No. 644,601. Patented Mar. 6, 1900.

W. C. HOMAN.

ACETYLENE GAS GENERATOR.

(Application filed Sept. 28, 1899.)

(No Model.)

Fig. 1.

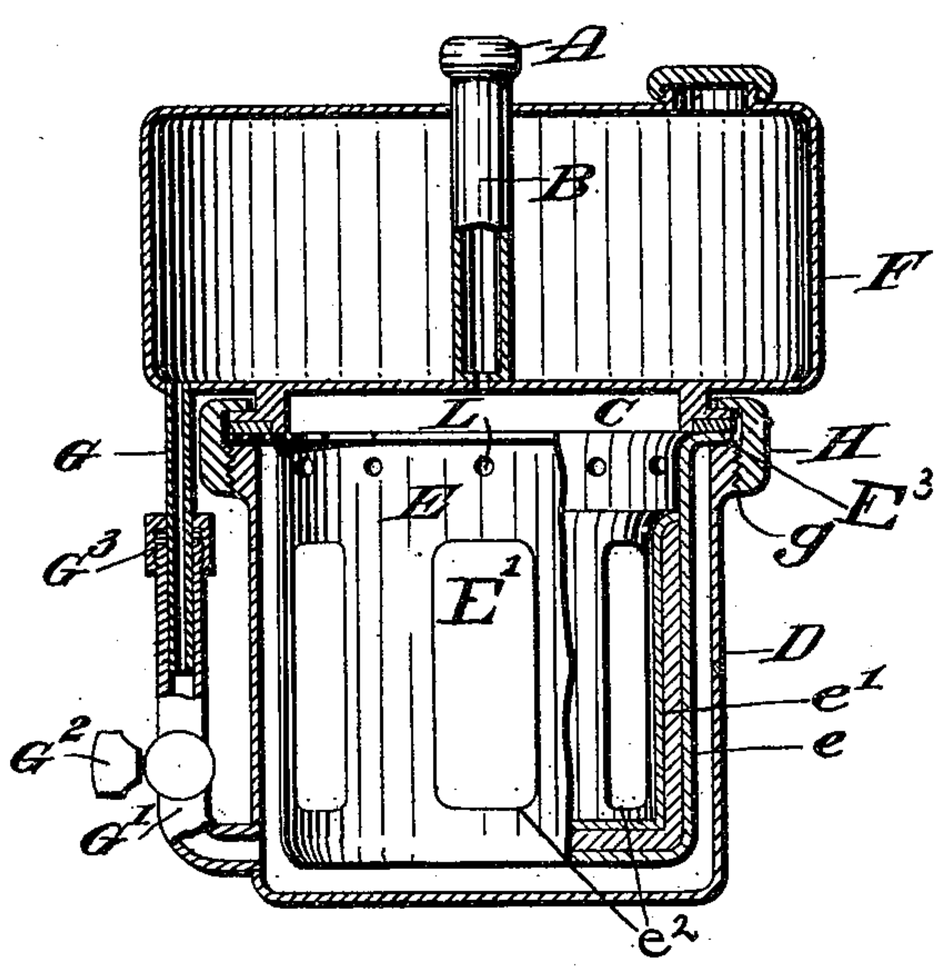


Fig. 2.

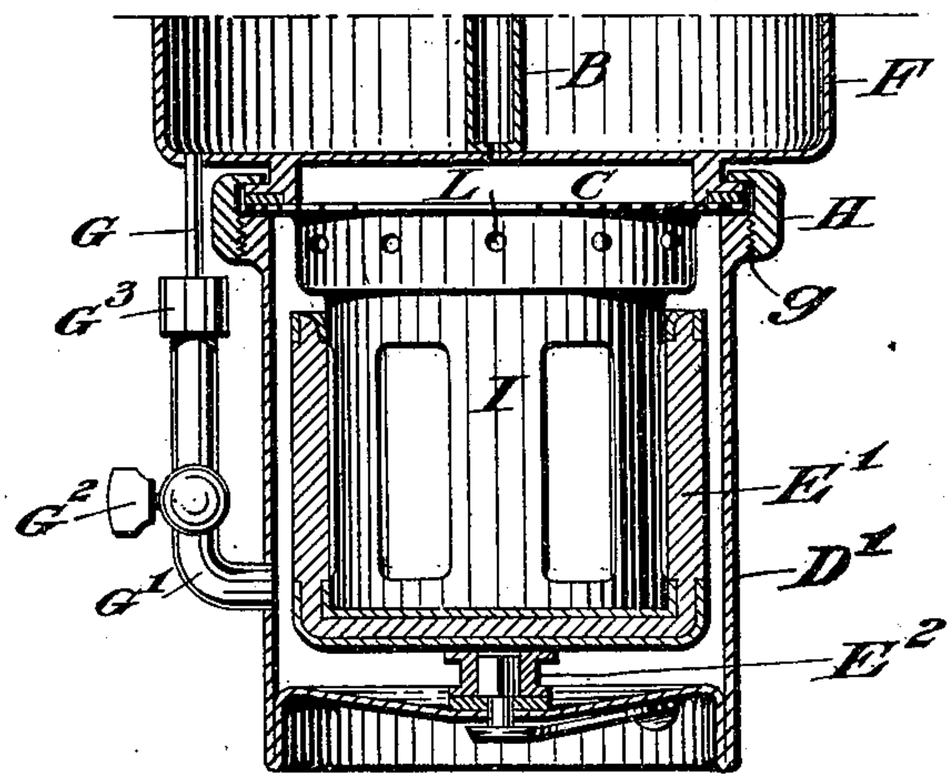
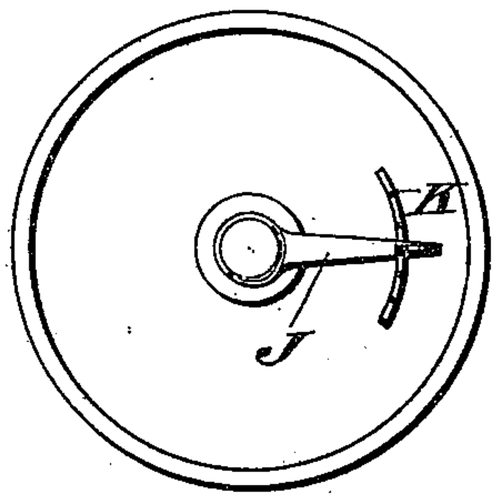


Fig. 3.



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ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 644,601, dated March 6, 1900.

Application filed September 28, 1899. Serial No. 731,886. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. HOMAN, a citizen of the United States, residing at Meriden, New Haven county, Connecticut, have invented certain new and useful Improvements in Acetylene-Generators, of which the following is a full, clear, and exact description.

This invention relates to acetylene-lamps.

One of the objects of my invention is to provide a means for conveying water to the carbid in such a manner as to most effectively moisten said carbid to cause it to throw off an inflammable gas.

Incidentally another object is attained—to wit, the prevention of the distribution in the carbid of an excess of water due to sharp jarring or concussions. Heretofore it has been common to distribute the water directly into the center of a mass of calcium carbid; but this method of water distribution is very disadvantageous, for reasons hereinafter given. Lamps of this character are employed very commonly on bicycles and carriages. On vehicles of this kind the said lamps are subjected to frequent and severe concussion and jarring, and it has been found that an excess of water has been thereby driven into the carbid-chamber, thereby causing the generation of an unnecessarily large amount of gas, which is allowed to go to waste. By the present invention the carbid is more uniformly moistened than ever before and the danger of overwetting the same is entirely obviated. Hence the lamps may be used with the greatest economy.

In the drawings, Figure 1 is a vertical section of my invention. Fig. 2 is a similar view of a modification. Fig. 3 is a view of the under side of the apparatus shown in Fig. 2.

In Fig. 1 of the drawings, A represents a gas-burner carried by the pipe B, which communicates with the gas-chamber C. D is an external casing inclosing a water chamber or space. E is a porous cup within the casing D, the internal wall of the casing and the external wall of the cup E being spaced apart slightly to afford the water-space previously referred to. E^3 is a flange carried at the upper edge of the cup E and affords a means whereby the cup E may be suspended from the water-reservoir F.

In the construction shown in the drawings, F is a water-supply reservoir, which communicates by means of pipes G G′ with the water-space in the casing D. G^2 is a valve for turning on or off said water-supply.

The carbid (not shown) is placed in the cup E, which cup is preferably of a construction hereinafter described. Various means may be devised for gaining access to the cup E for the purpose of inserting the carbid, one means of access being shown in the drawings, in which H is a ring rotatably carried by the reservoir F and having screw-threads which take onto corresponding screw-threads upon the casing D, as at *g*, so as to draw the said reservoir F and the casing D into close connection to form a gas-tight joint. In this construction it is desirable that the sections G G′ of the water-supply pipe be telescopic, in which event a suitable stuffing-box G^3 may be employed. Obviously the water-reservoir may be of any desired construction and located at any desired or convenient place. As a matter of fact, there is no need of a separate supply-reservoir aside from the water-space within the casing D. For convenience, however, it is preferable to have such a supplemental supply, because then a user may hold the water back from contact with the carbid until such time as it is desired to light the lamp, at which time the valve G^2 is turned to allow the inflow of water.

The construction of the cup shown in Fig. 1 comprises an external, preferably impervious, lining *e* and an internal, preferably impervious, lining *e′*, which lining is suitably perforated. Located between these linings *e* *e′* may be a suitable porous material, through which water may filter. In practical experience I have found that plaster-of-paris makes an excellent filtering material in that it possesses the necessary porosity and is sufficiently strong for the purpose. Plaster-of-paris is also particularly well adapted for this purpose from the fact that its chemical nature is so closely allied to that of the decomposed carbid of calcium that the decomposed material has practically no chemical action

thereon and may be readily washed off when it is desired to clean the cup. The perforations in the wall *e e'* of the cup (which expose the porous material) may be of any desired shape, size, or number, depending upon the porosity of the filtering material and desired speed of water-supply. Given a material of known porosity, and the speed of the water-supply, the rapidity with which the gas is generated may be determined in another way—to wit, by the extent of the surface of the porous material exposed to contact with the calcium carbid within said cup E. A great advantage is gained by distributing the water around the carbid instead of at one point in the center of a pile of carbid, as has heretofore been common. It has been found that by this old system of distributing water the carbid immediately adjacent the central distributing-point would upon becoming moistened and decomposed tend to choke up and materially hinder and impair the effective distribution of the water throughout the balance of the undecomposed carbid. By the present invention the water-distributing surface practically surrounds the carbid, and thus causes a uniform and accurately-determined water distribution from the outside toward the center instead of in an opposite direction.

As it may be desirable to in some constructions provide a regulating means independent of the known porosity of the material or the extent of the surface of porous material exposed to the carbid, therefore I have shown in the drawings, Figs. 2 and 3, a modification in which E' is a cup containing the carbid, which may be generally of the same construction as the cup E, Fig. 1, excepting that it may be mounted on the casing D' upon a rotary support E^2. In this construction I is a stationary damper supported, for example, like the cup E of Fig. 1 and perforated in a manner to correspond with the perforations on the inner shell of the cup E', so that the surface of the porous material within the perforations of the cup E' may be exposed to the carbid. By turning the cup E' a portion of the said exposed surface of the porous material may be cut off by the damper I from contact with the carbid, or, in fact, the arrangement of the openings in the cup E and damper I may be such that the porous material may be entirely cut off from contact with the carbid by rotating the cup E to a sufficient degree. Since this regulating means is located internally and is not visible, it may be desirable to have an external gage, such as a handle J, working in a rack K, the position of which may indicate the relative position of the porous portions of the cup E' with respect to the damper I. By making a communication—such, for example, as a slot or perforation L—from the gas-chamber C into the water-space around the carbid-holder an excess of pressure within the gas-chamber C will cause an increase of pressure within the casing D, which will tend to drive the water back through the tubes G G' and out of the water-space into said casing D. When the water is thus driven back, the generation of the gas will be somewhat lessened until the pressure in the gas-chamber D decreases to a suitable degree, upon which reduction of pressure water will again be permitted to flow through the pipes G G' into the water-space around the said carbid-holder.

To merely reverse the arrangement of parts and make the porous cup stationary and the perforated damper rotatable would not require invention, but would be such an obvious mechanical change that it would not depart from the spirit or scope of the invention. Likewise to substitute a reciprocatory movement for the rotary movement which is here described for regulating the amount of exposure of the carbid would be another obvious change, which would be fully within the scope of the invention. Other changes might also be made in various parts of the device without evading the scope of my intended claim of invention.

What I claim is—

1. A cup comprising a strengthening-skeleton and porous material permanently molded thereto.

2. In a device of the character described, a movable cup formed of a porous material and a metallic bearing-face permanently secured thereto.

3. In a device of the character described, a carbid-chamber having a porous portion, means for varying the exposure of said porous portion to the carbid, and means for holding water adjacent said porous portion.

4. A cup formed of a porous material, a band of strengthening material adjacent the edge of said cup, and strips of strengthening material extending longitudinally of said cup, said bands and strips being permanently secured to said cup.

5. In a device of the character described, a carbid-chamber having a porous portion, a water-chamber disposed externally of said carbid-chamber, means for varying the exposure of said porous portion to the carbid, and said carbid-chamber having a gas communication with said water-chamber for equalizing the pressure in said chambers.

6. In a device of the character described, a damper having apertures, a porous carbid-chamber, said parts being nested and one of said parts being movable, a water-chamber disposed externally of said parts and having a direct gas communication with said carbid-chamber.

7. In a device of the character described, a damper having perforations, a porous carbid-chamber, said parts being nested and one of said parts being movable, and a water-chamber disposed externally of said carbid-chamber.

8. In a device of the character described, a damper having segmental openings, a porous

cup having impervious segments and revolubly mounted with respect to said carbid-chamber, a water-chamber disposed externally of said parts, the space in said carbid-chamber having a direct gas communication with said water-space near the top thereof.

9. In a device of the character described, a damper having segmental openings, a porous cup having impervious segments, said cup being movable relatively to said damper, a water-chamber disposed externally of said parts, the space in said water-chamber having a direct gas communication with the space in said carbid-chamber near the top thereof.

10. In a device of the character described, a water-reservoir, a water-chamber detachably secured to said water-reservoir, means to conduct water to said water-chamber from said water-reservoir, a perforated damper having segmental openings and detachably secured to said water-reservoir, a porous cup mounted so as to be movable independently of said damper, said cup and damper being mounted internally of said water-chamber, and means for moving said parts independently.

11. In a device of the character described, a water-reservoir, a water-chamber detachably secured to said water-reservoir, means for supplying water to said water-chamber from said water-reservoir, a porous carbid-cup within said water-chamber, and strengthening means integral with said cup.

12. In a device of the character described, a water-reservoir, a water-chamber detachably secured to said water-reservoir, means for supplying water to said water-chamber from said water-reservoir, a porous carbid-cup forming an internal carbid-space, and means to vary the size of that portion of the porous cup that is exposed to the carbid.

Signed at Meriden, Connecticut, this 22d day of September, 1899.

WILLIAM C. HOMAN.

Witnesses:
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