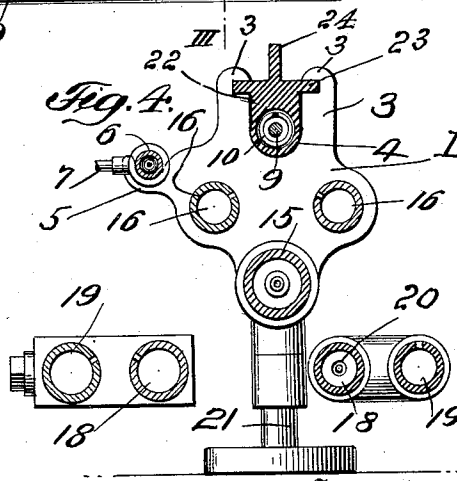
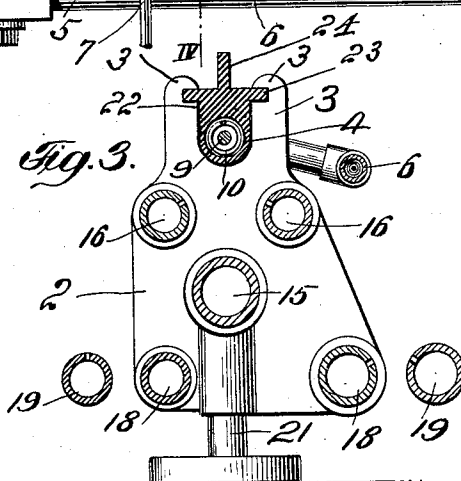
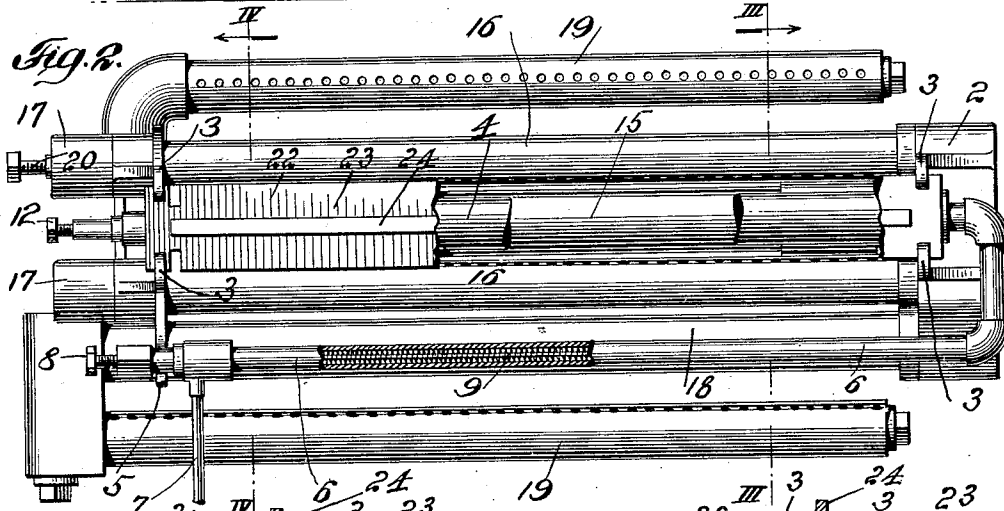
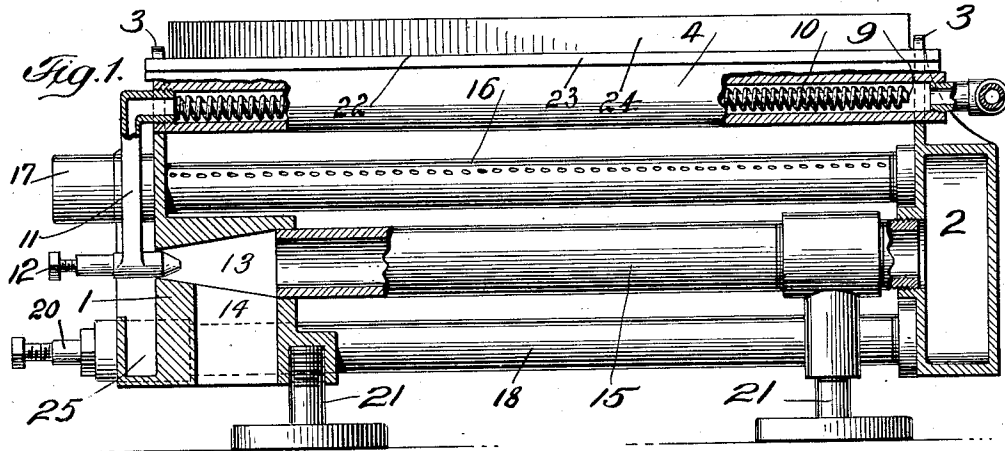


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OIL GAS BURNER.  
APPLICATION FILED APR. 8, 1912.

1,056,749.

Patented Mar. 18, 1913.



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# UNITED STATES PATENT OFFICE.

SCOTT M. ABBOTT, OF ST. CLOUD, MINNESOTA.

## OIL-GAS BURNER.

1,056,749.

Specification of Letters Patent.

Patented Mar. 18, 1913.

Application filed April 8, 1912. Serial No. 689,190.

*To all whom it may concern:*

Be it known that I, SCOTT M. ABBOTT, residing at St. Cloud, county of Stearns, and State of Minnesota, have invented certain new and useful Improvements in Oil-Gas Burners, of which the following is a specification.

One of the main objects of the invention is to provide a generator and burner of simple construction wherein kerosene and other low grade oils may be fed into a generating chamber under a suitable pressure; vaporized therein and delivered to a mixing chamber through a needle valve and under a high pressure so that the inflowing gas acts in the nature of an injector and draws into the mixing chamber the desired quantity of air. From this mixing chamber the gas passes to a distributing head to which is connected a series of burner tubes and conveying tubes.

Another object of the invention is to provide a generator chamber of peculiar construction and to place beneath said chamber a pair of parallel burner tubes so arranged that their flames are directed upwardly toward each other at such an angle that they meet below the generator and then flare upwardly directly under the generator. By this arrangement of the burner tubes a very high temperature is secured directly under the generator chamber and said temperature will be uniform throughout the entire length of the generating chamber.

There are other important objects and advantages of the invention which will appear hereinafter, or which will be apparent to those skilled in the art to which this invention relates.

In the drawings, Figure 1 is a side elevation of the burner, portions thereof being shown in vertical sectional view to more clearly illustrate its construction; Fig. 2 is a plan view, parts being broken away and other parts being shown in horizontal section to more clearly show the construction of the burner; Fig. 3 is a transverse sectional view on the line III—III of Fig. 2 looking in the direction indicated by the arrow; and Fig. 4 is a similar view taken on the line IV—IV of Fig. 2 looking in the direction indicated by the arrow.

Referring to the various parts by numerals, 1 designates the mixing head of the burner and 2 the distributing head there-

of. These heads are located a suitable distance from each other, depending upon the length and size of the burner, and each is provided with an upwardly extending yoke 3. In these yokes rests a tube 4 which forms a horizontal generating chamber extending throughout the length of the burner. The mixing head is formed with a laterally extending arm 5 on the upper edge of which rests the generator supply tube 6, the end of which adjoining the distributing head is connected to the end of the generator tube or chamber. Oil is fed to this supply tube through pipe 7, said oil preferably being forced into said supply tube under a high air pressure. Controlling the admission of oil to this tube is a needle valve 8 which enters said tube at the end thereof adjoining the mixing head, the oil tube 7 entering the supply tube adjacent the valve so that its outlet is controlled by said valve. In the supply tube 6 and also in the generating chamber is arranged a rod 9 having a coil spring 10 around it, said rod and spring partially filling said tube and chamber, and providing an extended evaporating surface.

The end of the generating chamber adjoining the mixing head is provided with a downwardly extending valve-carrying tube or nozzle 11, the lower end of which carries a needle valve 12 which permits gas to discharge into a chamber 13 in the mixing head. Connected to said chamber is a vertical air passage 14 which is open at the bottom of the head and permits air to be drawn up into the chamber 13 by the gas jet. Connected to the end of the chamber 13 and to the distributing head is a large mixing chamber or tube 15, the gas jet being arranged to deliver gas under a considerable pressure through the chamber 13 and into the tube 15. This will serve to draw the required quantity of air through the passage 14 into the chamber 13 and then into the tube 15. This mixing tube 15 is arranged directly under the generating chamber, the main generating burner tubes, which will be hereinafter described, being arranged above said mixing tube. From the tube 15 the mixed air and gas will pass into the head 2 from which extend the two horizontal parallel burner tubes 16 said tubes projecting through the distributing head and being provided with caps 17 screwed thereon, said caps serving to hold the two heads in proper relation to each other, it being, of course,

understood that the other ends of these burner tubes are screwed into the distributing head.

The burner tubes 16 are provided with burner perforations the walls of which incline upwardly and inwardly, said walls being so inclined that the gas jets issuing from said apertures will meet a slight distance below the generator tube 4.

As shown clearly in Figs. 2 and 4 the generator tube is located along the middle of the burner near the top thereof and the tubes 16 are arranged on opposite sides thereof slightly below the generator. By arranging the burner tubes as described so that the two flames impinge on each other just below the generator, the said generator will be subjected to a very high temperature throughout its entire length and there will be a complete and very rapid vaporization of the oil in the generator. It is manifest that by regulating the valves 8 and 12 the proper supply of oil to the generating tube may be secured and the proper mixture of air and gas in the mixing head obtained. The mixing head is further provided with two distributing tubes 18 which extend therefrom at the lower edge thereof parallel with the burner tubes and below the mixing tube 15 heretofore described. The ends of said tubes adjoining the mixing head are suitably connected to the burner tubes 19. These burner tubes 19 may be of any suitable construction and it will, of course, be understood that the gas may be led from the valved ends of the tubes 18 to any desired place for heating or illuminating the burner. The outlet from one of the distributing tubes 18 is controlled by a valve 20. It is to be noted that all of the valves are arranged at the mixing end of the burner so that they may be easily reached for manipulation when the burner is in position in a stove or furnace, the mixing head being the one that is to be arranged close to the furnace door.

Integral with the generating chamber is formed a supporting or reinforcing bar or member 22 extending along the top of the generator. This reinforcing member consists of the horizontal portion or plate 23 and the vertical central upstanding member or flange 24. This reinforcing member prevents the generating chamber sagging at the center when it is heated. The horizontal member or plate 23 is notched at its end near the mixing head to permit it to be passed down over the yoke 3 of said head. The generator with its reinforcing member, and the connected supply tube 6, may be readily disconnected from the heads and removed from the burner by detaching the flat reinforcing member 22 from the yokes 3. As shown clearly in Figs. 3 and 4, these yokes are notched horizontally to receive the longitudinal edges of the member 23. By mov-

ing the generator longitudinally slightly to bring the notches in the plate 23 into register with the adjoining yoke 3 the generator and its attached parts may be lifted free of the yoke and may then be moved longitudinally to disengage it from the yoke of the distributing head.

To support the generator and burner as a whole, supporting legs 21 are provided, one of which is connected to the mixing head and the other to a coupling on the mixing tube adjoining the distributing head. It will, of course, be understood, however, that any suitable means may be provided for supporting the burner and generator.

To start the generation of gas the mixing head is provided with an oil pocket 25 which may be filled with oil and lighted to start the generation of gas in the valve tube 11 adjacent the needle valve 12. This will generate a sufficient supply of gas to supply the burner tubes 16 after which the generation of gas will continue as long as the supply of oil is kept up.

It will, of course, be understood that the bar and coil spring may be omitted from the supply tube 6 and generator and any other suitable material placed therein to increase the evaporating surface and to retard the flow of oil under pressure. It is also to be understood that this material may occupy any desired length of the generator and supply tube and I do not wish to be limited in this respect.

What I claim is:

1. An oil-gas generator and burner comprising a mixing head, a distributing head, a generator tube extending between said heads at the top thereof, a supply tube connected to said generator tube, a mixing tube extending between said heads below the generator tube, a gas nozzle connected to the generator and directing a jet of gas into the mixing tube, means whereby said gas jet will draw air into said mixing tube, said mixing tube delivering the air and gas into the distributing head, and a pair of burner tubes extending from the distributing head to the mixing head below the generator and above the mixing tube, said burner tubes being provided with apertures the walls of which incline upwardly and inwardly, whereby jets from said apertures will impinge on each other directly under and close to the generator.

2. An oil-gas generator and burner comprising a mixing head, a distributing head, a yoke extending upwardly from each of said heads, a generator tube extending between said heads and lying in said yokes, a supply tube connected to said generator tube, a mixing tube extending between said heads below the generator tube, a gas nozzle connected to the generator tube and directing a jet of gas into the mixing head and through

said head into the mixing tube, an air inlet being formed in said mixing head whereby air will be drawn into the mixing tube through the mixing head, and a pair of parallel burner tubes extending from the distributing head to the mixing head below the generator, said burner tubes being provided with apertures having walls inclining upwardly and inwardly, whereby jets from said apertures will impinge on each other directly under and close to the generator.

3. An oil-gas generator and burner comprising a mixing head, a distributing head, a yoke extending upwardly from each of said heads, a generator tube extending between said heads and lying in said yokes, a supply tube connected to said generator tube, a mixing tube extending between said heads below the generator tube, a gas nozzle connected to the generator tube and directing a

jet of gas into the mixing head and through said head into the mixing tube, an air inlet being formed in said mixing head whereby air will be drawn into the mixing tube through the mixing head, a pair of parallel burner tubes extending from the distributing head to the mixing head below the generator, said burner tubes being provided with apertures having walls inclining upwardly and inwardly, whereby jets from said apertures will impinge on each other directly under and close to the generator, and gas distributing tubes connected to the distributing head.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

SCOTT M. ABBOTT.

Witnesses:

SABINA HUNSTEGER,  
A. W. CORWIN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."