No. 647,027. Patented Apr. 10, 1900.

W. H. PAYNE.

ACETYLENE GAS GENERATOR.

(Application filed Sept. 23, 1899.)

(No Model.)

Fig. 1.

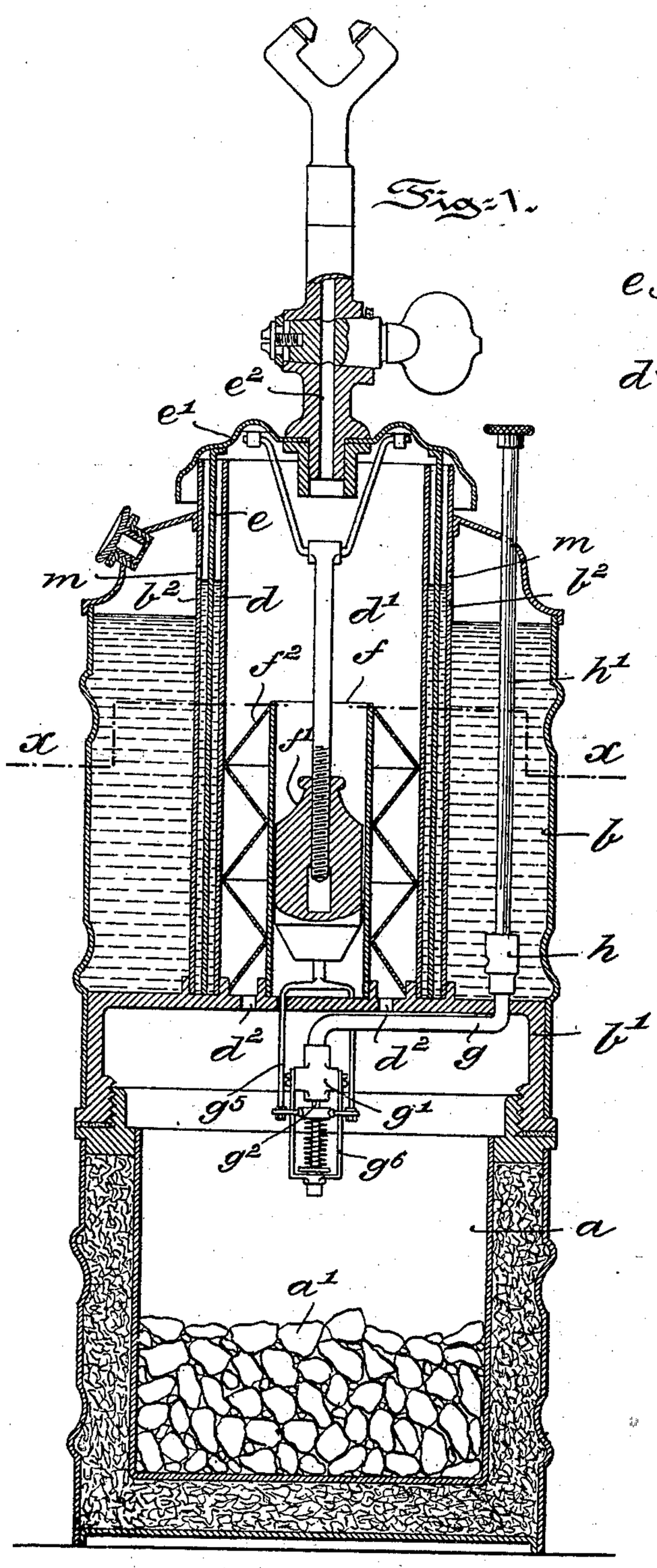


Fig. 2.

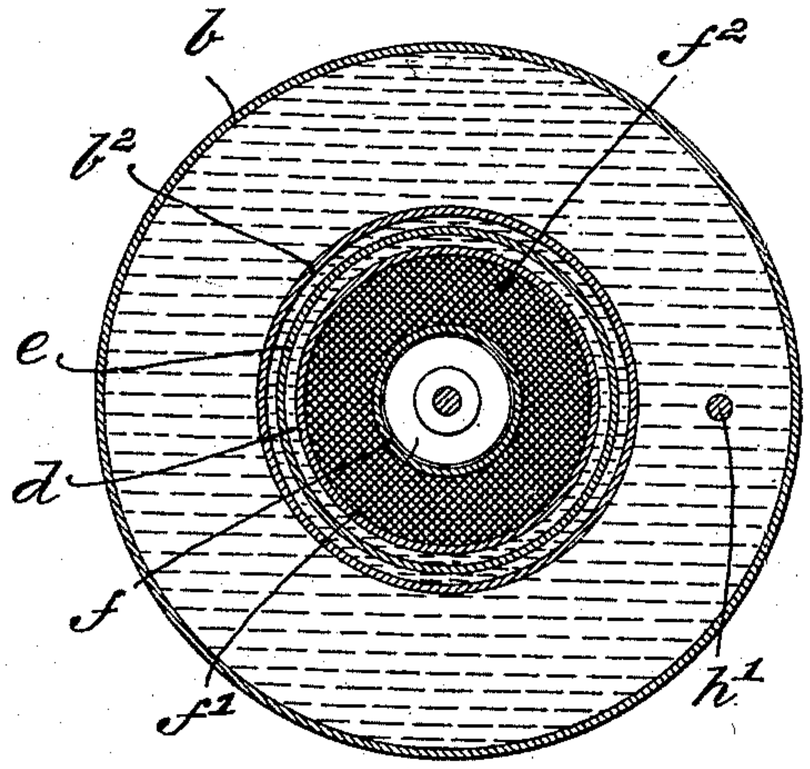


Fig. 3.

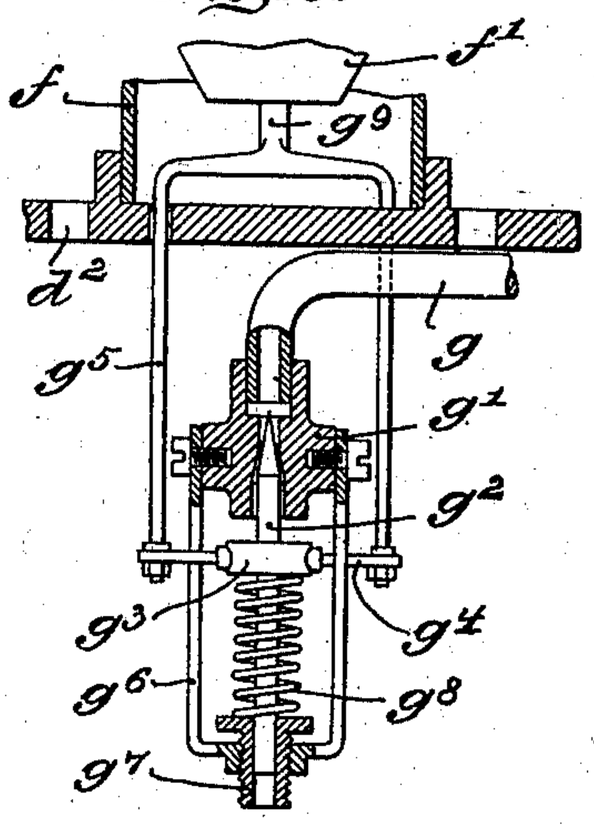
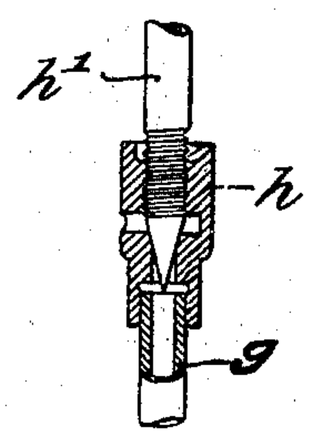


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM H. PAYNE, OF CAMDEN, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE AMERICAN CARBIDE LAMP COMPANY, OF PHILADELPHIA, PENNSYLVANIA.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 647,027, dated April 10, 1900.

Application filed September 23, 1899. Serial No. 731,499. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. PAYNE, a citizen of the United States, residing at the city of Camden, in the county of Camden and State of New Jersey, have invented certain new and useful Improvements in Acetylene-Gas Generators, of which the following is a specification.

My invention has relation to a generator adapted to produce acetylene gas, and in such connection it relates more particularly to the construction and arrangement of such a generator.

The principal object of my invention is to provide in an acetylene-gas generator a simple and efficient mechanism for automatically controlling the generation of the gas by the automatic regulation of the flow of water to the carbid.

To this end my invention consists, first, of a carbid or gas generating chamber, a water-chamber of annular cross-section and supported above the generating-chamber, a gasometer surrounded by the water-chamber and in open communication with the generating-chamber, a feed-pipe leading from the water-chamber to the generating-chamber, and a valve located on the feed-pipe within the gas-generating chamber and adapted to be opened automatically by the fall of the gasometer, and, second, of a feed-water pipe leading from the water to the generating chamber and provided with two valves, one of which is located on the pipe within the water-chamber and is adapted to be manipulated by hand, and the other is located in the pipe within the generator-chamber and is adapted to be controlled by the movement of the gasometer.

My invention further consists of an acetylene-gas generator constructed and arranged in substantially the manner hereinafter described and claimed.

The nature and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1 is a vertical central sectional view of an acetylene-gas generator embodying main features of my invention. Fig. 2 is a horizontal sectional view of the same, taken on the line $x\,x$ of Fig. 1. Fig. 3 is a front elevational view, partly sectioned and enlarged, illustrating in detail the valve located within the generator-chamber and controlling the feed-water pipe; and Fig. 4 is a similar view of the valve located within the water-chamber and also controlling said feed-water pipe.

Referring to the drawings, a represents the generator-chamber, in which the carbid a' is placed, and b is the water-chamber, annular in cross-section and supported above the gas-generator chamber a. In the preferred construction, as illustrated in Fig. 1, the base b' of the water-chamber is screw-threaded and adapted to be screwed down upon the top of the generator-chamber a. The inner wall b^2 of the chamber b forms one of the concentric walls of the immovable section d of the tank d', in which the gas accumulates. Within these walls, which contain water for sealing purposes, the movable section e is adapted to rise and fall, according to the amount of gas remaining in the tank or gasometer. The movable section e is provided with a suitable cap or roof e', from which extends the pipe e^2 for conducting or leading off the gas. The base b' of the water-chamber b serves also as the base of the tank d' and is provided with suitable perforations d^2, through which the gas generated in the chamber a is permitted to escape into the tank d'. Concentric with the inner walls d of the tank d' is arranged a tube f, serving as a guide for a plunger f', suspended from the cap or roof e' of the movable section e. Between the tube f and the inner wall d of the tank d' is arranged a series of staggered screen-plates f^2, located directly above the perforations d^2 in the base of the tank d'. These plates f^2 serve to screen or scrub the gas prior to its delivery to the tank d' proper.

Extending from the water-chamber b to the gas-generating chamber a is a pipe g, adapted to feed water from the chamber b to the interior of the chamber a and forming the sole

source of communication betwen said chambers. On the discharge end of the pipe g, which is located within the chamber a, is secured a valve-casing g', in which is adapted to move the stem g^2 of a valve. The preferred construction of this valve is illustrated in detail at Fig. 3 and consists of a stem g^2, having a conical end adapted to enter a corresponding seat in the casing g'. The stem g^2 is provided with a collar g^3, to which is secured a cross-bar g^4, the ends of which are secured to yoke g^5, sliding in the base of the tank d' and provided with a head g^9, directly in alinement with the plunger f'. Suspended from the casing g' of the valve is a similar but oppositely-arranged yoke g^6, which carries an adjustable nipple g^7, in which the stem g^2 of the valve is guided. Between the nipple g^7 and the collar g^3 is interposed a spring g^8, preferably coiled about the stem g^2 and normally tending to lift said collar, the yoke g^5, and the stem g^2 upward, so as to close the conical end of said stem down upon its seat in the casing g'. When, however, sufficient force is exerted upon the yoke g^5, the spring g^8 will be retracted and the collar g^3 and stem g^2 forced downward to open the valve. This force is exerted automatically by the movable section e of the tank d', since when said section e sinks to its lowermost position the plunger f', carried by said section, will impinge upon the projection or head g^9 on the yoke g^5. When, however, the section e rises, the plunger f' is lifted from the head of the yoke g^5, and said yoke will respond to the force of the spring g^8 sufficiently to permit the valve to close. The feed-water pipe g is also provided at its other end with a needle-valve h, (see Fig. 4,) located within the water-chamber b, the stem h' of said valve extending upward in said chamber and adapted to be manually manipulated outside the chamber to regulate or wholly cut off the flow to the pipe g.

The chamber b is normally sealed or air-tight, with the exception that its inner wall b^2, which is also the outer wall of the fixed section of the tank or gasometer d', is perforated, as at m, to permit of the entrance of sufficient air to the chamber b, the air passing below the cap or roof e' into the space between the double walls of the tank d', and thence into the chamber b through said perforations m. The perforations m are located at a sufficient height to prevent the outflow of the sealing-water into the chamber b when the water in said chamber is lowered through use. These perforations also permit the double walls to be initially filled with water from the chamber b when said chamber is first filled up.

From the above description it will be understood that a compact structure results from the collocation and arrangement of the gasometer, the water-chamber, and the gas-generator chamber. It will also be understood that the valve g', which regulates the flow of water to the chamber a, is entirely closed within said chamber a, and is hence not subject to accidental disarrangement or breakage, as frequently occurs when said valve is located outside the structure. Again, the feed-water pipe g is provided with two valves, one of which, the regulating-valve, is located within the water-chamber and can be manually manipulated from outside the structure, whereas the other, the controlling-valve, is located within the gas-generator chamber and can only be manipulated by the gasometer itself.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An acetylene-gas generator, comprising a gas-generator chamber, a water-chamber of annular cross-section and supported upon the gas-generator chamber, a gasometer surrounded by the water-chamber and in open communication with the generator-chamber, a feed-pipe connecting the water-chamber with the generator-chamber, and two valves, one of which is located on the pipe within said water-chamber and is adapted to be manually manipulated and the other is located on the feed-pipe within the generator-chamber, said valve provided with a stem, means adapted to move said stem in one direction, a device carrying said stem, and means for depressing said device and stem, whereby said valve is adapted to be closed and opened automatically by the rise and fall of said gasometer, substantially as and for the purposes described.

2. In an acetylene-gas generator, the combination with a water-chamber, a gas-generator chamber and a gasometer, of a feed-water pipe connecting the water-chamber with the generator-chamber and provided with two valves, one of which is located on the pipe within the water-chamber and is adapted to be manually manipulated and the other is located on the pipe within the generator-chamber and provided with a stem, a spring adapted to move said stem in one direction, a yoke carrying said stem and extending into the gasometer under tension of said spring and means carried by said gasometer for depressing said yoke and stem against the tension of said spring when said gasometer falls within said water-chamber, substantially as and for the purposes described.

3. In an acetylene-gas generator, provided with a gas-generator chamber, a water-chamber and a gasometer surrounded by said water-chamber and in open communication with the generator-chamber, a feed-pipe connecting the water-chamber with the generator-chamber, a valve located on said pipe and inclosed in the generator-chamber, a stem adapted to control said valve, a spring normally adapted to move said stem in one direction, a yoke carrying said stem and ex-

tending into the gasometer under tension of said spring and means carried by the gasometer for depressing said yoke and stem against the tension of said spring when said gasometer falls within the water-chamber, substantially as and for the purposes described.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.

WILLIAM H. PAYNE.

Witnesses:

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