

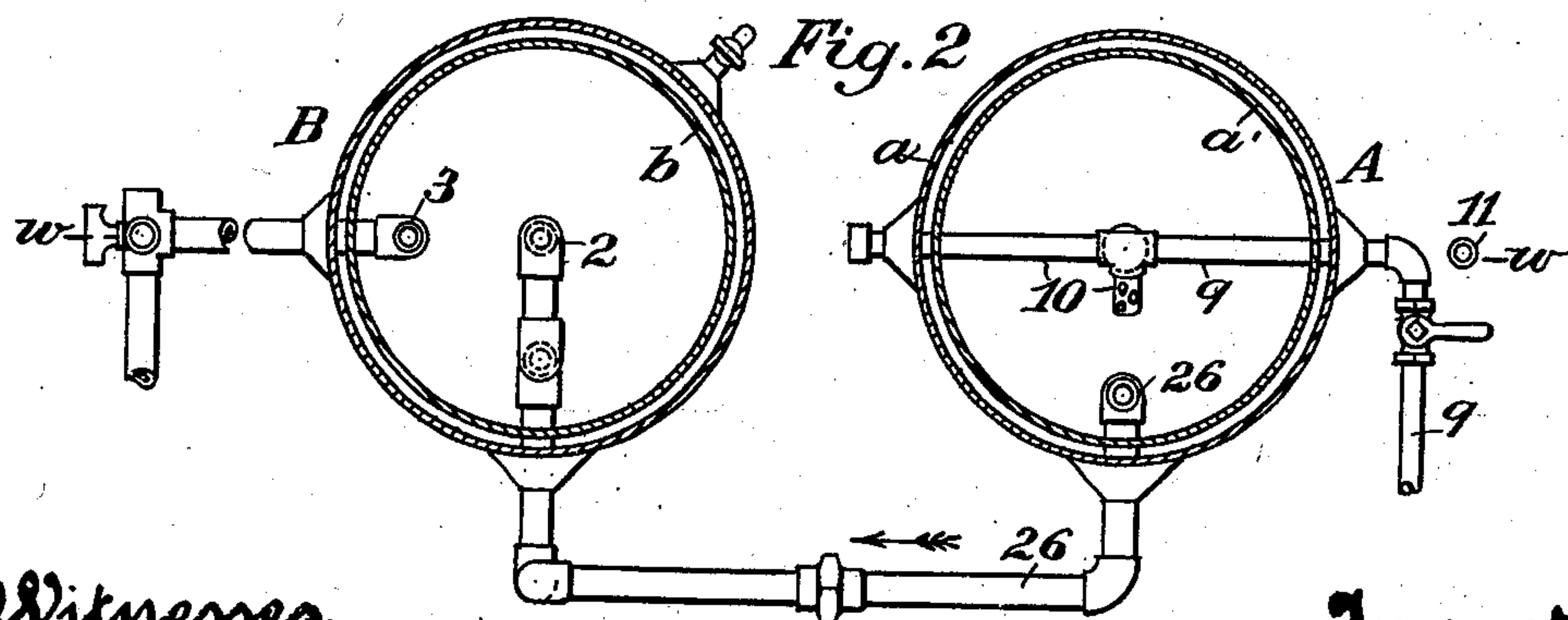
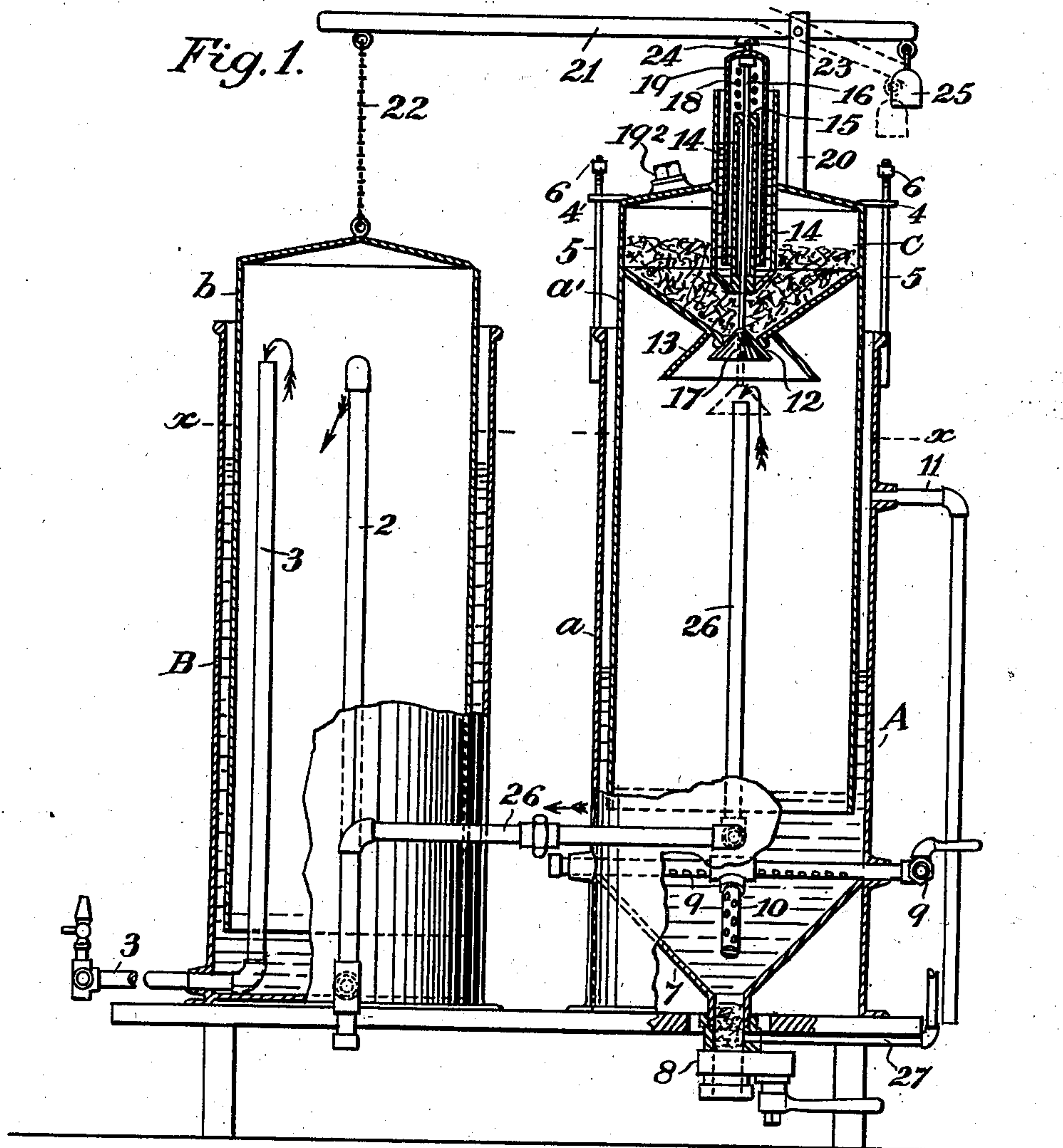
No. 702,092.

Patented June 10, 1902.

A. W. EDWARDS.
ACETYLENE GAS APPARATUS.

(Application filed Sept. 20, 1901.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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ACETYLENE-GAS APPARATUS.

SPECIFICATION forming part of Letters Patent No. 702,092, dated June 10, 1902.

Application filed September 20, 1901. Serial No. 75,711. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR W. EDWARDS, a citizen of the United States, residing at Sacramento, county of Sacramento, State of California, have invented an Improvement in Acetylene-Gas Machines; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in acetylene-gas machines of the class known as "carbid-feed" machines, in which the dry carbid in granulated form is let into the water-containing generator-chamber as needed. Its object is to provide a mechanism adapted for illuminating purposes on any scale in which the parts shall be as few in number as possible and wherein the feeding of the carbid may be automatically effected by a valve mechanism operated by the rise and fall of the gasometer. While feed-valves so operated have been used, they are generally so complicated or so exposed to the corroding and fouling influences of the carbid that they soon lose their required degree of sensitivity and in consequence undesirably augment the fluctuation in pressure within the gasometer.

My invention consists of a generator having its lower portion adapted as a water-containing receptacle, a carbid-chamber in the upper part of said generator, an annular discharge-opening in said chamber, a valve exterior to the chamber whereby the discharge is regulated, said valve of cone shape and having a stem extending upwardly through the chamber, a guide for said stem, telescoping tubes or cylinders inclosing said guide and adapted as a water seal to prevent the escape of any gas from the generator through said guide, and means whereby the rise and fall of the gasometer will tend to close or open the valve.

It also comprises a cone-shaped flange or shield upon the lower part of the carbid-chamber inclosing the discharge-opening, whereby the moisture condensing in the top of the generator is directed away from the valve-seat.

It also includes a novel disposition of pipes in the water-tank of the generator, by which the operation of cleansing the latter is assisted.

Further details will be described hereinafter, having reference to the accompanying drawings, in which—

Figure 1 is a vertical section of my invention, taken on the line *ww* of Fig. 2. Fig. 2 is a horizontal section taken on the line *xx* of Fig. 1.

A and B respectively represent a generator and a gasometer. The latter has the customary rising and falling bell *b* and the usual inlet and discharge openings 2 and 3, respectively. The generator comprises a water-containing receptacle *a* and a bell *a'*, adapted to fit within the latter. The bell is provided with guide-lugs 4, which are slidable on the standards 5, secured to the receptacle *a*. The bell is held in proper position by means of a nut 6. The two parts *a* and *a'* may thus be easily taken apart for inspection, cleaning, or other purpose. The bottom of the tank *a* is made in the form of an inverted cone 7, and a discharge-aperture is made at its apex, through which the water and deposit within the tank may be drawn off at any time. This opening is controlled by any suitable valve mechanism, as 8. Water is admitted to the tank through the pipe 9. This pipe extends transversely across the tank and has a central downward extension 10 in the line of the axis of the cone 7. The pipe 9 within the tank and the extension 10 are perforated, so that when water is let in it is discharged through these perforations over the entire inner surface of the cone and all lime deposit and incrustation thereon are removed. An overflow-pipe 11 prevents the tank being filled beyond a certain point. The upper portion of the bell *a'* is provided with a carbid-chamber C in the form of an inverted cone. The word "carbid" is used herein to designate the ordinary calcium carbid of commerce. An opening 12 is formed at the apex of the cone. On the exterior of the chamber and surrounding the opening 12 is an annular flared or cone-shaped flange 13. Entering the top of the bell and on the line of the axis of the cone C is a tube or small deep cylinder 14, which extends within the cone C, or, as will hereinafter be termed, the "carbid-chamber." The cylinder also projects a suitable distance above the top of the bell. Within and passing through the bottom of

this cylinder is a tube 15. The tube 15 serves as a guide for the stem 16 of the valve 17, which latter regulates the feed of carbid from chamber C into the generator-chamber. The valve is cone form and seats against the walls of the aperture 12 and opens downwardly and outwardly. The flared flange 13 forms a hood, as it were, for the valve, the purposes of which will be mentioned later. The valve 17 is made to seat normally, by means of a helical spring 18, upon the upper end of the stem, which spring has one end bearing against the tube 15 and the other retained by a nut on the stem. A tube 19, closed at one end to form a deep cup or cylinder, telescopes within the cylinder 14 and incloses the spring, stem, and tubular guide 15. When water is placed in the cylinder 14, a perfect water seal is made, so that gas forming within the generator, while it may pass into the carbid-chamber, may not escape through the guide-tube 15. The carbid in granular form is admitted to the chamber C through a suitable opening having a gas-tight closure 19. Upon the top of the bell *a'* is a support 20, upon which is fulcrumed a lever 21 of the second class. The other end of this lever is flexibly connected with the bell of the gasometer B by means of a chain 22. The support 20 is disposed in relation to the parts 14 15 19 so that said parts are intermediate of the support and the gasometer. The lever is provided with a cup-like projection 23, which is adapted to rest upon a projecting pin 24 on the cup 19. The short arm of the lever may be provided with a counterbalance-weight 25. The gas is conducted from the generator to the gasometer by means of a pipe 26.

In operation the generator is first filled with water to a desired height. The carbid-chamber is charged. During the process of charging the lever would be detached from the gasometer-bell or the latter would be wedged up, so as to allow the valve 17 to close. A downward pressure on the lever opens the valve and feeds the carbid to the generator. The gas passes into the gasometer through the pipe 26, while the steam generated at the same time with the gas is condensed on the inside of the top of the generator and flows down and off from the cone or shield 13. Without this shield the moisture would gather around the seat of the valve 17, befouling it and preventing the valve from operating properly. The cone shape of the valve 17 also diverts the carbid in such a way that it falls upon the water in a wide circle and nearer the walls of the generator, so that the rising steam caused by the slaking lime tends to pass up around and outside the shield instead of into the latter. As a consequence only a very small amount of moisture ever collects on the valve. As the gasometer fills the bell *b* rises and gradually allows the lever to lift and close the feed-valve. As the gas is consumed the bell falls, and when it has reached a certain mark the lever is operated to push

down on the valve-stem, and so again admit the carbid to the generator. The operation of feeding thus becomes entirely self-governing, depending only on the consumption of gas in the gasometer. All danger of explosion by the too rapid forming of gas or of an excessive amount of gas in the generator is obviated by reason of the water seal formed by the parts *a'* and *a*, one within the other, and also on account of the seal in cylinder 14.

The slaked carbid has a tendency to settle in a dense mass several inches thick on the bottom of the generator, and it is frequently necessary in cleaning out the tank first to make a passage-way or hole through this deposit, so the water even may be run off. I have placed a small pipe and nozzle 27 in the opening of the discharge-valve, through which a jet of water may be projected upward to assist in the cleansing process.

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

1. An acetylene-gas machine, comprising in combination a gasometer, a generator including a water-containing receptacle and a bell adapted to fit within the latter, uniting-passages between the gasometer and generator, a carbid-containing chamber in the upper part of said generator-bell, a discharge-opening in said chamber, a valve opening outwardly and downwardly and adapted to control said opening, means including a spring-pressed stem extending through the top of said bell whereby said valve is normally closed against said opening, and a lever of the second class on the outside of the generator-bell and connected with the bell of the gasometer, by means of which lever said valve is made to open and close by the rise and fall of the bell.

2. In an acetylene-gas machine, the combination with a generator composed of separable, telescoping cylinders, water supply and discharge openings in said generator, a carbid-chamber in the top of said generator, a discharge-aperture in the bottom of said chamber, a valve exterior to the chamber and fitting said aperture, the stem of said valve extending through said chamber to the exterior of the generator, means including a tube extending above and below the top of the generator and an inverted cup within said tube and extending above the same said means forming a water seal about said stem to prevent the escape of gas from the generator, a spring by which the valve is normally kept closed, and a lever bearing upon the cup whereby said valve may be opened to admit carbid to the generator-chamber.

3. In an acetylene-gas machine, the combination with a generator, of a carbid-chamber therein, a discharge-opening in the bottom of said chamber, a valve seating in said opening exterior to the chamber, a valve-stem, a tubular guide for said stem, said guide closed at both ends and extending above and below the

top of the generator-casing, means including a tube and an inverted cup both extending above and below the top of the generator-casing and forming a seal whereby gas may not escape through said guide, and a spring bearing upon the end of said guide and against the end of the stem whereby the valve is held in a normally closed position.

4. In an acetylene-gas machine, the combination with a generator, of a carbid-chamber, a discharge-aperture therein, a cone-shaped valve seating therein and adapted to open outwardly into the generator-chamber, a conical flange or hood upon said carbid-chamber and inclosing said valve, a stem on said valve, said stem extending upwardly through said carbid-chamber, a closed tubular guide for said stem, a fixed cylinder inclosing said guide, and extending above and below the top of the generator-casing, a means by which a seal with said cylinder may be formed to prevent the escape of gas around said stem, a spring by which said valve is made normally to seat, and a lever mechanism whereby said valve may be operated.

5. An acetylene-gas machine consisting in combination of a gasometer, a generator, water supply and discharge openings, a carbid-

chamber in said generator, a discharge-aperture in said chamber, a conical hood or flange surrounding said aperture, a valve seating in the latter and adapted to discharge the carbid radially within the generator-chamber, a stem for said valve, a tubular guide in which said stem is slidable, a spring by which said valve is normally held in closed position, a fixed cylinder open at its outer end extending into the carbid-chamber, and through which said guide passes, a second cylinder slidable within said fixed cylinder, and adapted to form a water or like seal therewith, said slidable cylinder inclosing and supported by said stem, and both cylinders and the guide extending above and below the top of the generator-casing and a lever of the second class fulcrumed upon the generator and adapted to bear upon the top of the slidable cylinder to operate the above-mentioned valve in relation to the rise and fall of the gasometer-bell.

In witness whereof I have hereunto set my hand.

ARTHUR W. EDWARDS.

Witnesses:

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