N. J. VERRET.

GAS GENERATOR FOR OIL BURNERS.

APPLICATION FILED MAY 25, 1921.

1,418,407. **Patented June 6, 1922.**

2 SHEETS—SHEET 1.

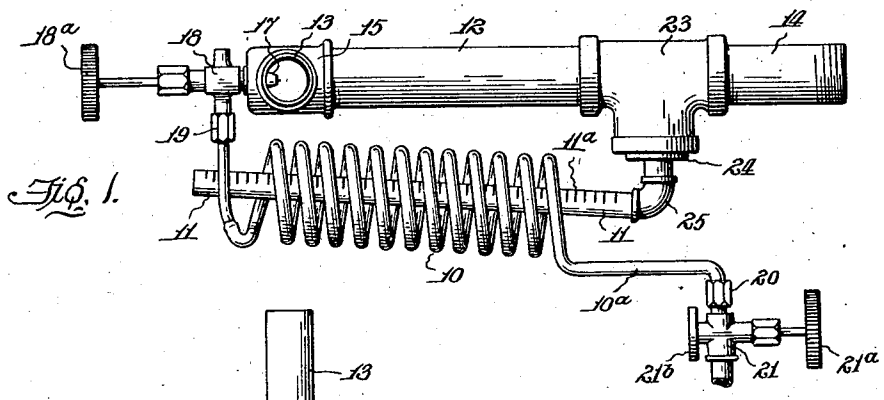


Fig. 1.

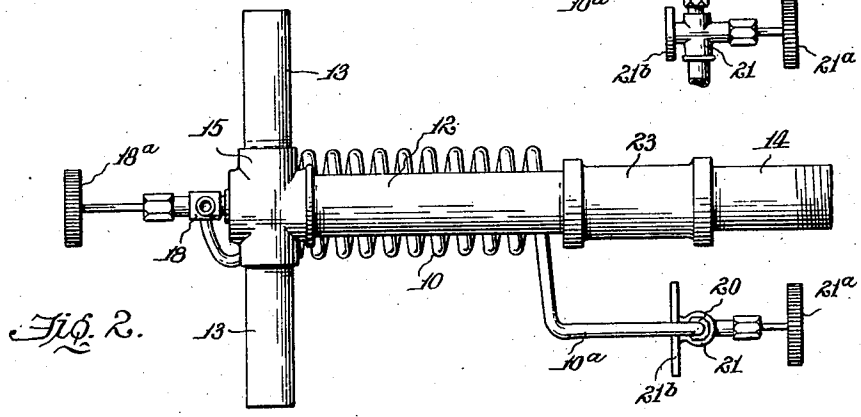


Fig. 2.

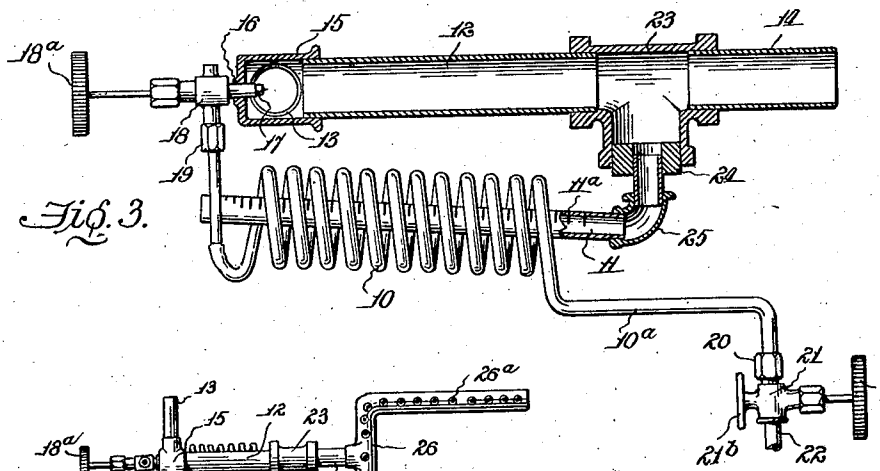


Fig. 3.

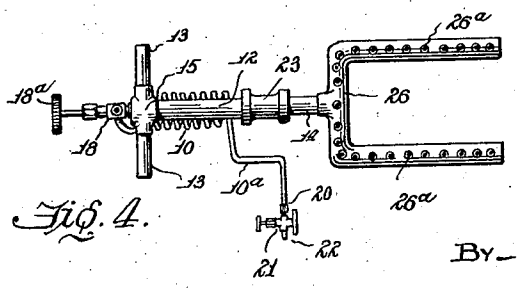


Fig. 4.

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2 SHEETS—SHEET 2.

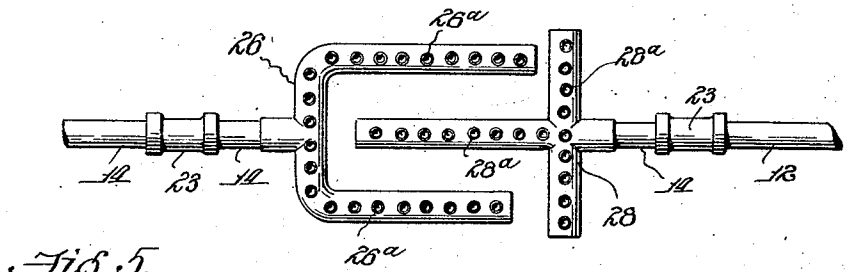


Fig. 5.

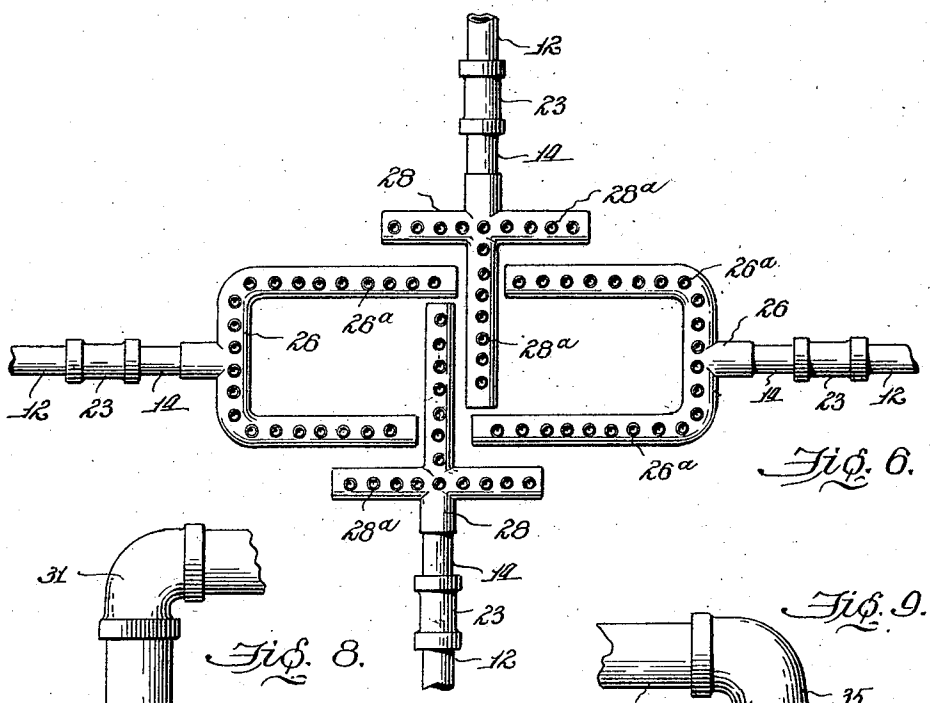


Fig. 6.

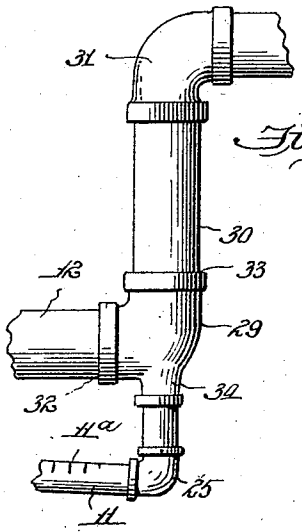


Fig. 8.



Fig. 7.

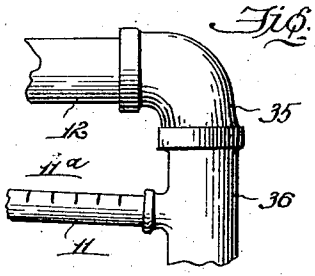


Fig. 9.

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GAS GENERATOR FOR OIL BURNERS.

1,418,407. Specification of Letters Patent. **Patented June 6, 1922.**

Application filed May 25, 1921. Serial No. 472,469.

To all whom it may concern:

Be it known that I, NICHOLAS J. VERRET, a citizen of the United States, residing at Memphis, in the county of Shelby and State of Tennessee, have invented a Gas Generator for Oil Burners, of which the following is a full and complete specification.

The primary object of my invention is to provide a generator or gas producer for oil burners which is simple, cheap and compact in construction for use in connection with different types of burners, being in the present instance a separate device or appliance that is independent of and away from the burner so that it will not be affected by the main heating flame; whereby the durability of the generator is materially increased and in operation it is more effective.

A further object of my invention is to so construct the generator or gas producer that when applied it is easily accessible for convenience in manipulation to start up the oil burner, its operation clearly visible for observation, and the several parts constituting the appliance arranged for convenient examination and repair.

A further object of my invention is to provide a gas generating device of this general character that is not liable to get out of order and in the use operates safely and economically to produce a supply of gas that will increase the effectiveness of any particular type of gas-burner that may be used in connection therewith.

Other objects and advantages of my invention will hereinafter appear in the following specification, and what I claim as new and desire to protect by Letters-Patent is particularly set forth in the appended claims.

In the accompanying drawings, forming a part hereof:—

Fig. 1 is a side elevation of a generator or gas producer constructed in accordance with my invention.

Fig. 2 is a plan view of the same.

Fig. 3 is a longitudinal vertical sectional view through the parts.

Fig. 4 is a plan view illustrating the application of the gas generator to a burner of particular construction.

Figs. 5 and 6 show manifold gas burner sections assembled to produce a large burner.

Fig. 7 is a perspective view of a gas burner tip; and

Figs. 8 and 9 are detail views of modified forms of couplings used in connection with the gas generator, and hereinafter referred to.

In carrying out my invention I make the retort 10 in the form of a coil which is heated in the present instance by an auxiliary burner 11 within the same, and conduct the vaporized oil into a mixing-chamber 12 located above the retort and auxiliary burner to receive heat from the latter, and provide said mixing-chamber with air inlet pipes 13, 13, at opposite sides thereof; the auxiliary burner being connected to the rear portion of the mixing-chamber to receive its supply of fuel gas therefrom, and a suitable connection, as nipple 14, provided for connecting the gas generator to the burner.

In constructing the device I employ for the mixing-chamber a pipe 12 of suitable size according to the required heating capacity of the burner or number of burners with which the generator is to be used, and attach to the forward end of this pipe a cap 15 having the air inlet pipes 13, 13, threaded into openings at opposite sides thereof, the outer end of said cap being provided with a small opening 16 to receive the nozzle 17 of a conventional form of needle-valve 18 through the medium of which the vaporized oil from the retort 10 is injected into the aforesaid mixing-chamber or gas-pipe 12. One end of the retort-coil is connected to this needle-valve by means of a gland-nut 19, and the other end of said coil, or an extension 10^a thereof, is connected by a gland-nut 20 to an ordinary form of cut-off or regulating valve 21 interposed between the coil and oil supply pipe 22. The regulating valve is provided with a manipulating wheel 21^a and with an attaching plate 21^b by which latter is it secured to a suitable support.

The needle-valve 18 is connected to the cap of the mixing-chamber by slipping the plain nozzle 17 thereof into the hole 16 in said cap, and of course either one or both the hole and nozzle may be slightly tapered for more securely holding the needle-valve in place by frictional engagement. This connection provides for readily removing the needle-valve for examining and cleaning the same, as well as repairing or renewing any of the parts of the generator. It will be here noted that air is admitted to the mixing-chamber at opposite sides of the discharge end of the needle-valve so that the inflammable gas will be formed in the pipe 12 after the manner of a Bunsen burner and

superheated by the auxiliary burner to produce a better flame at the main burner. It will be also noted that the stream of vaporized oil discharged from the needle-valve into the mixing-chamber or gas pipe 12 can be observed through either one of the air inlet pipes 13, whereby the character of the stream or spray can be readily seen and therefore more accurately regulated by manipulation of the needle-valve. The air inlet pipes are of a sufficient length to take in a fresh supply of air beyond that heated by the auxiliary burner, and of course the size of these pipes is governed by the size of the co-operating parts of the gas generator.

The mixing-chamber or gas-pipe 12 is supported at its rear end by a T-coupling 23 through which the mixture or gas passes to the burner by way of a suitable connection, as for instance the nipple 14, and this coupling also supports the auxiliary burner 11 so that a small part of the gas mixture from the mixing chamber may be drawn to supply said auxiliary burner; but as the burner-pipe is comparatively small the T-coupling is either provided with a reduced opening for connection of this pipe thereto or with a reducing plug 24. As the auxiliary burner pipe is located below and substantially parallel with the mixing-chamber or gas pipe 12 an elbow coupling 25 forms a part of the connection with the T-coupling. As shown in Figs. 1–3 of the drawings the mixing-chamber is connected to one end of the straight portion of the T-coupling and the nipple 14 to the other end thereof, while the auxiliary burner is connected to the opening in the coupling at right angles to said straight portion or direct passage and being comparatively small draws only a small quantity of the fuel gas to supply the same for heating the retort and mixing-chamber. This form of T-coupling is employed in connecting the gas generator on a line with the main burner; but it will be understood that other forms of couplings may be used when the main burner is to be located above or below the gas generator, as for instance the couplings shown in Figs. 8 and 9, hereinafter described. In each instance, as will be observed, the several parts of the gas generator are supported from the coupling device, the general arrangement being to provide a simple and compact appliance.

The generator or gas producer hereinbefore described may be used in supplying any type of gas burner and is easily connected through the medium of the nipple 14 or other pipe connection according to the desired location of the main burner with respect to the generator.

In Fig. 4 of the drawings I have illustrated a particular type of main-burner to be used in connection with the improved gas generator, for in this instance the body of the burner is U-shape to be used alone in providing a small single burner or in pairs to provide a larger burner, comprising the member 26 having the burner-openings 26^a into which are threaded tips 27 shown in Fig. 7. In connection with this burner member I prefer to use a cooperating burner-member 28 to provide a manifold main burner in which the said burner-members or sections are susceptible of arrangement in organizing burners of various sizes, for instance an intermediate size, as shown in Fig. 5, or a larger size, as shown in Fig. 6. The burner-member 28 is provided with openings 28^a threaded to receive the tips 27. Each burner-member carries an independent generator or gas producer of the construction hereinbefore described thereby forming a heating unit for use singly, in pairs, or in groups, to provide heating capacity according to any special requirement and a large range of uses from the small requirements in household heating and cooking to the larger requirements necessary in furnishing burners for bakeries, restaurants, hotels, laundries, and other business places or establishments; it being understood that groups of heating units of this character may be used in stoves and furnaces for heating buildings, in ranges for cooking, and in other kinds of heating apparatus and appliances for various purposes. Although the burner-members 26 and 28 provide a special form of manifold burner it will be obvious that the gas generator or gas producer hereinbefore described may be used to advantage with any other type of main burner adapted to use natural or artificial gas by connecting the same to the usual gas supply pipe. In every instance the use of the generator with either gasoline or kerosene results in producing a fuel mixture or gas that is vaporized and superheated independent of the main burner and therefore its quality or richness more accurately regulated.

In Fig. 8 I have shown one modification of the coupling which supports the several parts of the gas generator, in which instance the T-coupling 29 provides for directing the gas mixture from the mixing-chamber or gas-pipe 12 in an upward direction so as to connect with a burner located at a higher elevation than the generator, a nipple 30 and elbow coupling 31 being interposed between said T-coupling and the main burner. This coupling therefore has the larger passageway and connecting openings 32 and 33—to which the gas pipe 12 and nipple 30 are respectively connected—at right angles to each other, with the reducing portion 34 of the coupling extending downward to receive the auxiliary burner. When it is desired to locate the main burner

below the plane of the generator, or gas pipe 12 thereof, an ordinary elbow-coupling 35 (Fig. 9) of the desired size is employed, and in this instance a reducing T-coupling 36 is used as a part of the pipe connections between the elbow - coupling and main burner. It will be noted that in each instance ordinary pipe fittings are employed to make the connections, so that a change can be made when desired at small expense; furthermore, that the parts of the generator may be renewed also at small expense.

From the foregoing description it will be readily seen that my invention in the present instance resides primarily in the provision of a generator or gas producer for use in connection with any form of main burner, and presents a practicable device or appliance in which a coiled retort is heated by an independent burner to vaporize the oil and that this auxiliary burner also superheats the gas-mixture to produce an effective flame at the main burner. Furthermore that the particular arrangement of the comparatively few parts in compact and cooperative relation away from the main burner not only increases the life or durability of the generator but also increases its effectiveness in operation and ease of manipulation, as well as making it possible for repairs to be readily and conveniently made by an unskilled person.

I claim:—

1. A generator or gas producer for oil burners comprising a mixing-chamber to which the main burner is connected, an auxiliary burner pipe located below and adjacent to said mixing chamber for heating the same, said auxiliary burner pipe being connected to the mixing-chamber to receive fuel gas therefrom, a retort around the auxiliary burner pipe, a valve receiving the vaporized oil from the retort and discharging it into the mixing-chamber, and air inlets to the mixing-chamber.

2. A generator or gas producer for oil burners comprising a mixing-chamber to which the main burner is connected, an auxiliary burner-pipe located below and adjacent to said mixing chamber for heating the same and connected to the mixing-chamber to receive its fuel gas therefrom, a coiled retort around the burner-pipe, a valve receiving the vaporized oil from the retort and discharging it into the mixing-chamber, and air inlets to the latter.

3. A generator or gas producer for oil burners comprising a mixing-chamber to which the main burner is connected, an auxiliary burner-pipe located below and adjacent to said mixing-chamber for heating the same and connected thereto to receive its fuel gas therefrom, a coiled retort around the burner-pipe, a valve receiving the vaporized oil from the retort and discharging it into the mixing-chamber, and air inlet pipes connected to the mixing chamber at opposite sides of the discharge end of the aforesaid valve and projecting away from said mixing chamber, substantially as shown and described.

4. A generator or gas producer for oil burners comprising a mixing-chamber to which the main burner is connected, an auxiliary burner-pipe located below and adjacent to said mixing-chamber for heating the same, a coupling connected to the rear end of the mixing-chamber and having a reduced opening to which the burner-pipe is connected, a coiled retort around the auxiliary burner pipe, and a valve receiving the vaporized oil from the retort and discharging it into the mixing-chamber, substantially as shown and for the purpose set forth.

5. A generator or gas producer for oil burners comprising a mixing-chamber to which the main burner is connected, an auxiliary burner-pipe located below and adjacent to said mixing-chamber for heating the same, a coupling connected to the rear end of the mixing-chamber and having a reduced opening to which the auxiliary burner-pipe is connected, a coiled retort around the auxiliary burner-pipe, a valve receiving the vaporized oil from the retort and discharging it into the mixing-chamber, and inlet pipes projecting laterally from the forward end of the retort at opposite sides of the discharge end of the aforesaid valve, substantially as shown and for the purpose set forth.

6. A generator or gas producer for oil burners comprising a mixing chamber to which the main burner is connected, a cap at the forward end of the mixing-chamber having threaded openings at opposite sides and a hole in its rear wall, and a reducing coupling at the rear end of said mixing-chamber for connecting it to the main burner and for connecting an auxiliary burner-pipe thereto; together with an auxiliary burner pipe connected to the coupling, a coiled retort around the auxiliary burner-pipe, a needle-valve receiving the vaporized oil from the retort and fitted into the hole in the end wall of the cap on the mixing-chamber, and pipes threaded in the opposite openings in said cap to project away from the mixing-chamber, said pipes being on a line with the discharge end of the needle-valve, substantially as shown and for the purpose set forth.

7. A heating unit for burning oil comprising a U-shape main burner, a mixing-chamber connected thereto, an auxiliary burner-pipe connected to the rear end of the mixing-chamber and located below the latter, a coiled retort around said auxiliary

burner-pipe, a needle-valve receiving the vaporized oil from the retort and discharging it into the forward end of the mixing-chamber, and inlet pipes at opposite sides of the mixing-chamber on a line with the discharge end of the needle-valve, substantially as shown and for the purpose set forth.

8. A manifold oil burner comprising a U-shaped section and a T-shape section each carrying a mixing-chamber, an auxiliary burner-pipe connected to said mixing-chamber, a coiled retort around the auxiliary burner pipe, a needle-valve receiving the vaporized oil from the retort and discharging it into the mixing-chamber, and air inlets on a line with the discharge end of said needle-valve.

NICHOLAS J. VERRET.