Jan. 22, 1924. 1,481,573

W. T. VAN BRUNT

GAS GENERATOR AND BURNER

Filed Nov. 20, 1920

Fig. 1.

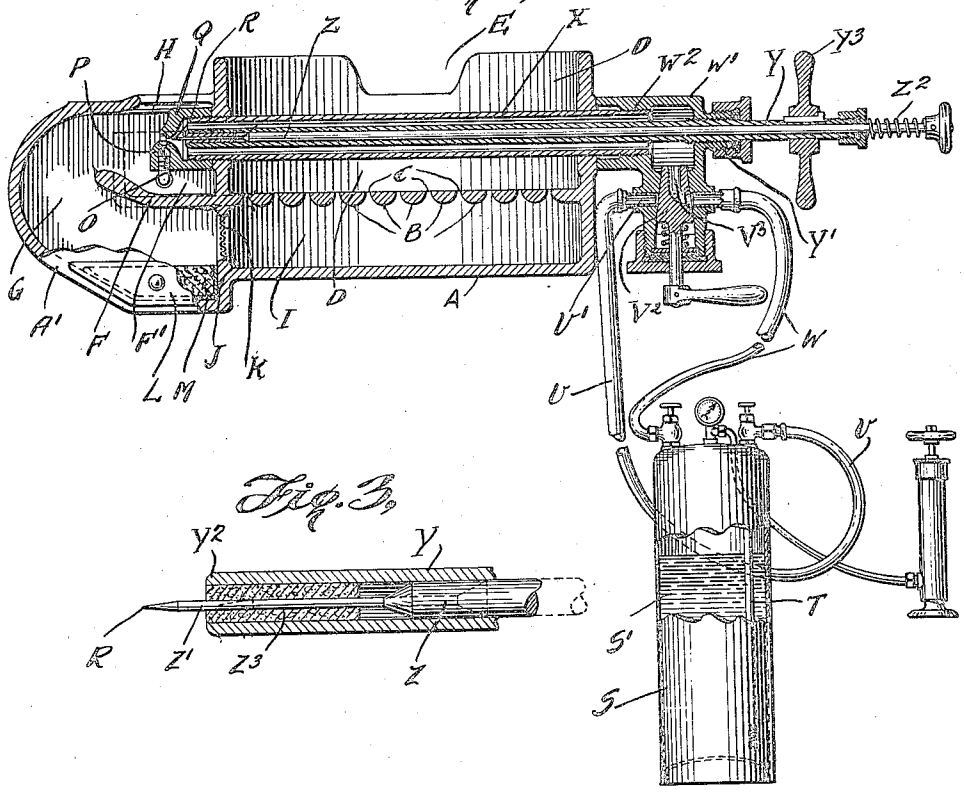
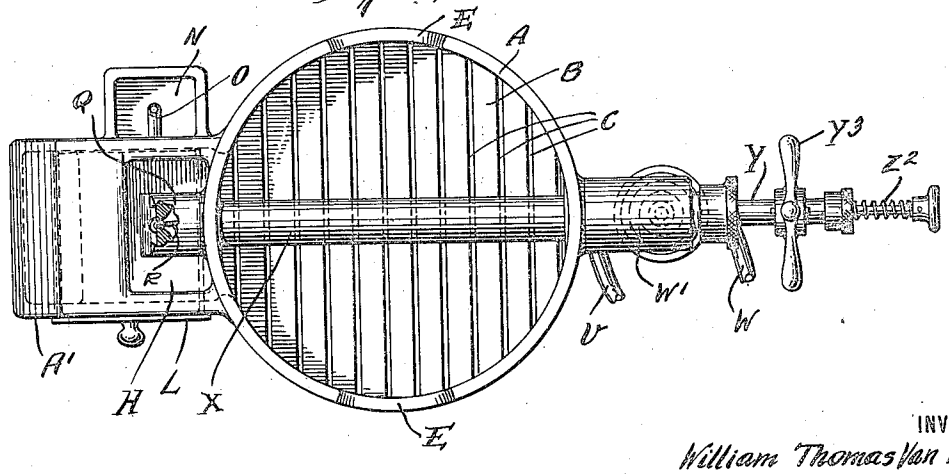



Fig. 3.




Fig. 2.




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# UNITED STATES PATENT OFFICE.

WILLIAM THOMAS VAN BRUNT, OF REDBANK, NEW JERSEY.

## GAS GENERATOR AND BURNER.

Application filed November 20, 1920. Serial No. 425,297.

*To all whom it may concern:*

Be it known that WILLIAM THOMAS VAN BRUNT, citizen of the United States, and resident of the city of Redbank, in the State of New Jersey, has invented certain new and useful Improvements in Gas Generators and Burners, of which the following is a specification.

This invention relates to oil burners which embody a gas generator and burner.

The object of my invention is to provide a combined gas generator and burner of simple construction by which oil such as kerosene may be converted into gas, the gas carburetted and burned in an efficient manner.

The novel features of construction are herein described and pointed out in the claims.

Referring to the drawings which form a part of this specification,

Fig. 1 is a longitudinal sectional view of a construction embodying my invention;

Fig. 2 is a plan view;

Fig. 3 is a longitudinal sectional view of the outlet valve drawn on a larger scale and illustrates how the needle is protected from carbon or other deposit.

A indicates the body of the burner and is usually made of cast iron. Cast integral with the body portion is a grid burner B comprising a number of parallel strips which form very narrow slots C—C—C extending across the body portion, and through which the generated gases pass and are burned in the chamber D formed directly above the grid B. The top of the chamber D is shown as circular in form but may be made in any desired shape, and is provided with openings E—E respectively to permit the products of combustion to freely escape in case a pan is placed over the entire top in the act of cooking. The body portion comprises an extension A′ having a partition F extending entirely across the extension and forming a dish F′. By reason of the partition F, a goose-neck passage G is formed leading from the air inlet H to the gas chamber I, said passage being restricted by the inwardly extending circular flange J. A screen K is located at this point to prevent ignition of the gas in the goose-neck passage G. Located in the bottom of the passage G is an absorbent pad M of asbestos which I prefer to place in a drawer L for easy removal, but the drawer may be dispensed with if desired, in which case the pad M is made to close the opening in which the drawer slides. N indicates a chamber to receive a small amount of gasolene and a small tube O extends to the spray nozzle of the atomizer which comprises a nut Q provided with a small cylindrical passage R, formed in juxtaposition to the nozzle P and at a right angle thereto. The outlet from the nozzle P is cupped or formed bell shaped so that a jet of air projected across it from the passage R will create a suction and lift the gasolene from the tube O and spray it into the goose-neck passage G, the spray so formed causing an induction of air through the air inlet H to mix with the atomized gasolene and flow through the passage G to the chamber I. S indicates a reservoir for kerosene oil and S′ the oil therein. T indicates a tube through which the oil is forced by compressed air located above the oil, through the pipe U to the control cock $V^2$. A pipe W conducts air from the reservoir S to the valve casing W′. The valve casing W′ is provided with a threaded bore $W^2$ which engages one end of a pipe X, comprising a retort gas generating chamber X′. The nut Q screws on the opposite end of the pipe X, thus holding it in fixed relation to the body portion A. A tube Y is threaded at Y′ in the casing W′, the end $Y^2$ of which is adapted to abut the inner wall of the nut Q and serve as a valve to control the cylindrical passage R. Extending through the tube Y is a rod Z one end of which is reduced in diameter to provide a cleaning rod Z′ which is adapted to slide through the passage R to clean the same and is retracted by the spring $Z^2$ within a sheath of asbestos indicated by $Z^3$ which serves to protect the needle Z′. The control valve is provided with a single passage $V^3$ which is adapted to register with the inlet V′ leading to the air supply, in reservoir S, and with the oil supply pipe W. By means of the handle $Y^3$ the valve $Y^2$ may be operated.

The device operates as follows:—

Assuming the reservoir S to be partly filled with kerosene and air under pressure in the top thereof, the cup N is filled with gasolene which will rise in tube O nearly to the top of the spray nozzle P. The cock $V^2$ is then opened to admit air from the pipe W to the chamber X′. The valve $Y^2$ is then opened to permit the air to pass through the orifice R and draw gasolene from the

pipe O and spray it into the goose-neck G, causing air to be inducted through the opening H and mixing with the gasolene thus forming a combustible mixture which flows through the screen K into the chamber I and through the slots C—C, etc., of the grid-burner B above which it is ignited, and the flame heats the retort X. By the time the gasolene is exhausted, the retort is heated sufficiently to vaporize the kerosene which is then admitted to the chamber X′ by turning the cock $V^2$ to open communication with the oil inlet V′, the oil flowing under the air pressure into the chamber X′ where it is vaporized and passing through the orifice R flows into the goose-neck passage G and induces air through the opening H, thus forming a carburetted mixture which flows to the burner in place of the gasolene mixture.

The absorbent pad M absorbs any free oil that may be carried over in starting the operation of the burner and after the burner has operated a short time and the adjustment of the control valve $Y^2$ is accurately set, the oil absorbed by the pad is gradually taken up by the heated gas flowing over it, leaving it dry and ready to act when the burner is again being started. The flow of oil from the reservoir is controlled since a higher gas pressure than normal in the retort chamber X′ will force the oil backward to the reservoir S, and as the pressure in chamber X′ is reduced below that of the air pressure on the oil, the oil will again be forced to the retort chamber. This action causes a constant surging action of the gas in the generator within small limits and this action serves to carry out any free carbon that may be formed in the chamber X′ and carry it downward through the valve V and feed port V′ to the reservoir S and for this reason the reservoir should be located below the level of the burner to obtain the best results. The air pressure is usually about fifteen pounds per square inch above that of the atmosphere and is supplied by a hand pump or other suitable means.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. The combination of a gas generator and burner comprising a body portion, a retort supported in the body portion having an unrestricted inlet for oil and a valve controlled outlet for vapor, a burner, a conduit leading from the vapor outlet to said burner, a pad of absorbent material located in the bottom of said conduit.

2. The combination of a gas generator and burner comprising a body portion having a conduit at one side thereof which is provided with an inlet opening for air and with an upwardly extending partition to form a goose-neck, said conduit leading to a chamber formed below the burner grid, and a burner, all formed integral with the body portion, said gas generator extending across the body portion above the burner, a hollow valve-rod extending through said retort, and a rod extending through said valve-rod, one end of which is adapted to extend through said outlet.

3. The combination of a gas generator and burner having a retort extending across the burner above the same, and provided with an outlet, a hollow valve-rod extending through said retort, a rod extending through said valve-rod one end of which is adapted to extend through said outlet and a protecting envelope for said last named rod carried by said hollow valve rod at the end adjacent said outlet.

4. The combination of a gas generator and burner comprising a retort having an outlet, a receptacle for gasolene located adjacent said outlet and a conduit leading from said receptacle to said outlet.

5. The combination of a gas generator and burner comprising a retort having a valve controlled outlet, a receptacle for gasolene located adjacent said outlet and a conduit leading from said receptacle to said outlet.

6. The combination of a gas generator and burner comprising a retort having an outlet, a receptacle for gasolene located adjacent said outlet and a conduit leading from said receptacle to said outlet, said receptacle being located relative to the height of said outlet so that the gasolene therein is normally below the level of the outlet but may be lifted by suction and sprayed by a gas flowing from said outlet.

7. The combination of a gas generator and burner comprising a body portion, a retort supported in the body portion having an unrestricted inlet for oil and a valve controlled outlet for vapor, a burner, a conduit leading from the vapor outlet to said burner, an inlet for air communicating with said conduit and a drawer in said conduit.

8. The combination of a gas generator and burner comprising a body portion, a retort supported in the body portion having an unrestricted inlet for oil and a valve controlled outlet for vapor, a burner, a conduit leading from the vapor outlet to said burner, an inlet for air communicating with said conduit, a drawer in said conduit and absorbent material in said drawer.

Signed at New York city, in the county of New York and State of New York, this 18th day of November A. D. 1920.

WILLIAM THOMAS VAN BRUNT.

Witness:
FRANK M. ASHLEY.