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COMPLETE SPECIFICATION.

**Improvements in and relating to Acetylene Gas Generators especially applicable to Buoys.**

I, THOMAS LEOPOLD WILLSON, of 188, Metcalf Street, in the City of Ottawa, County of Carleton, Province of Ontario, Canada, Electrical Engineer, do hereby declare the nature of this invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to acetylene generators and particularly automatic acetylene gas buoys, and the general object of the invention is to improve the construction of such devices to overcome certain disadvantages hitherto existing therein.

10 More particularly considered an important object is to prevent clogging or packing of the carbide in its chamber through expansion or other cause and at the same time prevent overgeneration by reason of the water washing against the carbide at the periphery of the chamber. Further objects will hereinafter be apparent.

15 One feature of the invention, when the device is used as a buoy, consists in a float through which the carbide chamber extends into a lower portion of larger diameter secured to the underside of the float chamber.

A further feature consists in the provision of a dumping grate normally adapted to support the carbide in the carbide chamber and being operable from  
20 the exterior of the generator or buoy.

Still further features comprise, when the device is used as a "buoy", a bottom for the carbide chamber having a central perforate portion and an imperforate peripheral portion adapted to prevent the water washing against the carbide at the sides of the chamber; and also a carbide chamber in communication with the water in which the buoy floats and having an outlet through which water may flow in and out and a valve for said opening adapted in normal position to restrict but not cut off the flow through the outlet. Further features of the invention will hereinafter appear.

In the accompanying drawings which illustrate the invention applied to a  
30 buoy;

Figure 1 is a vertical section through the buoy.

Figure 2 is a sectional detail on the line 2—2, Figure 1.

In the drawings, like characters of reference indicate corresponding parts in both figures.

35 Referring to the drawings, A represents the float chamber of any suitable character and B a central tubular member forming the carbide chamber and the gas generating chamber.

The member B is formed with a lower enlarged portion 11 which may conveniently be formed separately and secured to the underside of the float chamber, and a smaller upper portion 10 which extends through the float chamber and opens into the top of the lower portions, both of said chambers being preferably tubular in form.

The bottom 12 of the carbide chamber is secured to the lower portion 11 at

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some little distance below the end of the upper portion, and is provided with a dumping grate having an imperforate portion around its periphery.

In the embodiment illustrated, the bottom 12 consists of an annular dish-shaped plate secured to the side of the lower portion 11 and having a central aperture 14 which is filled by the grate 13 which is formed in two semi-circular sections 15 and 16 pivoted to lugs 17 and 18 on the underside of the bottom and being adapted to be tilted by suitable means operable from the top of the buoy. 5

The means provided for operating the grate comprise a longitudinally slidable member 19 extending through the generating chamber having a screw-threaded portion 20 at the top on which a nut 21 is mounted which is adapted to abut the cover 22 of the generating chamber: the lower end of the said member carrying lugs 23 and 24 which are connected by links 25 and 26 with suitable lugs 27 and 28 on the upper side of the grates. 10

When it is desired to operate the grates, the nut 21 is screwed to the top of the screw-threaded portion 20, permitting the member 19 to slide downwardly and thus permitting the residual lime and sludge to dump. 15

The lower portion 11 also carries a counter weight 29 and partition 30, the purpose and function of which may be understood by reference to my earlier Patent No. 18,106 of 1904.

It may also be noted that various other constructional features of the buoy are not herein described in detail may be ascertained by reference to the afore-said earlier patent. The counter-weight and partition are provided with central apertures 31 and 32, respectively, controlled by suitable valve members 33 and 34, carried on a valve stem 35 which may conveniently extend through the member 19 which is made tubular for that purpose the stem being held in adjusted position by suitable means such as nut 36 thereon adapted to abut the top of the tubular member. 20 25

The valve member 34 is of such character as to always permit a gradual inflow and outflow of water through it, but adapted when lowered to permit a quick discharge of the residual lime and sludge for the purpose already described. 30

The form of valve member 34, illustrated comprises a body portion 38 fitting the aperture 32 and formed with a small central perforation 39 through which the water may gradually flow in and out, the body portion being formed with guides 40 adapted to hold the valve in proper position with respect to the aperture as it is moved downwardly. 35

The operation of the buoy takes place in the usual manner, by the water passing through the aperture in the counter weight and partition to the carbide and being forced therefrom by the gaseous pressure as soon as a sufficient amount of gas is generated: the gas generated passing through a suitable purifier in the cover to the lamp which will be carried on top of the float chamber by a suitable frame work thereon. 40

Prior to refilling, when it is desired to clean the residual lime and sludge out of the carbide chamber, the tubular member and valve stem may be lowered, opening the grates and leaving a clear space through which any residual sludge and lime may discharge downwardly. 45

It will also be noted, that the lower portion of the carbide chamber, being larger than the upper portion, gives an opportunity for the carbide to expand and so prevents the compression and clogging of the same. In some cases, this expansion is a very serious matter, as where the chamber is very nearly full it will sometimes exert a considerable pressure on the cover. I may here state that it is not broadly new to provide an enlarged chamber at the lower end of the carbide chamber nor is it broadly new to collect the lime on a grate from which it may be dumped by means operated from the exterior of the generator. 50

While the various features constituting the subject matter of the present invention are particularly designed in connection with acetylene gas buoys, yet it is evident certain features might be applied with equal facility to any other form of acetylene gas generator of the water-to-carbide type. 55

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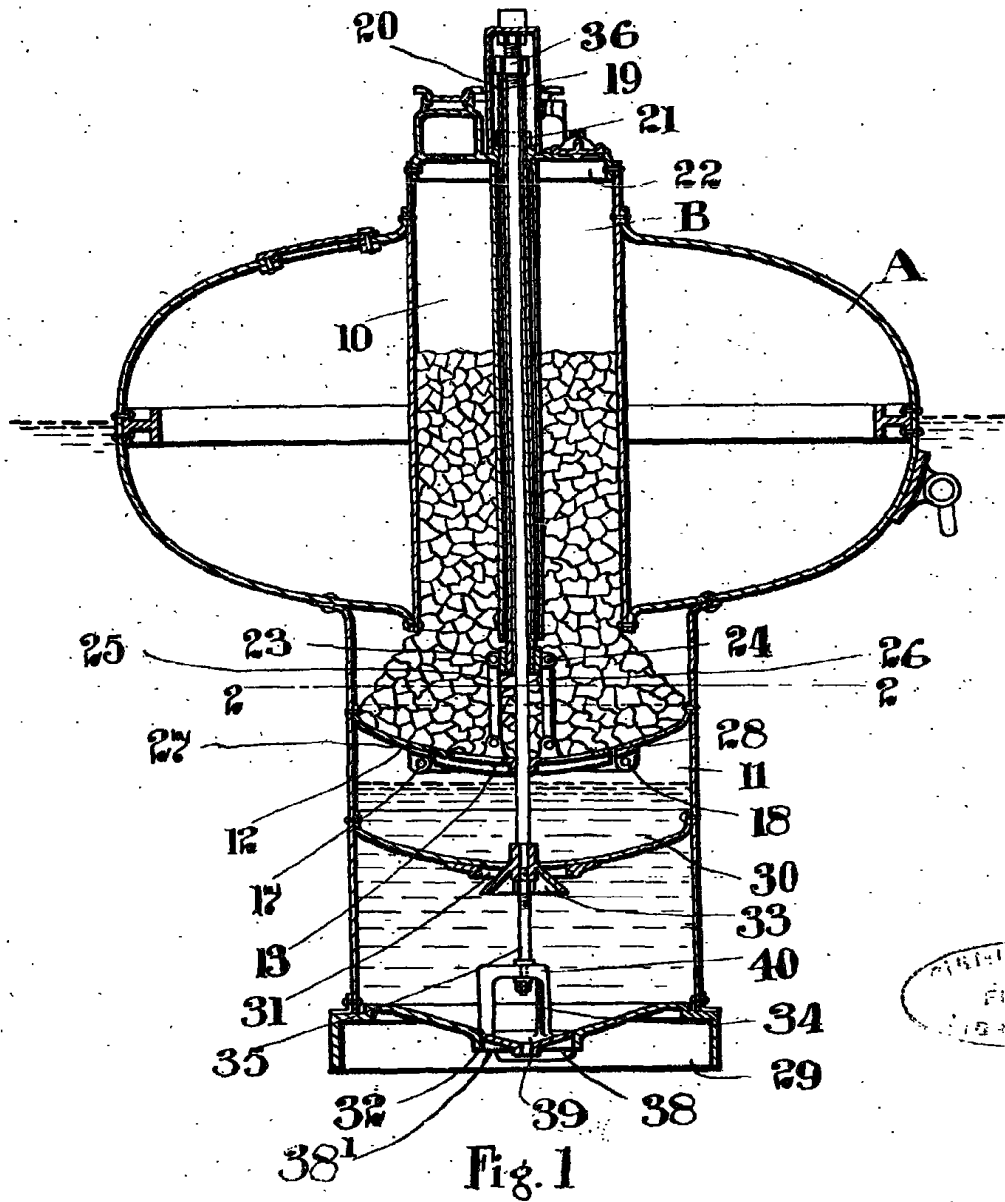
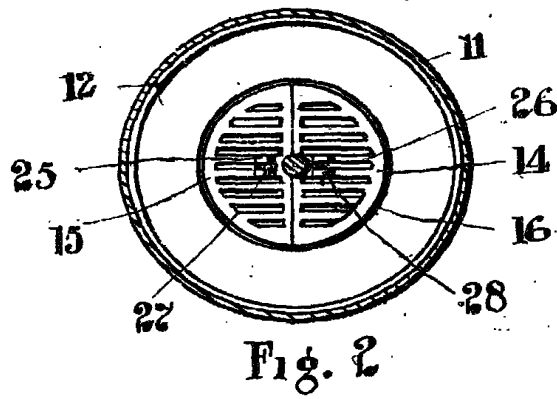
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Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:—

1. An acetylene gas buoy in which the carbide chamber is formed with an upper portion extending through the float chamber into a lower portion of larger diameter secured to the underside of the float chamber.
2. In acetylene gas generator or buoy of the carbide to water type the provision of dumping grates normally adapted to support the carbide in the carbide chamber and being operable from the exterior of the generator or buoy.
3. An acetylene gas generator according to Claim 2 in which the specific means described herein and shown in detail in the drawings are employed to operate the tilting dumping grates.
4. In an acetylene buoy, the provision in the carbide chamber of a bottom having a central perforate portion and an imperforate peripheral portion adapted to prevent the water washing against the carbide at the sides of the chamber.
5. In an acetylene gas buoy, having a carbide chamber in communication with the water in which the buoy floats and having an outlet through which water may flow in and out, and a valve for said opening adapted in normal position to restrict but not cut off the flow of water through said outlet.
6. A gas buoy constructed according to Claim 5 in which a perforated partition is provided having a valve 38 controlling the passage of liquid therethrough substantially as described.
7. An acetylene gas buoy, or generator constructed and arranged as shown in detail in the accompanying specification and drawing.

Dated this 4th day of January, 1910.

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Agents.



[This Drawing is a reproduction of the Original on a reduced scale.]