No. 641,194. Patented Jan. 9, 1900.

W. F. COOPER.

ACETYLENE GENERATOR.

(Application filed Mar. 28, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

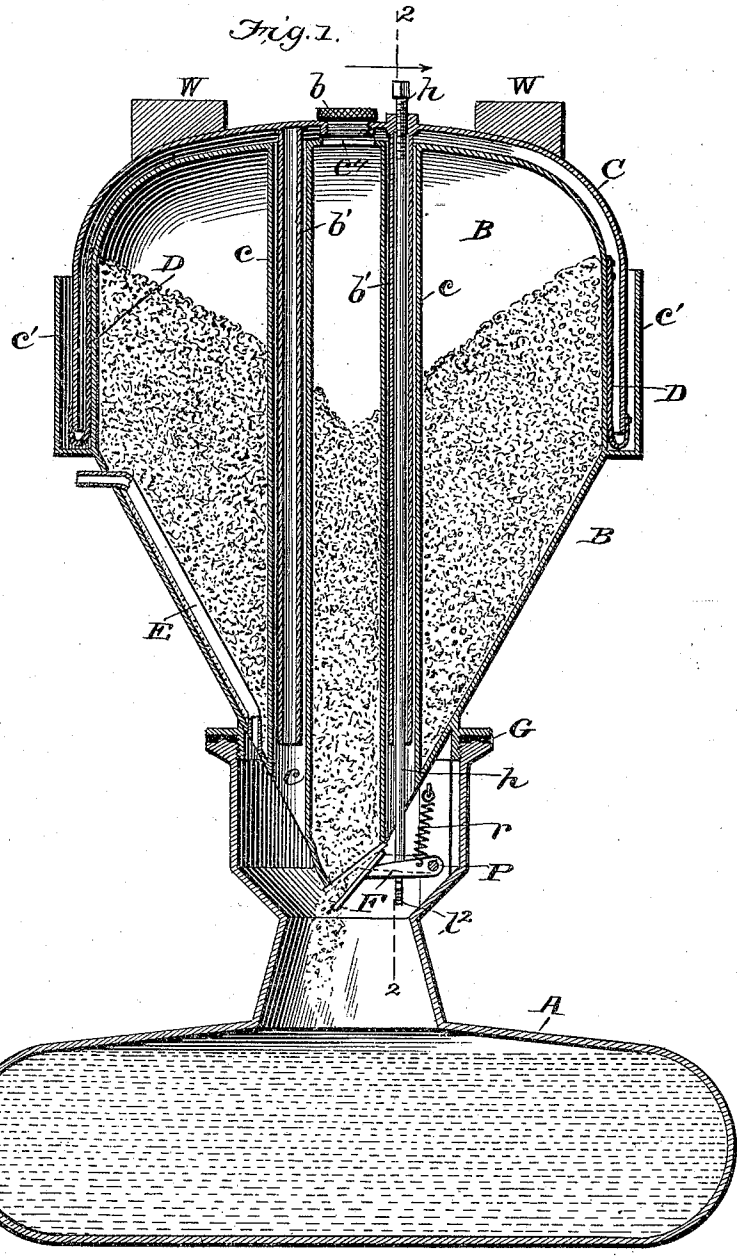

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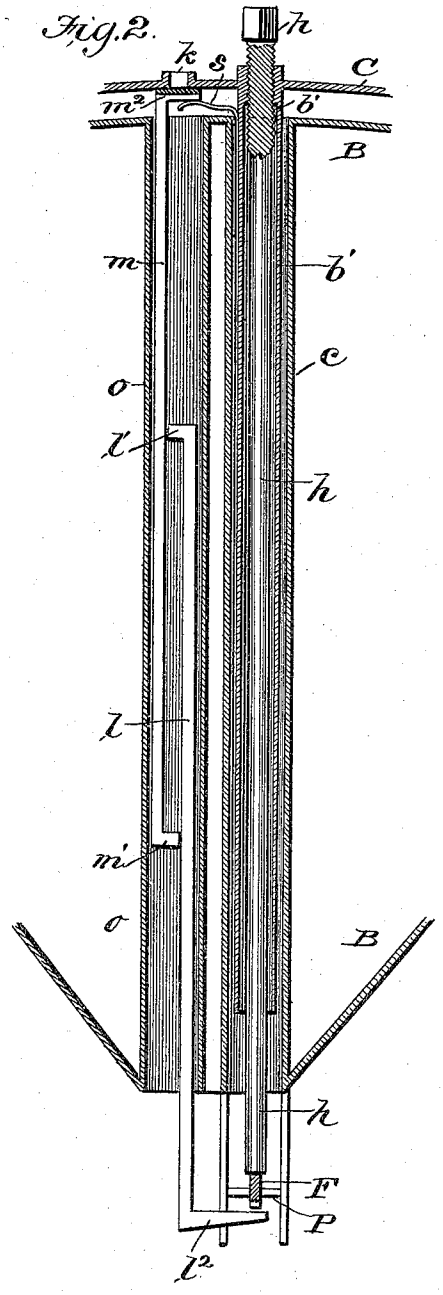
Fig. 2.



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UNITED STATES PATENT OFFICE.

WILLIAM F. COOPER, OF MERIDEN, CONNECTICUT.

ACETYLENE-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 641,194, dated January 9, 1900.

Application filed March 28, 1899. Serial No. 710,762. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. COOPER, of Meriden, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Acetylene-Gas Generators, of which the following is a specification.

My invention relates to acetylene-generators, and has for its object the generation of acetylene gas in any desired quantity, as for bicycle-lamps, house-lamps, or generators of any larger capacity.

My invention is based upon the carbid-feed principle; and it consists in the peculiar construction and arrangement of parts, as will be hereinafter more fully described.

Figure 1 is a vertical central sectional view of the generator, and Fig. 2 a vertical sectional view on line 2 2 of Fig. 1 looking in the direction of the arrow and showing a safety-valve for controlling an excessive generation of gas.

Similar letters refer to similar parts in both views.

The cone-shaped carbid-holder B has a reduced lower end and the water-chamber A a reduced neck portion, which are detachably connected by the threaded and packed joint G. The carbid-chamber B has fastened in eccentric position therein the guiding-tubes *c*, forming vertical passage-ways opening at top and bottom. The gasometer C also has corresponding guiding-tubes *b'*, so that when in position the carbid-holder B extends upward inside the bell of the gasometer. The gasometer is connected to the carbid-holder by a skirting D of flexible fabric arranged between it and the carbid-holder. This skirting is arranged in a peculiar manner for a special purpose—*i. e.*, one edge of it is connected to the lower edges of the bell of the gasometer, and the other edge is attached to the carbid-holder at a higher point within the bell when in its lower position. This causes the space between the fabric and the inside of the bell of the gasometer to be always in open communication with the gas-space between the carbid-holder and the bell of the gasometer, which brings the pressure of the gas inside the fold of the fabric, which causes the fabric to bend as it rises and falls with a gradual curve and freedom from all friction of the fabric sliding on itself.

The gasometer C has the adjustable threaded rod *h* tapped through its top and passing through one of the guiding-tubes *b'*, so that upon the depression of the gasometer the rod *h* strikes and opens the valve F, which is pivoted at P in the mouth of the water-receptacle.

The valve F is normally held upward, closing the opening in the bottom of the carbid-holder by the spring *r*, whose upper end is fixedly attached to the mouth of the water-chamber and prevents the dropping of the carbid until said valve is opened by the rod *h* descending with the gasometer. When this takes place, the dropped carbid uniting with the water forms gas, which passing through the tubes *c* to the space above the carbid-holder lifts the gasometer, allowing the valve to close and stopping the further dropping of carbid.

E is the outlet-tube for the gas. Upon escape of gas through the outlet E the gasometer descends and forms more gas, and the operation is thus repeated in an automatic manner.

The gasometer has the protecting-wall *c'* around the outside of it, which wall is attached to the carbid-holder. The gasometer has in its center the packed plug *b* for filling the carbid-chamber, and the carbid-chamber also has a portion of its top open at c^4 to allow the carbid passed through the carbid-filler hole to enter the carbid-chamber.

In Fig. 2 is shown the safety-valve for positively closing the valve and at the same time allowing the escape of gas in case there should be an accidental generation of more gas than the capacity of the gasometer. It is operated automatically a little before the gasometer is full, and consists of a tube *o*, having two sliding rods, one of which, *m*, has a valve end m^2, which is held upward against the opening *k* in the carbid-holder by the spring *s*, attached to tube *b'* of the gasometer, thus closing the opening gas-tight. Another rod *l* is arranged beside it in tube *o* and extends through the bottom of the carbid-holder and projects under the valve F at l^2. The two sliding rods *m* and *l* have each a projection

m' and l', the distance between which is a little shorter than the full distance to which the gasometer can rise.

When the gasometer C rises, it carries the rod m with it until the projection m' strikes l', and the rod l rising closes the valve F tightly, and the hole k is at the same time opened by the downward pull of rod l acting on rod m, thus allowing the escape of excess of gas.

The gasometer has a weight or weights W, that may be placed in any desirable position on the same.

It will be evident by an inspection of the drawings that the gasometer can be used and operated with a water seal by simply removing the flexible-fabric connection and filling the space between c' and the carbid-holder with water.

The advantage of the flexible-fabric gasometer is that it provides a gasometer with about three times the capacity when occupying the same space as the water-gasometer.

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

1. An acetylene-gas generator having a water-reservoir in the base, a carbid-holder in the top, and a gasometer having a bell that covers the carbid-holder, a flexible-fabric connection attached to the lower edge of the bell of the gasometer and to the carbid-holder inside the bell at a point above the lower edge of the bell when down substantially as and for the purpose described.

2. In an acetylene-gas generator, a water-reservoir in the base, a carbid-holder in the top with central outlet, a gasometer covering the carbid-holder and having a movable gas-tight connection between its bottom and the carbid-holder, eccentrically-arranged guiding-tubes through the carbid-holder, corresponding guide-rods fastened to the gasometer, and an eccentrically-arranged rod fixed adjustably in the gasometer and passing through one of said tubes, a hinged valve in the water-chamber below the carbid-holder provided with a spring and arranged to be acted upon by the rod on the depression of the gasometer, for the purpose specified.

3. An acetylene-gas generator having a water-reservoir in the base with a contracted mouth having a screw connection, a carbid-holder in the top having correspondingly-contracted lower end with screw connection, a gasometer covering the carbid-holder, a flexible-fabric connection between the bottom of the gasometer and the carbid-holder, a valve in the water-chamber below the bottom of the carbid-holder, and an adjustable rod fixed eccentrically to the gasometer and passing through the carbid-holder and adapted to open the valve and feed a fresh supply of carbid upon depression of the gasometer, substantially as described.

4. An acetylene-gas generator having a water-reservoir in the base, a carbid-holder in the top, a gasometer covering the carbid-holder and having an escape-valve opening, a carbid-feed mechanism actuated by depression of the gasometer, and two parallel sliding rods, one of them held to the gasometer with a yielding spring connection to close the escape-valve, and the other connecting with the carbid-feed valve to close it, and the two rods having a slip connection over each other to close the carbid-feed valve and open the escape-valve when an excessive range of movement of the gasometer is attained, substantially as described.

5. An acetylene-gas generator comprising a water-reservoir in the base with contracted screw-threaded mouth, a carbid-holder with contracted lower end having a screw-threaded connection, and a central opening entirely through it, a hinged flap-valve arranged at the bottom of said central opening, and an eccentric trip-rod attached to the gasometer and arranged to act upon the flap-valve substantially as shown and described.

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Witnesses:
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