No. 676,964. Patented June 25, 1901.

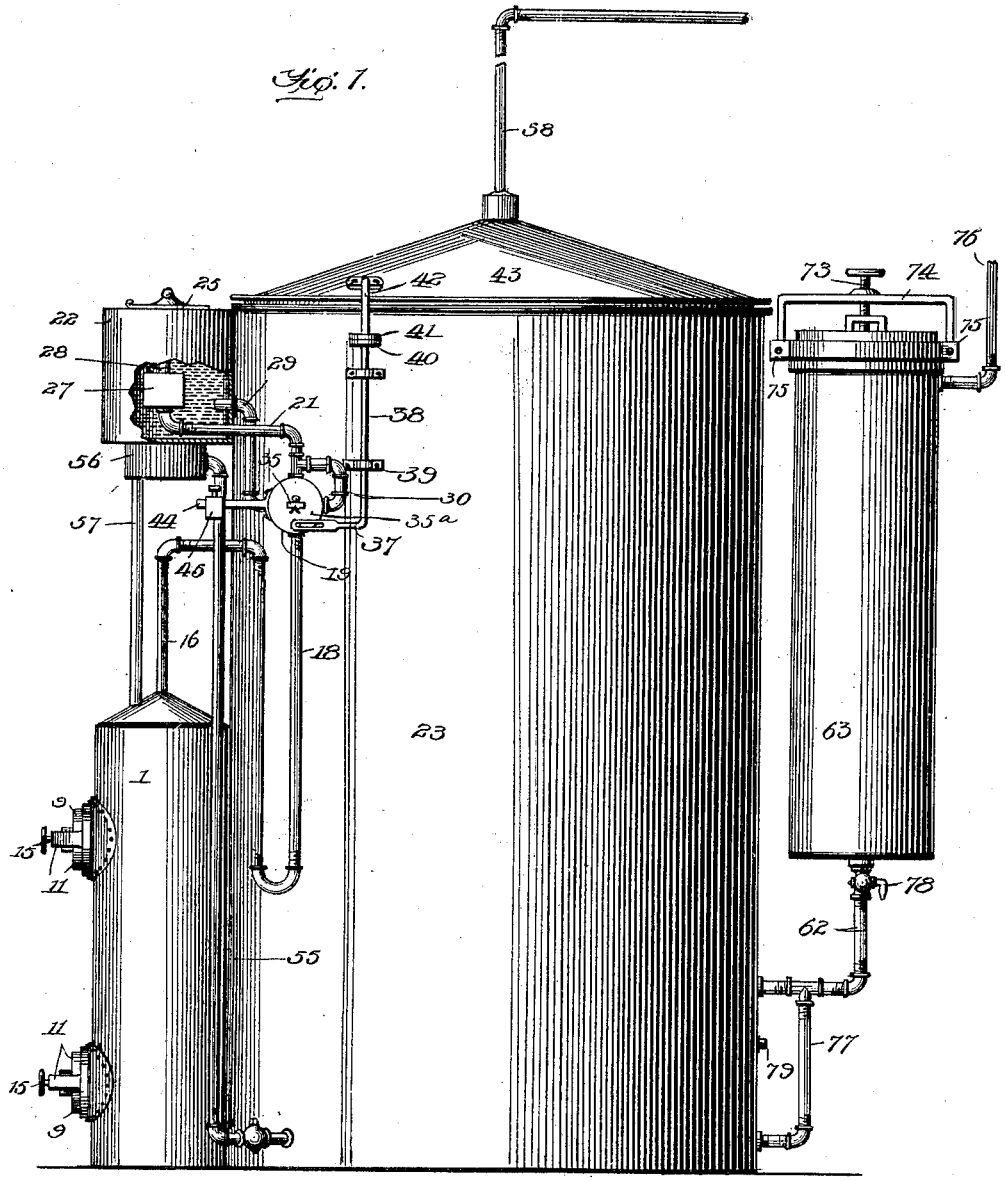
A. H. RIFE.

ACETYLENE GAS GENERATOR.

(Application filed Sept. 8, 1900.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.



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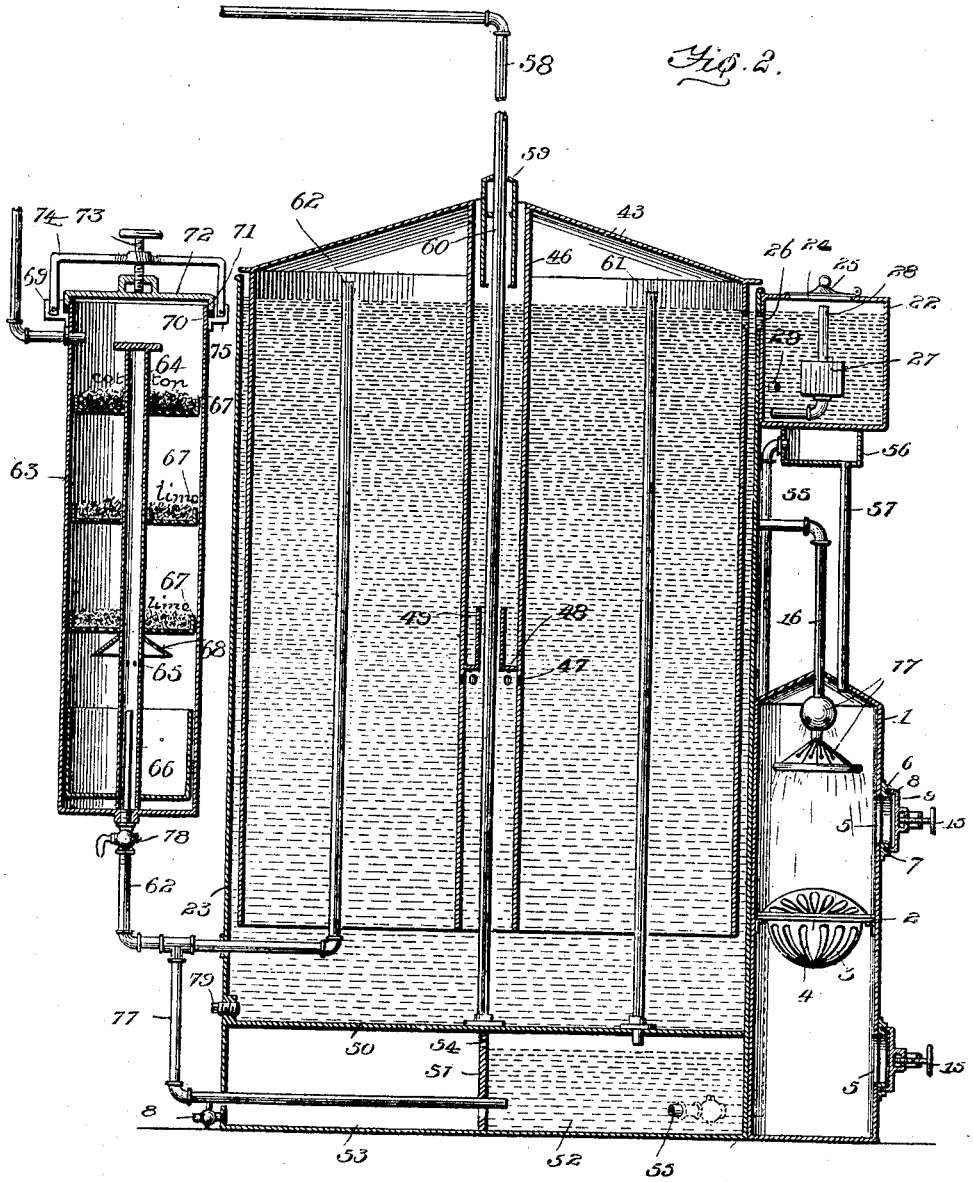
3 Sheets—Sheet 2.

Fig. 2.



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(No Model.) 3 Sheets—Sheet 3.

Fig. 3.

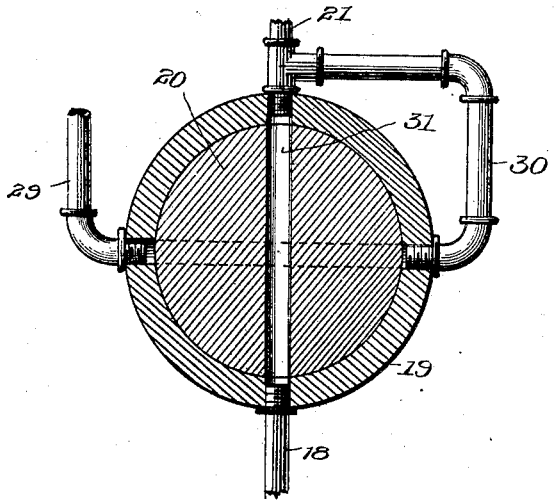


Fig. 4.

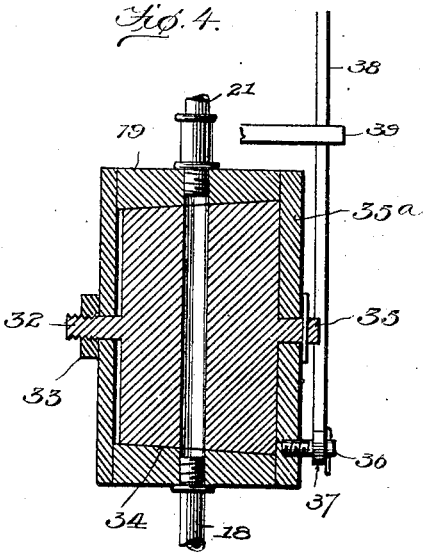


Fig. 5.

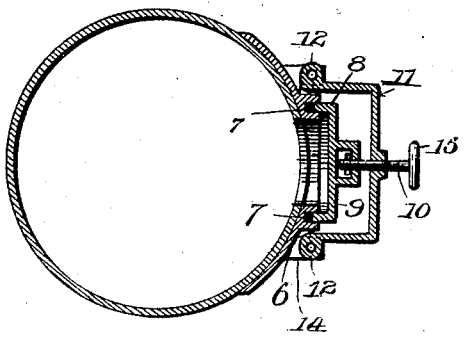
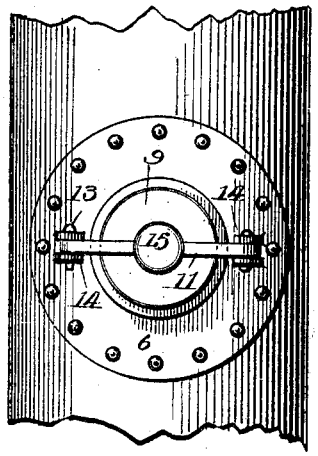


Fig. 6.



Witnesses:

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Inventor:

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UNITED STATES PATENT OFFICE.

ARCHIE H. RIFE, OF MACOMB, ILLINOIS.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 676,964, dated June 25, 1901.

Application filed September 8, 1900. Serial No. 29,401. (No model.)

To all whom it may concern:

Be it known that I, ARCHIE H. RIFE, a citizen of the United States, residing at Macomb, in the county of McDonough and State of Illinois, have invented new and useful Improvements in Acetylene-Gas Generators, of which the following is a specification.

This invention relates to new and useful improvements in acetylene-gas generators; and its primary object is to provide a device of simple construction having a carbid-receptacle within the generator, to which is supplied automatically a desired amount of water.

A further object is to provide means of novel construction for regulating the water-supply, such mechanism being operated by the up-and-down movement of the bell of the gasometer.

Other objects are to provide means whereby access to the interior of the generator may be readily obtained and to construct a novel exhaust for the surplus gas within the generator, said exhaust being provided with a water seal.

With these and other objects in view the invention consists in constructing a generator having a basket of peculiar construction arranged therein for the reception of the carbid. This generator is provided at suitable points in the wall thereof with apertures or hand-holes having closures of peculiar construction provided with means whereby they may be securely locked in closed position and prevent the escape of gas or air from or into the generator. Arranged within the generator, at a point above the basket, is a spray which is secured to the lower end of a pipe which bends downward and thence upward and opens into a valve-casing. This casing contains a valve having a passage extending transversely therethrough and adapted to connect said pipe with a second pipe opening into a closed receptacle arranged within a tank secured to the side of the gasometer. This tank communicates with the interior of said gasometer and is adapted to receive water therefrom. A pipe extends from the tank to a point within the side of the valve-casing equidistant from the pipes hereinbefore referred to, and a branch pipe is arranged upon the opposite side of said casing and communicates with the pipe of the sealed water-receptacle above referred to. It will thus be seen that the cylindrical valve may be turned so as to direct water either from the pipe of the generator to the pipe of the sealed water-receptacle or from the pipe of the water-tank to the branch pipe. This cylindrical valve has a wrist-pin extending from one face thereof, which engages a slot formed within the end of a vertical sliding rod mounted upon the gasometer. This sliding rod is adapted to be contacted at its upper end by an arm secured to the bell of the gasometer. A weighted arm extends from the valve and is adapted to hold the pipe of the tank and the branch pipe normally in circuit and the sliding rod normally projected to its highest position. A washer is provided within the gasometer, and a pipe is employed for conducting gas thereinto from the washer. A pipe also extends from the gasometer to the purifier.

The invention also consists in the further novel construction and combination of parts hereinafter more fully described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the complete device, showing the water-tank broken away. Fig. 2 is a central vertical section through the complete device. Fig. 3 is a central vertical section through the water-valve. Fig. 4 is a central vertical transverse section through the valve. Fig. 5 is a transverse section through the generator, showing a hand-hole and the mechanism for sealing the same; and Fig. 6 is a front elevation thereof.

Referring to the figures by numerals of reference, 1 is a preferably cylindrical generator, having brackets 2 mounted thereon at points between the upper and lower ends and adapted to support a carbid-receptacle or basket 3, preferably formed of metal and having apertures 4 arranged therein at suitable intervals. Hand-holes 5 are formed within the wall of the generator, preferably at points above and below the carbid-basket, and arranged about these openings at the outside thereof are grooved plates 6, adapted to receive gaskets 7, preferably of rubber. These gaskets are normally contacted by flanges 8, formed at the edges or edge of a closure 9. A screw 10 is swiveled to the center of the closure 9 and engages a threaded aper-

ture formed within the center of a yoke 11. This yoke is provided at each end with a perforated ear 12, adapted to receive a pin 13, which engages ears 14, formed upon the plate 6, before referred to. It will be seen that by making one of the pins 13 removable the remaining pin will serve as a pivot to permit the yoke to swing outward. The screw 10 is provided at its outer end with a wheel or other suitable means 15, whereby the same may be readily turned, causing the closure 9 to move inward or outward, as desired.

Extending into the upper end of the generator 1 is a pipe 16, to the lower end of which is secured a spray 17, adapted to discharge water upon all parts of the carbid basket or receptacle 3. This pipe 16 extends upward for a suitable distance and is then bent downward and upward, forming a trap 18, the end of which is secured to a circular casing 19 of a valve 20. This casing is provided with four apertures, which are equidistant from each other and one of which receives the end of the pipe 18, before referred to. A pipe 21 extends from the aperture which is directly opposite to the outlet of the pipe 18 and upward into a tank 22, secured to the side of the gasometer 23. This tank has an opening 24 in the top thereof, which is provided with a suitable closure 25, and an aperture 26 extends through the wall of the tank, so that the same may communicate with the interior of the gasometer. The end of the pipe 21 opens into a receptacle 27, from the top of which extends an air-exhaust pipe 28, the outlet of which is located at a point above the water-level in the tank. A pipe 29 extends from the tank 22 to one of the remaining apertures within the valve-casing 19, and a second pipe 30 is secured within the fourth aperture in said casing and opens at its opposite end into the pipe 21, before referred to.

The valve 20 has a single transversely-extending passage 31 therein, and it is obvious that said valve can be turned so as to permit water to flow either from pipe 18 to pipe 21 or from pipe 29 to pipe 30. The valve 20 is in the form of a truncated cone and has a threaded stem 32 extending from the smaller circular face thereof and through the end of the casing 19. This stem is adapted to be engaged by a nut 33, and it is obvious that by screwing said nut thereon the valve will be drawn inward, causing its inclined faces to bind firmly upon the inner inclined faces 34 of the valve-casing. A square stem 35 extends from the opposite face of the valve and engages a square opening formed within the center of a disk 35^a, which extends over the edges of the cylindrical casing 19. A wrist-pin 36 extends from the disk 35^a at a point adjacent to the edge thereof and is engaged by a slotted extension 37, formed at the lower end of a sliding rod 38, which is mounted within guides 39, secured to the side of the gasometer 23. This rod is provided at its upper end with a plate 40, which is adapted to be contacted by a second plate 41, secured to the end of an arm 42, extending from the top of the bell 43 of the gasometer. An arm 44 extends from the disk 35^a and is provided with an adjustable weight 45. It will thus be seen that the weighted arm normally holds the valve so that the passage 31 therein will connect the pipes 29 and 30. When in such position, however, the wrist-pin will be in raised position, the extension 37, however, always remaining in engagement therewith. The bell of the gasometer is provided at the center with a downwardly-extending tube 46, which may extend to a point in horizontal alinement with the lower edge of said bell; but perforations 47 are formed therein, as shown, at a point above its lower end. Within the tube 46 and above these perforations 47 is a partition 48, having an opening through the center thereof, which opening is inclosed by an upwardly-extending tubular portion 49.

Arranged at a point above the bottom of the gasometer 23 is a horizontally-extending partition 50, and a vertical partition 51 divides the chamber formed below the partition 50 into two compartments, one of which, 52, is used as a washer, while the second compartment 53 is adapted to receive the condensed matter which is discharged into the washer 52. This washer is adapted to be filled with water to a suitable height, and an aperture 54 is arranged within the partition 51 at a point on a level with the water-line within said compartment 52. It will thus be seen that any matter which may accumulate in the washer will flow through the aperture into the receiver 53. The washer communicates through a suitable valve-pipe 55 with the side of a condenser 56, preferably formed below the bottom of the tank 22, before referred to, and a second pipe 57 connects the bottom of said condenser with the top of the generator 1.

Secured to the center of the partition 50 and extending upward therefrom is an exhaust-pipe 58. This pipe extends through the tube 46 of the bell and out through the center of said bell. A downwardly-extending tube 59 is secured about the pipe and is of such length as to extend to a point a short distance above the water-level within the gasometer, and perforations 60 are formed within the exhaust-pipe 58 at a point above the lower end of the tube 59. As said tube 59 is of greater diameter than the tube 49, before referred to, it will be readily understood that when the bell rises within the gasometer said tube 49 will extend into the upper tube 59, and the water accumulated above the partition 48 and between tubes 46 and 49 will, in connection with the tube 59, form an effective water seal and prevent the gas entering through the openings 47 from escaping in any direction except through the apertures 60 within the pipe 58.

A pipe 61 extends upward from the top of the washer 52 to a point above the water-level within the gasometer, and a second pipe 62 extends downward from above the water-level and out through the wall of the gasometer. This pipe then extends upward into the bottom of a cylindrical purifier 63. That portion of the pipe 62 which extends into the purifier is adapted to be inclosed by the lower end of a removable tube 64, which is closed at the top and terminates at a point below the upper end of said purifier. Apertures 65 are arranged within the tube 64 at a point adjacent to the lower end thereof, and a cylindrical receptacle 66 incloses and is secured to the tube 64 at its lower end. Perforated pans 67 are secured to the tube at regular intervals, and the lower pans are adapted to receive suitable drying material, as lime, while the upper pan is provided with absorbent cotton or other suitable filtering material. A shield 68 is secured to the tube 64 at a point above the perforations 65 and below the pans 67 and is adapted to prevent clogging of said perforations by the material which drops from the pans 67. The upper end of the purifier 63 is inclosed by a grooved ring 69, which is secured thereto and the groove of which contains a preferably rubber gasket 70, which is adapted to be contacted by downwardly-extending flanges 71, formed at the edges of a closure 72. This closure is similar in construction and operation to the closure 9, before described, it being provided with a screw 73, swiveled thereto and engaging a yoke 74, secured to ears 75 upon the ring 69.

The gas-distributing pipe 76 extends from the upper end of the purifier. A pipe 77 connects the lower portion of pipe 62 with the interior of the washer 52 and is adapted to conduct any water or other condensed matter from the pipe 62 back into the washer. A cock 78 is arranged within the pipe 62, thereby permitting the flow of gas to be cut off, and drains, as 79 and 80, are suitably arranged within the receiver 53 and in the gasometer, so as to permit the water and other liquid matter to be readily removed therefrom.

It is believed that the operation of the device will be readily understood from the foregoing description. Carbid is placed in the basket 3 after one of the closures 9 has been removed. Said closure is then placed in position, and the device is ready for use after the gasometer has been filled with water through the tank 22 and the opening 24 therein. After gas has been generated within the generator it passes upward through the pipe 57 in the condenser 56 and thence downward by way of pipe 55 into washer 52. Any condensed matter which may be discharged into the washer will flow through the aperture 54 into the receiver 53. The gas will pass upward from the washer into the bell of the gasometer and will obviously force the bell upward. The bell will continue in its upward movement, and should the gas be generated too rapidly said bell will be lifted to such a height that the tube 49 will be moved into tube 59 and the aperture 47 will be brought to a point above the water-level. The gas will then escape through the apertures and the tubes 49 and 59 into the apertures 60 and the exhaust-pipe 58. The gas within the bell passes downward into pipe 62 and thence upward into pipe 64, from which it escapes to the apertures 65. The gas then passes upward through the pans 67, and after being purified by the material therein flows into the distributing-pipe 76. It will be understood that the upward movement of the bell will remove pressure from the end of the rod 38 and the weighted arm 44 will be free to swing downward, causing the valve to attain its normal position, which is with its passage 31 connecting the ends of the pipes 29 and 30. When the valve is in this position, the water passes from the tank 22 into pipe 29 and thence through the valve into pipe 30, which conducts it to the pipe 21 and receptacle 27. Any air which may be within said receptacle will be forced upward through the exhaust-pipe 28. It will of course be understood that when the disk 35^a is swung around by the downward-moving arm 44 the arm 38 will be raised by the wrist-pin 36. As the gas within the gasometer becomes exhausted the bell 43 will gradually lower until its arm 42 contacts with rod 38. Said rod will then be forced downward, causing the valve to turn and raising the arm 44. The amount of water within the receptacle 27 will then flow downward from pipe 21 to trap 18, and as said trap is filled at all times it will be seen that the water will be promptly discharged upon the carbid within the generator. At the same time communication between the pipes 29 and 21 is cut off. It will of course be understood that the pipe 58 is of sufficient length to permit the bell to move upward thereon until the apertures 47 within tube 46 arrive at a point above the water-level.

In the foregoing description I have shown the preferred form of my invention; but I do not limit myself thereto, as I am aware that modifications may be made therein without departing from the spirit or sacrificing the advantages thereof, and I therefore reserve the right to make such changes and alterations as may fairly fall within the scope of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an apparatus of the character described, the combination with a gasometer having a vertically-movable bell, of a generator, a carbid-receptacle therein, a tank secured to and communicating with the interior of the gasometer, a receptacle within the tank, an air-exhaust pipe extending upward

from the receptacle, a pipe connection between the receptacle and the interior of the tank, a pipe connection between the tank and the interior of the generator, means operated by the movement of the bell and adapted to alternately fill the receptacle and discharge the contents thereof into the generator, and a spray upon the water-inlet to the generator at a point above the carbid-receptacle.

2. In an apparatus of the character described, the combination with a gasometer having a vertically-movable bell, of a generator, a carbid-receptacle therein, a tank secured to and communicating with the interior of the gasometer, a cylindrical valve-casing, a receptacle within the tank, a pipe connection between the valve-casing and the receptacle, a similar connection between the valve-casing and the generator, a pipe connection between the valve-casing and the tank and between said casing and the pipe of the receptacle, a valve within the casing adapted to permit the passage of water from the receptacle to the generator and from the tank to the receptacle alternately, and means operated by the movement of the bell for turning the valve within its casing.

3. In an apparatus of the character described, the combination with a gasometer having a vertically-movable bell, of a generator, a carbid-receptacle therein, a tank secured to and communicating with the interior of the gasometer, a cylindrical valve-casing, a receptacle within the tank, a pipe connection between the valve-casing and the receptacle, a similar connection between the valve-casing and the generator, a pipe connection between the valve-casing and the tank and between said casing and the pipe of the receptacle, a valve within the casing adapted to permit the passage of water from the receptacle to the generator and from the tank to the receptacle alternately, a weighted arm to the valve adapted to hold the tank and receptacle normally in communication, a sliding rod mounted upon the gasometer, a slotted extension thereto engaging the valve, and an arm extending from the bell of the gasometer and adapted to contact with and depress the sliding rod.

4. In an apparatus of the character described, the combination with a gasometer having a vertically-movable bell, of a generator, a carbid-receptacle therein, a tank secured to and communicating with the interior of the gasometer, a cylindrical valve-casing, a receptacle within the tank, a pipe connection between the valve-casing and the receptacle, a similar connection between the valve-casing and the generator, a pipe connection between the valve-casing and the tank and between said casing and the pipe of the receptacle, a valve within the casing adapted to permit the passage of water from the receptacle to the generator and from the tank to the receptacle alternately, inclined sides to the valve adapted to bear upon similar walls of the casing, a threaded stem to the valve projecting through the casing, means for binding the valve against the walls of the casing, a square stem to the valve, a disk engaged thereby, a weighted arm secured to the disk and adapted to hold the valve normally in such position as to permit water to flow from the tank to the receptacle, a wrist-pin upon the disk, a sliding rod upon the gasometer, a slotted extension thereto engaging the wrist-pin, and an arm to the bell of the gasometer adapted to contact with and depress the sliding rod.

5. In an apparatus of the character described, the combination with a gasometer having a vertically-movable bell therein, of a generator, a carbid-receptacle therein, a tank secured to, and communicating with the interior of, the gasometer and adapted to be supplied with water therefrom, a receptacle within the tank, a valve, a pipe connection between said valve and the receptacle and tank, and a pipe connection between the valve and the generator, said valve being operated by the bell of the gasometer, thereby alternately filling the receptacle and discharging the contents thereof into the generator.

6. In an apparatus of the character described, the combination with a gasometer having a vertically-movable bell, of a generator, a carbid-receptacle therein, a tank secured to, and communicating with the interior of the gasometer, a receptacle within the tank, an air-exhaust from the receptacle, a pipe connection between the receptacle and the interior of the tank, a pipe connection between the tank and the interior of the generator and means operated by the movement of the bell and adapted to alternately fill the receptacle and discharge the contents thereof into the generator.

7. In an apparatus of the character described, the combination with a gasometer having a vertically-movable bell, of a generator having openings therein and a removable closure for each opening, a tank secured to, and communicating with, the interior of the gasometer, a receptacle therein, a valve, a pipe connection between the valve and the receptacle and tank, a pipe connection between the valve and generator, a spray within the generator at a point above the carbid-receptacle and means operated by the gasometer-bell for operating the valve and alternately filling the receptacle from the tank and discharging the contents thereof into the generator.

8. In an apparatus of the character described, the combination with a gasometer having a vertically-movable bell, of a generator, a carbid-receptacle therein, normally-sealed closures to the generator, a tank secured to the gasometer and adapted to be supplied with water therefrom, a condenser, a pipe connecting the generator and condenser, a washer within the gasometer, a pipe connecting the condenser and washer, a recep-

tacle within the tank, a valve operated by the movement of the bell and pipes connecting the valve with the tank, the receptacle and the generator, said valve adapted to direct the water either from the tank to the receptacle or from the receptacle to the generator.

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

ARCHIE H. RIFE.

Witnesses:
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A. E. RUSH.