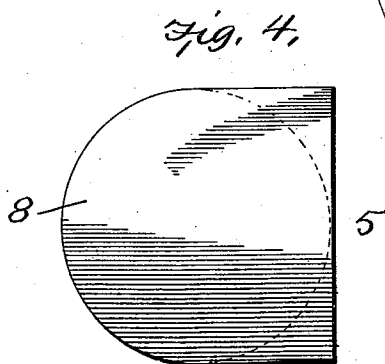
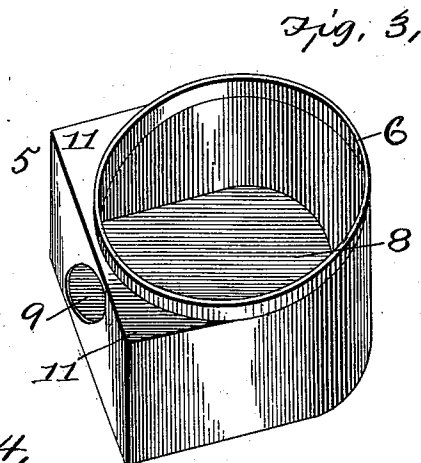
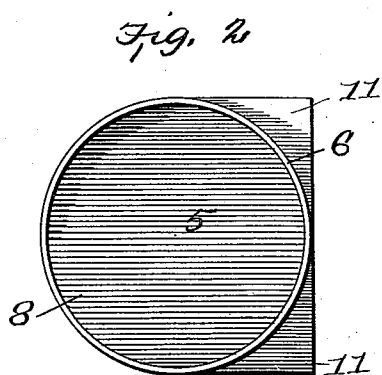
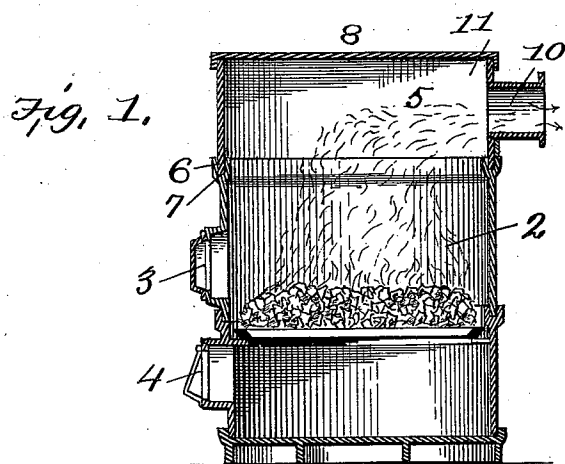


(No Model.)

E. FALES.
HEATING FURNACE.

No. 549,772.

Patented Nov. 12, 1895.



WITNESSES-

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UNITED STATES PATENT OFFICE.

EDWARD FALES, OF WINTHROP, MASSACHUSETTS.

HEATING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 549,772, dated November 12, 1895.

Application filed March 2, 1895. Serial No. 540,339. (No model.)

To all whom it may concern:

Be it known that I, EDWARD FALES, a citizen of the United States, residing at Winthrop, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Heating-Furnaces; 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.

The invention relates to improvements in heating apparatus, and it is particular applicable to hot-air furnaces, especially that class in which bituminous coal is used, although it is equally applicable to furnaces burning all kinds of fuel.

The principal objects of the invention are to economize fuel and to effect a more thorough and complete combustion thereof, thereby producing a clearer smoke and a more intense and uniform heat.

The invention consists, essentially, in providing a furnace above the fire-pot with an independent combustion-chamber whereby conflicting currents are produced therein, one of said currents being of a high temperature and passing upward from the fuel and the other a cooler current, which descends through the chimney, the two currents combining in the combustion-chamber, where they are burned, producing an intense heat.

The above-mentioned objects are attained by means of the structure illustrated in the accompanying drawings, in which—

Figure 1 represents a vertical sectional view of a furnace constructed according to my invention, showing the independent combustion-chamber mounted thereon; Fig. 2, an inverted plan view of the combustion-chamber; Fig. 3, an inverted perspective view of the same, and Fig. 4 a top plan thereof.

Referring to the drawings, the numeral 1 indicates a furnace constructed, preferably, of a vertical cylinder of metal, of suitable size, having a fire-pot 2 and the usual ash-pit below. The fire-pot and ash-pit are provided with doors 3 and 4, respectively.

The numeral 5 indicates a combustion-chamber, which is partly semicylindrical and partly rectangular in cross-section and is provided with a collar 6, of circular shape, which is adapted to fit into a groove 7, made in the upper edge of the fire-pot section. The com-

bustion-chamber is provided with a flat top 8 and an exit-opening 9 on its flat side, connecting with the usual smoke-stack or chimney 10.

The corners of the rectangular portion of the combustion-chamber project beyond the circular body of the furnace, forming vacuum-chambers 11, which, being farther from the center of heat than any other portion of said combustion-chamber, are filled with rarefied air or air of a much less temperature than the remaining portion of the combustion-chamber, thereby producing a partial vacuum.

The operation of the invention is as follows: Fire being built in the fire-pot as usual, the products of combustion will pass up into the independent combustion-chamber and out through the smoke-stack or chimney, and as soon as the draft is established the doors and dampers at the front of the furnace may be closed. A partial vacuum is at once created in the angular covers of the independent combustion-chamber, and this partial vacuum will cause a counter-current of cool air to descend from the sides of the smoke-stack or chimney, which counter-current of cool air will be drawn into the combustion-chamber, when eddy currents will be created or established in said chamber, and then currents coming in contact with the rising heat will produce fierce combustion and a most intense heat, resulting in a great saving of fuel, as the furnace can be kept in operation on a single charge for much greater length of time than usual.

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

1. The combination, with the fire-pot of a furnace, of an independent combustion-chamber, located above said fire-pot and provided with vacuum spaces, substantially as and for the purpose set forth.

2. The combination, with the fire-pot of a furnace, of an independent combustion-chamber, located above said fire-pot and provided with rear corner spaces, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in the presence of two witnesses.

EDWARD FALES.

Witnesses:

J. R. NOTTINGHAM,
E. A. PAUL.