H. A. BYERS.

ACETYLENE GAS GENERATOR.

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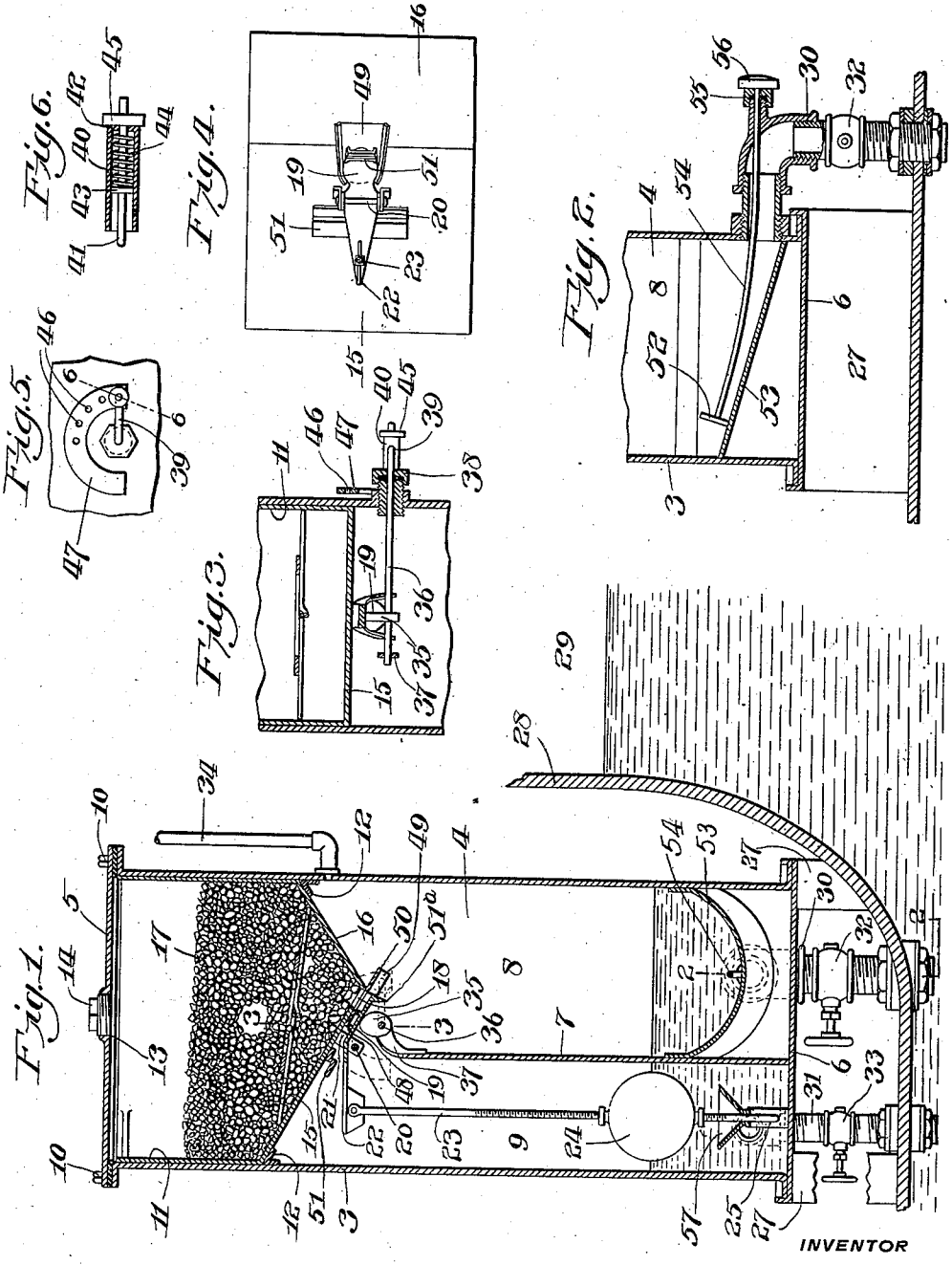
1,014,048.

Patented Jan. 9, 1912.



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ACETYLENE-GAS GENERATOR.

1,014,048. Specification of Letters Patent. Patented Jan. 9, 1912.

Application filed December 17, 1910. Serial No. 597,849.

To all whom it may concern:

Be it known that I, HARRY A. BYERS, a citizen of the United States, residing at Camden, in the county of Camden and State of New Jersey, have invented certain new and useful Improvements in Acetylene-Gas Generators, of which the following is a specification.

The object of my invention is to provide a novel, simple and efficient acetylene gas generator.

The invention is especially adapted for use on board boats and in other locations convenient to a body or stream of water, the apparatus being in communication with the body of water and having provision whereby water may flow from the outside body of water into and from the apparatus for the purpose of acting in conjunction with the carbid for the production of gas and for the purpose of washing away the sludge and for other purposes.

The invention also includes a novel means for automatically supplying carbid from a suitable holder to the water within the apparatus, the automatic supply of the carbid being controlled by the gas pressure.

With the object, thus, generally stated, the invention consists in the novel construction and combination of parts which will be hereinafter fully described and particularly claimed.

In the drawings:—Figure 1 is a vertical section of my improved acetylene gas generating apparatus, as supported within a boat, a portion of the hull of the boat and the body of water supporting the same. Fig. 2 is a vertical section, on line 2—2 of Fig. 1. Fig. 3 is a vertical section, on line 3—3 of Fig. 1. Fig. 4 is a view of the bottom of the carbid holder removed from the apparatus. Fig. 5 is an elevation of a portion of one side of the apparatus, showing the means for adjusting the stop which controls the door of the carbid holder. Fig. 6 is a section, enlarged, on line 6—6 of Fig. 5.

3 designates a vertically-arranged tank adapted to contain water and gas. In the present embodiment of my invention this tank comprises a vertically-arranged body portion 4, rectangular in cross section, upper and lower end heads 5 and 6, respectively and a partition wall 7 dividing the lower portion of the tank 3 into two compartments 8 and 9. The upper end head 5 of the tank is removable therefrom and is held in place by suitable tap screws 10.

Located within the upper portion of the tank 3 is a carbid holder 11 which rests upon suitable support 12 secured to the inside of the tank 3. This carbid holder 11 may be readily removed from the tank 3 through the upper end thereof after the end head 5 is removed.

The upper end head 5 is provided with an opening 13 therein through which carbid may be introduced to the holder 11; and this opening 13 is kept normally closed by a suitable screw plug 14.

The carbid holder 11 is provided with two inclined bottom walls 15 and 16 which converge toward each other and which direct the carbid 17 contained within the holder 11 toward a discharge opening 18 in the lower portion of the inclined wall 15. This opening 18 is kept normally closed by a suitable door 19 which is hinged as at 20 to a bracket 21 on the wall 15. The opening 18 is located above the compartment 8 whereby when the door 19 is opened carbid will be permitted to fall from the holder 11 through the opening 18 and into the compartment 8.

Extending from the door 19 is an arm 22 which is pivoted to the upper end of a rod 23 extending down into the compartment 9 within the tank. The lower portion of this rod 23 is screw-threaded, as shown, and screwed onto the rod is a float 24. This float 24 is vertically adjustable upon the rod 23. The lower end of the rod 23 extends freely through a guide opening in a bracket 25 secured to the tank whereby the rod 23 may be guided as it moves up and down.

The compartments 8 and 9 are separate from each other in the lower portion of the tank 3 and they communicate with each other in the upper portion of the tank. The compartments 8 and 9 are adapted to contain water, as shown, and the water in each compartment is adapted to be acted upon by the gas pressure within the tank which passes freely from one compartment to the other over the partition 7. The float 24 rests upon the water within the compartment 9 and the carbid discharged from the holder 11 falls into the water within the compartment 8 for the production of the gas.

The tank 3 in the present embodiment of my invention is mounted on suitable supports 27 within the hull 28 of a boat which

in turn is supported upon a body of water 29 as shown in Fig. 1.

The lower portions of the compartments 8 and 9 communicate with the outside body of water 29 through separate pipes 30 and 31, respectively, which extend through the hull 28. The pipes 30 and 31 are interrupted by valves 32 and 33, respectively, which may be opened and closed for any suitable purpose. The tank 3 is provided with a suitable outlet pipe for the gas; this pipe 34 leads to suitable burners as usual.

When the desired gas pressure is present within the tank 3 the door 19 is in the closed position as shown in the drawings. When, however, the gas within the tank 3 falls below the desired pressure water from the outside body of water 29 flows into the compartments 8 and 9 through the pipes 30 and 31 and raising the float 24 thereby raising the arm 22 and opening the door 19 and permitting carbid to fall from the holder 11 through the opening 18 and into the water within the compartment 8. The action of the carbid and the water within the compartment 8 generates additional gas, increasing the gas pressure within the tank 3 and forcing the water within the compartments 8 and 9 out through the pipes 30 and 31 to outside body of water 29 until the float 24 is lowered by gravity sufficient to close the door 19 and thereby stop the further discharge of carbid from the holder 11 to the compartment 8 and thus stop the further generation of additional gas. It will thus be seen that each time the gas pressure within the tank 3 falls below the desired pressure, carbid will be automatically delivered from the holder 11 to the water within the compartment 8 for the generation of additional gas.

From the construction just described it will be readily understood that as the water flows into and from the compartment 8 due to the increase and decrease of the gas pressure within the tank 3 the residue or sludge will be washed from the compartment 8 through the pipe 30 into the outside body of water 29.

In order to limit the extent of movement of the door 18 during the automatic opening and closing thereof as just described and thus limit the amount of carbid discharged from the holder 11 I provide a suitable stop 35 which is fixed to and projects from a shaft 36 mounted to turn in a bracket 37 on the partition wall 7. One end of the shaft 36 extends outwardly through a stuffing-box 38 in one side wall of the tank 3. The outer end of the shaft 36 is provided with an arm 39 extending at right angles thereto by means of which the shaft 36 may be turned to adjust the stop 35 with relation to the door 19. The outer end of the arm 39 is provided with a tubular portion 40 which extends parallel to the shaft 36. Within the tubular portion 40 is a pin 41 one end of which extends out through the outer end wall 42 of the tube 40. The pin 41 is provided with a collar 43 within the tube 40; and interposed between the collar 43 and the end wall 42 and surrounding the pin 41 is a spring 44 which tends normally to force the pin 41 toward the tank 3. The outer end of the pin 41 is provided with a fixed collar or head 45 which is arranged to engage the outer end of the tube 40 and limit the inward movement of the pin 41. The inner end of the pin 41 projects beyond the inner end of the tube 40 and is adapted to engage spaced openings 46 in a plate 47 secured to the side of the tank 3. When the pin 41 is engaged with the lowermost opening 46 in the plate 47 as shown in the drawings the stop 35 locks the door 19 in the closed position. When, however, the pin 41 is engaged with another opening 46 the door 19 may be permitted to open to a limited extent, the engagement of the pin 41 with the different openings 46 permitting the door 19 to be opened to different positions to control the amount of carbid discharged from the holder 11 as previously mentioned. When it is desired to introduce carbid to the holder 11 the stop 35 is adjusted to the position in which it locks the door 19 in the closed position thereby preventing the door from being automatically opened by the water entering the compartment 9 and raising the float 24 when the gas pressure within the tank 3 is relieved by the removal of the plug 14 or cover 5 for the introduction of carbid to the holder 11.

It is well known that in an apparatus of the class to which my invention relates that moisture accumulates on the inner walls of the tank above the water level therein, and, therefore, in order to prevent this water from entering the opening 18 and acting upon the carbid within the holder 11, I make the bottom walls 15 and 16 of the holder inclined, as shown, and I also provide suitable guards as follows:—Extending downwardly from the wall 15 around the upper portion of the opening 18 is a guard 48 which is formed on the edge of a plate 49. This plate 49 surrounds the opening 18 and is inclined downwardly as at 50 from the lower portion of the opening 18 and also from the lower portion of the wall 16 adjacent the opening 18. It will thus be seen that any moisture accumulating on the bottom walls 15 and 16 and running down the same will be prevented from entering the opening 18 by the guards 48 and 49, the water dripping from the bottom of the guard 48. I also provide a suitable guard 51 on the bottom wall above the bracket 21 which assists in preventing

the water running down the wall 15 toward the opening 18 from reaching the same. I also provide the lower end of the inclined door 19 with a downwardly extending lip 51ª so that water accumulating on the bottom of the door 19 will run down the same and follow the lip 51ª and drip from the bottom thereof and be prevented from entering the opening 18. Should the water flowing into and from the compartment 8 fail to wash all the sludge or residue therefrom I provide an agitator or scraper 52 which is engaged with the inclined bottom wall 53 of the compartment 8. This scraper 52 is secured to the inner end of a spring rod 54 which extends outwardly through a stuffing-box 55 on the elbow of the pipe 30. The outer end of the rod 54 is provided with a suitable head or handle 56 by means of which the rod 54 may be moved in and out to agitate the sludge within the compartment 8 so that it may be washed therefrom, and also to draw the sludge into the pipe 30.

When the carbid holder 11 is removed from the tank the rod 23 and float 24 are removed therewith so that access may be readily attained to the working parts of the apparatus. In order to direct the lower end of rod 23 to the opening in the bracket 25 when the carbid holder 11 is lowered into the tank 3 I provide the top of the bracket 25 with a suitable flaring portion 57, as shown.

I claim:—

In an acetylene gas generator, the combination of a tank having a gas outlet, means for supporting said tank with respect to an outside body of water, said tank being provided with two compartments each having communication with said body of water, a carbid holder, and means including a float in one of said compartments for delivering carbid from said holder to the other compartment.

In testimony whereof I affix my signature in presence of two witnesses.

HARRY A. BYERS.

Witnesses:

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