ellen Edwards

United States Patent Office.

EBEN EDWARDS, OF SOUTH BOSTON, ASSIGNOR TO HIMSELF AND EBENEZER SANBORN, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 107,347, *dated September* 13, 1870.

COMBINED FURNACE AND RANGE.

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

To all persons to whom these presents shall come:

Be it known that I, EBEN EDWARDS, of South Boston, in the county of Suffolk and State of Massachusetts, have invented a certain new and useful improved Combined Furnace and Range; and that the following is a full and exact description of the same, reference being had to the accompanying drawing.

The present invention consists—

First, of a range constructed with an air-chamber, about the sides and rear, but not the front of the fire-pot, into which cold air is admitted, in combination with a chamber located to the rear of said chamber about the fire-pot, and through suitable passages in communication therewith, with said chamber provided with an oven or ovens constructed with an air-space around it or them, that is, in direct connection with the fire-pot and the exit-flue or chimney, for the products of combustion to escape from the fire-pot.

Second, in combination with the above, of a drum or box, arranged within the chamber to the rear of the fire-pot chamber, for the products of combustion to pass through after escaping from the air-space about the oven or ovens in their passage to the exit-flue or chimney.

In the accompanying drawing my improved combined range and furnace is illustrated.

In plate 1, Figure 1 is a transverse horizontal section, taken in a plane above the fire-pot and range proper.

Figure 2, a longitudinal vertical section, mainly in plane of line *x x*, fig. 1, but diverging in some respects from said line, to more perfectly illustrate the arrangement and connection of parts.

In plate 2, Figure 3 is a transverse horizontal section in plane of line *y y*, fig. 4; and

Figure 4, a transverse vertical section in plane of line *z z*, fig. 2, plate 1.

A in the drawing represents the fire-pot of a combined range and furnace, constructed according to the present invention.

This fire-pot A, at the front, is open, but upon the sides B B and rear C is surrounded by a chamber, D, closed by plates E around its sides, bottom, and top.

F, the top plate of the range proper, which plate extends over the combined width and length of the fire-pot A and chamber D, and is provided with five pot-holes G.

H, a passage leading into chamber D at its rear side, and at or near the lower portion thereof. Through this passage H, cold air is admitted to the said chamber D, at or near its top.

These openings form communication with a chamber, J, located to the rear of the chamber D, and extended somewhat above the plane of the top plate to fire-pot A.

In this chamber J, in the present instance, are located two sets of ovens, K and L, opened at the ends M of the chamber, and arranged, the one set, K, near the bottom of the chamber, in the same horizontal plane, but on opposite ends, and the other set, L, in one and the same plane, but above the top of the fire-pot, and in opposite ends of the chamber J.

The lower ovens K are for the reception, more particularly, of articles desired to be kept warm, and the upper ovens L for the purpose of baking, roasting, &c.

The upper ovens L are each constructed with double walls, N N, around the sides, top, bottom, and inner end, leaving between the walls N N a continuous air-space or chamber, O, around each oven, that, by means of passages P, entering the lower side thereof, are connected with the combustion or fire-chamber A of the range, and by means of pipes X, at the upper side, connected to one and the same drum or box Q.

This drum or box Q is located above the ovens L, along the length of the chamber, and from it leads a pipe, R, down to the lower portion of the chamber J, that is connected with the exit-flue or chimney.

S, pipes entering the upper portion of chamber J.

T, dampers arranged by stems or rods *a* in proper position within the combustion-chamber A, to open and close the passages P, leading to the spaces about the ovens.

U, an opening into the fire-chamber, by which, with a suitable pipe-connection, a direct communication may be had with the exit-flue or chimney, said communication being provided with a damper to regulate or close the same.

With a fire in the fire-pot A, the direct draught through opening U closed, but the dampers T to passages P open, the products of combustion, &c., from the same are conducted around the ovens L to and into the box Q, and from thence to and through pipe R to the chimney.

By the heat generated from the fire the cold air admitted to the chamber D, about the fire-pot, through its passage H, becomes heated, escaping through openings I into chamber J, but from thence, circulating around within the same, escapes at S, by which, with suitable pipe-connections, it can be conducted to any room or locality desired.

From the combined construction and arrangement above described it is obvious—

First, that a large amount of surface is obtained for heating air to be used for heating apartments.

Second, that as the cold air is first conducted to the fire-pot chamber D, it is heated before reaching the chamber about the ovens, thus preventing any undue cooling of the same, and enabling them to be kept at suitable heat for use; and

Third, that an almost complete and perfect radi-

ation of the heat, in the currents of smoke, &c., from the fire-pot, is secured before they can escape into the chimney.

In one of the ovens, L, a shelf, *b*, made with open spaces *c*, is represented as placed.

d the slides or rails on which said shelf *b* is placed.

These rails *d* are provided with ear-pieces *f*, projecting over the upper side of the shelf, and arranged at intervals from the front to the rear side of the oven.

When the shelf is drawn out for a greater or lesser portion of its length from the oven the ear-pieces hold it from sagging, and maintain it in a horizontal position.

Having thus described my improved combined range and furnace,

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

1. The combination of the air-chamber D, having cold air-inlet H and escape I, with an air-chamber, J, in which is an oven or ovens constructed with an air-space connected to the fire-chamber and to the exit-flue, substantially as described, for the purposes specified.

2. In combination with the above, the drum Q, arranged in chamber J above the ovens, and connected to the air-spaces about the ovens, and to the exit-flue or chimney, substantially as and for the purpose specified.

The above specification of my invention signed by me this 24th day of June, A. D. 1870.

EBEN EDWARDS.

Witnesses:

EDWIN W. BROWN,

ALBERT W. BROWN.