No. 648,909. Patented May 8, 1900.

D. L. BAUMGARTEN.

ACETYLENE GAS GENERATOR.

(Application filed Dec. 13, 1897.)

(No Model.)

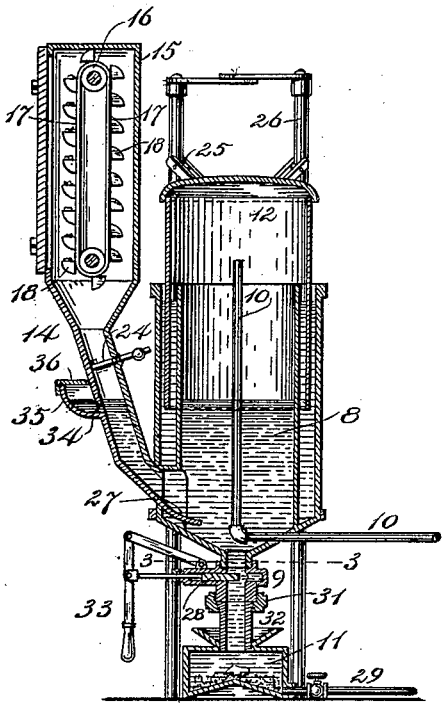

Fig. 1.

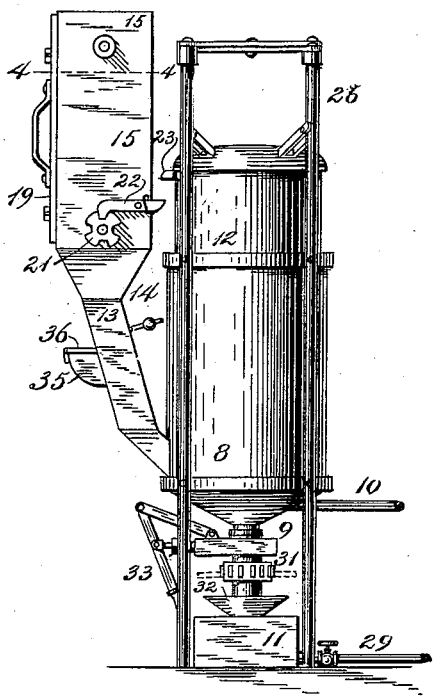

Fig. 2.

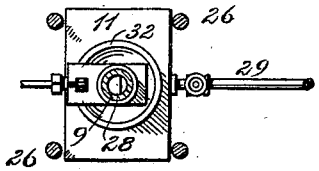

Fig. 3.

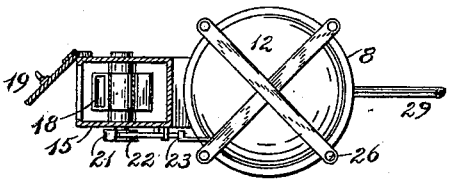

Fig. 4.

WITNESSES

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DAVID L. BAUMGARTEN, OF CINCINNATI, OHIO, ASSIGNOR TO THE SUNLIGHT GAS COMPANY, OF OHIO.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 648,909, dated May 8, 1900.

Application filed December 13, 1897. Serial No. 661,593. (No model.)

To all whom it may concern:

Be it known that I, DAVID L. BAUMGARTEN, a citizen of the United States, and a resident of Cincinnati, Hamilton county, State of Ohio, have invented certain new and useful Improvements in Acetylene-Gas Generators; and I do hereby declare the following to be a clear, full, 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, reference being had to the accompanying drawings, with the reference-numerals marked thereon, which form a part of this specification.

This invention relates to improvements in generators used in the manufacture of acetylene gas. This gas, as is well known, is manufactured by subjecting carbid of calcium to the action of water, the process of combining the two resulting in the production of the gas which is set free, leaving the unused and decomposed parts of the carbid in form of a muddy residue. In my generator the carbid is supplied to a substantially-permanent body of water, and one feature of my invention consists of a construction whereby such supply proceeds from time to time and automatically in proportion to the consumption of gas. Another feature is a construction whereby the resulting residue may be drawn off at times, as rendered necessary, without interfering with or interrupting the process of manufacture. Means are also provided whereby the escape of gas is prevented, while a supply of carbid enters the generator, and provision is made to facilitate the introduction of water to the generator.

In the following specification, and particularly pointed out in the claims, is found a full description of the invention, its operation, parts, and construction, which latter is also illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of the generator. Fig. 2 is a side elevation of the same. Fig. 3 is a horizontal section on line 3 3 of Fig. 1; and Fig. 4 is a top view of it, partly in section, on line 4 4 of Fig. 2.

The generator consists, substantially, of a sheet-metal tank 8, preferably galvanized, having a funnel-shaped bottom, the lower end of which connects by a neck 9 to a box 11, which receives the carbid and in which the generation proceeds. Tank 8 has double walls with a space between them, which is filled with water and receives the wall of another inverted tank 12. Box 11 and tank 8 are charged with water to a height about as shown in the drawings, the carbid being introduced to the water through a chute 13. The generation of gas ensues as soon as the two come together, but proceeds principally in box 11, the nascent gas rising above the water and occupying the space in the upper parts of tanks 8 and 12, the latter constituting a gasometer, which slowly rises as the gas accumulates. These parts of the apparatus, as well as a suitable outlet-pipe 10, which supplies gas to the service-pipes, are of the usual customary construction and arrangement. The upper end of chute 13 enlarges to form a hopper 14 and has superposed upon it a rectangular box 15. Within this latter, near top and bottom and in free-running bearings, are mounted guide-rollers 16, between and around which a belt 17 is stretched, carrying a number of buckets 18. These latter, on one side, as shown on the left, are charged, preferably, all at once, access being had through a door 19. Each bucket should contain sufficient carbid to produce after discharged into the generator all the gas necessary to fill the gasometer.

It will be observed that belt 17, since it is unequally loaded, has a normal tendency to move down on one side and to discharge its loaded pockets, which tendency, however, is also normally restrained by a locking mechanism until such time when the gasometer requires the action of the generator for replenishing it with gas, and for which purpose the latter must be supplied with carbid. This locking mechanism consists of a notched locking-wheel 21, rigidly mounted upon the spindle of one of the guide-rollers 16, preferably the lower one, and outside of box 15, the particular spindle being sufficiently extended for such purpose. It is normally locked against rotation by a detent 22, occupying one of its notches and pivotally supported on the outside of box 15. The gasometer descends, either by its own or with

the aid of added weight, thereby expelling the gas, and on its outside there is a lug 23 so located and projecting sufficiently to strike in its descent with the gasometer the rearwardly-extended detent 22. The result of this contact is a disengagement of the latter from the notched wheel, which permits the guide-rollers to rotate and the belt to move. The contact between lug 23 and detent 22 is, however, of very limited duration, so that the latter is immediately released again and left free to drop into the next arriving notch of wheel 21, thereby arresting the motion of it as well as of all other parts connected therewith. The pawl 22 and the lug 23 are beveled in opposite directions, so as to make the contacts between them very limited and permit the pawl to fall back into its normal position with the slightest possible delay. Should the bell stop in its movement just at the point of contact, so as to hold the pawl up long enough for more than one of the buckets to be emptied, it will not make any serious difference, because the increase of the gas-pressure will lift the bell so quickly as to cause no serious results. Meanwhile, however, the motion has been sufficient to bring one of the loaded buckets 18 to a position above hopper 14, which enables it to discharge its contents. These latter drop upon a balanced valve 24, pivotally supported and normally closing chute 13 to prevent the escape of gas. It also prevents the rising of moisture to the carbid-supply above. This valve tilts under the weight of the carbid which proceeds downwardly, while the former closes again by aid of a spring or weight, as shown. The carbid slides down the inclined bottom of tank 8 and enters box 11, which has a convex bottom to prevent piling up in the center. The generation takes place in box 11, but gas is set free as soon as the carbid enters the water, so that a reaction upon the gasometer takes place at once, under which tank 12 is lifted to immediately release detent 22, as explained before.

To permit lug 23 to clear the detent in rising, should it have slipped below, one part of the latter is hingedly secured, as shown, so as to be capable of yielding upwardly when engaged by lug 23 from the under side.

Tank 12 is guided in its movements by guide-rollers 25, which move on upright rods 26, the latter being connected to form a frame which supports the whole apparatus.

To prevent as much as possible the rising gas from entering chute 13, a deflector 27 is provided at the lower end of the latter, which projects into the lower part of tank 8 and crowds the gas toward the center. The residue remaining after the decomposition of the carbid accumulates in box 11 in form of a sediment of mushy consistency which from time to time must be removed. It is desirable that such removal be accomplished without interrupting the action of the gasometer—that is, without reducing the contained pressure. It should also be accomplished without loss of any of the water, except what is below the cut-off valve, because I have found that water which has been used for some time and become saturated with the gas and soluble portions of the carbid is preferable and quicker in action than if an entirely-fresh supply of water had been entered. For such purpose I provide in neck 9 a cut-off valve 28 of any suitable construction, which when closed permits the contents of box 11 to be readily drawn off through a valved discharge-pipe 29 without interfering in any way with the gasometer above. Where possible, pipe 29 may waste into a sewer; but where the absence of a permanent location makes such connection impossible box 11 may be bodily removed to be emptied. To permit such action, neck 9 is in two parts normally connected by means of a screw-coupling 31, which when loosened permits the required temporary disconnection.

Since the escape of some water cannot be avoided, it is desirable that means, as shown at 32, be provided to receive it. A suitable form of valve is a sliding gate-valve, as shown, operated by a lever 33. In Fig. 2 valve 28 is entirely closed and box 11 may be emptied. In Fig. 1 it is in an intermediate position while being moved either for opening or closing. It is entirely opened and remains so to admit the carbid as soon as box 11 is in position and with its discharge-pipe closed. The limited loss of water, which the supplying of box 11 entails, is supplied through an opening 34, provided with a permanent funnel 35 and kept closed by a lid 36.

Instead of belt 17 a chain may be substituted, in which case pulleys 16 would be changed to sprocket-wheels.

I have shown a vertically-moving belt carrying and moving the buckets containing the carbid. By this construction I am enabled to use the force of gravity to move these buckets. If the buckets were arranged on a horizontal track, it would be necessary to move them forward by mechanism operated by the movement of the gasometer or bell, whereas when arranged on a belt moving vertically or substantially vertically the force of gravity is utilized to move them forward. I do not, however, limit myself to the vertical arrangement or the use of gravity.

Having described my invention, I claim as new—

1. The combination of an acetylene-gas generator consisting substantially of a vessel adapted to contain water, a gasometer which receives the gas, a feed device consisting of a series of buckets to contain carbid, a gravity-operated belt on which they are supported, guide-pulleys for the belt and means controlled by the movement of the gasometer which permit the belt with the buckets to move intermittently for the purpose of supplying the generator by dumping the contents of its buckets, substantially as and in the manner described.

2. The combination of an acetylene-gas generator consisting substantially of a vessel adapted to contain water, a gasometer which receives the gas, a gravity-operated feed device consisting of a series of buckets to contain carbid, a gravity-operated belt on which they are supported, guide-pulleys for supporting the belt in an upright position, the buckets on one side of the belt only to contain carbid, whereby the latter receives a normal tendency to move and locking mechanism controlled by the movements of the gasometer whereby the movement of the belt is normally arrested.

3. The combination of an acetylene-gas generator consisting substantially of a vessel adapted to contain water, a gasometer which receives the gas, a feed device consisting of a series of buckets to contain carbid, a belt on which they are supported, guide-pulleys for supporting the belt in an upright position, the buckets on one side of the belt only to contain carbid, whereby the latter receives a normal tendency to move, a notched wheel 21 on one of the spindles of one of the guide-pulleys of the belt, a detent 22 to prevent it from rotating and a projection 23 on the gasometer adapted to disengage the detent from the locking-wheel all as shown and described.

4. The combination of an acetylene-gas generator consisting substantially of a vessel adapted to contain water, a gasometer which receives the gas, a feed device for supplying the generator at intervals with carbid, a chute 13 which connects the feed device with the generator and an opening 34 in chute 13 to admit water, a permanent funnel 35 formed around this opening and a hinged lid for closing it.

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

DAVID L. BAUMGARTEN.

Witnesses:
C. SPENGEL,
EMIL WEIL.