

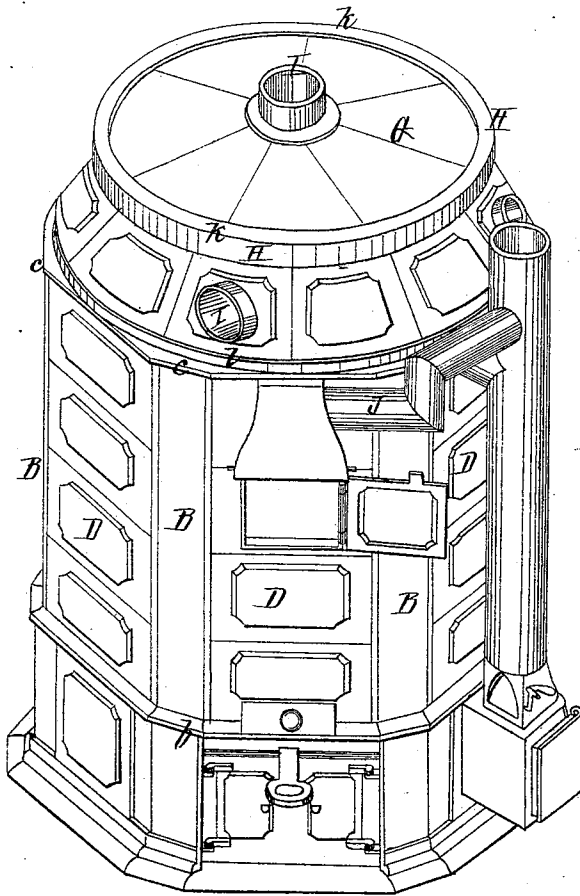
2 Sheets--Sheet 1.

J. MAGEE.
Hot-Air Furnaces.

No. 145,512.

Patented Dec. 16, 1873.

Fig: 1.



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W. J. Cambridge

Inventor,
John Magee

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Fig. 2.

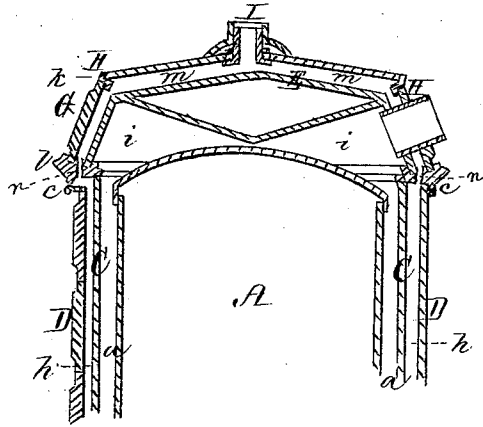
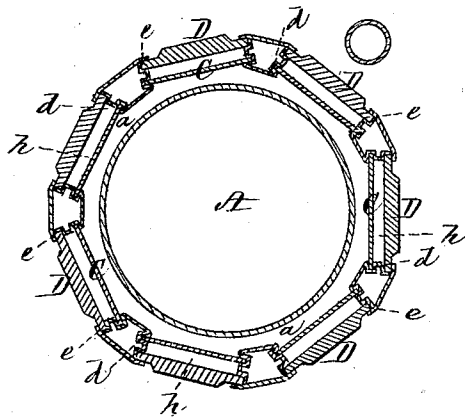


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN MAGEE, OF CHELSEA, MASSACHUSETTS, ASSIGNOR TO THE MAGEE FURNACE COMPANY.

IMPROVEMENT IN HOT-AIR FURNACES.

Specification forming part of Letters Patent No. **145,512**, dated December 16, 1873; application filed June 30, 1873.

To all whom it may concern:

Be it known that I, JOHN MAGEE, of Chelsea, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Casings or Coverings for Furnaces, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of the furnace having my improvements applied thereto. Fig. 2 is a vertical section extending only through my improved casing. Fig. 3 is a horizontal section.

Furnaces for heating buildings are ordinarily provided with an outer casing having an air-space between it and the furnace proper. In the construction of "set" furnaces the casing is composed of brick, and in portable furnaces of metal. The metal casing is objectionable on account of the great loss of heat by radiation, and the brick casing is objectionable for the reason that it is expensive to construct, occupies considerable space, and cannot be easily removed when the furnace is to be repaired. To avoid the loss by radiation arising from the employment of a metal casing, and to overcome the objections incident to the use of a brick casing, is the purpose of my present invention, which consists in a furnace having two separate and independent concentric air-chambers around the fire-pot, the outer wall of the outer chamber being formed mainly of removable panels of soap-stone, or other suitable non-conducting material.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A is the furnace proper, the outside of the cylindrical portion of which is surrounded by a series of vertical metal posts or standards, B, placed at intervals from each other and at a short distance from the furnace, so as to form with the slabs C an air-space, *a*, around the said posts or standards, extending from the base *b* of the

furnace to a point near the top, and being securely held in place and together by a metal cap passing around the outside of their upper ends, the whole serving as a frame, B *c*, each post B of which is provided on each side with two grooves, *d e*, extending vertically throughout their length, the inner row of grooves, *d*, being for the reception of a series of metal plates, C, which are slid down within the grooves *e* into a position for one to rest upon the other and forming the inner casing, the outer row of grooves, *e*, being for the reception of a series of panels or slabs, D, of soap-stone, forming the out casing, and the inner surface of each panel being situated a short distance from the outer surface of each plate C, so as to form an air-space, *h*, between them. The cold air, entering the inner space *a*, is intensely heated by contact with the outside of the furnace, and being rarefied passes up through an air-space, *i*, communicating therewith, and situated between the furnace and the inner metal lining or casing *i* of the top E, from which the heat is conducted to the various apartments through the circulating-pipes. (Not shown.) The outside of the top of the casing is (like the outside of the cylindrical portion) composed of soap-stone panels G set in a metal frame, H, consisting of an upper ring, *k*, and a lower ring, *l*, secured together and resting upon the top of the frame of the cylindrical portion of the casing. Between the inner and outer walls of the top of the casing is formed an air-space, *m*, which communicates through openings *n*, (not shown,) with the air-space *h* between the casings C D, surrounding the cylindrical portion of the furnace. The hot air which radiates from the outside of the inner casing C passes up the air-spaces *h* and *m* into and through an outlet-pipe, I, provided at the center of the top of the casing, whence it is utilized by being conducted to one of the apartments to be warmed.

From the foregoing it will be seen that the property of the soap-stone composing the outer casing is to intercept the passage of the heat outwardly into the apartment in which the furnace is placed by confining the heat within the

spaces *h* and *m*, to be conducted in any desired direction to the various apartments of the building, whereby the loss of heat by radiation incident to a furnace having an ordinary casing of metal is effectually prevented. Furthermore, by constructing the outer casing in separate and independent pieces or panels capable of being readily removed, instead of a permanent wall of brick, the labor of setting up, repairing, or removing the furnace is materially reduced.

If desired, the non-conducting panels herein described could be faced with metal.

J is a hollow trunk, the opening at the bottom of which is situated immediately above the opening through which fuel is admitted to the furnace. This pipe is provided with a damper, (not shown,) and is connected with

the ordinary vertical pipe leading to the chimney-flue.

I claim—

The combination of the outer casing, formed of the grooved posts *B* and removable panels *D*, of soap-stone or other suitable non-conducting material, with the fire-pot *A* and the intervening metallic casing *C*, which divides the air-space between the fire-pot and the outer casing, thus forming two separate and distinct air-chambers, substantially as and for the purpose set forth.

Witness my hand this 24th day of June, A. D. 1873.

JOHN MAGEE.

In presence of—

N. W. STEARNS,
W. J. CAMBRIDGE.