

Sept. 18, 1923.

1,468,302

J. A. KENWORTHY

GAS BURNER

Filed Jan. 18, 1922

Fig. 1.

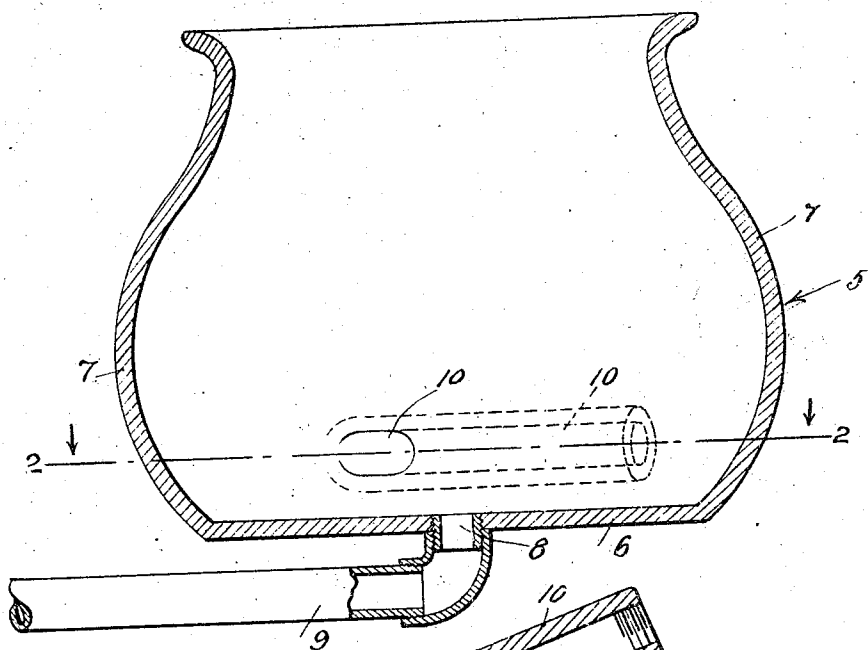


Fig. 2.

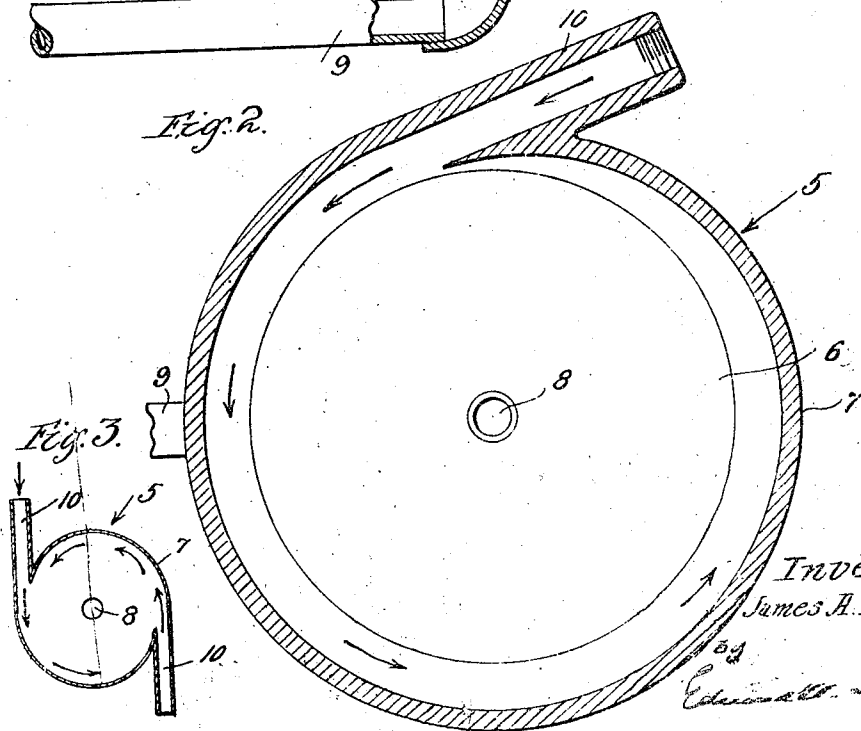
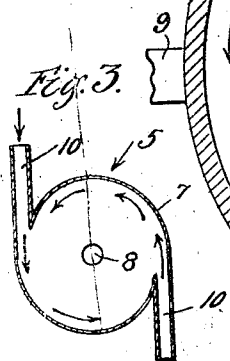


Fig. 3.



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UNITED STATES PATENT OFFICE.

JAMES A. KENWORTHY, OF LOS ANGELES, CALIFORNIA.

GAS BURNER.

Application filed January 18, 1922. Serial No. 530,018.

To all whom it may concern:

Be it known that I, JAMES A. KENWORTHY, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Gas Burners, of which the following is a specification.

My invention relates to an improved gas generator and burner, and is especially directed to an improvement on my generator and burner construction as illustrated and described in my United States Letters Patent entitled Gas generators and burners, 1,417,745, issued May 10th, 1922. In the construction above referred to I have provided a casing having a gas generating coil mounted therein, and a centrally disposed air supply tube within the casing, the gas discharge outlet of the generator being disposed in tangential relation to the burner casing.

While the above described construction has proved highly efficient and economical in operation, I have discovered that by employing a substantially cylindrical casing and admitting the fuel supply centrally thereto, and at the same time forcing the air supply to the interior of the burner casing tangentially, I am able to effect simplicity of manufacture of the generator burner without sacrificing efficiency and economy in operation.

The object of this invention is to provide a generator burner construction consisting of a body portion having fuel and air inlets leading thereto, a compressed air inlet disposed tangentially with respect to said body portion so as to cause a whirling action to the burning fuel during the operation of the burner, and at the same time to effect a thorough atomization and complete combustion of the liquid fuel.

Other objects and advantages will be apparent from the following description, and as illustrated in the accompanying drawing, in which:

Fig. 1 is a central vertical section through my burner.

Fig. 2 is a transverse section taken on the line 2—2 of Fig. 1, looking in the direction indicated by the arrows thereon.

Fig. 3 is a transverse section through my burner casing embodying a modified form.

Referring more specifically to the drawings, 5 designates a casing having a substantially flat bottom 6, and an annular wall 7

extending upwardly therefrom. The diameter of the upper end of the casing is preferably less than the diameter directly above the bottom wall 6, thus forming a restricted flame exit opening, the bulging configuration of the casing wall preventing any liquid fuel being carried or creeping upwardly and outwardly from the casing by the air pressure before complete vaporization.

The bottom wall 6 is provided with a centrally disposed fluid inlet opening 8 into which is screwed or otherwise secured a fluid supply pipe 9 that leads from a source of fuel supply tank (not shown).

Adjacent the bottom wall 6 is formed an air inlet opening 10 in the form of a pipe preferably formed integral with the annular wall 7 of the burner casing, and having its outer end internally threaded for the reception of an air pipe line that leads to a source of air supply (not shown). Air inlet opening is arranged at a tangent to the annular wall 7 of the burner in order to cause a whirling motion to the air on its entrance to the interior of the burner casing.

The inner end of air inlet opening 10 is of smaller diameter than the outer end, and is preferably elongated transversely with respect to the burner casing so that the air may be forced within the casing in a comparatively thin horizontal sheet, this method of admitting air tending to a more complete vaporization of the liquid fuel.

In Fig. 3 of the drawings I have shown a modified form of burner casing in which the casing 5 is provided with a plurality of air inlets, preferably located at diametrically opposite points in the casing wall and at a tangent thereto, as in the form illustrated in Figs. 1 and 2 of the drawing, both of said air inlets discharging air in the same general direction.

In the operation of my improved burner liquid fuel is admitted to the burner through the fuel pipe line 9, the oil flowing in an even volume over the bottom floor 6 in the burner casing, from whence it is carried in a whirling motion by the air which is forced thereto through the air inlet opening 10. As the air inlet opening 10 is arranged tangentially with respect to the wall 5 of the burner casing and above the bottom floor of the casing it will at once be noted that as the air passes over the liquid fuel in the bottom of the burner it will become richly surcharged with the

liquid fuel to form a highly combustible vapor, also the whirling motion of the air within the casing will tend to produce a partial vacuum in the center of the burner casing and thus further assist in the complete carburization of the liquid fuel.

The form illustrated in Fig. 3 which is provided with two air inlets, is for the purpose of uniformly cooling the entire wall of the burner casing, the wall opposite the air inlet, as shown in Fig. 1, becoming much more highly heated than that portion of the wall adjacent the air inlet opening. By forming the peripheral wall of the burner casing in a pot form and with a restricted opening, all tendency of the oil to creep upwardly and outwardly without becoming vaporized is prevented.

By means of the construction herein described, it will at once be obvious that I do away with all generator pipes that are liable to become clogged with carbon, and that there is no need of a firing pan to start the burner in operation as in usual constructions. The flame issuing from the burner will have a whirling motion and will distribute the heat therefrom in a uniform and even manner throughout the fire box in which the burner may be located.

By means of valves which may be secured to the fuel inlet and air inlet pipe lines the ratio of the oil and air can be readily regulated.

What I claim is:

1. A gas generator and burner, comprising a substantially cylindrical casing open at the top and closed at the bottom, said casing having a liquid fuel supply opening leading thereto in the bottom wall thereof, and provided with an air supply opening in said casing wall arranged to dis-

charge a current of air to the interior of said casing tangentially with respect to the cylindrical wall.

2. A gas generator and burner, comprising a casing of annular form open at the top and closed at the bottom, the opening at the top portion being of less diameter than the lower portion of said casing, said casing being provided with a liquid fuel inlet in the bottom wall, and having a compressed air inlet leading thereto arranged tangential to its annular wall, whereby to cause a whirling motion to the air on an operation of the burner.

3. A gas generator and burner construction, comprising an annular walled chamber open at the top and having a liquid fuel inlet leading thereto, said walled chamber being further provided with an air inlet arranged above the fuel inlet and disposed tangentially to said wall, whereby the air current admitted therethrough will be given a whirling motion on an operation of the burner.

4. A gas generator and burner construction, comprising a walled chamber having a liquid fuel entrance leading thereto, said chamber having a flame outlet leading therefrom, said walled chamber being further provided with an air inlet arranged tangentially to said walled chamber and leading to the interior thereof, said air inlet being located above the fuel of and in said walled chamber, whereby compressed air will be given a whirling motion to effect a vaporization of the liquid fuel.

In witness that I claim the foregoing I have hereunto subscribed my name this 15th day of December, 1921.

J. A. KENWORTHY.