No. 778,052. PATENTED DEC. 20, 1904.

T. E. LEWIS.

ACETYLENE GAS GENERATOR.

APPLICATION FILED DEC. 13, 1898. RENEWED SEPT. 20, 1904.

NO MODEL.

Fig. 1.

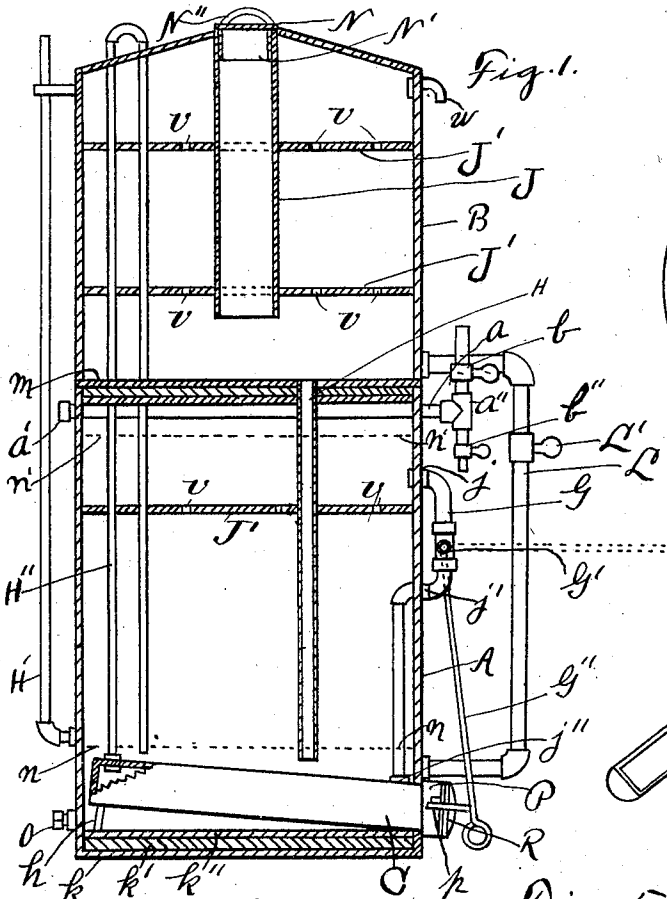

Fig. 7.

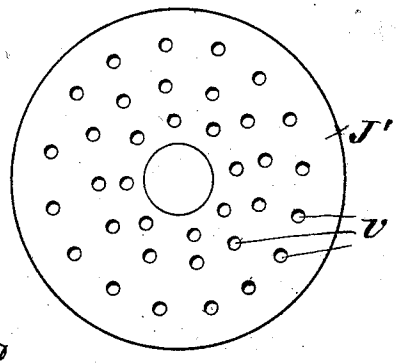

Fig. 2.

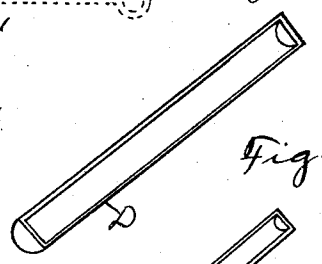

Fig. 3.

Fig. 4.

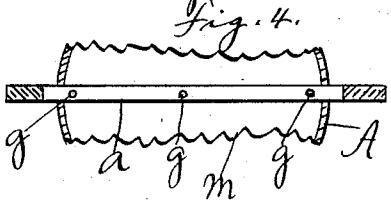

Fig. 5

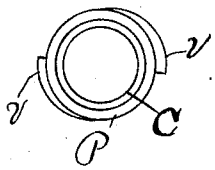

Fig. 6

Witnesses:-
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No. 778,052. Patented December 20, 1904.

UNITED STATES PATENT OFFICE.

THOMAS E. LEWIS, OF FORT WORTH, TEXAS.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 778,052, dated December 20, 1904.

Application filed December 13, 1898. Renewed September 20, 1904. Serial No. 225,240.

To all whom it may concern:

Be it known that I, THOMAS E. LEWIS, a citizen of the United States, residing at Fort Worth, Texas, have invented certain new and useful Improvements in Gas-Generators, of which the following is a specification.

This invention is an improvement on my Patent No. 606,674, dated July 5, 1898, and relates to gas-generators, and particularly to apparatus for generating gas from carbid; and the objects are to construct a machine for generating and storing gas and which will operate automatically until a supply of carbid is exhausted and to arrange the water-supply in the gas-holder so that the water will be fed to the carbid until enough gas has been generated to force the water down below the outlet for water, and thus automatically stop the feeding of the water to the carbid, the water being forced gradually from the gas-holder into a storage-tank above the gas-holder, where the water will remain until the supply of gas has been diminished. As the gas is consumed the water will descend into the gas-holder until it rises high enough to run through its outlet to the carbid again. In this operation the water becomes charged with gas.

Another object is to keep the generating-chamber surrounded by water, which condition will keep the carbid-chamber cool and keep the solder from melting from the joints about the generating-chamber. The generating-chamber is so placed that one end is higher than the other end. By this arrangement water comes in contact with the carbid gradually.

Another object is to put the generating-chamber, the gas-holder, and the water-storage tank in one compact inclosure.

Other objects and advantages will be fully explained in the following description, and more particularly pointed out in the claims.

Reference is had to the accompanying drawings, which form a part of this application.

Figure 1 is a vertical section of the invention. Fig. 2 is a perspective view of the trough for holding carbid. Fig. 3 is a similar view of a smaller trough, which is put into the larger trough. Fig. 4 is a broken section of the gas-holder, illustrating the perforations in the pipe for conducting the gas out of the gas-holder. Fig. 5 is an end view of the generating-chamber, showing the cam-shaped flange for securing a cap or covering on the chamber. Fig. 6 is a side elevation of the cap and the bail for securing the cap on the generating-chamber. Fig. 7 is a detail view of a brake-disk.

Similar characters of reference are used to indicate the same parts throughout the several views.

The generator has a gas-holder A, a water-storage tank B, mounted on and secured to the gas-holder A, a generating-chamber C, and a trough D, mounted in said chamber. A pipe a, having perforations g, is mounted in the upper part of the gas-holder and has the ends projecting through the walls of the gas-holder. A supply-pipe for conducting the gas away may be connected to either end of pipe a. The drawings show a nut a' on one end and a T-pipe a'' on the other end, having a stop-cock b and an air-cock b'' connected thereto. The bottom k of the gas-holder is reinforced by a disk k', of wood, and a disk k'', of metal. The partition m between the gas-holder and the water-storage tank is constructed in a similar manner. This construction makes these parts strong and rigid. A suitable opening is made in the side wall of the gas-holder for the generating-chamber C, and one end of this chamber is supported in the gas-holder on a brace h.

The dotted line n n indicates the lowest line of gas and the top of the water when the water is lowest in the gas-holder. The line n' n' indicates the highest line the water reaches in the gas-holder. Water is fed to the carbid from the gas-holder through a pipe G, which receives water at j and enters the gas-holder again at j' and connects with the generating-chamber C at j''. Pipe G is provided with a cut-off valve G', which is operated by a rod G''. When the rod G'' is down, as shown in full line, the valve is opened and the water can be admitted through the pipe G. When this rod is raised to the position of the dotted line, the valve G' is closed.

The gas-holder is provided with a tube H for admitting water from the water-storage

tank to the gas-holder. This tube reaches below the line representing the lowest point to which the gas reaches. Consequently the gas does not escape up this tube into the water-tank. Before the gas would go low enough to escape up this pipe it would escape through the pipe H′ to the air. This arrangement prevents any possibility of an explosion. The gas is collected in the gas-holder by means of a pipe H″. This pipe must run above the highest point to which the water may reach, so that this pipe will not siphon the water out of the generating-chamber. The pipe H″ is passed up through the gas-holder and through the water-tank and is bent and passed back through the same vessels below the low-water line *n n*. The gas passes through the water before it reaches the space in the gas-holder above the water.

The tank B is provided with tubular extension J within the tank. This extension is to prevent the water from being thrown out of the tank when the generator is used on vehicles or locomotives. Water-brakes J′ are soldered or otherwise suitably attached to the sides of the tank and also to the sides of the gasometer to prevent the water from being thrown with much force against the sides of the vessels. The brakes may be arranged vertically, if practical. The brakes are disks having suitable apertures for the pipes and the tube J. One or more of these brakes may be used. The brakes are also perforated at a few points *v* to let the water through above the brakes. A cap N, having an annular flange N′ and a handhold N″, is provided for closing the tube J.

A casting P is put on the generating-chamber C to aid in closing this chamber. The casting conforms to the shape of the generator and is riveted and soldered to chamber C and to the gas-holder. A cap R, having an annular flange R′, closes this chamber. A gasket-ring P is placed on the flange R′ and presses against the end of chamber C and against the casting P and makes a gas and water tight joint. A bail S, pivotally connected to the cap R and having L's at the ends for engaging the cam-flanges *v*, holds the cap securely on the chamber C. The cam-flanges *v* aid in making an air-tight joint. Before this cap is removed the water-supply must be cut off. For this reason the rod G″ is made long enough to extend down in front of the cap. The cap cannot be removed without raising the rod G″. Consequently the rod will be raised and the valve G′ will be closed.

It will be noticed that the chamber C is placed at an incline. This will make the water come in contact with the carbid gradually. The carbid is placed in the trough D, and this trough is inserted in the chamber C. Smaller troughs *d* can in some instances be used with advantage. The smaller troughs are filled with carbid and placed in the trough D, so that the carbid will be used entirely out of the first in order before the next in order is attacked by the water.

The operation may be described as follows: The trough is filled with carbid and placed in the chamber C and the chamber closed. The valve G′ may be closed until the generator is to be used. Water is poured in the tank B through extension J. The tank B must hold no more water than can be held by the gas-holder between the lines *n n* and *n′ n′*. The water will run into the gas-holder until it reaches the line *n′ n′* unless the valve G′ is opened, in which case gas will be generated and probably prevent the water from rising much above the opening at *j*. As the gas is generated it will accumulate above the water in the gas-holder and force the water gradually down in the gas-holder and up through the tube H into the water-tank. The gas enters the gas-holder through the pipe H″ and passes up through the water. The gas will soon force the water below the opening at *j*, so that water will cease to flow through the pipe until enough gas has been removed from the gas-holder to let the water rise up in the gas-holder again. The water in tank B will afford the proper amount of pressure to force the gas to places for consumption. If too much water is poured in tank B, it will escape through the vent-pipe *w*. The tank also takes air through this vent-pipe.

A pipe L is used to allow water to pass from the tank B to the gasometer. This pipe is provided with a cut-off valve L′. The pipe L may be used in connection with the tube H, or either one may be used for the passage of water from tank B to the gas-holder. The gasometer is drained by means of a plug *o*. The pipe *a* is drained through the perforations *g*, and the gas enters the pipe through the same perforations, the perforations being in the under side of the pipe.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a gas-generator provided with a water-tank, a gas-holder and a generating-chamber mounted in said gasometer; a tube forming a passage between said gas-holder and water-tank, a pipe running out of and in said gas-holder and connecting with said generating-chamber, said generating-chamber being mounted with the outer end lower than the inner end and being immersed in water, a carbid-trough mounted in said chamber, whereby said chamber will be kept cool by the circulation of water around the same and whereby the water entering said trough will attack the carbid gradually, and a pipe for carrying gas from said chamber to said gasometer, said pipe running up through said gasometer and tank above the high-water line and back through said parts below the low-water line in said gasometer.

2. In a gas-generator provided with a water-tank, a gas-holder, a generating-chamber mounted in said gas-holder, and a gas and a water pipe connecting said gas-holder and said chamber; a tube provided with a cut-off valve forming a passage between said tank and said gas-holder, said water-tank having a tubular extension into the interior thereof for receiving water and a cap for closing said tubular extension and brakes attached to the interior wall of said tank.

3. In a gas-generator provided with a water-tank, a gas-holder, a generating-chamber, and a gas and a water pipe connecting said gas-holder and said chamber; a tube forming a passage between said gas-holder and said tank, the pipe for feeding water from said gas-holder to said chamber being provided with a cut-off valve, said chamber being provided with a closing-cap, and rod attached to said cut-off valve and extending down in front of said cap and so arranged that said cap cannot be removed without raising said rod and closing said valve.

4. In a gas-generator provided with a water-tank, a gas-holder, a generating-chamber, and suitable pipes connecting said gas-holder and said chamber; a tube provided with a cut-off valve forming a passage between said gasometer and said tank, said tube extending below the low-water line in said gas-holder, the pipe for delivering gas from said chamber to said gas-holder being adapted to discharge the gas below the surface of the water in said gas-holder whereby the water is charged with gas before being fed from said gas-holder to said generating-chamber, and a pipe having perforations in the under side thereof for drainage mounted in said gasometer for conveying gas for consumption.

In testimony whereof I set my hand, in the presence of two witnesses, this 9th day of December, 1898.

THOMAS E. LEWIS.

Witnesses:
A. L. JACKSON,
JAMES GILFORD BROWNING.