No. 693,069. Patented Feb. 11, 1902.

E. M. ROSENBLUTH.

ACETYLENE GAS GENERATING LAMP.

(Application filed Feb. 4, 1899.)

(No Model.) 2 Sheets—Sheet 1.

FIG. 1.

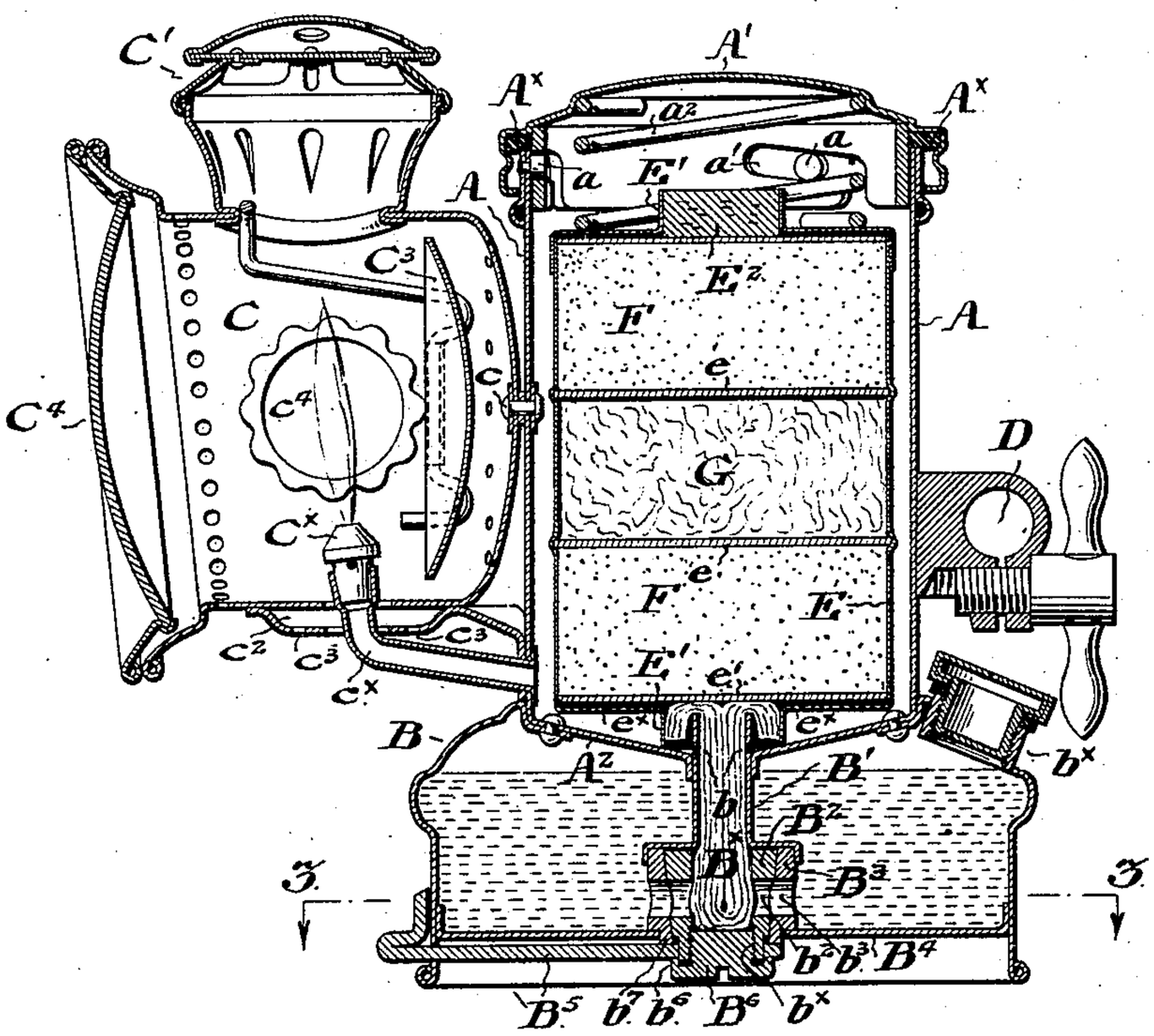
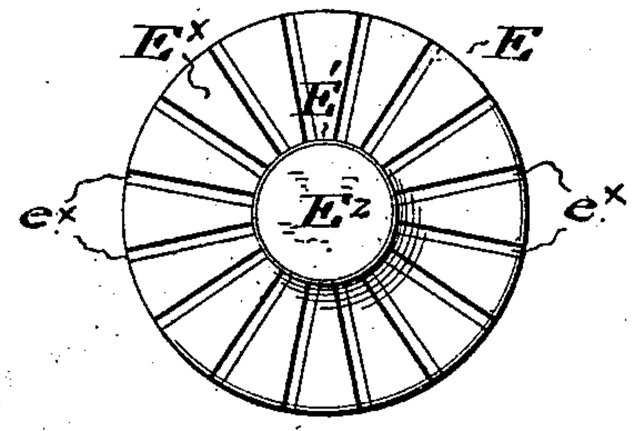


FIG. 6.



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(No Model.) 2 Sheets—Sheet 2.

FIG. 2.

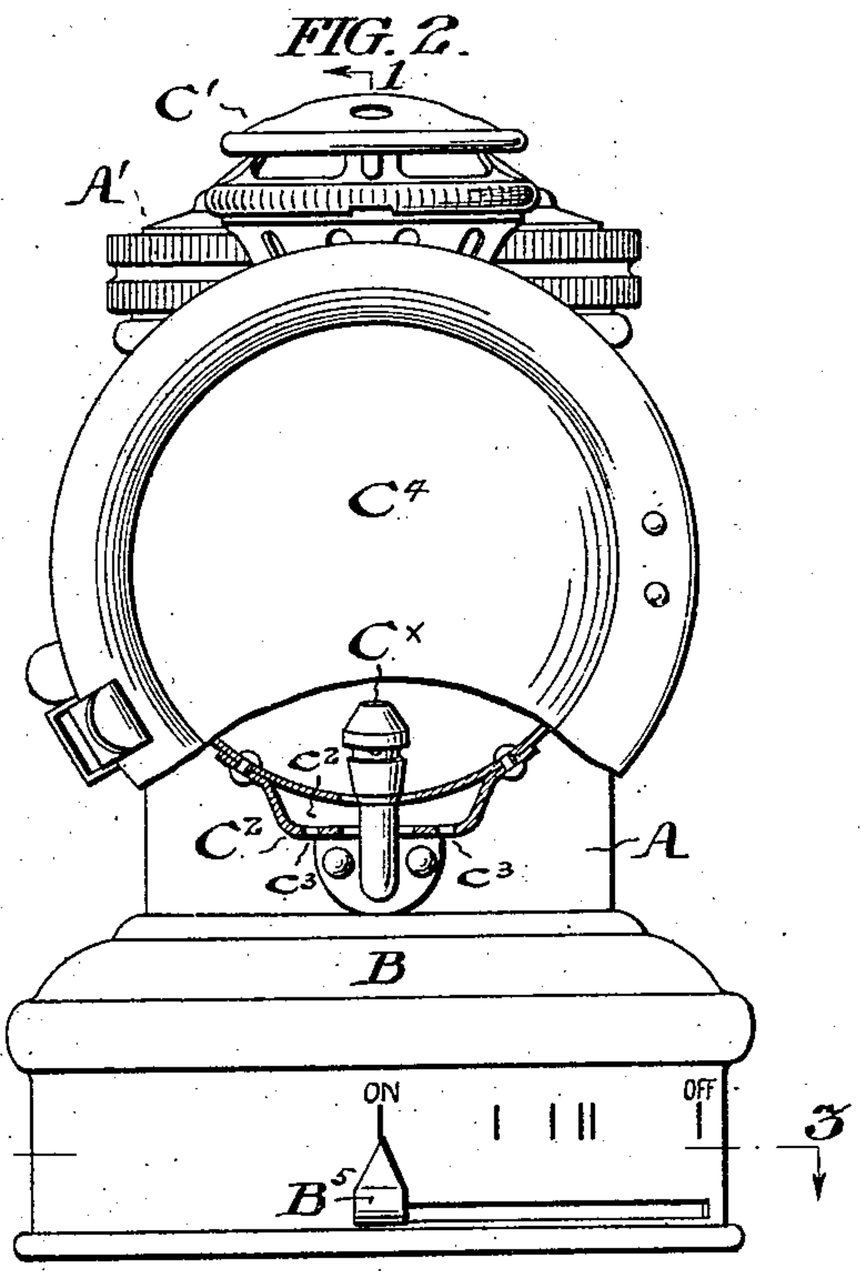


FIG. 4.

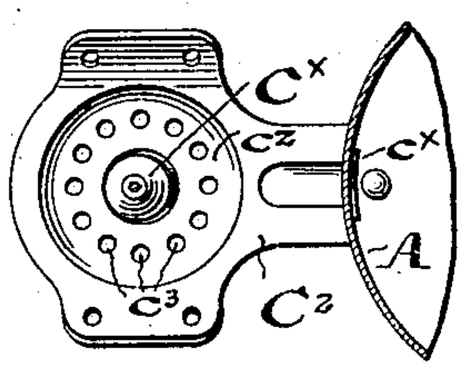


FIG. 3.

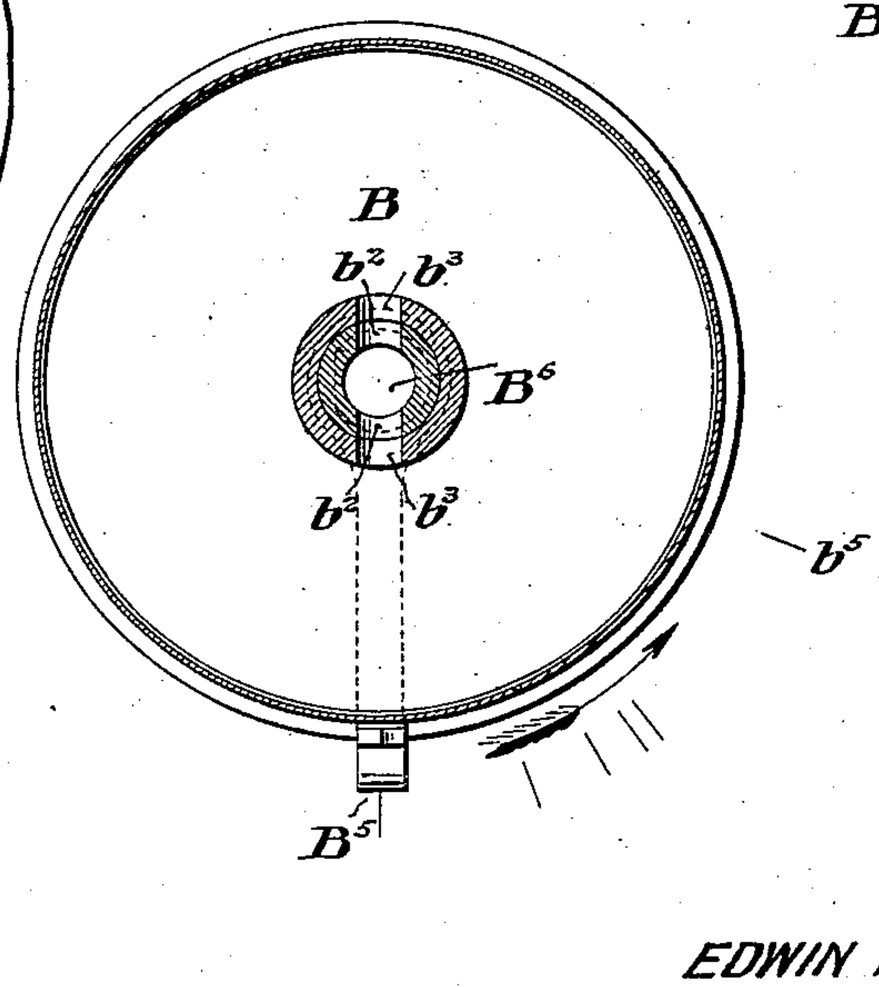
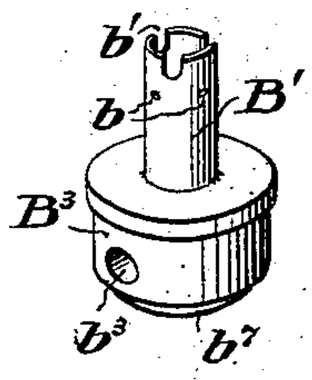


FIG. 5.



WITNESSES:

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UNITED STATES PATENT OFFICE.

EDWIN M. ROSENBLUTH, OF PHILADELPHIA, PENNSYLVANIA.

ACETYLENE-GAS-GENERATING LAMP.

SPECIFICATION forming part of Letters Patent No. 693,069, dated February 11, 1902.

Application filed February 4, 1899. Serial No. 704,482. (No model.)

To all whom it may concern:

Be it known that I, EDWIN M. ROSENBLUTH, of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Acetylene-Gas-Generating Lamps, whereof the following is a specification, reference being had to the accompanying drawings.

My invention relates to a gas-generating lamp wherein the supply of water is stored below a charge of gas-producing chemical, to which the water is uplifted by the capillary attraction of an absorbent medium, means being provided to control the upward flow of water through said medium without movement of the latter, as hereinafter more definitely specified and claimed.

In the accompanying drawings, wherein I have shown a convenient embodiment of my invention in a portable lamp, such as may be conveniently used upon a bicycle or similar vehicle, Figure 1 is a central vertical sectional view of the lamp, taken on the line 1 1 of Fig. 2. Fig. 2 is a front elevation of the lamp, a portion of the flame-casing being broken away to show details of its construction. Fig. 3 is a plan sectional view taken on the line 3 3 of Figs. 1 and 2. Fig. 4 is a fragmentary plan sectional view showing the construction of the flame-casing bracket. Fig. 5 is a perspective view of the wick-tube and the controlling-valve. Fig. 6 is an end view of the carbid-cartridge.

In said figures, A is the casing wherein the charge of carbid is retained and the gas generated. Beneath the casing A is fixed the water-casing B, forming the base of the lamp structure. The flame-casing C extends laterally from the casing A in fixed relation with both casings A and B, and the bracket D, fixed upon the casing A, serves as a support for the entire lamp structure.

The casing A is provided with studs a to engage the inclined slots a' in the internal flanges of the removable cap A'. Partial rotation of said cap suffices to compress the washer $A^{\times}$ and seal said casing, and the spring a^2 serves to prevent displacement of the charge of carbid.

The casing B is charged with water through the inlet $b^{\times}$, and said water is uplifted to the casing A by the wick $B^{\times}$, which fills the wick-tube B' and extends through the valve B^2, which controls the flow of water to the wick. Said valve B^2 is mounted for rotation in the valve-casing B^3, which is in fixed relation with the wick-tube B' and serves to rigidly connect the floor B^4 of the casing B with the floor A^2 of the casing A. The valve B^2 extends through the floor B^4 and is provided beneath the latter with an operating-lever B^5. As best shown in Fig. 3, the valve and valve-casing are respectively provided with similar ports b^2 and b^3, which in the position shown are registered to admit the maximum amount of water to the wick. It is obvious, however, that rotation of the operating-lever B^5 in the direction of the arrow upon Fig. 3 serves to reduce the area of the water-inlet. Movement of said lever B^5 to the position indicated at b^5 serves to completely close the valve and exclude the water from said wick.

I prefer to make the valve B^2 of conical form, as shown in Fig. 1, for when so shaped it may be conveniently adjusted in its seat by means of the screw-plug B^6, the flange b^6 of which bears upon the operating-lever B^5, which in turn bears upon the projecting flange b^7 of the valve-casing B^3. Said plug B^6 not only serves, as aforesaid, to adjust said valve within its casing and maintain the operating-lever B^5 in proper relation therewith, but also serves to close the opening $b^{\times}$ in the bottom of said valve, through which the wick $B^{\times}$ may be conveniently withdrawn and replaced when said plug is removed. The provision of an opening through which the wick $B^{\times}$ may be conveniently removed is a valuable feature of construction, inasmuch as the efficiency of the wick $B^{\times}$ is affected by its continued use, rendering the occasional renewal thereof desirable.

The upper extremity of the wick-tube B' is notched, as indicated at b' in Fig. 5, so that the flow of water through the laterally-projecting top strands of the wick may not be restricted by pressure of the carbid upon the same. The notched extremity of the wick-tube B' presents the wick above the floor A^2 of the casing A, which is inclined and the wick-tube B' provided with apertures b on a level therewith, so that any moisture condensed within the casing A will gravitate toward the wick-tube and drain therein. The

aforesaid means for draining the casing A serves to maintain the latter free of moisture, except such as is directly absorbed by the charge of carbid and generated as gas.

The gas generated in the casing A is delivered to the burner $C^{\times}$ in the flame-chamber C through the tube $c^{\times}$, fixed in the casing A, and the products of combustion are discharged from the casing C through the chimney C'.

The burner-tube $c^{\times}$ extends through the bracket C^2, which serves to rigidly support the casing C from the casing A, said casings being also riveted together, as shown at *c*. The bracket C^2 is recessed at c^2 and perforated at c^3, so that the burner $C^{\times}$ is cooled by the passage of air around it, in such manner, however, as not to cause the flame to flicker.

The flame-chamber C is conveniently provided with a reflector C^3, which, as shown, is of the type forming the subject-matter of Letters Patent of the United States No. 606,028, granted to me on June 21, 1898. Said chamber is also provided with a glazed door-front C^4 and glazed side openings c^4.

It is obvious that the mechanism above described serves to control the upward capillary flow of water from the casing B to the casing A regardless of the disposition of the carbid in the latter. It is well known, however, that the introduction of carbid and the removal of the carbid-ash from a gas-generator is facilitated if the carbid is supported by a removable receptacle or is comprised in what may be termed a "carbid-cartridge." Attempts have hitherto been made to preserve carbid from the deteriorating effects of air and moisture in cartridges comprising perforated shells and temporary coverings more or less waterproof, the latter designed for removal at the instant of inserting the cartridge in the gas-generator. I have found that such a method of packing carbid in cartridge form does not suffice to exclude moisture, much less air. To facilitate the use of carbid in the generator above described, I have devised the peculiar form of carbid-cartridge shown in section in Fig. 1, wherein E is an imperforate outer shell having a neck or necks E', which when not in use are provided with means, such as corks E^2, to hermetically seal the same. The neck E' also serves to inclose the wick $B^{\times}$, protruding within the casing A, and to so confine and direct the flow of water within the cartridge-shell E as to insure the maximum output of gas therefrom:

The carbid is supported within the shell E by the porous diaphragm *e'*, extending across the neck E'. Said diaphragm serves to evenly distribute the water received through said neck, but when in direct contact with the flat surface $E^{\times}$ of the shell E (see Fig. 6) the flow of water seems to be restricted by the pressure of the carbid. Therefore I find it advantageous to corrugate the end walls of the shell E in ribs $e^{\times}$, projecting within the shell to uphold said diaphragm, and permit the water to pass freely therethrough.

In order that the carbid F may have room to expand within the cartridge-shell E, I provide a movable partition *e* in the latter, supported in normal position by a readily-compressible solid filling material, such as organic or mineral wool G, which may be absorbent. The material G serves to maintain the carbid in proper position to readily take up the moisture delivered to it by the wick $B^{\times}$ and at the same time yields gradually under the pressure of expansion of the carbid until the latter has produced its quota of gas.

In generators of the type to which this invention belongs it is found that the rate of production of gas is diminished as the distance between the source of water-supply and the active carbid is increased. I therefore find it advantageous to so construct the carbid-cartridge E that the opposite ends thereof may be alternately presented to the wick, so that when the carbid at one extremity has been fully consumed that at the other extremity may be presented and the light maintained without substantial diminution until the full capacity of the carbid is exhausted. Aside from this feature of uniform production of light such a double construction of a carbid-receptacle is economical, in that while a comparatively large charge of carbid may be maintained in the casing A only a portion of it is subjected to the deteriorating effects of moisture if it is desired to extinguish the light before the entire charge is exhausted. On the other hand, if the light has been extinguished with the charge at one end of the shell partially consumed a bright light may be immediately obtained upon opening the water-valve if the cartridge has been reversed.

I do not desire to limit myself to the precise details of construction herein set forth, as it is obvious that various modifications may be made therein without departing from the spirit of my invention.

I claim—

1. In an acetylene-gas generator, a carbid-chamber, a water-chamber, a wick extending from said water-chamber within said carbid-chamber, a rotary valve surrounding said wick and arranged to control the supply of water thereto, an opening through said valve, arranged so that said wick may be withdrawn therefrom, an operating-handle for said valve, and a removable plug arranged to adjust said valve in its casing, to secure said handle upon said valve, and to normally close the wick-opening in said valve, substantially as set forth.

2. In an acetylene-gas generator, a carbid-chamber, a water-chamber, a wick extending from said water-chamber within said carbid-chamber, a rotary valve surrounding said wick and arranged to control the supply of water thereto, an opening through said valve arranged so that said wick may be withdrawn therefrom, and a removable plug arranged to

normally close the wick-opening in said valve, substantially as set forth.

3. In an acetylene-gas generator, a carbid-chamber, a water-chamber, a wick extending from said water-chamber within said carbid-chamber, a rotary valve surrounding said wick and arranged to control the supply of water thereto, an opening through said valve arranged so that said wick may be withdrawn therefrom, and a removable plug arranged to normally close the wick-opening in said valve, and serving to adjust said valve in its casing, substantially as set forth.

4. In an acetylene-gas generator, the combination with a water-chamber, of a carbid-chamber having a downwardly-inclined floor fixed above the water-chamber, a wick-tube extending from said water-chamber within said carbid-chamber and terminating above said inclined floor, and a lateral opening in said wick-tube at its junction with said floor, arranged so that liquid upon said floor shall drain within said tube, substantially as set forth.

5. In an acetylene-gas generator, the combination with a water-chamber, of a carbid-chamber fixed above the water-chamber, a wick-tube extending from said water-chamber within said carbid-chamber, and terminating above the floor of the latter, a wick in said tube, and a notch in the upper edge of said tube arranged to receive a laterally-projecting portion of said wick, substantially as set forth.

6. In an acetylene-gas generator, the combination with a water-chamber, of a carbid-chamber, fixed above the water-chamber, a wick-tube fixedly connecting the floor of said water-chamber with the floor of said carbid-chamber, and terminating above the latter, a lateral inlet to said wick-tube from said water-chamber, and a valve arranged to control the flow of water from said water-chamber through said lateral inlet to said wick-tube, substantially as set forth.

7. In an acetylene-gas generator, the combination with a water-chamber, of a carbid-chamber fixed above the water-chamber, a wick-tube in fixed relation with said two chambers, a wick in said tube, a water-outlet in the top of said wick-tube within said carbid-chamber, an outlet at the bottom of said wick-tube, opening to the atmosphere, and arranged so that said wick may be withdrawn therefrom, a removable plug arranged to normally close the bottom opening of said tube, and a valve arranged to control the flow of water from said water-chamber to said wick-tube, substantially as set forth.

8. In an acetylene-gas generator, the combination with a water-chamber, of a carbid-chamber fixed above the water-chamber, a wick extending from said water-chamber within said carbid-chamber, a removable carbid-cartridge fitted to said carbid-chamber and provided with a neck arranged to inclose the upper extremity of said wick, and a valve arranged to control the flow of water from said water-chamber through said wick to said cartridge, substantially as set forth.

9. In an acetylene-gas generator, the combination with a water-chamber, of a carbid-chamber fixed above the water-chamber, a wick extending from said water-chamber within said carbid-chamber, a removable and reversible carbid-cartridge fitted to said carbid-chamber, and provided at each end with a neck arranged to alternately inclose the upper extremity of said wick, and a valve arranged to control the flow of water from said water-chamber through said wick to said cartridge, substantially as set forth.

10. In an acetylene-gas generator, a carbid-chamber, a water-chamber, a wick extending from said water-chamber within said carbid-chamber, a rotary valve surrounding said wick, and arranged to control the supply of water thereto, an opening through said valve, arranged so that said wick may be withdrawn therefrom, a removable plug for said opening, and an operating-handle for said valve, substantially as set forth.

EDWIN M. ROSENBLUTH.

Witnesses:
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CLIFTON C. HALLOWELL.