

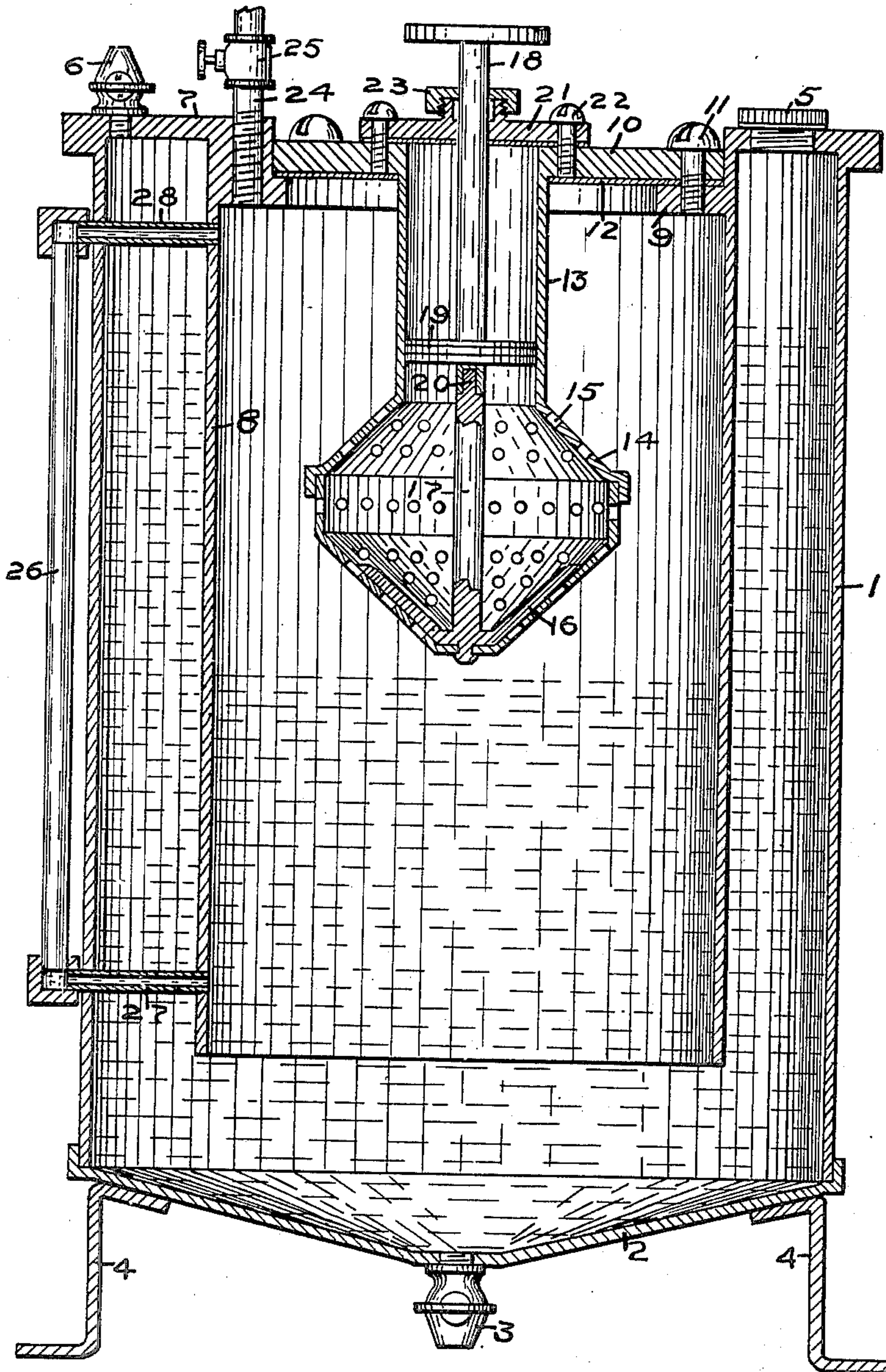
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Patented Nov. 6, 1900.

L. D. RAILSBACK.
ACETYLENE GAS GENERATOR.

(Application filed Nov. 27, 1899.)

(No Model.)



WITNESSES:

G. A. Blaker,
M. C. Buck.

INVENTOR.

Lafayette D. Railsback.

BY

V. H. Lockwood,

His ATTORNEY.

UNITED STATES PATENT OFFICE.

LAFAYETTE D. RAILSBACK, OF INDIANAPOLIS, INDIANA.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 661,320, dated November 6, 1900.

Application filed November 27, 1899. Serial No. 738,393. (No model.)

To all whom it may concern:

Be it known that I, LAFAYETTE D. RAILSBACK, of Indianapolis, county of Marion, and State of Indiana, have invented a certain new and useful Acetylene-Gas Generator; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, in which like figures refer to like parts.

This invention relates to a new construction and arrangement of acetylene-gas generators whereby the generation of gas is automatically regulative and freed from danger of explosion and great simplicity in construction and operation is attained.

Broadly speaking, this invention consists in a water-tank with a bottomless generating-chamber within the water-tank and means for holding the water up in the outside water-tank to prevent its rising in the inner generating-chamber while said chamber is open at its upper end for charging the carbid-holder or for any other purpose. This maintenance of the water in a certain position is effected by rendering the outside tank air-tight at the upper end and providing a valve-closed air-vent therein. When said valve is closed, the pressure of the air on the water in the generating-chamber or the gas therein will keep the water from rising in the generating-chamber when the latter chamber is for any purpose opened at its upper end. Then when the generation of gas is desired the generating-tank is closed and the air-valve in the water-tank is opened, letting air enter the water-tank, which permits the water to rise in the generating-chamber to contact with the carbid. As gas is generated if the pressure becomes too great in the generating-chamber the water will be forced down, partially or entirely, away from the carbid-holder, thus reducing or stopping the formation of the gas, and as the pressure of the gas diminishes the water will correspondingly rise and increase the formation of the gas.

The full nature of my invention will appear from the accompanying drawing and the description following of one form of device embodying my said invention, and the scope of the invention will be understood from the claims following said description.

The drawing shows a vertical longitudinal

section of a form of generator that will explain the nature of said invention.

1 is the casing of the water-tank, with the sloping bottom 2, from whose lower portion an outlet is provided, closed by the valve 3.

4 represents the legs supporting the tank.

5 is a screw-cap closing the opening through which the water can be introduced. Any other means of supplying water to the tank may be employed, provided the inlet can be closed air-tight. An air-vent is also provided in the upper end of said tank, that is closed or opened by the air-valve 6.

Extending down from the top 7 of the tank 1 is an annular casing, that forms the gas-generating chamber 8. It is open at the bottom and does not extend entirely to the bottom of the water-tank 1, so that the water in said tank can enter the generating-chamber at its lower end, as shown. The casing forming the generating-chamber has the annular inwardly-extending flange 9 in its upper end, to which the top 10 is secured by the bolts 11, there being suitable packing 12 in order that the upper end of the gas-generating chamber should be closed air-tight.

The carbid-holder extends down centrally from the top 10 and consists of the upper straight portion or barrel 13 and the lower portion 14, that is doubly conical and provided with perforations 15. Within the lower end of the perforated portion 14 of the carbid-holder I mount a scraper 16 on the stem 17, that is rotatable by the handle 18. The scraper 16 is to remove the deposit of lime and other substances from the lower part of the carbid-holder to prevent clogging the apertures therethrough. The handle 18 is held in place by the washer 19, that is made preferably of rubber and fits air-tight in the barrel 13 of the carbid-holder. The lower end of the handle 18 is provided with a square socket that fits over the square end 20 of the stem 17. The carbid-holder is closed air-tight by the cap 21, that is bolted to the top 10 by the bolts 22. Likewise the screw-cap 23 closes air-tight the passage-way through the cap 21 for the handle 18 of the carbid-scraper.

In order to charge the carbid-holder, the cap 21 is removed and also the handle 18 and rubber washer 19. After the carbid is intro-

duced these are replaced. The gas that is generated passes through the pipe 24, that is closed by the valve 25, to any suitable burner. A glass water-gage 26 is placed in one side, 5 that is connected at its lower end by the pipe 27 to the lower portion of the gas-generating chamber 8 and at its upper end by the pipe 28 to the upper end of said chamber 8. The function of this is to indicate the position of 10 the water within the generating-chamber.

The operation of this generator will be understood from the following explanation: Supposing the carbid-holder to be in place and charged and both the inner and outer 15 chambers not air-tight at their upper ends, the water-tank is filled through the opening closed by the screw-cap 5 or any other means until the water reaches the carbid-holder. Then the top of the inner generating-chamber 20 is closed air-tight and water is further introduced, so as to raise a column of water in the outside chamber to the height shown or to any other height. If desired, the outside tank can be entirely filled. Then the water-supply is shut off and the valve 25 for letting out the gas is opened. Nothing further need be 25 done, as from that time until a new supply of water or carbid is needed the device is self-regulative. As soon as the valve 25 is opened 30 the water in the inner chamber rises about the carbid and the formation of gas begins. If the pressure becomes too great in that chamber, the water will be pushed down correspondingly from the carbid. As more gas is 35 consumed, more burners lighted, and more gas admitted, the water, because of the decreased pressure above it, will rise higher about the carbid. The pressure of the gas in the generating-chamber controls the position of the water. The relative normal pressure of gas in the generating-chamber that 40 may be desired and the hydrostatic pressure of the column of water in the outside chamber, which two things act against each other, can be predetermined by increasing the height 45 of the water in the outside chamber. Ordinarily this will be immaterial; but in case high pressure of gas is needed it might become necessary.

When the carbid-holder needs charging again, the air-valve 6 is closed and the cap at the upper end of the carbid-holder removed, as explained above. The closing of the valve 6 holds the column of water up in the outside 50 chamber during this operation. As soon as the top of the carbid-holder is closed and the valve 6 is opened the generation of gas will again proceed. The simplicity and self-regulative feature of this construction is therefore 60 obvious.

In raising the column of water in the outside chamber above the desired height in the inside chamber the inside chamber must be closed air-tight and the outside one opened. 65 On the other hand, when the outside chamber is closed air-tight and the top of the inside chamber is open the column of water will

be held up in the outside chamber and down in the inside chamber. The relative position of the water in the two chambers is unchanged 70 as long as the top of either the outer or inner chamber is closed air-tight. The valve 6 should be closed only when it is necessary to open up the generating-chamber; but in such case it will keep the column of water in 75 that chamber away from the carbid-holder, which is the main feature of this invention. Without the air-valve 6 the carbid-holder could not be charged or operated upon unless enough of the water were removed to 80 put the level in both chambers below the carbid-holder. The object of this invention is to avoid the necessity of changing the position of the water or giving it any attention when it is desired to recharge the carbid- 85 holder. If a regular water-supply pipe were employed to feed water to the outside tank, no special charging of that tank would be necessary. If too much water enters, it could not rise in the inner chamber against the gas 90 or air pressure therein, but would flow out through the air-valve 6. Yet in that case if the air-valve 6 were closed it would sustain the column of water in the outside chamber when the top of the inner chamber was 95 opened. This outside water-tank also serves as a water-jacket about the generating-chamber to keep it cool.

What I claim as my invention, and desire to secure by Letters Patent, is— 100

1. An acetylene-gas generator including a water-tank closed at its upper end, a generating-chamber extending down therein that is open at its lower end, a carbid-holder in said chamber, a closure for charging it through 105 the upper end, and a valve-closed air-vent at the upper end of the water-tank, whereby the water will be held down in the generating-chamber when it is opened at the upper end.

2. An acetylene-gas generator including a 110 water-tank closed at its upper end, a generating-chamber extending down therein that is open at its lower end, a carbid-holder that does not extend to the lower end of the generating-chamber, a closure for charging the 115 carbid-holder through its upper end, an air-vent at the upper end of the water-tank, and means for closing said air-vent air-tight, whereby the water will be held down in the generating-chamber when it is opened at the 120 upper end.

3. An acetylene-gas generator including a water-tank closed at its upper end with a casing depending therefrom to form a generating-chamber, a carbid-holder mounted in said 125 generating-chamber that does not extend to the lower end thereof and whose lower end is so formed as to hold the carbid in a downwardly-tapering body, and a valve-closed air-vent at the upper end of the water-tank. 130

4. An acetylene-gas generator including a carbid-holder whose upper end is straight and whose lower end is conical, a rotatable scraper mounted in the lower end having a stem ex-

tending upward therefrom, a handle extending into the carbid-holder that is detachably connected with the stem of the scraper, and a washer on said handle within the straight
5 portion of the carbid-holder to close the carbid-holder and hold the handle in place.

In witness whereof I have hereunto affixed

my signature in the presence of the witnesses herein named.

LAFAYETTE D. RAILSBACK.

Witnesses:

V. H. LOCKWOOD,
M. C. BUCK.