

G. W. WHITE.
Hot-Air Furnace.

No. 164,627.

Patented June 15, 1875.

Fig. 1

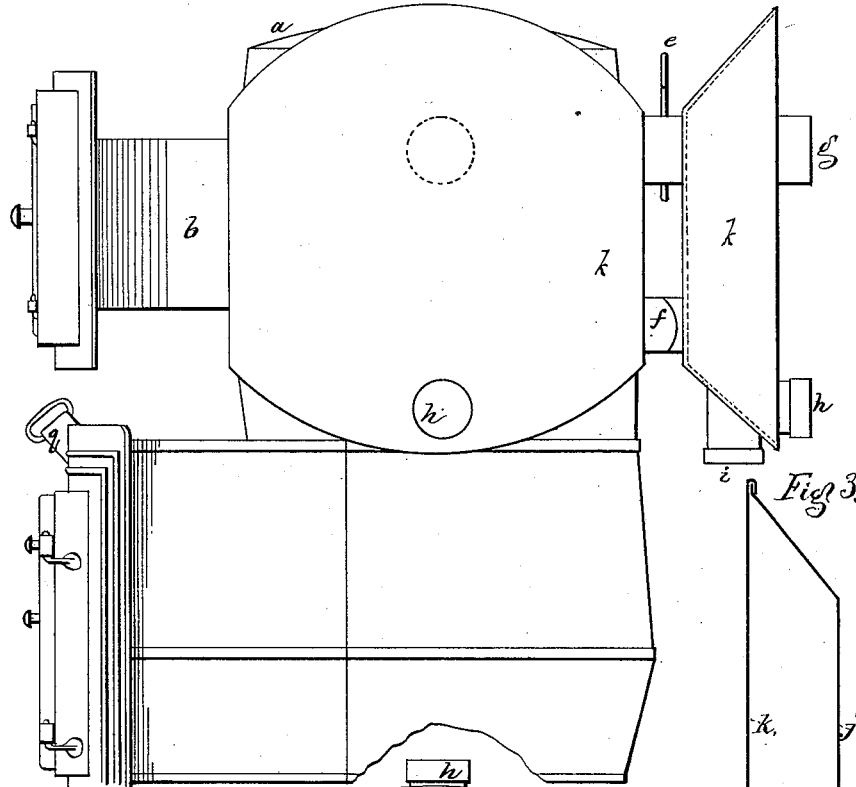


Fig. 3

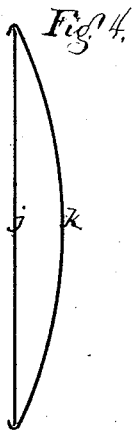
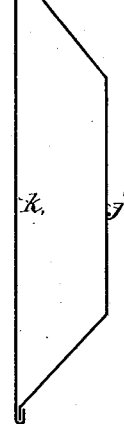
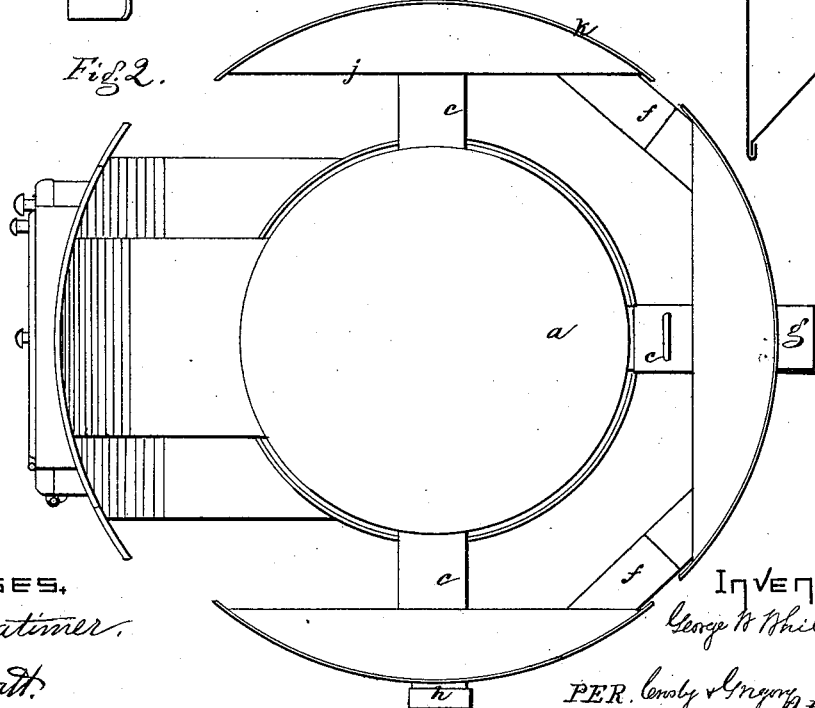


Fig. 2



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UNITED STATES PATENT OFFICE.

GEORGE W. WHITE, OF MALDEN, MASSACHUSETTS.

IMPROVEMENT IN HOT-AIR FURNACES.

Specification forming part of Letters Patent No. 164,627, dated June 15, 1875; application filed April 15, 1875.

To all whom it may concern:

Be it known that I, GEORGE W. WHITE, of Malden, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Furnaces, of which the following is a specification:

This invention relates to improvements in the construction and arrangement of detached radiators connected to the dome or combustion-chamber of a furnace, and to each other, and to the smoke-outlet.

In the drawing, Figure 1 shows in side elevation a furnace embodying my improvements, and Fig. 2 is a plan of the same. Figs. 3 and 4 are vertical and horizontal sections, taken through one of the radiators, and showing their construction from but two sheets of metal.

The dome or combustion-chamber *a* over the fire-pot has connected to it a passage-way, *b*, for the fuel, closed by a door in the usual manner. Necks of size and form suited to receive connecting-pipes are located, as shown at *c c c*, near the top of the dome, and preferably ninety degrees apart from each other, and serve to allow the volatile products of combustion to enter the tops of the two side radiators, from which they pass, through open pipe-connections, located as shown, and near the bottoms of the radiators, into the rear radiator, and thence to the smoke-outlet; but, when kindling a fire or adding fresh fuel, the damper at *e*, which at other times is kept closed, is opened until combustion is well established, and then it is closed, compelling the hot volatile products of combustion rising in the dome *a* to pass into the tops of the side radiators, and then, descending therein, to pass through the connecting-pipes *f* into the rear radiator, in which they ascend, and the smoke escapes through the funnel connected at *g*.

These radiators are made, each, of sheets of wrought metal, bent and seamed together as shown in Figs. 3 and 4; and the seams may be made more secure, if desired, by rivets.

An opening, properly closed, is made at *h*, near the bottom of each radiator, which openings, by suitable pipes, are extended through the casing or walls of the furnace, to afford

facility for clearing solid deposits from the radiators. It is sometimes a matter of convenience to locate such clear-outs where shown—at *i*, Fig. 1.

The sheet *j* of each radiator is made into three plane surfaces, angularly disposed with relation to each other, as best seen in Fig. 3; while sheets *k* are curved, and are bent at their edges to enfold the edges of sheets *j*, making at the junction seams which, though usually sufficiently tight and strong, may be strengthened and tightened by rivets, solder, or brazing, or by cement.

The angular form of the top and bottom of each radiator given by the angular planes of the sheet *j* makes each radiator act as a deflector to incoming currents of cold air entering near the furnace-base, turning them inward toward the fire-pot and combustion-chamber, between which and the radiators most of the entering air passes, though a portion ascends between the outer sheets *k* of the deflectors and the casing or wall in which the furnace is set. The top incline of each deflector allows the heated air arising between the combustion-chamber and the radiators to spread in the chamber, from which the conveying-pipes take the hot air to be distributed. The radiators, being hung on the necks cast or formed on the combustion-chamber, move with its motions caused by expansion and contraction.

Having described my invention, I claim—

An air-heating furnace or stove, provided with radiators, constructed substantially as described, and connected with the combustion-chamber, and with each other, and with the smoke-outlet, whereby the products of combustion pass into the radiators at the sides of the combustion-chamber, and then downward into the intermediate radiator, and into the smoke-outlet, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE W. WHITE.

Witnesses:

G. W. GREGORY,
S. B. KIDDER.