

No. 641,243.

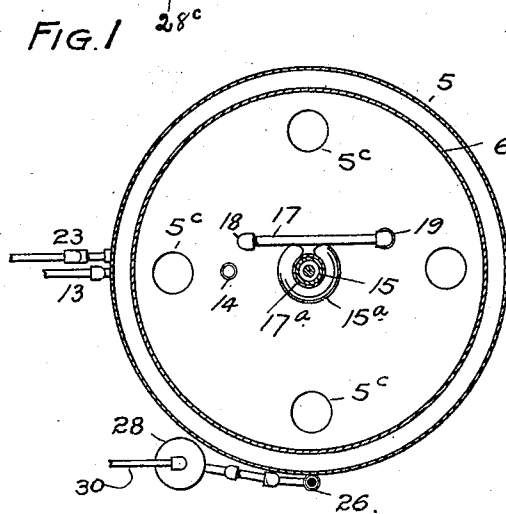
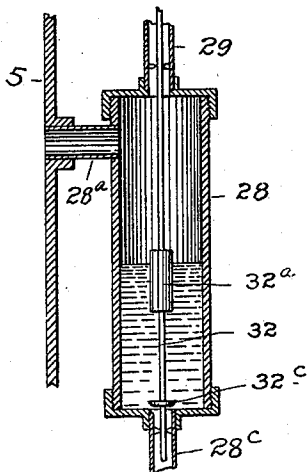
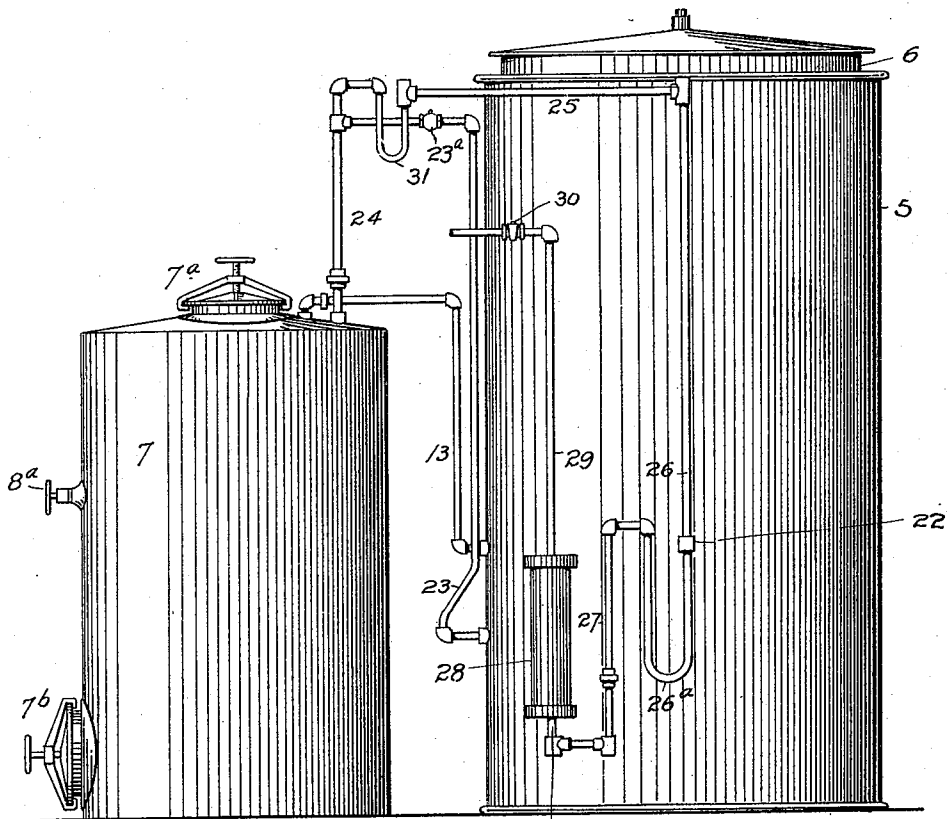
Patented Jan. 9, 1900.

W. C. STERNE.
ACETYLENE GAS GENERATOR.

(Application filed Feb. 11, 1899.)

(No Model.)

2 Sheets—Sheet 1.



28. Witnesses
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 Nellie G. Daniels

FIG. 3

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W. C. Sterne

By his Attorney *[Signature]*

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2 Sheets—Sheet 2.

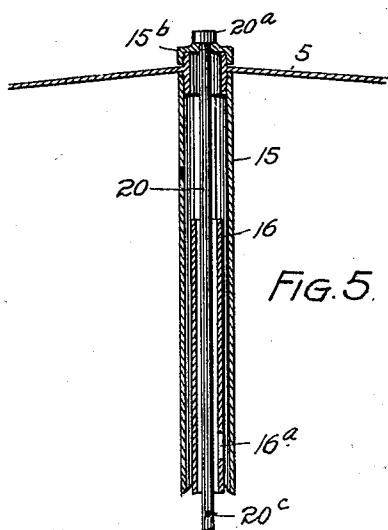
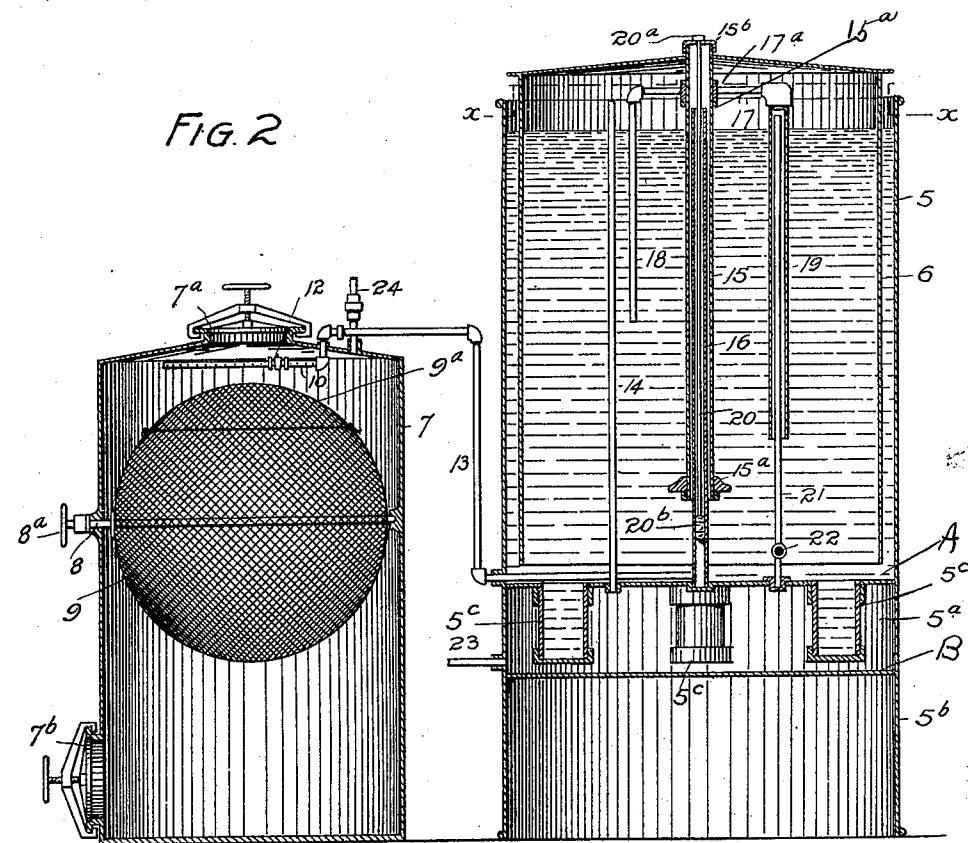


FIG. 5.

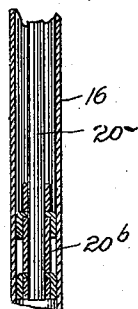


FIG. 6.

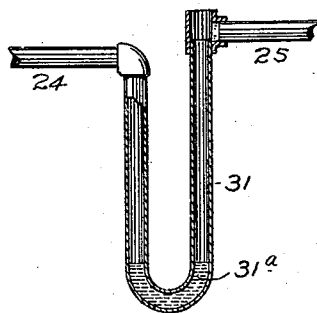


FIG. 7.

Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM C. STERNE, OF LITTLETON, COLORADO.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 641,243, dated January 9, 1900.

Application filed February 11, 1899. Serial No. 705,285. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. STERNE, a citizen of the United States of America, residing at Littleton, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Acetylene-Gas Machines; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in acetylene-gas machines, my object being to provide a device of this class which shall be simple in construction, economical in cost, reliable, durable, and efficient in use; and to these ends the invention consists of the features, arrangements, and combinations hereinafter described and claimed, all of which will be readily understood by reference to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a side elevation of my improved machine. Fig. 2 is a vertical longitudinal section taken through the same. Fig. 3 is a section taken on the line X X, Fig. 2. Fig. 4 is a longitudinal section taken through the water-trap. Fig. 5 is a section taken through the upper part of the gasometer. Figs. 6 and 7 are details of construction.

Similar reference characters indicating corresponding parts in the views, let the numeral 5 designate the stationary cylindrical casing, provided with two horizontal partitions A and B. The compartment above the partition A is the largest and contains the necessary water for use with apparatus of this character. The partition A is provided with openings communicating with wells 5^a, which project into the compartment 5^a and are suspended from the partition. The portion 5^b of the casing below the partition B is only employed to raise the water tank or receptacle to the desired height above the generator for supplying water to the latter. Attached to the partition A and projecting upwardly into the water-tank is a vertical pipe 16, whose upper extremity projects above water-level. This pipe 16 telescopes in a larger pipe 15,

attached to the top of the gasometer 6. The lower extremity of the pipe 15 is open and provided with a weight 15^a. Hence the water rises in the tube 15 to the level of the water in the tank. In the tube 16, a short distance below the water-line, is formed an opening 16^a. Attached to the top of the gasometer and projecting downwardly into the tube 16, whose upper extremity is open, is a small pipe 20, whose lower extremity is open and provided with washers 20^b, which fill the tube 16 and form a sort of piston, preventing the water from passing below the washers except through the pipe 20, which is provided with a small opening 20^c, located a short distance below the opening 16^a, through which the water enters the pipe 20 and passes thence into the bottom of the pipe 16, from which leads the water-supply pipe 13 to the spraying device 10, located in the generator 7 above the carbide-holder 9, which is composed of wire screen and mounted on a shaft 8, journaled in the casing of the generator. In the top of the generator 7 is formed an opening through which the carbide is passed to the holder 9, the latter being provided with a hinged door 9^a, which is opened to receive the carbide. This opening in the top of the generator is closed by a cover 12. The ashes are removed from the generator through an opening formed in the lower part thereof and normally closed by a cover 7^b.

The gas passes from the generator into a pipe 24 and thence by way of a pipe 23 to the compartment 5^a of the casing 5. In this compartment the gas is cooled by coming in contact with the walls of the wells 5^a and the partition A. After the compartment 5^a is filled with gas under a certain pressure the gas passes upwardly through an open-ended pipe 14 into the gasometer 6 above the water in the tank 5 and raises the gasometer. If the generation of gas exceeds the consumption or demand, the inverted gasometer-tank will continue to rise until the opening 20^c of the pipe 20 is above the water-level. When this occurs, the water is shut off from the carbide-holder and the generation of gas ceases until sufficient gas has been used to allow the gasometer to move downwardly far enough to bring the hole 20^c again below the water-level.

When using the gas, it is taken from the compartment or chamber 5^a, which communicates with the gasometer by way of an open-ended pipe 14, as heretofore explained. From the chamber 5^a the gas passes by way of a short pipe 28^a to the trap 28, which receives the water of condensation. This trap consists of a small tank having openings in both ends. The lower opening is surrounded by a seat which a valve 32^c is adapted to engage. This valve is attached to a stem 32, which extends into pipes attached to the respective extremities of the trap. To this stem is also attached a float 32^a. The function of this trap is to receive and discharge the water of condensation. The gas when it leaves the generator is laden with a considerable quantity of vapor of water, which is condensed in the chamber 5^a and passes into the trap. When this water accumulates sufficiently to raise the float 32 and unseat the valve 32^c, the water escapes from the bottom of the trap through an outlet 28^c until the float again falls and allows the valve to resume its seat. The float is located sufficiently above the water to maintain a water seal in the trap and prevent the escape of gas through the water-outlet 28^c. The gas enters the trap near its upper extremity and passes thence through an outlet-pipe 29, which leads from the top of the trap to the location where it is to be used. This pipe 29 is provided with a stop-cock 30 to regulate or entirely cut off the flow of gas through the pipe 29.

Surrounding the upper part of the tube 15 is a loose sleeve 17^a, supported by a collar 15^a, attached to the tube. To this sleeve is secured a horizontal piece of pipe 17, to one extremity of which is attached a depending pipe 18, whose lower extremity is open and normally located below the water-level. The opposite extremity of the pipe 17 is connected with the upper end of a larger depending pipe 19, whose lower extremity is also submerged. A pipe 21, whose lower extremity is attached to the partition A, projects upward into the pipe 19. The upper extremity of the pipe 21 is open and located above the water-level. If for any reason the heretofore-described devices for checking the flow of water to the generator should fail to work and the generation of gas should continue, causing the gasometer to rise after the hole 20^c of the pipe 20 is above the water-level, as soon as the lower extremity of the pipe 18 passes out of the water the gas will escape by way of said pipe, the pipe 17, and the pipe 21, which is provided with an opening 22, which leads to an external pipe 26, which passes upwardly, allowing the gas to escape to the open air. Connected and communicating with the pipe 26 below the opening 22 is a trap 26^a, which is also connected with the pipe 28^c by a pipe 27. This trap provides an escape for the water of condensation, which otherwise might accumulate in and stop the escape of gas by way of said safety-pipe 21, and the water

therein at the same time forms a seal against the escape of gas in this direction, it being desirable that the gas should escape upward and pass out of the building.

The pipe 23, which conducts the gas from the generator to the chamber 5^a, is provided with a check-valve 23^a, which allows the gas to pass through the pipe to the said chamber, but prevents its return. If for any reason this check-valve should fail to perform its function and the passage of gas from the generator through the pipe 23 should be cut off, an explosion would result if no means were provided to prevent such an accident.

The pipe 24 is connected with a trap 31, whose bend contains a shallow mercury seal sufficient to prevent the gas under normal conditions from passing therethrough. In case, however, the check-valve should become stopped this seal would immediately yield and allow the gas to pass therethrough to a pipe 25, which leads to the upper extremity of the pipe 26, and make its escape.

Having thus described my invention, what I claim is—

1. In an acetylene-gas machine the combination, with the generator, the water-supply pipe and the gasometer, of a tube projecting upwardly into the water-tank and provided with an opening located below the water-level, a pipe attached to the gasometer and projecting into the open end of the said tube and having an opening normally below the water-level whereby the water from the tube is allowed to enter said pipe, whose lower extremity is open to allow the water to pass to the lower part of the tube, means to prevent the water from passing into the lower portion of the tube except by way of said pipe, and a water-conduit leading from the lower portion of the tube to the generator.

2. In an acetylene-gas machine the combination, with the generator, the water-supply pipe and the gasometer, of a tube projecting upwardly into the water-tank and provided with an opening located below the water-level, a pipe attached to the gasometer and projecting into the open end of the said tube, and having an opening normally below the water-level whereby the water from the tube is allowed to enter said pipe, whose lower extremity is open to allow the water to pass to the lower part of the tube, the pipe being provided with means performing the function of a piston to prevent the water from passing into the lower portion of the tube except by way of said pipe, and a water-conduit leading from the lower portion of the tube to the generator.

3. The combination, with a generator, a gasometer, and the water-supply tank, of a chamber located below the water-tank, cooling-wells located in said chamber and communicating with the water-tank, a conduit connecting said chamber with the gas-space of the gasometer, a conduit leading from the generator to said chamber, and another con-

duit leading from said chamber to the locality where the gas is to be used.

4. The combination, with a generator, a gasometer, and the water-supply tank, of a chamber located below the water-tank, cooling-wells located in said chamber and communicating with the water-tank, a conduit connecting said chamber with the gas-space of the gasometer, a conduit leading from the generator to said chamber, another conduit leading from said chamber to the locality where the gas is to be used, and an interposed water-trap through which the gas passes.

5. The combination, with a generator, a gasometer, and the water-supply tank, of a chamber located below the water-tank, cooling-wells located in said chamber and communicating with the water-tank, a conduit

connecting said chamber with the gas-space of the gasometer, a conduit leading from the generator to said chamber, another conduit leading from said chamber to the locality where the gas is to be used, an interposed water-trap through which the gas passes, said trap being provided with a valve, and a float attached to the valve-stem whereby the surplus water is allowed to escape, a water seal however being maintained for the purpose set forth.

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

WILLIAM C. STERNE.

Witnesses:

J. H. BOEKENFELD,
NELLIE G. DANIELS.