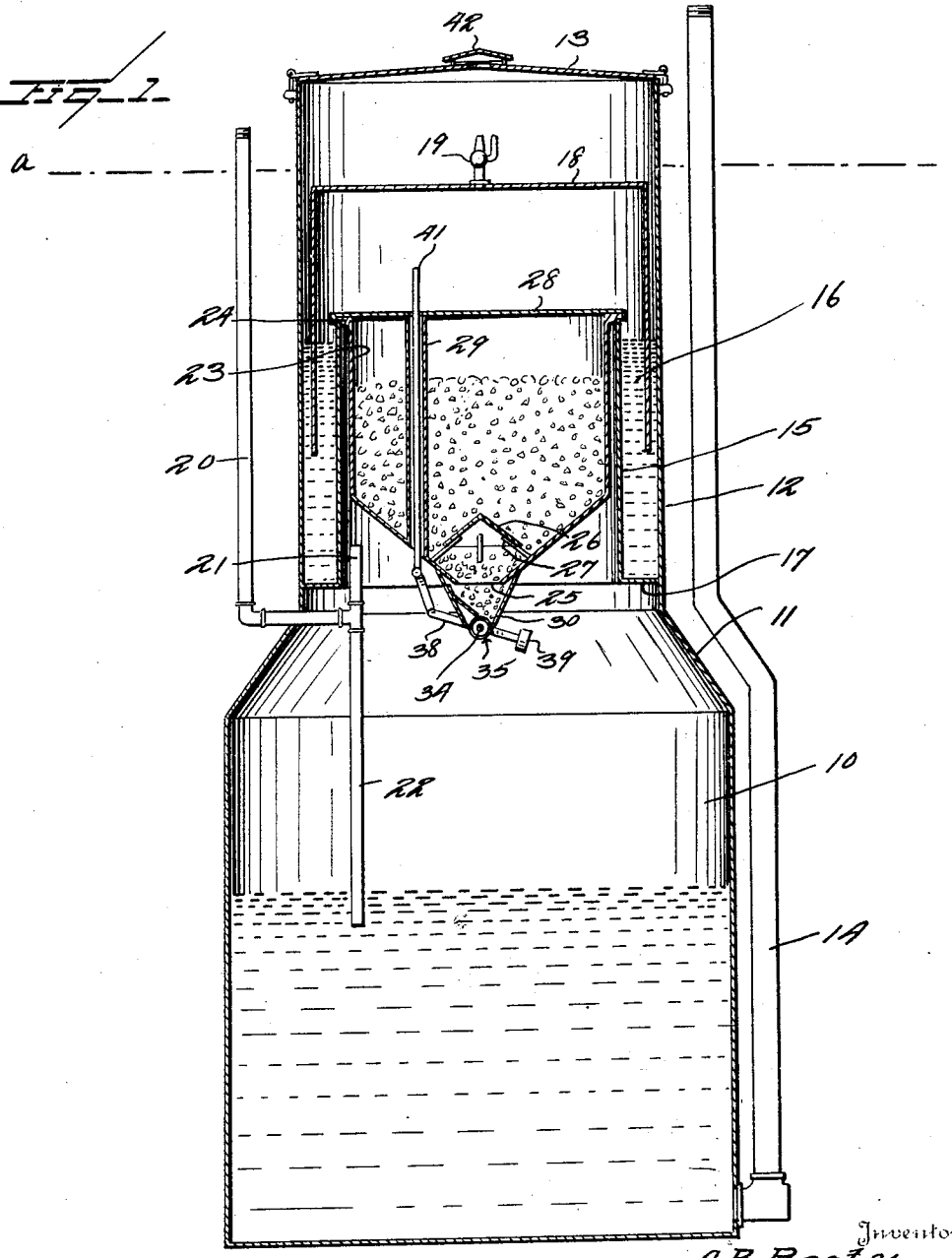
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ACETYLENE GAS GENERATOR

Filed March 24, 1927 2 Sheets-Sheet 1

Fig. 1.



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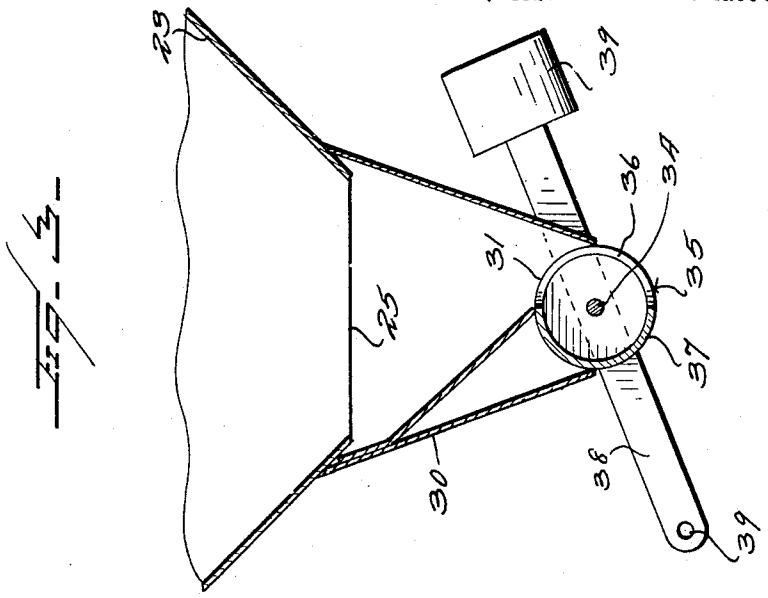


Fig. 3.

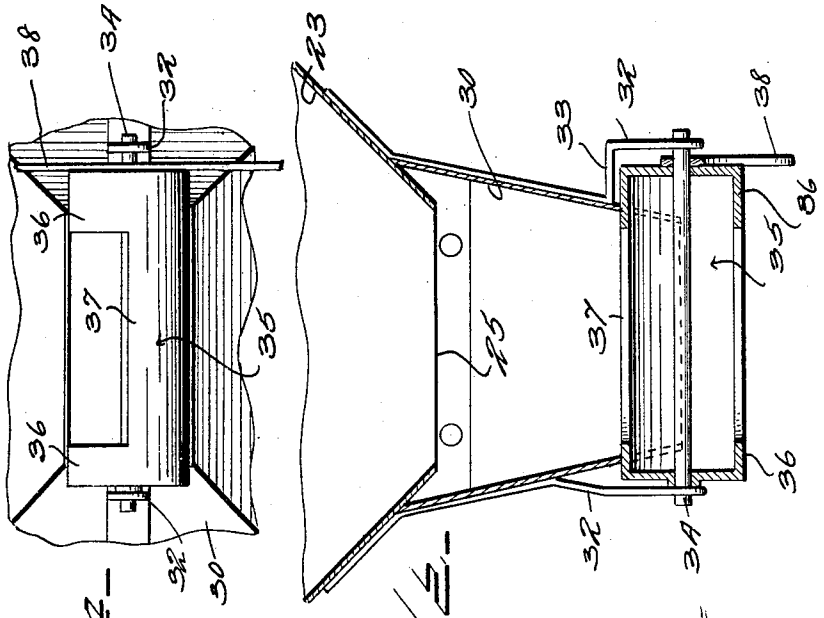


Fig. 4.

Fig. 5.

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UNITED STATES PATENT OFFICE.

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ACETYLENE-GAS GENERATOR.

Application filed March 24, 1927. Serial No. 178,096.

This invention relates to generators for generating acetylene gas and the general object of the invention is to provide a generator of an improved form and including a gas bell and provide a feed valve operated to discharge feed into the generating chamber when the gas bell lowers beyond a predetermined point and cut off the feed when the gas bell rises.

A further object is to provide a drip pipe operatively connected to the gas line and acting to take care of the sweat and return this water of condensation to the water in the bottom of the generating chamber.

Other objects have to do with the details of construction and arrangement of parts to appear more fully hereinafter.

Our invention is illustrated in the accompanying drawings wherein:—

Figure 1 is a vertical sectional view of a gas generator constructed in accordance with our invention;

Fig 2 is a vertical sectional view of the lower portion of the hopper and the feed controlling valve;

Fig. 3 is a sectional view transverse to the plane of Figure 2;

Fig. 4 is an underside plan view looking downward into the hopper, showing the valve.

Referring to the drawings 10 designates the generating chamber which has an inwardly or centrally inclined portion 11 at its upper end and extended upward therefrom has the cylindrical portion 12 normally covered by the cone-shaped cap 13, to be referred to more specifically hereinafter. From the lower end of the generating chamber 10 extends the sludge pipe 14 whereby the carbide sludge may be removed from the lower end of the generating chamber.

Disposed within the lower end of the body 12 is the inner wall 15 of a water seal compartment 16, the bottom of which is designated 17. Operating within the body 12 is the bell 18 whose lower edge is disposed within the water of the water seal 16. This bell rises as the gas pressure rises and falls as the gas pressure falls. The top of the bell 18 is provided with an air valve 19.

Entering the side wall of the inclined portion 11 is the gas pipe 20 which has an upwardly extending branch 21 extending upward just inside of the wall 15 and has the downwardly extending branch 22 which extends into the water in the lower portion of the generating chamber 10.

Disposed within the wall 15 and concentric thereto is the carbide hopper 23, the upper end of which is flanged at 24 to rest upon the wall 15. This carbide chamber is hopper-shaped at its lower end and provided with a central opening 25. Above this opening is a cone-shaped distributor 26 supported by legs 27. The top of the carbide hopper is designated 28 and is removable so as to permit the carbide hopper to be filled with carbide.

Extending downward through the carbide hopper and opening through the cone-shaped lower end, is a tube 29. The lower end of the carbide hopper discharges into a rectangular, downwardly tapered casing 30 which is riveted or otherwise attached to the lower end of the cone-shaped carbide hopper. The side walls of this casing are reentrantly rounded, as at 31, and attached to the side walls are the brackets 32 whose lower ends are angularly bent outward, as at 33, and perforated for the passage of a transversely extending pivot rod 34.

Mounted upon the rod 34 and oscillatable therearound is a valve 35, the valve consisting of two cylindrical portions 36 connected by a semi-cylindrical web 37. The cylindrical portions 36 have their inner margins extending just within the side walls of member 30 and the semi-cylindrical portion 37 normally extends across and entirely closes the discharge opening at the bottom of the rectangular casing 30.

Attached in any suitable manner to one end of the valve, is a bar 38, constituting a lever, one end of which is angularly bent and weighted, as at 39, the other end being perforated as at 40. To the perforated end is attached a rod 41 which extends upward through the tube 29 and extends a distance above the hopper cover 28 so that when the bell 18 falls a predetermined amount, the top of the bell will strike this rod 41, depress it, and rotate the valve 35 against the action of the weight 39. This rotation of the valve permits discharge from the interior of the carbide hopper. As soon as the carbide reaches the water in the bottom of the generating chamber 10, gas is evolved and acts to lift the bell and, as the bell is lifted, the valve will rotate in a reverse direction

by reason of the weight 39 and the valve will close. It is to be particularly noted that the valve moves transversely across the direction of feed and, therefore, cuts off the flow of carbide. The valve does not move up against the flow but transversely across it and, therefore, the valve cannot be blocked by material getting between the valve and its seat on the carbide hopper. The cap 13 is provided with means whereby it may be detachably locked upon the body 12 and is formed at its center with a vent 42, and will be provided with handles.

The operation of this generator will be obvious from what has gone before. The generators are preferably disposed beneath the ground to an extent indicated by the dotted lines *a*—*a*. In order to fill the carbide hopper, the cover 13 is removed, the bell is lifted off, the cover 28 for the hopper is removed and the hopper filled with carbide. Upon descent of the bell beyond a predetermined point, carbide will be fed into the generating chamber and when gas is evolved therefrom, the bell will be lifted. Thus, a constant supply of gas will be kept up. This gas is carried off by the pipe 20 which leads to any suitable gas line and any water of condensation or sweat will be carried off through the branch pipe 22 and discharged into the lower portion of the generator casing.

The air valve 19 is to be opened when taking out the gas bell so as to permit air to enter the same and break any vacuum caused by the water seal. This valve is also used for permitting air to escape which has accumulated while recharging. The sludge may be pumped out through pipe 14 and the chamber 10 may be filled with water either through the pipe 14 or through the opening in the top.

It is to be particularly noted that the valve 35 constitutes the bottom of the hopper and that it has a sliding action whereas in all other carbide feed mechanisms known to me, the feed mechanism includes parts having holes to let the carbide through and these are very liable to clog up or have valves which lift or lower for the same purpose which may very readily clog up or become impeded. Our feeder is, as before remarked, the bottom of the hopper and as there is nothing below the opening 37 when the valve is turned in the position shown in Figure 3, the carbide is free to fall directly downward and cannot lodge anywhere.

We claim:

In an acetylene generator, a generating chamber, a carbide hopper, a downwardly tapering casing attached to the carbide hopper and extending downward therefrom and having the lower ends of its side walls upwardly curved, a deflecting plate disposed within the casing and having its upper ends extending downward in divergent relation to one of the end walls and terminating at the reentrant end of the casing, brackets attached to the side walls, a pin extending through the brackets and beneath the opening in the casing, a valve having circular end portions and a semi-circular middle portion, the middle portion of the valve fitting the re-entrant edges of the side walls and being rotatably mounted upon said pin, a lever attached to one end of the valve and having a weight urging the valve to a closed position, and means for shifting said lever to rotate the valve from its closed to its open position and vice versa, said means being operated automatically upon a decrease of carbide in the generating chamber.

In testimony whereof we hereunto affix our signatures.

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