ACETYLENE GENERATOR

Maurice P. De Motte, Indianapolis, Ind., assignor to Ozwald Acetylene Company, a corporation of West Virginia

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The invention pertains in general to acetylene generators and in particular to agitators for the carbide-feed valve in acetylene generators of the carbide-to-water type.

The main object of this invention is to provide such an acetylene generator with means for agitating the feed valve to provide a more uniform flow of carbide when the valve is open. Other objects and novel features will be manifest by the following specification and the accompanying illustrations in which Fig. 1 is a vertical section of one form of the acetylene generator embodying my invention and,

Fig. 2 is a vertical section of another form of an acetylene generator embodying my invention.

In generators of this type the carbide is usually carried in a hopper or chamber either suspended in or forming the upper portion of the generator, and the carbide is fed into water in the lower portion of the generator through a valve in the bottom of the hopper that is opened and closed by a diaphragm responsive to the pressure in the generator.

In my improved generator I provide an additional movement and agitate this feed valve by connecting it with a float that rests on the water in the lower portion of the generator and is moved by the agitation of the surface caused by the generated gas.

The carbide hopper is in the upper portion of a generating chamber having a wall that extends from the top of the generator downward below the surface of the water. The space around the generating chamber is a gas storage chamber that contains the float. A valve in the bottom of the carbide hopper controls the flow of carbide to the generating chamber and the opening of this valve is controlled by the pressure in the generator. This carbide valve is carried by a pivot in such a way that it has two motions; a vertical motion in response to the pressure in the generator; and a rocking motion on its pivot that is transmitted from the float by a suitable connection. The float is moved by the agitation of the surface of the water caused by gas passing from the generating chamber through the water to the storage chamber.

Preferably, the float is a hollow inverted bell, although it may be solid. In some instances the generating chamber may be dispensed with entirely as its purpose here is chiefly to increase the agitation on the surface of the water. On the other hand, it may be increased in size to reduce the area of the surface of the water in the storage chamber and increase the agitation of the float.

The embodiment of my invention shown in Fig. 1 comprises a generator having a cylindrical casing 10 with a gas tight cover 11. Suspended within the generator from the cover 11 is a cylindrical wall 12 that extends downward below the surface of a quantity of water 14 that partially fills the generator.

The space inside the wall 12 is divided by a conical partition 15 into a carbide hopper 16 and a generating chamber 17. The conical partition 15 is inverted so that the apex is downward and this partition forms the bottom of the carbide hopper.

An opening is provided at the apex of the partition 15 in which carbide valve 18 is carried by a lever 19 that is hinged to the wall of the generating chamber. The carbide valve 18 is attached to the lever 19 by means of a pivot 20 and the lever 19 is moved by a rod 21 that extends upward through the carbide hopper 16 where it is attached to a diaphragm 22 that is responsive to the pressure within the generator. The diaphragm 22 is moved in one direction by a spring 23, the tension of which may be varied by a screw 24. A normally closed filler opening 25 is provided in the top of the carbide hopper for replenishing its supply, and an outlet 26 for gas is provided near the top of the storage chamber 27.

A hollow float 28 having an open bottom rests upon the water in storage chamber 27. This float 28 is carried by a U-shaped rod 29 that is attached to the center of the float and extends downward into the water under wall 12 and then upward through brackets 30 attached to the inside of the generating chamber to a point where it is loosely coupled to an arm 31 carried by the carbide valve 18. The rod 29 has a loose sliding fit in brackets 30, and the outer end of arm 31 is provided with an eye in which the upper end of rod 29 is loosely held between nuts 32. The carbide generator is provided with numerous other conventional features, such as a carbide shield 33, some of which is not shown for the sake of simplicity.

In the operation of the generator gas is drawn from the outlet 26. This reduces the pressure within the generator and spring 23 forces rod 20 downward, thereby moving lever 19 and opening carbide valve 18. This allows carbide to drop from the hopper 16 through the generating chamber 17 into the water 14. The action of the water on the carbide generates gas that fills 55...
the generating chamber 17 and bubbles outward below the lower edges thereof through the water into storage chamber 27. This agitates the surface of the water in the storage chamber 27 there- 5 by causing float 28 to move up and down, and this movement transmitted through rod 29 to arm 31 causes the carbide valve 18 to rock on its pivot 20. This rocking movement causes the carbide to flow at a more uniform rate and this prevents 10 variations in the gas pressure within the generator. Therefore, a generator equipped with my valve agitating mechanism is more reliable in action and provides a more uniform pressure than generators known heretofore.

In the embodiment of the invention shown in Fig. 2 the size of the generating chamber has been increased until it substantially fills the casing 10 and the area of the surface of the water exposed to the gas storage chamber is reduced to substantially that within the cylindrical wall 24 of a float chamber 35 having an inturned lower edge 36 immersed in water 14. The float 28 rests upon the water in chamber 35 and its operation is similar to that shown in Fig. 1. This arrange- 25 ment, however, increases the agitation of the water and consequently the movement of the float. Wall 12 of the generating chamber is of larger diameter than the wall 12a of the carbide hopper and it extends downward into the water below the lower end of wall 34 of the float cham- 30 ber 35. Due to the increased size of the gener- ating chamber, rod 21 extends upward to the distal region outside of the hopper. Nevertheless, regardless of this difference and that in the 35 means for attaching rod 29 to arm 31 of the carbide valve, the parts operate in the same man- ner as those in the generator shown in Fig. 1. However, various changes in the construction and arrangement of the parts may be made without departing from the spirit of the invention or the scope of the claims.

I claim:
1. In an acetylene generator adapted to contain water; a gas generating chamber within said generator; a carbide hopper in communic- 45 ation with said generating chamber; a gas stor- age chamber around said generating chamber and said carbide hopper; a carbide valve in the bottom of said carbide hopper; means for control- ling the opening of said valve by the pressure in said generator; an arm carried by said carbide valve; one or more brackets carried by the walls of said gas generating chamber; a U- shaped rod loosely coupled to said arm and ex- 50 tending downward through said brackets into said water and then upward into said gas stor- age chamber; and a hollow float having an open- bottom attached to said rod in said storage chamber.
2. In an acetylene generator adapted to contain water; a generating chamber within said generating chamber having the bottom thereof sealed by said water; a storage chamber around said generating chamber; a carbide hopper opening into said generating chamber; a carbide valve in said carbide hopper; an arm carried by said valve; a float in said storage chamber; and a U-shaped rod passing through said water and having one end connected to said float and the other end connected to said arm.
3. In an acetylene generator adapted to contain water and comprising a carbide hopper therein, a generating chamber therein, and a storage chamber therein; the combination of a carbide valve between said carbide hopper and said generating chamber; means for controlling the opening of said valve by the pressure in said generator; buoyant means in contact with said water; and means connecting said buoyant means and said valve for translating movement of said water into rocking movement of said valve.
4. In an acetylene generator adapted to contain water and comprising a carbide hopper and a carbide valve in said hopper; the combination of means for automatically opening said valve to release carbide which generates a gas and agi- tates the surface of said water; buoyant means supported by said water; and means connecting said buoyant means and said valve for translating movement of the surface of said water into rocking movement of said valve.
5. In an acetylene generator comprising a casing having water therein; a gas generating chamber having a wall extending downward into said water and substantially filling said casing; a carbide hopper of smaller diameter than said generating chamber and extending upward therefrom; a gas storage chamber around said carbide hopper and above said generating chamber; a float chamber having a wall extending from said gas storage chamber downward through said generating chamber below the surface of said water; a valve at the outlet of said carbide hopper; and a float in said float cham- 15 ber for agitating said valve.
6. In an acetylene generator having water therein; a carbide hopper near the top of said generator; a generating chamber below said carbide hopper having a wall extending downward below the surface of said water, a gas storage chamber outside of said hopper and above said generating chamber; a float chamber having a wall extending from said gas storage chamber into said generating chamber and terminating below the surface of said water and above the lower end of the wall of said generating cham- 20 ber; a valve at the outlet of said carbide hopper; a float in said float chamber; and means for moving said valve by the movement of said float.
7. In an acetylene generator adapted to contain water; a carbide hopper; a gas storage chamber therein; a gas generating chamber therein; means for conveying gas from said gen- erating chamber through said water to said storage chamber; a carbide valve at the outlet of said carbide hopper; buoyant means in contact and mov- 30 able with the surface of said water in said storage chamber; and means connecting said buoyant means and said valve for translating movement of the surface of said water in said storage chamber into rocking movement of said valve.
8. In an acetylene generator having an outer casing adapted to contain a partial filling of water; a generating chamber within said casing having a wall extending upward from below the surface of said water; a carbide hopper opening into said water in said generating chamber; a carbide valve in the bottom of said hopper; means for opening said valve by a change in pressure within said generator; a float supported by said water outside of said generating chamber; and means for agitating said valve by a movement of said float comprising a rod extending from said float around the lower edge of said wall to said valve.
9. In an acetylene generator having a casing adapted to contain a partial filling of water; a 45
closed generating chamber within said casing having a wall with the lower end thereof below the surface of said water so that gas generated therein passes through and agitates said water; a carbide hopper opening into said generating chamber; a carbide valve in said hopper; a float within said casing supported and movable by said water outside said wall; and means operably connecting said valve and said float for rocking said valve by movement of said float.

10. In an acetylene generator having a casing adapted to contain a partial filling of water; a closed generating chamber in said casing having a wall sealed at the bottom by said water which is agitated by passage of gas therethrough; a storage chamber above said water between said casing and a wall; a carbide hopper in communication with said generating chamber; a carbide feed valve in said hopper; a float at the surface of said water in said storage chamber; and means passing through said water for connecting said float to said valve whereby to translate movement of said water into rocking movement of said valve.

11. In an acetylene generator having a casing adapted to contain water; a generating chamber in said casing with the bottom thereof below the surface of said water; a storage chamber in said casing having the bottom thereof formed by the surface of said water; a carbide hopper having an outlet opening into said generating chamber; a valve in said outlet; a float on said water in said storage chamber adapted to be moved by movement of said water when gas passes therethrough from said generating chamber to said storage chamber; and a U-shaped rod passing through said water with one end connected to said float and the other end connected to said valve to agitate said valve by movement of said float.

12. In an acetylene generator comprising a casing adapted to contain water; a gas generating chamber having a wall extending downward into said water and substantially filling said casing; a carbide hopper of smaller dimension than said generating chamber and extending upward therefrom; a gas storage chamber around said carbide hopper and above said generating chamber; a float chamber having a wall extending from said gas storage chamber downward through said generating chamber below the surface of said water; a valve at the outlet of said carbide hopper; and means for imparting rocking movement to said valve comprising a float on said water in said float chamber, and a connection between said float and said valve.

13. An acetylene generator comprising an outer casing adapted to contain water; a closed generating chamber within said casing sealed at the bottom by said water; a gas storage chamber within said casing around said generating chamber; a carbide hopper having an outlet opening into the upper portion of said generating chamber; a carbide release valve in the outlet of said carbide hopper; means controlled by the pressure within said generator for opening said valve and releasing carbide from said hopper to generate gas in said generating chamber and agitate the surface of the water in said storage chamber by passage of said gas through said water from said generating chamber to said storage chamber; and means for imparting rocking movement to said valve comprising a float supported by the water in said storage chamber, and means for operably connecting said float to said valve whereby to translate movement of the surface of said water into rocking movement of said valve.

14. In an acetylene generator comprising an outer container adapted to contain water; a gas generating chamber within said casing having the bottom thereof sealed by said water; a gas storage chamber within said casing around said generating chamber; a carbide container having an outlet opening into said generating chamber above said water; a carbide feed valve in the outlet of said carbide container; means for opening said valve to generate gas in said generating chamber which passes through said seal into said storage chamber and agitates the surface of the water therein; and means passing through said water seal for operably connecting said float with said carbide valve whereby to translate movement of the surface of said water into rocking movement of said valve.

MAURICE P. DE MOTTE. 50