No. 663,240. Patented Dec. 4, 1900.

W. REMINGTON.

ACETYLENE GAS GENERATOR.

(Application filed Aug. 9, 1900.)

(No Model.)

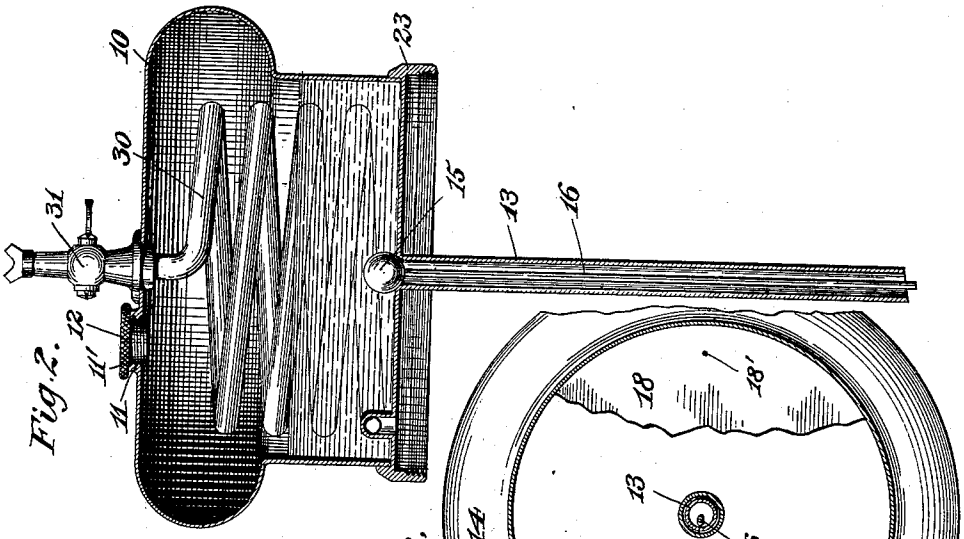


Fig. 2.

Fig. 3.

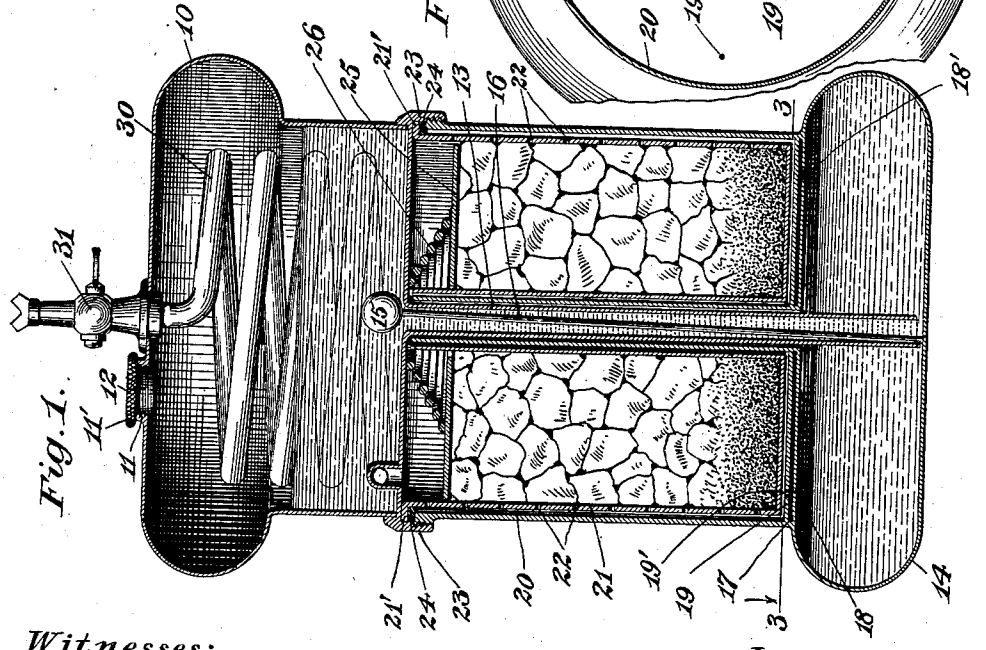


Fig. 1.

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ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 663,240, dated December 4, 1900.

Application filed August 9, 1900. Serial No. 26,367. (No model.)

To all whom it may concern:

Be it known that I, WOLCOTT REMINGTON, a citizen of the United States of America, and a resident of Windsor, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Acetylene-Gas Generators, of which the following is a specification.

This invention relates to acetylene-gas generators, and has for its object a provision of an apparatus of the kind mentioned whereby gas may be generated in an entirely automatic manner and in which the production of such gas will be prevented as soon as a sufficient quantity has been produced to establish a predetermined amount of pressure.

My invention has furthermore for its object the provision of means whereby water or other liquid element which forms one of the component gas-producing mediums shall be absolutely excluded and prevented from contact with the other gas-producing medium as soon as such pressure has reached a certain limit.

Further objects of my invention will be found in the organization and in the construction of some of the component parts of which the generator is composed, so as to render the generator a practical device which may be easily assembled or taken apart. At the same time the generator is adapted for transportation, and no particular harm will result nor will its utility be impaired even if the generator should be upset.

One of the principal difficulties found in acetylene-gas generators is the absolute exclusion of one of the gas-producing mediums from contact with the other as soon as sufficient gas has been generated to produce a certain predetermined pressure It is one of the particular aims of my present invention to so construct the gas-generator that the commingling of the gas-producing mediums will be instantly interrupted as soon as a sufficient supply of gas has been generated. For this reason a gas-generator constructed in accordance with my invention includes as one of its salient features a chamber, which I preferably term a "restriction-chamber," interposed between the water-reservoir and the gas-generating or carbid-containing chamber, such restriction-chamber serving at the same time as a passage whereby water is admitted to the generating-chamber only in small quantities and which will act in itself as a barrier to prevent the water from splashing in bulk into said generating-chamber.

In the accompanying drawings, in which similar characters denote similar parts, Figure 1 is a central vertical section of my improved generator. Fig. 2 is a similar view of the upper portion thereof which constitutes the water-reservoir. Fig. 3 is a horizontal section on line 3 3, Fig. 1.

It may be stated at the beginning that it is immaterial to the proper operation of the generator what ingredients or gas-producing mediums are employed, those in the present instance consisting of calcium carbid and water, the latter being contained in a suitable receptacle or reservoir forming the upper portion of the generator, which latter comprises substantially two main parts and the lower portion of which contains the gas-generating chamber and the pressure-equalizing chamber.

The reservoir 10 is preferably provided with a water-inlet opening 11, closed by a suitable screw-plug 11', which may have a vent, as indicated by dotted lines 12. Leading from the reservoir is a conduit, shown herein as a pipe 13, through which water may pass from the reservoir and be conducted into an equalizing-chamber 14, while the passage of such water may be automatically stopped as soon as the water-reservoir section is disconnected from the lower section of the generator. The means herein shown comprise a ball 15, adapted to close the upper end of the pipe 13, as shown in Fig. 2, while a rod 16, secured to said ball, may serve to raise said ball from its seat when its lower end is engaged by the bottom of the equalizing-chamber during the assembling of the two parts of the upper and lower sections of the generator.

Preferably disposed immediately above the equalizing-chamber and substantially constituting a top therefor is what may be termed a "restriction-chamber" 17, composed of two or more plates 18 19, having unalined aper-

tures 18′ 19′, respectively, through which the water must pass before entering the generating-chamber 20, containing the carbid-receptacle 21, which forms the gas-generating chamber proper. This carbid-chamber 21 is of such size as to leave a comparatively small annular space between the outer surface of its wall and the inner surface of the generating-chamber, and the wall of the carbid-chamber is preferably provided with a series of apertures 22, placed at different heights from the bottom thereof, so that the water as it rises in the generating-chamber may decompose the lower layers of the carbid contained in the carbid-receptacle and subsequently rise to higher levels, provided, however, that the gas which is generated in the chamber is not of sufficient quantity to repress the water and force the same out of the generating-chamber and back through the restriction-chamber into the equalizing-chamber.

Inasmuch as it is essential that the annular water-space 20 surrounding the carbid-receiver should be very thin and even throughout, means are provided whereby said carbid-holder is centralized relatively to the generating-chamber and retained in such position. These means preferably consist of a flange 21′, formed on the upper edge of the receptacle 21 and fitted into a ring 23, secured to or forming part of the water-reservoir 10. In order to render the joint between the upper and lower sections of the gas-generator air-tight and also to prevent leakage of gas from the generating-chamber, a gasket of rubber 24 may be employed, as seen in Fig. 1.

The operation of my improved acetylene-gas generator is as follows: Carbid is placed in the receptacle 21, and a follower or plate, such as 25, operated by a spring 26, may be placed on top of the carbid, and the two sections of the generator are then screwed together. Water is admitted from the reservoir 10 through the pipe 13 into the equalizing-chamber, filling the same and rising through the restriction-chamber 17 and into the generating-chamber 20, from which it will pass through the apertures 22 into the carbid-holder 21, and thus first decompose the lower layers of carbid contained therein. Gas will thus be generated immediately until a sufficient pressure is obtained, which will result in forcing the water contained in the generating-chamber 20 downward and back through the apertures 19′ and 18′ of the water-restriction chamber 17. The water may under some circumstances be also forced out of the equalizing-chamber 14 and back through the pipe 13 into the water-reservoir 10 if the generation of such gas is sufficient and the pressure sufficiently high to counteract the weight of the column of water above the bottom of the equalizing-chamber. Gas may be withdrawn from the generating-chamber through a coil of pipe 30, which may be connected at its upper end to a stop-cock 31, whereby the gas may be turned on or off at will. As soon as the pressure of gas decreases water will again rise in the generating-chamber until it will come in contact with the carbid, when the generation of gas will again take place.

From the foregoing it will be understood that as long as there are water and carbid contained within the generator there will always be a certain amount of gas, which may be instantly ignited after the stop-cock 31 has been opened, and, furthermore, that when such stop-cock is closed the water will immediately be driven out of the carbid-chamber and away from the carbid, so that the gas contained in the generator is always under a certain pressure, which cannot vary to any great extent. It will also be understood that inasmuch as the restriction-chamber formed by the plates 18 and 19 is of great area and very small depth very little gas will be required to force the water back through such restriction-chamber and also that all the water which enters the generating-chamber must pass through apertures 18′ and 19′, so that when said restriction-chamber is filled with gas under pressure no water can pass through said apertures even if the generator should happen to be upset.

While I have shown and described the restriction-chamber as being formed of a plurality of plates, it will be of course evident that the particular form of such restriction-chamber may be varied without departing from the spirit of my invention.

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

1. In an acetylene-gas generator, the combination, with a water-reservoir; and with a generating-chamber; of a restriction-chamber, disposed between said generating-chamber and the reservoir, and comprising a plurality of superimposed plates, having apertures for permitting the passage of water from the reservoir to the generating-chamber.

2. In an acetylene-gas generator, the combination, with a water-reservoir; and with a generating-chamber; of a restriction-chamber, disposed between said generating-chamber and the reservoir, and comprising a plurality of superimposed plates, having unalined apertures for permitting the passage of water from the reservoir to the generating-chamber.

3. In an acetylene-gas generator, the combination, with a water-reservoir; a carbid-chamber; and an equalizing-chamber in communication with the reservoir; of a generating-chamber, surrounding said carbid-chamber; and a restriction-chamber interposed between the equalizing and carbid chambers.

4. In an acetylene-gas generator, the combination, with a water-reservoir; a carbid-chamber; an equalizing-chamber; and a conduit from the reservoir to the equalizing-chamber; of a generating-chamber surround-

ing the carbid-chamber; and a restriction-chamber between the carbid and equalizing chambers.

5. In an acetylene-gas generator, the combination, with a water-reservoir; a carbid-chamber having apertures disposed at different levels; and a generating-chamber surrounding the carbid-chamber and forming therewith a narrow annular space; of a restriction-chamber; and an equalizing-chamber disposed between said carbid-chamber and the reservoir.

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