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GAS BURNER.

APPLICATION FILED OCT. 11, 1907.

930,523.

Patented Aug. 10, 1909.

Fig. 1

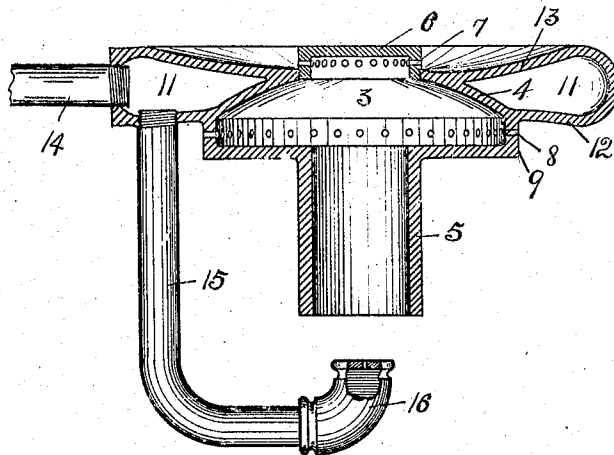
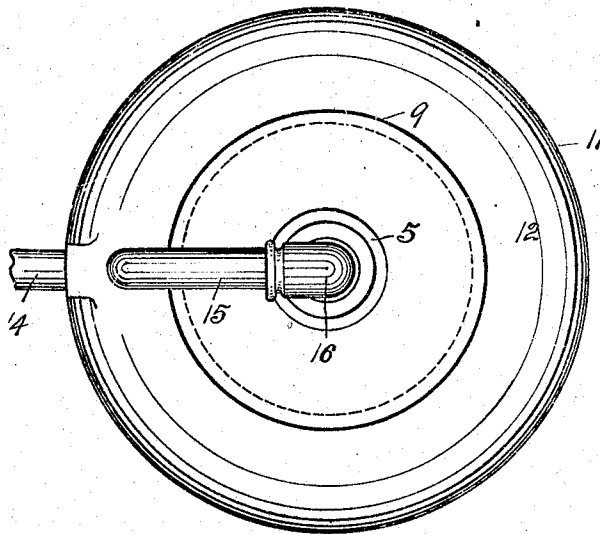


Fig. 2



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UNITED STATES PATENT OFFICE.

WILLIAM M. BACHELDER, OF MAUMEE, AND MEREDITH D. AVERY, OF TOLEDO, OHIO.

GAS-BURNER.

No. 930,523.

Specification of Letters Patent.

Patented Aug. 10, 1909.

Application filed October 11, 1907. Serial No. 396,974.

To all whom it may concern:

Be it known that we, WILLIAM M. BACHELDER and MEREDITH D. AVERY, citizens of the United States, and residents, respectively, of Maumee and Toledo, in the county of Lucas and State of Ohio, have invented a certain new and useful Gas-Burner; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

Our invention relates to burners for use in furnaces or stoves, though useful in other relations and particularly to burners of the class combining a gas-heating or generating-chamber in their construction.

The object of our invention is the provision of a simple, cheap and highly efficient burner of this class, which is designed more especially for gas, though hydrocarbon oils may be used, and which is so constructed and has its gas-heating or generating-chamber so disposed relative to the zone in which the combustion takes place that the flames impinge thereon in such a manner as to cause it to become very highly heated, whereby to expand the gas passing therethrough to its fullest extent to facilitate thorough and complete combustion.

The operation, construction and arrangement of the parts of the invention are fully described in the following specification and illustrated in the accompanying drawings, in which,—

Figure 1 is a central vertical section of the burner comprising our invention, and Fig. 2 a bottom plan view thereof.

Referring to the drawings, 3 designates the mixing-chamber of the burner, which chamber has a dome-shaped roof 4 and is formed on its bottom with a downwardly projecting tubular chimney-part 5 through which the air and gas pass to enter the mixing-chamber. Tapped centrally into the top of the mixing-chamber is a hollowed plug 6, which projects a short distance above such chamber to form a turret and is provided in its side wall with an annular series of jet orifices 7, as shown. A similar series of orifices 8 are arranged in the side wall 9 of the mixing-chamber.

Surrounding the dome 4 intermediate the turret 6 and wall 9 of the mixing-chamber is an annular conduit 11 which is formed by the spaced annular flanges 12 and 13 projecting radially from the dome or upper portion of the mixing-chamber and connecting in a preferably rounded curve at their outer edges. The lower flange 12 projects from the mixing-chamber above the row of orifices 8 at substantially the base of the dome 4, thus enabling the jets of burning gas discharged from such orifices to impinge directly against the bottom of the conduit 11 and hug the curved outer side of the conduit in its ascent whereby to highly heat the same. The flange 13 preferably projects in a slight upward incline from the dome 4 adjacent to the base of the turret 6 so that its outer portion stands substantially in a plane with the top of the plug 6, as shown, thus causing the jets of flame, which are emitted from the orifices 7, to strike against the inclined surface of the conduit top and be directed upwardly thereby. As will be seen the top of the conduit 11 presents a broader impinging surface to its flame jets than does the bottom to its flame jets.

It will be noted that the forming of the flanges 12 and 13 in spaced relation on the dome 4 of the mixing-chamber, as shown, not only positions the inner ends of such flanges near the upper and lower orifices 8 and 7, respectively, thus increasing the heating surface of the generating-chamber, but also provides a single dividing wall between the mixing and generating chambers, thereby adding materially to the efficiency of the burner. It is found in practice with this construction of burner that the intense heat of the generating-chamber 11 is rapidly communicated to the wall 4 of the mixing-chamber and that the entire burner is thereby maintained at a red heat, thus causing the mixed air and gas to be expanded and heated to a very high state within the mixing or super-heating-chamber 3, whereby complete combustion is accomplished and the flames from the discharge orifices are of a light blue nature.

The gas or other fuel is admitted to the heating conduit 11 through the supply-pipe 14, and after passing through the conduit is permitted to pass therefrom through the outlet pipe 15, the upper-end of which is tapped into the bottom of the conduit. This pipe extends downward and has its lower end por-

tion curved to bring its free end upward vertically and centrally below the open lower end of the chimney-part 5. The free end of the pipe 15 is provided with a centrally perforated cap or plug 16 through which the gas or gaseous vapor is ejected upward through the chimney-part 5 into the mixing-chamber 3. The fuel supply being turned on and the jets ejected from the orifices 7 and 8 lighted, the lower and upper walls 12 and 13 of the conduit 1 are heated to a very high state by the impinging thereon of the flame jets, the lower of which pass upward around the outer edge of the conduit hugging the outer side thereof and meet with the upper jets above the burner at the edge thereof, thereby heating and expanding the gas in the conduit to the fullest extent before it is discharged from the outlet pipe 15 and commingled with the air in the mixing-chamber. As the expanded gas is forcefully discharged through the chimney-part 5 air is drawn into and mixes therewith in the mixing-chamber, which also becomes highly heated, thus effecting a further expansion of the mixed gases in the chamber to a degree that adapts them to thorough and complete combustion that is free from the odor and noxious waste products incident to incomplete combustion.

30 We wish it understood that we do not desire to be restricted to the exact details of construction and arrangement of the parts

shown and described, as obvious modifications will occur to persons skilled in the art.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent, is,—

A burner comprising a mixing-chamber having a dome-shaped roof portion provided at its central top portion with a turret, said chamber being provided in its side and turret with rows of orifices, a flange projecting from the mixing-chamber above the lower row of orifices and substantially at the base of the roof portion, a flange projecting from the turret and having a greater flame impinging surface than the lower flange, said two flanges being connected at their outer edges to form a closed conduit around the mixing-chamber dome, which conduit is separated from the interior of the mixing-chamber by a single wall, a supply-pipe tapped into the conduit, and an outlet pipe leading therefrom and having its discharge into the bottom of the mixing chamber, substantially as described.

In testimony whereof we have hereunto signed our names to this specification in the presence of two subscribing witnesses.

WILLIAM M. BACHELDER.
MEREDITH D. AVERY.

Witnesses:

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