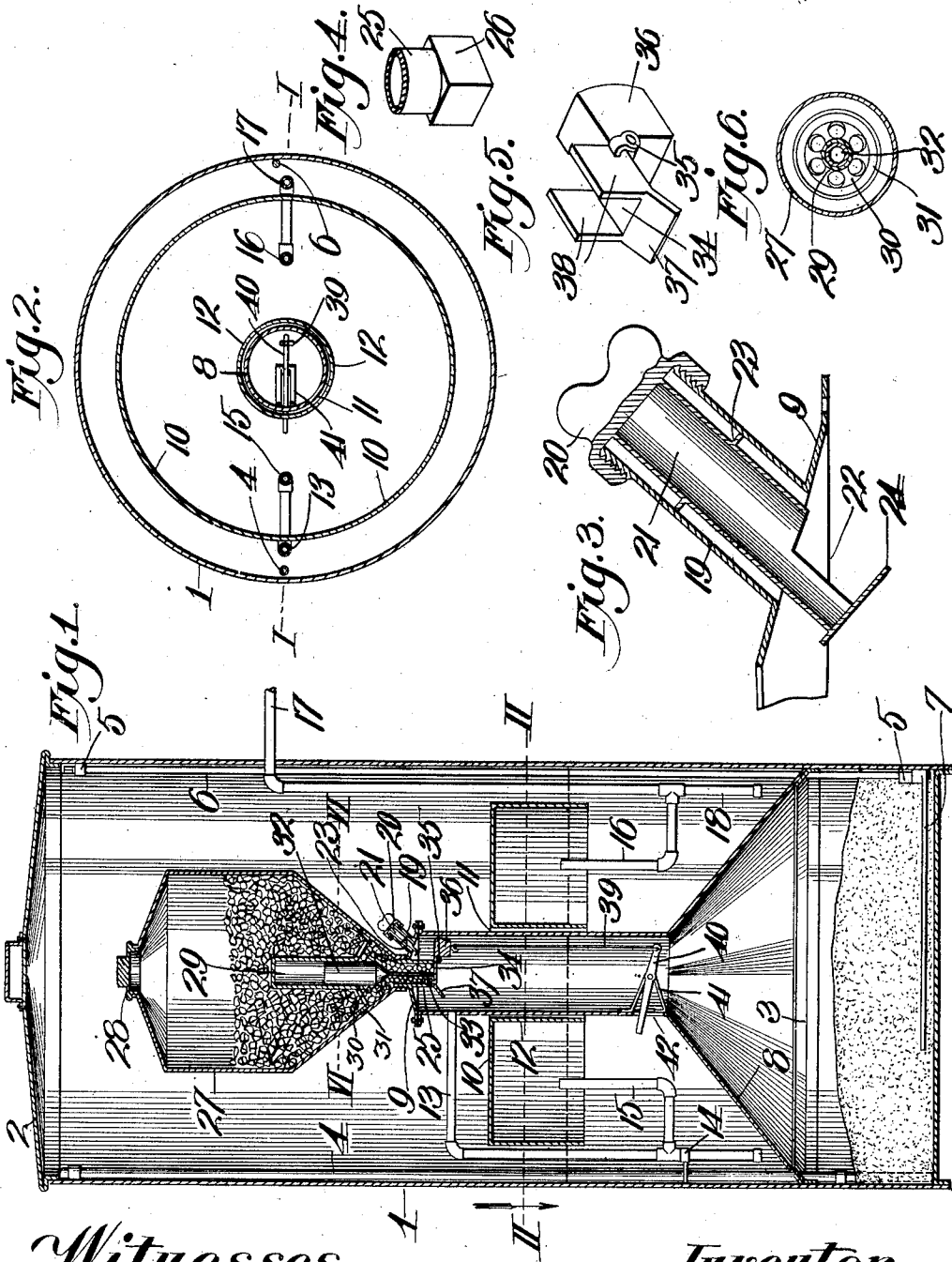


D. C. BORUFF.
 ACETYLENE GAS GENERATOR.
 APPLICATION FILED SEPT. 5, 1911.

1,038,081.

Patented Sept. 10, 1912.



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UNITED STATES PATENT OFFICE.

DANIEL C. BORUFF, OF KANSAS CITY, MISSOURI.

ACETYLENE-GAS GENERATOR.

1,038,081.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, DANIEL C. BORUFF, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Acetylene-Gas Generators, of which the following is a specification.

This invention relates to acetylene gas generators of that class especially desirable for house lighting and has for its object to produce an efficient and reliable generator which can be manufactured and installed at low cost.

With this general object in view and others as hereinafter appear, the invention consists in certain novel and peculiar features of construction and organization as hereinafter described and claimed; and in order that it may be fully understood reference is to be had to the accompanying drawings, in which—

Figure 1, is a central vertical section of an acetylene gas generator embodying my invention, the section being taken on the line I—I of Fig. 2. Fig. 2, is a horizontal section on the line II—II of Fig. 1. Fig. 3, is an enlarged section of a part of the generator. Fig. 4, is a detail perspective view of the lower end of the tube for discharging carbid into the water from the carbid hopper. Fig. 5, is a detail perspective view of the valve controlling the discharge of carbid into the water. Fig. 6 is a section on line VI—VI of Fig. 1.

In the said drawings 1 indicates a tank provided with a cover 2, and near its lower end with an internal ring 3. Arranged vertically within the tank and extending for substantially the full length thereof is a pipe 4 to which a pump may be connected for pumping the carbid residuum and the water from the tank. Secured within the tank is a pair of bearings 5 in which is journaled a rod 6 provided at its lower end with an arm 7, the rod and arm together constituting an agitator for stirring up the carbid residuum and water so that the mixture may be pumped from the tank through pipe 4, any suitable means, such as a wrench or crank handle being adapted to be secured to the upper end of rod 6 for the purpose of turning the same back and forth to effect the agitation mentioned.

8 indicates an inverted funnel shaped gas holder resting on ring 3, and the stem of

the funnel is provided at its upper extremity with a centrally apertured plate 9, for a purpose which is hereinafter explained.

10 indicates a gas bell having a central opening 11 in its top through which the stem of the funnel extends, and surrounding the funnel and depending from the bell at the margin of said opening is a circular wall 12 which acts to insure upward and downward movements of the bell without any tilting movement of the latter.

13 is a pipe leading outward from the stem of the funnel above the gas bell and then extending downward below and exterior to said bell, and said pipe is retained reliably in position with respect to tank 1 and the funnel by a bearing 14. The lower end of the pipe, which is closed, acts as a receptacle for water produced by condensation in the gas, and extending upward into the bell from pipe 13 some distance above the lower end of the latter is a pipe 15 for discharging the gas generated into the bell, the upper end of said discharge pipe 15 being above the water line of the tank, the said water line being shown in dotted lines, Fig. 1.

To conduct the gas from the bell a pipe 16 extends downward from the latter at a point above the water line and communicates with a house pipe 17, and the lower end 18 of said pipe, which is closed, acts like the lower end of pipe 13, as a collector of water produced by condensation in the gas passed through the house pipe.

19 is a tubular nipple communicating with and extending upward from plate 9 and externally threaded at its upper end for engagement by the internally threaded cap 20, and extending downward from said cap through and of substantially smaller diameter than the nipple 19, is a tubular stem 21 provided at its lower end with a side opening 22. The stem is provided with an external flange 23 engaging the wall of the nipple and forming a substantially gas tight joint therewith, and at its lower end the tube is provided with a disk 24 of the same diameter as flange 23 to also form a gas tight partition between the tube and nipple when the former is raised sufficiently to dispose said disk within said tube. This tube with its flange and disk has a special function hereinafter explained.

Depending through and rigid with plate

9 is a vertical tube 25 terminating within the stem in the funnel in a squared end 26 for a purpose which hereinafter appears, and secured upon said tube above the plate 9 is a hopper 27 to which access is had through an opening controlled by a removable cap 28, this hopper being adapted to contain a considerable charge of carbid.

29 is a vertical tubular guide arranged centrally in the hopper and provided at its lower end above the corresponding end of the hopper, with an outwardly projecting perforated flange 30 through which carbid is adapted to flow and said perforated flange is preferably provided with an upwardly flaring flange 31 fitting against and secured in any suitable manner to the outwardly tapering end of the hopper.

Fitting slidably in the tubular guide 29 is a hollow plunger valve 32 terminating in a downwardly tapering lower end to seat on the upper end of tube 25 under certain conditions hereinafter mentioned and provided with a depending stem 33 resting normally upon a valve 34 hinged at 35 to the lower end of one side of the squared portion of tube 25, the said valve 34 being held closed normally by a weight 36, said weight being sufficiently heavy to raise and hold the plunger valve elevated through the upward pressure applied by valve 34 on stem 33 of the plunger valve. It will thus be seen that as long as valve 34 remains closed, the plunger valve is held open, so that carbid which has passed downwardly through the perforated flange 30, may enter and fill tube 25, the said tube being of capacity to hold a single charge of carbid, it being understood that when valve 34 is opened, the plunger valve gravitates downward and closes communication between the body of the carbid and said tube 25 so that it is impossible for more than a predetermined charge of the carbid to drop through the stem of the funnel into the water. The plunger valve through its gravitative action, incidentally acts to insure the expulsion of the charge of carbid in said tube, as will be readily seen, but its chief function, is as above stated, to cut off communication between the hopper and tube 25, as under proper conditions the charge of carbid resting on the hinge valve will invariably drop through the force of gravity into the water when said hinge valve opens and requires no pressure behind it to effect such expulsion.

Valve 34 is preferably provided with a downwardly-inclined lip 37 at its free end to impart a spreading tendency to the charge of carbid as it falls from the tube 25, and to guard against the carbid flowing laterally the valve is provided with upwardly-projecting side walls 38, which fit snugly at all times against opposite sides of the squared portion 26 of said tube 25.

39 is a rod pivotally pendent from weight 36 and pivoted at its lower end to the inner end of a short lever 40 pivoted for movement in a vertical plane on a bracket 41 secured to and within the stem of the funnel, the said lever projecting through a vertical slot 42 in said funnel stem so that the inner wall 12 of the gas bell just before it attains its most depressed position, shall engage and depress said projecting end of the lever and thus overcome the resistance of weight 36 and effect the opening of valve 34, it being understood that the downward movement of the bell occurs through the exhaustion therefrom of the gas and that its operation of the lever is for the purpose of effecting the deposit of an additional discharge of carbid into the water of the tank, so that sufficient gas shall be generated to reëlevate the gas bell to its original position, and as it rises the weight 36 gradually closes valve 34 and effects the simultaneous reëlevation of the plunger valve and the outer end of said lever, this action being entirely automatic and repeated until the supply of carbid in the hopper is exhausted.

Initially the gas bell will be depressed, valve 34 will be opened and the plunger valve will be seated upon the upper end of tube 25 and cut off communication between the hopper and the funnel and thus prevent a charge of carbid entering the latter from the hopper. With the parts in this position it is necessary to prime the apparatus, and to conveniently accomplish this purpose the cap 20 is unscrewed from the nipple 19 and a charge of carbid is placed in tube 21 through opening 22. The tube is then reinserted in the nipple, and slipped downward with its side opening disposed upwardly, until the cap engages the upper end of the tube, and as the cap is screwed upon said nipple, the tube turns and discharges its contents into the water through the stem of the funnel. This starts the generation of gas and effects the ascent of the bell and the consequent closure of the valve 34 and reëlevation of the plunger valve so that a charge of carbid may pass into the tube 25, after which the operations are automatic as hereinbefore explained.

Should it be desired at any time to deposit additional carbid in the water of the tank while the bell is elevated by gas therein, the cap 20 can be unscrewed from the nipple and then drawn upward until the disk 24 forms a partition between said tube and the nipple, it being understood that the said disk enters the nipple before the flange 23 is withdrawn from the nipple, so that it will be impossible for gas to escape up through the nipple.

When the tube is raised to almost wholly withdraw from the nipple and is so disposed that its opening 22 faces upwardly, a charge

of carbid can be placed in the tube, which is then slid downwardly through the nipple until such charge drops through the stem of the funnel into the water, and starts anew
5 the gas generating operation.

From the above description it will be apparent that I have produced an acetylene gas generator embodying the features of advantage enumerated as desirable, and which
10 is susceptible of modification in minor particulars without departing from the spirit and scope or sacrificing any of the advantages of the appended claim.

I claim.

15 An acetylene gas generator, comprising a tank to contain water, an inverted funnel fitting in the tank and having its stem projecting above the water line thereof, a gas bell around the funnel and depending into
20 the water, a perforated plate covering the upper end of the stem of the funnel, a tube rigid with and depending through the perforation of the plate and squared at its lower end, a carbid hopper fitting over the
25 upper end of said tube, a vertical tubular

guide within said hopper and terminating at its lower end above the said tube in a perforated flared end, a valve hinged to the lower end of the tube, a weight holding the hinged valve normally closed, a gravity plunger
30 valve fitting in the said guide, and provided with a depending stem resting on the valve to hold the plunger valve above the end of said tube when the hinged valve is closed and to effect the reëlevation of the plunger
35 valve when the hinged valve is closed, a lever pivotally supported within the stem of the funnel and projecting out through an opening therein for depression by the bell when the same descends sufficiently, and a
40 rod pivotally connecting the lever with the weighted end of the hinged valve to reverse the pivotal operation of the lever when the bell is elevated.

In testimony whereof I affix my signature,
45 in the presence of two witnesses.

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Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."