July 19, 1927. 1,636,173

E. F. DIEHM

AUXILIARY HEATER FOR FURNACES

Filed Nov. 6. 1925 2 Sheets-Sheet 1

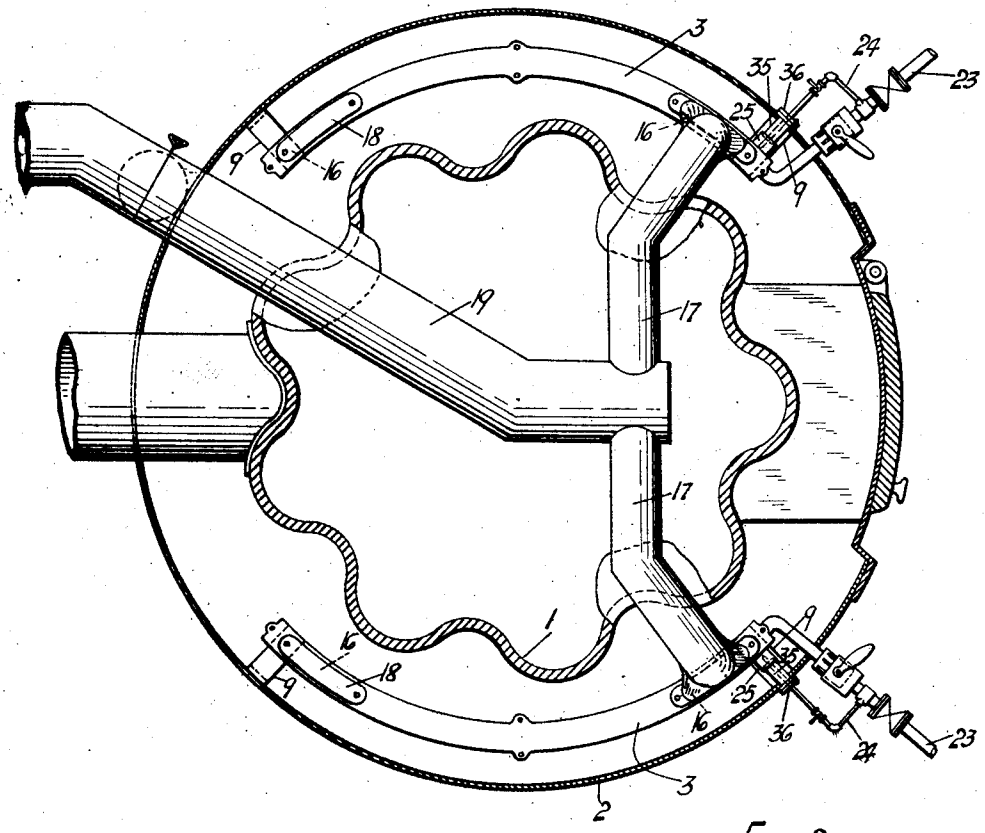


FIG.-2.

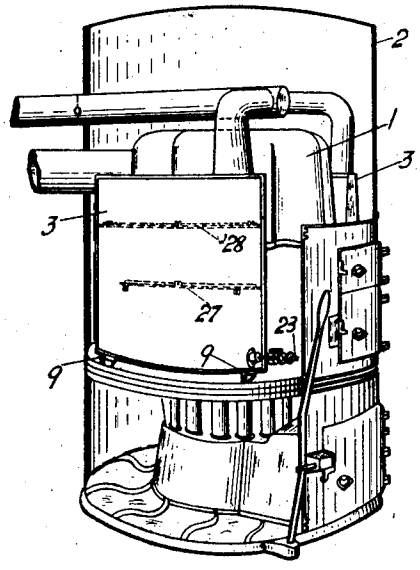


FIG.-1.

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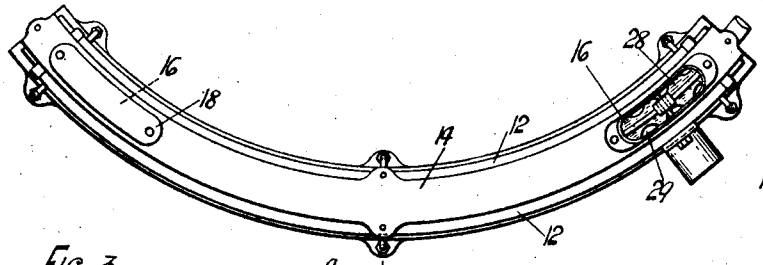
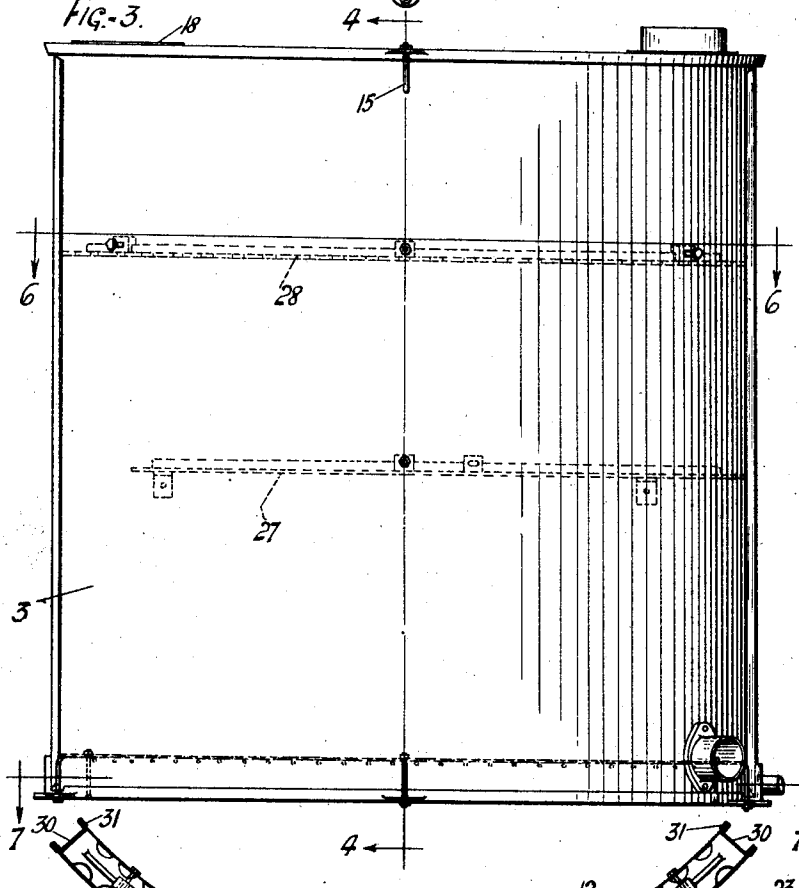


FIG.-5.

FIG.-3.



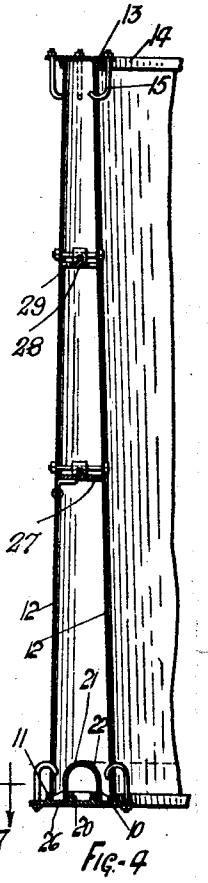


FIG.-4

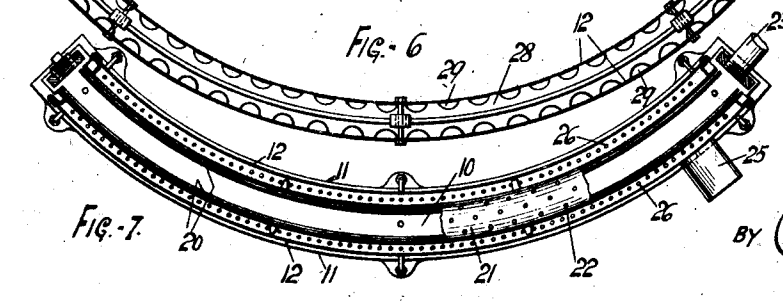


FIG.-6

FIG.-7.

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UNITED STATES PATENT OFFICE.

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AUXILIARY HEATER FOR FURNACES.

Application filed November 6, 1925. Serial No. 67,281.

This invention relates to furnaces such as used for heating buildings or residences by hot air, and particularly to an improved auxiliary gas heater adapted to be used in connection and in combination with a coal furnace of the usual type.

The objects of the invention are to improve upon attachments of this general nature and to secure the greatest possible heating capacity with a minimum of fuel consumption. The device is especially intended and adapted as an auxiliary heater to be used when the cold weather is not severe enough to require a large coal fire. The heater may be used as a substitute for the coal furnace during the autumn and spring days, although it may be used during the entire winter season if desired. Simplicity of design and efficiency are the principal beneficial results obtained by the invention, although other objects and advantages will be secured as will be evident to those skilled in this art.

In the drawings is shown one form of the invention as it has been perfected, it being understood that changes and modifications may be made within the scope of the invention as set forth in the claims hereto appended.

Figure 1 is a perspective view of a furnace of any usual or preferred type, that shown being adapted for the burning of soft coal, a portion of the outer casing being broken away to show the method of mounting the auxiliary burner or burners in place;

Figure 2 is a horizontal section on a larger scale;

Figure 3 is a side view of the heater per se;

Figure 4 is a vertical section on the line 4—4 of Figure 3;

Figure 5 is a plan; and

Figures 6 and 7 are horizontal sections on the lines 6—6 and 7—7 of Figure 3 respectively.

In the drawings, the usual furnace structure is shown at 1 which is surrounded by the spaced sheet metal casing 2, providing the necessary air space about the furnace. The auxiliary heater or heaters are arranged so that they may be located in the casing and between the casing and furnace body. In the drawings, there are shown two of these auxiliary heaters which are indicated as a whole by the numeral 3, the heaters being arc-shaped so as to fit about the furnace and being relatively narrow and high so as to secure the maximum heating capacity without interfering with the circulation of air during the time that the main furnace 1 is being used.

Except that the two auxiliary heaters are located upon opposite sides of the furnace, they are identical and one only will be described.

The heater is supported upon brackets 9 extending from the casing 2 and comprises a base 10 which is formed with exterior flanges 11 which operate as abutments for the lower edges of side walls 12. The side walls converge upwardly as shown in Figure 4, and are held at their upper ends by flanges 13 depending from a curved plate 14 which covers the heater. Bolts 15 are utilized at required points to secure the walls in position. The cover plate 14 is provided with openings 16 at either end, to one of which is attached the flue 17 for the products of combustion. The two openings are provided in the cover plate so that the same casting may be used on both sides of the furnace, a cap plate 18 being secured over the top of the opening which is not being utilized. The two flues 17 are connected to the single flue 19 which leads to the chimney. The ends of the heater are closed by end walls 30 which are provided with parallel flanges 31 which are received over the edges of the side walls.

The central portion of the base plate 10 is provided with parallel, upstanding flanges 20 over which is placed an inverted U-shaped burner 21 which is provided with a plurality of holes 22.

The gas is conducted from a pipe 23 through the usual valves and mixer and is discharged into one end of the burner. A small pilot light 24 leads from the main gas pipe and discharges through an opening 25 adjacent the burner. A small tube 35 is secured on the casing 2 and telescopes within the tube 25. The outer portion of the tube is flanged over the casing and is provided with a small pivoted shutter 36. Between the walls of the U-shaped burner 21 and the side walls of the heater, the base plate is formed with parallel rows of holes 26 which support the combustion.

In order to distribute the products of com-

bustion through the auxiliary heater, a longitudinal baffle plate 27 extends from the end of the heater at the gas inlet to a point adjacent the remote end wall and over this baffle is located a spreader plate 28 which extends through the entire length of the heater. This plate is provided with a plurality of notches 29 along each edge. The action of the baffle and spreader plates is to retard the flame and distribute it more evenly throughout the heater and thereby obtain a better and more efficient heating from the device. The upwardly tapering construction of the burner serves to retard the upward flow of the products of combustion so that further beneficent results are obtained.

It will be seen that an efficient, economical and easily constructed auxiliary heater has been devised, and while the description has been detailed, it will be appreciated that changes and modification may be made changes and modification may be made within the scope of the invention.

1. An auxiliary gas heater for coal furnaces, which is arcuately shaped to fit between the main furnace and the casing, said heater comprising side and end walls, and a combined burner and base plate, the side walls converging upwardly, a baffle plate and a perforated spreader located within the heater, and means to discharge the products of combustion from the top of the heater.

2. An auxiliary gas heater for coal furnaces, which is arcuately shaped to fit between the main furnace and the outer casing, said heater comprising side and end walls, a base plate having parallel rows of apertures along its edges, an inverted U-shaped perforated member mounted on the base plate to provide a burner in combination with the base plate, and a baffle located within the heater.

3. An auxiliary gas heater for use in coal furnaces, comprising an arc-shaped and relatively long and narrow base plate provided with parallel rows of apertures, an inverted U-shaped element mounted upon said base plate between said rows to provide a burner, side and end walls upon said base plate, the side walls converging upwardly, and a baffle plate located within the heater above the burner.

4. An auxiliary heater for furnaces comprising an arcuate casing and a burner in the bottom of said casing, said burner including an inverted U-shaped, perforated strip located on the bottom of the casing, said casing having apertures through the bottom thereof for supplying air about the burner.

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