No. 818,151. PATENTED APR. 17, 1906.

D. A. EBINGER.

GAS FURNACE.

APPLICATION FILED MAY 22, 1905.

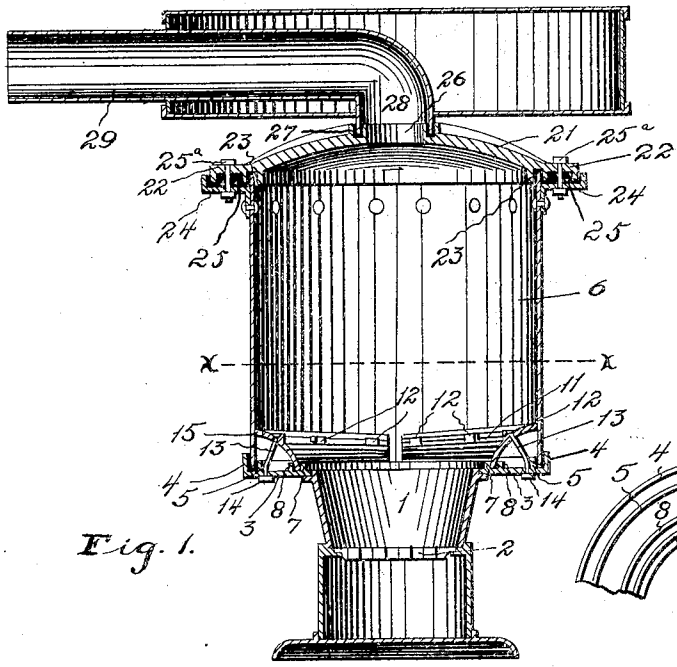

Fig. 1.

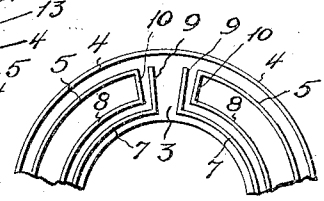

Fig. 4.

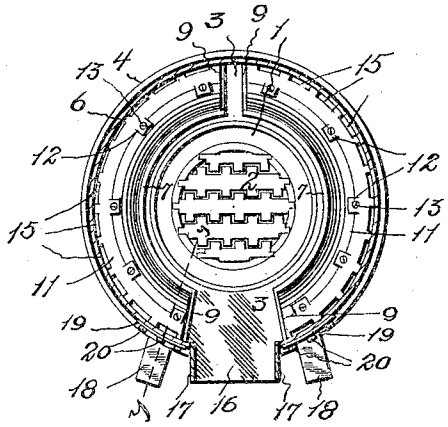

Fig. 2.

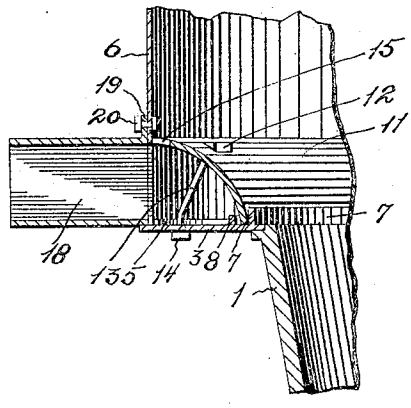

Fig. 3.

WITNESSES:

Carl Stoughton

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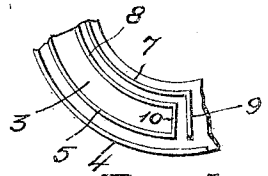

Fig. 5.

INVENTOR

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GAS-FURNACE.

No. 818,151. Specification of Letters Patent. Patented April 17, 1906.

Application filed May 22, 1905. Serial No. 261,682.

To all whom it may concern:

Be it known that I, DAVID A. EBINGER, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Gas-Furnaces, of which the following is a specification.

This invention relates to a new and useful improvement in gas-furnaces.

The object of the invention is to provide a simple device of superior construction in which the joints may be efficiently packed.

Another feature resides in the particular construction of the burner-supporting ring and the burner itself, also the peculiar formation of the top plate whereby its joint with the casing may be properly and readily packed.

Finally, the object of the invention is to provide a device of the character described that will be strong, durable, and efficient and simple and comparatively inexpensive to make.

With the above and other objects in view the invention consists of the novel details of construction and operation, a preferable embodiment of which is described in the specification and illustrated in the accompanying drawings, wherein—

Figure 1 is a vertical sectional view of a gas-furnace, showing my improved construction applied thereto. Fig. 2 is a horizontal sectional view taken on the line $x\ x$ of Fig. 1. Fig. 3 is a partial vertical sectional view taken on the line $y\ y$ of Fig. 2. Fig. 4 is a partial plan view of the burner-ring, showing the rear portion thereof; and Fig. 5 is a partial plan view of the forward portion of the burner-ring.

In the drawings the numeral 1 designates the fire-pot, in the lower end of which is arranged the usual coal-grate 2. At its upper end the fire-pot supports a laterally-extending ring 3, around the outer edge of which extends a vertical flange 4. Arranged concentrically to the flange 4 and set inwardly a slight distance therefrom are segmental flanges 5, which extend on each side of the furnace. The segmental flanges 5 and the outer flange 4 act to form a cup-socket in which is received the lower end of the thin metal casing 6, suitable packing material being calked in the socket about the end of the casing to produce a tight joint.

A short distance from its inner periphery the ring 3 is provided with oppositely-disposed concentric segmental ribs 7 and 8. The ribs 7 and 8 are separated so as to form a packing-channel and at their forward and rear ends are provided with transverse extensions 9 and 10, the extensions 9 projecting from the ribs 7 and terminating short of the outer flange 4, while the extensions 10 extend from the ribs 8 and connect with the flanges 5. In this manner the channels formed between the ribs 7 and 8 are continued between the extensions 9 and 10 and terminate in the socket formed between the flanges 4 and 5. Upwardly-curved burner-plates 11, closed at each end, and thus formed with three lower edges, are received in the channels described, the upper and outer vertical edges of their ends lying in close contact with the inner surface of the casing 6. The burner-plates 11 are curved longitudinally as well as transversely and are inclined from front to rear, as indicated in Fig. 1. The burner-plates on their transverse curved surface are provided with a number of bosses 12, having horizontal upper surfaces and bored so as to receive the headed ends of outwardly-inclined bolts 13, which are bent and passed vertically through the ring near the inner sides of the flanges 5, so as to have their threaded portion projecting below the said ring. Suitable nuts 14, threaded on the projecting ends of the bolts when tightened, serve to draw the burner-plates 11 downward and in close relation with the parts with which they contact. At their extreme upper and outer edges the burner-plates are formed with a plurality of notches or recesses 15, through which the gas or fuel may escape. A suitable packing material may be calked in about the burner-plates in the channels formed by the ribs 7 and 8 and their extensions 9 and 10, if desired.

The burner-plates 11 terminate at their rear ends a short distance from each other, while at their forward ends they are separated a considerable distance, so as to provide a suitable fire-opening, the ring 3 being provided with a forwardly-projecting extension 16, which is provided with the usual casing 17, it being understood that the flange 4 is cut away, so as to give the extension a smooth and unobstructed surface. On each side of the extension the outer flange 4 is also broken away, so that the lower surface of an

angular mixing-sleeve 18 may rest on the ring 3, as clearly illustrated in Fig. 3. The casing 6 is cut away about the sleeves 18, so as to establish communication between the same and the burner-plates 11. The sleeves 18 are formed on their sides and top with laterally-extending flanges 19, by which they are secured to the casing by suitable bolts 20. A gas or other fuel pipe (not shown) is introduced into each sleeve 18 and the combustible mixture made in the usual manner, it being understood that in accordance with the usual practice the fuel-pipe is somewhat smaller than the sleeve, so as to allow air to be drawn into the sleeve by the fuel to form the proper combustible mixture.

At the upper end of the casing 6 I provide the usual curved top 21, which is formed with extensions 22, inside of which extends an annular channel 23. The upper end of the casing is received in the channel 23, while the extensions 22 are supported in flanged brackets 24, secured on the casing. The extensions 23 are cupped out, and a suitable packing material 25, placed in the brackets and the cup portions of the extensions, as well as in the annular channel 23, serves to provide tight joints. Suitable bolts 25^a pass through the extensions 23 and the brackets 24 and serve to hold the parts securely together. At its central portion the top 21 is formed with the usual escape-opening 26, about which is formed an annular channel 27, adapted to receive the downturned end 28 of the pipe 29. The pipe 29 is provided for the purpose of conveying the fumes and waste products from the casing 6 to the usual outlet. A suitable packing material placed in the channel 27 about the end 28 of the pipe serves to form a tight joint. A suitable outer casing or shell may be arranged about the parts and air admitted thereto in the usual manner, the latter heated and suitably conveyed to the desired points.

Coal may be fed through the fire-opening formed by the casing 17 onto the grate 2 in the usual manner and a coal fire maintained. The coal fire may be used separately or in connection with the gas-burners.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a furnace, the combination with the fire-pot adapted to receive fuel and the furnace-casing, of a ring-plate extending from and supported by the fire-pot and provided with ribs forming inner and outer channels, the outermost of which receive the lower end of the casing, curved burner-plates inclined rearwardly having their lower ends fitting in the inner channels of the ring-plate and their upper ends in contact with the casing, and means for fastening the burner-plates against said ring-plate and said casing.

2. In a furnace, the combination with the fire-pot adapted to receive fuel and the furnace-casing, of a ring-plate extending laterally from and supported upon the upper end of the fire-pot, the said ring being formed with an upstanding flange around its outer edge and curved ribs adjacent to the flange, the said ribs and flange forming a channel for the reception of the lower end of the furnace-casing, the said ring also being formed with a plurality of concentric ribs provided nearer the inner edge of the ring and forming a channel, upwardly-curved burner-plates having their lower ends fitting in the last-named channel and their upper ends in contact with the furnace-casing, and means for holding the burner-plates against said ring-plate and said casing.

In testimony whereof I affix my signature in presence of two witnesses.

DAVID A. EBINGER.

Witnesses:

A. T. PHELPS,

W. B. SCHLEY.