

UNITED STATES PATENT OFFICE.

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ACETYLENE-GAS MACHINE.

945,235.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, BENJIMAN F. HOLDAWAY, a citizen of the United States, residing at Sandford, in the county of Vigo and State of Indiana, have invented a new and useful Acetylene-Gas Machine, of which the following is a specification.

This invention has relation to acetylene gas machines and it consists in the novel construction and arrangement of its parts as hereinafter shown and described.

The object of the invention is to provide in an apparatus of the character indicated means for discharging a predetermined amount of calcium carbide or other gas-producing substance into the gas-generator at intervals as the gas is consumed and as the pressure thereof reduces. Means is provided whereby the pressure of the gas is utilized for the purpose of actuating a lever against the tension of the spring, and as the pressure of the gas diminishes the tension of the said spring comes into play and actuates the mechanism for discharging the carbide into the gas-producing liquid.

In the accompanying drawings:—Figure 1 is a vertical sectional view of the machine. Fig. 2 is a side elevation of a pawl and ratchet mechanism used in the machine. Fig. 3 is a detail top view, with parts broken away, of a feeder used in the machine.

The machine comprises a tank 1, which is provided with an inclined bottom 2 and a draw-off cock 3. The tank 1 is adapted to contain water, and a gas-receiver 4 is located above the same. The said receiver is provided with the usual telescoping dome 5. One or more pipes 8 are provided and are connected at their upper ends with the interior of the dome 5, and at their lower ends with the interior of the tank 1. A gas chamber 7 is located in the receiver 4 and communicates with the interior of the dome 5. The said receiver 4 contains water in the usual manner which effects a seal about the lower edge of the dome 5. A service pipe 6 is connected at one end with the lower portion of the gas chamber 7 and passes out of the side of the machine as illustrated in Fig. 1 of the drawings. A by-pass 2' is connected at one end with the service pipe 6 and is provided with a valve 3'. The stem of the said valve 3' is provided with a lever 4', to one end of which is attached a weight 5', by means of a chain 6', which passes over a pulley 7'. The said valve 3' is normally main-

tained in closed position by the weight 5'. The opposite end of the lever 4' is connected with the movable dome 5 by means of a rod 8' or its equivalent. When the dome 5 is elevated and the gas pressure under the same becomes excessive, the longitudinal movement of the rod 8' will turn the valve 3', which will open the pipe 2' and permit the excess of gas contained under the said dome 5 to escape through the chamber 7, pipe 6 and pipe 2'.

A calcium carbide magazine 9 is mounted upon the tank 1 and is provided with a removable cap 10, which, when detached from the magazine, opens a port through which carbide may be introduced into the said magazine. The magazine 9 is provided at its lowest point with an outlet or opening 11.

A chamber 12 is interposed between the bottom of the magazine 9 and the top of the tank 1, and the bottom of the said chamber is provided with an opening 13. A rotatable feeder 14 is journaled in the chamber 12 and operates below the opening 11 in the magazine 9 and above the opening 13 in the bottom of the said chamber. Said feeder 14 is provided with a series of compartments 15 which are adapted to move in an orbit about the axis of the feeder, and which pass at their upper ends under the opening 11, and at their lower ends over the opening 13. Said compartments may be loop-shaped, as shown in Fig. 3, or of other configuration. A beveled pinion 16 is fixed to the shaft 14, and a shaft 17 extends transversely through the compartment 12. One end of the said shaft 17 projects beyond the side of the compartment 12 and is provided with a turning knob 18. A ratchet disk 19 is fixed to the opposite end portion of the shaft 17 and a lever 20 is fulcrumed upon the said shaft 17 adjacent the said disk 19. A pawl 21 is pivoted to the lever 20 and is adapted to engage the ratchets of the disk 19. A spring 22 is fixed at one end to a fixed portion of the compartment 12 and at its other end is attached to one end of the lever 20. A cylinder 23 passes through the bottom of the compartment 12 and enters the upper portion of the tank 1. Said cylinder 23 is open at both ends, and a plunger 24 is mounted for reciprocation therein.

A plunger rod 25 is attached at one end to the said plunger and at its opposite end is

pivotally connected with that end of the lever 20 opposite the end thereof with which the spring 22 is connected.

From the above description it is obvious that when the shaft 17 is initially turned by hand by revolving the knob 18, the beveled pinion 26 which is carried thereby and which meshes with the pinion 16, forces the feeder 14 to rotate. As the compartment 15 passes under the outlet 11 in the bottom of the magazine 9 a charge of calcium carbide from the said magazine falls into the compartment 13 located thereunder, and the said carbide is carried around with the said compartment to the opening 13, at which point it falls into the tank 1. Thus, the calcium carbide is introduced into the water and results in the formation of gas and incidental pressure. The gas passes up through the pipe or pipes 8 into the reservoir 4, from which pipe it passes through the chamber 7 and the service pipe 6. At the same time the pressure of the gas upon the lower face of the plunger 24 and the cylinder 23 moves the said plunger in an upward direction which, through the connecting rod 25, swings the lever 20 upon the shaft 17 against the tension of the spring 22. As the gas is consumed and the pressure thereof reduced, the pressure of the spring 22 comes into play, and that end of the lever 20 with which it is connected is elevated and, through the instrumentality of the pawl 21 and the ratchet disk 19, the shaft 17 is turned in the opposite direction from that above described.

Thus it will be seen that after the machine is set in operation manually in the initial instance, it automatically continues the operation of feeding the calcium carbide into the water in predetermined quantities and at such intervals as needed, namely, when the pressure of the gas is reduced to such an extent that the pressure of the spring 22 may come into play to actuate the parts.

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

In a generator for acetylene gas a tank, a magazine located above the tank, a rotary feeder interposed between the magazine and the tank, a shaft operatively connected with the feeder, a disk mounted upon the shaft, a lever pivoted upon the shaft and carrying a pawl for engagement with the disk, a spring connected at one end to the said lever, and at its opposite end to a fixed point, a cylinder entering the tank at one end and extending exteriorly thereof at its other end, a plunger located in the cylinder, and a rod operatively connecting the said plunger with that end of the lever opposite the end thereof with which the said spring connects.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

BENJIMAN F. HOLDAWAY.

Witnesses:

CHESTER D. HOLIDAY,
HIRAM E. DYSART.