

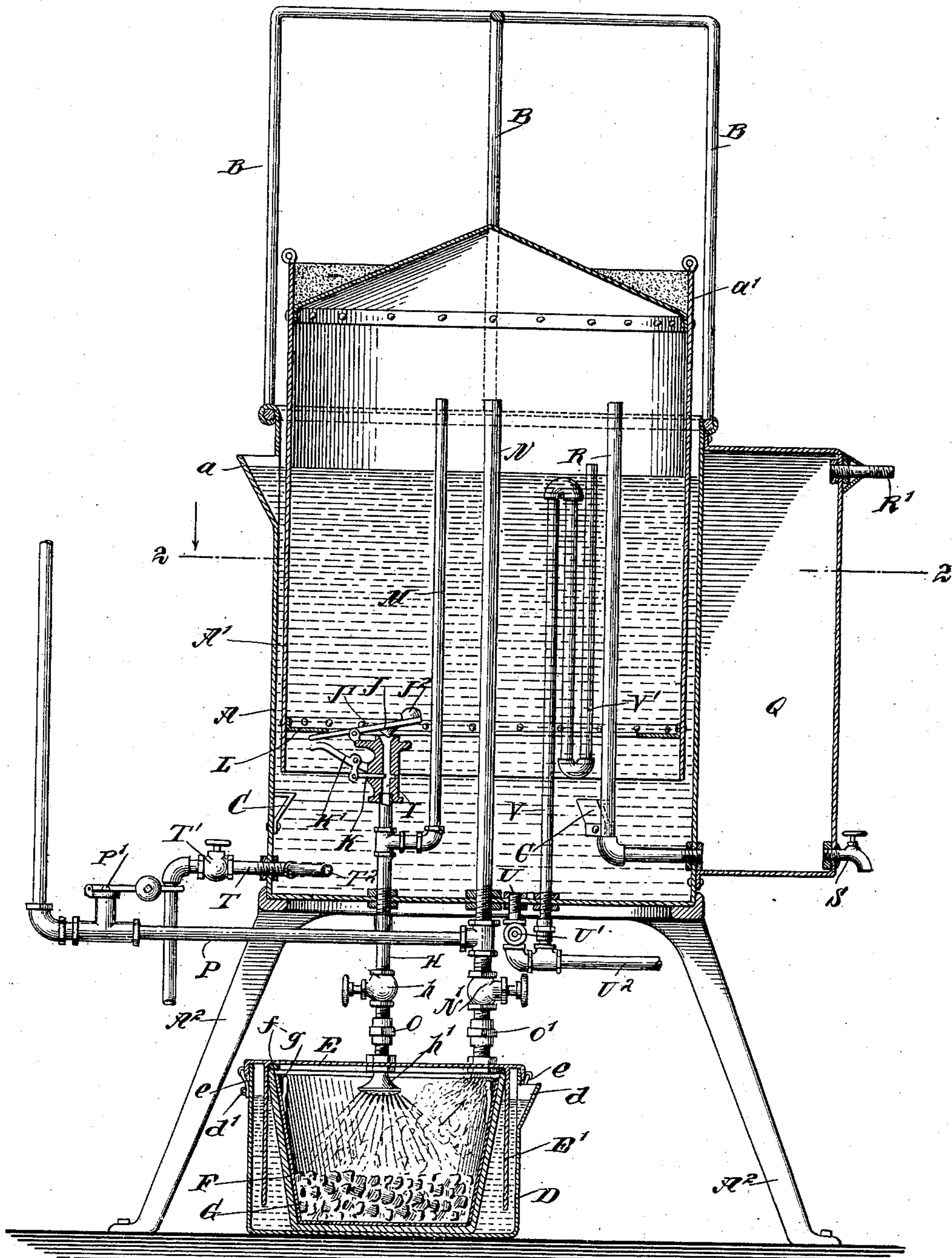
No. 654,350.

Patented July 24. 1900.

C. W. METCALF.
ACETYLENE GAS GENERATING APPARATUS.

(Application filed July 7, 1899.)

(No Model.)



WITNESSES:

Geo. W. Maylor
H. L. Reynolds

INVENTOR
C. W. Metcalf
BY
Mumby
ATTORNEYS

UNITED STATES PATENT OFFICE.

CHARLES WESLEY METCALF, OF EL PASO, TEXAS, ASSIGNOR OF ONE-HALF
TO JOHN IRVING MCKENNA, OF SAME PLACE.

ACETYLENE-GAS-GENERATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 654,350, dated July 24, 1900.

Application filed July 7, 1899. Serial No. 723,069. (No model.)

To all whom it may concern:

Be it known that I, CHARLES WESLEY METCALF, of El Paso, in the county of El Paso and State of Texas, have invented a new and
5 Improved Acetylene-Generating Apparatus, of which the following is a full, clear, and exact description.

My invention relates to improvements in apparatus for generating acetylene, and comprises the novel features hereinafter described and claimed.

Reference is to be had to the accompanying drawing, forming a part of this specification, in which the figure of drawing represents a
15 sectional elevation of my device.

My device uses as a part thereof the ordinary gasometer consisting of a tank A, which is constructed to hold water, and a rising-and-falling bell A', placed within said tank and
20 forming the storage-chamber for the gas. This gasometer varies in some minor details from the ordinary gasometer—as, for instance, the side walls of the gasometer-bell are continued above the top thereof, as shown at a',
25 thus forming an upwardly-extending flange which produces a receptacle adapted to receive sand or other similar material by which the bell may be weighted, so as to obtain the desired pressure of gas.

30 The tank A is provided with upwardly-extending guide-arms B, which serve to retain the bell in place as it rises, and the tank is also supported upon legs A² at such a distance as to permit the insertion of the generator beneath the same. The generator, which
35 is shown in section beneath the gasometer, is composed of several parts, which are so secured together as to make them air-tight, when in use. The outer tank D, which is
40 preferably made square in plan, has another tank F, placed within the same and preferably made round in plan. The outer tank D is preferably made of galvanized iron, while the inner tank F is made of cast-iron. These
45 two parts have a common cover E, which is provided with a depending apron or flange E', which is circular in plan and fits closely about the outside of the tank F, the lower edge of said flange extending downward into
50 the water, which is placed between the two tanks F and D, thereby forming a water seal

to prevent the escape of gas. As an additional precaution to prevent the escape of gas and also to prevent the vapors of water from entering the chamber which contains the carbid, a packing-ring f is provided, which lies
55 beneath the cover E and engages the upper edge of the tank F.

The cover E is secured to the outer tank D in any suitable manner. The method of securing the same herein shown consists of
60 hasps or loops e, which are secured to the cover E and are adapted to pass over staples or hooks d', secured to the outer tank D.

Within the inner tank F is placed a bucket
65 G, which closely fits the inside thereof and within which is placed the carbid. This inner or lining bucket is preferably made of galvanized iron and is provided with handles
70 g, by means of which the refuse may be readily removed and a new bucket containing a fresh charge of carbid immediately inserted.

The cover E is provided with two openings, one of which receives the pipe H, by which water is supplied to the carbid from the gas-
75 ometer-tank, and the other of which receives the pipe N, by which the gas is conveyed from the generator to the gasometer. These pipes extend upwardly through the bottom of the
80 gasometer, the pipe N extending to above the level of water in the tank A. The pipe H is provided inside of the generator with a rose
h' or any suitable form of sprinkler-head. For convenience in attaching and detaching
85 the generator to and from the pipes H and N unions O and O' are provided. These pipes are also provided with valves h and N', by which the flow of water and gas may be cut
off when desired.

The water-supply pipe H extends upwardly
90 into the water-space of the tank A and at its upper end is provided with a valve-casing I, said casing being provided with seats for two valves, the outer one lying at the upper end of the casing and the other lying lower down,
95 both valves controlling the same passage. The upper valve-seat is controlled by means of a conical valve J, which fits within the upper end of the passage in the casing and is
100 mounted upon a pivoted lever J', which is provided with a counterweight J², adapted to normally hold this valve closed. The other

valve-seat is designed for the reception of a slide or gate valve K. This valve is connected with a lever K', which is pivoted upon an arm of the casing I and extends outwardly to a point corresponding horizontally with the end of the lever J'. The lever K' is, however, at a lower elevation than the lever J'. Both of these levers are operated upon in succession by means of a flanged ring L, which is secured to the inner surface of the gasometer-bell near its bottom. This ring projects inwardly a sufficient distance to engage the ends of the levers J' and K' and first engages the lever J', so as to open the valve J and permit the entrance of water to the pipe H and thus to the generator and the carbide therein. This will cause the generation of gas sufficient to elevate the bell and thus to close the valve J and cut off the flow of water. In case, however, that the carbide is exhausted, there will not be generation of gas sufficient to raise the bell. In this case the bell will continue to sink until it engages the lever K' and will then close the gate-valve K. It is to be understood that the gate-valve K remains normally open, the same being provided with a spring or other suitable mechanism which will secure this result. By this means the flow of water to the generator is eventually cut off whether generation of gas is caused thereby or not.

In order to permit the pipe H to be cleared of water after the valve J has been closed, a pipe M is connected therewith and extends upwardly within the gasometer to a point above the water-level, thus permitting the gas to flow downward into the pipe to displace the water.

Within the tank A is provided a series of ledges C, so placed as to receive the lower edge of the bell A' when the carbide has been exhausted and the bell sinks below its ordinary lowest position. The gas is drawn from the gasometer through a service-pipe R, which discharges into the lower portion of a gas-receiving tank Q, said tank being formed outside of the tank A and secured thereto in such manner as to utilize the wall of the tank A as the inner wall of the tank Q. The gas contained within this tank is cooled by contact with the cool inner wall which lies between said tank and the tank A. The gas is drawn off from this tank by means of a service-pipe R', which connects with the upper end thereof.

To the lower part of the tank Q is secured a valve S, by means of which water may be drawn off, if any should collect in the tank. The pipe N, which connects the generator with the gasometer and through which the gas flows, has an overflow-pipe P connected therewith and leading to any convenient point for the discharge of surplus gas. In this pipe is placed a valve P', which is weighted, so as to open by the pressure of gas when the same exceeds the desired point.

The gasometer-tank A is provided with a

funnel or lip *a*, by means of which water may be introduced therein. The tank D, forming the outer tank of the generator, is also provided with a similar lip or funnel *d*.

The gasometer-tank may be provided with a water-supply connection consisting of a pipe T, which enters the bottom of the tank and has its inner end T² bent to one side, so as to direct the issuing water in a tangential direction, thus causing a whirling motion to be given to the water, which will stir up any sediment deposited in the tank and facilitate its being drawn off. This pipe may be connected with a public water-supply and is provided with a valve T'.

The water and any sediment in the tank may be drawn off through a pipe U, which enters the bottom of the tank near its center, so as to catch the sediment which in a whirling body of water is always drawn to the center. A valve U' controls the flow of water to the waste-pipe U². A water-overflow pipe is also provided consisting of a vertical pipe V, which passes through the bottom of the tank and has an extension consisting of a loop V', the end of the pipe extending to the desired water-level and being open. As soon as the water rises above the upper end of this pipe it will flow out through it. The loop V' forms a seal which prevents gas from escaping.

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

1. An acetylene-generating apparatus comprising a gasometer having a rising-and-falling bell, a generating-chamber, a water-feed pipe extending from the tank of the gasometer to the generator and open at its upper end within the tank, two independently-pivoted valves for said pipe within the gasometer-tank and arranged in series or tandem, the upper valve for the open end of the pipe being normally closed and the lower valve normally open, the said gasometer-bell having an internal projecting portion adapted when the gasometer descends to engage the first valve to open it and by a continued descent to engage and move the other valve to close it, substantially as described.

2. A water-supply device for acetylene-generators comprising a casing having two valve-seats therein, one upon the end of the casing and the other inward therefrom and adapted to receive a gate-valve, two levers pivoted upon said casing, the outermost carrying a lift-valve which is normally closed, a gate-valve connected to the other lever and normally open, and operating means for said valves engaging first the lever of the outermost or lift valve to open it and then upon a sufficient continuation of movement in the same direction engaging the lever of the other or gate valve to close it, substantially as described.

3. An acetylene-generating apparatus, comprising a gasometer having a rising-and-falling bell, a generating-chamber, a gas-convey-

ing pipe leading from the generating-chamber to the gasometer, a feed-water pipe leading from the water-space of the gasometer-tank to the generating-chamber, the said pipe being provided at its upper open end with a valve-seat, a pivoted lever having a valve thereon adapted to engage the said valve-seat, the said valve being normally closed, a second valve for said pipe normally open and located below the first valve, means for successively operating the valves, and a pipe connected with said feed-pipe at a point below the said valves and extending upward within the gasometer above the water-level in the tank, substantially as described.

4. A water-supplying device for acetylene-generators, comprising a valve-casing having a valve-seat upon its outer end and a slide or gate valve seat inward from said end, a pivoted lever having a valve thereon adapted to engage the outer valve-seat, a slide or gate valve in the other valve-seat, a lever engaging said gate-valve, and a gasometer-bell having an internal flange adapted in its descent to engage said levers in succession to first open the outer valve and then to close the inner valve, substantially as described.

5. A water-supplying device for acetylene-generators, comprising a tank adapted to contain water, a generator, a feed-water pipe leading from said tank to the generator, a valve-casing on the end of said pipe within the tank, a valve-seat on the outer end of said casing, a

pivoted lever having a valve thereon adapted to engage said seat, the said valve being normally closed, a slide or gate valve seat arranged in said casing, a slide or gate valve for said seat and normally open, a pivoted lever connected with said slide or gate valve, and a rising-and-falling gasometer-bell adapted in its descent to operate the lever of the first valve to open said valve and by a continued descent to operate the lever of the other valve to close said valve, substantially as described.

6. An acetylene-generating apparatus, comprising a generator, a gasometer supported above the generator and having a rising-and-falling bell, a water-supply pipe for the tank of the gasometer entering near the bottom thereof, a water-feed pipe connecting the gasometer-tank with the generator and extending upward within the gasometer-tank above the water-inlet thereof, a valve for controlling the admission of water to said pipe, means for automatically operating said valve, a gas-conveying pipe leading from the generator to the gasometer, the said pipe being provided with an overflow-pipe having a relief-valve, and cut-off valves in the water-feed and gas-conveying pipes between the generator and the gasometer, substantially as described.

CHARLES WESLEY METCALF.

Witnesses:

LUCIAN NICHOLL,
CHARLES DE GROFF.