

No. 672,187.

Patented Apr. 16, 1901.

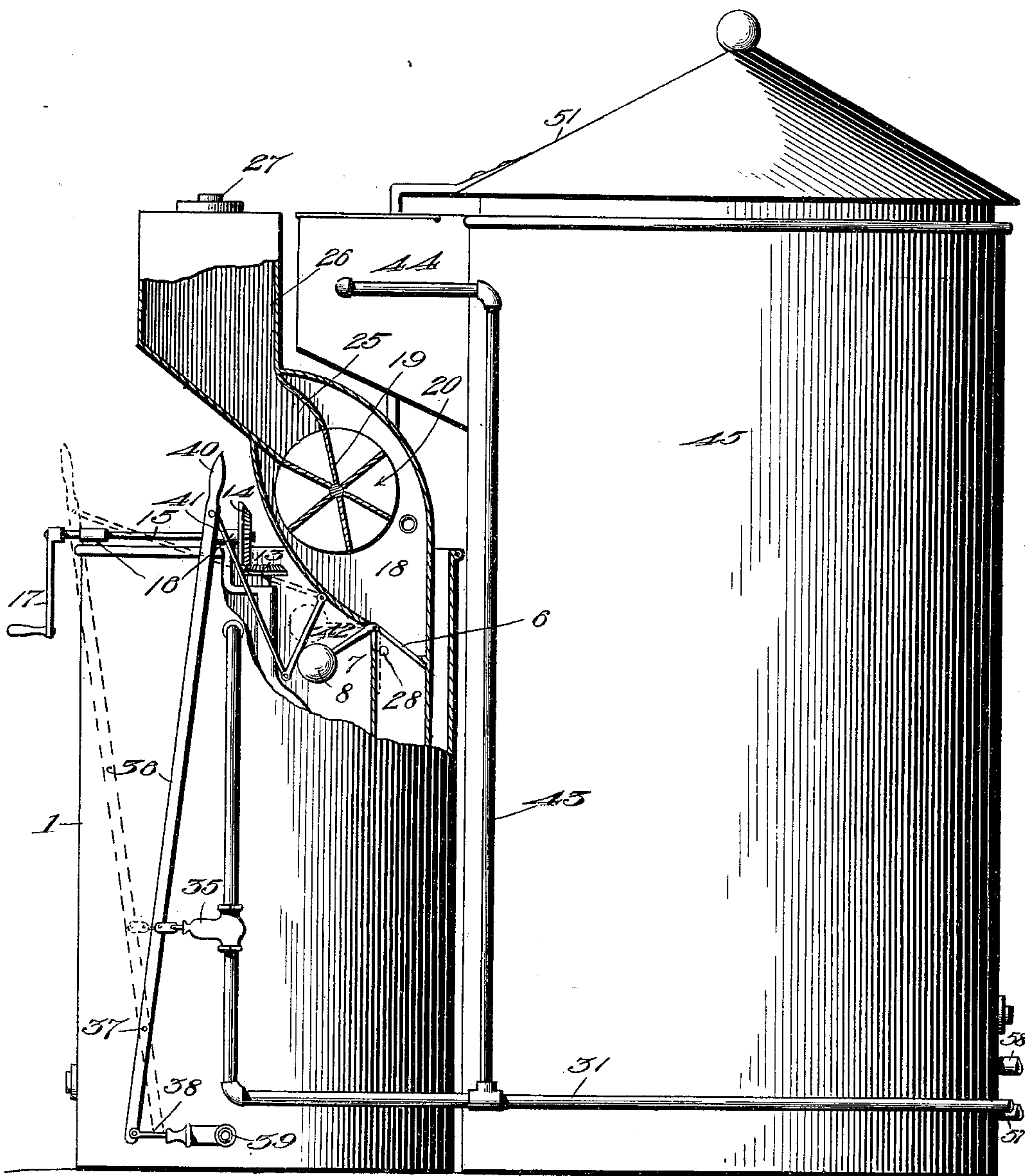
J. T. EDWARDS.
ACETYLENE GAS GENERATOR.

(Application filed July 24, 1900.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



Witnesses

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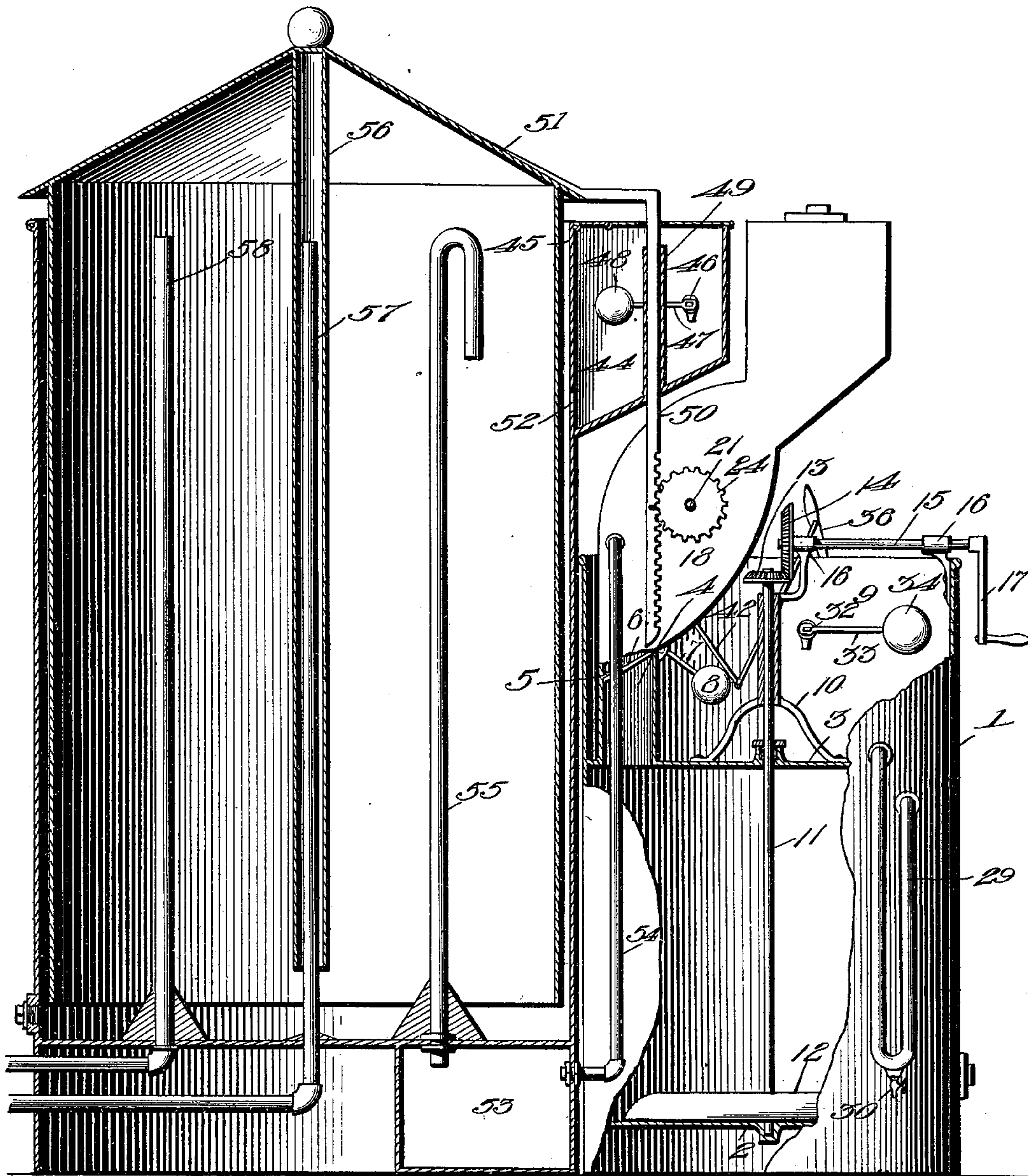
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3 Sheets—Sheet 2.

Fig. 2



Witnesses

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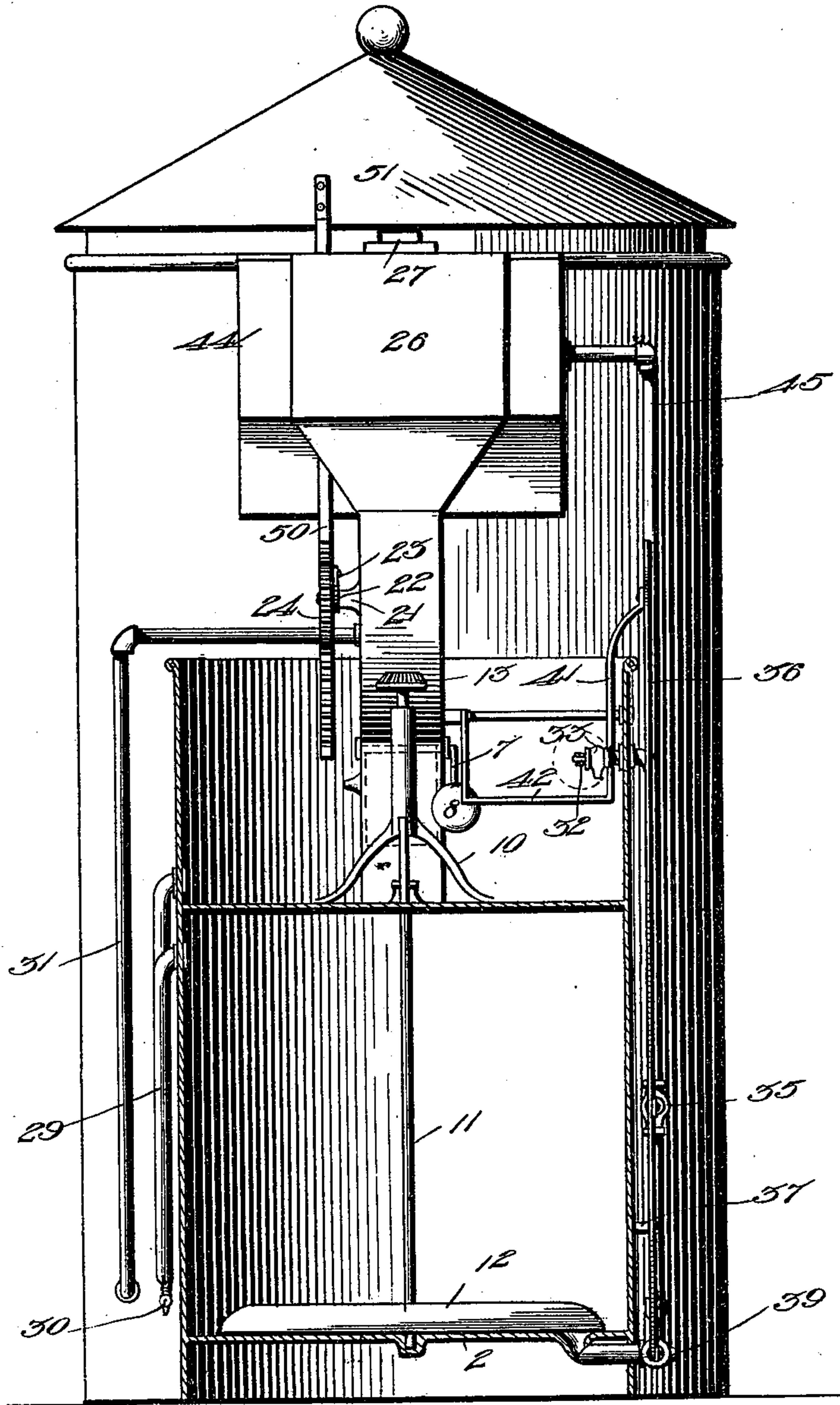
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3 Sheets—Sheet 3.

Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

JOSEPH T. EDWARDS, OF WEAVERVILLE, CALIFORNIA.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 672,187, dated April 16, 1901.

Application filed July 24, 1900. Serial No. 24,678. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH T. EDWARDS, a citizen of the United States, residing at Weaverville, in the county of Trinity and State of California, 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 strong and durable device of simple construction which automatically controls the generation of the gas.

A further object is to provide means whereby carbide will be fed in small quantities to a large body of water, whereby all the gas within the carbide is produced without the generation of heat.

A further object is to provide a carbide-feed of novel construction and to provide means whereby the contents of the generator may be agitated as desired.

Other objects are to provide means for automatically controlling the flow of water to the generator and gasometer and to provide means whereby the gas is permitted to automatically escape from the gasometer when generated too rapidly.

To these ends the invention consists in providing a generator from the top of which extends a passage leading to the lower portion of a hopper which may be closed and made air-tight in any desired manner. Within this hopper is mounted a feed-cylinder having recesses formed in the periphery thereof, and the shaft of said feed-cylinder is provided with a ratchet-wheel adapted to be engaged by a pawl which is secured to a gear located, preferably, without the hopper. This gear is engaged by a rack which depends from the side of the bell of the gasometer. An open compartment is formed above the generator below the hopper, and within this compartment is mounted a standard which supports the shaft of an agitator, of novel construction, which is provided with suitable means whereby rotary motion is imparted thereto. A water-inlet pipe projects into this upper compartment and is provided with a valve upon the stem of which is a float which is adapted to be raised and lowered by the water within said

compartment. A second float is secured to an arm which extends into said upper compartment and projects from a gate which is hinged within the passage extending from the generator to the hopper, said gate adapted to close the passage when the float is in lowered position.

The water-inlet pipe above referred to extends to a suitable supply and is provided with a gate-valve which is operated by a lever pivoted to the side of the gasometer. This lever is also secured to a second gate-valve located within an outlet-pipe running from the lower portion of the generator. A rod extends from the upper portion of the lever and is pivoted at its end to a second rod pivoted to the bottom of the feed and within the upper compartment of the generator. This rod is adapted when the lever is thrown toward the hopper to depress the float of the hinged gate within the passage of the generator and hold the same in such position. When in this position, the flow of water to the generator is shut off, while at the same time the outlet from the gasometer is opened. This is for the purpose herein-after more fully described. A trap-pipe extends from the lower portion of the upper compartment of the generator to the upper portion of the lower compartment, and through this pipe the water is admitted from said upper compartment to the lower portion of the generator. A pipe extends from the supply heretofore referred to and has an outlet in a compartment secured to the outer wall of the gasometer. This pipe is provided at its outlet with a valve operated by a float, said float adapted to hold water within the gasometer at a desired level, there being a passage from the receptacle to the interior of the gasometer. The gas-pipe extends from the feed of the generator to a catch-basin or receptacle formed beneath the gasometer, and a second pipe extends upward from this compartment to a point above the water-level within the gasometer and has its outlet beneath the level of said water. A suitable distributing-pipe extends from the interior of the bell, and an exhaust-pipe is also located within the bell and is normally inclosed by a tube depending from the top of the bell. This tube,

however, is of such length as to permit the escape of gas through the exhaust-pipe in the event of the gas being generated too rapidly.

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, forming a part of this specification, and in which—

10 Figure 1 is a side elevation of the device, showing the upper portion of the generator and the hopper and feed in section. Fig. 2 is a section through the complete device, taken from the opposite side thereof; and Fig. 3 is
15 a central transverse section through the generator.

Referring to said figures by numerals of reference, 1 is the wall of the generator, which may be formed of any desired material.
20 This generator is provided with a suitable bottom 2, and a partition 3 is formed therein at a point below the upper edge of the wall. Extending upward from this partition is a preferably rectangular passage 4, provided at
25 a point near its upper end with a rib or shoulder 5, adapted to limit the upward movement of a gate 6, which is hinged to the opposite side of said passage and is provided with an arm 7, which extends into the upper com-
30 partment of the generator and is provided with a float 8. Within this upper compartment 9 is mounted a standard 10, within which is journaled a shaft 11, which is mounted at its lower end within the bottom of the gas-
35 ometer and is provided with a cross-strip 12, which is of nearly the exact internal diameter of the generator. This strip normally bears upon the bottom of the generator and serves the purpose of an agitator for the contents
40 thereof. A pinion 13 is secured to the upper end of the shaft 11 and meshes with a second pinion 14, which is at the end of a horizontal shaft 15. This shaft is journaled within suitable brackets 16 and is provided at its outer
45 end preferably with a crank 17, whereby motion may be imparted thereto.

The passage 4, heretofore referred to, communicates at its upper end with a compartment 18, within which is journaled a feed-
50 cylinder 19. This feed-cylinder fits snugly between the side walls of said compartment and is provided with recesses 20 within the periphery thereof.

Secured to the shaft 21 of feed-cylinder 19
55 is a ratchet-wheel 22, adapted to be engaged by a pawl 23, which is secured to the inner face of a gear 24. This pawl is normally pressed into contact with the ratchet-wheel by means of a spring or in any other suitable
60 manner. This pawl-and-ratchet mechanism is similar to that shown and described in my application filed July 24, 1900, Serial No. 24,677.

Fitting snugly against the periphery of the
65 feed-cylinder 19 are the walls of a spout 25, which extends into the compartment 18 from

the hopper 26. This hopper is of any desired form and material and is provided with an inlet, which may be closed in any suitable manner, as by means of a cap 27. 70

Within the passage 4, heretofore referred to, at a point below the hinge of the gate 6, is an outlet 28, which is adapted to be closed when said gate is in lowered position. The trap 29 extends from the lower portion of the
75 upper compartment 9 to the upper portion of the lower compartment of the generator, and this trap is provided with a suitable drain, as 30.

Opening into the upper compartment 9 of
80 the generator is a supply-pipe 31, which is provided with a suitable valve 32, having a stem 33, to the end of which is secured a float 34. Within this pipe is secured a gate-valve 35, secured to a lever 36, which is pivoted at
85 a point below said valve, as at 37, to the outer side of the generator. The lower end of this lever is secured to the stem of a second gate-valve 38, mounted within an outlet 39, which extends from the generator, at the bottom
90 thereof. Pivoted to the upper end of the lever, adjacent to the handle 40 thereof, is a rod 41, pivotally secured to a second-rod 42, which is mounted within the upper compart-
95 ment 9 of the generator and is hinged to the lower portion of the compartment 18 at a point above the float 8, heretofore referred to. It will thus be seen that when the handle 40 is drawn toward the compartment 18 the gate-
100 valve 38 will be opened, while the valve 35 will be closed, and at the same time the valve 42 will depress the float 8 and cause the gate 6 to swing upward against the rib 5, and thereby close the passage 4.

A pipe 43 extends from the supply 31 and
105 has an outlet within a receptacle 44, secured to the side of the gasometer, at the upper end of its outer wall 45. The end of this pipe is provided with a suitable valve 46, having a stem 47, to the end of which is secured a float
110 48. This receptacle 44 may be located at any side of the gasometer which may be desired; but, as shown in the drawings, the same is formed at a point directly above the compart-
115 ment 18 and is provided with a central tube 49, through which passes a rack or toothed arm 50, which depends from the top of the bell 51 of the gasometer and is adapted to mesh with the gear 24, heretofore referred to. This bell is of any desired material and is loosely
120 mounted within the outer wall 45 of the gasometer, heretofore referred to. An aperture 52 is formed between the gasometer and the compartment 44, and water is admitted there-
125 through from said receptacle to the gasome- ter, as is obvious.

A compartment 53 is formed below the gas-
ometer, and a pipe 54 extends therefrom to the compartment 18 and is for the purpose
130 of conducting gas from said compartment to the gasometer. A second pipe 55 is secured to the top of the compartment 53 and extends

upward to a point above the level of the water within the gasometer and thence downward to a point below said level. This, as is obvious, will permit gas to flow into the bell 51, but will prevent backward flow thereof.

A tube 56 extends downward from the center of the bell 51 and incloses a pipe 57, which is used as an exhaust. This tube 56 is of such length as to permit gas to escape thereunder and through the pipe 57 when the bell is raised to a predetermined height by the too-rapid generation of gas.

A suitable distributing-pipe, as 58, extends from the upper portion of the gasometer to the burners or other points of use.

Carbid is placed within the hopper 26 and will, as is obvious, rest upon that portion of the periphery of the feed-cylinder 19 which lies between the walls of the spout 25. Said hopper is then closed and the lever 36 thrown into the position shown in full lines in Fig. 1. This will, as is obvious, permit the escape of all water, &c., which may be within the lower compartment of the generator and at the same time will shut off the flow of water to said generator. Moreover, the rod 42 will depress the float of the gate 6 and prevent the admission of air to the compartment 18. After the water has been exhausted from the generator the floats 8 and 34 will remain in lowered position. The lever is then swung outward upon its pivot into the position shown in dotted lines in Fig. 1, thereby closing the outlet 39 and opening the valve 35. Water will then flow into the compartment 9 of the generator through the valve 32 and thence through the trap 29 into the lower compartment. As the water rises within the generator the air will exhaust through the outlet 28 until the float 8 is raised. This, however, will not occur until water has reached the level of said outlet 28. As the water continues to rise the float 34 will also be carried upward therewith, ultimately shutting off the supply.

Carbid is originally placed within the generator in any desired manner, as by revolving the feed-cylinder 19. It is obvious that this carbid will drop through the passage 4 into the water within the lower compartment, and the gas generated thereby will rise through the passage 4 into the compartment 18 and will pass therefrom through the pipe 54 into the catch-basin or compartment 53, from whence it will pass through pipe 55 into the bell 51. This will, as is obvious, cause the bell to move upward; but such movement will not affect the feed-cylinders 19, as the pawl secured to the gear 24 will slip over the teeth of the ratchet-wheel 22. When, however, the gas within the bell is withdrawn and the bell moves downward within the wall 45 said pawl will engage with the ratchet-wheel and cause the feed-cylinder to revolve, carrying therewith such carbid as rests within the recesses 20 and discharging it into the passage 4. It is obvious that the operation of the device will then be repeated.

It will be seen that should the gas be generated too rapidly the same will escape beneath the tube 56 and out through the tube 57.

It will be understood that the float 48 retains the water within the gasometer normally at a desired level.

When it is desired to remove the contents of the generator, it is merely necessary to again throw the lever into the position shown in solid lines in Fig. 1, and the contents thereof will flow through the outlet 39. By revolving the shaft 11 and the strip 12 thereof by means of the crank 17 and the pinions 13 and 14 the slack carbid will be broken into small particles and will, as is obvious, readily flow from the generator.

It will be seen that the trap 39 permits the water to flow directly to the lower compartment of the generator without, however, allowing the gas to escape back therethrough and out of compartment 9.

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 as fairly fall within the scope of my invention.

Having thus 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; of a generator communicating therewith and having an upper and a lower compartment and a passage extending from said lower compartment; a carbid-receptacle above said passage; a gate hinged within the passage; a float secured to said gate, and a water-inlet.

2. In an apparatus of the character described, the combination with a gasometer; of a generator communicating therewith and having an upper and a lower compartment and a passage extending from said lower compartment; a carbid-receptacle communicating with said passage; a gate hinged within the passage; an arm thereto extending into the upper compartment of the generator; a float upon the arm; and a water-inlet.

3. In an apparatus of the character described, the combination with a gasometer; of a generator communicating therewith and comprising an upper and a lower compartment and having a passage extending from said lower compartment; a carbid-receptacle communicating with said passage; a shoulder within the passage; a gate hinged within the passage and adapted to bear upon said shoulder; an outlet within the passage at a point adjacent to the gate and adapted to be closed when the same is in lowered position; a stem to the gate projecting into the upper compartment of the generator; a float thereon; means for holding said float in lowered position, and a water-inlet.

4. In an apparatus of the character de-

scribed, the combination with a gasometer having a bell and a toothed arm thereto; of a generator communicating therewith and having an upper and lower compartment and a passage extending from said lower compartment; a receptacle communicating with said passage; a feed-cylinder therein having recesses within its periphery; a gear upon the shaft of the feed-cylinder meshing with the arm of the bell; a pawl-and-ratchet connection between said gear and its shaft; a hopper communicating with said receptacle; a spout thereto contacting with the periphery of the feed-cylinder; a shoulder within the passage; a gate hinged to the opposite side of said passage and adapted to bear upon the shoulder; an arm to the gate projecting into the upper compartment of the generator; a float upon the arm; means for holding said float in lowered position, and a water-inlet.

5. In an apparatus of the character described, the combination with a gasometer; of a generator communicating therewith and comprising an upper and lower compartment; a hopper; a receptacle communicating with said hopper and with a passage extending from the lower compartment of the generator; a carbid-feed device within said receptacle; a gate within the passage; an arm thereto extending into the upper compartment of the generator; a float upon the arm; an inlet-pipe; a float-controlled valved outlet thereto; a second valve within the pipe; a valved outlet from the generator; a lever pivoted to the valve of the outlet and the second valve of the inlet-pipe; and means operated by said lever for depressing the arm of the gate within the passage.

6. In an apparatus of the character described, the combination with a gasometer; of a generator communicating therewith and having an upper and a lower compartment; a trap communicating with said upper and lower compartments; an inlet-pipe to the upper compartment; a valve within the inlet-pipe at a point in said upper compartment; a float secured to the stem of the valve; an outlet from the lower compartment having a

valve therein; a valve within the inlet-pipe at a point without the generator; and a lever pivoted to the gasometer and connected to said valve and to the valve in the outlet.

7. In an apparatus of the character described, the combination with a gasometer having a bell therein; of a receptacle secured to the outer wall of said gasometer and communicating with the interior thereof; an inlet-pipe to said receptacle; a float-controlled valve thereto; a compartment beneath the gasometer; a generator having an upper and a lower compartment; a carbid-receptacle communicating with the lower compartment; a pipe connecting said receptacle with the lower compartment of the generator; an inlet-pipe to the generator having a float-controlled valve; a feed device within the carbid-receptacle; means for operating the feed device by the movement of the bell of the gasometer, and a water-inlet.

8. In an apparatus of the character described, the combination with a gasometer; of a generator comprising an upper and a lower compartment; a carbid-receptacle communicating with a passage extending from the lower compartment; a pipe connecting said carbid-receptacle and a compartment beneath the gasometer; a carbid-feed within the receptacle operated by the movement of the bell of the gasometer; a gate within the passage below the feed; an arm thereto projecting into the upper compartment of the generator; a float to the arm; an inlet-pipe to said compartment; a float-controlled valve to said inlet; a valve within the inlet-pipe; a valved outlet from the gasometer; a lever connected to the valve of the inlet-pipe and of the outlet; a rod connected to said lever and adapted to depress the float of the gate within the passage; and a trap connecting the upper and lower compartments of the generator.

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

JOSEPH T. EDWARDS.

Witnesses:

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J. D. MURRAY.