No. 635,366. Patented Oct. 24, 1899.

F. L. WHITE.

ACETYLENE LAMP.

(Application filed Nov. 19, 1898.)

(No Model.)

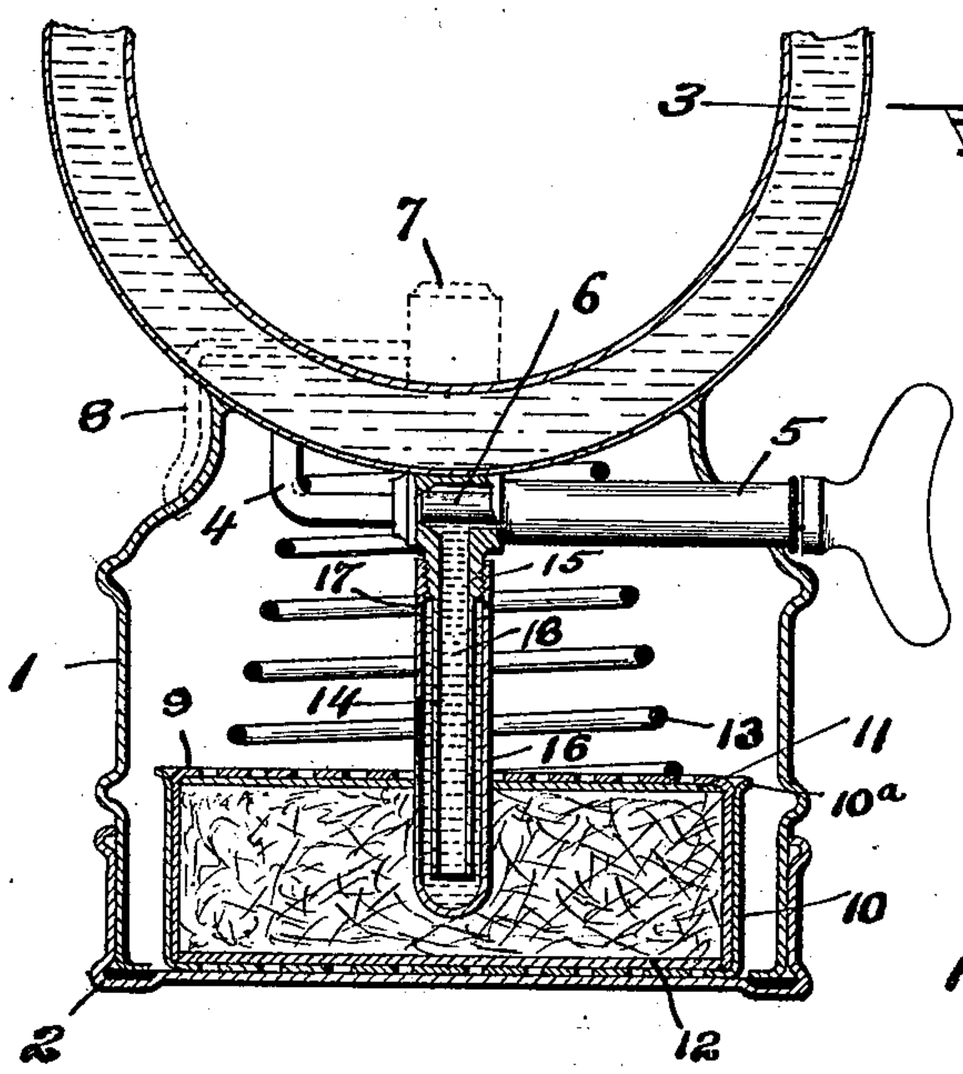

Fig. 1.

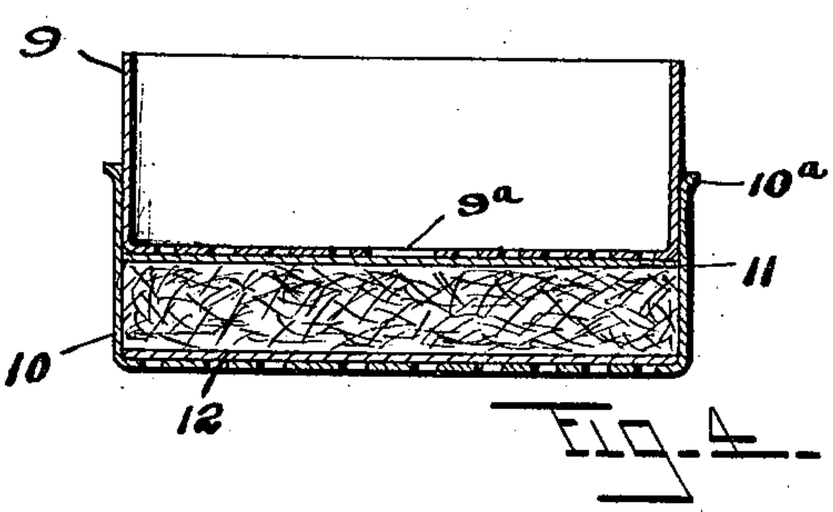

Fig. 4.

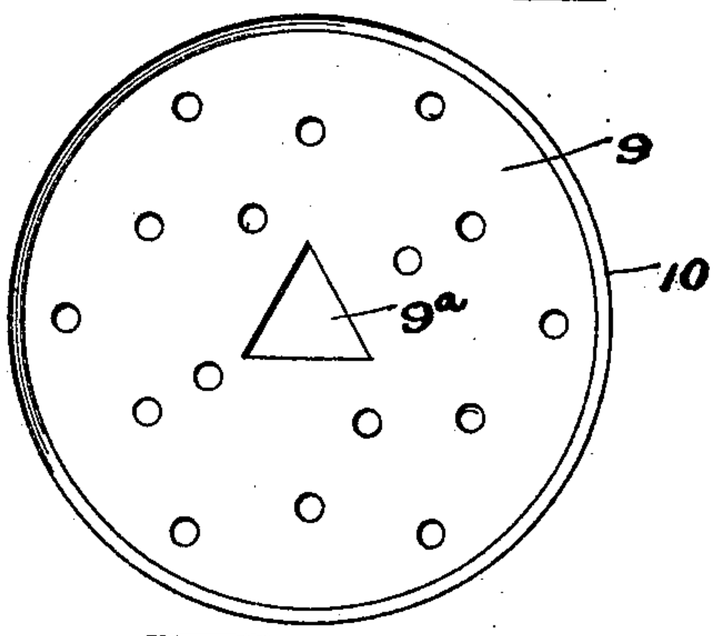

Fig. 3.

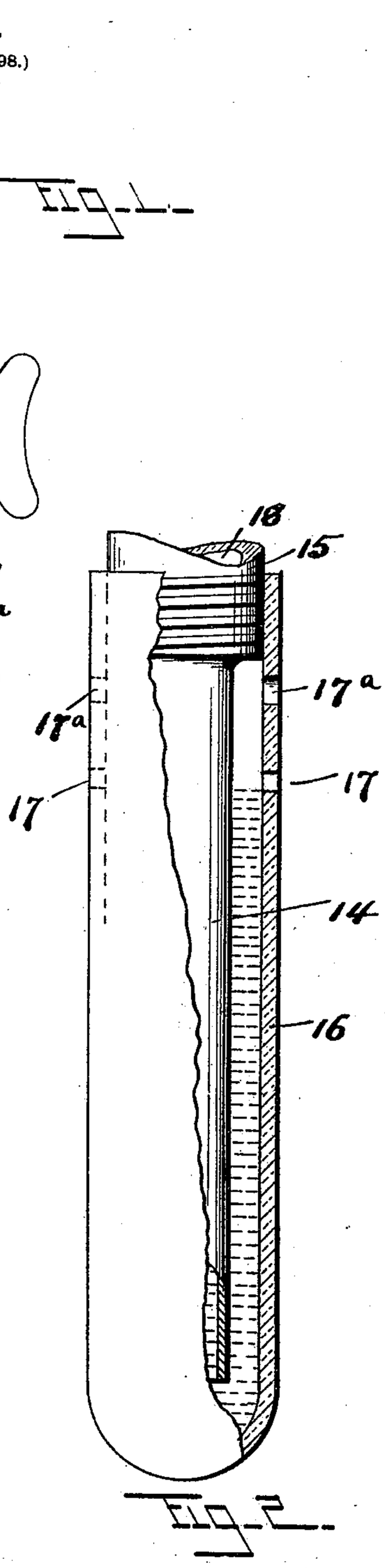

Fig. 2.

Witnesses.

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UNITED STATES PATENT OFFICE.

FREDERICK L. WHITE, OF WATERBURY, CONNECTICUT, ASSIGNOR TO GEORGE H. CLOWES, OF SAME PLACE.

ACETYLENE-LAMP.

SPECIFICATION forming part of Letters Patent No. 635,366, dated October 24, 1899.

Application filed November 19, 1898. Serial No. 696,846. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK L. WHITE, a citizen of the United States, residing at Waterbury, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Acetylene-Lamps, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in acetylene-lamps, and has particular reference to the carbid-receptacle and water-feed devices.

It is the object of my invention to improve the construction of such devices by making their structure simple and economical, with few parts that are not easily disarranged or liable to be clogged by the carbid, and designed so that they can be easily cleaned and be subjected to continued and repeated usage, as well as to add materially to the efficiency of the whole lamp.

To this end my invention consists of the improvements in acetylene-lamps as hereinafter set forth, and more particularly pointed out in the claims.

Referring to the drawings, in which like numerals designate like parts in the several views, Figure 1 is a transverse section of an acetylene-lamp with my improvements attached. Fig. 2 is a fragmentary elevation of the feed-tube mechanism. Fig. 3 is a plan view of the carbid-receptacle. Fig. 4 is a transverse sectional view of the carbid-receptacle, showing the method of using the same for a small charge of carbid.

I have illustrated in Fig. 1 a section of one form of an acetylene-lamp to which my improvements may be attached, but do not limit myself to a lamp of such construction, as the devices invented by me and hereinafter described may be used with any lamp burning acetylene or other analogous gases. In the said figure the numeral 1 designates the lamp-base, which is of circular form, the interior being the gas-chamber, 2 the separable bottom, 3 the water-reservoir, 4 the water-tube connecting the reservoir and the valve 5, 6 the valve-stem, 7 the burner, and 8 the tube leading from the gas-chamber to the burner.

The carbid-receptacle is composed of the two members 9 and 10, of cup shape, the head of each of which is perforated and one of the said cups being fitted telescopically within the other. Through the center of the head of the cup 9 is a triangular perforation 9^a of considerably larger area than the other perforations.

I prefer to make both of the shells of substantially the same size and large enough to hold a single charge of carbid, so that either may be used as a measure to determine the exact amount of carbid for a single charge. This is an important feature, for in lamps heretofore made where the carbid-receptacle is susceptible of repeated use no means have been devised to accomplish this end, the operator depending entirely upon his own judgment to ascertain the exact amount of each charge. If the charge should be too large, the excess expansion of the receptacle materially affects the usefulness of the lamp and the full amount of the carbid cannot be consumed, while if the charge is too small a too-frequent recharging of the receptacle is necessary.

Within the shells 9 and 10 and against the inside of the perforated heads are inserted disks of blotting-paper 11 12 or other like absorbent material. These disks, by means of the perforations in the heads of the shells, absorb the moisture and water formed in the gas-chamber by condensation and transmit it to the calcium carbid, thus insuring a dry gas-chamber and preventing the accumulation of a wet gas which burns with an uneven light. When the disks are inserted and the receptacle filled with carbid, it is placed in the gas-chamber, the end of the water-feed tube entering through the triangular perforation 9^a, puncturing the disk 11, and passing down through the carbid nearly to the bottom of the lower shell. Lateral displacement of the receptacle is prevented by the water-feed tube, and the coil-spring 13, which bears upon the top of the shell 9, prevents the receptacle from jumping up and down while allowing the same to expand as the carbid deteriorates. A slight rap upon the edge 10^a will jar out the lime residue within the shell 10 and the receptacle is ready for another charge. By turning the edge of the shell 10 outward, as

at 10^a, any dents or burs formed therein by striking the same to remove the lime residue will not interfere with the two shells operating together telescopically. In Fig. 4 is illustrated the manner of using the receptacle for a smaller charge of carbid, the top shell being simply inverted, as can be clearly understood from the drawings.

The water-feed devices comprise an inner tube 14, having a head 15, and an outer tube 16, the bottom of which is closed and the upper end internally threaded to fit upon the externally-threaded head 15, as shown in Fig. 2. Outer tube 16 is pierced near the upper end thereof adjacent to the threaded head 15 by one or more overflow-ports 17 and gas-vents 17^a 17^a. In Fig. 1 the tube 14 is shown as integral with the casing of the valve 5 and adapted for use in a lamp of that particular construction; but in Fig. 2 it is broken off at the top, intending thereby to show that the tube can be made separate from the valve, if desired, and secured thereto by any of the means common to the art, or it may be bent or curved to adapt it for any style of lamp, and, further, the head 15 may be integral with the tube 14 and the body of the valve 5, as illustrated in Figs. 1 and 2, or it may be separate and attached to either the valve-body or tube in any well-known manner within my invention. The water is conveyed to the bore 18 of the inner tube by any convenient means, after which it drops to the bottom of the outer tube, filling the space between the said inner and outer tubes until it reaches the holes 17, when it overflows and runs down the outside of the tube 16 and into the calcium carbid, which surrounds its lower end. A limited amount of gas accumulates in the tube 16, and to provide means whereby it may escape, and thus avoid any tendency it may have to retard the waterflow, I have devised the gas-vents 17^a 17^a, which are in the walls of the tube above the overflow-holes 17.

In water-feed devices heretofore made a fabric or wicking has been used to distribute the water; but this proved defective in that small particles of deteriorated carbid would accumulate thereon and clog the flow of the water, and, again, the heat generated by the formation of the gas heated the water passing through the wicking sufficiently to prevent its flow, all of which conditions impaired the efficiency of the lamp. In my devices the use of wicking or fabric is avoided, and as the small particles of carbid cannot escape from the carbid-receptacle the water-supply is never clogged; but if perchance the particles of carbid should escape into the gas-chamber the construction of the outer tube is such that the flow of the water would not be affected thereby. Furthermore, as only the lower portion of the outer tube is heated by the generation of gas the flow of water is not impaired by the heat, but, on the contrary, a continuous flow of cool water is obtained. It will be seen that the water is continually flowing through the inner tube, thence between the inner and outer tubes, and finally escapes through the overflow-holes. This prevents the water from remaining in that portion of the tube liable to be heated long enough for its temperature to be materially affected.

There are many changes that can be made within my invention, and I would therefore have it understood that I do not limit myself to the exact construction herein shown and described, but claim all that falls fairly within the spirit and scope of my invention.

I am aware that water-feed tubes have been made which comprise an outer tube and an inner tube of less diameter than the outer tube, and I do not therefore claim such construction broadly.

What I claim as new, and desire to secure by Letters Patent, is—

1. In an acetylene-lamp having a water-reservoir and a carbid or gas chamber suspended beneath said water-reservoir, the combination therewith of a water-feed device connected with the said water-reservoir and projecting into the said carbid-chamber, comprising an inner tube having an open bottom and an outer tube of greater diameter having a solid bottom and one or more overflow-ports, whereby the water may escape from the said water-reservoir through the said water-feed device into the said carbid-chamber, substantially as described.

2. In an acetylene-lamp, a carbid-receptacle composed of two cup-shaped members, one fitting telescopically within the other; one of said members having an enlarged perforation through the head thereof and a plurality of smaller perforations surrounding the same, the other of said members having a plurality of perforations through its head portion and the edges at the open end thereof turned outward to form a bell-shaped lip, substantially as described.

3. In an acetylene-lamp having a gas-chamber and water-reservoir, the combination therewith of a carbid-receptacle adapted to be inserted within the said chamber and comprising two members fitting telescopically within each other and having disks of blotting-paper or other like absorbent material against the inside of their perforated heads; and a water-feed device having operative connection with the said reservoir at its upper end, and the lower end thereof projecting within the said receptacle, the said device comprising an outer tube having a solid bottom and overflow-ports through the shell thereof, and an inner tube of less diameter having an open bottom, within the said outer tube, substantially as described.

4. In an acetylene-lamp having a water-reservoir, as 3, and a generating-chamber, as 1, suspended beneath said reservoir, the combination therewith of a carbid-receptacle

composed of the two cup-shaped members 9 and 10, a coil-spring 13 inserted above the said receptacle and adapted to prevent displacement thereof, a water-feed device having operative connection with said reservoir and projecting downward into the said generating-chamber, and composed of the inner tube 14 and outer tube 16, having overflow-ports 17, all constructed and operating substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

FREDERICK L. WHITE.

Witnesses:

WILLIAM F. GOELTZ,

GEORGE E. HALL.