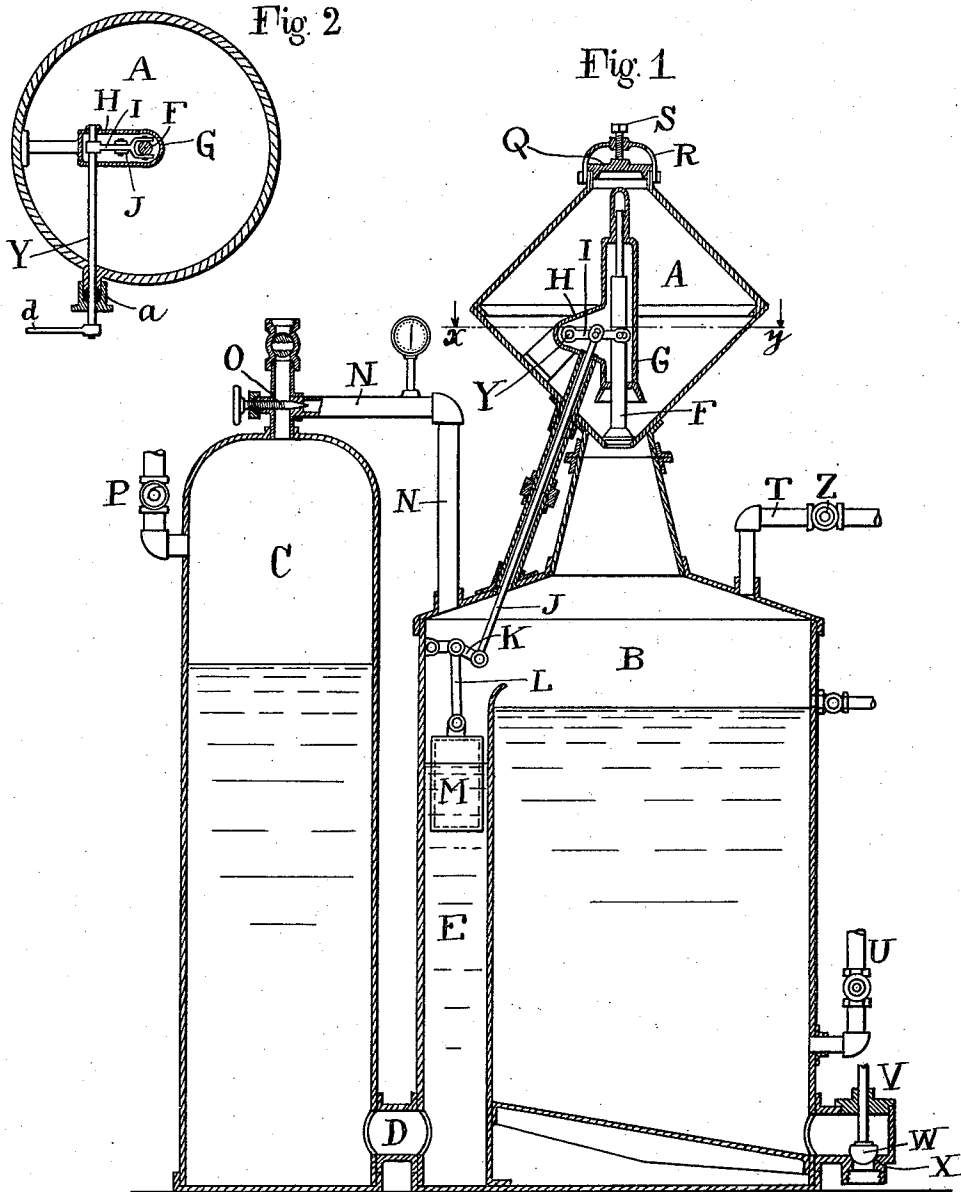


N. GOODYEAR.
GAS GENERATOR.

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1,031,709.

Patented July 9, 1912.



Witnesses
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UNITED STATES PATENT OFFICE.

NELSON GOODYEAR, OF NEW YORK, N. Y., ASSIGNOR TO MAINE DEVELOPMENT CORPORATION, A CORPORATION OF MAINE.

GAS-GENERATOR.

1,031,709.

Specification of Letters Patent.

Patented July 9, 1912.

Application filed June 11, 1908. Serial No. 437,849.

To all whom it may concern:

Be it known that I, NELSON GOODYEAR, a citizen of the United States, and resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Gas-Generators, of which the following is a specification, accompanied by drawings.

My invention relates to improvements in gas generators particularly for those in which the gas is generated automatically at high pressure.

For an illustration of the invention I have chosen to show its application to an acetylene gas generator of the carbid feed type and which is shown in the accompanying drawings in which,—

Figure 1 is a longitudinal cross section. Fig. 2 is a horizontal section through the hopper of the generator on the line $x-y$.

Referring to Fig. 1, A is a hopper for containing the solid gas generating element in this case calcium carbid. B is the generating tank for holding the other gas generating elements are brought together. C is a pressure tank connected at its bottom by a tube or passageway D leading to a receptacle, or compartment, E divided off from but within the generating tank B. F is the valve for feeding the solid gas generating material which for use in this particular form of apparatus should be in a granular, or pulverized form. The valve F moves within a casing G having an extension H for containing a lever I which is adapted to raise and lower the valve F. The lever I is in turn connected by the rod J, the lever K and the link L to a float M. The float M is adapted to rise and fall within the chamber E with variations in the level of the water in the receptacle E to be more fully explained hereafter. The upper portion of the pressure chamber C is connected to the upper portion of the generator tank B by a pipe N provided with a controlling valve O. The valve O should preferably be in the form of a needle valve, or its equivalent adapted to control the flow of gas through a very small aperture. For filling the pressure tank a pipe connection with cock is provided as shown at P. The hopper of the generator is provided with a charging lid Q with suitable means for securing it in place as by the bail R and screw

S. The generator is provided with the usual gas educting pipe T water inlet U and flush out valve V. The gas educting pipe T is provided with a cock Z. In this instance the flush out valve V is of the type in which a soft rubber ball W is forced against the seat X in such a way that the pressure within the generator tends to keep it closed. The greater the pressure the more tightly the valve is forced against its seat.

In Fig. 2 I have shown how the valve F can be controlled manually irrespective of the level of the water in receptacle E. This is accomplished by extending the rock shaft Y which is fastened to the lever I through a stuffing box a on the side of the hopper. The outer end of the rock shaft is provided with a handle d by means of which the valve F and the float M may be raised and lowered from the outside of the generator.

In the operation of the apparatus the hopper A is first charged with carbid or other suitable material; then the generator tank B is filled with water to about the level shown in the drawing. Then the handle d of the feed mechanism is fastened up by any suitable means to prevent the feeding valve F being opened prematurely. Water is poured into the pressure tank C until it is above the level of the top of the float M when the valve P is closed. The valves O and Z are then closed and the handle d is released slowly. Since the float M is submerged it will rise as soon as the handle d is released and in rising will lift the feeding valve F which permits the gas generating material to fall into the generating tank B when gas is instantly evolved causing the water in the receptacle E to be depressed until the float is lowered sufficiently to cause the valve F to be closed when the generation of gas will cease. It will be noted, however, that since the outlet of the pressure tank C is closed at the top, air will be compressed over the water in the pressure tank to a moderate extent sufficient to allow of the depression of the water in the receptacle E until the float is permitted to fall to a point which will arrest the flow of generating material from the hopper A. Now, supposing it is desired to use the generator for delivering gas at a pressure of 100 lbs. per sq. in. or thereabout. Then the valve O is opened slightly allowing gas to pass from the generating tank B through the pipe N

into the pressure tank C. This transfer of gas will permit the water to rise and find its level within the receptacle E until more gas is generated by the opening of the valve F 5 which will momentarily depress the water in the receptacle E and arrest the flow of gas generating material until sufficient gas has passed through the pipe N and the valve O to reestablish a level of the water within 10 the receptacle E which will again cause gas to be generated. It will thus be seen that the pressure within the apparatus will mount higher and higher to any desired pressure which can be indicated by a suitable pressure gage whereupon the valve O 15 is closed. Now, the cock Z leading to the point of application of the gas is opened. As soon as a slight amount of gas is withdrawn from the generator tank, the pressure 20 will be lowered on the surface of the water in the receptacle E and this water will be caused to rise by the high pressure of the gas contained within the pressure tank C.

From this description and the drawings, 25 it will be seen that the delivery pressure of the gas through the educting or delivery pipe T can be controlled at will by means of the valve O. The pressure of the confined gas in the pressure tank serving to 30 cause the generator to act automatically at any desired pressure below the liquefying point of the gas. It will be seen that the generation and pressure of the gas in the generating chamber is regulated and controlled 35 by the difference in pressure existing between the chambers or compartments C and B, and that by admitting more pressure at will through the controlling valve O to the pressure chamber C, the generating 40 chamber B will respond by operating at a higher pressure. Consequently the pressure chamber contains a regulating-pressure for controlling the generator.

It will be understood that this is but one 45 of many forms of apparatus to which the invention may be applied.

I claim and desire to obtain by Letters Patent the following:

1. A gas generator, having a carbid hopper and a generating tank, carbid feeding 50 mechanism, said tank being provided with a separate compartment, a float controlling the carbid feeding mechanism and controlled by the rise and fall of water in said compartment, a pressure chamber capable of being 55 closed to the atmosphere for confining the gas therein above atmospheric pressure and communicating at its lower end with said compartment, and a valve controlled passage connecting the upper portion of the 60 tank with the upper portion of said pressure chamber.

2. A high pressure gas generator, having a float and gas generating mechanism actuated thereby, a compartment or chamber 65 normally partly filled with liquid which actuates the said float and is subjected to the pressure of the gas generated, a separate pressure chamber, normally partly filled with liquid, connections affording free communication 70 for said liquid with the body of liquid which actuates the said float, the gas space of said separate pressure chamber being normally closed, and means for creating pressure in said pressure chamber and 75 controlling same comprising a gas passage from the gas space above said float to the gas space of said pressure chamber and a valve for closing and controlling said passage, whereby a governing pressure in the 80 said pressure chamber may be admitted at will and thereby the action of the float and the pressure of the gas generated be governed.

In testimony whereof I have signed this 85 specification in the presence of two subscribing witnesses, June 10, 1908.

NELSON GOODYEAR.

Witnesses:

E. VAN ZANDT,
E. P. LA GAY.