N. GOODYEAR.

GAS BUOY.

APPLICATION FILED JUNE 2, 1906. RENEWED APR. 3, 1909.

1,050,058.

Patented Jan. 7, 1913.

3 SHEETS—SHEET 1.

Fig. 8.

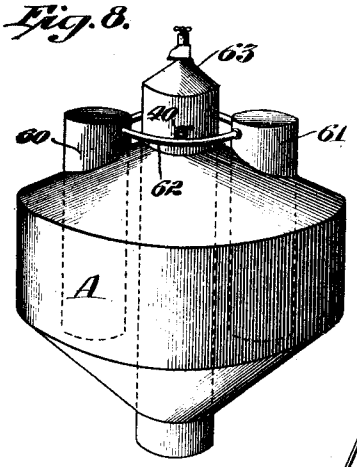

Fig. 1.

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3 SHEETS—SHEET 2.

Fig. 2.

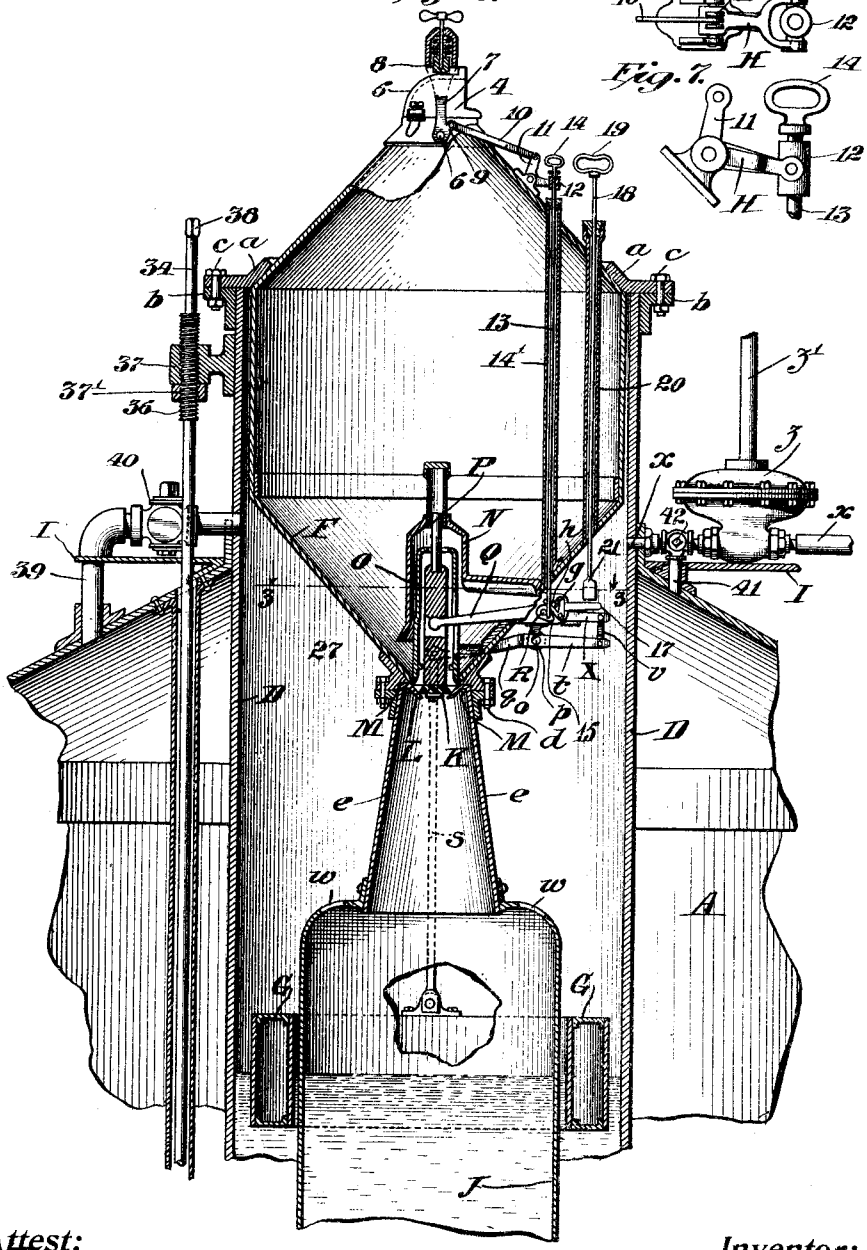

Fig. 6.

Fig. 7.

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3 SHEETS—SHEET 3.

Fig. 3.

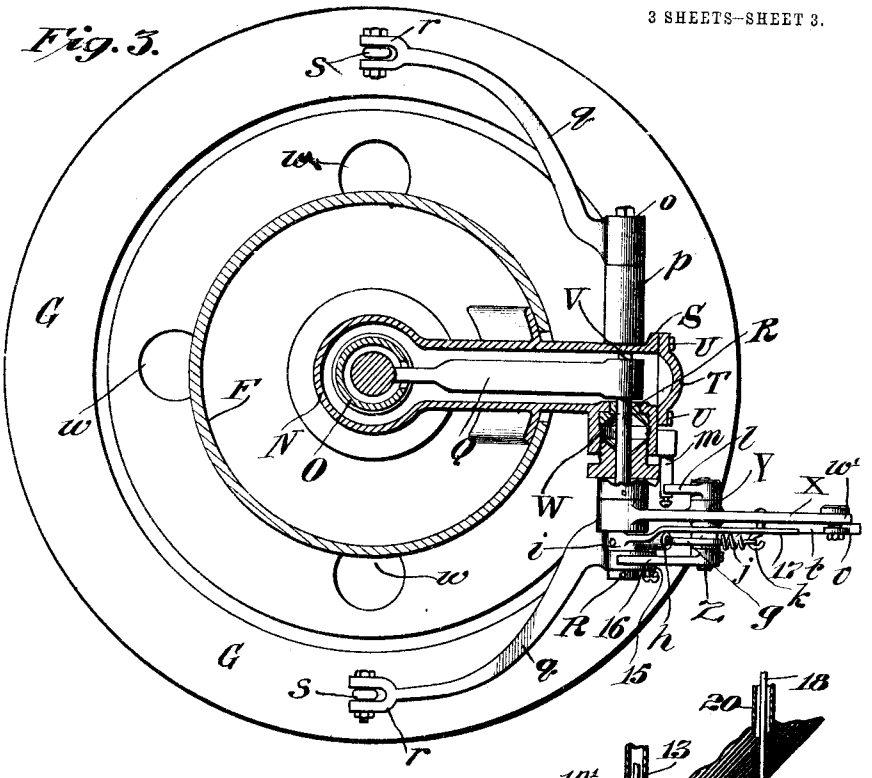

Fig. 4.

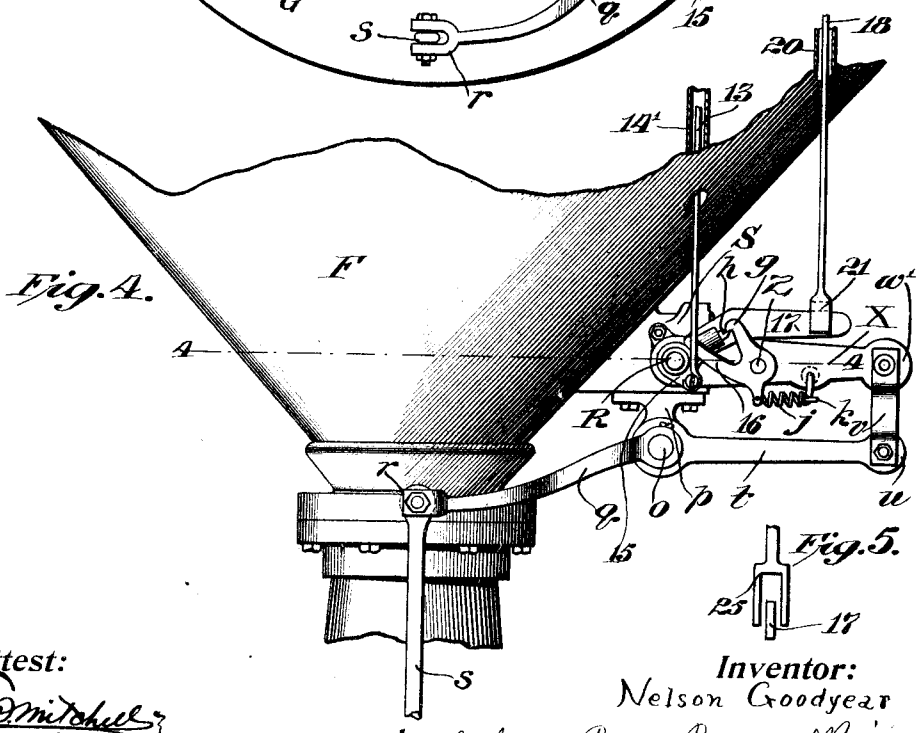

Fig. 5.

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UNITED STATES PATENT OFFICE.

NELSON GOODYEAR, OF NEW YORK, N. Y., ASSIGNOR TO BROOKS H. WELLS, OF NEW YORK, N. Y.

GAS-BUOY.

1,050,058. Specification of Letters Patent. Patented Jan. 7, 1913.

Application filed June 2, 1906. Serial No. 319,832. Renewed April 3, 1909. Serial No. 487,768.

To all whom it may concern:

Be it known that I, NELSON GOODYEAR, a citizen of the United States, and resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Gas-Buoys, of which the following is a specification, accompanied by drawings.

This invention relates to buoys which are lighted by gas, as for instance acetylene gas, which is produced by a generator forming part of the buoy.

The objects of the invention are to improve upon the construction and operation of such buoys, and obviate the difficulties which have been met with in obtaining pure gas, so that a bright light will at all times be furnished without clogging of the burners.

Another object is to secure efficient mechanical means, certain in their operation, for controlling the generation of gas.

Further objects of the invention will hereinafter appear and to these ends the invention consists of a gas buoy for carrying out the above objects embodying the features of construction, combinations of elements, and arrangement of parts having the general mode of operation substantially as hereinafter fully described and claimed in this specification, and shown in the accompanying drawings, in which—

Figure 1 is a vertical sectional view of the buoy; Fig. 2 is an enlarged detail vertical sectional view of the upper portion of the buoy partly broken away showing the carbid feeding mechanism; Fig. 3 is an enlarged detail transverse sectional plan view on the line 4—4 of Fig. 4, looking in the direction of the arrows; Fig. 4 is a side elevation of the mechanism shown in Fig. 3; Fig. 5 is a detail view; Fig. 6 is a detail plan view of a portion of the mechanism, and Fig. 7 is a side elevation of Fig. 6. Fig. 8 is a side elevation of a modification.

In accordance with this invention, the buoy is lighted by acetylene gas, although the invention is not limited to acetylene gas lighting because other kinds of gas may be used. Instead of permitting the seawater to rise up around the suspended carbid I have constructed my buoy on the principle of a carbid feed generator, in which the carbid is fed to the water which enters the open bottom of the buoy.

Referring to the drawings A represents the body or float of the buoy and B is the lantern which may be of any suitable or desired construction. The float is adapted to be anchored by means of suitable anchors and the chains C, shown in this instance connected to the float A. Suitably supported within the float A is a tube D braced by the braces E. This tube carries the carbid hopper F and within the tube is the actuating float G connected to operate the valve of the carbid feeding mechanism. The lower end of the tube D is open to permit the ingress and egress of the sea water.

The lamp B is suitably supported from the float A as by means of the framework H, and a grating platform I is provided in this instance arranged on top of the float A and encircling the carbid hopper F to enable the workmen to charge the hopper with carbid and operate the mechanism of the generator.

Preferably the carbid hopper F is removable from the upper end of the tube or tank D, in this instance the hopper being secured to the tube D by means of the flanges *a* and *b* and bolts *c*. By removing the bolts *c* the hopper may be raised up out of the tube D. Removably secured to the lower end of the hopper by means of the bolts *d* is a neck *e*, in turn secured to a secondary or inner tube J, which extends down almost to the bottom of the tube D and is centered therein at its lower end by means of the guides or brackets *f*. The hopper F and inner tube J are removable together upwardly out of the tube D, it being understood that the framework H should first be removed from the float A. Within the carbid hopper F is a valve K controlling the opening in the bottom of the hopper, and preferably the valve seat is removably connected to the hopper as by means of the bolts M. The valve is protected by a casing N suitably supported on the side of the hopper, and within the casing is also arranged another valve or stop O tubular in form within which the valve K operates. The valve K is provided with a guiding stem P and is connected to be operated by a lever Q carried by a rock shaft R supported in suitable bearings, shown in this instance arranged in a neck S carried by the casing. Preferably a removable cap T is provided connected to the

neck by means of the bolts U. When the shaft R is rocked in one direction the valve K will be raised and will move upward within the stop O until said valve engages the stop which will in turn be raised. When the rock shaft R is released the stop O and valve K will fall by their own weight and the stop will close first. When the valve is opened by the movement of the rock shaft, the valve opens first and by means of this construction the valve is prevented from sticking and being caught by pieces of carbid. The lever Q is suitably connected to the rock shaft R, in this instance a squared portion V being provided upon the rock shaft, which is thrust through the end of the lever.

Suitable means are provided for operating the valve K by means of the actuating float G. The rock shaft R extends through a stuffing box W and is provided with an arm X loose thereon, having a bearing Y, in which is supported a small rock shaft Z. Suitably secured to this rock shaft Z is a latch *g* adapted to coöperate with a hook *h* secured fast to the rock shaft R in any suitable manner by means of the hub *i*. A spring *j* secured to the latch *g* and also to a projection *k* on the arm X holds the latch normally in engagement with the hook so that downward movement of the arm X will rock the shaft R. The other end of the rock shaft Z is provided with a finger *l* secured fast thereon and projecting over a stop *m* projecting from the casing so that at the downward limit of the movement of the arm X the finger *l* will engage the stop *m* and rock the shaft Z, thereby releasing the latch *g* from the hook *h* and permitting the rock shaft R to rotate and close the valve K in the hopper.

A countershaft *o* is suitably supported in bearings *p* carried by the neck S and suitably secured to said countershaft are arms *q*, to the inner ends *r* of which are connected the vertical rods *s*, which in turn connect with the actuating float *g*. One of the arms *q* is provided with an extension *t*, the outer end *u* of which is connected by a link *v* to the outer end *w'* of the arm X. The rise and fall of the actuating float G thereby transmits motion to the arm X, thereby controlling the rock shaft R, the arm Q and valve K. When the water rises in the cylindrical tube D, the float rises, the ends *r* of the arms *q* are raised, and the outer end *u* of one of said arms is depressed, thereby pulling down the outer end *w'* of the arm X, and since the latch *g* is in engagement with the hook *h* the rock shaft R will be rotated in a direction to raise the inner end of the lever Q and thus open the valve K. Carbid will drop into the water from the hopper and the pressure of the gas generated will depress the level of the water, thereby causing the float to fall and thus permitting the valve K to close under its own weight, the valve alternately controls the starting and stopping of the feeding of an intermittent stream of carbid directly to the water.

The inner tube J is provided with suitable gas openings *w* above the highest level of the water and the gas is led through pipe *x* to the lamp or lantern B, a regulator *z* being provided to keep the gas pressure substantially uniform. Preferably a filter 1 is provided in connection with the lamp or lantern, in this instance the filter is suitably connected to the base upon which the lamp is supported, and the gas pipe *x* as shown enters the lower portion of the filter. Said pipe is preferably provided with a valve 2 as shown and the filter chamber is provided with removable covers 3 and 3' for cleaning purposes.

In order to insure the safety of the apparatus, means are provided whereby the latch *g* is disconnected from the hook *h* when the cover 4 of the carbid hopper is opened to permit carbid to be charged into the hopper. The valve K will then close so that carbid cannot be fed to the water at the same time that it is being charged into the hopper. In this instance, the carbid cover is provided with a cam surface 5 and a bail 7 pivoted at 6 passes over the cover 5 and is provided with a spring pressed follower 8. The bail 7 is provided with a finger 9 to which is pivoted a link 10 also pivoted to a bell crank lever 11. Said bell crank lever carries a pivoted sleeve 12 through which passes a rod 13, having a handle 14 at its upper end. The rod 13 passes downwardly through a tube 14' in the hopper F and is pivotally connected at its lower end to a cam 15 which bears against a finger 16 connected to the latch *g*. Normally the cam 15 is in such position that the latch *g* is permitted to engage with the hook *h*. By raising the rod 13 by hand the cam 15 will be rotated and the latch *g* will be moved out of engagement with the hook *h*. This same result is accomplished by opening the carbid cover 4, in which case the link 10 rocks the bell crank lever 11, thereby raising the rod 13, rotating the cam 15 and moving the latch *g* out of engagement with the hook *h*, thus permitting the valve K to close. After the carbid has been charged into the hopper, the closure of the cover 4 restores the latch *g* to normal position, but without engaging said latch with the hook *h*. The hub *i* of the hook *h* is provided with an arm 17 extending substantially parallel to the arm X. By depressing the arm 17 the hook *h* may be brought into engagement with the latch *g*. In this instance means are provided for slightly depressing the outer end of the arm

17, thereby rocking the shaft R and opening the valve K slightly. Some carbid is then fed to the water and the generation of gas depresses the level of the water and causes the float G to fall, thereby raising the outer end of the arm X and bringing the latch q into engagement with the hook h automatically to enable the apparatus to operate thereafter. As shown, a rod 18 having a handle 19 extends downwardly through a tube 20 and is provided with a fork 21 at its lower end, which straddles the lever 17. By forcing down on the handle 19 the outer end of the lever 17 will be depressed to feed carbid in starting the apparatus.

Within the tube J are baffle plates 22 and 23 which prevent the carbid from falling too rapidly and escaping through the opening 24 at the bottom of the generating chamber. In place of these baffle plates, screens or other suitable means for accomplishing the same end may be substituted. The bottom of the generating chamber is formed by a solid casting 25 having the hole or aperture 24. This solid casting 25 serves as a ballast to keep the buoy in upright position. When the carbid cover 4 is opened the sea water will find its way through opening 24 and will rise to the normal water line of the buoy. The actuating float G will also rise with the water to the normal water line. The opening 24 in the bottom of the generating chamber is quite small. The purpose of this restriction is to prevent any considerable surging up and down of the water within the tube D. A very small opening, for instance, one inch in diameter, is sufficient to allow for the escape of the residuum, which is automatically disposed of as soon as formed. Even with perfectly calm water there is a considerable current through the opening 24 caused by the sudden increase of pressure when gas is generated. When the carbid falls generation is completed almost immediately and the calcium hydrate in excess of that which can be held in solution in the water is precipitated in a white cloud, which is heavier than water and which settles slowly and ultimately passes out into the sea. When the buoy is subjected to violent storms or is in very rough water, such as in a bad tide rip, the action of the waves tends to cause a surging of the water within the tube D similar to that in the tube of a whistling buoy. This tendency is greatly modified by the restriction of the opening 24 to such an extent that the automatic action of the actuating float G is not interfered with. There is a continual variation of pressure of the gas within the tube D, but this variation is eliminated as the gas passes through the regulator. If the consumption of this gas is so great that the water raises the float, more carbid feeds and the water is simply driven to a lower point in the tube D. It will be readily seen that from the relatively great area of the tube D compared with the opening 24, that a considerable rush of water momentarily through said opening will scarcely affect the level in the tube. Furthermore the elasticity of the gas in the generating chamber and gas space 27 is sufficient to follow up the variation of the water level without a considerable reduction of pressure.

In the operation of the apparatus after the carbid hopper is filled and the cover 4 closed the latch is disconnected from the hook as already described. The hand lever 18 is then depressed to depress the end of the lever 17, thereby rocking the rock shaft R and operating the arm Q to raise the valve K and permit some carbid to feed. Gas is then generated and the pressure depresses the level of the water in the tube D, thereby causing the actuating float G to fall which pulls down the inner ends r of the arms q and raises the outer end u of the arm t, thus raising the outer end w' of the lever X, and bringing the latch q into engagement with the hook h. The buoy is now in working trim and will continue to make gas as long as gas connections to the lantern or lamp B are open. As the gas is consumed the water on the inside of the buoy gradually rises until the valve K is again opened automatically and more carbid is fed. The feeding takes place at a considerably higher pressure than that necessary to maintain the flame at the proper size so that there is never danger of the flame becoming dim. The varying buoyancy, due to the varying quantity of gas in the tube D, is relatively small so as not to materially change the normal water line. There is a very great advantage in constructing a buoy to feed carbid to water automatically because pure gas is obtained at all times and a bright light will be maintained without clogging the burners.

Preferably means are provided for varying the size of the opening 24 in the bottom of the tube D so that this opening may be adjusted for varying conditions and any suitable means may be provided for this purpose, as shown the opening 24 being provided with a valve 28 carried by a spindle 29 guided in a bearing 30 formed by the arms 31. The valve 28 is adapted to be entirely closed or moved nearer or farther away from its seat by means of the lever 32 pivoted at 33 and connected by means of a swivel joint 33' with a vertical rod 34 extending upwardly through a tube 35 in the float and provided with a threaded portion 36 adapted to be rotated in an interiorly threaded bearing 37. The upper end of the rod 34 as shown is provided with a head 38, by means of which the rod may be ro-

tated. The vertical adjustment of the rod 34 enables the valve 28 to be adjusted relatively to its seat. A lock nut 37' locks the rod in desired position.

In accordance with this invention the buoy is so constructed that gas may be stored within the float A which forms a storage tank and permanent reservoir inaccessible to sea water. The lantern may be kept burning from the gas stored in the tank, in which case the automatic carbid feeding mechanism is not utilized except to generate gas, which is stored in the beginning. As shown, a gas pipe 39 connects one portion of the hollow float A with the gas space 27 in the tube D, and this pipe is provided with a suitable valve 40. A by-pass pipe 41 is shown connecting another portion of the buoy float A with the gas educting pipe x, and a three-way valve 42 is preferably provided at the juncture of the bypass 41 and the educting pipe x. In using the buoy on the storage principle, the valve 40 is opened to permit communication between the gas generating space 27 and the float A. The three-way cock 42 is turned to close the educting pipe x. The rod 34 is turned until the valve 28 in the bottom of the tube D is closed and the desired amount of water for the generation of gas is thereby trapped in the tube D. The carbid hopper having been filled with carbid, the hand rod 18 is manipulated to permit carbid to be fed to the water and the gas generated passes through the pipe 39 into the hollow float A until said float has been filled with gas under pressure at which point the generation of gas is stopped. The gas may be used for the lantern by leaving the valve 40 open and by turning the valve 42 to open the gas educting pipe x. The gas will then pass from the storage chamber in the float A to the gas educting pipe x and the lantern. The gas may also be used by keeping the valve 40 closed and by opening the three-way cock 42 to a point which permits the gas to pass through the by-pass 41 from the storage chamber to the gas educting pipe x. If desired the storage chamber in the float A may be filled with a suitable quantity of acetone and the acetylene generated passed into the acetone, which will absorb a great quantity of the gas in accordance with its well known properties, and in this way more gas may be stored in the float than without acetone.

This buoy, provided with automatic and manual gas generating means, together with means for storing the gas is adapted for use in temperate climates and also in high latitudes where the freezing of the water would interfere with the automatic operation.

The by-pass 41 is particularly useful because the cock 40 may be closed and carbid charged into the hopper without interfering with the supply of gas which will continue to be supplied through the by-pass 41 and cock 42 to the pipes leading to the lantern.

In Fig. 8 a modification is shown in which permanent storage tanks 60 and 61 are shown carried by the float or body in any suitable manner. In this instance the tanks are set into the float through suitable apertures, and suitable piping 62 having the valve 40 is provided to connect the storage tanks with the generating chamber.

By the terms "gas buoy" and "body" or "float" in the following claims, I do not mean to exclude as equivalents thereto different forms of buoyant vessels or boats.

Obviously some features of this invention may be used without others and the invention may be embodied in widely varying forms.

Therefore, without limiting the invention to the devices shown and described, and without enumerating equivalents, I claim and desire to obtain by Letters Patent the following:

1. In a gas buoy the combination of a body or float having a chamber carried by the float open to the sea water, and means controlled by the level of the water in said chamber for feeding carbid to water.

2. In a gas buoy the combination with the body or float, of a water chamber open to sea water, a carbid hopper and a carbid feeding valve automatically controlling the starting and stoppage of the feeding of an intermittent stream of carbid directly to water.

3. In a gas buoy the combination with the body or float of a water chamber within the float, a carbid hopper and carbid feeding mechanism controlled by the level of the water in the water chamber for feeding carbid to the water.

4. In a gas buoy the combination with the body or float, of a water chamber within the float having an opening for the ingress and the egress of the sea water, a carbid hopper and a carbid feeding valve in the hopper automatically controlling the starting and stoppage of the feeding of an intermittent stream of carbid directly to the water.

5. In a gas buoy the combination with the body or float of a water chamber within the float having an opening for the ingress and egress of the sea water, a carbid hopper and carbid feeding mechanism controlled by the level of the water in the water chamber for feeding carbid to the water.

6. In a gas buoy the combination with the body or float, of a water chamber within the float having an opening for the ingress and egress of the sea water, means inde-

pendent of the carbid feeding mechanism for varying said opening, a carbid hopper and carbid feeding mechanism controlling the feeding of carbid to the water.

7. In a gas buoy the combination with the body or float, of a water chamber therein having an opening for the ingress and egress of the water, means for varying said opening, a carbid hopper and carbid feeding mechanism controlled by the level of the water in the water chamber for feeding carbid to the water.

8. In a gas buoy the combination with the body or float, of a generating chamber within the float having an opening for the ingress and egress of the sea water, a lantern, a gas connection from the generating chamber to the lantern, a carbid hopper and a carbid feeding valve for the hopper automatically controlling the starting and stoppage of the feeding of an intermittent stream of carbid directly to the water.

9. In a gas buoy the combination with the body or float, of a generating chamber having an opening for the ingress and egress of the water, means for varying said opening, a lantern, a gas connection from the generating chamber to the lantern, a carbid hopper and carbid feeding mechanism controlled by the level of the water in the water chamber for feeding carbid to the water.

10. In a gas buoy the combination with the body or float, of a water chamber within the float open to sea water and removable carbid feeding mechanism situated in said water chamber.

11. In a gas buoy the combination with the body or float, of a generating chamber within the float having an opening for the ingress and egress of sea water and removable carbid feeding mechanism situated in said water chamber.

12. In a gas buoy the combination with the body or float, of an interior generating chamber open to sea water and removable carbid feeding mechanism supported by said chamber.

13. In a gas buoy the combination with the body or float, of an interior generating chamber open to sea water and a carbid hopper and carbid feeding mechanism, said hopper and mechanism being removably supported.

14. In a gas buoy the combination with the body or float, of a generating chamber open to sea water and removable carbid feeding mechanism for feeding carbid to said chamber.

15. In a gas buoy the combination of the body or float, of a generating chamber within the float open to sea water, a carbid hopper, carbid feeding mechanism, an actuating float within the generating chamber and operative connections between said actuating float and the carbid feeding mechanism.

16. In a gas buoy the combination with the body or float, of a generating chamber having an opening for the ingress and egress of sea water, a carbid hopper, carbid feeding mechanism, an actuating float within the generating chamber adapted to rise and fall with the level of the water in said generating chamber and operative connections between the float and carbid feeding mechanism.

17. In a gas buoy the combination with the body or float, of a tube forming a generating chamber having an opening for the ingress and egress of water, an interior protective tube and an actuating float outside of the interior tube, a carbid hopper, carbid feeding mechanism and operative connections between the float and said carbid feeding mechanism.

18. In a gas buoy the combination with the body or float, of a gas generating chamber within the float having a valve opening in its bottom for the ingress and egress of sea water, means for feeding carbid to said chamber and normally submerged baffle plates independent of the valve opening for retarding the downward passage of the carbid through the water in said chamber.

19. In a gas buoy the combination with the body or float, of an interior generating chamber having a valve opening in its bottom for the ingress and egress of sea water, a carbid hopper, carbid feeding mechanism and baffle plates below the water level between the carbid feeding mechanism and the valve opening in the bottom of the chamber for retarding the fall of the carbid.

20. In a gas buoy the combination with the body or float, of a generating chamber having an opening very small in comparison with the area of the chamber for the ingress and egress of sea water, whereby sudden fluctuations in the rise and fall of the water are prevented, carbid feeding mechanism, and means controlled by the level of the water in said chamber for controlling said carbid feeding mechanism.

21. In a gas buoy the combination with the body or float, of a generating chamber having an opening very small in comparison with the area of the chamber for the ingress and egress of the water, whereby surging and sudden fluctuations of water in the chamber are prevented, means for varying said opening, and carbid feeding mechanism controlled by the level of the water in said chamber for feeding carbid to the water.

22. In a gas buoy the combination with the hollow body or float, of a generating chamber, carbid feeding mechanism, a gas educting pipe leading from the generating chamber and a gas connection between said generating chamber and the hollow body or

float, whereby gas may be generated and stored.

23. In a gas buoy the combination with a hollow body or float, of a generating chamber, carbid feeding mechanism, and means for storing the gas generated in said body or float.

24. In a gas buoy the combination with the body or float, of a generating chamber within the float having an opening for the ingress and egress of sea water, a carbid hopper and cover therefor, carbid feeding mechanism, and means for always preventing the feeding of carbid when the cover is open.

25. In a gas buoy the combination with the body or float, of a generating chamber within the float having an opening for the ingress and egress of the sea water, a carbid hopper and cover therefor, carbid feeding mechanism and means whereby the cover cannot be opened without disconnecting the carbid feeding mechanism.

26. In a gas buoy the combination with the body or float, of a water chamber, a carbid hopper, automatic carbid feeding mechanism, and additional means for manually operating said mechanism.

27. In a gas buoy the combination with a body or float, of a water chamber, a carbid hopper, carbid feeding mechanism controlled by the level of the water in the water chamber, and independent manual means for operating said mechanism.

28. In a gas buoy, the combination with a float, of a generating chamber within said float, carbid feeding mechanism, and means for storing the gas in the float.

29. In a gas buoy, the combination with the float, of a generating chamber, carbid feeding mechanism, means for storing the gas in the float, and a gas connection between the generating chamber and the gas storing space.

30. In a gas buoy, the combination with the float, of a generating chamber, carbid feeding mechanism, means for storing the gas in the float, a gas connection between the generating chamber and the storage space, a gas educting pipe leading from the generating chamber, and a by-pass connecting the storage space with the gas educting pipe.

31. In a gas buoy, the combination of a generating chamber, carbid feeding mechanism and means for storing the gas generated in a permanent reservoir inaccessible to the sea water.

32. In a gas buoy, the combination with a float, of carbid-feeding mechanism, and a generating chamber within the float provided with a restricted opening in its bottom, and means for adjusting said opening.

33. In a gas buoy, the combination with the body or float, of a generating chamber having an opening very small in comparison with the area of the chamber for the ingress and egress of sea water, whereby surging and sudden fluctuations of the water in the chamber are prevented, means for feeding carbid to the water in said chamber, and means for opening and closing said opening in the generating chamber.

34. A floating structure, a tank disposed within said structure and closed at its upper end, a carbid chamber in the upper portion of said tank, means for supplying water under pressure from the water floating such structure to the portion of said tank below said carbid chamber, and means controlled by the constantly varying quantity of water in said tank through such supply for automatically controlling the feed of the carbid to such water.

35. A floating structure, a tank therein closed at its upper end, carbid supplying means with its discharge end at all times above the highest water level in said tank, a pipe for supplying water under pressure from the water floating such structure to the bottom of said tank and automatically discharging the spent carbid therefrom through said water supply pipe, and means controlled by the constantly varying quantity of water in said tank for automatically controlling the feed of the carbid to such water.

36. A floating structure, a tank therein closed at its upper end, carbid supplying means with its discharge end at all times above the highest water level in said tank, a pipe for supplying water under pressure from the water floating such structure to the bottom of said tank and automatically discharging the spent carbid therefrom through said water supply pipe, and means controlled by the constantly varying quantity of water in said tank for automatically controlling the feed of the carbid to such water and insuring a constantly varying quantity of water in the tank.

37. A floating structure, a tank therein, a pipe connecting the bottom of said tank to the water exterior of said structure and having therein a normally open valve whereby the exterior water is continuously automatically delivered to and discharged from said tank, and a carbid feed having a discharge opening at all times above the highest water level in said tank and automatically controlled by the varying water level in said tank.

38. In a floating structure the combination with the body or float of a gas generating chamber having an opening or passageway for admitting under pressure water from the water floating the structure, and gas generating mechanism the movable actuating members of which are controlled by the variations of gas pressure in the generating chamber, and a valve for the said

opening or passageway to the water floating the structure having operating connections for actuating the valve separately from the gas generating mechanism.

39. In a floating structure the combination with the body or float of a generating chamber carried thereby and having an opening or passageway for admitting under pressure water from the water floating the structure, gas generating mechanism having an actuating connection therefor for generating gas independently of the level of water within said chamber, said generating mechanism comprising means for feeding or stopping the feed of a stream of gas generating material.

40. A floating structure having a gas generating compartment and a compartment separated therefrom but having gas communication therewith and containing a movable float, gas generating mechanism actuated by the said float, an opening or passageway for admitting ingress and egress of the water floating the said structure to and from the compartment containing the said float, whereby the float is actuated by the coaction between the gas pressure generated and the pressure of the water floating the structure.

41. A floating structure having a body or float, a generating chamber having an opening or passageway for supplying water thereto under pressure from the water floating the structure, automatic gas generating means, a closing device for said opening or passageway, an auxiliary gas chamber, connections, and valve for storing gas within the body or float, and means for generating gas independently of the normal working pressure when said closing device is closed, to store the gas under pressure in said body or float.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

NELSON GOODYEAR.

Witnesses:
E. VAN ZANDT,
A. L. O'BRIEN.