

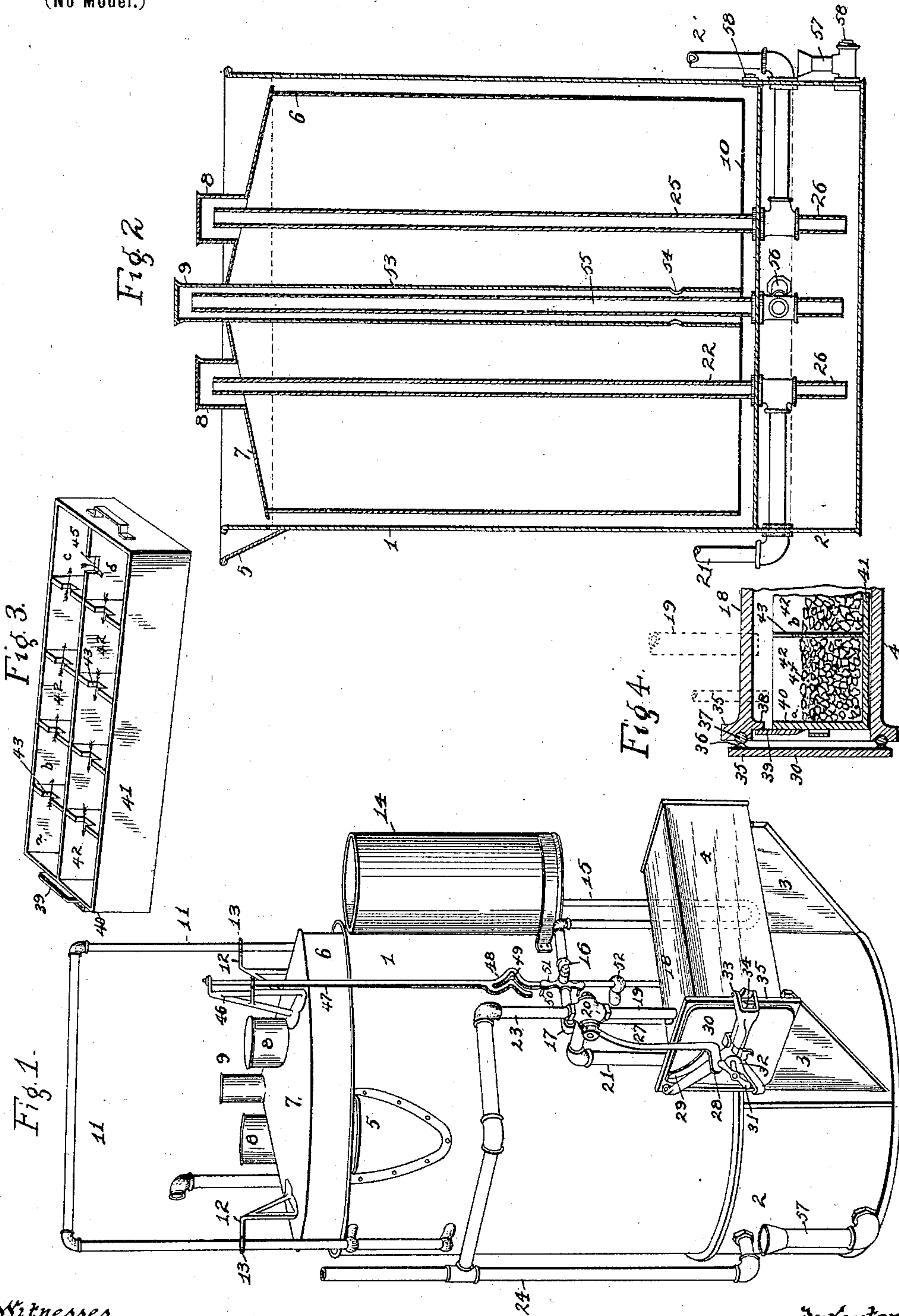
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Patented Aug. 21, 1900.

W. H. MITCHELL & W. A. ARMSTRONG.  
ACETYLENE GAS GENERATOR.

(Application filed Oct. 2, 1899.)

(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. 656,560, dated August 21, 1900.

Application filed October 2, 1899. Serial No. 732,318. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM H. MITCHELL, of the city of St. Louis, and WILLIAM A. ARMSTRONG, of Doniphan, Ripley county, State of Missouri, have invented certain new and useful Improvements in Acetylene-Gas Generators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

Our invention relates to acetylene-gas generators; and it consists of the novel construction, combination, and arrangement of parts hereinafter shown, described, and claimed.

The object of this invention is to construct a device for generating acetylene gas provided with a means for automatically regulating the passage of water upon the carbide within the generator and a means whereby the connection between the generator and gasometer must be cut off before the door of the generator can be opened.

Figure 1 is a perspective view of our complete invention. Fig. 2 is a vertical sectional view of the gasometer, showing its interior construction. Fig. 3 is a perspective view of the carbide-pan made use of in connection with our invention. Fig. 4 is a vertical sectional view of a part of the generator and carbide-pan, showing their connection.

In the construction of the device as shown we provide a water-tank 1, mounted upon a condensation-chamber 2, which is of suitable height and is provided on its outer surface with brackets 3 for supporting a generator 4. Upon the top and to one side of the tank 1 we provide a filling-lip 5, which is for the purpose of filling said tank with water. Within the tank 1 we place the gasometer 6, provided at its top with a cover 7, having three caps 8 and 9, which act as chambers and recesses, in which the ends of pipes may project. The bottom 10 of the gasometer 6 is open, as shown in Fig. 2. The gasometer 6 is arranged to be raised by means of the gas and is guided upon a guide-frame 11, suitably secured to the sides of the water-tank 1, and said gasometer is guided upon said guide-frame by brackets 12, secured to the cover 7, and is right-angular in form, and its free end 13 is passed loosely around the vertical members of the guide-frame 11.

To one side of the water-tank 1 we support in any desirable manner a smaller water-tank 14, which is provided at its bottom with a water-pipe 15, which extends downwardly and suitably bent and extending again upwardly and bent at right angles and secured to a cut-off valve 16. This arrangement is for the purpose of preventing any gas from the generator from passing into the water-tank 14, as the lower ends of the vertical pipes 15 act as a seal and are at all times filled with water. From the cut-off valve 16 extends a pipe 17, which passes downwardly and connects the generator 4, extending through its top 18, as shown by dotted lines in Fig. 4.

At the top of the generator and extending therethrough is a pipe 19, which is connected to a valve 20, to which is connected the supply-pipe 21, extending downwardly and through the condensation-chamber and connecting a pipe 22, which extends vertically through the water-tank to a height a short distance above its water-level. Upon the top of the valve 20 we apply a pipe 23, which is arranged at right angles, passing around the water-tank 1 and connected to a blow-off pipe 24. Said pipe 24 extends downwardly, is bent at right angles, and passes through the condensation-chamber 2, connecting a pipe 25, which also extends vertically through the water-tank 1, projecting a short distance above the water-level. Each of the pipes 22 and 25 extends downwardly a short distance below the horizontal pipe connections and are used as drip-pipes 26. This is for the purpose in case any of the gas should condense within said pipes it will allow the same to pass therefrom and enter the condensation-chamber, thus preventing any water from passing within the service-pipes.

The valve 20 is provided with a handle 27, which is suitably bent and extends downwardly and is provided with two projecting arms 28 and 29, the arm 29 coming in close communication with a door 30 of the generator 4 and the arm 28 coming in communication with the tightening-screw 31, which is used for bringing the door 30 in close communication with the opening of the generator for making a gas-tight joint. The tightening-screw 31 is passed through a frame 32, consisting of three arms, two of which pro-



ject at an angle and act as hinges for the door 30, the horizontal arm being provided at its end with ears 33, which pass over a lug 34, formed on a flange 35 of the generator.

5 The object of the handle 27 is to prevent the door 30 from being opened while the valve 20 is open. It is necessary in this construction when it is desired to open the door 30 to remove the handle 27 from its position in

10 front of said door, and by doing this it will close the valve 20, thereby closing the connection between the generator 4 and the gasometer, thus preventing any gas from returning from the gasometer 6 back into the

15 generator while the door is open. The handle 27 acts as a safeguard, and no mistake can ever be made, as the door 30 cannot be opened until the handle 27 is pushed aside. The door 30 is provided on its inner surface

20 with projections 36 and designed to come in communication with a rubber packing 37, formed within the flange 35 of the generator. This construction is for the purpose of providing a gas-tight joint at this point.

25 The upper inner surface of the generator is provided with a detent 38, which extends downwardly a short distance and is designed for the purpose to come in contact with a lug 39, formed on the end 40 of the carbid-pan

30 41, its purpose being to prevent said pan 41 from being placed within the generator rear foremost. The carbid-pan 41 is provided with a plurality of cells 42, each having a passage 43 for allowing the water to pass from

35 one into the other. The arrangement of the cells may clearly be seen by referring to Fig. 3. It will be observed that each cell is connected to the other by said cut-off portion 43, and the water which is allowed to drip upon

40 the carbid 44, placed within the cell *a*, will be allowed to pass through the cut-away portion in its partition after the same has been filled and fill the cell *b*, and so on until the water reaches the cell *c*, and after said cell

45 has been filled it passes through the cut-away portion 45 and enters the cell *d* and passes from one to the other, as indicated by the arrows. By this arrangement the water is allowed to pass in only one of the cells indicated by the letter *a*. After the carbid within

50 the cell *a* has been completely decomposed and the gas generated thereby passed through the pipe 19 into the gasometer the water will then pass upon the adjoining cell *b*, and so

55 on, cell by cell, until all the carbid in the entire number of cells is decomposed.

Upon the top of the gasometer 6 we place a bracket 46, to which is secured in any desirable manner a rod 47, extending down-

60 wardly and provided with an angular bend 48, forming a slot 49, in which is adapted to operate when brought in communication a pin 50, formed on the double arm 51, connected to the cut-off valve 16. It will be observed by referring to Fig. 1 that said arm 51 is arranged in duplicate. This is for the purpose to allow said valve to be operated, no

matter in what position said rod 47 may be. The lower projection of the arm 47 below the bend 48 is guided in the guide 52, secured in any desirable manner to the side of the water-tank 1. By this arrangement of rod 47 and arm 51 the water-supply in the tank 14 is regulated.

When the carbid in the pan 41 is completely decomposed and gas from the gasometer consumed, said gasometer will be allowed to assume a lowering position, and when the same is near its lowest point the bend 48 will come in communication with the pin 50 of the arm 51, turning the same, and thereby cutting off the supply of water within the generator, thus preventing an overflow within said generator.

The object of providing the chambers 8 and 9 upon the cover 7 is to allow said tank to assume a very low position, bringing the water-level of the water-tank close to its top, thus allowing but little space within the top of said gasometer, so that almost all of the gas can be utilized. Within the center of the gasometer connecting the chamber 9 we provide a tube 53, extending downwardly and provided with apertures 54 near its bottom. This tube is placed over a pipe 55, extending upwardly near the top of said chamber 9, and is secured at its bottom to a pipe 56, which is passed outwardly through the condensation-chamber to a point of escape. This is for the purpose that when the gasometer is raised by means of the gas-pressure to a point where the apertures 54 will rise above the water-level the gas will then escape through said apertures and pass upwardly and downwardly through the pipe 55 into the pipe 56, where it is allowed to escape from the building into the open air. This is to prevent the gas from raising the gasometer from the water-tank in case of an overpressure.

At one side near the bottom of the condensation-chamber we provide a filler 57, by which the condensation-chamber is filled with water and is allowed to be filled to a level with the top of said filler. We also provide the water-tank 1 and the condensation-chamber with a plug 58, by which the water and its sediment can be drained therefrom.

We claim—

An acetylene-gas generator having a small water-tank, a suitably-bent seal-pipe leading from said tank, a valve in said pipe, arms integral with said valve, pins 50 carried by said arms, a rod 47 carried by the gasometer, said rod having an angle 48 and a slot 49 which are for the purpose of engaging the pins 50 thereby operating the valve 16 at suitable times as the said rod is elevated or lowered by the gasometer, substantially as specified.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM H. MITCHELL.

WILLIAM A. ARMSTRONG.

Witnesses:

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JOHN C. HIGDON.