Sept. 18, 1945. J. LA FORCE 2,385,087

ACETYLENE GENERATOR

Filed Aug. 23, 1944 2 Sheets-Sheet 1

Fig. 1.

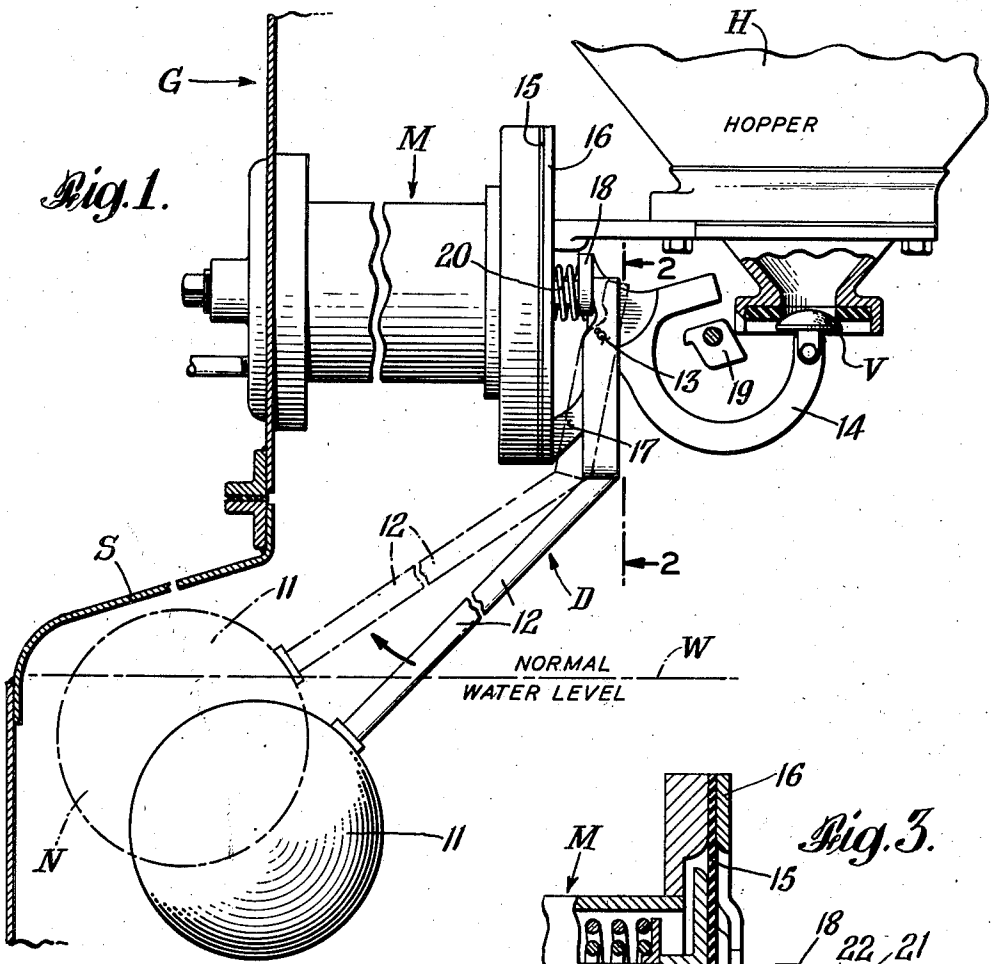
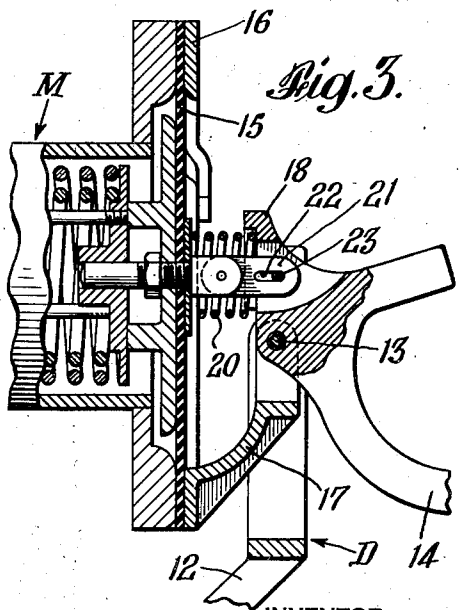


Fig. 3.



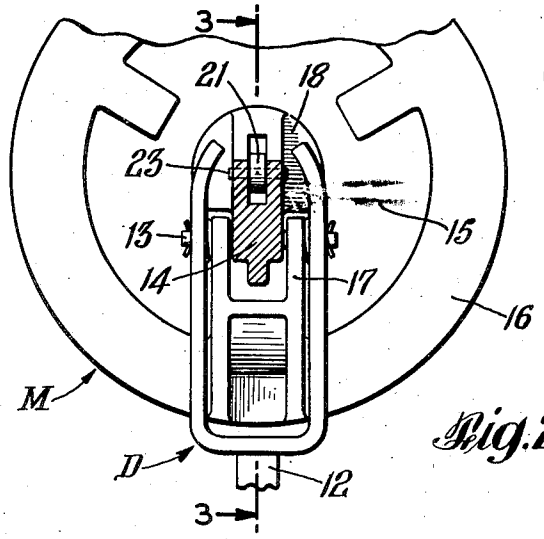


Fig. 2.

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Filed Aug. 23, 1944 2 Sheets-Sheet 2

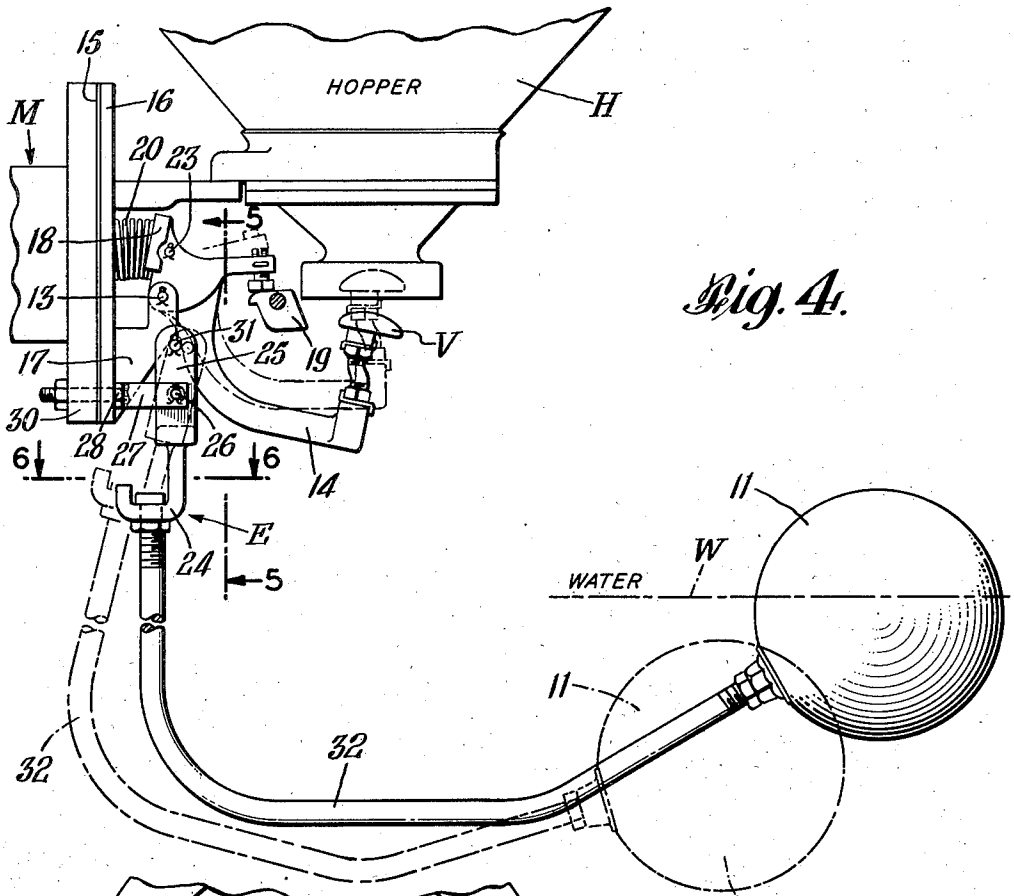

Fig. 4.

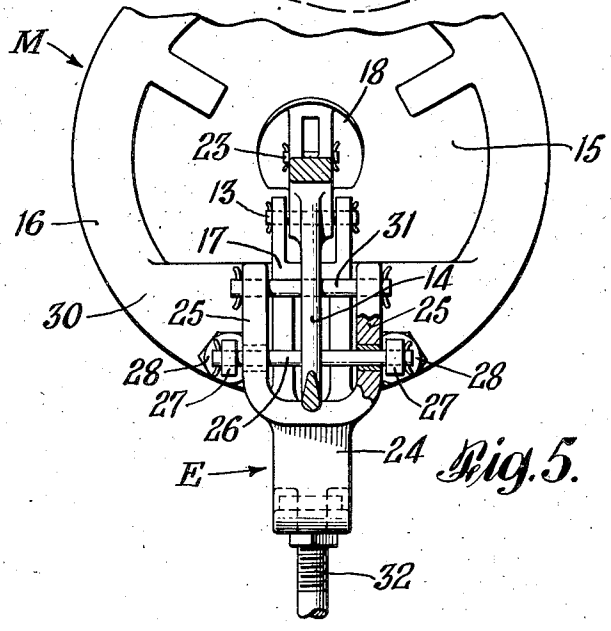

Fig. 5.

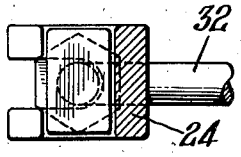

Fig. 6.

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UNITED STATES PATENT OFFICE

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ACETYLENE GENERATOR

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Application August 23, 1944, Serial No. 550,822

5 Claims. (Cl. 48—53.3)

This invention relates to acetylene generators and more particularly to a low water level interference device for the carbide feed valve of a medium-pressure acetylene generator.

The main objects of the invention are to provide a simple and reliable device which acts automatically to prevent the feeding of carbide when insufficient water or no water is present in the generator water shell, and is especially suitable for use in medium-pressure acetylene generators employing a spring opposed, diaphragm type carbide feed control mechanism.

In the drawings:

Fig. 1 is a view mainly in side elevation of apparatus exemplifying the invention;

Fig. 2 is an enlarged fragmentary cross-sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is a fragmentary sectional view taken on line 3—3 of Fig. 2;

Fig. 4 is a view in side elevation of a modification;

Fig. 5 is an enlarged fragmentary view taken on line 5—5 of Fig. 4; and

Fig. 6 is an enlarged view in section taken on line 6—6 of Fig. 4.

In accordance with the invention an interference device D comprising a float 11, lever 12 and pivot 13 is incorporated in the carbide feed valve mechanism M used in a medium-pressure acetylene generator G. The device D serves to prevent feeding of carbide from hopper H when insufficient water W is present in the acetylene generator G. In case the device D itself fails to function, the generator G is simply rendered inoperative and a safe condition prevails. The generator G comprises a spring opposed, diaphragm type carbide feed control mechanism. The purpose of the device D is to prevent any feeding of carbide when insufficient water (or no water) is present in the generator water shell.

Float 11 is rigidly attached to the lever 12 which is bifurcated and pivoted to the fulcrum pin 13. A carbide feed lever arm 14 is likewise pivoted to the pin 13, being normally actuated by the motion of a diaphragm 15 which is responsive to the gas pressure within the generator G. Integral with a diaphragm ring clamp 16 is a central supporting yoke 17 for the fulcrum pin 13, the branches of the yoke and bifurcated lever being disposed at opposite sides of the arm 14.

As shown in position N in Fig. 1, the float 11 rests along the surface of the indicated normal water level of the generator water shell or container S. In this position N the lever 12 is drawn away from spring guide 18 of the carbide feed lever arm 14. Then, with feed lock rod cam 19 turned to the feed position as shown in Fig. 1, carbide feed valve V is capable of being actuated by the motion of the diaphragm 15 transmitted through an opening spring 20 and a slotted connecting yoke 21.

Fig. 3 illustrates the position of the lever 12 when the water level within the generator is below normal. The combined weight of the float 11 and lever 12 is increased by the lever arm proportions and applied against the spring guide 18 of the carbide feed lever arm 14. The force is sufficient to compress the opening spring 20 and prevent any movement of the carbide feed lever arm 14. However, the diaphragm 15 is still free to move although its motion is not translated to the lever arm 14 due to the slot 22 and pin 23 construction of the connecting yok 21. This latter feature is common to "Oxweld" medium pressure acetylene generators and allows the feed valve V to fall open by gravity plus the force of the opening spring 20 but closes the feed valve V by direct pulling on the slotted connecting yoke 21.

In case of failure of the float 11 (for example, by sinking or by becoming crusted with lime so that it will not float) the device D will possess the desirable feature of closing the carbide feed valve V and rendering the generator G incapable of operation. The feed lock rod cam 19 functions independently of the above described float interference device D. No matter what position the float 11 is in, the feed lock rod cam 19 can be rotated from the feed position to the lock position and thereby prevent feeding of carbide.

In Fig. 1, when float 11 is in position N, the generator is in operation, but carbide is not being fed to the water inasmuch as the diaphragm 15 is holding the carbide feed lever arm 14 in the closed position. In Fig. 3 the generator parts would be in position to operate were it not for the lever arm 12 preventing motion of the carbide feed lever arm 14.

In some acetylene generators the diameter of the water shell or container is quite small, so that the lever arm 12 would be too short for proper operation of the interference device D. By using a different pivot point however, as illustrated in Figs. 4–6, the invention may be adapted for use in such generators. The interference device E includes a bifurcated member 24, the prongs or tines 25, 25 of which are pivoted to a transverse pin 26. The pin 26 is supported at its opposite ends by projections 27, 27 of bolts 28, 28 which secure the lower portion 30 of the clamp 16 in place. A bar

or rung 31 is mounted across the tines 25, between the yoke 17 and arm, so that the valve V is free to be operated by the mechanism M when the rung 31 engages the yoke 17, but the valve V is positively closed when the rung 31 is forced against the arm 14. Connected to the member 24 is a stem 32 which is suitably bent and provided with a float 11.

In operation, when the float 11 falls to a predetermined level because the water W becomes too low, or because the float becomes heavy with lime, the rung 31 is caused to turn the arm 14 so as to close the valve V. Thus, the mechanism M has no further control of the valve V. However, when the float 11 is supported by the water W, the rung 31 engages the yoke 17 which acts as a stop, and the mechanism M functions normally to control the arm 14 and valve V, the rung 31 being held by the float 11 out of the way of the arm 14. Thus, the device E only interferes with the normal operation of the generator when insufficient water is present or when the float itself fails.

I claim:

1. In an acetylene generator, a carbide feed valve, a pivoted arm connected to said valve, a carbide feed control mechanism so connected to said arm that said arm is free to turn to close said valve, and a float controlled device for turning said arm and closing said valve when the water in the generator falls to a predetermined low level, said device comprising a lever and a float arranged to operate said arm to close said valve when the float falls to such low water level.

2. In a medium-pressure acetylene generator having a water container, the combination with a carbide feed valve mechanism comprising a fulcrum pin, a carbide feed lever arm pivoted to said pin, a spring guide carried by said arm, a valve opening spring engaging one side of said guide, a slotted connecting yoke connected to said guide through said spring, and an acetylene gas pressure responsive diaphragm connected to said yoke for operating said arm against the force of said spring, of a device for preventing the feeding of carbide by said mechanism when insufficient water is present in the generator water shell, said device comprising a lever pivoted to said pin, a float attached to one end of said lever, the other end of said lever being engageable with the other side of said guide when said float drops below a predetermined level, so that when the float is above such level said carbide feed valve mechanism operates as usual, but when the float is below said level the engagement of said lever with the guide closes the carbide feed valve, rendering the generator incapable of operation.

3. In a medium-pressure acetylene generator having a water container, the combination with a carbide feed valve mechanism comprising a fulcrum pin, a carbide feed lever arm pivoted to said pin, a spring guide carried by said arm, a valve opening spring engaging one side of said guide, a slotted connecting yoke connected to said guide through said spring, and an acetylene gas pressure responsive diaphragm connected to said yoke for operating said arm against the force of said spring, of a device for preventing the feeding of carbide by said mechanism when insufficient water is present in the generator water container, said device comprising a bifurcated lever pivoted to said pin at opposite sides of said arm, a float rigidly attached to one end of said lever, the two branches at the other end of said lever being engageable with the other side of said guide when said float drops below a predetermined level, so that when the float is above such level said carbide feed valve mechanism operates as usual, but when the float is below said level the engagement of said branches with the guide closes the carbide feed valve, rendering the generator incapable of operation.

4. The combination with a pivoted carbide feed valve arm, of a low water interference device comprising a pivoted member, means actuated by said member for operating said arm to valve-closed position, a stem connected to said member, and a float carried by said stem, said float when raised holding said means out of the way of said arm, the fall of said float to a predetermined level acting to cause said means to lock said arm in valve-closed position.

5. The combination with a yoke, and a carbide feed valve arm pivoted to said yoke, a pin, of a bifurcated member having tines pivoted to said pin, a rung mounted across said tines between said yoke and arm, a stem connected to said member, and a float connected to said stem, said float causing said rung to engage said yoke out of the way of said arm when the float is above a certain level, and said float causing said rung to engage and turn said arm to carbide-valve-closed position when the float is below a certain level.

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