No. 617,710. Patented Jan. 17, 1899.

W. A. BARROWS.

ACETYLENE GAS GENERATING LAMP.

(Application filed June 1, 1897.)

(No Model.)

Fig. 1.

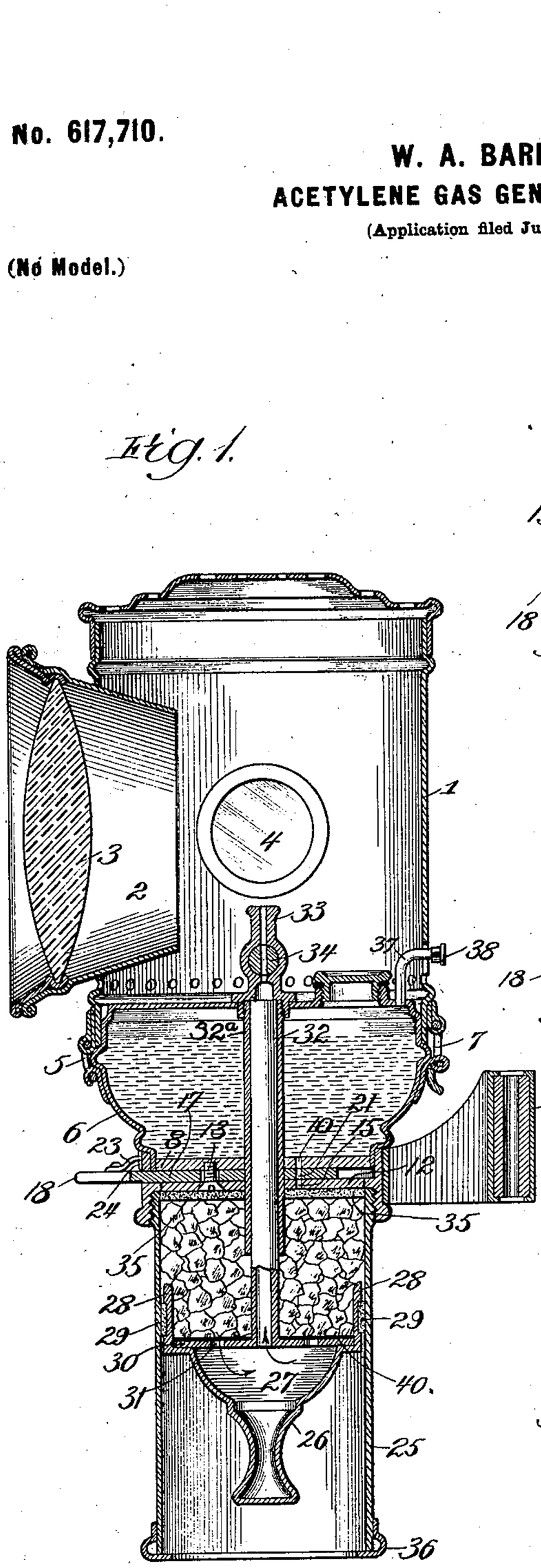


Fig. 2.

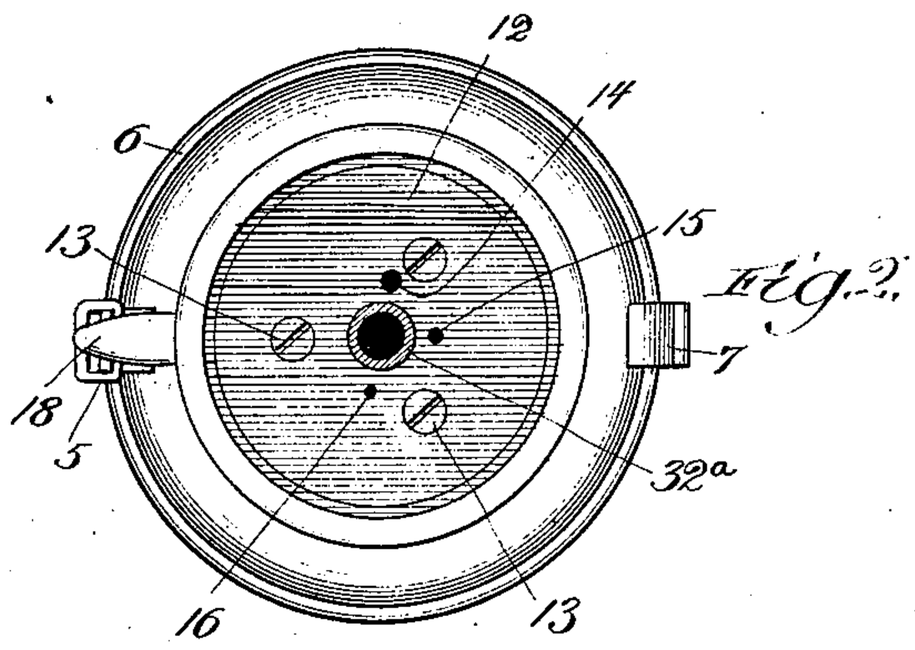


Fig. 3.

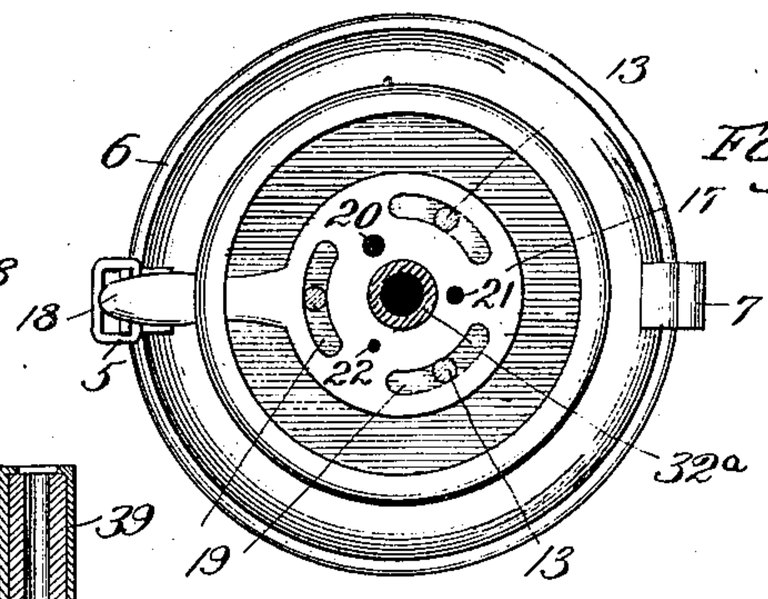


Fig. 4.

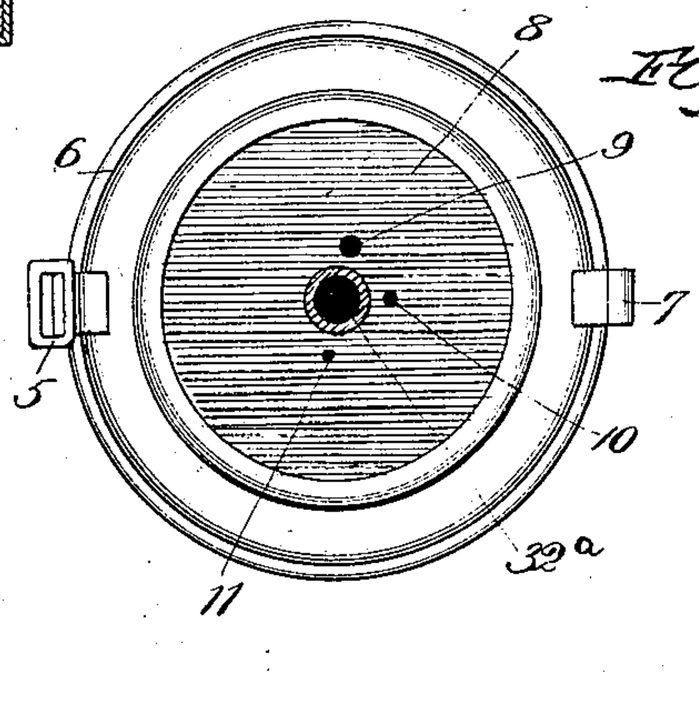
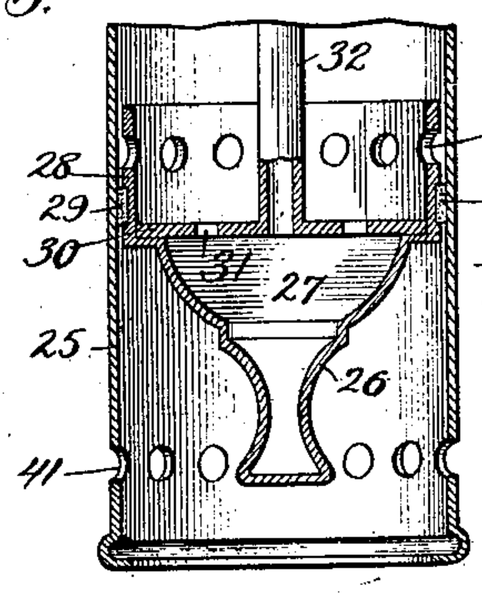


Fig. 5.



Witnesses:
Chas. E. Gaylord.
Lulu J. Stiles.

Inventor:
Walter A. Barrows.
By Samuel E. Libbey
Atty.

UNITED STATES PATENT OFFICE.

WALTER A. BARROWS, OF CHICAGO, ILLINOIS.

ACETYLENE-GAS-GENERATING LAMP.

SPECIFICATION forming part of Letters Patent No. 617,710, dated January 17, 1899.

Application filed June 1, 1897. Serial No. 638,870. (No model.)

To all whom it may concern:

Be it known that I, WALTER A. BARROWS, of Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Lamps, of which the following is a specification.

My invention relates particularly to lamps for bicycles and the like wherein acetylene gas is used; and its object is to provide novel and efficient means for generating and controlling the gas.

My invention also has for another object to prevent explosions by providing a safety arrangement.

My invention embodies other novel and advantageous features of construction and operation, which will be apparent from the description hereinafter given.

In the accompanying drawings, Figure 1 is a central sectional elevation of my lamp; Fig. 2, a bottom plan thereof with the gas-generator removed; Fig. 3, a similar plan, but with the bottom plate of Fig. 2 removed; Fig. 4, another similar plan, but with the disk valve of Fig. 3 removed; and Fig. 5, a detail view of a modified form of the safety device.

My lamp employs the lamp-body 1, protractor 2, lens 3, and side lights 4, which are of the usual and well-known construction and form no particular part of my invention. The lamp-body is hinged at 5 at one side to a reservoir 6, adapted to contain the water necessary in the generation of the gas. The body is held locked upon the reservoir by any suitable means, such as the clasp device 7.

The reservoir has a bottom 8, provided with feed-apertures 9, 10, and 11 of varying diameters for the purpose of obtaining a variable feed, as hereinafter explained. A plate or disk 12 is secured to the bottom of the reservoir by means of screws 13 or otherwise and has apertures 14, 15, and 16, similar to and registering with apertures 9, 10, and 11. Between these plates is interposed a flat disk-valve device 17, adapted to control the feed-apertures, and having a handle 18, extending extraneous of the casing. This disk valve has slots 19, adapted to receive the screws 13, and also has apertures 20, 21, and 22. This valve controls the flow of water from the reservoir, and by shifting it to different positions a variable predetermined amount of flow is obtained. In order to indicate the registration of the various apertures, a spring-finger 23 is secured to the handle 18 and is adapted to be received in slots or recesses 24.

A cylinder or barrel 25 is screwed into or otherwise secured to the bottom portion of the reservoir below the plates 8 and 12. This cylinder is open at top and bottom and contains a sliding bottom 26, having a bowl-shaped chamber 27 and cylindrical side 28 at its upper portion, between which and the walls of the cylinder 25 a ring 29 of suitable packing material is preferably interposed. Above the bowl is supported a plate 30, having perforations 31 with a vertical supply-tube 32, telescoping in a downwardly-extending tube 32^a, secured in the top of the water-chamber. An ordinary gas tip or jet 33, having a cock 34, communicates with the supply-pipes.

Preferably immediately below the plates a disk 35 of any suitable porous material is arranged and receives the water passing through the apertures when the valve is properly turned.

The cylinder 25 is open at its bottom and the sliding bottom can be moved by hand. Around the lower edge of the cylinder is a ring 36, which is fitted rather tight therein, but removable upon considerable pressure. The ring projects slightly over the opening of the cylinder and normally acts as a stop for the movable bottom.

A vent may be provided for the water-reservoir, such as a pipe 37, projecting from the top thereof and out through the lamp-body. The end is provided with a cap 38, which can be turned to open or close a small opening to the atmosphere. This vent may be dispensed with, and it is not essential to the lamp unless a gravity water-feed only is desired.

Any suitable form of bracket attachment, such as 39, may be employed.

My lamp operates as follows: The cylinder is preferably removed from the upper portion, so as to be accessible from the top for charging. The calcium carbid is placed within the cylinder and rests upon the perforated plate 30. The bottom is moved inward, as shown in Fig. 1, and the valve 17 is moved so as to connect a set of the holes or passages from

the water-chamber. The amount of water fed is regulated by the valve, which may connect the holes of varying diameters. The gas now generated passes downward, being preferably filtered in its passage through any suitable straining or filtering material 40, and then passes into the chamber or cup 27, whence it passes upwardly through the pipe 32 to the jet 33. The water from the chamber moistens the porous disk and passes therethrough, supplying the gas-generating chamber with the water required. To obtain an increased generation, the valve is turned so as to connect the largest water-passages to give an increased flow of water. When it is desired to extinguish the lamp, the valve is turned to cut off the water-feed and the sliding bottom is drawn downward, whereupon the generation of gas will cease.

When the gas is being generated, some of the gas may pass through the water-feed passages, and without the vent device would cause a pressure feed of the water. If the cap 38 were open, the small amount of such gas above the water would escape and the water would feed by gravity. The gas having a free passage through the tip or burner will choose that route and but an inconsiderable amount would pass into the water-chamber. The vent device might be omitted without detracting from the lamp.

The bottom of the cylinder may be entirely taken out for recharging or for other purposes by sliding it downward forcibly to remove the ring 36. This removable ring also provides the safety element of my lamp. In case a high pressure is generated the bottom may be blown out by the gas without destroying or injuring the lamp.

In Fig. 5 I have shown another form of the safety feature, in which the cylinder has a number of holes 41 near the lower end, which is open, but prevents the withdrawal of the bottom. The sides of the cup-shaped bottom have corresponding holes 42, so that when the gas-pressure forces the sliding bottom downward the holes 41 and 42 will register and gas-pressure will blow out therethrough.

By the use of my invention I provide a simple and efficient lamp which is easy of control and regulation and absolutely safe in use. The amount of gas to be generated can be regulated, and the generation may be stopped in a simple manner. It is possible to remove or separate the active materials when desired, so that such materials may not be wasted, whereby a single charge of the carbid will last a considerable length of time.

Although I have described more or less precise forms and details of construction, I do not intend to limit myself thereto, as I contemplate changes in form, proportion of parts, and the substitution of equivalents as circumstances may suggest or render expedient without departing from the spirit and scope of my invention and claims.

While I may have described and illustrated my invention as applied to and embodied in a bicycle-lamp, it will be understood that this is simply one of the many uses to which it may be put and that I do not limit myself thereto. I therefore contemplate using my invention for all purposes to which it is applicable—as, for instance, for ordinary lanterns, vehicle-lamps, house-lamps, headlights, &c., and all general illuminating and signaling purposes.

I claim—

1. The combination of a water-receptacle, an acetylene-gas-generating chamber or cylinder, having an open end, a manually-operated movable abutment forming a gas-tight closure for the open end of said chamber, the chamber communicating with the water-receptacle substantially at its other end, means for controlling the passage of water from the receptacle to the generating-chamber, and a gas-outlet leading from the generating-chamber without passing through said abutment.

2. An acetylene-gas generator comprising a water-receptacle, a casing forming a gas-generating chamber provided with an open end and having communication with the water-chamber, a movable abutment forming the bottom and gas-tight closure for closing the open end of the chamber, a wall or partition located between the water-receptacle and the generating-chamber and having openings therethrough and a gas-outlet pipe leading from the bottom of the generating-chamber without passing through said abutment.

3. An acetylene-gas-generating device for lamps, comprising a water-chamber, a cylinder or casing therebelow forming the gas-generating chamber and having an open end, a movable abutment or gas-tight closure adapted to slide up and down in the generating-chamber and to close such open end, the bottom of the water-chamber having openings entering the generating-chamber, a valve controlling such openings and a gas-outlet leading from the generating-chamber without passing through said abutment.

4. In an acetylene-gas lamp, the combination of a casing, a burner therein, a water chamber or receptacle having false or double bottoms, a casing therebelow forming the gas-generating chamber, the double bottoms having passages entering the generating-chamber, a disk valve controlling such passages and interposed between such bottoms and a passage or pipe from the generating-chamber to the burner.

5. In an acetylene-gas lamp, the combination, with a casing and a burner therein, of a water chamber or reservoir, a casing therebelow forming a gas-generating chamber, a partition located between the chambers and provided with openings therethrough, a cup-shaped gas-tight bottom in the generating-chamber, a perforated plate supported thereby and a pipe leading from the generating-chamber to the burner.

6. In an acetylene-gas lamp, the combina-

tion with a casing and a burner therein, of a water-chamber, a casing adjacent thereto forming the generating-chamber, means of communication between the chambers, a cup-shaped closure or bottom for the casing slidable in the generating-chamber, a perforated plate upon such bottom on which the calcium carbid rests and forming a chamber for the gas when generated and a pipe leading upwardly through the water-chamber to the burner.

7. In an acetylene-gas lamp, the combination with a lamp-casing and a burner therein, of a water-chamber, a casing forming a generating-chamber, means of communication between the chambers, a sliding bottom in the generating-chamber, a ring upon the bottom edge of the generator-casing normally acting as a stop for the sliding bottom but removable upon considerable pressure and a passage or pipe from the generating-chamber to the burner.

8. In an acetylene-gas lamp, the combination with the lamp-frame and its burner therein, of a water-chamber, a casing therebelow forming the generating-chamber, means of communication between the chambers, a pipe extending downwardly through the water-chamber into the generating-chamber and connected to the burner, a movable bottom in the casing and a supply-pipe movable with such bottom and telescoping in the first-named pipe.

9. In an acetylene-gas lamp, the combination of a water-chamber, having a bottom provided with openings, a second bottom or plate also having openings, screws or pins for securing the same to the bottom of the chamber, a disk valve having slots to accommodate the screws or pins and located between the said bottoms, such valve having openings adapted to register with and connect the openings in the bottoms, and a casing below the water-chamber forming the generating-chamber, a gas-burner and a connection thereto from the generating-chamber.

10. An acetylene-gas lamp comprising the lamp-body and its burner, a water-chamber, a generating-chamber located adjacent thereto and having an open end or bottom, a movable abutment or gas-tight closure for closing such open end, a connection leading from the bottom of the generating-chamber to the burner without passing through said abutment and means for closing and opening communication between the chambers and for regulating the amount of water fed to the generating-chamber.

11. In an acetylene-gas lamp, the combination with a lamp-body and its burner, of a water-chamber having a bottom with openings of varying diameters, a second bottom having similar openings, a disk valve having openings corresponding to the holes in said bottoms, a generating-chamber below the water-chamber and a communication therefrom to the burner.

12. In an acetylene-gas lamp, the combination with a lamp-body and its burner, of a water-chamber, a gas-generating chamber therebelow, a regulated passage between the chambers, a movable bottom in the generating-chamber comprising a ring portion 28 fitting the interior of the chamber, a perforated plate 30 resting upon such bottom and forming a cup-shaped chamber 27, and a pipe leading therefrom to the burner.

13. In an acetylene-gas lamp, the combination with a lamp-body and its burner, of a water-chamber, a casing therebelow, a regulated passage between the water-chamber and the casing, such casing being open at its lower end and having a gas-tight movable closure or bottom adapted to be slid up and down therein, such bottom alone closing the open end of the casing and being capable of manual operation, and a gas-outlet leading from the generating-chamber without passing through said bottom.

14. In a lamp generating and using acetylene gas, the combination, with the case and burner therein, of a water-chamber, a generating-chamber adapted to receive the carbid and having an open end, porous material separating the chambers but permitting the restricted passage of water, a gas-outlet from near the bottom of the generating-chamber and through the carbid without passing through said bottom, and a movable bottom or gas-tight closure adapted to slide up and down in the generating-chamber and to close the open end of such chamber.

15. In an acetylene-gas lamp, the combination of a water-chamber, a gas-generating chamber adapted to receive the carbid and having an open end, a porous partition between the chambers and located at the top of the generating-chamber, a valve device also between the chambers for controlling the water to the porous partition and into the generating-chamber, a movable bottom or gas-tight closure adapted to slide up and down in the generating-chamber and to close the open end of such chamber, and a gas-outlet leading from the generating-chamber without passing through said bottom.

16. In an acetylene-gas lamp, the combination of a water-chamber, a gas-generating chamber adjacent thereto and containing the carbid, such generating-chamber having an open end, a movable abutment slidable in the generating-chamber and forming the bottom and closure for said generating-chamber, a partition of porous material between the chambers and located at the top of the generating-chamber, a valve device controlling the water to the porous material and having means for regulating the amount of water fed, and a gas-outlet leading from the generating-chamber without passing through said abutment.

17. In an acetylene-gas lamp, the combination of a water-chamber having a bottom or plate with an aperture or passage, a false

bottom or plate having a similar passage, a movable disk interposed between the plates and provided with a passage adapted to register with and connect the passages in the plates when such disk is properly turned, a gas-generating chamber located below the water-chamber and having an open end, a movable abutment slidable in the generating-chamber and forming the bottom and closure for said generating-chamber, such abutment being adapted to be forced or blown outwardly upon an undue expansion of the gas, and a gas-outlet from the generating-chamber.

18. In an acetylene-gas lamp, the combination of a water-reservoir 6, a casing 25 forming a generating-chamber, a bottom 8 for the water-chamber, a second bottom 12 and a movable disk valve 17, the two bottoms and the disk having openings of varying diameters which permit of the passage of water in variable feed into the generating-chamber.

19. In an acetylene-gas lamp, the combination of a water-reservoir 6, a casing 25 forming a generating-chamber, double bottoms 8 and 12 having openings from the water-chamber into the generating-chamber, a disk valve 17 controlling such openings and the degree of feed, a movable bottom 26 closing the open end of the casing, a burner, and a connection therewith from the generator.

20. In an acetylene-gas lamp, the combination of a water-chamber having a bottom or plate with an aperture or passage, a false bottom or plate having a similar passage, a movable disk interposed between the plate and provided with a passage adapted to register with and connect the passages in the plates when such disk is properly turned, a casing below the water-chamber forming a generating-chamber, a porous pad or partition located adjacent to the false bottom of the water-chamber and substantially at the top of the generating-chamber and a supply-pipe leading from the generating-chamber.

21. In an acetylene-gas lamp, the combination of a water-reservoir 6, a casing 25 forming a generating-chamber, double partitions or plates 8 and 12 having openings of varying diameters, a valve 17 controlling such openings, a burner, a pipe 32^a communicating therewith and extending downward through the water-chamber and into the generating-chamber, a movable bottom 26 in the latter chamber, and a pipe 32 carried thereby and telescoping with the first pipe.

22. In a gas-lamp, the combination of a water-chamber, a generating-chamber having a bottom, means for regulating communication between the chambers, a perforated partition located in the generating-chamber upon said bottom and supporting the carbid and an outlet-pipe leading from the generating-chamber from below the partition and passing upward through the generating-chamber directly to the burner without passing through said bottom.

23. In an acetylene-gas lamp, the combination with a case and a burner, of a water-chamber, a gas-generating chamber located therebelow, a movable bottom therein, means of communication between the chambers for the passage of water to the generating-chamber, means for regulating such communication, a perforated horizontal partition located in the generating-chamber upon the movable bottom and supporting the calcium carbid, and an outlet-pipe communicating with the generating-chamber near its bottom and below the partition and extending upwardly through the entire generating-chamber and also through the water-chamber to the burner without passing through said bottom.

24. An acetylene-gas lamp comprising a water-chamber, a generating-chamber adapted to hold the carbid and having an open end, a movable abutment slidable in the generating-chamber and forming the bottom and closure for such open end, a perforated partition on the abutment supporting the carbid and forming a chamber or pocket between itself and the abutment, and a telescopic outlet-pipe movable with the abutment and communicating with the pocket, such pipe passing upwardly through the generating-chamber.

WALTER A. BARROWS.

Witnesses:
W. H. SNYDER,
SAMUEL E. HIBBEN.