No. 740,725. PATENTED OCT. 6, 1903.

G. D. WILLIAMS & A. J. CONEY.

BANK OR MINE CAR.

APPLICATION FILED JUNE 3, 1903.

NO MODEL.

FIG. 1.

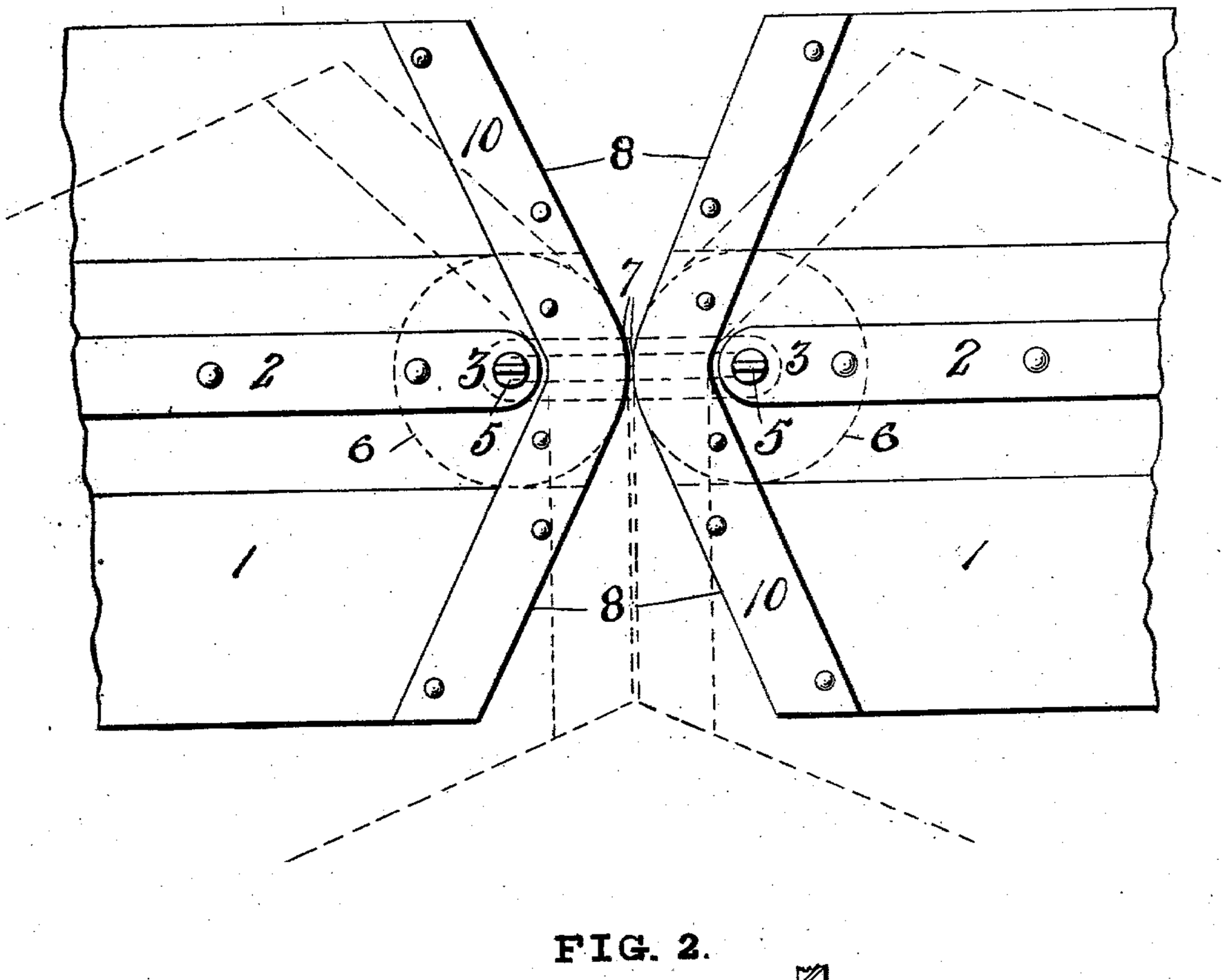
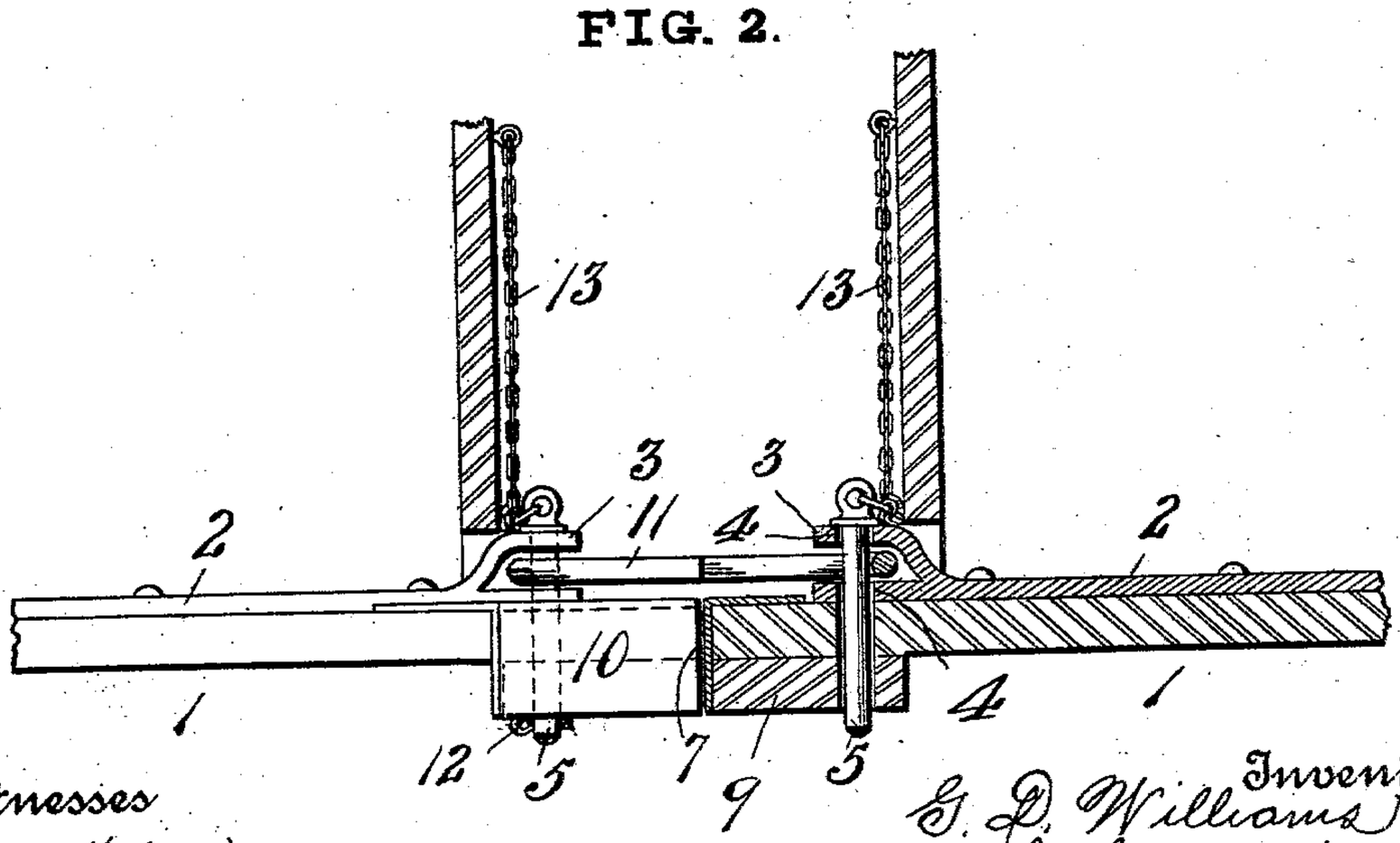


FIG. 2.



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No. 740,726. PATENTED OCT. 6, 1903.

T. F. WILLIAMS.

ACETYLENE GAS GENERATOR.

APPLICATION FILED SEPT. 29, 1900.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2.

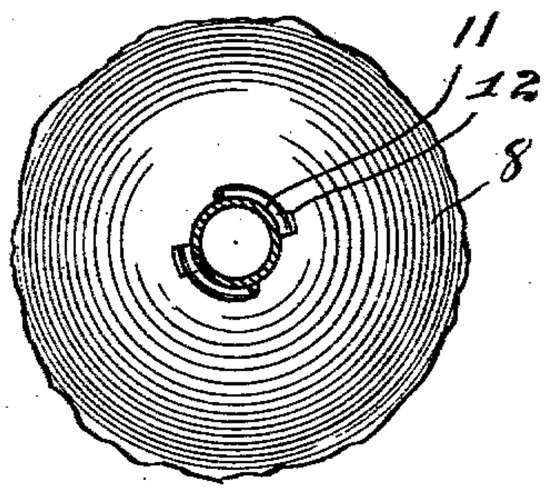
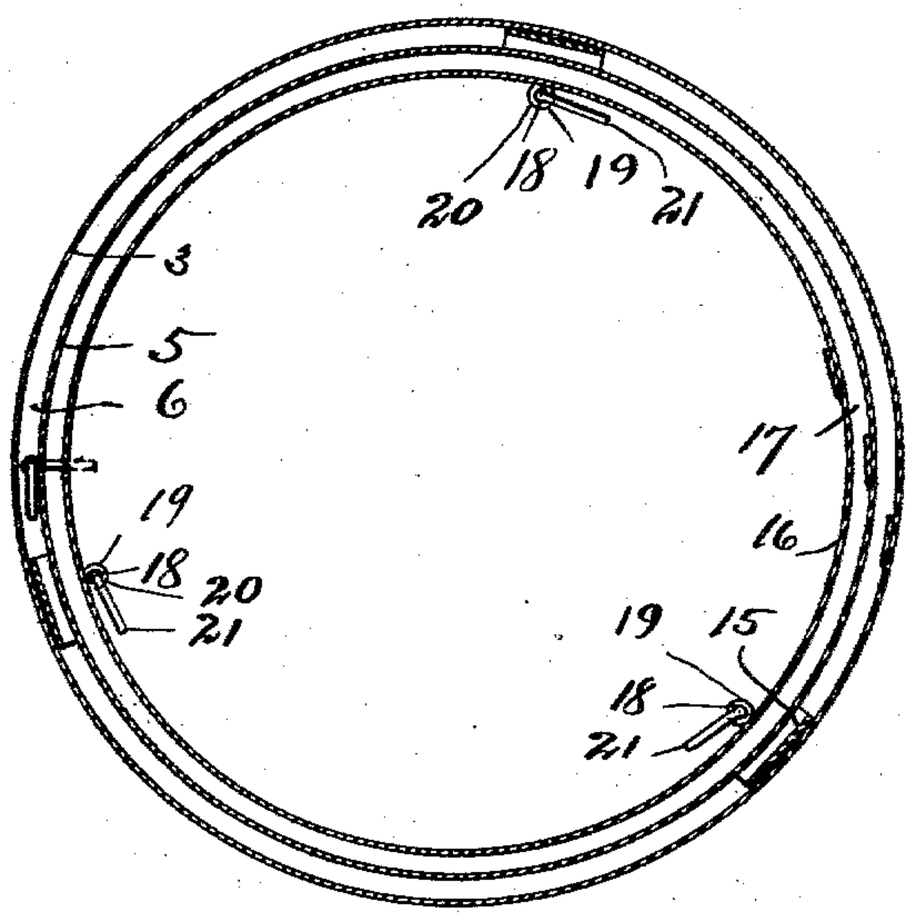


Fig. 3.



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No. 740,726. Patented October 6, 1903.

UNITED STATES PATENT OFFICE.

THOMAS F. WILLIAMS, OF CHICAGO, ILLINOIS, ASSIGNOR TO EDWARD L. WILLIAMS, OF GILLHAM, ARKANSAS.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 740,726, dated October 6, 1903.

Application filed September 29, 1900. Serial No. 31,517. (No model.)

To all whom it may concern:

Be it known that I, THOMAS F. WILLIAMS, of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Acetylene-Generators, of which the following is a specification.

This invention relates to improvements in acetylene-generators, and refers more specifically to a portable generator embodied in the present instance in the form of a lamp for domestic and analogous purposes.

Among the objects of the invention are to provide a device of the character referred to of simple and cheap construction in which the gas is generated by admitting to the carbid-chamber limited quantities of water, the rate of admission being determined and regulated by the pressure of gas acting against a hydrostatic pressure; to provide a construction in which the carbid vessel may be most conveniently adjusted from time to time relatively to the liquid-level of the water-supply reservoir to compensate for the lowering of said level by consumption; to provide a construction wherein the inlet-ducts through which the liquid is admitted to the carbid-chamber are in form of pipes or elongated passages obstructed or partially occupied, so that the passages therethrough are practically capillary passages, thus rendering the fluctuations of the water-supply less abrupt and the generation of gas more uniform and certain, and in general to provide improvements in the details of construction and arrangement of the apparatus contributing to its efficiency and convenience of manipulation.

To the above ends the invention consists in the matters hereinafter described, and more particularly pointed out in the appended claims, and will be readily understood from the following description, reference being had to the accompanying drawings, in which—

Figure 1 is an axial sectional view of a lamp embodying my invention. Fig. 2 is a fragmentary sectional view taken on line 2 2 of Fig. 1 and looking downwardly. Fig. 3 is a horizontal sectional view taken on line 3 3 of Fig. 1 and looking downwardly.

Referring to said drawings, 1 designates as a whole a suitable font or reservoir adapted to contain a considerable quantity of water, the upper portion 2 of said font being enlarged and preferably of ornamental contour, while the lower portion 3 is of reduced diameter and cylindric and is supported by means of any suitable base 4.

5 designates as a whole a gas-bell, the lower portion of which is cylindric to conform to the interior of the lower part 3 of the font, but is of somewhat smaller diameter, so as to provide an annular water-space 6 between the bell and the font, the lower end of said bell being in open communication with the interior of the font, while its upper end is closed by an end wall 7, desirably of upwardly-tapered form, so as to be capable of rising within the reduced dome-shaped upper part 8 of the font. With the center of the upper end of the bell is connected a gas-pipe 9, which extends thence vertically up through the center of the top of the font and is provided at a point outside of the font with a suitable burner-nozzle 10. The pipe 9 is provided with one or more relatively heavy screw-threads 11, extending throughout the principal length of the pipe and engaging corresponding thread-recesses 12, formed in the upper end wall of the font, as best shown in detail Fig. 2, whereby the bell may be raised or lowered by rotating it relatively to the dome portion of the font. In order that the bell may be thus raised or lowered without rotating the bell itself, the dome portion 8 of the font is made separate from the main body thereof and adapted to fit thereon cap-fashion, so as to be capable of rotation, the lower end of said dome being desirably provided with a beaded margin 13, which fits within an annular groove 13′, formed upon the exterior of the upper margin of the main body of the font. In order that the bell may not be lowered beyond a certain point within the font, it is desirably provided at one side with a stop or lug 14, projecting radially outward therefrom and adapted to engage the shoulder formed at the junction of the globular part of the body with the cylindric portion thereof.

In order to center the gas-bell within the cylindric part of the font and at the same time to hold it yieldingly against rotation, I provide a plurality of spring-strips 15, secured upon the outer cylindric side, so as to extend

longitudinally thereof at intervals apart around the circumference of the bell, as best indicated in sectional Fig. 3, said strips being permanently secured at one end and bowed outwardly between their ends, so as to bear yieldingly against the interior of the font, as clearly shown in Fig. 1.

16 designates as a whole the carbid-receptacle, which is desirably and as shown herein made in the form of a cylindric cup open at its top and having a closed bottom and adapted to fit within the gas-bell, its external diameter being somewhat less than the internal diameter of the bell, so as to provide a surrounding annular space 17 between said members in open communication at its lower end with the water-space of the generator.

18 designates a plurality of water-inlets formed through the bottom wall of the carbid-receptacle and communicating with extended passages or ducts 19, leading upwardly within said receptacle to a point above the normal level of the body of carbid therein, said ducts being desirably formed and, as shown herein, by means of pipes 20 of relatively small internal diameter secured vertically against the inner wall of the carbid-cup, preferably of equal height and open at their upper ends. Within each duct or pipe 20 is arranged an obstruction for retarding the flow of liquid therethrough, said obstructions consisting, preferably, of wires 21 of slightly less external diameter than the internal diameter of the pipes and of sufficiently greater length than the latter to enable their protruding ends to be bent over at right angles, so as to retain the wires in position, as indicated clearly in Fig. 1. The wires thus arranged within the ducts serve to obstruct said ducts, so as to leave capillary passages only therethrough, and at the same time, by means of their projecting angular ends 21, they may be oscillated to break up and clear out any incrustation which may form within the pipes or upon the wires, thus maintaining the passages open notwithstanding their reduced size. The carbid cup or vessel is conveniently retained in position within the bell by means of a latch 22, formed of a length of wire having its intermediate portion seated within a tubular socket secured vertically to the exterior of the bell and having its lower end turned at right angles inwardly to form a ledge or lug upon which the edge of the carbid-cup may rest, while its upper end is also turned at right angles to the body portion and in a direction approximately at right angles to the direction of the supporting-lug, so that it may be used as a handle or finger-piece to rotate the supporting-lug out from beneath the carbid-cup to permit the withdrawal of the latter.

When embodied in a house-lamp, as shown in the present instance, the generator may be provided with any suitable globe-support, as that indicated at 23.

The operation of the generator constructed as shown may be briefly described as follows: The gas-bell, with the carbid-cup therein, having been lifted out of the font, the dome portion of the latter being engaged with the gas-pipe and moved together with the bell, the font will be charged with a suitable quantity of water, the carbid-cup removed from the bell and also charged, and the parts then returned to place. In returning the bell to its place within the font care should be taken to first rotate the dome or cup down to the lower end of the gas-pipe adjacent to the upper end of the bell, so that when the latter is seated within the font it will be held suspended in the position indicated in dotted lines in Fig. 1, in which position it is to be noted the upper inlet ends of the supply-pipes 20 should be above the level of the water within the font. The parts having been thus placed in readiness, the lamp is brought into operation by rotating the cup or dome 8 in the proper direction to lower the bell and contained carbid vessel to a point where the upper ends of the inlet-ducts will be below the level of the liquid within the font, whereupon the liquid rising through said ducts will escape therefrom and drip down upon the carbid, thus inaugurating the generation of gas. The gas generated fills the bell and passes out through the gas-pipe to the burner, whereupon it may be lighted. The liquid will continue to flow in through the supply-ducts until the pressure of gas within the bell exceeds the hydrostatic pressure under which the liquid is entering the carbid-chamber, whereupon the pressure acting upon the liquid within the ducts and within the annular space between the carbid-cup and interior of the bell will force it back sufficiently to arrest the flow into the chamber. By reason of the extended passages obstructed by the wires, as described, the pressure will be less effective in driving back the liquid, and consequently the fluctuation will be less abrupt between the periods while the liquid is flowing and while it is interrupted and by reason of the fact that the capillary passages through the tubes are of substantially the same size throughout their lengths the increase and decrease of pressure will be uniform and in direct proportion to the hydrostatic head, and consequently the rate of generation of gas will be more uniform.

The rate of generation can be controlled obviously to a large extent by the hydrostatic pressure, it being obvious that if the pressure becomes too great it can be reduced by elevating the bell through the medium of the screw connection of the gas-pipe with the font, and, vice versa, if the pressure be too low it may be increased by simply rotating the cap to lower the bell farther. From time to time at relatively long intervals apart it will be necessary to lower the bell by steps to compensate for the lowering of the liquid-level within the font and to compensate for the increased supply required as the body of residue increases and the body of active carbid de-

creases. Obviously these adjustments can be made in the most convenient manner by simply rotating the dome of the font by hand. When it is desired to arrest the generation of gas before the charge of carbid is consumed, the bell is simply lifted up high enough to arrest the inflow of water by rotating the supporting-cap in the proper direction.

I claim as my invention—

1. An acetylene-generator, comprising in combination a chamber to contain a body of water, a generating-chamber adapted to contain the carbid arranged within the water-chamber, a bell having its lower end open and inclosing said generating-chamber, and an inlet-duct communicating at its lower end with the water entering the bell and discharging at its upper end within the generating-chamber above the body of carbid therein, said inlet-duct being of capillary size throughout substantially its full height, whereby the area of liquid exposed to gas-pressure therein is substantially the same throughout all fluctuations of level of the liquid, substantially as described.

2. An acetylene-generator, comprising in combination, a chamber to contain a body of water, a generating-chamber adapted to contain the carbid arranged within the water-chamber, a bell having its lower end open and inclosing said generating-chamber, and an inlet-tube communicating at its lower end with the water entering the bell and discharging at its upper end within the generating-chamber above the body of carbid therein, said inlet-tube being substantially of uniform size throughout and provided with an extended obstruction likewise of uniform cross-sectional size whereby the passage therethrough is reduced to capillary size throughout its full operative length, for the purpose set forth.

3. An acetylene-generator, comprising in combination, a chamber to contain a body of water, a generating-chamber adapted to contain the carbid arranged within the water-chamber, a bell having its lower end open and inclosing said generating-chamber, an upwardly-extending inlet-tube of uniform size throughout its length and communicating at its lower end with the water entering the bell and discharging at its upper end within the generating-chamber above the body of carbid therein, and a wire extending throughout the length of said inlet-tube of slightly smaller diameter than the interior of the tube, and means movably confining said wire in position in said tube, substantially as described.

4. An acetylene-generator, comprising in combination, a chamber to contain a body of water, a generating-chamber adapted to contain the carbid arranged within the water-chamber, a bell having its lower end open and inclosing said generating-chamber, and a plurality of upwardly-extending inlet-tubes secured to the inner vertical wall of the generating-chamber, each communicating at its lower end with the water-space within the lower end of the bell and discharging at its upper end within the generating-chamber above the body of carbid therein and each having a wire rotatably inserted therein of less diameter than the diameter of the duct and provided with a bent handle portion whereby it is adapted to be moved therein and whereby the wire is secured in position, as and for the purpose set forth.

5. In an acetylene-generator, the combination with a water-reservoir and a carbid-receptacle partly submerged therein and supplied by hydrostatic pressure from said reservoir, of means for adjusting the height of the carbid-receptacle relatively to the reservoir, comprising a vertically-disposed screw-threaded member adapted to support the carbid-receptacle and a correspondingly-threaded cap or dome rotatably mounted upon the reservoir and forming a relatively fixed support with which said threaded member has operative engagement and means for holding the carbid-receptacle from rotation while permitting it to rise and fall, whereby rotation of the supporting-dome serves to raise or lower the carbid-receptacle.

6. In an acetylene-generator, the combination, with a reservoir provided at its upper side with a rotatable cap member, of a gas-bell arranged within said reservoir, a carbid-cup removably secured within the lower part of the gas-bell, a plurality of inlet-pipes arranged vertically within the carbid-cup against the inner side wall thereof, each communicating at its lower end through an opening in the bottom of the cup with the water-space beneath the latter and rising at its upper end at a point above the normal level of the body of carbid within the cup, means for centering and frictionally holding the bell in position within the reservoir, comprising a plurality of spring-strips secured to its exterior and bearing against the interior of the reservoir and means for adjusting the height of said bell and contained carbid-cup, comprising a gas-pipe attached to and communicating with the upper end of the bell and provided upon its exterior with a thread engaging a correspondingly-threaded aperture in the rotatable upper part of the generator, substantially as described.

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