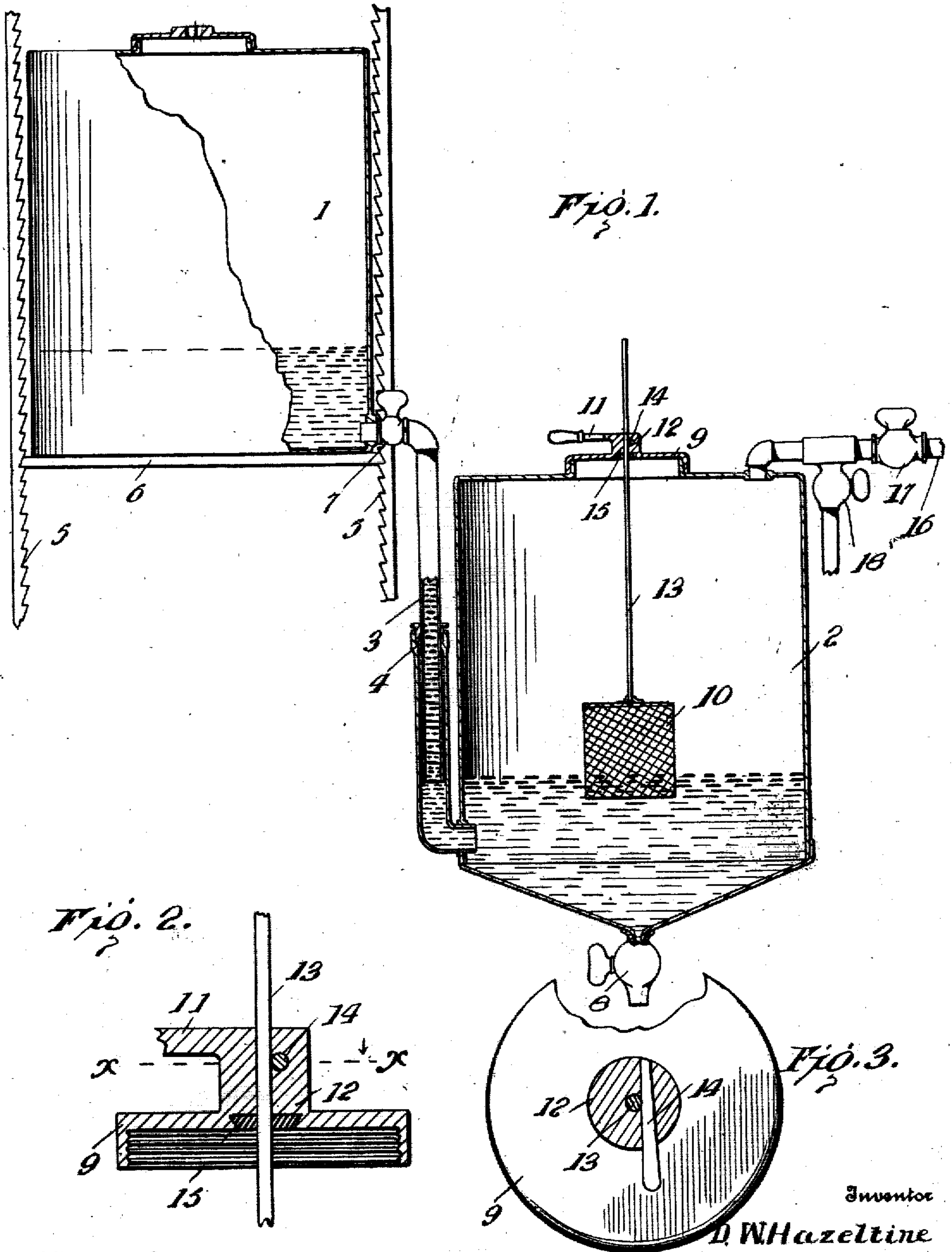


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D. W. HAZELTINE.
ACETYLENE GAS GENERATOR.
APPLICATION FILED DEC. 29, 1905.



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ACETYLENE-GAS GENERATOR.

No. 825,585.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, DANIEL WADE HAZELTINE, a citizen of the United States, residing at Conneaut, in the county of Ashtabula and State of Ohio, have invented certain new and useful Improvements in Acetylene-Gas Generators, of which the following is a specification.

This invention appertains to apparatus for generating illuminating-gas from calcium carbide, and has for its object to devise a simple mechanism which will admit of controlling the production of the gas, so as to prevent waste thereof or the accumulation of dangerous pressure within the generator.

The chief object of the invention is to prevent overproduction of the gas and to provide for automatic control of the same as consumed; also to admit of replenishing the carbide from time to time, as may be required, so as to supply the service-pipe with gas at all times and under proper pressure.

The invention embodies a generator and a combined pressure and reservoir tank, the latter being adjustable vertically to admit of regulating the pressure within the generator, as may be required to meet existing conditions, and said tank also serving as an overflow or reservoir to contain water or other liquid which controls the production of gas according to the consumption thereof.

The invention also embodies novel means which will admit of vertical adjustment of the carbide-receptacle and securance of the same in the required adjusted position.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and accompanying drawings.

While the invention may be adapted to different forms and conditions by changes in the structure and minor details without departing from the spirit or essential features thereof, still the preferred embodiment is shown in the accompanying drawings, in which—

Figure 1 is a vertical central section of an acetylene-gas generator embodying the invention. Fig. 2 is an enlarged sectional view of the cap for closing the opening in the top of the generator and from which the carbide-receptacle is suspended, showing the means for

holding the latter in an adjusted position. Fig. 3 is a transverse section on the line *xx* of Fig. 2.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The machine or apparatus embodies two tanks 1 and 2, the latter being the generator and the former the combined pressure and reservoir tank. The tank 1 is located at a higher level than the tank or generator 2 in order to provide ample head for the water, whereby the gas in the tank 2 may be under sufficient pressure to cause it to flow through the service-pipe to the outlets thereof. A pipe 3 connects the lower portion of the tank 1 with the lower portion of the tank 2, and said pipe connection 3 is preferably extensible, being composed of telescoping sections, which admit of vertical adjustment of the tank 1 to vary the pressure within the generator to meet varying conditions. A suitable packing or stuffing box 4 is provided to maintain a tight joint between the telescoping sections, so as to obviate leak or waste. The tank 1 is adapted to be raised or lowered and supported in the adjusted position by any suitable means. For convenience, the framework 5 is supplied with an adjustable support 6, upon which the tank 1 rests. The sides of the framework 5 are vertically toothed, and the support 6 may be adjusted by being placed upon corresponding teeth of said sides of the framework 5 in a manner which will be readily apparent. A cock 7 is interposed in the length of the pipe connection 3 to control communication between the two tanks. The bottom portion of the tank 2 is preferably sloped to a central point at which an opening is formed and normally closed by means of a cock 8. This construction admits of all sediment gravitating to a central point and facilitates cleaning of the tank or generator 2 when required. A screw-cap 9 closes an opening in the head or upper end of the tank 2, and the carbide-receptacle 10 is suspended therefrom in any manner. A handle 11 is applied to the screw-cap 9 for convenience of turning the same when tightening or loosening the cap. The handle 11 is spaced from the cap to admit of the hand obtaining a firm and convenient

grip thereon and is connected at its inner end with a boss 12, projected upward from the center of the cap.

The carbid-receptacle 10 may be of any formation so long as it is adapted to receive and hold a quantity of calcium carbid and admit of water having free access thereto. The receptacle is generally constructed of wire, although it may be formed of meshed or reticulated material of any kind. A connection 13 holds the carbid-receptacle 10 in suspension from the cap 9 and preferably consists of a stout wire or light rod, the same being attached to the parts in any manner. To admit of vertical adjustment of the carbid-receptacle to vary its position with reference to the level of the water within the tanks 1 and 2, it is preferred to have the connection 13 adjustable with reference to the cap 9, and for this purpose said cap and boss 12 are vertically apertured to receive the rod or wire 13, which is held in the desired position by means of a tapered key 14, fitted into a tapered opening formed transversely in the boss 12 and intersecting with the vertical opening through which the connection 13 passes. A packing 15 provides a tight joint between the connection 13 and the cap 9 and is fitted into an undercut recess formed in the lower side of said cap, as shown most clearly in Fig. 2.

The service-pipe 16 connects with the upper portion of the tank or generator 2 and is provided with cocks 17 and 18, the latter being located at a point between the generator or tank 2 and the cock 17 to admit of venting the generator as well as providing for the admission of air under pressure when it is required to force all or nearly all the water from the tank 2 into the tank 1 preliminary to replenishing the carbid-receptacle or withdrawing the sediment from the tank 2.

When starting the machine, the cock 7 is closed and a quantity of water is supplied to the tank 1 sufficient to fill the tank 2 to a depth to cover the carbid-receptacle 10. The receptacle 10 after being filled with calcium carbid is placed in position in the tank 2, and said tank is closed by screwing home the cap 9, after which said carbid-receptacle is adjusted to the desired elevation by moving the connection or rod 13 up or down within the boss 12 and securing it in the adjusted position by means of the key 14. The cock 17 is closed and the cock 18 opened, and upon opening the cock 7 water will pass from the tank 1 into the tank 2. After reaching a level to cover all or a part of the carbid-receptacle gas will be evolved by the chemical action of the water and calcium carbid, and after the air has been expelled from the generator and the gas appears at the cock 18 the latter is closed, and the gas

accumulating in the upper portion of the tank or generator 2 exercises a downward pressure upon the water therein and causes the same to recede and pass into the tank 1, leaving the carbid-receptacle clear of the water. Upon opening the cock 17 the acetylene gas passes freely into the service-pipe and may be burned at any outlet thereof in the manner well understood. As the pressure within the upper portion of the generator or tank 2 decreases by reason of consumption of the gas the water will rise in said tank 2, passing therein from the tank 1 until it reaches the carbid-receptacle and again acts upon the carbid, when a fresh quantity of gas is produced and the action just described repeated. The initial head or pressure of the water contained in the tank 1 may be regulated by raising or lowering said tank, and provision is had for the vertical adjustment of the combined pressure and reservoir tank by means of the extensible pipe connection 3. The quantity of gas contained in the generator may be governed by moving the carbid-receptacle 10 up or down in the manner stated. The adjustment vertically of the carbid-receptacle incidentally provides for varying the pressure of the gas to a limited extent, as will be readily comprehended. After the carbid has become spent or unfit for further chemical reaction the cock 17 is closed and a force-pump fitted to the cock 18, which is then opened and air forced into the tank 2 to create a pressure therein sufficient to force the water therefrom into the tank 1, after which the cock 7 is closed and the screw-cap 9 and carbid-receptacle 10 removed. Should it become necessary to remove any sediment or to clean the generator, the cock 8 is opened and the residue or precipitate drawn off. After the carbid-receptacle has been replenished and the parts replaced the cock 7 is open, and water passes from the tank 1 into the tank 2 until the carbid-receptacle becomes submerged, and the carbid contained therein being acted upon by the water evolves gas, which displaces the air, and after said gas appears at the cock 18 the latter is closed and the operation hereinbefore repeated.

Having thus described the invention, what is claimed as new is—

1. In an acetylene-gas generator, the combination of a generator-tank provided with a carbid-receptacle, a vertically-adjustable pressure and reservoir tank normally arranged at a higher level than said generator-tank, and an extensible valved connection between the lower portions of the two tanks, said connection being composed of telescoping sections having a stuffing-box or packing between them to obviate any possible leak.

2. In an acetylene-gas generator, the combination of a generator-tank, a framework

embodying sides provided with vertically-arranged teeth, a support adapted to be adjusted upon the framework by being disposed upon corresponding teeth thereof, a pressure and reservoir tank carried by the adjustable support aforesaid, an extensible pipe connection between the pressure and reservoir tank and the generator-tank, and a

service-pipe connected with the generator-tank.

10

In testimony whereof I affix my signature in presence of two witnesses.

DANIEL WADE HAZELTINE. [L. s.]

Witnesses:

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