

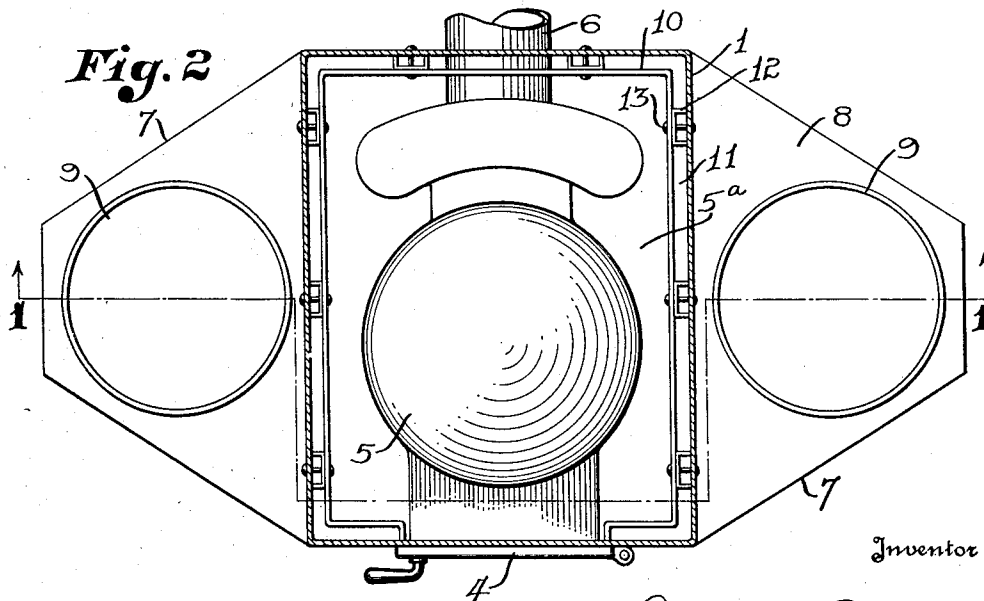
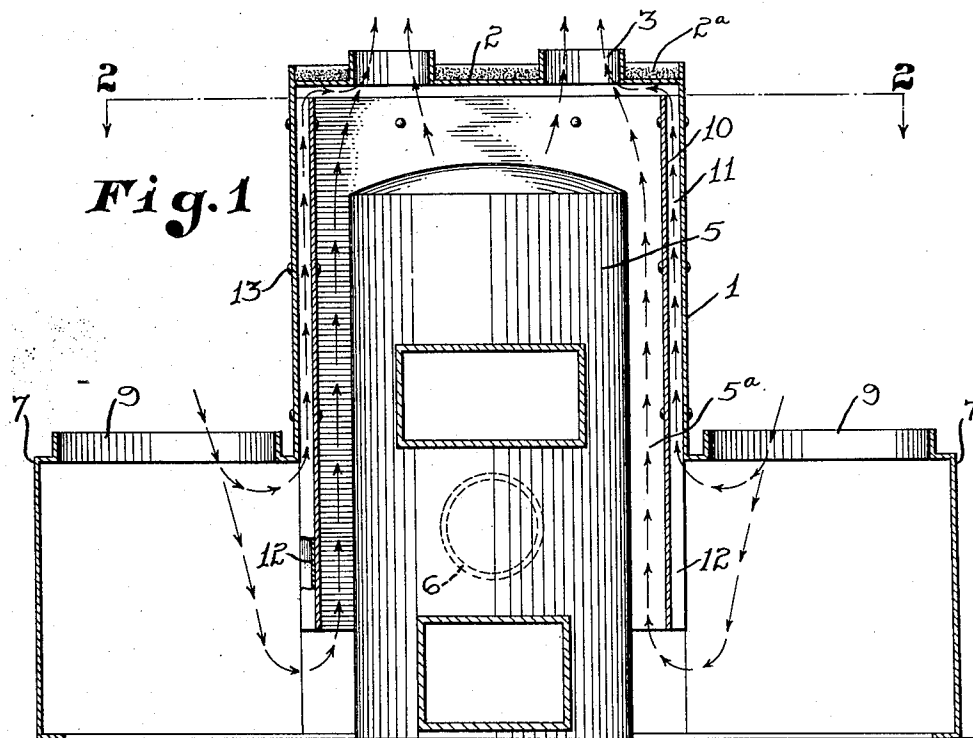
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R. M. BAKER

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HOT AIR FURNACE CASING

Filed June 17, 1930



Inventor

Robert M. Baker

By

Owen + Owen

Attorneys

## UNITED STATES PATENT OFFICE

ROBERT M. BAKER, OF TOLEDO, OHIO

## HOT AIR FURNACE CASING

Application filed June 17, 1930. Serial No. 461,794.

This invention relates to furnaces of the hot air type commonly employed for residence heating purposes, and an object is to produce a furnace casing which contains the new and improved features of construction and arrangement which enhance the efficiency of its operation.

The invention is shown by way of illustration in the accompanying drawings, in which:

Fig. 1 is a vertical, sectional elevation on the line 1—1 of Fig. 2 showing the furnace casing construction and the passage of air from the outside through the casing to the warm air outlets; and

Fig. 2 is a transverse, sectional view on the line 2—2 of Fig. 1.

Referring to the drawings, the furnace casing comprises a substantially square sheet metal structure having side walls 1 and a top wall 2, the latter having warm air outlet ducts 3, to which are connected the usual pipes for conveying the heated air to the various rooms of the building. The side walls 1 are extended above the top wall 2 and a layer 2<sup>a</sup> of heat insulating material, such as sand, covers the top wall, the side wall extensions holding this layer in place. At the front of the casing is the usual door 4 through which coal may be delivered to the firebox 5. From the fire box 5 leads the smoke pipe 6, which extends through one of the side walls as shown in Fig. 2.

Arranged in opposed relation and joined to the adjacent side walls are air inlet boxes 7, which in plan are substantially frusto-triangular, and open directly to the interior of the casing. Thus, the opening from the inlet boxes 7 to the interior of the casing is co-extensive with the width of the casing. This enables a relatively large volume of cold air to be delivered to the casing chamber 5<sup>a</sup> and thoroughly distributed throughout such chamber, thereby enabling the furnace to handle the maximum volume of air.

In the top wall 8 of each inlet box 7 is a cold air inlet duct 9, to which may be connected a suitable pipe for supplying fresh or relatively cold air to the furnace. It will be observed that the boxes 7 are disposed on

opposite sides of the furnace, and the combined area of the openings from these boxes to the furnace provides for a substantial volume of air to be furnished to the furnace. As shown, the height of the boxes 7 is slightly less than one-half the height of the furnace casing, although these proportions may be varied.

Spaced from the side walls 1 of the casing is a supplemental wall or partition 10, which extends continuously about the inside of the casing, and terminates adjacent the door 4. The partition 10 is spaced a short distance from the side walls 1 to provide a space 11 therebetween. This spacing is effected by U-shaped spacers 12, which extend longitudinally of the casing and are held in place by rivets 13.

The top edge of the partition 10 is spaced a short distance from the top wall 2 of the casing, and the lower end of the partition is spaced from the base of the furnace, although, as will be observed in Fig. 1, the spacing at the lower end of the partition covers a substantial portion of the openings which lead from the air inlet boxes 7 to the interior of the furnace casing. This arrangement serves to divide the currents of air passing into the boxes 7, the greater portion of this air passing beneath the partition 10 into the casing chamber 5<sup>a</sup> and thence upwardly to the warm air outlets 3. A small portion of the air passes upwardly through the space 11 formed by the partition 10, and thence past the upper end of the partition for mixture with the heated air. This arrangement greatly enhances the efficiency of the furnace in that the cool air in the space 11 absorbs heat from the partition wall 10 and keeps the outer wall 1 of the casing cool, thereby preventing dissipation of heat into the furnace room through the outer or side wall 1. The spacers 12 not only provide additional channels for the passage of air, but also keep the upwardly moving currents of air in well defined paths.

It is to be understood that numerous changes in details of construction and arrangement, as well as choice of materials, may be effected without departing from the

spirit of the invention, especially as defined in the appended claim.

What I claim as new and desire to secure by Letters Patent is:

- 5 A furnace casing including opposite side walls, and a top wall having a warm air outlet, a pair of vertical and oppositely disposed cold air inlet boxes each having a cold air inlet at its top, said boxes having open  
10 inner sides of a width equalling the width of and connected to the respective opposite adjacent side walls of the casing, and a partition spaced from the side walls of the casing and having its top spaced from the top  
15 wall of the casing and its bottom projecting for a distance below the cool air inlets of the boxes whereby the inlet to the space between the outer side of the partition is located at a distance above the inlet to the inner side  
20 of the partition.

In testimony whereof I have hereunto signed my name to this specification.

ROBERT M. BAKER.

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