

No. 776,756.

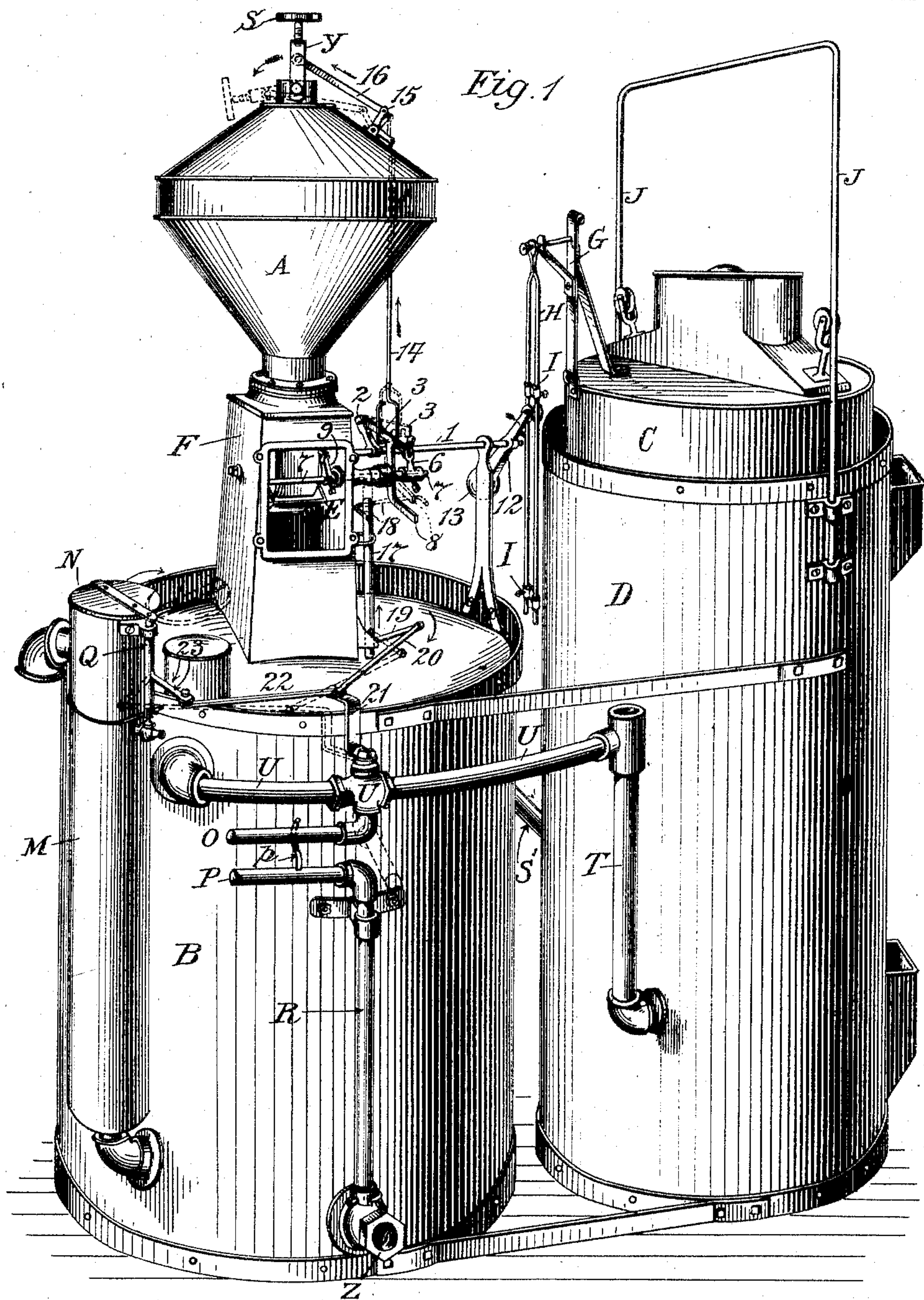
PATENTED DEC. 6, 1904.

L. P. POWELL.
ACETYLENE GAS GENERATOR.

APPLICATION FILED FEB. 12, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses
Edward C. Dowland.
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Inventor
Luther P. Powell
By his Attorney
Charles J. Kirtner

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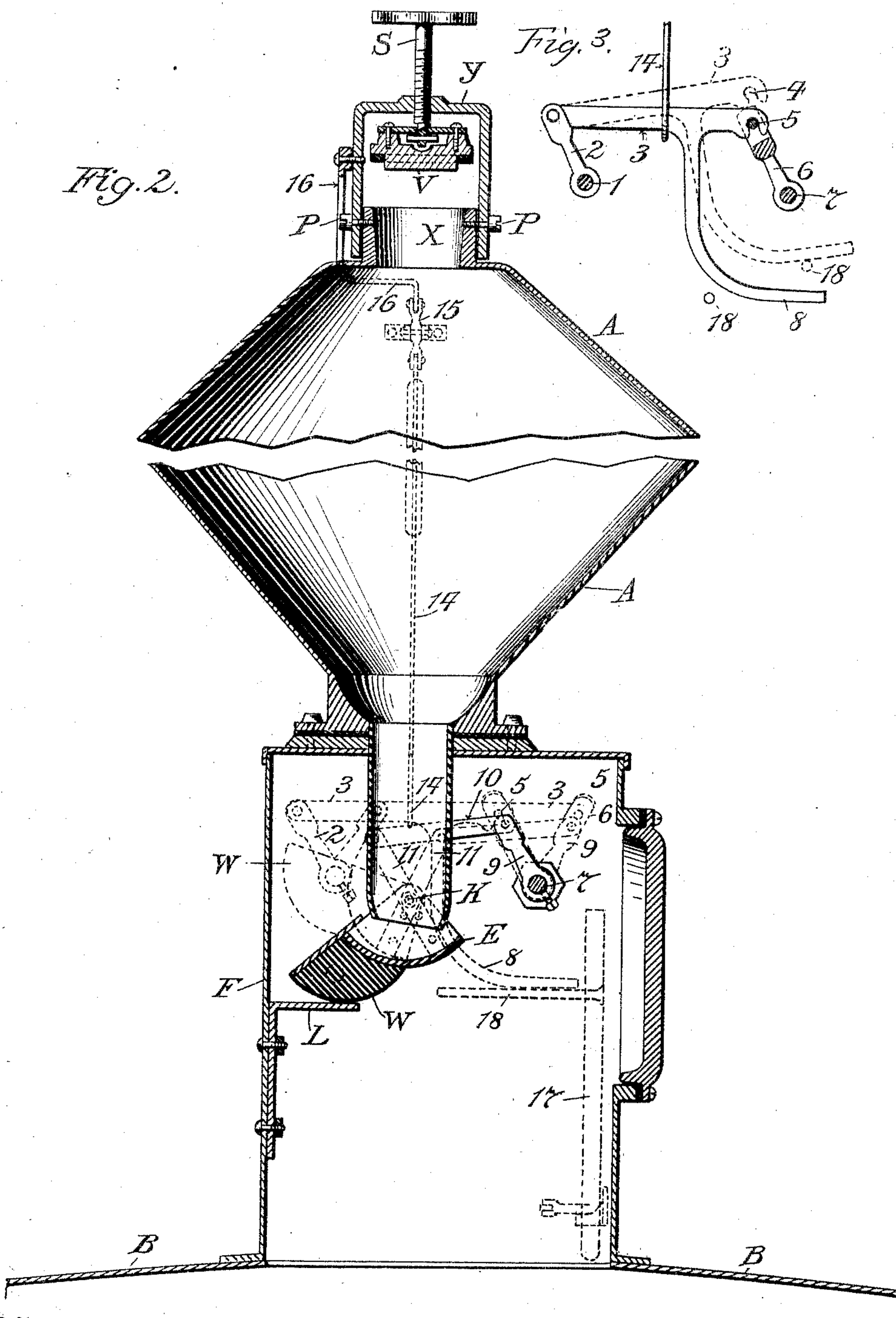
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UNITED STATES PATENT OFFICE.

LUTHER P. POWELL, OF LONG ISLAND CITY, NEW YORK, ASSIGNOR TO
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ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 776,756, dated December 6, 1904.

Application filed February 12, 1904. Serial No. 193,302. (No model.)

To all whom it may concern:

Be it known that I, LUTHER P. POWELL, a citizen of the United States, residing in Long Island City, (New York,) county of Queens,
5 and State of New York, have made a new and useful Invention in Acetylene-Gas Generators, of which the following is a specification.

My invention is directed particularly to that type of acetylene-gas generators in which the
10 gas is generated by gravity-feed apparatus—that is to say, apparatus by which the carbid is allowed to be fed automatically into the generating-chamber through the agency of means controlled by the movements of the
15 gasometer as the gas is generated and consumed; and it has for its object the provision of means for preventing explosions in the use of gas-generators and systems of this type.

To this end it consists, first, in providing
20 means for preventing the possibility of feeding the carbid into the generating-chamber when the carbid-containing chamber or hopper is open or is being filled; second, in providing means for effecting the same result
25 when the generating-chamber is being flushed or cleaned; third, in providing means for effecting the same result when the vent-pipe which connects the generating-chamber with the blow-off pipe is open; fourth, in providing
30 means for effecting the same result when the water filling and overflow pipe connected with the generating-chamber is open.

In short, my invention is designed to avoid in so far as possible any danger of generat-
35 ing gas when the machine is not normally in condition to perform its complete function as a generator.

For a full and clear understanding of my invention, such as will enable others skilled
40 in the art to construct and use the same, reference is had to the accompanying drawings, in which—

Figure 1 is a perspective view of a complete generator and gasometer embodying my
45 improvements, the door of the feed-chamber being removed for the purpose of giving a better view of the structural arrangement of

the feeding apparatus. Fig. 2 is an enlarged vertical sectional view taken through the top of the generating-chamber, the feed-cham- 50 ber, the carbid hopper or chamber, and the attached parts, illustrating also, partly in dotted lines and partly in full lines, the structural arrangement of the carbid-feeding apparatus and its connection with the valve or 55 cover which closes the opening at the top of the carbid-hopper, the door, however, of the carbid-feeding chamber in this view being shown in position. Fig. 3 is a detail view illustrating the essential parts of my improve- 60 ment as connected with the feed-controlling apparatus.

Referring now to the drawings in detail and first to Fig. 1, A represents the carbid- 65 hopper, located, as usual, above the carbid-feeding chamber F, secured directly to the top of the generating-chamber B.

C represents the gasometer seated in the usual gasometer-tank D, and E (see Fig. 2) represents the carbid-feeding cup, pivotally 70 supported beneath the carbid-hopper A upon trunnions K K at its opposite ends.

H represents a double or duplex feed-bar pivotally supported at its upper end to a horizontal rod sustained in turn by a standard G, 75 attached directly to the top of the gasometer C.

I I represent sliding stops adapted to be adjustably secured at different points of the feed-bar H by set-screws, as shown.

J J represent guide-standards secured di- 80 rectly to the top of the gasometer-tank for guiding the gasometer in its ascent and descent in the usual way.

L (see Fig. 2) represents a ledge or shelf on the inside of the feed-chamber adapted to 85 support the heavily-weighted portion W of the feed-cup E.

M represents the water overflow and filling pipe, connected at its lower end directly to the interior of the generating-chamber and 90 provided at its upper end with a cover or cap N, supported upon a vertically-disposed shaft Q, journaled in journal-bearings connected directly to the side of said pipe.

R represents the operating-rod for opening the flushing-cock in the flushing-pipe Z at the bottom of the generating-chamber, said operating-rod being provided with the usual handle P, having an upwardly-extending pin *p*, bearing at its upper end against the inner side of an operating-handle O, adapted to control the movements of a cock in the vent-pipe U, connected directly to the generating-chamber on one side and to the blow-off pipe T on the other, which is connected in the usual manner to the condensing-chamber near the bottom of the gasometer.

V represents a gas-tight valve or cover supported by a hand-screw S in a yoke Y, pivoted to the neck X of the carbid-hopper and adapted when seated to effectually close said hopper against the escape of any gas which may accumulate therein.

S' represents the supply-pipe connecting the generating-chamber with the gasometer in the usual way.

I will now describe the especial features of novelty which constitute the essence of my invention, the same being, as hereinbefore indicated, directed particularly to means for preventing any possibility of feeding the carbid from the carbid hopper or chamber into the gas-generating chamber when the complete apparatus thus far described is not performing its complete function as a generator in the generation and use of the gas generated.

1 represents a horizontally-disposed shaft journaled at one end in the side of the feed-chamber F and at the other to a standard secured directly to the top of the generating-chamber B. 2 represents a crank secured directly to said shaft and supporting at its free end a pivoted latch 3, the disengaged end of which has a notch 4, adapted to engage under normal conditions a pin 5, secured to the forked end of a crank 6, secured in turn to a shaft 7, journaled in a suitable journal-bearing attached directly to one side of the feed-chamber F and extending through said journal-bearing into the feed-chamber, said shaft being provided at a point inside the feed-chamber with a second crank 9 to the free end of which is pivoted a link 10, attached in turn to a third crank 11, connected directly to one of the trunnions K, which support the pivoted weighted feed-cup E, the normal condition of said cup when carbid is being fed into the generating-chamber being, as shown in full lines in Fig. 2, with the heavy weight W upon the ledge or shelf L.

12 is an operating-arm attached to the outer end of the shaft 1 and having a weight 13 at one end adapted to hold the feed-cup normally in the position shown in Fig. 2, the other end of said arm 12 being provided with a grooved roller adapted to move between the two parts of the double or duplex feed-bar H, the limits

of said movement being controlled by the adjustable stops I I and the arrangement such that the united action of the weights 13 and W tend strongly to turn the feed-cup E into the position shown in Fig. 2, so as to cut off the flow of carbid to the generator.

14 is a vertically-disposed link or chain having a loop at its lower end which surrounds the latch 3, the upper end of said link being connected to one arm of a bell-crank lever 15, pivotally secured to the top of the carbid-hopper A, the other arm of which is connected in turn by a second link 16 to the yoke Y, which supports the valve V, the arrangement being such that when said valve is in its closed position with the yoke vertically disposed the free end of the latch 3 will rest with the notch 4 surrounding the pin 5, so that the feed of the carbid may be successively effected and shut off as the gasometer descends and ascends.

8 is a downwardly-extending angular arm integral with the latch 3 and located in the path of a laterally-extending arm 18, secured to or integral with the upper end of a vertically-disposed rotary and sliding rod 17, having bearings attached to one side of the feed-chamber F.

19 is an arm secured directly to the rotary and sliding rod 17 at a point near its lower end and having its free end pivotally secured to a link 20, connected in turn to an angular bar 21, secured directly to the end of the cock in the vent-pipe U, one portion of the arm 19 being so arranged with relation to a spirally-disposed sliding surface *s*, attached to the outer face of the feed-chamber F, that when the arm is rotated it will cause the arm 19, and hence the curved arm 18, to be raised and rotated simultaneously and to pass under the angular arm 8, as will be more minutely described in connection with the description of the operation. 22 is a link similar to 20, attached also to the angular bar 21 and pivotally secured at its other end to a short arm 23, secured in turn to or integral with the shaft Q, journaled, as before described, to one side of the water-overflow pipe M.

Upon the supposition that the carbid-hopper A is filled with carbid and the valve V in its lower or closed position, with the yoke Y located in its vertical position, as shown in Fig. 1, the consumption of the gas in the gasometer C as it descends in the usual manner until the upper stop I comes into mechanical contact with the roller at the free end of the lever 12 will rotate said lever and its supporting-shaft 1 in the direction of the arrow, simultaneously imparting, through the crank 2, latch 3, pin 5, crank 6, shaft 7, crank 9, link 10, crank 11, and trunnion K, a rotary motion in such direction as to rotate the feed-cup E and weight W and parts already described into the position shown in dotted lines in Fig. 2. Consequently as the carbid descends into

the generating-chamber gas is generated in the usual manner and flows through the supply-pipe S' into the condensing-chamber at a point below the open end of the gasometer C.

5 Therefore as gas is generated by the carbid falling into the water it causes the gasometer to rise, and as it rises the upper stop I is lifted off the friction-roller on the end of the arm 12 and allows the weight 13 and weight W on the feed-cup E to rotate the cup to its normal or closed position, as shown in Fig. 2. Should the two weights fail to do so and gas continue to be generated, the gasometer will ascend to its extreme limit, so that the lower stop I will ultimately come into mechanical contact with the friction-roller on the end of the arm 12, and through the united action of the weights and the gasometer the cup E will return to its absolutely-closed position, as shown in Fig. 2. This operation continues in a manner well understood in accordance with the generation and consumption of the gas. Should it be desired to open the carbid-hopper at any time, the screw S is actuated through the hand-wheel shown and the valve or cover V lifted, after which the yoke Y and its supported parts, including the valve, are turned in the direction and into the position shown in dotted lines and by the arrow, Fig. 1, so that as said yoke is moved the latch 3 is lifted by reason of the action of the links 16 and 14 and bell-crank lever 15 into the position shown, so that the united action of the weights W and 13 will assure the movement of the feed-cup to the position shown in Fig. 2.

Should it be desired to open the cock in the vent-pipe U at any time or to open the cock in the flushing-pipe Z by operating either or both of the handles P or O, it will be seen that by reason of the connection of these cocks the sliding rod 17, through the agency of the angular bar 21 and connected links and arms and arm 18, will be rotated and lifted under the angular extension 8 of the latch, so as to lift it into the position shown in dotted lines in Fig. 1, thereby cutting off the carbid supply. The same action of either of the cocks referred to will for like reason, because of the connection of the link 22 and arm 23 to the angular bar 21, cause the cover or cap of the overflow and filling tube M to be removed, so that it is apparent that by no possibility can any of the essential operative parts of the machine be disturbed from their normal operative conditions without cutting off the feed-supply of the carbid, thus assuring the fact that the generation of gas will discontinue when this is effected.

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

1. An acetylene-gas generator provided with a generating-chamber; a carbid hopper or chamber and a removable cover therefor;

in combination with means beneath the carbid hopper or chamber for feeding the carbid into the generating-chamber; together with interconnecting means between the carbid-feeding means and the gasometer for automatically feeding the carbid into the generating-chamber, and additional means between the lid or cover of the carbid-hopper for disconnecting the interconnecting means between the gasometer and the feeding means when the cover of the carbid hopper or chamber is open, substantially as described.

2. An acetylene-gas generator provided with a generating-chamber; a carbid hopper or chamber having a removable cover; means for feeding the carbid from the hopper into the generating-chamber; a gasometer and interconnecting means between the gasometer and the feeding means for automatically effecting the feed of the carbid; the cover of the carbid-chamber being mechanically connected to the feeding means by a rod and a pivoted latch, all so arranged that when the lid or cover is opened or removed the automatic feed mechanism is wholly disconnected from the gasometer, substantially as described.

3. An acetylene-gas generator provided with the following elements; a generating-chamber; a feed-chamber inclosing the feeding mechanism; a carbid-hopper and a removable cover therefor; a vent-pipe having a controlling-cock; a flushing-pipe provided also with a controlling-cock, said cocks being movable independently, and an overflow and filling pipe provided with a removable cover; in combination with interconnecting means between the cover of the carbid-hopper, the cocks of the vent-pipe, the flushing-pipe and the lid or cover of the overflow and filling pipe; together with a gasometer operatively connected with the feeding mechanism and interconnecting means between the cover of the hopper for disrupting the connection between the gasometer and the feeding means, whereby when either of the covers or cocks is open the feeding means is wholly disconnected from the gasometer and automatic feed absolutely prevented, substantially as described.

4. An acetylene-gas generator provided with a pivoted feed-cup weighted on one side; a rotary shaft having interconnecting means between it and the feed-cup, said rotary shaft being provided with an operating-arm having a weight adapted to act conjointly with the weighted end of the cup; in combination with means carried by the gasometer for positively operating the feeding mechanism on its descent, so as to deliver carbid into the generating-chamber; additional means for operating in the same direction as the two weights when the gasometer reaches its extreme upper limit on its ascent; a carbid-hopper provided with a removable cover and interconnecting

means between said cover and the means
which connects the gasometer to the feeding
means, all so arranged that when the cover of
the carbid-hopper is removed, or when the
5 gasometer reaches its extreme upper limit,
the automatic feed of the carbid is absolutely
prevented, substantially as described.

In testimony whereof I have signed my name
to this specification in the presence of two sub-
scribing witnesses.

LUTHER P. POWELL.

Witnesses:

C. J. KINTNER,
M. F. KEATING.