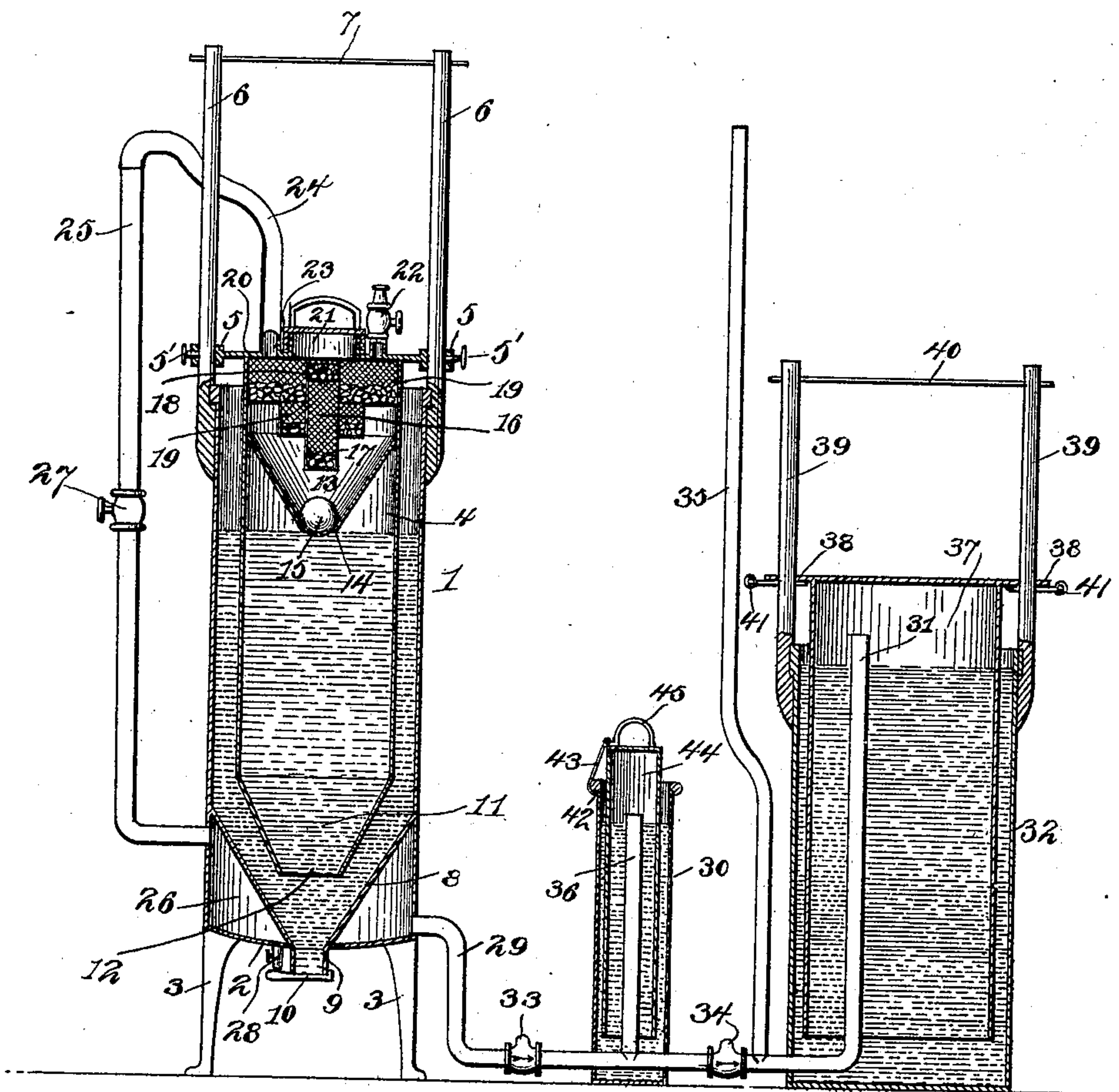


(No Model.)

E. E. SHULER.
ACETYLENE GAS GENERATOR.

No. 605,926.

Patented June 21, 1898.



Witnesses:
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UNITED STATES PATENT OFFICE.

ELMER ELSWORTH SHULER, OF HAVELOCK, NEBRASKA.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 605,926, dated June 21, 1898.

Application filed October 6, 1897. Serial No. 654,254. (No model.)

To all whom it may concern:

Be it known that I, ELMER ELSWORTH SHULER, a citizen of the United States, residing at Havelock, in the county of Lancaster and State of Nebraska, have invented certain new and useful Improvements in Acetylene-Gas Generators; 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.

My invention relates to a novel form of generator for acetylene gas; and the object is to provide a simple, efficient, and automatic device of this character.

To this end the invention consists in the construction, combination, and arrangement of the several parts of the device, as will be hereinafter more fully described, and particularly pointed out in the claims.

In the accompanying drawing the same reference characters indicate the same parts of the invention.

The figure in the drawing is a longitudinal view of a generator embodying my invention.

1 represents a cylindrical tank open at the top and provided with a concave bottom 2, the whole supported on suitable legs 3 3.

4 represents a cylindrical drum mounted concentrically within said tank, so as to have a free vertical movement therein, and which is insured by the guide-eyes 5 5 on the upper end of the drum encompassing the vertical parallel guide-rods 6 6, fixed to the opposite sides of the tank. These guide-eyes 5 5 are provided with set-screws 5' 5', by means of which the drum may be sustained in an elevated position when desired. The upper ends of these guide-rods are connected by a transverse brace 7, which serves the double purpose of bracing the rods 6 6 and limiting the upward movement of the cylinder.

8 represents a conical diaphragm fixed in the lower end of the tank 1, and its lower end terminates in a vertical pipe 9, which extends through the concave bottom 2, and its projecting end is provided with a slide-gate 10. A suitable receptacle may be placed under the gate to receive the spent carbid, or the gate may be connected direct with the sewer. The lower end of the drum 4 terminates in a

correspondingly-shaped conical bottom 11, provided with a central orifice 12.

13 represents a conical diaphragm fixed in the upper end of the drum, and it is provided with a central orifice 14, which receives a ball or float valve 15.

16 represents the reticulated carbid-basket, fixed in the upper end of the drum, above the diaphragm 13, and it is of novel construction, being formed with a reduced cylindrical bottom 17, a cylindrical pocket 18, arranged above said bottom, and a series of annular concentric shelves 19 19, arranged in different planes.

20 represents the top of the drum, provided with a removable screw-cap 21, through which the calcium carbid is supplied to the generator, and with a vent-cock 22. A nipple 23 is fixed in said top 20, and from it a flexible pipe 24 leads to a vertical pipe 25, fixed to the tank 1, its lower end communicating with the chamber 26, formed in the tank between the conical diaphragm 8 and the bottom 2. The vertical pipe 25 is provided with a cut-off valve 27 and the bottom of the tank with a drip-cock 28.

29 represents the discharge-pipe, leading from the chamber 26 through the small storage gas-holder 30 and terminating in a vertical pipe 31, opening above the water-level in the larger storage gas-holder 32.

33 and 34 represent forwardly-opening check-valves arranged in the discharge-pipe between the tank 1 and the smaller gas-holder 30 and the latter and the larger gas-holder 32, and 35 represents the service-pipe from which the gas is drawn for consumption, it being connected to the discharge-pipe between the check-valve 34 and the gas-holder 32. A vertical pipe 36 extends upwardly from the discharge-pipe 29 and terminates above the water-level inside of the holder 30.

The drum 37 of the holder 32 is provided with the guide-eyes 38 38, which encompass the guide-rods 39 39, fixed to the holder, the upper ends of said rods being connected by a cross-brace 40 to brace the rods and limit the upward movement of the drum.

41 41 represent transverse pins removably secured in suitable orifices in the guide-rods, and they normally limit the downward move-

ment of the drum—that is to say, in the ordinary working of the generator the guide-eyes 38 38 have a vertical movement on the guide-rods between said pins 41 41 and the cross-
5 brace 40.

The holder 30 is provided with a lug 42, and 43 is a locking-lever pivoted to the drum 44, which engages the lug when the drum is depressed to its full extent in the holder, and
10 45 represents a handle on the top of the drum to manipulate it when desired.

The operation of the device is as follows: Water is first placed in the tank 1 to the proper level and the drum 4 raised until the
15 orifice 14 in the bottom of the conical diaphragm 13 is above the water-level, the ball-valve closing said orifice and the drum supported in this position by the set-screws 5' 5'. The screw-cap 21 is then removed, and the
20 calcic carbid is then evenly distributed over the basket 16. The cap is then replaced, the valve 22 opened, the valve 27 closed, and the set-screws 5' 5' turned to release the drum, which then settles down in the water, the ball-
25 valve meantime rising to allow the water to come in contact with the lowermost charge of carbid, and the generation of the gas immediately commences, and after the air has been expelled and the aqueous vapor, somewhat
30 resembling steam, escapes at the vent-cock 22 the latter is closed and the valve 27 opened. The gas now passes into the condenser and cooling-chamber 26 and from that through the discharge-pipe 29 to the holders 30 32 and
35 the service-pipe 35, and the supply of gas will automatically continue as long as there is any unslaked carbid in the basket. Of course it will be understood that when the gas is being generated faster than it is consumed and the
40 holder 32 is filled the pressure of the gas in the drum 4 will cause it to rise, not only lifting the carbid-basket from the water, but also carrying the diaphragm 13 as well, and as the ball-valve 15 closes the orifice 14 in
45 said diaphragm the aqueous vapor arising from the water is effectually cut off from the carbid in the basket, and any small particles of carbid which may become detached are prevented from falling in the water. Thus
50 the generation of gas practically ceases and is only resumed again when the consumption has been sufficient to relieve the pressure in the drum and allow the basket to descend, so as to present a new supply of carbid to the
55 action of the water, thus raising the drum to accommodate its capacity and maintaining a uniform pressure at the burners.

Should the generator be exhausted and the burners grow dim, indicating low pressure
60 and no gas generating, the pins 41 41 are removed from the guide-rods 39 39, allowing the drum to descend, which permits the reserve supply of gas in the holder 32 to feed the service-pipe 35. The drum 44 of the small
65 holder 30 is now raised, which acts as a pump and draws off the gas remaining in the generator and cooling-chamber. The generator

is now slushed out, a fresh charge of water and carbid added, and the operation continued as in the first place. The drum of the small
70 holder is now depressed to force its gas into the larger holder, which raises the drum of the latter, and the pins 41 41 replaced, as before, to maintain a reserve supply of gas in case of the exhaustion of the generator. 75

Although I have specifically described the construction and relative arrangement of the several elements of my invention, I do not desire to be confined to the same, as such
80 changes or modifications may be made as clearly fall within the scope of my invention without departing from the spirit thereof.

Having thus fully described my invention, what I claim as new and useful, and desire to secure by Letters Patent of the United States, 85 is—

1. An acetylene-gas generator, comprising the stationary tank 1, in combination with the movable drum 4 concentrically mounted within said tank, the conical diaphragm 13
90 fixed in the upper end of said drum, and provided with the orifice 14, the ball-float 15 adapted to close said orifice, and the carbid-basket 16 arranged in said drum above said diaphragm, as and for the purpose set forth. 95

2. An acetylene-gas generator, comprising the tank 1 provided with the concave bottom 2, the conical diaphragm 8 fixed in the lower end of said tank so as to form an annular chamber 26, and terminating in a pipe 9
100 extending through the bottom 2 and the gate 10 fixed to its projecting end, in combination with the drum 4, having a closed top, a carbid-receptacle located in said drum, and a pipe connecting the upper end of said drum
105 with the chamber 26, as and for the purpose set forth.

3. An acetylene-gas generator, comprising the tank 1 provided with the concave bottom 2, the conical diaphragm 8 fixed in the lower
110 end of said tank so as to form an annular chamber 26, and terminating in a pipe 9 extending through the bottom 2 and the gate 10 fixed to its projecting end, in combination with the drum 4, having a closed top, and a
115 conical bottom 11, provided with a central orifice 12, a carbid-receptacle located in said drum, and a pipe connecting the upper end of said drum with the chamber 26, as and for the purpose set forth. 120

4. An acetylene-gas generator, comprising the cylindrical tank 1 formed with the concave bottom 2, provided with the drip-cock 28, the conical diaphragm 8 fixed in the lower
125 end of said tank, so as to form an annular condensing and cooling chamber for the gas, and provided with an outlet-pipe 9, extending through the bottom 2 and terminating in a gate-valve 10, and the vertical parallel guide-rods 6, 6, fixed to the upper end of said tank
130 and connected at their upper ends by the transverse brace 7, in combination with the concentric drum 4 formed with the converging bottom 11 provided with the central ori-

5 fice 12, the conical diaphragm 13 fixed in the upper end of said drum and provided with the central orifice 14 and the float-valve 15 seated in said diaphragm, the reticulated or
10 foraminous carbid-basket 16, fixed in said drum between its closed top 20 and the diaphragm 13 and formed with a series of shelves for containing the calcic carbid in different horizontal planes, the guide-eyes 5, 5 fixed to
15 said drum and provided with set-screws 5', 5', the vent-cock 22, and the screw-cap 21 secured to the top 20 of said drum, the flexible

pipe 24 leading from said top and the fixed pipe 25 leading from the cooling-chamber 26 and provided with the valve 27 and communicating with said flexible pipe 24, as and for the purpose set forth.

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

ELMER ELSWORTH SHULER.

Witnesses:

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