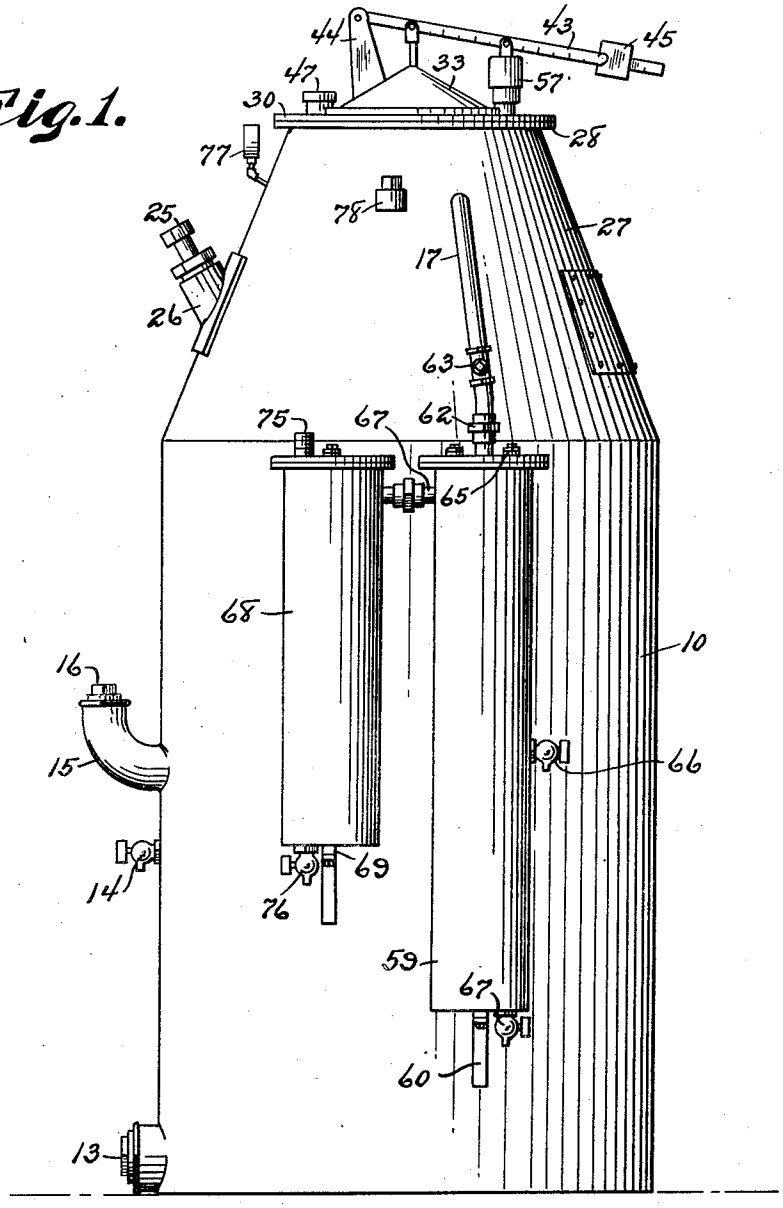
Dec. 17, 1929. J. C. STOVALL 1,740,208

ACETYLENE GAS GENERATOR

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Fig. 1.



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WITNESS

Dec. 17, 1929. J. C. STOVALL 1,740,208

ACETYLENE GAS GENERATOR

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Fig. 2.

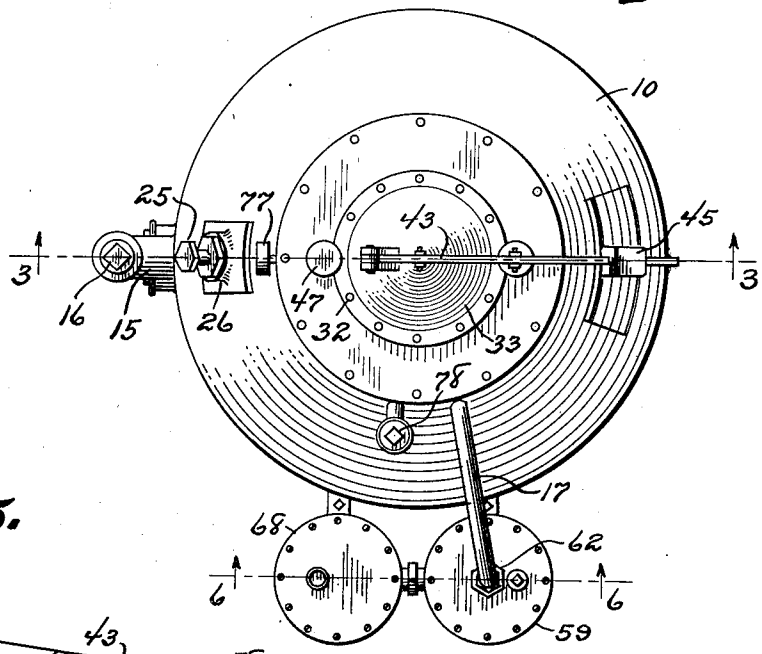
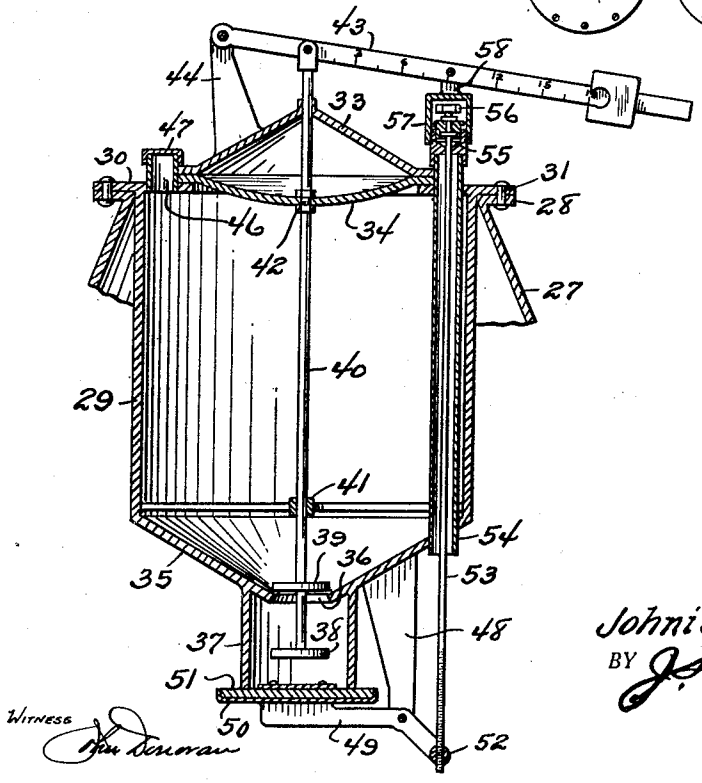


Fig. 5.



Witness

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Dec. 17, 1929. J. C. STOVALL 1,740,208

ACETYLENE GAS GENERATOR

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Fig. 4.

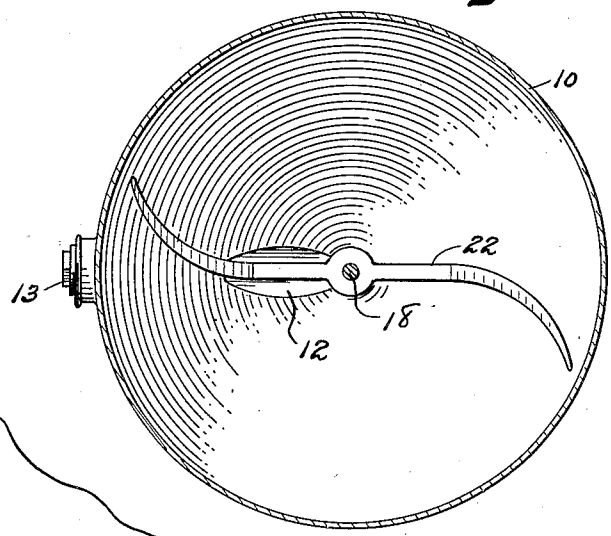
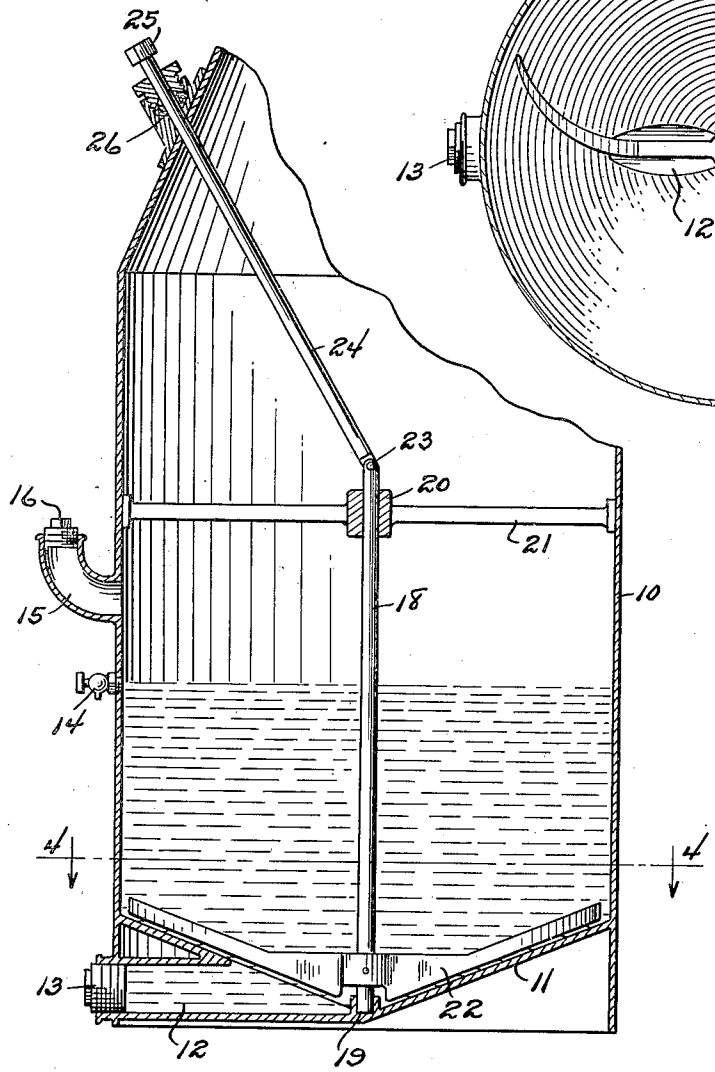


Fig. 3.



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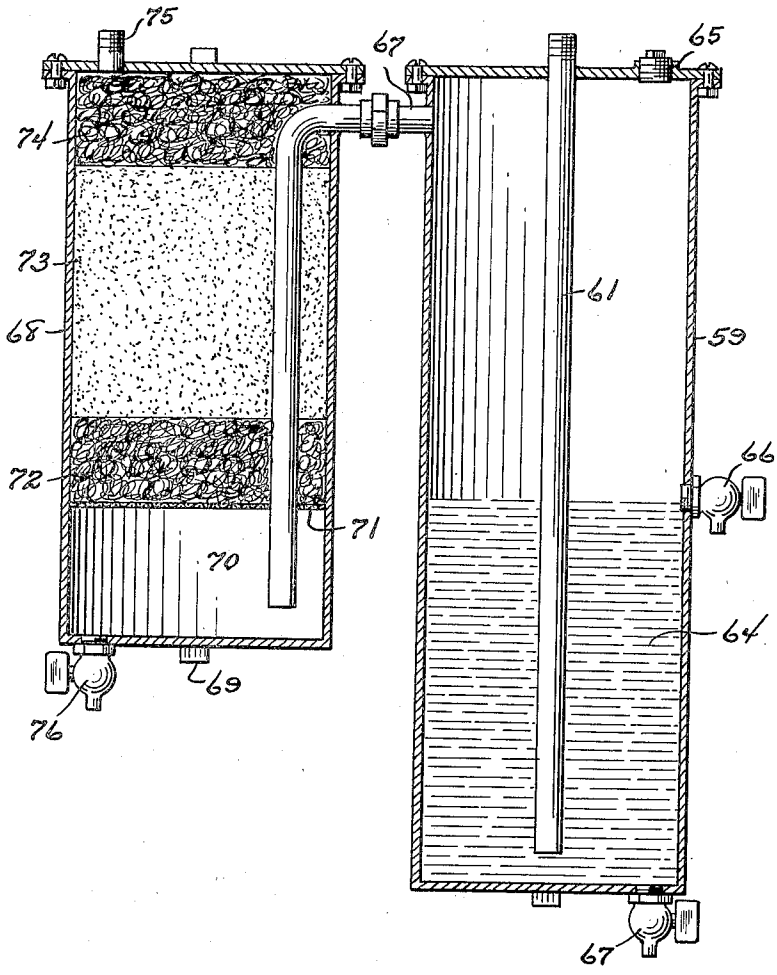
WITNESS John Donovan

Dec. 17, 1929. J. C. STOVALL 1,740,208

ACETYLENE GAS GENERATOR

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Fig. 6.



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Patented Dec. 17, 1929 1,740,208

UNITED STATES PATENT OFFICE

JOHNIE CADE STOVALL, OF PLAINVIEW, TEXAS

ACETYLENE-GAS GENERATOR

Application filed October 25, 1927. Serial No. 228,617.

This invention relates to improvements in acetylene gas generators, an object being to provide means for automatically controlling the generation of gas in regulated quantities, so as to provide a gas supply in accordance with the needs of the user, the invention also having for an object the provision of means to lock the generator against operation and to prevent mixture of the carbide and water, so that the generator may be safely stored, moved or shipped, and its operation prevented by unauthorized persons.

Another object of the invention is the provision of a gas generator which includes means for cutting off the supply of gas and sealing the supply pipe in the event of fire, so that the fire cannot reach the main generating tank, but will be extinguished through lack of fuel.

Another object of the invention is the provision of means for drying the generated gas so that all moisture will be removed, and thus eliminate the possibility of the gas line freezing in extreme weather, and the disadvantages of oxidized welds, due to moisture, when the gas is used for welding purposes.

With the above and other objects in view, the invention further includes the following novel features and details of construction, to be hereinafter more fully described, illustrated in the accompanying drawings and pointed out in the appended claims.

In the drawings:—

Figure 1 is an elevation of a gas generator constructed in accordance with the invention.

Figure 2 is a top plan view of the same.

Figure 3 is a fragmentary sectional view through the main generating tank.

Figure 4 is a section on the line 4—4 of Figure 3.

Figure 5 is a detail sectional view through the carbide container and showing a portion of the main generating tank.

Figure 6 is a sectional view on an enlarged scale showing the automatic cut off for the gas supply pipe, and the gas drier.

Referring to the drawings in detail wherein like characters of reference denote corresponding parts, the reference character 10 indicates the main generating tank which is preferably provided with a bottom 11 which inclines downwardly to the axial center of the tank and which is provided with an outlet passage 12, normally closed by a plug or closure 13. This tank is designed to contain water whose level may be regulated by a petcock 14, the latter being also useful for testing the condition of the water within the tank. Water is supplied to the tank through a water inlet pipe 15 and this pipe is normally closed by a screw plug 16. The space within the tank above the water provides for the accommodation of the generated gas which passes outward through a gas outlet pipe 17 adjacent the top of the tank 10.

Mounted for rotation within the tank and disposed axially thereof is a shaft 18 whose lower end is mounted in a bearing 19 and whose upper end is mounted in a bearing 20 which is carried by arms 21 extending from the sides of the tank. Secured to the lower end of the shaft 18 is an agitator which comprises oppositely extending scraper blades 22. These blades may be oppositely curved as shown in Figure 4 and their lower edges are inclined in conformity with the shape of the bottom of the tank. When the agitator is rotated, the collected material will be scraped from the bottom of the tank and may be drawn off through the passages 12, so that the tank may be properly cleaned. Connected to the upper end of the shaft 18 by means of a universal connection 23, is a rod 24. This rod extends outward through the side of the tank and is provided with an operating handle 25, by means of which it may be conveniently operated to rotate the agitator in the manner just described. The rod preferably extends through a stuffing box 26 so as to provide a leakproof joint.

The top portion of the tank is inclined as shown at 27 and is open at the top, the opening being surrounded by a flange 28. Extending into the open top of the tank is a carbide container 29 whose top is surrounded by a flange 30. The flange 30 is secured to the flange 28 by means of fastening devices 31. Secured to the top of the container 29 as shown at 32 is a flanged cap 33 and clamped between this cap and the top of the container

29 is a diaphragm 34. This diaphragm is formed of any suitable material, but is preferably formed of rubberized fabric having a disk of rubber upon opposite sides.

The bottom of the container 29 is inclined as shown at 35 and is provided with a discharge opening 36, while extending downward from the bottom around this discharge opening is a sleeve 37. The opening 36 is designed to be closed by means of spaced valves 38 or 39. These valves are carried by a stem or rod 40 which is guided for movement in a bearing 41 and which is secured to the diaphragm 34 as shown at 42. This rod passes upward through the cap 33 and is pivotally secured to a beam 43. One end of this beam is pivotally mounted upon a bracket or arm 44 which extends from the cap and carries a weight 45. This weight is adjustable upon the beam and the latter is provided with graduations as shown in Figure 5, so that the weight may be adjustably positioned upon the beam. Carbide is introduced into the container through a filling neck 46 which is closed by a cap 47.

Normally, the opening 36 is unobstructed, so that carbide may pass outward through this opening for mixture with the water in the bottom of the tank 10. The carbide discharged from the container 29 will strike the valve 38 and the latter in addition to providing a closure for the opening 36, will act to scatter the carbide. The weight 45 is positioned so that the diaphragm 34 will respond to a predetermined pressure, and when the generated gas passes upward through the opening 36 and acts upon the diaphragm, when a predetermined pressure is reached, the diaphragm will be forced upward and will carry with it the valve stem or rod 40 so that the valve 38 will close the opening 36 to cut off the supply of carbide. As soon as pressure is reduced within the tank 10 the valve will open so that a feed of the carbide will be resumed. The cap 33 in addition to providing a closure for the container 29, also closes the open end of the tank 10. An important function of the cap however resides in the fact that it will limit movement of the diaphragm 34.

Extending downwardly from the bottom of the container 29 is a bracket 48 to which is pivotally secured an arm 49 which carries a closure plate 50. This plate is provided with a rubber or other compressible lining 51 which is adapted to engage the lower edge of the sleeve 37 to close said sleeve and consequently close the outlet from the container 29. The outer end of the arm 49 carries a swiveled nut 52 which has threadedly secured therein one end of a rod 53. This rod extends upward through a tube or pipe 54 and through a leakproof packing 55 at the upper end of the pipe. The rod is provided with a wrench receiving portion 56, so that by rotating the rod 53 the arm 49 will be moved upon its pivot so as to open or close the lower end of the sleeve 37. Normally, the sleeve is open so as to permit of the discharge of carbide from the container 29. If it is desired to move the generator, or if it is desired to prevent operation of the generator for any other purpose, the rod 53 is rotated to bring the closure plate 50 into position to close the end of the sleeve 37. A cap 57 is then placed over the upper end of the rod 53, the said cap having a threaded engagement with the upper end of the pipe 54. The cap carries spaced apertured ears 58 which are adapted to receive the beam 43 between them. The beam is also provided with an opening which will register with the openings of the ears 58, so that a lock or other fastening device may be inserted through these openings. The valve 39 will then close the opening 36. In addition, the closure plate 50 will be locked in position to close the lower end of the sleeve 37 so as to prevent carbide from passing outward or prevent water from passing inward into the container.

The generated gas passes outward from the tank 10 through the pipe 17 for distribution to its point of use. In the present invention however, this pipe enters a tank or container 59 which is secured to the main tank 10 by means of brackets 60. For this purpose, the pipe 17 is connected to a pipe 61 by means of a coupling 62, while a valve 63 is interposed in the pipe 17. The pipe 61 extends downward into the tank 59 with its open end adjacent the bottom of the tank and is immersed in water or other suitable liquid indicated at 64. This water is introduced into the tank through an opening which is normally closed by a plug 65 and its level is regulated by means of a petcock 66. A similar petcock 67 is provided at the bottom of the tank for the purpose of drawing off the water or cleaning the tank. Gas from the main tank 10 will thus enter the tank 59 through the pipe 61 and will pass upward through the water and be discharged through a pipe 67 adjacent the top of the tank 59. This pipe enters a casing 68 which is also secured to the tank 10 by means of brackets 69. The pipe 67 extends downward into the casing 68 with its open end adjacent the bottom of the casing so that the gas is discharged into a space 70 whose top is defined by a screen 71. Positioned between this screen and the top of the casing 68 is a layer of wool felt indicated at 72 and a layer of twisted asbestos fiber 73 and another layer of wool felt 74, so that gas leaving the pipe 67 will pass upward through the wool felt and asbestos fiber and outward through a gas outlet 75 from which it may be conducted to any desired point. By passing the gas through the wool felt and asbestos fiber, all of the moisture will be removed from the gas so that a pure dry gas will be provided.

The casing 68 is provided with a petcock 76 for the purpose of drawing off moisture.

The main tank 10 is preferably provided with a pressure indicator or gauge 77 and a blow-off or safety valve 78.

In the event of fire or flashback through the gas distributing lines, the fire will be prevented from reaching the main tank 10 through the safety device or tank 59. This is due to the fact that a back pressure will be provided in the tank 59 so that the water 64 will be forced upward into the pipe 61 and the pipe 17, and will close and seal these pipes, so that in addition to cutting off the fire from the main tank, the supply of gas will also be cut off and the flame extinguished through lack of fuel.

The invention is susceptible of various changes in its form, proportions and minor details of construction and the right is herein reserved to make such changes as properly fall within the scope of the appended claims.

Having described the invention what is claimed is:—

1. An acetylene gas generator comprising a main tank providing a container for water and gas, a carbide container within the tank, means operated by pressure of gas within the tank to control the discharge of carbide from the carbide container, means to lock the carbide container to prevent the discharge of carbide from, or the entrance of water into said carbide container and means common to the carbide discharge controlling means and the carbide container locking means, to prevent operation of either of said means.

2. An acetylene gas generator comprising a main tank providing a container for water and gas, a carbide container within the tank, a valve for controlling the discharge of carbide from the carbide container, means operated by pressure of gas within the tank to operate the valve, means to render the valve operating means responsive to a determined pressure, means to lock the carbide container to prevent the discharge of carbide from, or the entrance of water into said container and means common to the valve pressure regulating means and the carbide container locking means, to prevent operation of either of said means.

3. An acetylene gas generator comprising a main tank providing a container for water and gas, a carbide container within the tank and having a discharge opening, a pressure operated valve to control the discharge opening, a normally open closure plate for sealing the discharge opening, manually operated means upon the outside of the tank to operate the closure plate and means engageable over the manually operated means and detachably connected with the pressure operated valve controlling means, to prevent operation of either of said means.

4. An acetylene gas generator comprising a main tank providing a container for water and gas, a carbide container within the tank and having a discharge opening, a pressure operated valve to control the discharge opening, means to adjust the valve for operation at a predetermined pressure, a normally open member for closing the discharge opening, manually operated means to operate said member and means associated with the valve adjusting means to prevent operation of the manually operated means.

5. An acetylene gas generator comprising a main tank providing a container for water and gas, a carbide container within the tank and having a discharge opening, a pressure operated valve to control the discharge opening, means to adjust the valve for operation at a predetermined pressure, a normally open member for closing the discharge opening, manually operated means to operate said member and means common to the valve adjusting means and the closing means of the discharge opening to prevent operation of either the valve or said closing means.

6. An acetylene gas generator comprising a main tank providing a container for water and gas, a carbide container within the tank and having a discharge opening, a pressure operated valve to control the discharge opening, a pivotally mounted weighted lever connected with the valve to control the operation of said valve, normally open means to close the discharge opening, means to manually operate said closing means, and means removably secured to the weight operated lever and enclosing the manually operated closing means to lock the parts against operation.

In testimony whereof I affix my signature.

JOHNIE CADE STOVALL.