No. 667,919. Patented Feb. 12, 1901.

D. McDONALD.

ACETYLENE GAS GENERATING APPARATUS.

(Application filed Nov. 15, 1900.)

(No Model.) 2 Sheets—Sheet 1.

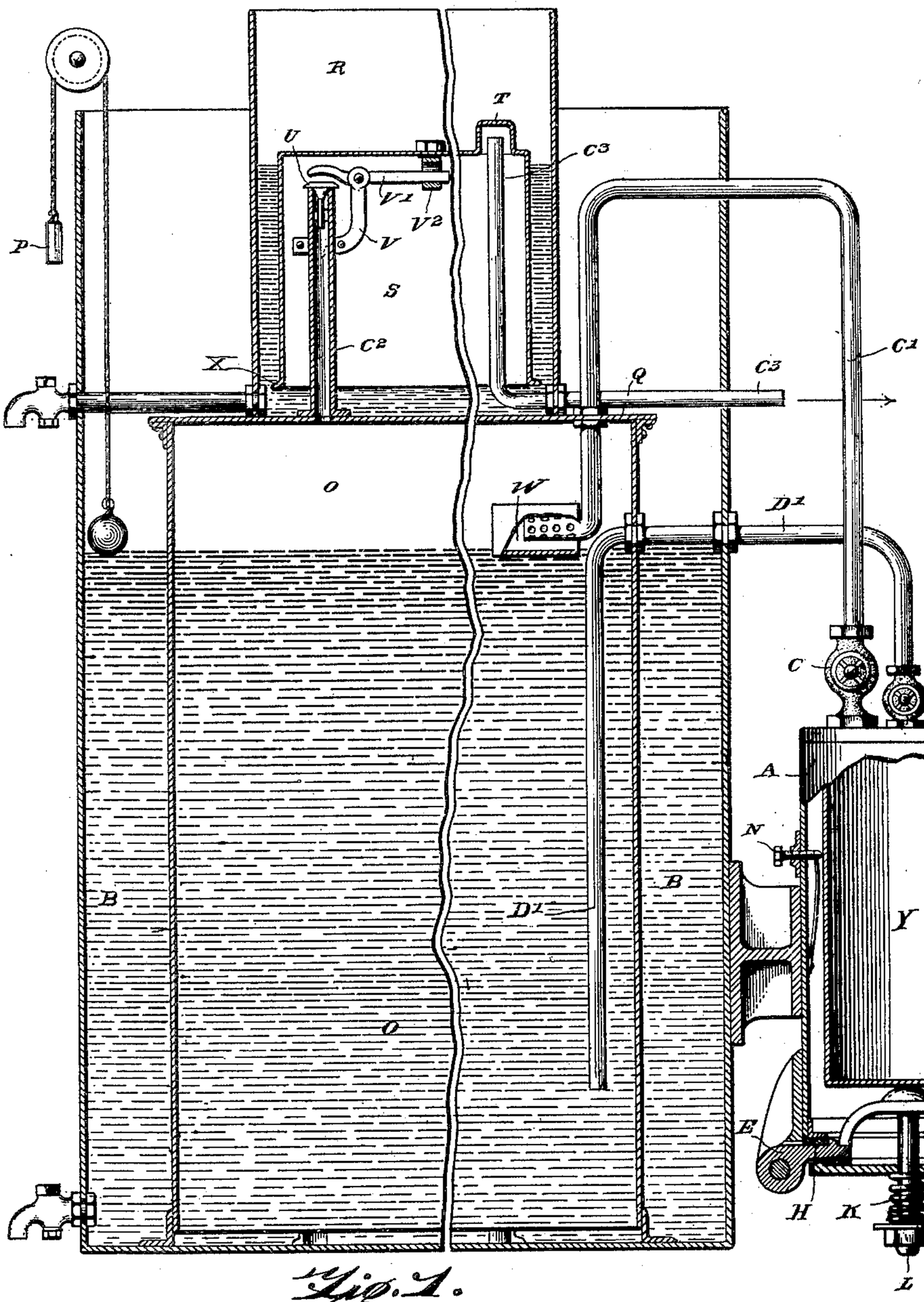

Fig. 1.

Witnesses
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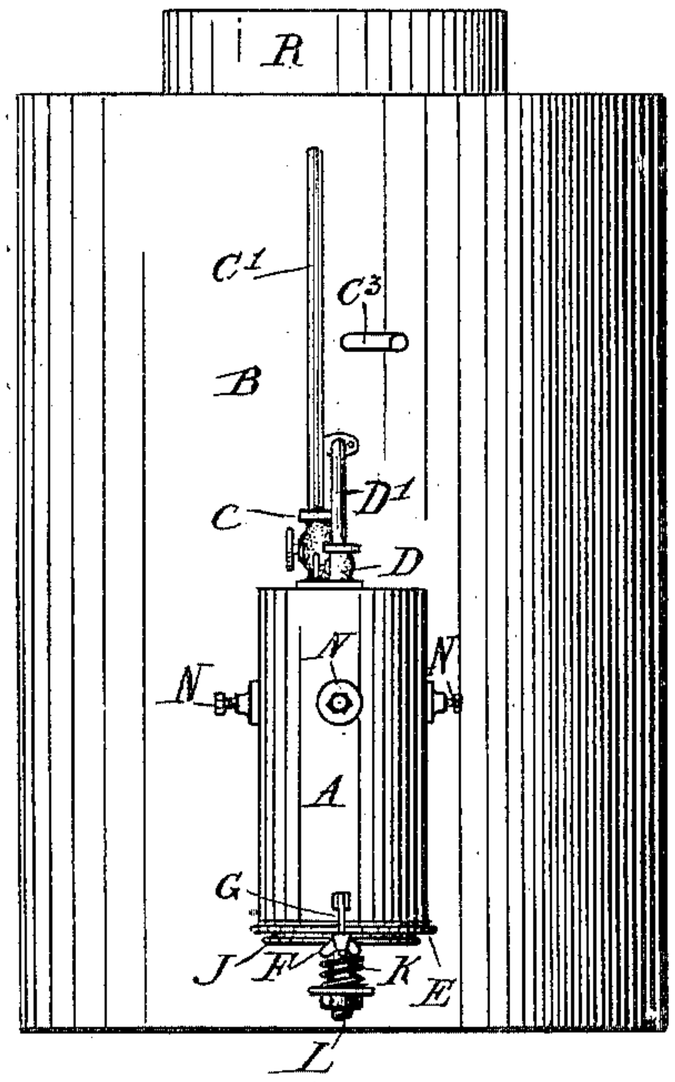

Fig 2

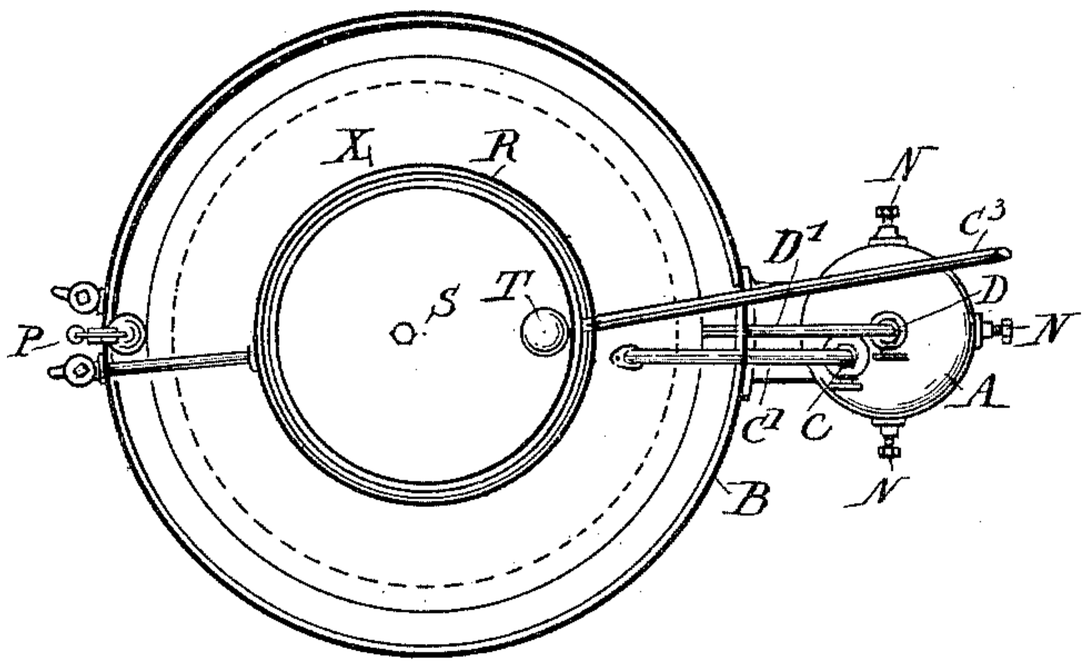

Fig 3

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UNITED STATES PATENT OFFICE.

DONALD McDONALD, OF YARRAVILLE, VICTORIA.

ACETYLENE-GAS-GENERATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 667,919, dated February 12, 1901.

Application filed November 15, 1900. Serial No. 36,630. (No model.)

To all whom it may concern:

Be it known that I, DONALD McDONALD, engineer, a subject of the Queen of Great Britain and Ireland, residing at 14 River street, Yarraville, in the county of Bourke, Colony of Victoria, have invented a certain new and useful Improved Acetylene-Gas-Generating Apparatus, of which the following is a specification.

The object of my invention is to provide an acetylene-gas-generating apparatus which shall not only be safe and cheap, but at the same time cleanly, simple, and efficient. In it the supply of the water which falls upon the carbid is regulated by the volume of gas generated, so that upon a predetermined amount being gathered the water-supply is cut off. Not only is the temperature of generation safe, but complete decomposition of the carbid occurs, with a low pressure in every part of the apparatus. The maximum evolution of gas is also obtained, and not only can all air at starting be blown through without any difficulty, but the carbid can be introduced and the residues removed without either danger or inconvenience.

Referring to the drawings which form a part of this specification, Figure 1 represents a side sectional elevation of the apparatus. Fig. 2 shows, on a reduced scale, an elevation with the generating-chamber in front. Fig. 3 represents a plan of the apparatus, also on a reduced scale.

Similar letters of reference indicate similar or corresponding parts wherever they occur in the several views.

On reference to the drawings it will be seen that the generating-chamber A, which is preferably affixed to the side of an open-topped main tank B, is cylindrical in section. At its top are the gas-outlet valve C and the water-inlet valve D, and at its bottom is a door E, opening downwardly. This is pivoted to the chamber on one side and on the other is retained thereto by a winged nut F, turning on a bolt G, pivoted to the said chamber. This bolt passes between a forked extension on the door and by compression on the said extension enables the rubber or other flexible jointing-ring H between the door and the cylinder to make a gas-tight joint. Through the door is a hole covered on the outside by a relief-valve J, having a flexible jointing-ring thereon. This relief-valve is compressed by a spring K, which surrounds a bolt L, one end of which bolt is connected to an inner bridge-piece M over the door, and the other has a nut and washer thereon. Inside the chamber are three or more steadying-pins N or downwardly-inclining lugs, which centralize the carbid-holder Y on its insertion.

Leading from the generator are two pipes C′ and D′, having thereon the valves C and D, respectively, before referred to. One of these, C′, conveys the gas generated through a combined purifier and condenser W, described below, to an open-bottomed closed-top stationary gas-reservoir O, also hereinafter described. The other conveys the water from the said reservoir to a sprayer or water-distributer situated above the carbid-holder Y.

The reservoir O is situated in the submerged or partially-submerged open main tank B, in which the varying level of the water is shown on the exterior by the indicator P. Through the removable roof Q of the reservoir is a hole surmounted by a communication-pipe C^2. This pipe passes through the water in the auxiliary tank R, situated above the roof of the stationary reservoir. Floating in said auxiliary tank (the water of which has practically an unvarying level and is unconnected with the water in and around the reservoir beneath it) is an open-bottomed closed-top float S. This has a dome T thereon. On the top of the communication-pipe C^2 is a gas-cut-off valve U, and extending from said pipe is a bracket V, to which is pivoted a seesaw lever V′. One end of this lever can press on the top of the said valve, and the other engages with a catch V^2, extending below the roof of the said float. The buoyancy of the float with its valve-lever can be effected by the addition or removal of weights from the lugs, protuberances, or ring X.

The combined purifier and condenser W, which may contain in its interior any materials for arresting and precipitating impurities or moisture, is so connected to its pipe and to the removable roof of the reservoir that it can be withdrawn either for inspection or cleansing.

On its leaving the auxiliary tank the service-pipe C^3 can also pass through a long con-

densing-coil within or without the main tank, and any liquid, deposits, or impurities gathering therein may be drawn off from a catch-box on the coil-bottom.

The cycle of operations for blowing through all air and starting the apparatus is as follows: Water is entered into the main tank to the desired height, as shown by the indicator, and directly it has expelled all air from the water-pipe the valve over the generating-chamber is closed. The gas-valve being able to rise, the air escapes from inside the reservoir and water rises up to the roof of the same. Water is afterward poured into the auxiliary tank, and the service-pipe being opened air escapes. The door of the generator-chamber being open, a charged carbid-holder is entered and the door closed. The apparatus is now ready for gas generation, which is commenced by opening the water-regulating valve. The rising gas is conveyed through the valve above the generating-chamber and the purifying-box to the stationary reservoir and from there by the communication-pipe to beneath the float in the auxiliary tank. Directly the quantum of gas is gathered in the stationary reservoir the water is displaced till it departs from the bottom of the water siphon-pipe. A quick cut off of the water then takes place, and there is very little, if any, after-generation. The float is so loaded that when the predetermined volume of gas is produced and there is but little or no consumption the gas-valve by the rising of the float is wholly or partially closed and gas to the service-pipe is thereby cut off. Both over and under generation are instantly visible, since either is indicated by a pilot-light or by the position of the indicator. Either one or the other can be at once remedied by the attendant. If by the presence of phosphorated hydrogen or other means the pressure in the generating-chamber should become excessive, the relief-valve, having been adjusted to release the same, at once acts.

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

1. In acetylene-gas-generating apparatus a carbid-generator having a gas-outlet and water inlet and distributer therein and a downwardly-opening pivoted door at its bottom to permit the passage of charged or exhausted carbid-holders said door having a relief-valve compressed to its outer face by a spring adjusted by a nut on a bolt the inner end of which bolt is held by a bridge-piece, substantially as described.

2. In acetylene-gas-generating apparatus a main tank containing an open-bottomed closed-top stationary gas-reservoir having a water-outlet therein and a gas-inlet with a purifying-box thereon and a gas-outlet above which reservoir is an auxiliary tank having a dome thereon and a service-pipe therefrom and a float the communication-pipe over the outlet having thereon a valve controlled by a lever actuated by the said float, substantially as described.

3. An acetylene-gas-generating apparatus consisting of a main tank containing an open-bottomed closed-top stationary gas-reservoir having a water-outlet therein and a gas-inlet with a purifying-box thereon and a gas-outlet above which reservoir is an auxiliary tank having a dome thereon and a service-pipe therefrom and a float the communication-pipe over the outlet having thereon a valve controlled by a lever actuated by said float in combination with a carbid-generator having a gas-outlet and a water-inlet.

4. In acetylene-gas-generating apparatus, the combination with a generator of a main water-tank, a stationary gas-reservoir therein having a closed top and open bottom, a water-pipe connecting said tank and generator, a gas-pipe connecting the latter with the gas-space of said reservoir, an auxiliary water-tank, a float-bell therein, a pipe to establish gas communication between said float-bell and said gas-reservoir, a valve operated by said float-bell in said pipe, and a service-pipe leading from the gas-space of said float-bell, substantially as described.

In witness whereof I have hereunto set my hand to this specification in the presence of two witnesses.

DONALD McDONALD.

Witnesses:
EDWIN PHILLIPS,
CECIL W. LE PLASTREER.