April 4, 1939. A. W. SCHISLER 2,152,978

GAS GENERATOR

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Fig. 1.

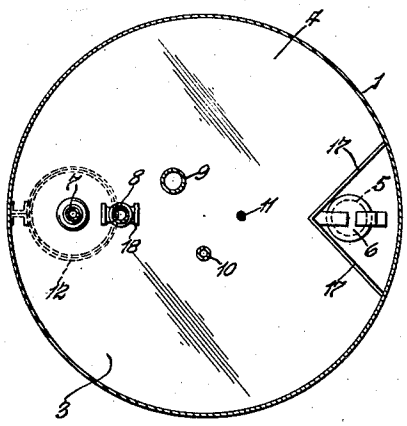
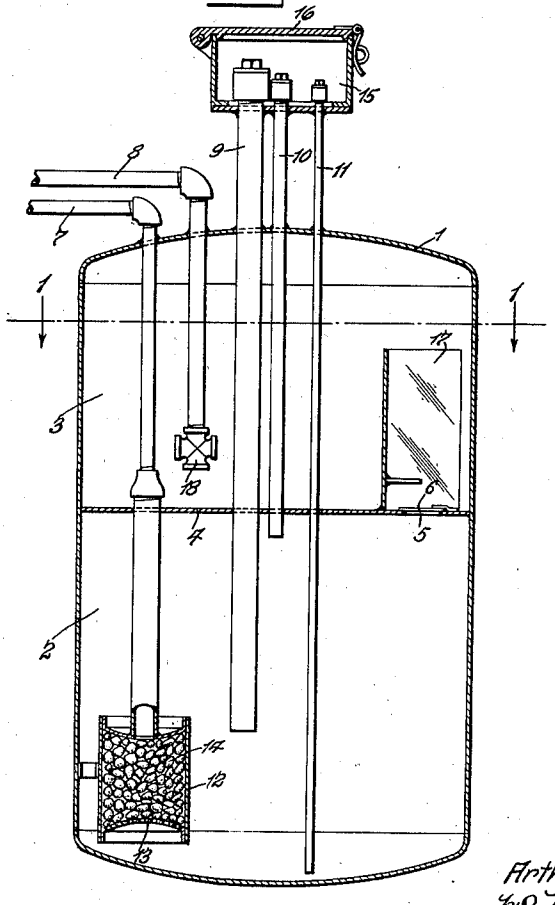


Fig. 2.



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GAS GENERATOR

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3 Claims. (Cl. 261—121)

This invention relates to a gas generator for producing gas suitable for domestic use in lighting and heating (for cooking).

An object of this invention is to produce a simple, efficient device for producing a carburetted hydrocarbon gas for domestic purposes, which will be economical to manufacture and which will require little service for cleaning or repairing.

Another object of this invention is to provide a single self-contained unit which will include a liquid storage compartment, a gas storage compartment and a carburetor, of simple, safe and durable construction.

Other objects will be apparent from the following detail description, taken in connection with the accompanying drawing.

Fig. 1 is a horizontal section on line 1—1, Fig. 2; and

Fig. 2 is a central vertical section.

The device, as specifically illustrated in the drawing, includes a drum 1 divided into a lower liquid storage chamber or compartment 2 and an upper gas compartment 3 by a horizontal baffle or partition 4, in such position that the lower chamber 2 comprises approximately 60 per cent. and the upper chamber comprises approximately 40 per cent. of the volume of the drum 1. The chamber 2 communicates with the chamber 3 through an orifice 5 in the partition 4, which orifice is covered by a check valve 6 arranged to permit flow only from the lower to the upper chamber.

The fittings comprise an air inlet pipe 7, a gas service pipe 8, a filler pipe 9, a pressure relief tube 10 for filling, and a clean-out pipe 11. The air inlet pipe 7 opens into a carburetor chamber 12 situated near the bottom of the compartment 2 and having a perforate bottom wall 13, to permit ingress of liquid hydrocarbon from the compartment 2 and egress for carburetted gas. The chamber is filled preferably with a cellular material 14 having high porosity and permeability. An excellent material for this purpose is "Aloxite" which is a porous aggregate comprising fused aluminum oxide and a ceramic binder. The material is preferably granular of a size one-fourth inch to one inch although satisfactory results have been obtained by using a solid plate of the material interposed between the air inlet and the outlet of the carburetor.

The foregoing is a short description of the device as shown in the drawing, while the essential features are pointed out in the appended claims. A more detail description of the apparatus and of its method of operation will assist in understanding and practicing the invention.

The drum 1 is preferably of steel having sufficient strength, with an allowance for safety, to hold a working pressure of six pounds and adapted to be buried in the ground. The pipes 9, 10 and 11 terminate preferably in a control box 15, having a lid 16. Each of the pipes is provided with a plug, as shown in the drawing, or other suitable closure. It will be understood that the control box is situated at the top of the ground. The chamber 2 may be filled substantially to the baffle plate or partition through the pipe 9, which extends through the partition and into the chamber. In order to vent the chamber 2 when filling, the pipe 10 which extends into the top of the lower chamber, will be opened. The cleaning out pipe 11 extends approximately to the bottom of the drum to provide means for cleaning out the device. This may be accomplished by introducing pressure into the compartment 2 or by suction applied to the pipe 11.

A pair of vertical baffle plates 17, arranged angularly with respect to each other, are positioned about the port 5 and extend upwardly toward the top of the compartment 3. These baffle plates promote circulation of the gas in the chamber in order to provide a uniform product for delivery to the service line 8.

This mixing to secure uniformity is also assisted by the position and form of the inlet for the service pipe 8, which comprises a cross fitting 18 open laterally at two sides and at the bottom and situated near the bottom of the chamber 3, as clearly shown in the drawing. The gas has a tendency to stratify and the arrangement of the baffle plates 17 and the intake fitting 18 are such as to deliver a uniform mixture.

It is contemplated that air pressure be introduced into the pipe 7, preferably direct from a compressor at a pressure of between three and six pounds. The exact pressure is not essential but the pressures named have been found to give satisfactory results and are preferable. It is also contemplated that regulating devices, which form no part of the invention claimed herein, be arranged in such a manner that a compressor adapted to feed the line 7 be put into action when pressure in the chamber 3 falls to three pounds and that the compressor be stopped when the pressure rises to six pounds.

The arrangement of the carburetor and its position in the chamber or compartment 2 is such as to give most efficient results. Liquid hydrocarbons, especially when obtained from

different sources or from different batches, have a tendency to stratify, with the lighter hydrocarbons on top and the heavier hydrocarbons on the bottom. Of course, the heavier hydrocarbons are the harder to carburette. Therefore, the arrangement is such that the heavier hydrocarbons, where there is a stratification, are the first to be introduced into the carburetor. It will be seen thus that the system is such as to avoid the deficiency of many carburetting systems in which the hydrocarbons are merely skimmed, leaving as a residue heavier hydrocarbons in concentrated form which are difficult to handle and which tend to reduce the quality of the gas and eventually to clog the system.

It is contemplated that the device be used with pentane or its homologues. As a matter of fact, the present apparatus will effectively carburette hydrocarbons heavier than those handled by conventional apparatus, but best results are obtained by using light hydrocarbons where available.

The cellular material 14, as described, is preferably granular material between one-fourth inch and one inch in size and comprises aluminum oxide and silicon carbide fused with a binder at a high temperature to produce a material which is relatively indestructible and having very high porosity and permeability. It is known that granular material such as charcoal has been proposed for use in carburetors, but such material has a tendency to fatigue, which tendency is not present in the material described. Furthermore, none of the materials previously proposed has a porosity and permeability comparable to that herein described and is nowhere as efficient, even when fresh and under the most favorable conditions.

It is to be understood that various changes may be made in the details of construction, within the scope of the appended claims, without departing from the spirit of this invention, and that parts of the invention may be used successfully without the whole.

I claim:

1. A carburetor comprising a chamber having an air inlet, a gas outlet, and a body of cellular material interposed between said inlet and outlet, said material being of high porsity and permeability comprising a porous aggregate consisting of fused aluminum oxide and a ceramic binder.

2. A gas generator comprising a drum, a horizontal partition dividing the drum into a lower liquid storage chamber and an upper gas storage chamber, a carburetor in the lower chamber, a port in the partition, a check valve for the port, a service pipe opening into the upper chamber, pipes comprising a filler pipe, a pressure relief tube and a clean-cut pipe extending through the top wall of the drum, the upper chamber and the partition and open to the lower chamber, and a control box above the chamber adapted to be situated at ground level and housing the upper end of said filler pipe, relief tube and clean-out pipe.

3. A gas generator comprising a gas storage chamber, a carbureting chamber, a port in said storage chamber communicating with the carbureting chamber, a vertical baffle extending about said port toward the top of the chamber, and a service pipe extending toward the bottom of the storage chamber and having at its end a lateral opening and a bottom opening to the chamber.

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