R. WILEY.

COMBINED FIRE PLACE AND FURNACE.

No. 181,752. Patented Aug. 29, 1876.

Fig. 1.

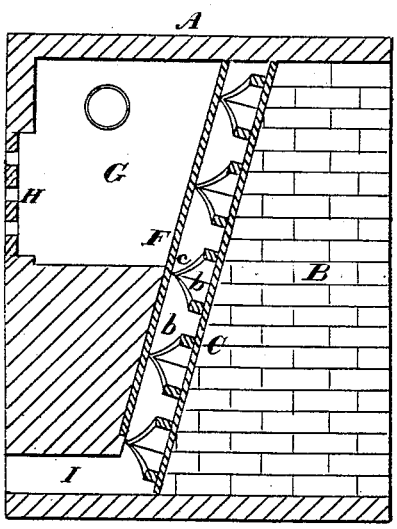


Fig. 2.

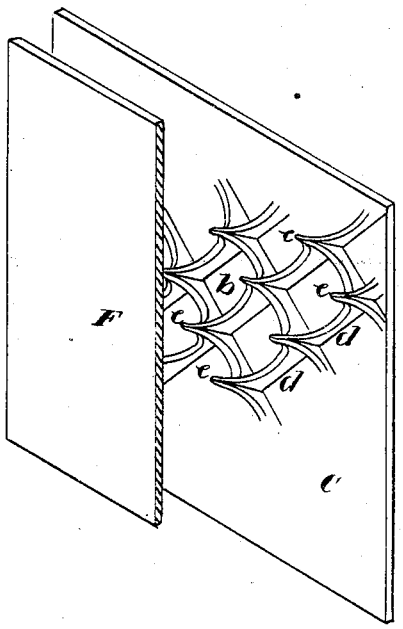
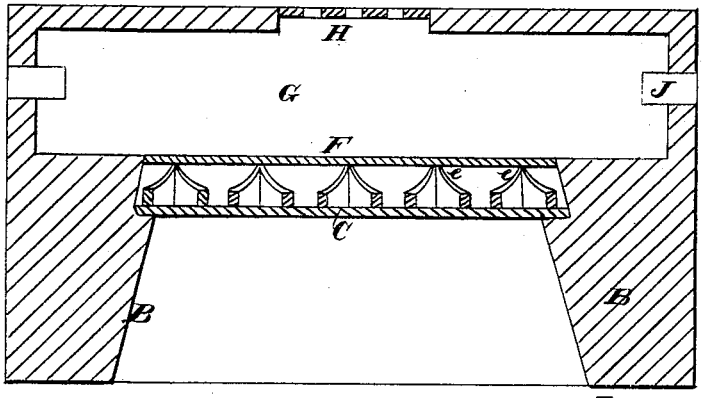


Fig. 3



Witnesses

Geo. H. Strong

Jno. L. Borne

Inventor

Reason Wiley

by Dewey & Co

Attys

UNITED STATES PATENT OFFICE

REASON WILEY, OF ARCATA, CALIFORNIA.

IMPROVEMENT IN COMBINED FIRE-PLACE AND FURNACE.

Specification forming part of Letters Patent No. **181,752**, dated August 29, 1876; application filed July 6, 1876.

To all whom it may concern:

Be it known that I, REASON WILEY, of Arcata, Humboldt county, State of California, have invented a Combined Fire-Place and Furnace; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention without further invention or experiment.

My invention relates to a novel combination of a fire-place and a heating-furnace, by which rooms adjacent to and above that in which the fire-place is situated may be warmed; and it is an improvement in that class of devices known as fire-place heaters. It consists of a peculiarly-constructed back for the fire-place, in which braces for strengthening the plate and preventing it from warping or twisting are so combined as to leave passages through which the air to be heated can circulate and eventually pass into a chamber in the masonry, from which it is distributed by the proper passages to the rooms to be warmed.

Referring to the accompanying drawings for a more complete explanation, Figure 1 is a vertical section. Fig. 2 is a view of the ribbed backs of Plate C. Fig. 3 is a horizontal section.

A is a body of masonry, built up to form a fire-place, of which B B are the sides or jambs, and these are made solid in the usual manner. The back-plate C of the fire-place is made of cast-iron, and has its front on the side next to the fire, made smooth, as shown.

The back has cast upon it two sets of ribs or braces, which cross it diagonally to the sides and at right angles with each other, so as to form small open squares *b* between them. These ribs are depressed between the sides of the squares, as shown at *d*, and rise up into points at the angles *e*, where they meet, and this allows a free circulation of air between the ribs, so that it becomes thoroughly heated, while from the shape of the ribs, the plate is effectually prevented from warping or getting out of shape. The masonry which forms the back of this fire-place is built up close to the projections *e* of the plate *c*, and thus leaves a zigzag or winding series of passages between itself and the plate *c*, within which the air will be perfectly heated. A plate, F, may be built against the front of this masonry-backing, so as to make the passage smooth and facilitate building it.

The masonry is built up to any suitable height behind the fire-place, so that it leaves a chamber, G, into which the heated air can pass.

In the usual method of constructing houses, the fire-place serves to heat one room, and another room will be situated directly or nearly behind it. In order to heat this room effectually, it will be necessary to create a circulation of air within it. This I do by making a register-opening, H, directly from the chamber G into the room, at any suitable distance from the floor, and I connect the bottom of the space back of the heating-plate with the same room, near the floor, by means of a passage, I. It will thus be seen that I have a perfect circulation of air from this rear room entering through the passage I, and becoming perfectly heated by moving through the sinuosities of the ribbed back of the plate C until it enters the chamber G, from which it is discharged, through the register H, into the room again. The heat of this room may be perfectly regulated, and, if desired, other flues, J, may be extended from the chamber G to rooms upon the floor above.

This construction may be easily adapted to chimneys and fire-places which are already built, by inserting the plate C into the jambs, and then removing sufficient masonry from the back to leave the chamber G, register, and passage I.

In the case of old chimneys, the flues J will have to pass up on each side of the chimney; but when new ones are built, they may be constructed directly in the brick-work.

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

1. The combined fire-place and furnace, consisting of the iron fire-place back C, having its rear surface formed into a series of zigzag

passages, in combination with the chamber G, register H, and induction-passage I, the whole constructed to operate substantially as and for the purposes herein described.

2. The heating-plate, constructed with the diagonal ribs crossing each other so as to form small heating-chambers *b* between them, and having the depressions *d* for the escape of the air, said ribs also preventing the plate from warping, substantially as herein described.

In witness whereof I have hereunto set my hand and seal.

REASON WILEY. [L. S.]

Witnesses:
GEO. H. STRONG,
OLWYN T. STACY.