

No. 651,869.

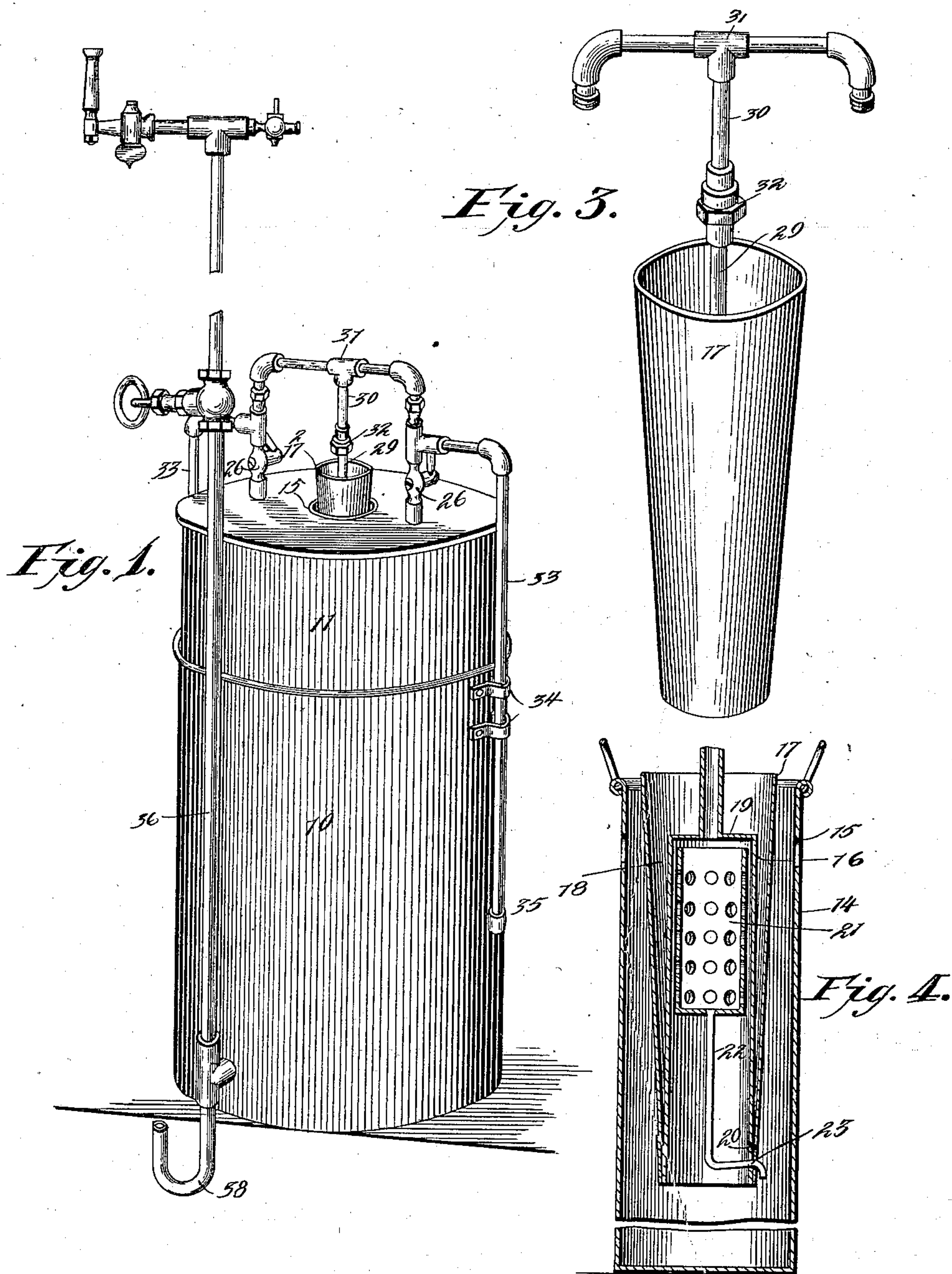
Patented June 19, 1900.

C. M. LINDHOLM
ACETYLENE GAS GENERATOR.

(Application filed Jan. 25, 1900.)

(No Model.)

2 Sheets--Sheet 1.



Witnesses

W. H. Walker
W. H. Berwick

Charlie M. Lindholm Inventor

By *Fris* Attorneys.

CA Snow & Co.

No. 651,869.

Patented June 19, 1900.

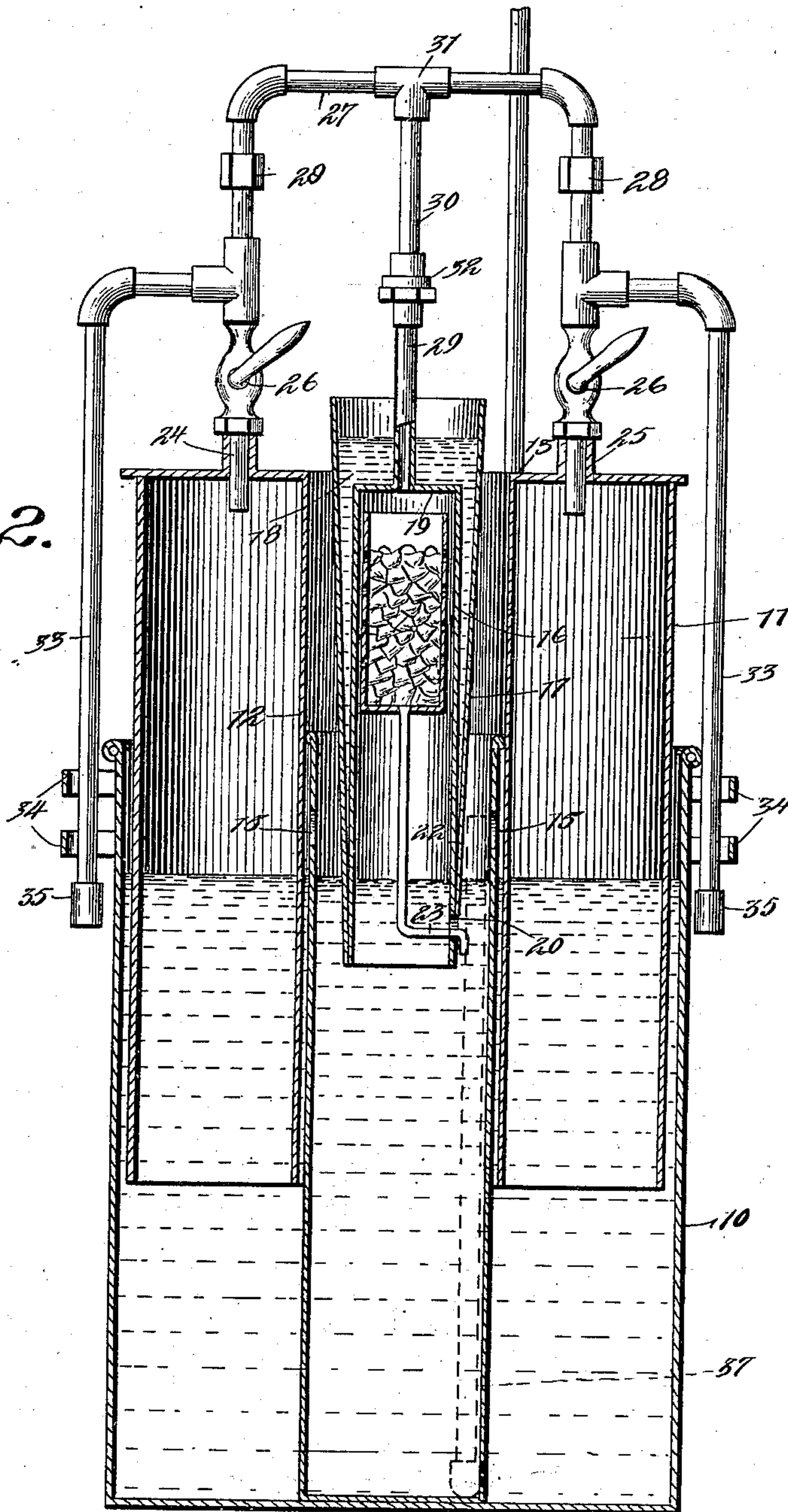
C. M. LINDHOLM.
ACETYLENE GAS GENERATOR.

(Application filed Jan. 25, 1900.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 2.



Witnesses

L. H. Walker

H. J. Beukhof

Charlie M. Lindholm Inventor

By *his* Attorneys,

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

CHARLIE M. LINDHOLM, OF PEARSALL, TEXAS.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 651,869, dated June 19, 1900.

Application filed January 25, 1900. Serial No. 2,782. (No model.)

To all whom it may concern:

Be it known that I, CHARLIE M. LINDHOLM, a citizen of the United States, residing at Pearsall, in the county of Frio and State of Texas, have invented a new and useful Acetylene-Gas Generator, of which the following is a specification.

My invention relates to improvements in acetylene-gas generators of that class in which the generator is combined with the expansible tank for operation automatically therewith; and one object in view is to provide an improved generator of this type which is kept in a relatively-cool condition by a surrounding bath of water and which generator is removable at will from the floatable bell of the tank.

A further object is to prevent the waste carbide from dropping into the water of the expansible tank and to provide for the free discharge of gas from the generator to the floatable bell, while at the same time permitting the expeditious removal of said generator for the purpose of cleaning and recharging the same.

With these ends in view the invention consists in the novel combination and construction of parts, which will be hereinafter fully described and claimed.

In the drawings, Figure 1 is a perspective view of an acetylene-gas generator constructed in accordance with my invention. Fig. 2 is a vertical sectional elevation on an enlarged scale as compared with Fig. 1. Fig. 3 is a detail perspective view of the generator proper removed from the expansible tank. Fig. 4 is a vertical sectional view through the generator assembled within the waste-receptacle.

Like numerals denote corresponding parts in each of the several figures of the drawings.

The expansible holder is similar to devices ordinary in the art in that it consists of a tank 10 and a floatable gas-bell 11, which is inverted into the tank, so as to have its lower open portion normally immersed in a water seal contained in the tank. A cylinder 12 is arranged centrally within the floatable bell, and in the head of this bell is an opening 13, around the edges of which the cylinder 12 is secured firmly to the bell-head. This cylinder is open at both ends, so that the generator

may be easily inserted into its upper open end, while the lower open end of the cylinder is substantially flush with the corresponding end of the bell, whereby said lower end of the cylinder is sealed by immersion in the water-bath contained in the carbide.

14 designates a waste-receptacle which is used in connection with the generator proper for the reception of the waste or spent carbide that may drop from the carbide vessel of said generator. This waste-receptacle is closed by an imperforate head at its lower end; but its upper end is open and flanged, the diameter of the flanged end of said receptacle being less than that of the opening 13 in the bell-head. This construction enables the waste-receptacle to be arranged within the cylinder 12 for its lower closed end to rest upon the bottom of the tank, and thus said receptacle is arranged removably within the bell and within the open-ended cylinder 12. At a point intermediate of its length the waste-receptacle is provided with water-inlet openings 15, and said receptacle is adapted to remain at rest on the travel of the bell and the cylinder, so that the receptacle will be immersed in the water of the tank sufficiently for the openings 15 to lie below the water-level, thereby permitting the water to flow into the receptacle in order to reach the active material contained in the carbide vessel.

The generator proper has connected inner and outer shells 16 17, arranged to form an intermediate water-chamber 18, which is adapted to contain a cooling-bath that surrounds the inner generator-shell 16 for the purpose of keeping the generator at a low temperature. As shown more clearly by Fig. 4 of the drawings, the inner shell 16 is cylindrical, with an open lower end and a closed upper end 19; but the outer generator-shell 18 is of conical form, so as to flare upwardly and extend above the head of the inner shell, the lower end of the flared outer shell being joined in any suitable way to the corresponding end of the cylindrical inner shell. The two shells, assembled and united as described, provide a flaring chamber 18, which extends above the head of the inner cylindrical shell, so that the chamber may contain the cooling-bath adapted to entirely surround the generator inner shell 16, except at the lower end

thereof. It is well known that the generation of acetylene by the mutual decomposition of carbide and water is attended by considerable heating of the parts of the generator; but the construction of my generator for the reception of the cooling-bath makes provision for the maintenance of the generator in a comparatively-cool condition. The generator is arranged within the waste-receptacle in a manner to expose its open upper end through the bell-head, so that ready access can be obtained to the cooling-chamber 18 for replenishing the cooling-bath therein without removing the generator from the apparatus.

Although I have shown and described the generator as consisting of the connected conical and cylindrical shells, I do not desire to strictly confine myself to this specific construction, because I am aware that the generator may consist of two cylindrical shells arranged concentric with each other and united together at their lower ends by any approved means. The generator is provided at its lower end with a transverse opening 20. Within the inner shell 16 of the generator is arranged a carbide vessel 21, which, as shown by the drawings, is constructed of sheet metal perforated throughout its area, although any other foraminous material may be employed. Said vessel is provided with a stem 22, having an angular foot 23, the latter adapted to fit in the opening 20 of the generator, so as to support the carbide vessel in an elevated position and removably within the inner shell 16.

It is to be observed that the waste-receptacle 14 is arranged removably within the floatable bell and that the generator is arranged within this waste-receptacle. The generator, however, has no positive or direct connection with the waste-receptacle; but, on the other hand, I employ separable gas-pipe connections between the generator and the head of the floatable bell, said connections being constructed to suspend the generator within the waste-receptacle and to permit the expeditious removal of said generator from the bell.

24 25 designate short lengths of gas-pipe which are fastened to the bell-head, on opposite sides of the opening 13 therein, each pipe having a stop-cock 26. A cross-pipe 27 has depending branches which are united separately by the couplings 28 to the short lengths of gas-pipe 24 25. A sectional connecting-pipe 29 30 is between the cross-pipe and the head 19 of the inner shell of the generator, one section of the pipe being made fast with the generator-head and the other pipe-section being united to the cross-pipe 27 by the T connection 31. A coupling 32 unites the two members of the pipes separably together, said couplings 28 and 30 being of any construction suitable for the purpose. The generator is made fast with the lower section of the separable pipe, and this pipe is supported by the cross-pipe, which in turn is attached to the short lengths of the pipe fastened to the bell-

head. The described construction provides means for suspending the generator within the waste-receptacle and also establishes the gas-outlet from the generator to the chamber of the floatable bell. It is evident that the couplings 28 may be manipulated to release the cross-pipe 27 from the short lengths of pipe 24 25, and this cross-pipe, together with the sectional pipe and the generator, may be removed for the purpose of enabling an attendant to reach the stem 22, whereby the carbide-receptacle may be withdrawn for ready access thereto in cleaning and recharging the same.

The bell is guided in its vertical travel by the vertical rods 33 and the keepers 34. The rods are fastened at their upper ends to the lengths of pipe 24 25 and the keepers are attached to opposite sides of the tank 10. The rods are adapted to travel with the bell and are fitted in the keepers to slide therein in order to direct the bell in its traveling play within the tank under variation in the volume and pressure of the gas. Stops 35, fastened to the lower ends of the rods, limit the upward movement of the bell by impinging the keepers. The gas is carried from the expandible tank by a pipe 36, having a branch 37, indicated by dotted lines in Fig. 2, disposed within the tank and extending upwardly from the bottom thereof to a point above the water-line. A relief-trap 38 is coupled to the lower end of the gas-pipe, said trap adapted to receive a quantity of water, which forms a seal therein to prevent, normally, the escape of gas through the trap. When the gas attains a pressure sufficient to overcome the head of the water seal in the trap—as, for instance, a pressure exceeding four ounces to the square inch—the water seal is displaced from the trap automatically and the gas finds a vent through said trap, thus making provision for automatically venting the apparatus and minimizing the liability of explosion.

The operation is as follows: The vessel 21 having been charged with carbide, it is slipped into the generator to assume a position for its foot to enter the opening 20, and the generator is now arranged in the waste-receptacle, which is arranged in the open-ended cylinder of the bell. The couplings 28 are manipulated to make the cross-pipe fast with the short lengths of pipe 24 25, thus suspending the generator within the waste-receptacle. The bell settles in the tank, while the water flows into the openings 15 of the receptacle and fills the latter to a point sufficient to reach the carbide in the vessel 21, the water having free access to the carbide through the open lower end of the generator. The water attacks the carbide for the instantaneous generation of gas, which flows through the pipe 29 30, the cross-pipe, and the short lengths of pipe 24 25 into the floatable bell, the stop-cocks 26 being opened. The accumulation of gas lifts the bell and the parts attached

thereto, so as to prevent the further ingress of water to the generator; but on the consumption of gas at the burners the bell again descends for the admission of a limited quantity of water, thus increasing the water in the generator and attacking the carbid for renewing the operation of generating the gas. This is continued until the carbid shall have been exhausted; but before removing the generator preliminary to recharging the same the stop-cocks 26 should be closed to prevent the gas from escaping from the bell.

Changes within the scope of the appended claims may be made in the form and proportion of some of the parts, while their essential features are retained and the spirit of the invention is embodied. Hence I do not desire to be limited to the precise form of all the parts as shown, reserving the right to vary therefrom.

Having thus described the invention, what I claim is—

1. An acetylene-gas-generating apparatus, comprising a water-tank and bell, the latter having a depending cylinder open at its upper and lower ends, pipes communicating with the gas-space in the bell, carried thereby, and extending transversely above the open upper end of said cylinder and provided with a vertical depending branch extending into said upper end of said cylinder, a generating-chamber depending from said vertical branch pipe, having gas communication therewith

and sealed at its lower end in the water in the tank, a carbid-receptacle supported within said generating-chamber and carried thereby, and a water-receptacle in the water-tank and arranged in said open-ended cylinder, substantially as described.

2. The combination with an expansible tank, of an open-ended cylinder fixed to the slidable tank member, a waste-receptacle arranged in said cylinder and having openings for the ingress of water thereto, a double-shell generator having a surrounding water-chamber and fitted within said receptacle, and gas connections between the generator and the slidable tank member, substantially as described.

3. The combination with an expansible tank, of the valved pipes fastened thereto, a waste-receptacle fitted removably in the slidable tank member and having openings for the ingress of water, a generator fitted within said receptacle and having a removable carbid vessel, a cross-pipe coupled to the pipes on the slidable tank member, and another pipe connecting the generator with the cross-pipe, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHARLIE M. LINDHOLM.

Witnesses:

J. A. DEPOYSTER,
J. C. COX.