

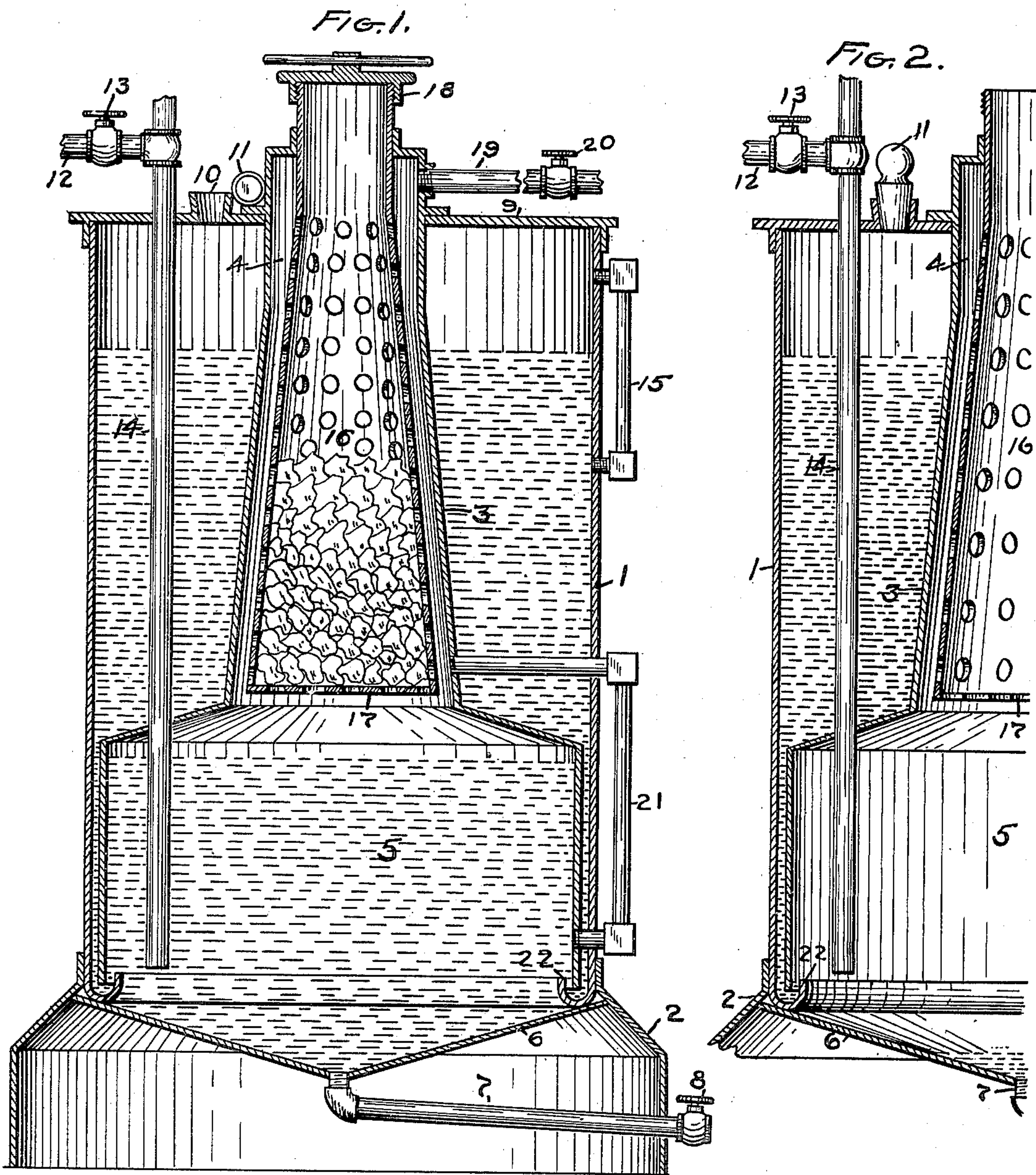
No. 661,321.

Patented Nov. 6, 1900.

L. D. RAILSBACK.  
ACETYLENE GAS GENERATOR.

(Application filed May 28, 1900.)

(No Model.)



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 661,321, dated November 6, 1900.

Application filed May 28, 1900. Serial No. 18,292. (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 drawings, in which like figures refer to like parts.

The object of this invention is to improve and simplify the construction of acetylene-gas generators in order to bring about better operation and convenience in operation.

One of the novel features in this invention is the means employed for holding the water up in the water-tank while the carbide is being recharged or the sediment and impure water removed. To that end the water-tank is provided with a valve-closed air-vent at the upper end—that is, the upper end of said tank is water-tight—and at the lower end the outer casing of said tank is turned up U-shaped about the lower edge of the inner casing, so that when the water is withdrawn from the inner chamber air cannot pass into the water-chamber, and the air-pressure on the water in the U-shaped portion of the casing will hold the water up in the water-tank. In such case either the lower end or the upper end or both of the inner chambers can be opened for the insertion or removal of any contents without losing the water in the outer chamber.

The foregoing, with the other features of this invention, will appear from the accompanying drawings, and the description following of one form of device embodying said invention and the scope of said invention will be understood from the claims following said description.

In the drawings, Figure 1 is a central vertical section of the acetylene-gas apparatus while in use. Fig. 2 shows one side of the apparatus from top to bottom with the water removed from the inner chamber, but held up in the outer chamber.

The details of construction of the apparatus herein shown for the purpose of illustrating the general nature of this invention is as follows:

1 is the outside casing or shell of the water-tank and is supported on the base 2.

3 is the inner casing, forming the inner wall of the water-tank and also forming within said casing 3 the generating-chamber 4 in its upper end and the gas-holder 5 at its lower end. Said casing 3 is gradually enlarged from the top to a point near the middle to form the generating-chamber, and the lower end of said casing is considerably enlarged to form the gas-holder, thus leaving but a small space between the gas-holder and the outside casing 1.

The outside casing 1 at its lower end is turned inward and upward U-shaped about the lower end of the inner casing 3. The edge of such inturned portion of the outer casing extends above the lower edge of the inner casing, so as to form the annular trough or receptacle 22 for water that will hold the body of water above the lower end of the inner casing 3, whereby air cannot pass from the gas holder or chamber within the casing 3 under the lower end of the casing 3 into the outer or water chamber so long as there is any water in said chamber-trough 22. A funnel-shaped bottom 6 is provided leading from the lower end of the outer casing 1 to a central outlet for the sediment and impure water through the tube 7, that is closed by the cock 8. The outer casing 1 or water-tank has a plain air-tight top 9, provided with the air-vent 10, that is closed by the plug or other air-tight closure 11.

Water is introduced through the pipe 12 from some suitable source of supply, which has the cock 13 in it and which discharges into the tube 14, that extends vertically through the top 9 into the gas-holder or central lower chamber 5 nearly to the bottom. The joint must be air-tight where this pipe 14 passes through the top 9 and the casing 3. The upper and lower ends of the tube 14 are open. The water first enters the lower end of the gas-holder, and by opening the air-vent 10 the water flows up between the inner and outer casings to fill the water-tank as full as desired. It should preferably be filled nearly to the top, and to indicate its height the water-gage 15 is provided near the upper end of the outer tank. After said water-tank is supplied with water in this manner the cock 13 is closed, but the air-vent 10 left open during the operation of the device.



A carbid-holder 16 is placed in the gas-generating chamber 4, with its lower end near the lower end of said chamber and provided with a screen 17, on which the carbid is dropped through the upper end when opened. The upper end is closed by the cap 18 after the carbid is introduced. The diameter of the carbid-holder increases from top to bottom, so that the carbid will never stick in the holder. There is sufficient space around the carbid-holder and the casing 3 to permit the upward movement of the gas formed to the upper end of the gas-generating chamber, from which it is conducted by the service-pipe 19, that is provided with the cock 20.

In operation with the air-vent 10 open and the cock 8 closed at the bottom the water will move downward by gravity into the gas-holder and up into contact with the carbid, whereupon gas will be generated. If the gas is generated so rapidly as to create a back pressure, the water will be forced down out of contact with the carbid and if necessary some of it be forced back into the water-chamber. With the diminution of the pressure of the gas the water will return to the carbid. In this manner the apparatus is self-regulative. The height of the water in the gas-holder is indicated by the gas and water gage 21, the upper end of which is connected with the lower end of the gas-generating chamber and the lower end of which connects with the lower end of the gas-holder on a line substantially with the lower end of the tube 14.

When it is desired to remove the sediment or impure water from the gas-holder or recharge the carbid-holder, the air-vent 10 is securely closed by the plug 11 or otherwise, and then the screw-cap 18 or the cock 8 may be opened singly or together, as desired. In this way all the water and contents may be removed from the gas-holder, and in such case the water in the water-chamber will remain there held up by the air-pressure on the water in the U-shaped trough 22 at the lower end of the water-chamber. This advantage is very valuable, especially in the larger forms of this apparatus, as the water is not wasted and the time for filling is saved. After the apparatus is cleaned in this manner the cock 8 and screw-cap 18 may be closed and the air-vent 10 opened, whereupon the apparatus proceeds at once to the generation of gas. If the generation of gas is so excessive as to force the water nearly altogether out of the gas-holder 5, some gas will escape through the pipe 14, and thus relieve the pressure in the gas-holder, so that none of it will be forced into the water-chamber. The upper end of the tube 14 may, if desired, enter a chimney or other place for discharging such excessive gas. The need of this will seldom occur, as the movement to and fro of the body of gas and water in the gas-generating chamber and gas-holder will be limited and usually not excessive. The tube 14 is provided merely for

precaution. By introducing the water into the pipe 14, so that it primarily enters the gas-holder 5, a fresh supply of water may be introduced into said gas-holder 5 after the same has been cleaned out without interfering in the least with the body of water held up in the water-chamber.

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

1. An acetylene-gas apparatus including a chamber for generating and holding the gas, a water-tank with its lower end upturned into said chamber and open, the walls of the generating-chamber extending into said upturned portion forming a seal and means for closing the upper end of said water-tank air-tight.

2. An acetylene-gas apparatus including a chamber for generating and holding the gas with its lower end open, and a surrounding water-tank with its lower end upturned trough-like into said inner chamber and open, the walls of the generating-chamber extending into said upturned portion forming a seal.

3. An acetylene-gas apparatus including a chamber for generating and holding the gas, a water-tank with its lower end upturned into said chamber and open, the walls of the generating-chamber extending into said upturned portion forming a seal means for closing the upper end of said water-tank air-tight, and means for removing the water from the lower end of said inner chamber.

4. An acetylene-gas apparatus including a chamber for generating and holding the gas, a carbid-holder mounted in the upper portion of said chamber, a removable cap for closing the upper end of said carbid-holder, a gas-outlet from the upper end of said chamber, a water-outlet from the lower end thereof, a water-tank with its lower end upturned in said inner chamber and open, the walls of the generating-chamber extending into said upturned portion forming a seal and means for closing the upper end of said water-tank air-tight.

5. An acetylene-gas apparatus including a gas-generating chamber, a gas-holder below and communicating with and of greater diameter than the gas-generating chamber, a water-tank with its lower end upturned into the gas-holding chamber and open, the walls of the generating-chamber extending into said upturned portion forming a seal an air-vent at the upper end of the water-tank, means for closing the same air-tight, and an open tube leading from the lower end of the gas-holder to the open air.

6. An acetylene-gas apparatus including a gas-generating chamber, a gas-holder below and communicating with and of greater diameter than the gas-generating chamber, a water-tank with its lower end upturned into the gas-holding chamber and open, the walls of the generating-chamber extending into said upturned portion forming a seal an air-

vent at the upper end of the water-tank,  
means for closing the same air-tight, an open  
tube leading from the lower end of the gas-  
holder to the open air, and means for sup-  
plying the apparatus with water through said  
open tube.

In witness whereof I have hereunto affixed

my signature in the presence of the witnesses  
herein named.

LAFAYETTE D. RAILSBACK.

Witnesses:

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