

No. 636,586.

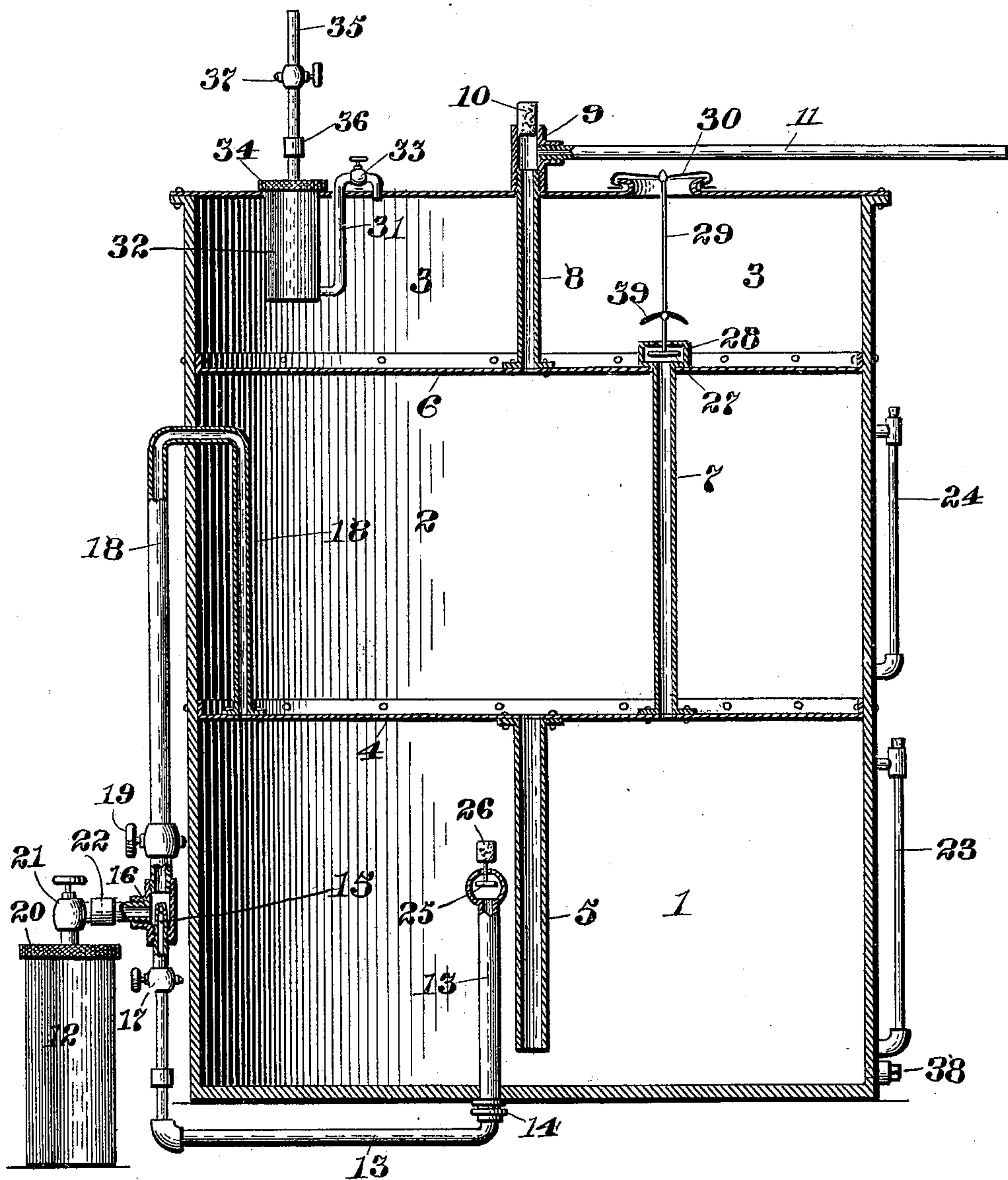
Patented Nov. 7, 1899.

O. P. SWEM.

ACETYLENE GAS GENERATOR.

(Application filed Mar. 11, 1899.)

(No Model.)



Witnesses
 Marcus L. Byrnes.
 Wm. C. Jewby

Inventor
Ole P. Swen
by
Mason Smith & Lawrence
Attorneys

UNITED STATES PATENT OFFICE.

OLE P. SWEM, OF TACOMA, WASHINGTON.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 636,586, dated November 7, 1899.

Application filed March 11, 1899. Serial No. 708,745. (No model.)

To all whom it may concern:

Be it known that I, OLE P. SWEM, a citizen of the United States, residing at Tacoma, in the county of Pierce and State of Washington, have invented certain new and useful Improvements in Acetylene-Gas Generators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in acetylene-gas generators; and it consists in a tank having a gas-receiving compartment, a gas-distributing compartment, and a generator connected with the gas-receiving compartment in such a manner that the formation of the gas is automatically regulated by the pressure of the gas.

It also consists in certain other novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described and claimed.

In the accompanying drawing the figure represents a vertical central section through a gas-generator constructed in accordance with my invention.

1 in the drawing represents the gas-receiving compartment, 2 a water-compartment, and 3 a gas-distributing compartment, all within an inclosing tank.

My improved generator is designed more particularly for use upon vessels, and while it may be used anywhere it is so constructed that the movement of a ship or other vessel will not prevent the regular generation of gas. I preferably employ a generator which is formed with separate compartments and which has a detachable generating-compartment arranged exteriorly of the main closure. As clearly illustrated in the drawing, the main closure or tank is provided in the bottom with a receiving-tank 1, which is divided from the upper part of the closure by a partition, as 4. The compartment 1 is connected with the compartment 2 above it by means of a pipe, as 5, secured at its upper end to the partition 4 and extending to within a short distance of the bottom of the chamber 1. The chamber 2 is formed between the partition 4 and an upper partition 6, the said partition 6 separating the compartment 2 from the compartment 3 in the top of the main closure.

The compartment 1 is connected with the compartment 3 by means of a pipe 7, secured at its lower end to the partition 4 and at its upper end to the partition 6. A pipe, as 8, leads from the top of the compartment 2 through the compartment 3 and passes out the top of the closure, having a T-coupling; as 9, secured to its upper end. The upper end of the T is open and is normally closed by means of a removable plug, as 10. A pipe, as 11, is also connected to the T 9 and extends beyond the closure in any suitable direction. This pipe is left open at its ends and permits air to pass in and out to the compartment 2, according to the height of water therein. By removing the plug 10 water may be placed in the chamber 2 at any time. The generating-chamber 12, as heretofore stated, is located outside of the main closure and is connected therewith by suitable piping. A pipe 13 supplies water to said generating-chamber 12, said pipe 13 extending upwardly through a suitable packing-plate 14 in the bottom of the compartment 1 into the said compartment and to a point a little more than half-way to the top thereof. This upward extension of the pipe 13 is preferably arranged very near the center of the compartment 1, so that its upper end will be at a point in the said chamber where the variations in the height of the water contained in said compartment will be least. The pipe 13 extends upwardly outside of the main casing to a point near the top of the generating-chamber 12. The said pipe 13 is provided with a reduced upper end, as at 15, which upper end extends into a T-coupling, as 16. The upper end of the reduced portion 15 is perforated to permit of a small flow of water therefrom at the proper time. The pipe 13 may be also provided with a cock or valve, as 17, to cut off the flow of water, if desired. The T 16 is also connected with a pipe 18, which extends up the side of the main closure and into the chamber 2, near the top thereof, and thence it turns downward and leads into the top of the chamber 1, its lower free end being secured to the partition 4, as illustrated. This pipe 18 is also provided with a cock or valve, as 19. The generating-chamber 12 may be of any desired construction and is provided, preferably, with a screw-cap top, as 20, which has secured to it a cock, as

21, for controlling the passage-way through the said top. The cock 21 is connected with the T 16 by means of piping and a pipe-coupling, as 22, so that the said generating-chamber 12 may be easily detached from the rest of the apparatus and recharged and quickly replaced again for producing more gas. Each of the chambers 1 and 2 is preferably provided with sight-gages, as 23 and 24. These gages preferably consist of glass tubes resting at their lower ends in elbow-joints and at their upper ends engaging T's connected with the interior of the compartment. The T-joints are preferably left open at their upper ends and adapted to be closed by removable plugs.

When it is desired to generate gas, the generating-compartment 12 is supplied with suitable carbid and the tank 2 is filled with water, the air in the compartment 1 having been entirely driven out by filling the same with water before the generator 12 was attached to the apparatus. The cock 21 being open, the water will flow through the pipe 13 and nozzle 15 into the generator and begin the forming of gas. The gas thus liberated will pass upwardly through the pipe 18 into the upper part of the chamber 1. I preferably provide the upper end of the pipe 13 in the chamber 1 with a valve, as 25, said valve being provided with a stem having a cork or other light substance secured at its upper end, as at 26. While the water is above the upper end of the pipe 13, the buoyancy of the cork 26 will hold the valve 25 out of engagement with the end of the pipe 13 and permit water to flow through the same. When the pressure of the gas in the top of the receptacle 1 is sufficient to force the water below the cork 26, the valve 25 will be closed and no more water can enter the pipe 13 for generating gas. The pressure of the gas, it will be seen, forces the water back up the pipe 5 into the chamber 2. When the gas has been used so that the pressure in the chamber 1 is reduced, the water will again rise in the said chamber and lift the valve 25, permitting more water to enter the generating-chamber. The gas formed and collected in the receiving-chamber 1 passes up pipe 7 into the distributing-chamber 3, and its entrance into said chamber is automatically controlled by means of a valve 27, which is held in place at the upper end of the pipe 7 by means of a valve-seat 28. The valve is attached to the lower end of a rod, as 29, which is secured to a rubber or other elastic diaphragm, as 30, which covers an opening in the top of the chamber 3. When the pressure in the chamber 3 exceeds a certain point, it will raise the diaphragm 30 sufficiently to close the valve 27 and prevent any more gas from flowing in. When the gas has been used, the diaphragm will fall and the valve 27 be opened to permit more gas to enter the said chamber 3. Just above the valve 27 I preferably secure a diaphragm, as 39, against which the gas escaping from the pipe 7 will impinge and be thrown

downwardly, thus giving it a chance to settle and clear in rising. The gas may be conducted from the chamber 3 in any suitable manner; but I prefer to pass it by means of a pipe 31 into a filtering or purifying chamber, as 32, located in the top of the chamber 3. The pipe 31 may be controlled by a cock, as 33. The top of the chamber 32 extends through the top of the chamber 3 and is provided with a screw-cap, as 34, to which is connected a discharge-pipe, as 35, by means of a pipe-coupling, as 36. A controlling-cock, as 37, may be also placed in the pipe 35. Any suitable filter or purifier may be located in the chamber 32. The construction of the said chamber with a removable top 34 and the coupling 36 makes it possible to remove the said top at any time and replace the filtering material, the cock 33 being closed during such an operation to prevent the escape of gas. The bottom of the tank is preferably provided with an opening closed by a screw-cap, as 38, so that the chamber 1 may be thoroughly cleansed at any time that it may be desirable. It is necessary, of course, to prevent any clogging of segment at the bottom of the pipe 5.

It will be noted that in constructing the generator with a pipe 13, its upper end will be located at a point where the water is least affected by the rocking of a ship or other vessel, the rise and fall of the water at the center being not materially affected by such rocking. The use of the detachable gas-generating chamber is also important, as the same may be recharged without allowing the escape of gas or disagreeable odors in the room or cabin that it may be placed in. When it is desired to recharge the chamber 12, the cocks 17 and 19 are closed, as well as the cock 21. The coupling 22 may be then loosened, and the chamber 12 may be carried to any suitable place for recharging. After being charged it can be returned to its place and the cocks opened again for the formation of gas. It will be noticed that the pressure of the gas automatically regulates the flow of the water to the generator through the chamber 1, and the pressure of the gas also regulates the flow of the gas into the chamber 3, thus producing almost an even pressure at all times in the supply-pipe 35 and preventing the change of fluctuations in the supply of the said gas to the burners in using the same. My device is also very simple in construction and not likely to get out of order and may be used not only on shipboard but anywhere else.

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

1. In a gas-generator, the combination with a main closure of partitions for forming therein a gas-receiving chamber, a water-chamber and a gas-distributing chamber, means connecting the said chambers, a generating-chamber detachably connected with the receiving-chamber, a branching pipe connecting the

generating-chamber with the said distributing-chamber, one branch of the said pipe entering the chamber at the top and the other branch entering it at the bottom, so that the pressure of the gas in the receiving-chamber will regulate the flow of water to the generating-chamber, substantially as described.

2. A gas-generator comprising a main closure having a receiving-tank, a water-tank and a distributing-tank formed therein, means connecting the water-tank and the distributing-tank with the receiving-tank, a generating-tank connected with the receiving-tank by means of a water-pipe, and a gas-pipe, said water-pipe extending from a point near the center of the receiving-chamber to a point near the top of the generator and provided with a reduced end so that a small flow of water will be secured, cocks for regulating the flow of water and gas in the said piping, and a pipe-coupling for removably securing the generator to the said piping, substantially as described.

3. A gas-generator comprising a main closure having in its lower end a receiving-chamber, and a water-chamber located above the said receiving-chamber and adapted to supply water thereto, a pipe connecting the central portion of the said receiving-chamber with a generating-chamber, said pipe having a valve at its upper end, a float secured to the said valve, a gas-pipe also connecting the top of the receiving-chamber with the generating-chamber, the construction being such that the gas will cause the water in the receiving-chamber to rise and fall, thereby permitting the valve to be opened or closed for controlling the flow of the water to the generator, substantially as described.

4. A gas-generator comprising a main closure having a lower receiving-chamber, a central water-chamber and an upper distributing-chamber, piping connecting the receiving-chamber with the generating-chamber, a pipe connecting the receiving-chamber with the distributing-chamber and a valve located at the upper end of said latter pipe its stem extending into the said distributing-chamber and adapted to be raised or lowered by the

pressure of the gas for automatically regulating the flow of gas into the said distributing-chamber, substantially as described.

5. A gas-generator comprising a main closure having a receiving-chamber, a water-chamber and a distributing-chamber formed therein, a generating-chamber connected with the said receiving-chamber for forming gas, a pipe connecting the receiving-chamber with the distributing-chamber, a valve at the upper end of the said pipe provided with a suitable valve-seat, the stem of the said valve being connected with a flexible diaphragm located in the top of the said chamber, a gas-deflector secured to the said stem, and means for leading gas through a purifier from the said chamber, the construction being such that the flow of gas into the said distributing-chamber is automatically regulated by the pressure of the diaphragm and the deflector gives the gas a chance to settle and clear in the said distributing-chamber, substantially as described.

6. In a gas-generator, the combination with a main closure having a receiving-chamber, a water-chamber, and a distributing-chamber formed therein, means for supplying gas to the said chamber, a pipe open at the top for supplying water to the water-tank, a plug for closing said pipe, a vent-pipe secured to the said supply-pipe for permitting air to enter and pass out of the said water-chamber, a filtering-chamber mounted in the top of the distributing-chamber and connected therewith by means of a suitable pipe, a cock for controlling the flow of gas through the said pipe, a removable top for closing the upper end of the filtering-chamber, the construction being such that the filtering-chamber may be recharged without the escape of gas from the distributing-chamber, substantially as described.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

OLE P. SWEM.

Witnesses:

FRANK J. MILLER,
B. BERTELSON.