No. 649,466. Patented May 15, 1900.

L. MAYHEW.

ACETYLENE GAS GENERATOR.

(Application filed Mar. 21, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

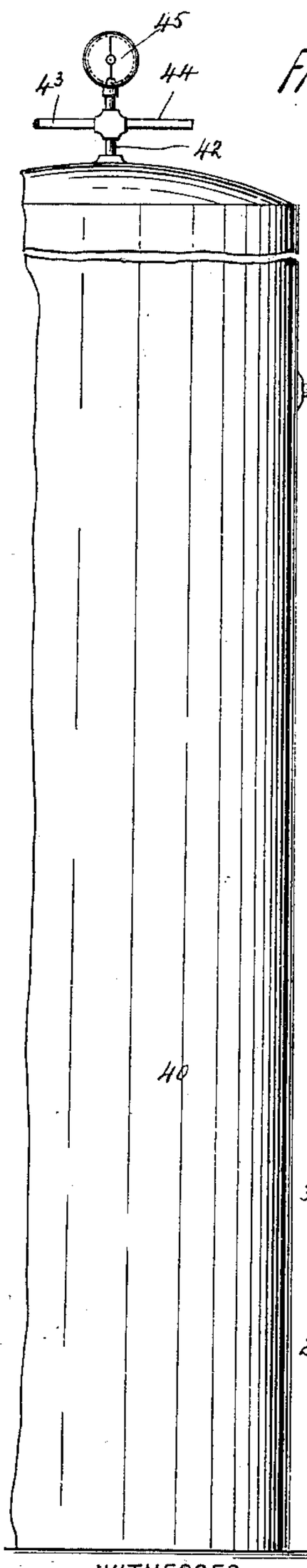
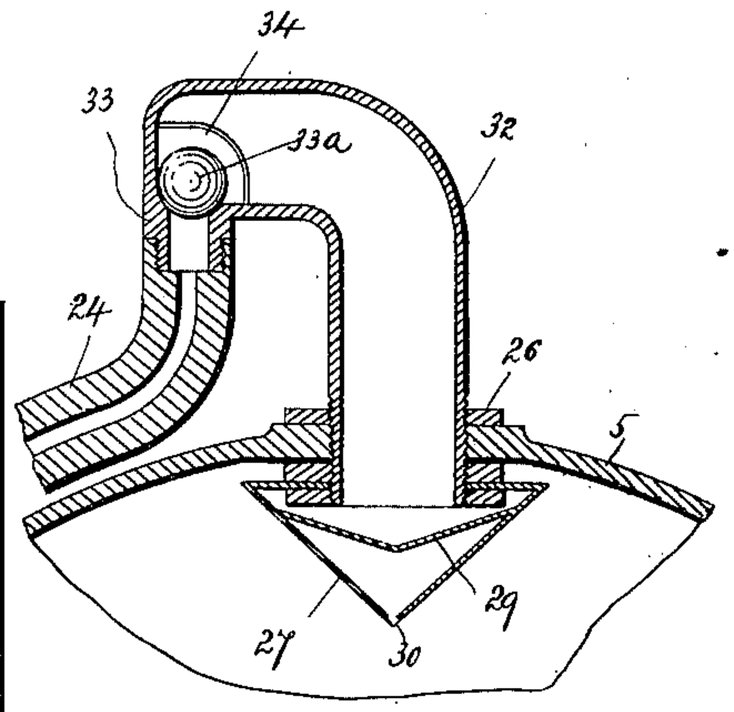


Fig. 4.



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(No Model.) 2 Sheets—Sheet 2.

FIG. 2.

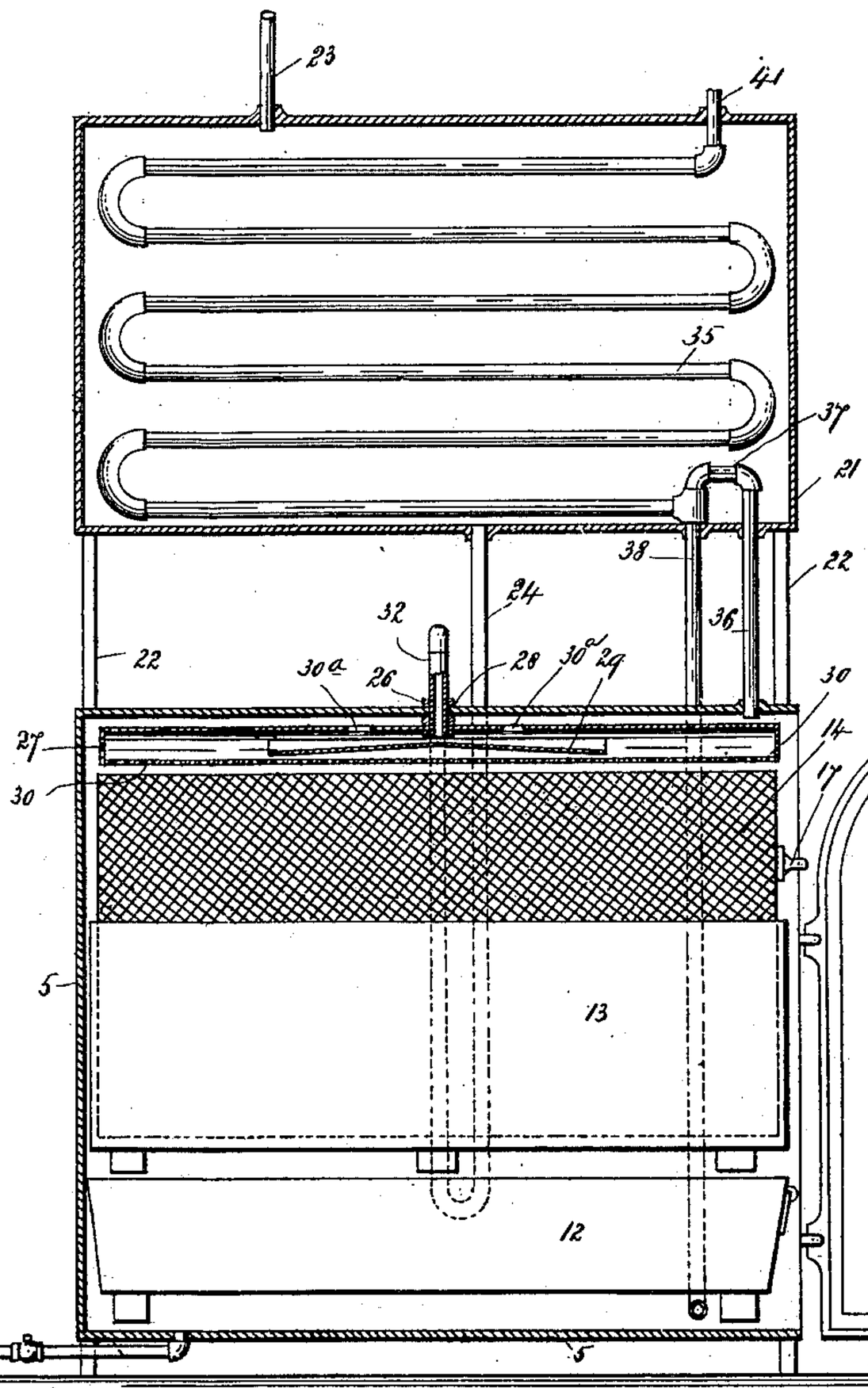
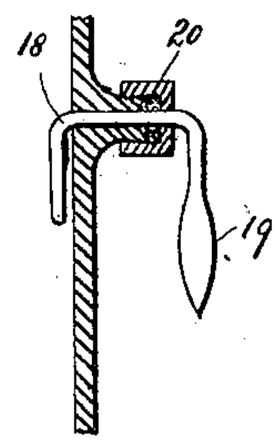
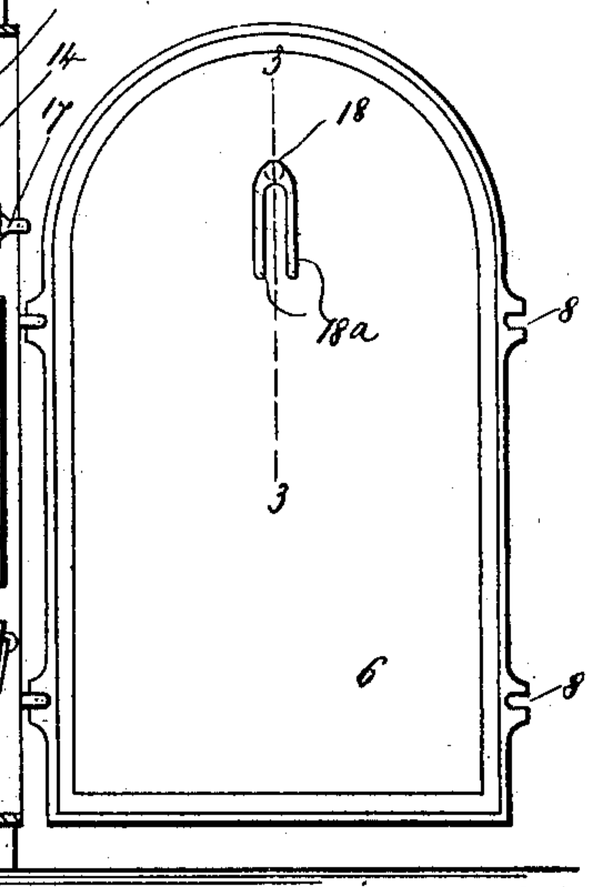


FIG. 3.





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UNITED STATES PATENT OFFICE.

LEWIS MAYHEW, OF NEW WHATCOM, WASHINGTON, ASSIGNOR OF ONE-HALF TO NATHAN N. HINSDALE, OF SAME PLACE.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 649,466, dated May 15, 1900.

Application filed March 21, 1899. Serial No. 709,878. (No model.)

To all whom it may concern:

Be it known that I, LEWIS MAYHEW, a citizen of the United States, residing at New Whatcom, in the county of Whatcom and State of Washington, have invented certain new and useful Improvements in Acetylene-Gas Generators, of which the following is a full and complete specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to apparatus for generating acetylene gas; and the object thereof is to produce an apparatus of this class which shall be constant and even in the generation of the gas and shall automatically regulate the production and flow thereof.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which like numerals of reference denote like parts in the several views, and in which—

Figure 1 is an end elevation of my apparatus; Fig. 2, a side elevation thereof, partly in section, the several casings being sectional; Fig. 3, a section of a portion of the door of the generator-casing, showing the shaker mounted therein; and Fig. 4, a section of a portion of the generator-casing and check-valve.

Referring more particularly to the drawings, 5 is a rectangular casing provided with a dome-shaped upper portion, and one end thereof is open and provided with a door 6, hinged thereto, as at 6ª. The door 6 exactly fits the open end of the casing 5 and is provided with a continuous gasket 7 upon the inner portion, insuring a tight closure and a pair of slotted lugs 8, by which it may be securely held in a closed position by means of a pair of thumb-screws 9, mounted in the casing 5. The casing 5 is supported by suitable legs 10 and is provided upon its inner sides with two pairs of cleats 11, upon the lower of which is slidably supported an ash-pan 12 and upon the upper of which is a frame or casing 13. The casing 13 is constructed with an open bottom and forms the support of a carbid-basket 14, which is segmental in form in the upper portion, fitting approximately the curve of the upper portion of the casing 5, and converges in the lower portion to an apex, as at 15. (Shown in dotted lines in Fig. 1.) The basket 13 is pivoted at the ends in the ends of the casing 13, as at 16, and is capable of slight oscillation in the casing 13. The basket 14 is composed of a rigid frame of wire or cross-rods and has a movable top by which the interior may be reached to charge the same with calcium carbid or other material from which the gas is to be generated. The casing 5 shall be denoted as the "carbid" casing.

The basket 14 is provided at the end adjacent the door 6 and above its pivotal line with a lug or projection 17, and the door 6 is provided, as shown in Figs. 1 and 3, with an angular shaker 18, having depending forked arms 18ª, and adjacent the inner side of the door 6, and the shaker passes through the door 6 and a suitable stuffing-box 20, secured to the outer side thereof and is provided outside said door with a depending handle 19. When the door 6 is closed, the lug 17 passes between the forked arms 18ª, and it is evident that with the respective parts in this position if the handle 19 be oscillated the carbid-basket 14 will also be oscillated upon its pivotal points.

Above the casing 5 is supported a water-reservoir casing 21 by means of standards or legs 22, which are secured to both of said casings. The casing 21 is adapted to be filled with water and is provided with a vent-pipe 23, which is adapted to lead to the atmosphere outside of a building in which my apparatus may be used. A water-supply pipe 24 leads from the lower portion of said casing 21 and downwardly rearward of the casing 5 and again upwardly to a point above the casing 5, forming a trap, as at 25, and again downwardly through the top of said last-named casing, as at 26, and enters a discharge-casing 27, within which it terminates. The discharge-casing is supported directly and centrally above the carbid-basket 14 by means of a collar 28, which fits the pipe 24 and is secured also to the casing 5 and casing 27. The casing 27 is provided interiorly with a longitudinal drip-trough 29, the bottom of which slants from the center toward each end, the center being directly beneath the orifice of the pipe 24. The bottom of the discharge-casing 27 is perforated longitudinally, as shown at 30 in Figs. 1 and 2, and the top, as at 30ª, the sides con-

verging to form an angular bottom, all as shown in the drawings. The pipe 24 is provided with a stop-cock 31, and at the point where it curves above the casing 5ª is formed a check-valve, as shown in Fig. 4, the adjacent end of the pipe 24 being enlarged as to bore, as shown at 32, and provided with an interior annular shoulder 33, forming a valve-seat. A ball-valve 33ª is mounted above the seat 33, its movement being limited by a cage-wire 34, fixed in said pipe end 32. The arrangement of this valve and seat is such that gaseous pressure from the casing 5 will tend to close the pipe 24. The reservoir-casing 21 is also provided with a condenser-coil 35, and a gas-pipe 36 connects and communicates therewith and passes through the bottom of the casing 21 and the top of the carbid-casing 5. The pipe 36 is provided at its point of juncture with the coil 35 with an upwardly-curved elbow 37, and adjacent said elbow a drip-pipe 38 connects and communicates with the coil 35 and passes through the bottom of the casing 21 down to the bottom portion of the casing 5, where it passes through at the sides beneath the ash-pan 12, at which place a drip-pan may, if preferred, be placed to receive the drip of said pipe, or the drip may flow unchecked, if desired.

A water-scale 39 is mounted upon the end of the reservoir-casing 21 and communicates with said reservoir for the usual purpose.

A gas-tank 40 is provided in the practice of my invention, and may be placed at any feasible distance desired from the casings 5 and 21, and a tank-pipe 41 communicates with the interior thereof and with the coil 35 in the reservoir 21. The tank 40 may be of any desired construction, according to the pressure of gas it is designed to withstand. In the upper portion thereof is a gas-main pipe which communicates therewith and projects therefrom and is provided with a safety-valve pipe 43, a connection-pipe 44, and a gage 45.

The operation of my device will be evident from the foregoing description when taken in connection with the accompanying drawings and the following statement thereof.

Calcium carbid is placed in the basket 14, the door 6 of the casing 5 is closed, and the cock 31 of the pipe 24 is opened, it being understood that the reservoir-tank 21 is filled with water. The water will now flow down through the trap 25, up through the valve at 33, into the enlarged portion 32, through the top of the casing 5, onto the trough 29, and through the perforations 30 in the discharge casing 27 onto the carbid in the basket 14. Acetylene gas will at once form and rise through the pipe 36 into the condenser-coil 35 in the reservoir 21. Within this coil it will be dried and purified by the action of the surrounding water, and the moisture in the gas will pass through the drip-pipe 38 and be discharged from the lower end thereof, preventing the return of said moisture to the basket 14 to produce further generation of gas. Passing from the coil 35 the gas enters the gas-tank 40 through the pipe 41 and may be drawn off as desired through the connection-pipe 44. The trough 29 spreads the water entering the carbid-basket, so that a more general generation of gas will ensue, the gas forming in direct proportion to the quantities of carbid and water supplied thereto. The gas as it forms in the casing 5 will also pass upward and exert a pressure upon the ball-valve 33ª, and the enlarged end 32 of the pipe 24 will allow the gas to operate thus at the same time that the water passes down therethrough. The gas cannot enter the reservoir 21 through the pipe 24 because of the trap 25, and at a certain predetermined pressure it will operate the ball-valve 35ª to check the flow of the water and terminate generation of the gas. By this means the supply of water to the carbid is maintained proportionate to the desired generation of gas and a dangerous pressure in the casing 5 is obviated.

The perforations 30ª in the casing 27 assist the gas to enter the pipe end 32, as they obviate the necessity of the gas passing through the water-supply perforations 30 in said casing.

Should the water in the reservoir 21 become exhausted or the ball-valve fail to operate and gas pass thereinto through the water-pipe 24, it will pass into the outer air through the pipe 23.

The basket 14 is formed as described, so that the carbid as it becomes depreciated in bulk shall settle toward the center thereof and remain beneath the plane of the dripping water, the ashes dropping through the bottom of the basket into the pan 12. When the door 6 is closed and the shaker-arms 18ª engage the lug 17, the basket 14 may be oscillated to more thoroughly deposit the ashes therefrom and rearrange the contents thereof.

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

1. In a generator of the class described, a closed casing provided at one end with a door, the upper portion of said casing being segmental in form, a carbid-basket pivotally mounted in said casing and segmental in form in the upper portion thereof, an angular shaker revolubly mounted in said door and provided interiorly thereof with forked arms and adapted to engage a projection formed upon said carbid-basket to oscillate the same, substantially as shown and described.

2. In a generator of the class described, a closed casing, a carbid-basket mounted therein, a water-supply pipe communicating with the upper portion of said casing and provided with a discharge-casing having a perforated bottom and top, and an angular trough mounted in said discharge-casing and adapted to receive directly the water from said pipe, substantially as shown and described.

3. In an apparatus of the class described, a casing provided with a movable door, a pivot-

ally-mounted carbid-basket provided with a projection, and a shaker revolubly mounted in said door and mounted within said casing provided with forked arms adapted to engage said projection to oscillate said basket, substantially as shown and described.

4. In an apparatus of the class described, a water-discharge casing provided with a perforated bottom and top, and an angular trough mounted in said discharge-casing and adapted to receive directly the flow of water, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 11th day of March, 1899.

LEWIS MAYHEW.

Witnesses:
JEREMIAH NETERER,
N. N. HINSDALE.