March 11, 1924. 1,486,665

W. W. HOLLOWAY ET AL

BURNER FOR RADIANT GAS HEATERS

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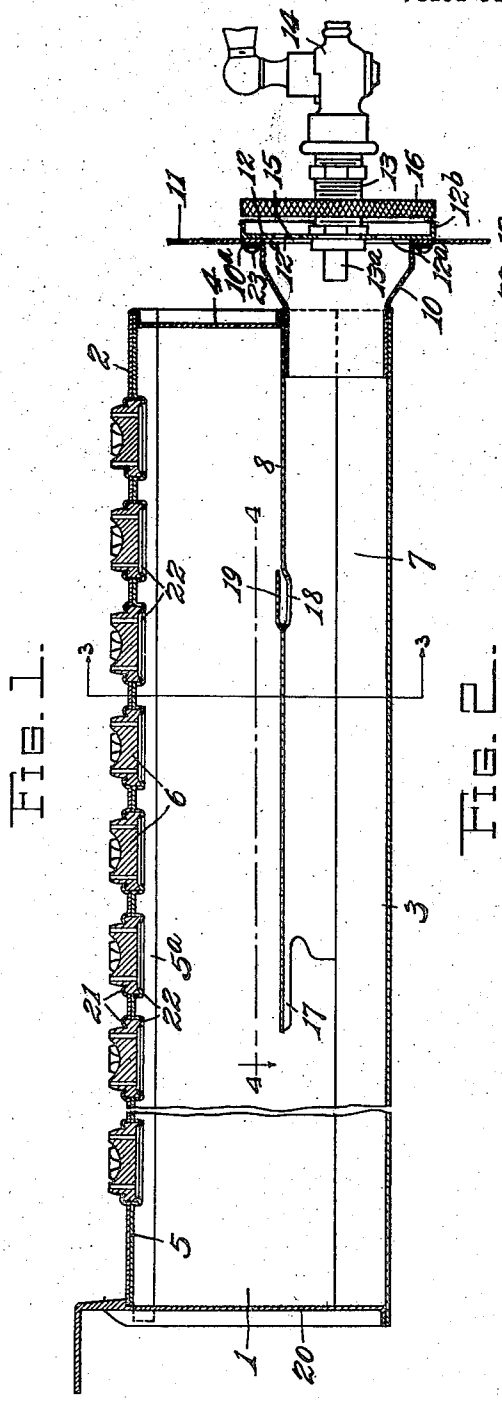


Fig. 1.

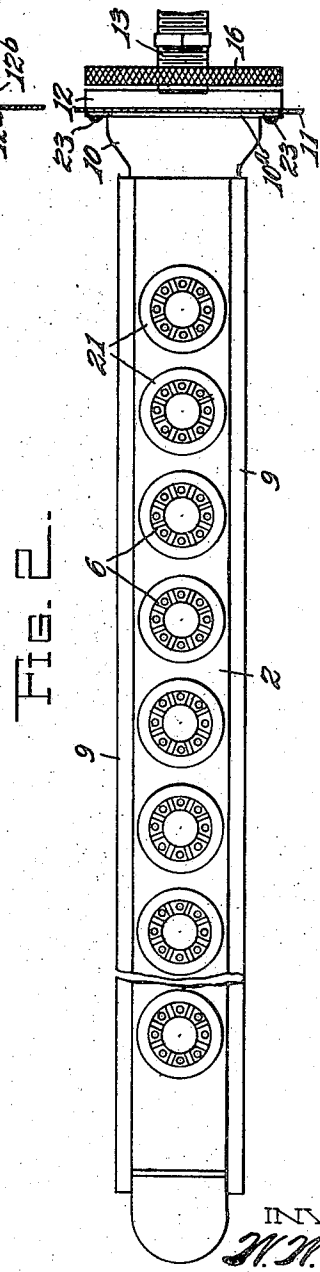


Fig. 2.

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Fig. 4.

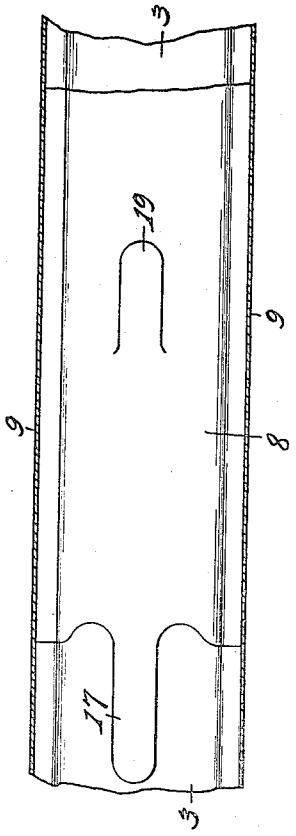
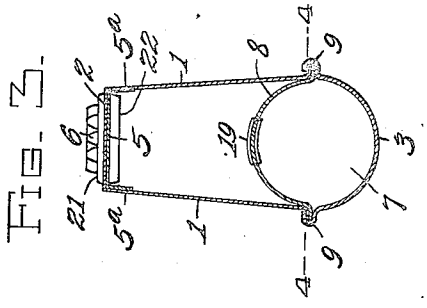


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM W. HOLLOWAY, OF WHEELING, WEST VIRGINIA, AND HENRY KIELBERG, OF MARTINS FERRY, OHIO, ASSIGNORS TO WHITAKER-GLESSNER COMPANY, OF WHEELING, WEST VIRGINIA, A CORPORATION OF WEST VIRGINIA.

BURNER FOR RADIANT GAS HEATERS.

Application filed July 26, 1922. Serial No. 577,723.

To all whom it may concern:

Be it known that we, WILLIAM W. HOLLOWAY and HENRY KIELBERG, citizens of the United States of America, and residents, respectively, of Wheeling, county of Ohio, and State of West Virginia, and Martins Ferry, county of Belmont, and State of Ohio, have invented certain new and useful Improvements in Burners for Radiant Gas Heaters, of which the following is a specification.

This invention relates broadly to gas burners, and more specifically to a burner for gas heating stoves.

The primary object of the invention is to provide a burner for domestic gas heating stoves of the open-front radiant type in which incandescent tubular radiants of clay or composition material are employed for radiating heat, which will efficiently and without back-flashing supply proper and readily combustible mixtures of gas and air either with gas supplied at high or low pressure, and which, therefore, is equally efficient in operation with natural or artificial gas.

A further object is to provide a burner of the character mentioned which embodies therein rigidly-supported gas-feeding grids through which gas is supplied to radiants located thereover.

A still further object is to provide a gas burner having a construction which insures a substantially uniform and even distribution throughout its length of the gas delivered thereto.

Another object is to provide a gas burner of the character referred to which has associated therewith a simple and efficient form of mixer whereby air is regulatably supplied for commingling with the gas for producing a proper combustion mixture.

With these and other objects in view, the invention resides in the features of construction, arrangement of parts and combinations of elements which will hereinafter be fully described, reference being had to the accompanying drawings, in which—

Figure 1 is a central longitudinal section of the invention;

Figure 2 is a top plan view of the same;

Figure 3 is a cross section on line 3—3, Fig. 1; and—

Figure 4 is an enlarged fragmentary section on line 4—4, Fig. 1.

Referring to said drawings, 1 indicates the substantially upright side walls and 2 the flat top of a horizontally disposed sheet-metal burner shell or casing which is of approximately U-shape, inverted, and 3 designates the bottom of said casing, said bottom being of semi-cylindrical form in cross section and having its lateral edges attached to the lower ends of said side walls 1. The opposite ends of said casing are closed by caps or closures 4 and 20.

Fitted closely beneath the flat top 2 of the casing is a sheet metal plate 5 having downturned flanges 5ª seated against the opposite side walls 1 and attached to the latter by spot-welding. Said plate 5 and said top 2 together constitute a mounting for a plurality of longitudinally alined burner grids 6 which are preferably of the form disclosed in the co-pending application, Serial No. 551,861, of Henry Kielberg, and which are preferably clamped in place by encircling flanges 21 and 22 formed in said top 2 and said plate 5, as disclosed in said application.

Provided in the lower portion of the casing 1 is a passage 7 through which gas is introduced to the interior of said casing for distribution to the various burner grids 6, said passage being preferably tubular and having outlets designed to provide such an even distribution of the fuel as will cause the mixture to issue in uniform volume from the various grids for producing even incandescence. The lower half of said tubular passage is constituted by the arcuately curved, or semi-cylindrical, bottom 3 of the casing. A semi-cylindrical sheet-metal member 8 complements said bottom 3 in the formation of said passage, said member having its lateral edges turned outward to form flanges which directly underlie similar flanges formed on the lower ends of the opposite side walls 1, and said flanges being embraced by hook-like edges formed on the bottom 3, said edges serving to permanently clamp the parts in fixed relation.

The tubular passage 7 opens outward

through the closure 4 and has closely fitted therein the reduced end of an induction nozzle 10 which has an annular outer end flange 10^a rigidly attached to a side wall 11 of the heater casing in embracing relation to an opening 15 provided in said wall. A cap 12 provided with a plurality of ports 12^a and having an outwardly directed annular flange 12^b is mounted on the outer face of said wall 11, as by means of the same screws or bolts 23 by which said nozzle is attached. Directed centrally through said cap and the opening 15 and rigidly supported by the former is a nipple 13 through which gas is introduced into said nozzle 10 from a service pipe (not shown), a suitable gas-control valve, as 14, being disposed intermediate said nipple and said pipe. A spud insert 13^a is carried by the inner end of said nipple, as ordinarily. Threaded upon said nozzle so as to be adjustable with respect to the flange 12^b of the cap 12 is a disk-like air regulating valve 16 by which the volume of air admitted through the ports 12^a and thence through the opening 15 may, by adjustment, be controlled.

The complemental tube-forming member 8 has a length somewhat less than that of the casing 1 so that a very large proportion of the volume of the combustible mixture of gas and air conducted through the tubular passage 7 is discharged from the latter to the interior of the casing at a considerable distance from the blind end or closure 20. In practice, it has been found that the most uniform distribution of the mixture among the various grids 6 is obtained by having the member 8 terminate slightly past the mid-length of the casing. Further, it has been found advantageous to provide at the inner end of said member 8 a narrow centrally-disposed longitudinally-extending tongue, as 17, on opposite sides of which the mixture may rise. One or more suitable apertures 18, preferably formed by striking up small overlying tongues 19, are provided in the member 8, as shown.

What is claimed is—

1. A burner for radiant gas heaters, comprising a sheet-metal casing having a horizontal top, depending side walls, and a bottom attached to said side walls, a sheet metal plate underlying said top, a plurality of burner grids annularly embraced and clamped in place by said top and said plate, and a fuel-conducting passage formed within said casing and adapted to distribute fuel to said grids.

2. A burner for radiant gas heaters, comprising a sheet-metal casing having a flat horizontal top, depending side walls, and a bottom attached to said side walls, a sheet metal plate underlying said top, a plurality of burner grids annularly embraced and clamped in place by said top and said plate, and means for distributing fuel throughout the interior of said casing.

3. A burner for radiant gas heaters, comprising a sheet-metal casing having a horizontal top, depending side walls, and a bottom attached to said side walls, a sheet metal plate underlying said top, a plurality of burner grids annularly embraced and clamped in place by said top and said plate, and a tubular passage formed within said casing for the distribution of fuel to said grids, the lower part of said passage being formed by the bottom of the casing.

4. A burner for radiant gas heaters, comprising a sheet-metal casing having a horizontal top, depending side walls, and a bottom attached to the lower ends of said side walls, said bottom being semi-cylindrical in cross-section, and a semi-cylindrical member located within said casing in complemental relation to said bottom for forming a fuel-conducting passage.

5. A burner for radiant gas heaters, comprising a sheet-metal casing having a flat horizontal top, depending side walls, and a bottom attached to the lower ends of said side walls, said bottom being semi-cylindrical in cross-section, and a semi-cylindrical member located within said casing in complemental relation to said bottom for forming a fuel-conducting passage, said member having less length than said bottom.

6. A burner for radiant gas heaters, comprising a sheet-metal casing having a flat horizontal top, depending side walls, and a bottom attached to the lower ends of said side walls, said bottom being semi-cylindrical in cross section, and a semi-cylindrical member located within said casing in complemental relation to said bottom for forming a fuel-conducting passage, said member leading through an end of said casing and terminating at a point approximately midway between the ends of said casing.

7. A burner for radiant gas heaters, comprising a sheet metal casing having an upper portion of approximately U-shape, inverted, providing a top and depending side walls, a semi-cylindrical bottom attached to said side walls, and a member arranged complementally with respect to said bottom to form an intermediate fuel passage, said side walls and said member having flanges, and said bottom having hook-like lateral edges disposed in clamping relation to said flanges.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM W. HOLLOWAY.
HENRY KIELBERG.

Witnesses:
G. O. SMITH,
H. E. DUNLAP.