No. 670,657. Patented Mar. 26, 1901.

# W. J. BAULIEU.

## ACETYLENE GAS MACHINE.

(Application filed Sept. 15, 1899. Renewed Sept. 8, 1900.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

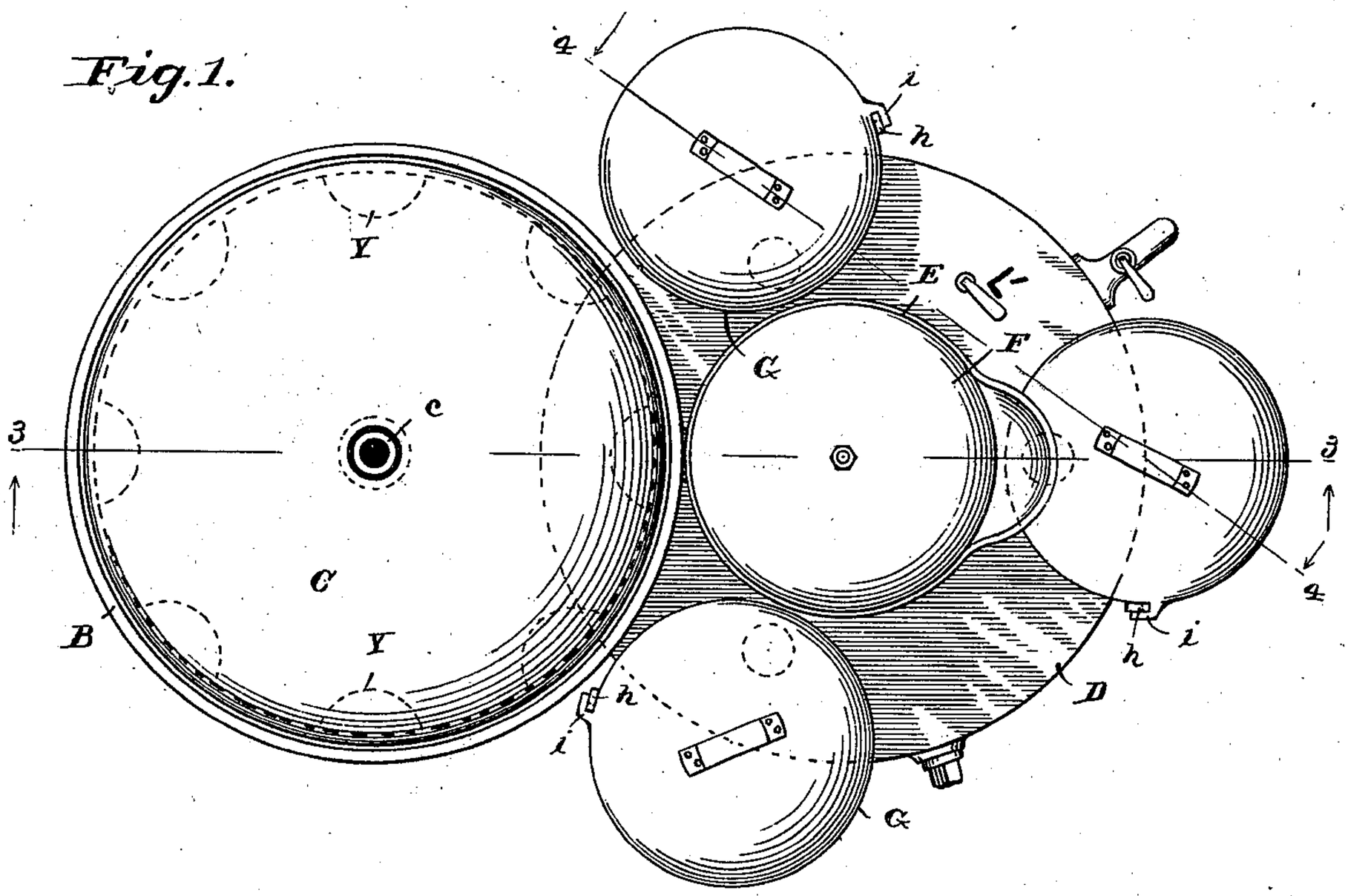
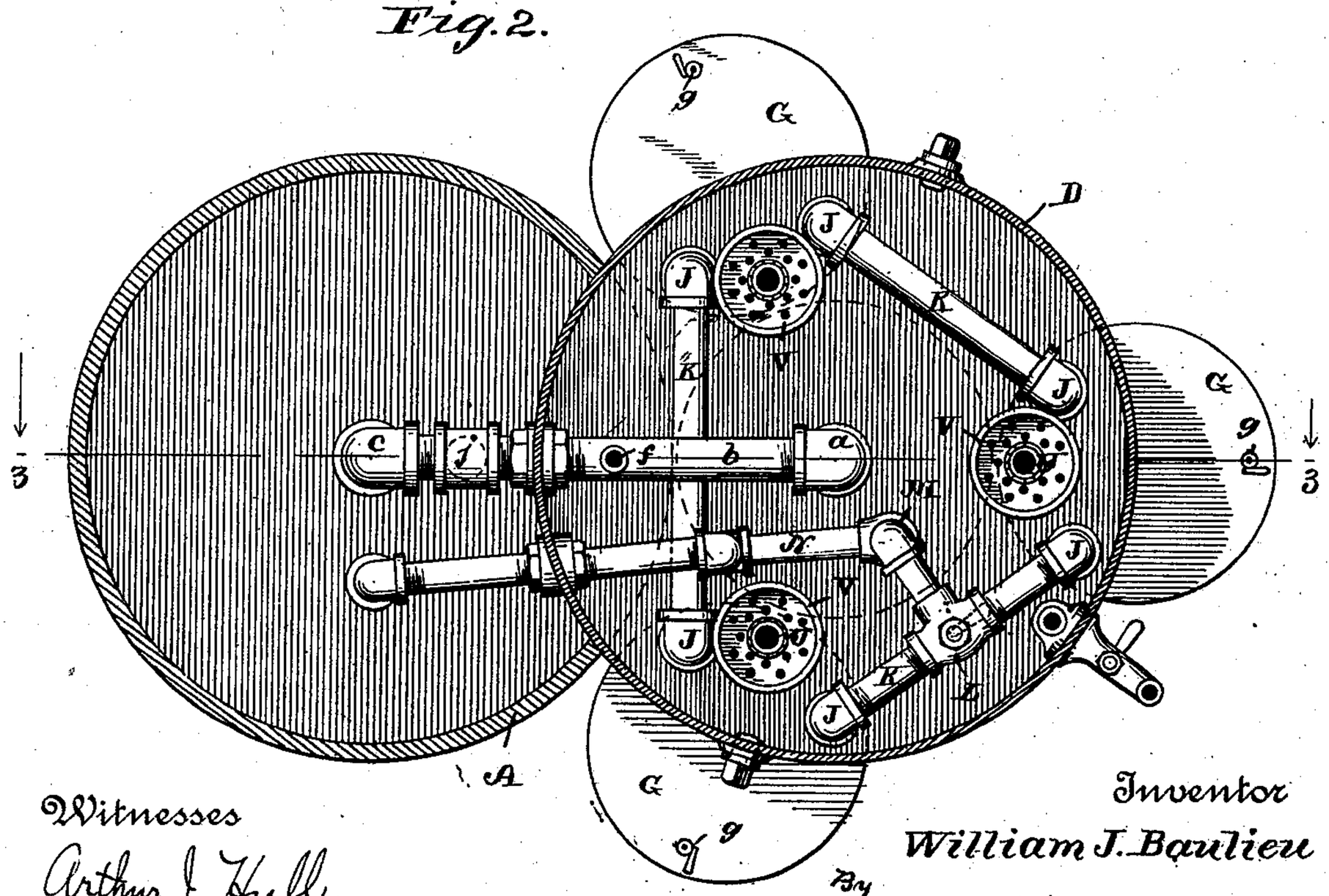



Fig. 2.

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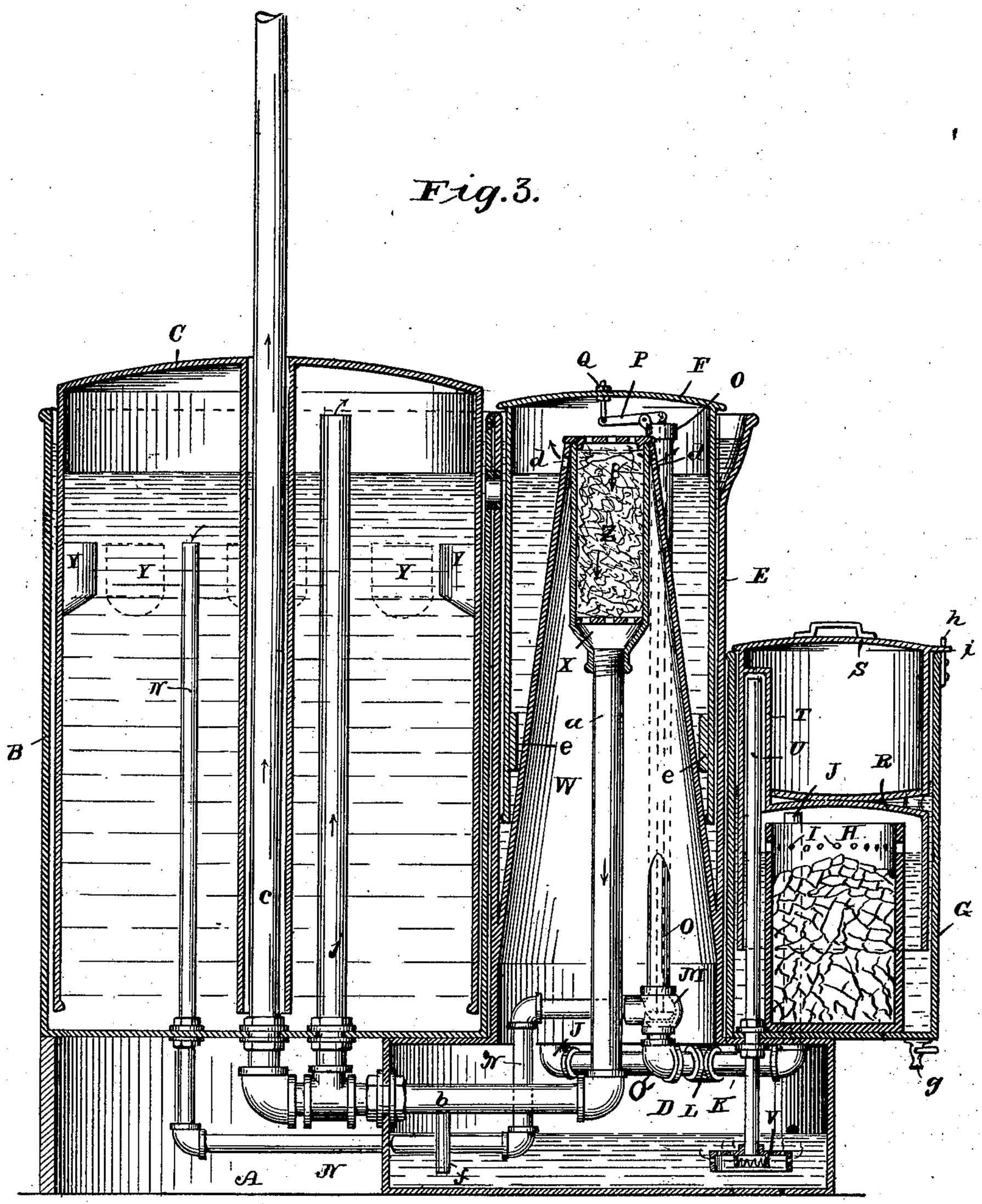
(No Model.) 3 Sheets—Sheet 2.

*Fig. 3.*

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(No Model:)

3 Sheets—Sheet 3.

*Fig. 5.*

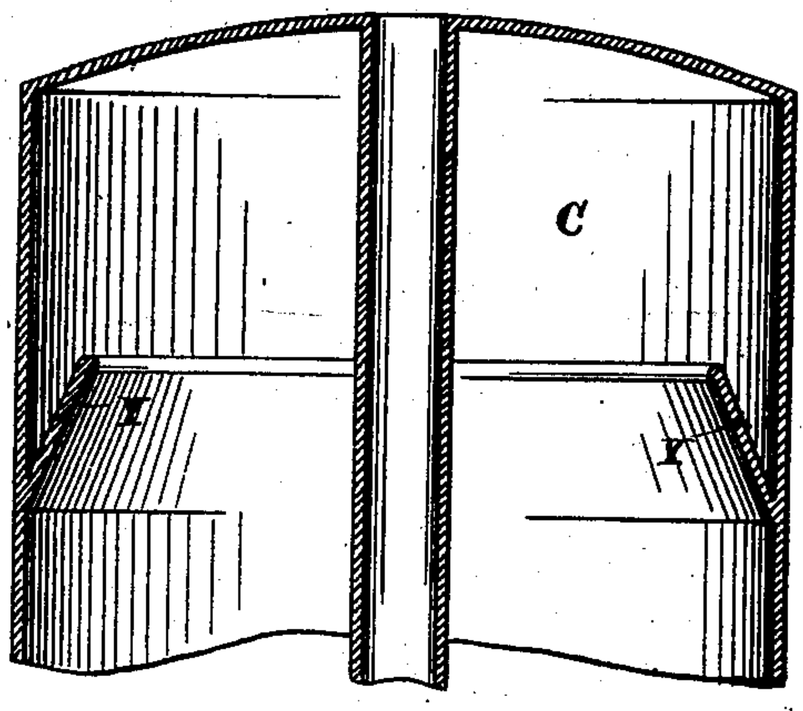
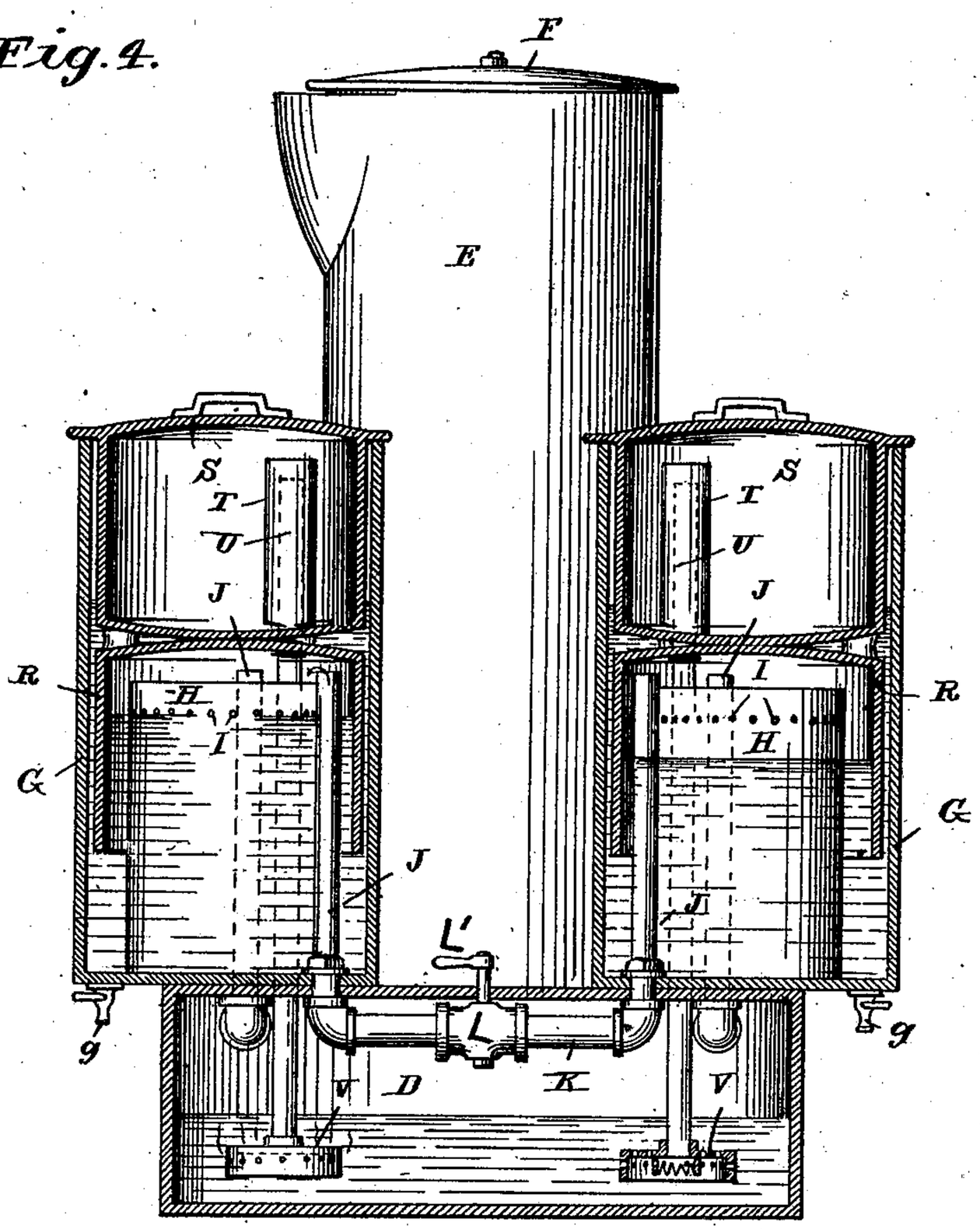



*Fig. 4.*

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# UNITED STATES PATENT OFFICE.

WILLIAM J. BAULIEU, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR OF ONE-HALF TO JOHN D. CARPENTER, OF SAME PLACE.

## ACETYLENE-GAS MACHINE.

SPECIFICATION forming part of Letters Patent No. 670,657, dated March 26, 1901.

Application filed September 15, 1899. Renewed September 8, 1900. Serial No. 29,436. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM J. BAULIEU, a citizen of the United States, and a resident of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Acetylene-Gas Machines, of which the following is a specification.

My invention relates to gas-machines of the acetylene type and comprises improvements on several of my prior inventions and novel features which are equally applicable to other styles of machines.

It is the object of my invention to improve the efficiency of gas-machines in several important particulars, the first of which is to provide a more sensitive mechanism for governing the supply of water to the carbid-generators; second, to improve on the means of distributing the gas in the wash and for otherwise purifying the gas, and finally to simplify and further improve the construction of machines whereby a larger percentage and improved quality of gas are obtained from the carbid with comparatively little attention by the user.

With the above object in view my invention resides and consists in the novel construction and combination of parts set forth in the accompanying three sheets of drawings, forming a part of this specification, and upon which similar characters of reference denote like or corresponding parts throughout the several figures, and of which—

Figure 1 shows a plan view of my complete machine. Fig. 2 shows an inverted sectional plan view of Fig. 1. Fig. 3 shows a central vertically-longitudinal section taken on line 3 3 of Fig. 1. Fig. 4 shows a central vertical cross-section on line 4 4 of Fig. 1 and illustrates the pipe connections of said generators and the relation of one with the other. Fig. 5 is a detail view of the top portion of a bell used in my machine and showing therein a modification which will later be again referred to.

The construction of my machine, as will be apparent, embodies a storage-gas reservoir which is fed from an intermediate reservoir containing a purifier and through which the gas passes from the several generators, of which I have illustrated three in the drawings. It will be apparent, however, that a greater number of these generators may be employed, in which case they would be connected one with the other, as is the case in my present construction.

Referring in detail by letters of reference to the construction of my machine, A indicates a base for the tank B of the storage-reservoir, and C the bell thereof.

D indicates the wash-tank, which also serves as a support for the tank E of the intermediate reservoir, of which F is the bell. The tanks G of the several generators are also supported upon the tank D, as will be apparent from the several figures of the drawings.

Since the several generators are alike in construction, I will use the same reference characters to indicate like parts through each of them.

H indicates a carbid-pot, which may be in the form of a bucket and provided with a suitable handle whereby it can be removed from time to time for recharging. This pot, as will be apparent, is set down in the water of the tank G. Said water is increased from pipe J until it reaches the level of the perforations I of the pot, through which it is fed onto the carbid, whereby gas is generated. Said water referred to within the tank G is increased from time to time from the supply in the main storage-tank through the following connections: A pipe J projects up within the tank G and is connected (see Figs. 2, 3, and 4) by a horizontal pipe K with the adjoining generator, whereby the water may be fed from one generator to another as they become flooded. Within one of these horizontal pipes K, I locate a three-way valve L, the handle L′ of which projects up through the covering of the wash-tank, as will be apparent. Said valve is connected by a valve M, which regulates the feed-water to the generators and which is connected to a pipe N from the water-supply of the main storage-tank. The stem of the valve M is inclosed within a pipe O and is provided at its upper end with a lever P and connection Q with the top of the bell of the intermediate reservoir. It

will thus be apparent that when said bell rises with an excessive accumulation of gas the valve in question will immediately be closed with considerable force and so held until the pressure from the bell F is released.

Referring again to the water connections of the generators, it will be seen that there are two pipes of equal heights for each generator, (see Fig. 4,) one of them constituting an inlet and the other an outlet and each being a part of a U-shaped connection. The water is fed through the valves L and M before mentioned to one of the adjoining generators and then to the successive generators in their respective orders as they become flooded.

The inclosure for the generators comprises a bell R, which is provided with a cylindrical extension-top S, having a flanged cover to rest upon the rim of the tank. Said cylinder only serves as an empty extension, whereby the bell may finish even with the top of the generator. An internal barrel-shaped inclosure T is located in the cylinder and forms an extension for the bell of the generator and through which the gas passes to the pipe U for delivery to the wash. The tanks of the several generators may be provided with cocks *g*, whereby the water can be drawn off from time to time should occasion require. The flanges of the covers of said generators are also provided with locking mechanism which, as will be seen, comprises simply a notch *h*, under which an extension *i* of the cover is turned.

The lower end of the pipe U is provided with a distributer in the form of a perforated disk V, having an annular depending flange. The purpose of this distributer is to afford a cheap and desirable construction for breaking up or separating the volume of gas as it flows into the water. The perforations in question are preferably very fine to insure a small stream of gas passing through each. From this distributer the gas is washed through the water of the tank and finds its way up through the internal conical-shaped wall W of the tank E and emerges through perforations *d* at the top and into the bell F of the intermediate reservoir, where said gas is again exposed to the surface of the water contained in said reservoir. The gas next passes through the purifier X, which consists of a cylindrical body having a perforated top and bottom, the intermediate chamber being filled with a suitable packing Z, such as cotton or other like material. From the above it will be apparent that the gas enters the perforated cover and passes through the packing and out through the bottom. From said purifier the gas is passed down through a pipe *a* into a horizontal pipe *b* and up through the main pipe *c* for service. Within the horizontal pipe *b* I locate a branch pipe *j*, through which the excessive supply of gas is delivered up into the storage-reservoir and whereby the gas from said tank may in turn be delivered to the main pipe for service. I also preferably provide said pipe *b* with a drip *f*, as will be apparent in Figs. 2 and 3, which permits of the escape of any fluid which may accumulate therein.

Within the bell of the main storage-tank I provide a pocket or a series of pockets Y, which in a measure act as a weight and afford at a desired time a resistance to the upward movement of the bell, whereby the movement of the bell of the intermediate reservoir is controlled by the movement of the other.

The foregoing will be best understood when explained, as follows: When the valve M is open, the water flows from the storage-tank into the carbid-generator, from whence the gas escapes through the wash and up into the bell F of the intermediate reservoir. This reservoir being weighted, as at *e*, a resistance is afforded, and the gas flows on to the adjoining storage-reservoir, causing its bell to rise, whereby the latter draws the pockets up through the water until the top level is reached, when the extra weight of said pockets and the fluid contained therein affords a marked resistance to the movement and backs the gas into the bell of the first reservoir, causing the same to rise, whereby the valve M is quickly and firmly held by the weights in question and the flow for service would likewise be more desirable.

With a weighted bell and connections as herein described the relative position of the two bells when in use is that the larger one stands higher than the smaller one until the pockets begin to emerge from the water and that throughout the operation of the machine the pockets of the large bell play to and fro in and out of the water in accordance with the quantities of gas contained in the bells.

In the modification shown in Fig. 5 it will be seen that I have illustrated an annular pocket instead of a series, as indicated in the other figures. This is obviously cheaper to construct and fully as practicable in every particular. I therefore do not wish to be limited to the construction shown in my preferred form. In fact, I do not wish to be limited to fluid-pockets of any kind, since a construction of weights may be provided whereby at a given time the force of the same may be applied to the bell to retard its movement and to back the gas into the bell of the intermediate reservoir for operating a valve to control the supply of water to the generators proper.

The wash-tank D is preferably closed, so as to prevent the escape of water therefrom, since I find in practice that it is particularly desirable to retain the same water for washing purposes as long as possible, as said water becomes charged with substances from the gas and better adapts it for cleansing and with less loss of gas from passage therethrough. I also find that after using the water for a time with the construction as herein

illustrated it is possible when covering the generators to inclose a quantity of air within the bell and force said air down through the pipe O and through the wash, taking with it more or less of the gases therefrom in a manner to further improve the quality and increase the quantity.

The operation of my machine is as follows: The water for the generator is taken in through pipe N and the quantity thereof is governed by the valve M, which latter in turn is controlled by the operation of the bell E of the intermediate reservoir. The water passes through valve M and is deflected by valve L to the right or left in one of the adjoining generators. The gas made by this inflow of water escapes through pipe U and its distributer into the water, from which it escapes and passes up into the conical wall and emerges through the perforations under the bell of the intermediate reservoir. From this reservoir the gas passes through the purifier to the large reservoir, when the gas acts to raise the bell. As the pockets of this bell emerge from the water a weighted resistance is offered to the movement of the bell, and consequently the gas is backed into the intermediate reservoir, causing its bell to rise, which immediately acts on the valve M and cuts off the supply of water. By reason of the connecting U-shaped pipes J and K the generators are permitted to overflow one into the other, thus successively exhausting the carbid thereof.

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

1. In a gas-machine, the combination with one or more generators, of a water-supply therefor, a reservoir having an expansible bell, pipe connections, a valve within said supply having operating connections with said bell, a conical-shaped internal wall to the tank of said reservoir, and having perforations around its upper periphery, a purifier located within said conical-shaped wall and a service-pipe leading from said purifier, substantially as described.

2. In an acetylene-gas machine, the combination with the generator, of a water tank and pipe leading from the former to the latter, a perforated disk located upon the delivery end of said pipe, having a depending annular flange and perforations in both the main body of said disk and its flange, all adapted to be submerged within the water-tank for distributing the flow of gas therein, substantially as described.

3. In an acetylene-gas machine, the combination with the generator, of a water tank and pipe leading from the former to the latter, a perforated disk located upon the delivery end of said pipe, having a depending annular flange and perforations in both the main body of said disk and its flange, all adapted to be submerged within the water-tank for distributing the flow of gas therein, an inner depending flange surrounding the pipe-opening, and having a serrated edge, substantially as described.

4. In a gas-machine, the combination with one or more generators, of a reservoir comprising a tank and expansible bell, an annular pocket formed on said bell and adapted to be submerged in the water and retard the movement of said bell at a predetermined time, an intermediate reservoir connected with both said expansible bell and the generators, a conical-shaped internal wall to said intermediate reservoir and having perforations around its upper periphery to introduce the gas under the bell, a purifier located within said conical-shaped wall and having a perforated cover to admit the gas, a service-pipe leading from the bottom of said purifier, a water-feed pipe connecting the main reservoir and the generators, a valve located in said pipe, a stem and lever connecting the valve with the bell whereby its action is controlled by the movement of said bell.

5. In a gas-machine, the combination with one or more generators, of a reservoir comprising a tank and expansible bell, an annular pocket formed on said bell and adapted to be submerged in the water and retard the movement of said bell at a predetermined time, an intermediate reservoir connected with both said expansible bell and the generators, a water-feed pipe located in said second reservoir and provided with a valve to govern the supply of water to the generators, connections with the stem of said valve from the bell of the intermediate reservoir whereby said valve is operated by the movement of said bell.

Signed at Bridgeport, Connecticut, this 14th day of September, 1899.

WILLIAM J. BAULIEU.

In presence of—
J. D. CARPENTER,
C. M. NEWMAN.