

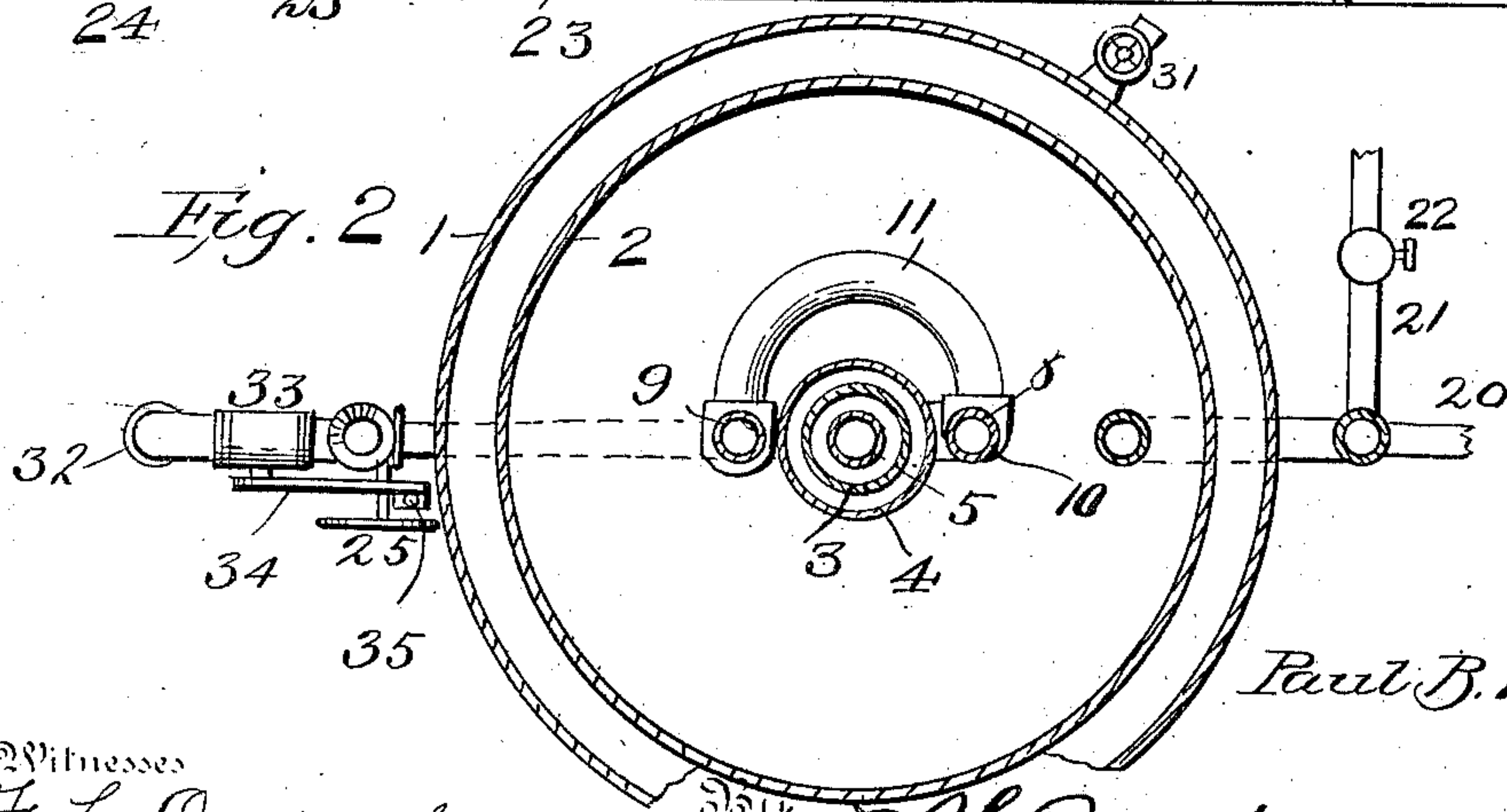
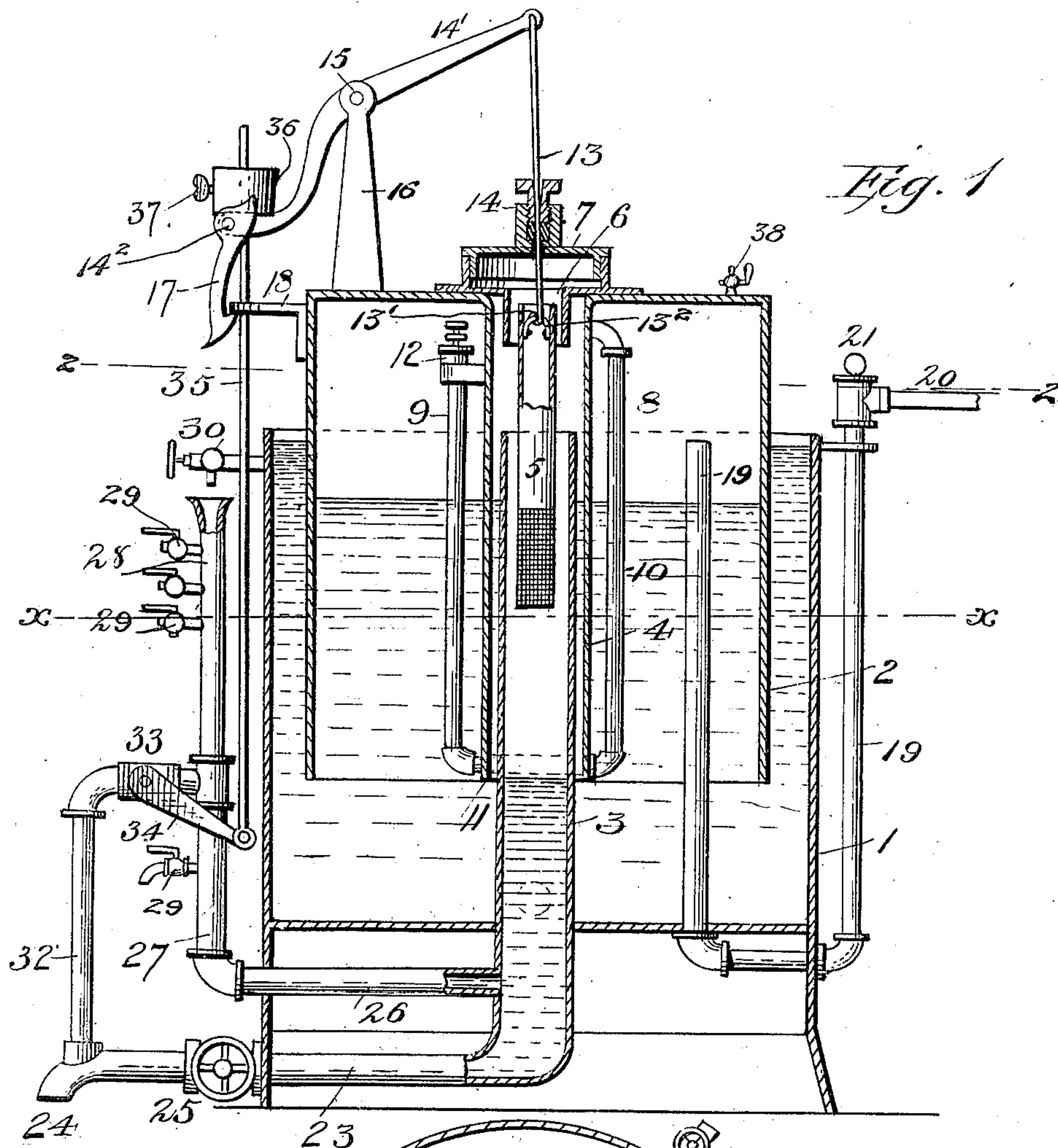
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Patented July 15, 1902.

P. B. PERKINS.
ACETYLENE GAS GENERATOR.

(Application filed Apr. 25, 1901.)

(No Model.)



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ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 704,664, dated July 15, 1902.

Application filed April 25, 1901. Serial No. 57,375. (No model.)

To all whom it may concern:

Be it known that I, PAUL B. PERKINS, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Acetylene-Gas Generators; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in apparatus for generating acetylene gas, the object in view being to provide an apparatus of this character which is simple, durable, and efficient in construction and operation and in which provision is made for arresting the generation of gas by simultaneously lowering the level of the water in the generator and elevating the carbid-holder therefrom to insure absolute safety against overpressure.

With this and other objects in view, which will appear as the nature of the invention is better understood, the invention consists in certain novel features of construction, combination, and arrangement of parts, as will be hereinafter fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a central vertical section of an acetylene-gas generator constructed in accordance with my invention, and Fig. 2 is a sectional plan view of the same on line 2 2 of Fig. 1.

Referring now more particularly to the drawings, the numeral 1 represents the water-tank of the apparatus, in which is movably mounted the bell 2, which serves as the gas-holder.

Rising vertically from the bottom of the tank 1 and extending coaxially within the same up to the plane of the top portion of the tank is a tube or pipe 3, forming, in connection with a tube or pipe 4, depending from the top of the bell 2, the generating-chamber of the apparatus, in which the carbid-holder 5 is placed. The tube 4 telescopes over the tube 3 and is located in line with a central opening 6 in the top of the bell 2, which opening is closed by a cap or cover 7. Through this opening the carbid-holder 5, which consists of a cage or basket made wholly or partly

of reticulated or foraminous material, is inserted and removed. The gas generated in the chamber formed by the tubes 3 and 4 passes outwardly into the bell or holder 2 through a conducting-pipe 8. This pipe has two imperforate limbs or branches 9 and 10, arranged upon opposite sides of the generating-chamber and connected at their lower ends by a U-shaped imperforate coupling 11. The limb or branch 10 is in open communication at its upper end with the generator-tube 4, so as to receive the gas therefrom, while the other limb 9 is provided at its upper end with a check-valve 12, which permits the gas to flow outwardly therefrom into the bell or holder 2, but prevents its return, so as to obviate all liability of escape of the gas from the holder 2 through the opening 6 when the cap or cover 7 is removed for the insertion and removal of the carbid-holder 5.

The carbid-holder 5 is suspended within the generator-tube 3 from a rod 13, which works within a stuffing-box 14 upon the cap 7 and is formed with a hook 13' at its inner end to engage a bail 13² on the carbid-holder and pivoted at its outer end to an arm of a pivoted bell-crank lever 14', which is fulcrumed at 15 to a post or bracket 16, rising from the holder 2. The other arm of this lever carries a lateral pin 14³, upon which is pivoted a gravity-catch 17, having a hooked lip adapted to engage a bracket or projection 18, extending from the side of the holder 2 to hold the said arm of the lever down, and thereby maintain the carbid-holder 5 suspended above the water in the generator-tube 3 to arrest the generation of gas, as hereinafter described. The gas from the holder 2 is discharged to the exterior through a discharge-pipe 19, which is composed of two branches arranged one upon the interior of the tank and the other upon the exterior thereof, said branches being connected at their lower ends by a suitable coupling. The inner branch of this pipe extends up into the holder 2 above the level of the water in the tank 1, and the outer branch is provided at its upper end with a coupling for connection with a service-pipe 20 and an excess-pressure pipe 21 and has arranged therein a relief or safety valve 22, which when an excess amount of gas is pres-

ent in the pipe 19 opens under pressure and allows the surplus gas to flow through the pipe 21 to a suitable holder (not shown) provided for the purpose.

- 5 Connected to the lower end of the generator-tube 3 is a draw-off pipe 23, which is provided at its outer end with a discharge spout or nozzle 24 and a valve 25, controlling the flow of water and residuum therethrough.
- 10 Through this pipe the residuum or waste matter dropping from the holder 5 into the water in the tube 3 may be drawn off, together with the water in said tube, whenever it may be found necessary or desirable. A discharge-
- 15 pipe 26 is also in communication with the generator-tube 3 and extends to the exterior through the wall of the tank 1. A vertical pipe 27 is coupled to the outer end of this tube 26 and extends parallel with the wall of the tank 1. At its upper end this pipe 27 is
- 20 open for the reception of water to form a water seal 28 and is provided with a series of gage-cocks 29, whereby the level of the water in the generator-tube 3 may be readily ascer-
- 25 tained at any time. A valve or cock 30 is in communication with the upper end of the tank 1 at or slightly below the primary level of the water therein and is arranged above the mouth or open end of the pipe 28, so that
- 30 water may be drawn off from said tank and discharged into the pipe 28 to keep the generator-tube 3 supplied with water for the generation of gas. A draw-off cock 31 is also
- 35 connected with the tank 1, whereby the water may be withdrawn therefrom whenever required.

- To the pipe 27 is connected an emergency exhaust-pipe 32, which is also connected with the spout or nozzle 24 of the pipe 23 and has
- 40 arranged therein a valve 33, to which is connected a lever-arm 34. This lever arm is pivoted at its outer or free end to the lower end of an operating-rod 35, which extends through a guide-opening in the bracket or projection
- 45 18 and projects upwardly to a point above the outer arm of the lever 14'. A contact-piece 36 is adjustably mounted upon the upper end of this rod by means of a set-screw 37, and with said contact-piece the end of the
- 50 outer or locking arm of the lever 14' is adapted to contact to move said rod upwardly to open the valve 33 to allow the water contained within the generator-tube 3 to exhaust when an excess pressure of gas is generated, as will
- 55 be hereinafter described. As the carbid-holder 5 is suspended directly from the rod 13, it will of course be readily perceived that the position of said rod determines the position of the holder in the generator-tube 3.
- 60 The vertical movement of the rod 35 is limited by the extent of swing of the arm 34 and oscillatory play of valve 33.

- In operation the tank 1 is first filled with water up to a point slightly above the valve
- 65 or cock 30 and the petcock 38 on the holder or bell 2 opened to allow the escape of air therefrom. The carbid-holder 5 is then sup-

plied with a charge of carbid and inserted through the opening 6 into the generator-tube 3, the rod 13 connected therewith, and the long arm of the lever 14' forced down to bring the catch 17 into engagement with the bracket or projection 18 to hold said carbid-holder elevated above the normal level of the water in the tube 3. The cap 7 is of course first removed to permit of the insertion of the basket or holder 5 and then applied to close the opening 6 to prevent the escape of gas. The valve or cock 30 is then opened to allow water from the tank 1 to flow into the pipe 27 and from thence into the pipe 28 and generator-tube 3 to provide the supply of water for the generation of gas, and this is continued until the water has reached the level in the pipe 27 and tube 3 of the line $x x$, when said valve or cock 30 is closed to shut off the flow of water from the tank 1. The catch 17 is then released from engagement with the bracket or projection 18, thereby releasing the lever 14', so as to allow the basket or holder 5 containing the carbid to drop downwardly into the generator-tube 3 to bring the carbid into contact with the water contained therein, whereupon the generation of gas commences. At this point the burners supplied by the service-pipe 20 are opened to allow air to discharge from said pipe, and when the discharge of gas from the burners is first detected said burners and the petcock 38 are closed. The upward movement of the bell or holder 2 then signifies the generation of more or less gas, which will continue while the supply of carbid in the cage or holder 5 lasts. If for any reason the generation of a greater supply of gas than is necessary for consumption should ensue, the bell or holder 2 will rise to the limit of its upward movement under the abnormal pressure of the gas therein and the outer arm of the lever 14' will contact with the contact-piece 36 on the rod 35, whereby the said arm of the lever will be forced downward and the inner arm thereof elevated, thereby raising the carbid-holder 5 out of the water. At the same time the movement of the holder 2 will cause the rod to be elevated and to draw then on the lever-arm 34, which in moving will open the valve 33 and allow the water contained in the generator-tube 3 to discharge through the pipes 26, 27, and 32 and the spout or nozzle 24 to the exterior, thereby lowering the level of the water in the tube 3 to a little below the horizontal line of the valve 33 and stopping the generation of gas. The upward movement of the holder 2 and downward movement of the outer arm of the lever 14' also bring the catch 17 into engagement with the bracket or projection 18 as the carbid-holder is about to leave the water, in which its lower end is slightly submerged, by means of which the carbid-holder 5 is held elevated until the catch 17 is disengaged and the apparatus again set into operation by an attendant.

From the foregoing description, taken in

connection with the accompanying drawings, the construction, mode of operation, and advantages of the invention will be readily understood, and it will be seen that the invention provides an apparatus which is comparatively simple of construction, performs its work in an efficient manner, and is designed to secure safety under all conditions of service.

Variations in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

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

1. In an acetylene-gas generator, the combination of a water-tank, a movable bell or gas-holder, telescoping tubes in the tank and gas-holder coöperating to form a generating-chamber, a lever mounted upon the bell, a carbid-holder suspended in the generating-chamber from said lever, a catch carried by the lever, a projection upon the bell adapted to be engaged by said catch, and means whereby upon the elevation of the bell to its extreme limit the lever is operated to raise the carbid-holder above the level of the water in the generating-chamber and to bring the catch into engagement with said projection

to lock the lever to hold said carbid-holder raised, substantially as described.

2. In an acetylene-gas generator, the combination of a water-tank, a bell movably mounted therein, tubes arranged within the tank and bell and telescoping to form a generating-chamber, a valved draw-off pipe connected with the generating-chamber, a feed and discharge pipe also connected with the generator and having a valve therein, an emergency exhaust-pipe connected with said feed and discharge pipe, means for drawing water from the tank and supplying it to said feed and discharge pipe, a carbid-holder suspended within the generating-chamber, a lever pivoted to the bell and having a short arm connected with said holder, a catch upon the free end of the locking-arm of the lever to engage the bell when the latter moves to the limit of its upward movement, a rod connected with the valve in said discharge and feed pipe, and a contact-piece on said rod adapted to be engaged by the long arm of the lever, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

PAUL B. PERKINS.

Witnesses:

J. T. HAYES,

H. J. STEWART.