No. 622,482. Patented Apr. 4, 1899.

B. F. JACKSON.

GAS BURNER.

(Application filed Sept. 29, 1898.)

(No Model.)

Fig. 1.

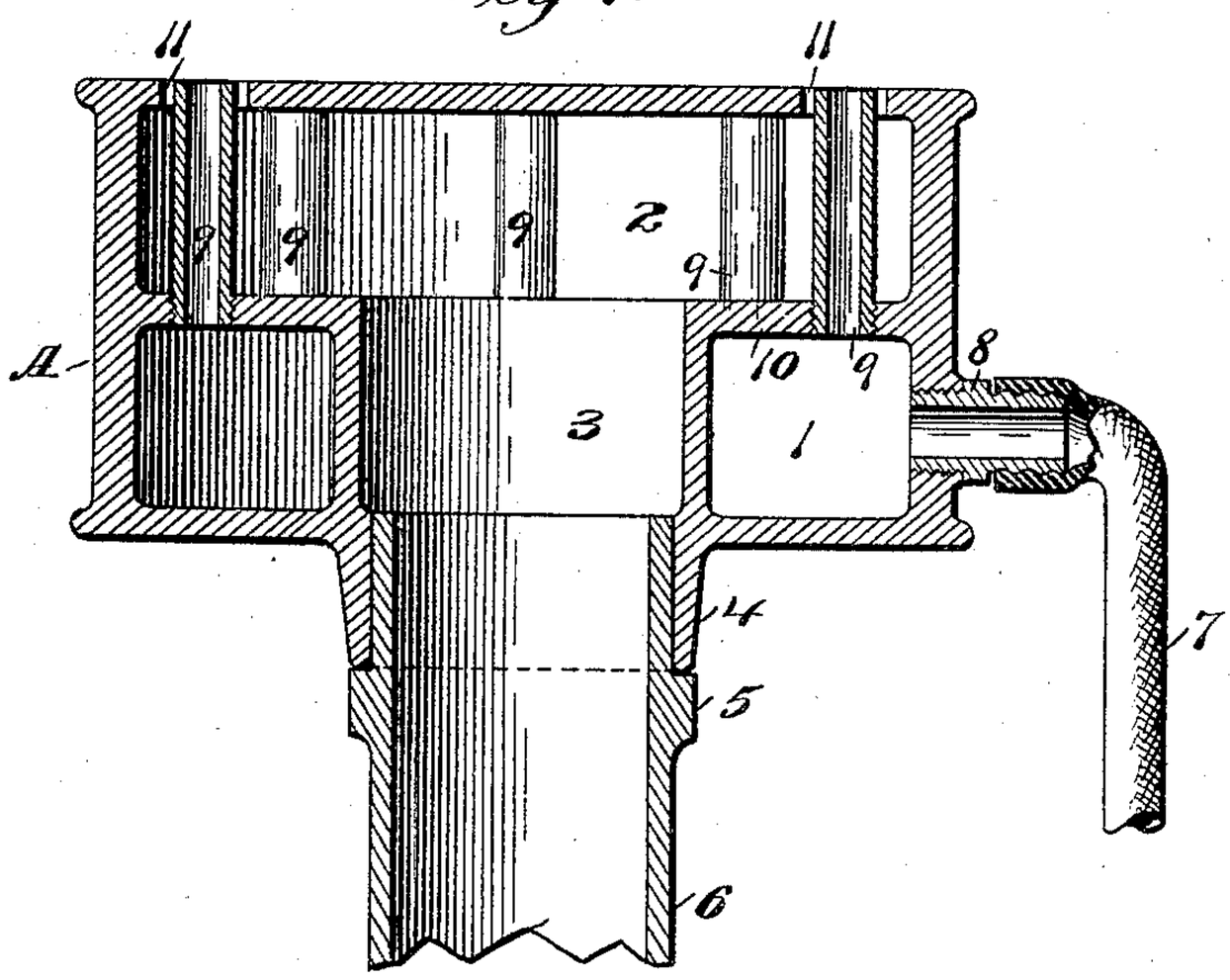
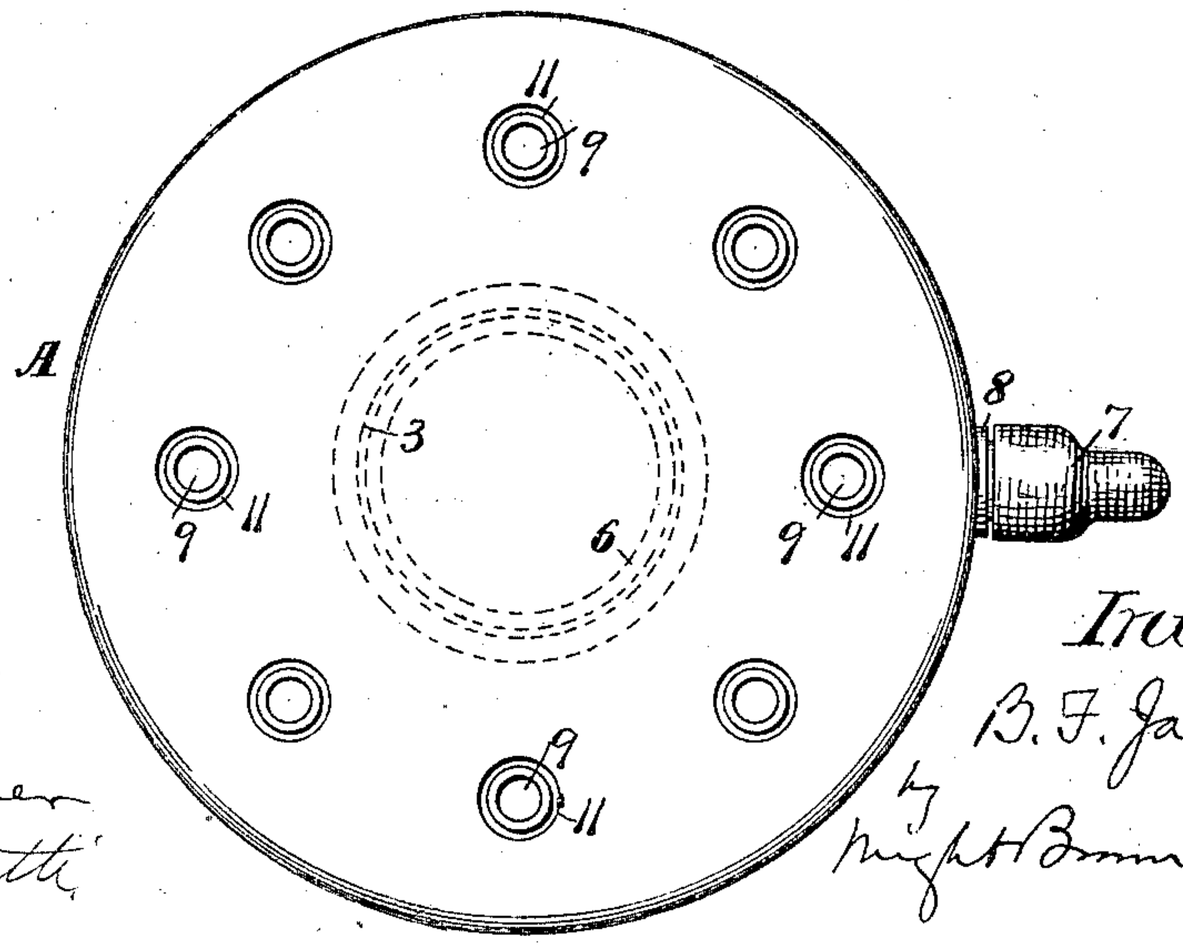


Fig. 2.



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GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 622,482, dated April 4, 1899.

Application filed September 29, 1898. Serial No. 692,190. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. JACKSON, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Gas-Burners, of which the following is a specification.

This invention relates to an improvement in burners for consuming mixed air and gas, and is more particularly applicable to that class of burners in which air is fed under pressure to the gas with which it is mixed.

One form of gas-burner to which air under pressure is supplied consists of a chamber for the air and a second chamber for the gas, the air-chamber having a series of orifices and the gas-chamber having a series of tubes which pass through the air-chamber and the mouths of which lie in the orifices of the air-chamber. The air under pressure issues from the orifices around the mouths of the tubes, being mixed with the gas at that point. In burners of this form it has been usual to supply the air under pressure to the air-chamber at some point, usually at the side, so that the air would be unequally distributed among the several burner-tubes. The result of thus supplying the air is that those of the burner-tubes which receive the most air maintain a much stronger combustion than the other burner-tubes. They therefore burn out much quicker, and at the same time the burner as a whole is less efficient not only because some of its parts burn out before others, but also because it does not deliver an equal amount of heat to all parts of the object to which its heat is to be imparted. The same is also true in a greater or less degree of burners employing a single gas-tube which passes through an air-chamber to which air is supplied under pressure. In such constructions, however, the different parts of the burner will receive different amounts of air, and different degrees of combustion will be accordingly maintained at different parts of the burner-tube, so that the burner as a whole does not deliver an even degree of heat.

It is the object of this invention to produce a burner to which air is supplied under pressure and in which all parts of the burner-tube, or in case there is a plurality of burner-tubes each burner-tube, get the same amount of air and consequently maintains an even combustion, thereby producing a more efficient burner and one having a longer life.

The invention consists in certain parts, improvements, and combinations to be hereinafter described, and more particularly pointed out in the claims hereunto appended.

In the accompanying drawings, which form a part of this specification and in which like letters and numerals of reference indicate the same parts, Figure 1 is a vertical sectional elevation of a burner embodying the invention, and Fig. 2 is a plan view of the same.

The burner which has been selected to illustrate the invention consists of a casting A, having a web 10, which separates the casting into two superposed chambers 1 and 2. The chamber 1 is annular in form, and its inner walls form a tube 3, which is preferably centrally located. The casting is shown as having a downwardly-depending flange 4, which rests upon a shoulder 5, formed upon a pipe 6, which pipe supplies air under pressure to the burner. The burner may, however, obviously be supported in any suitable way.

The chamber 2 is the air-chamber, and the air from the pipe 6 passes into it through the tube 3.

The chamber 1 is the gas-receiving chamber, the gas being fed thereto from a pipe 7, which is connected to the chamber in any suitable way, as by a union 8, which is threaded into a perforation in the side of the chamber. The gas is fed out of the chamber 1 through short burner-tubes 9, which are preferably screw-threaded into the web 10, which separates the chambers 1 and 2. These burner-tubes pass through the chamber 2 and have their upper ends located in orifices 11 of the top wall of this chamber. These orifices are larger in diameter than the diameter of the burner-tubes, a space being thus left around the burner-tubes, through which the air from the chamber 2 is forced, the air being mixed with the gas as it issues from the burner-tubes.

It will be seen that by admitting the air under pressure into the chamber 2 in the manner described it will first impinge against the top of the chamber 2 and then flow laterally

and evenly in all directions toward the burner-tubes 9 and out through the orifices in the top in which the burner-tubes are located. It is apparent that the air will be distributed equally to all the burner-tubes, the result being that an even combustion is attained at each of the burner-tubes. The burner as a whole is consequently much more efficient in its action and has a much longer life than would be the case if the air were distributed unequally to the burner-tubes, which would be the result if the air under pressure were forced in at the side, for instance, of the chamber. In that case the burner-tubes in the direct line of the air-current would receive more air than those lying on each side of it, with the result that much stronger combustion would be maintained at those tubes than at others.

While the burner is shown as circular in form, it is of course obvious that it may be of any shape desired and that the air might be admitted in other ways than at the bottom, the essential idea of the invention being to so admit the air under pressure to the air-chamber as to be distributed equally among the several burners. It is also obvious that the burner may be provided with as many or as few burner-tubes as desired.

What I claim is—

1. The combination in a burner to which gas and air under pressure are supplied, of an air-chamber having a plurality of apertures in its top, a plurality of burner-tubes one for each aperture, each tube having its orifice closely adjacent to said aperture, and means for delivering air under pressure to the chamber so that an equal amount of air shall be supplied to each aperture, substantially as described.

2. The combination in a burner to which gas and air under pressure are supplied, of a chamber having a plurality of apertures in its top and a plurality of burner-tubes one for each aperture, the orifices of the tubes being closely adjacent to the apertures, the chamber having an opening in its bottom through which air under pressure is admitted the opening being so located that the air is distributed equally among the apertures, substantially as described.

3. The combination in a burner to which gas and air under pressure are supplied, of an air-chamber having a plurality of apertures arranged substantially in a circle, a plurality of burner-tubes one for each aperture, said tubes having their orifices closely adjacent to the apertures, and a chamber having an opening in its bottom through which the air under pressure is admitted to the chamber, the said opening being at a substantially equal distance from each of the apertures, substantially as described.

4. The combination in a burner to which gas and air under pressure are supplied, of a gas-chamber, a superposed air-chamber having a plurality of apertures, a plurality of burner-tubes leading from the gas-chamber through the air-chamber and having their orifices closely adjacent to the apertures, an opening in the bottom of the air-chamber, said opening being so located that the air is equally distributed to the said apertures, and an air-inlet tube connecting with the opening in the air-chamber, substantially as described.

5. The combination in a burner to which gas and air under pressure are supplied, of a gas-chamber, a superposed air-chamber having a plurality of apertures, a plurality of burner-tubes leading from the gas-chamber through the air-chamber and having their orifices closely adjacent to the apertures, an opening in the bottom of the air-chamber, said opening being at a substantially equal radial distance from each of the apertures, and an air-inlet tube connecting with the opening in the air-chamber, substantially as described.

6. A gas-burner formed from a casting having a series of orifices in its wall, and an internal web which separates the casting into two superposed chambers for air and gas respectively, the gas-chamber being provided with a gas-inlet opening and its inner wall forming an air-inlet tube, the web having a large aperture which forms the mouth of the air-inlet tube, and a series of small apertures and a series of burner-tubes, each having one end secured in the apertures in the web and having the opposite end lying in one of the orifices in the wall of casting, substantially as described.

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

BENJAMIN F. JACKSON.

Witnesses:

C. F. BROWN,

M. B. PHILIPP.