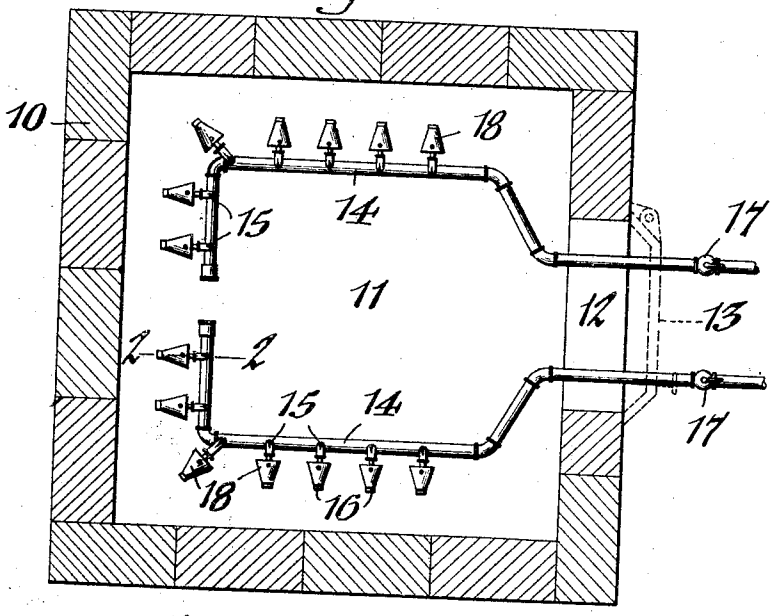
Dec. 23, 1930. F. X. HAMBERGER 1,785,900

FURNACE BURNER

Filed Aug. 8, 1928

Fig. 1.



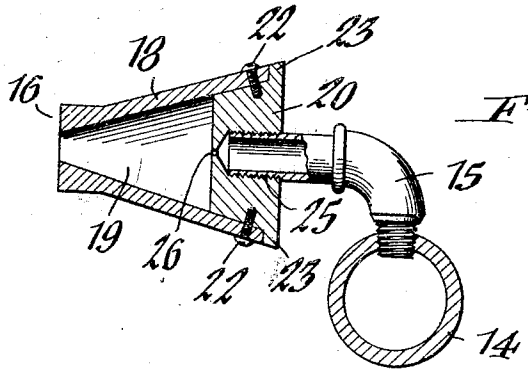


Fig. 2.

Fig. 4.

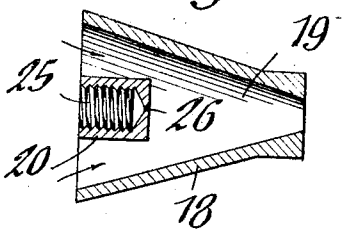
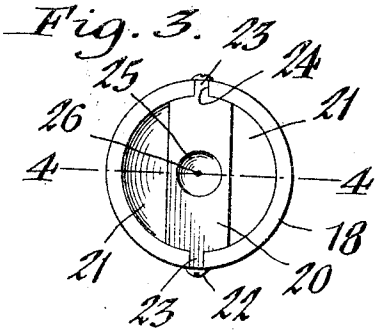


Fig. 3.



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UNITED STATES PATENT OFFICE

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FURNACE BURNER

Application filed August 8, 1928. Serial No. 298,291.

This invention relates to improvements in gas burners which have been particularly designed for use in furnaces, boilers and similar heating apparatus.

Its chief object is the provision of a simple, inexpensive and efficient burner of this character which has been designed to produce a maximum amount of heat with a minimum of fuel consumption.

Another object of the invention is to provide a burner which can be readily installed in and removed from the furnace or boiler and whose burner elements are so constructed that they will produce a combustible mixture which produces a very high degree of heat.

In the accompanying drawings:—

Figure 1 is a top plan view of my improved burner showing the same installed in a furnace. Figure 2 is an enlarged cross section on line 2—2, Figure 1. Figure 3 is a rear end view of one of the burner elements. Figure 4 is a horizontal section on line 4—4, Figure 3.

Similar characters of reference indicate corresponding parts throughout the several views.

By way of example, my improved burner has been shown in connection with a furnace 10 having a heating chamber 11 containing an opening 12 normally closed by a door 13. To facilitate the installation of the burner through the opening of the furnace-chamber, it is composed of two sections each including a pipe or manifold 14 arranged in spaced relation to one side wall of said chamber and the adjoining portion of the rear wall thereof in the manner shown in Figure 1. Connected to this pipe at suitable intervals along its length are substantially L-shaped nipples 15 to which the horizontally-disposed burner-elements or jets indicated generally by the numeral 16 are joined. The pipes 14 are connected to the service gas supply line and are provided with controlling-cocks 17.

Each of the burner elements preferably consists of a conical body 18 having a forwardly-tapering or substantially frusto-conical mixing chamber 19 whose larger or rear end constitutes an inlet for receiving the gas and air and whose smaller or front end serves as the outlet or discharge for the combustible mixture. Fitted in the inlet end of the mixing chamber and extending diametrically across the same is a cross bar or bridge piece 20 on either side of which is formed an air inlet 21 which receives its air below the grates of the furnace, it being desirable to have both the lower draft and the chimney draft partially open at all times to obtain the best results. This bridge bar is detachably mounted in the burner-body 18 and is rigidly held thereto by screws 22, while projections 23 at the ends of the bar engaging notches 24 in the rear edge of the burner-body serve to properly center it. Disposed centrally of the bridge-bar is a threaded opening 25 by means of which the burner-body is connected to the nipple 15, said opening terminating short of the front or inner face of the bridge-bar and merging into an orifice 26 through which the gas is admitted into the mixing chamber 19.

As shown in Figure 1, the burner elements face outwardly to direct the flames against the furnace walls or the flues of the boiler, the discharge ends of said elements being suitably spaced from such walls, say two to three inches.

In the use of my improved burner, the air is admitted to the mixing chambers 19 of the several burner elements through the inlets 21 provided at the rear ends of the conical bodies 18 and gas is discharged under pressure into said chambers through the orifices 26. The comparatively large volume of air drawn into the mixing chamber is thoroughly commingled with the gas as it issues from the inlet orifices 26, this mixture of gas and air being brought into more intimate contact as it travels with increased velocity toward the converging end of the mixing chamber and producing a highly combustible mixture which issues from the front ends of the burner-jets in torch-like flames of a very high degree of heat. These flames are directed in uniform sheets against the side and rear walls of the furnace chamber and thence travel upwardly along the same by the action of the draft in the furnace.

While manifestly simple, compact and inexpensive in construction, this furnace burn-

er is efficient, reliable and economical in operation, it produces a maximum of heat with a minimum consumption of fuel, and its burner-elements can be readily taken apart for cleaning purposes.

I claim as my invention:—

1. A gas burner of the character described, comprising a frusto conical burner-body containing a correspondingly-shaped mixing chamber of uniform taper from end to end thereof and having an air inlet at its flared end and a mixture outlet at its converging front end, and a detachable bridge bar arranged transversely of the burner-body at the flared end of its mixing chamber and containing a threaded opening for connecting the body to a gas supply nipple, the front end of said opening terminating in an orifice for admitting gas to said mixing chamber.

2. A gas burner of the character described, comprising a burner-body containing a forwardly-converging mixing chamber of a smooth uniform taper having an air inlet at its larger end and a mixture outlet at its smaller end, the larger end of said burner-body having a pair of notches therein, and a detachable bridge-bar arranged transversely of the burner-body and having projections at its ends engaging said notches, said bar being adapted for attachment to a gas pipe and containing an orifice for admitting gas to the mixing chamber.

FRANK X. HAMBERGER.