

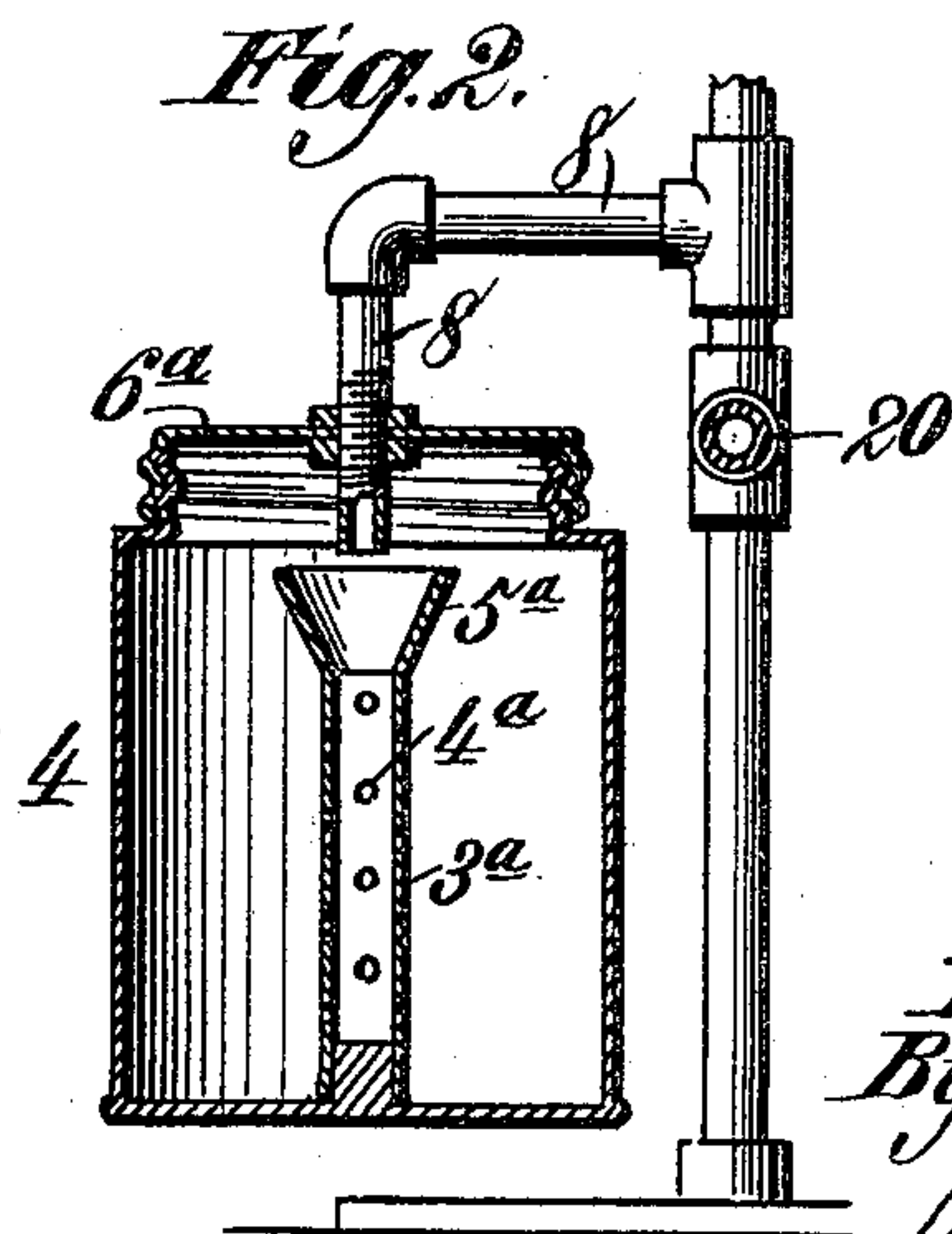
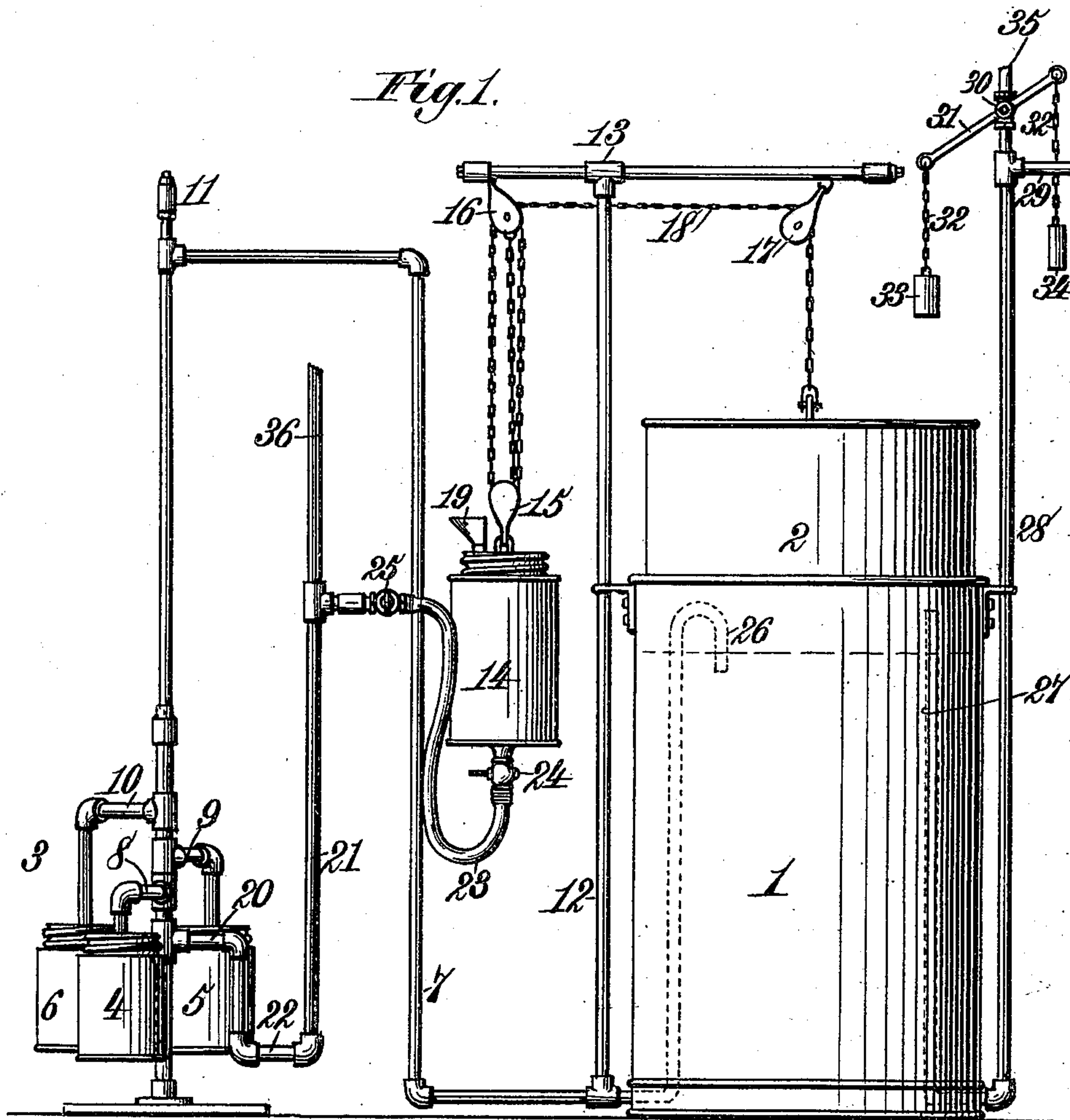
No. 640,065.

Patented Dec. 26, 1899.

R. H. WITZ.
ACETYLENE GAS GENERATOR.

(Application filed Sept. 18, 1899.)

(No Model.)



Witnesses.
Robert G. Smith,
J. B. Keefe

Inventor.
Richard H. Witz.
By *James L. Norris*
Atty.

UNITED STATES PATENT OFFICE.

RICHARD H. WITZ, OF STAUNTON, VIRGINIA, ASSIGNOR OF ONE-THIRD TO
WILLIAM S. BURKE, OF SAME PLACE.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 640,065, dated December 26, 1899.

Application filed September 18, 1899. Serial No. 730,918. (No model.)

To all whom it may concern:

Be it known that I, RICHARD H. WITZ, a citizen of the United States, residing at Staunton, in the county of Augusta and State of Virginia, have invented new and useful Improvements in Acetylene-Gas Generators, of which the following is a specification.

My invention relates to an acetylene-gas generator.

10 The object of my invention is to provide an acetylene-gas generator having the novel features of construction and improved operation of parts hereinafter indicated, and particularly pointed out in the claims.

15 I have illustrated my invention in the accompanying drawings, in which—

Figure 1 is a side elevation of the apparatus, and Fig. 2 is a sectional view of one of the generators.

20 Referring to the drawings, the numeral 1 indicates the gasometer, having a bell 2, and the numeral 3 the generator, comprising in the present instance three separate chambers, denoted, respectively, by the numerals 4, 5, 25 and 6.

The numeral 7 indicates the pipe which affords communication between the generator and the gasometer for supplying the generated gas to the latter. Communicating with 30 said pipe 7 at different heights, respectively, are three branch pipes, denoted by the numerals 8, 9, and 10, which communicate, respectively, with the chambers 4, 5, and 6, entering the tops of said chambers. Within 35 each of the generating-chambers I provide a tube 3^a, perforated throughout its length, as indicated at 4^a, said tube extending to near the top of the chamber and at its upper end having a flaring mouth 5^a, which is immediately below the outlet end of the branch pipe 8, 9, or 10, as the case may be. In the present instance the view illustrates a section through the chamber 4, and the flaring mouth 5^a is therefore indicated as being below the 45 branch pipe 8. These chambers are provided with a movable cover 6^a, whereby they may be filled or partially filled with the carbid, which is made to surround the tube 3^a. As the water passes through the pipe 8, as more 50 fully explained later on, it drops into the tube

3^a, and rising in the same passes out through the various apertures 4^a and attacks the carbid surrounding the tube. The pipe 7 extends vertically upward from the generator, as shown, and then is given a downward bend, 55 so that it will enter the gasometer, in the bottom of the latter. In the top of the pipe 7, leading directly from the generator, I provide an ordinary pop or other escape-valve 11, so that should the pressure of the gas in the 60 chamber exceed the safety-point the valve 11 will be opened by such excessive pressure and a certain quantity of the gas allowed to escape. Supported on the lower horizontal portion of the pipe 7 is a vertical pipe 12, 65 having at its upper end a cross-arm 13. The pipe 12 is closed, however, and has no communication with the pipe 7, its purpose being to afford a stand or support for the water-tank and the apparatus for operating it. 70

The numeral 14 indicates the water-tank, which has secured on its top a pulley-block 15. Supported from the arm 13, immediately above the water-tank, is a second pulley-block 16. On the opposite end of the cross-bar, immediately over the bell of the generator, is 75 secured a pulley 17. A chain 18, having one end secured to the upper part of the bell 2, is passed over the pulley 17 and then through and around the two pulley-blocks 15 and 16, 80 its opposite end being secured in a manner to afford a block-and-tackle arrangement for raising and lowering the tank 14.

The numeral 19 indicates a filling-spout by means of which water may be supplied to said 85 tank. Leading from the pipe 7, at a suitable distance below the lowermost branch pipe 8, is a pipe 20, which is bent downward and is then given a vertical extension 21 to a height considerably above that of the highest branch 90 pipe 10. By extending the pipe 20 downward and then upward I afford a water seal or trap 22 therein, as will be understood. Connecting the vertical pipe 21 with the interior of the water-tank 14 and at the bottom of the 95 latter is a rubber or other flexible tube 23, a valve 24 being provided at the connection with the water-tank and a second valve 25 at the connection with the pipe 21. The pipe 7 enters the bottom of the gasometer, is ex- 100

tended a certain distance above the indicated water-level therein, and is then curved or bent, as indicated at 26, and its open end submerged in the water in the gasometer. By this arrangement the gas passing through the pipe 7 must issue from said pipe beneath the water in the gasometer, whereby it will be cooled and purified by its passage through said water.

The numeral 27 indicates a pipe leading from near the upper part of the gasometer downward and to the outside of the same, where it has a vertical extension 28, provided with a branch pipe 29, leading to the burners or other place of consumption. Above the point of connection of the branch pipe 29 with the pipe 28 I provide a safety escape-valve 30, which is operated by the following mechanism: Secured on the stem of valve 30 is a rod 31, having secured on opposite ends, respectively, chains 32, to the lower end of each of which is secured a weight, said weights being denoted, respectively, by the numerals 33 34. The weight 33 is heavier than the weight 34 and operates normally to hold the valve 30 in a closed position. Said weight 33 is suspended immediately above the bell of the gasometer, and the length of the chain 32 supporting it is so adjusted that should the bell of the gasometer rise beyond the point denoting the limit of pressure to which it is safe to subject the gasometer it will raise the weight 33, and the weight 34 will then draw the end of the rod 31 to which its chain is attached downward, thereby opening valve 30 and allowing the gas to escape from the gasometer until the normal pressure has been restored. The escape-pipe is denoted by the numeral 35 and would of course lead outside of the building within which the generator might be stationed.

The operation of generating gas is as follows: The bell 2 being in its lowest position and initially, the tank 14 is filled with water through the spout 19, the valves 24 and 25 being open. The water immediately passes through the flexible pipe 23 and pipes 21 and 20 into the pipe 7, and rising in said pipe will pass through the branch pipe 8 into the generating-chamber 4. As the water attacks the carbide gas is immediately generated and will pass upward through the pipe 8 into the pipe 7 and thence to the gasometer. As the gas continues to flow into the gasometer the bell thereof will rise, slackening the chain 18 more and more and allowing the tank 14 to fall lower and lower until finally it reaches a point below the point of connection of flexible pipe 23 with the pipe 21, when the flow of water to the generator will be cut off. As the gas is consumed the bell 2 will descend, drawing the chain 18 through the pulley 17 and the pulley-blocks 15 and 16, thereby raising the tank 14 and allowing the water again to pass through the pipes described to the generator. Should the previous supply of water have

been insufficient to slake all of the carbide in the chamber 4, the water passing into said chamber will again start a fresh generation of gas, as before; but when all the carbide in the chamber 4 has been slaked the water will fill said chamber, rise through the branch pipe 8 and into the pipe 7, in which it will rise and pass into the branch pipe 9 and thence to the generating-chamber 5, when the operation first described will ensue. After all the carbide in the generating-chamber 5 has been slaked the said chamber will next be filled with water, and the water will then rise in the pipe 7 and pass into the branch pipe 10 to the generating-chamber 6. Back pressure of the gas through the pipes 20 21 is prevented by the water seal or trap 22. When it is desired to close communication between the generator and the water-tank, either of valves 24 or 25 may be closed, or should a leak be discovered in the pipe 23 both of said valves may be closed for the purpose of renewing said pipe.

As a further improvement I continue the pipe 21 beyond the point of connection therewith of the flexible pipe 23, as indicated by the numeral 36, such pipe leading to the outer air and affording a blow-off pipe from the generator, and by admitting air to pipe 21 permitting the more ready flow of the water therethrough to the generator.

Having thus fully described my invention, what I claim as new is—

1. In an acetylene-gas generator, the combination with the gasometer and the generator, of a main pipe leading upward from the generator having its outer end provided with a safety escape-valve, a branch pipe connected with said main pipe at a point below the safety-valve and leading into the gasometer, a support, a hoisting apparatus mounted on said support and operated through the movements of the bell of the gasometer, a water-tank suspended from said hoisting apparatus, a pipe leading from the generator having a trap and a vertical extension leading to the outer air, and a flexible tube affording communication between said vertically-extending pipe and said water-tank and connected to the vertically-extending pipe at a point intermediate its ends, substantially as described.

2. In an acetylene-gas generator, the combination with the gasometer of a generator comprising a series of independent generating-chambers, a main pipe leading upward from the generator and having at its outer end a safety escape-valve and a branch pipe leading from said main pipe into the gasometer, a series of branch pipes communicating with said main pipe at successively different heights, and leading into the respective generating-chambers, a pipe leading from said main pipe at a point below the lowermost of said branch pipes and having a trap and a vertical extension leading to the outer

air, a support, hoisting mechanism mounted thereon and operatively connected with the bell of the gasometer, a water-tank suspended from said hoisting mechanism and a flexible
5 tube connecting the water-tank with said vertically-extending pipe, substantially as described.

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

RICHARD H. WITZ.

Witnesses:

JAMES L. NORRIS,
GEO. W. REA.