J. B. BURDETT.

CARBID FEED MECHANISM FOR ACETYLENE GENERATORS.

APPLICATION FILED MAY 29, 1911.

1,095,702. Patented May 5, 1914.

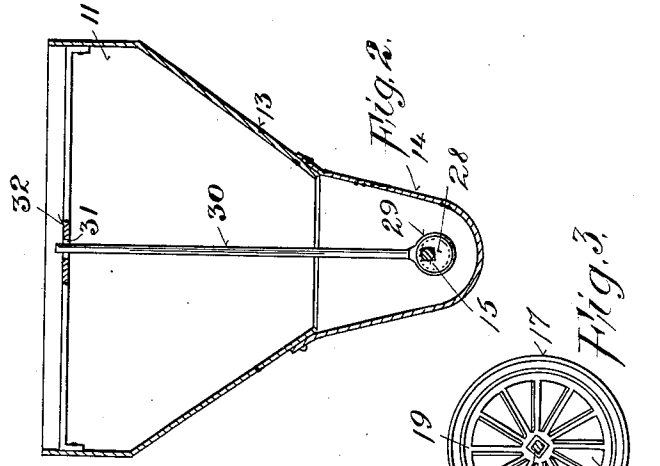


Fig. 2.

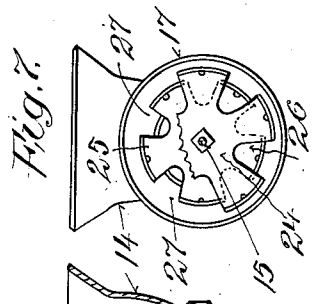


Fig. 7.

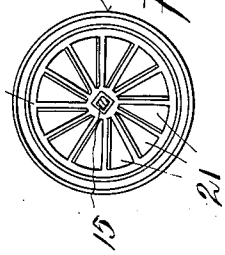


Fig. 3.

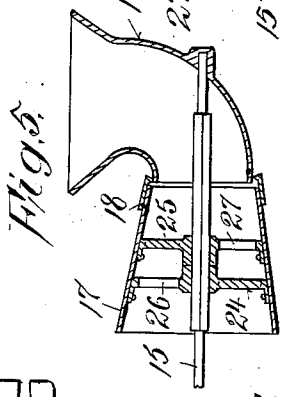


Fig. 5.

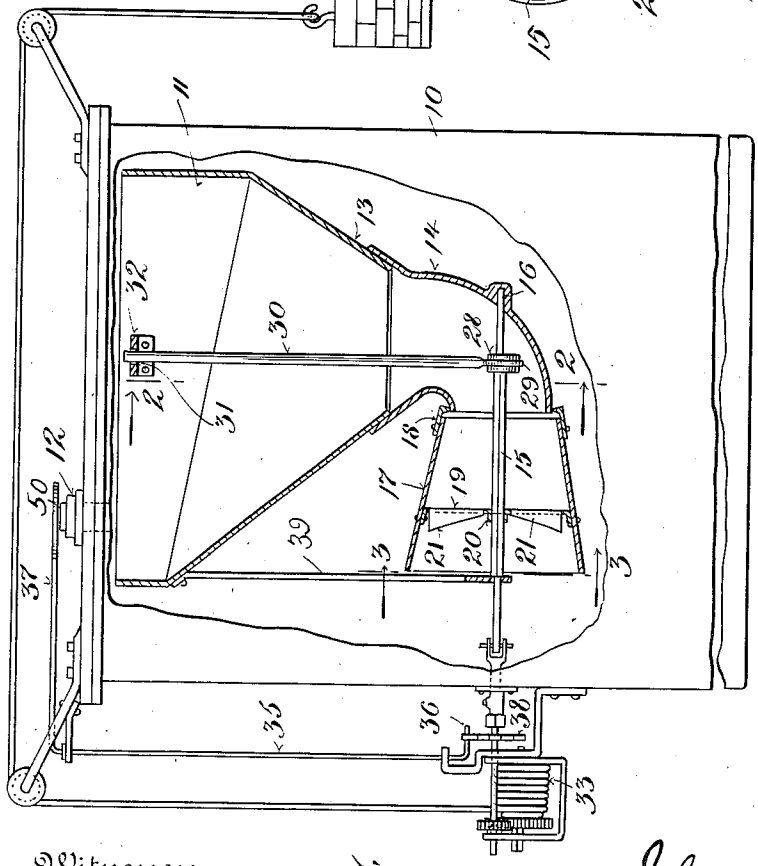


Fig. 1.

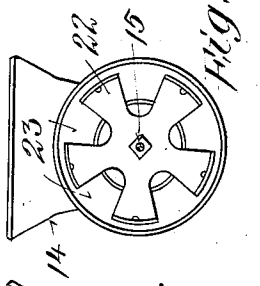


Fig. 6.

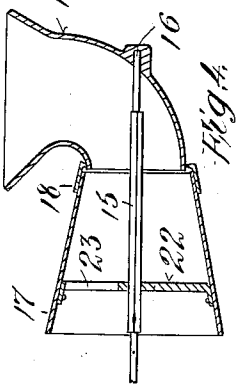


Fig. 4.

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UNITED STATES PATENT OFFICE.

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CARBID-FEED MECHANISM FOR ACETYLENE-GENERATORS.

1,095,702. Specification of Letters Patent. Patented May 5, 1914.

Application filed May 29, 1911. Serial No. 630,101.

To all whom it may concern:

Be it known that I, JOHN B. BURDETT, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have made a certain new and useful Invention in Carbid-Feed Mechanism for Acetylene-Generators, of which the following is a specification.

This invention relates to carbid feed mechanism for acetylene generators of the type wherein the carbid is fed to and dropped into a generating chamber containing water to effect the required generation of acetylene gas by the chemical union of the carbid and water.

The object of the invention is to provide a carbid feed mechanism for the purpose and use referred to which is simple in construction and efficient in operation.

A further object is to provide a carbid feed mechanism of the character mentioned which embodies means for feeding the carbid by gravity in quantities as required, and wherein clogging of the carbid in the feed hopper is avoided.

Other objects of the invention will appear, more fully hereinafter.

The invention consists substantially in the construction, combination, location and relative arrangement of parts, all as will be more fully set forth hereinafter, as shown in the accompanying drawing, and finally pointed out in the appended claim.

In the drawing,—Figure 1 is a broken view in side elevation, parts broken out and parts in vertical section, of an acetylene generator showing the application thereto of a carbid feeding mechanism embodying the principles of my invention. Fig. 2 is a detail view in vertical section of the feed hopper on the line 2, 2, Fig. 1, looking in the direction of the arrows. Fig. 3 is a detail view in vertical section on the line 3, 3, Fig. 1, looking in the direction of the arrows, showing one form of means for restraining and controlling the gravity feed of the carbid. Figs. 4 and 5 are broken views in vertical section showing modified constructions of gravity feed retaining means. Fig. 6 is a view in end elevation of the construction shown in Fig. 4. Fig. 7 is a similar view of the construction shown in Fig. 5.

In the practical operation of acetylene generators the feed of the carbid to the generating tank which contains water to effect the desired gas generation is an important feature of the apparatus. The carbid is usually employed in the form of lumps of irregular size and shape and great difficulty is experienced in feeding the same properly and in the required proportions. Where a feed hopper is employed the lumps of carbid tend to bridge the narrow portion of the hopper and thus to clog the same, and hence arresting the feed thereof. Various devices have been proposed to prevent such clogging, and to secure an efficient feed of the carbid but practical defects have developed in the use of prior devices which render them unsuited to the purpose, and irregular in action.

It is among the special purposes of my present invention to avoid the defects which have been found to exist in prior devices employed for this purpose and to provide an arrangement wherein the carbid feeds by gravity through the hopper and into the generator chamber but the gravity feed thereof is regulated and contracted by suitable restraining devices, suitably operated and arranged. I also propose to combine with the gravity feed restraining or controlling devices, suitable means for preventing the formation of bridges across the feed hopper by the lumps of carbid. I also provide means whereby the gravity feed restraining devices are arrested while fresh supplies of carbid are being introduced to the feed hopper.

Various specific forms of means for accomplishing the objects and purposes of my invention may be devised. While, therefore, I have shown, and will now describe various embodiments of my invention, I desire it to be understood that my invention, as defined in the claim, and in its broadest scope, is not to be limited or restricted to specific details of construction.

In the drawing 10, designates a generator chamber adapted to contain water into which the carbid is dropped. The carbid is first introduced into a hopper 11, suitably mounted and supported within the hopper. The top of the chamber is provided with an opening controlled by a plug or cover 12, and by the removal of said plug or cover the carbid may be readily delivered into the hopper 11, through said opening.

At its lower end the hopper 11 is con-

tracted, as indicated at 13, and upon this contracted portion is mounted the neck portion 14, which is deflected downwardly and laterally, as clearly shown. A shaft 15, extends through the wall of chamber 10, and longitudinally and centrally through the laterally inclined portion of the neck 14, and is journaled at its inner end in any suitable manner, as, for instance, in a bearing 16, formed in the rear wall of neck portion 14. Upon this shaft is mounted to revolve therewith, a truncated-cone shaped drum 17, having its smaller end arranged to encompass the delivery mouth of the laterally extending portion of neck 14. A convenient arrangement is shown wherein a band 18 is applied over or around the exterior surface of the smaller end of the drum, and extends beyond said end so as to also encircle the delivery mouth of the neck portion 14.

With the arrangement above described it will be seen that when carbid is delivered into the hopper 11, the tendency is for it to descend through the hopper and then pass by gravity through the laterally extending downwardly inclined portion 14, and thence, also by gravity, passing along through the drum 17, which, in effect, forms a continuation of the downwardly inclined, laterally extending portion of the neck, finally dropping from the larger end of the drum into the water contained in the lower part of the tank or chamber 10. The free gravity feed of the carbid in this manner, however, is objectionable since the carbid will thereby be supplied to the generating tank in too great quantity. In accordance with my invention I provide restraining devices for the purposes of restraining the gravity feed of the carbid, controlling such feed, and preventing the carbid from feeding by gravity in too great quantities.

The gravity feed restraining device may be of different specific form.

In Figs. 1 and 3, I have shown one form wherein a partition plate 19 is placed within the drum 17, and secured at its periphery to the inner surface of the drum, and provided with a central hub 20, to receive therethrough the shaft 15. This partition plate thus carries the drum 17, and causes the same to revolve with the shaft. The partition plate 19 is slit radially to from triangular shaped flanges 21, which are bent outwardly toward the larger end of the drum, thereby providing openings through the partition plate through which the carbid may pass by gravity as the drum revolves. By arresting the rotation of the drum the feed of the carbid will also be arrested. The outwardly deflected flanges 21, thus form restraining means to restrain the gravity feed of the carbid.

In Figs. 4 and 6, I have shown a slightly modified form of restraining means wherein the partition plate 19 with the deflected flanges 21, as shown in Fig. 1, is replaced by a partition plate 22, having a series of radial openings 23, therein, through which in proper regulated quantities the carbid may pass by gravity as the drum revolves.

In Figs. 5 and 7, I have shown two partition plates 24, 25, having radial openings 26, 27, respectively, the openings 26, being out of register with the openings 27.

In all the forms shown of the gravity feed restraining devices, it will be readily understood that, in practice, the lumps of carbid will pass by gravity through only that slot or opening of the partition plate which is lowest, and as the axis of the drum is horizontal the radial slots or openings pass successively the lowest point in the drum as the latter revolves. It will be thus seen that I provide a most simple and efficient means for controlling and restraining the gravity feed of the carbid.

In order to prevent clogging of the carbid in the hopper and in the narrowed portion thereof and in the throat of the neck portion 14, I mount an eccentric 28, upon shaft 15, at a point within the neck portion 14, and apply therearound a strap 29, to which is connected a rod 30. The other end of this rod plays freely through a slot 31, in a cross-piece 32, mounted in the hopper 11. The rotation of shaft 15, imparts oscillatory reciprocating movements to the rod 30, which serves to break up any bridging of the carbid and prevent the same from clogging.

Rotation may be imparted to shaft 15 in many different ways and by any suitable arrangement of drive device. I have shown a simple construction of spring motor 33, geared to said shaft. In this arrangement the motor is operated by a weight 34, though any other form of spring motor might well answer the desired purpose, and in the details thereof said motor forms no part of my present invention.

It is important that the feed of carbid from the hopper into the generating tank be arrested during the time the cap 12 is open for the introduction of fresh charges of the carbid to the hopper 11. To accomplish this result I employ a rock rod 35, having arms 36 and 37, arranged to coöperate respectively with a stop device 38, associated with the motor 33, and with the plug 12, in such manner that the arm 37, extends over plug 12, while the arm 36, is out of engaging relation with respect to the stop device 38. If desired the arm 37 may be provided with a depending flange 50 to encompass the plug 12, thereby rendering said plug 12 inaccessible for removal. When however, the arm 37 is shifted so as to permit the plug 12 to be accessible for removal the arm 36 is thereby moved into position to be engaged by the stop device 38, and hence to stop the motor.

If desired an arm 39, depending from the hopper 11, may serve as an additional bearing support for the shaft 15.

Having now set forth the objects and nature of my invention, and various constructions embodying the principles thereof, what I claim as new and useful, and of my own invention, and desire to secure by Letters Patent is:—

In an acetylene generator, a tank, a hopper mounted therein, a shaft extending transversely the lower end of said hopper, an eccentric mounted on said shaft, a strap therefor, a rod connected to said strap, a guide mounted in the hopper through which the end of the rod freely works, and means for rotating said shaft.

In testimony whereof I have hereunto set my hand in the presence of the subscribing witnesses, on this 20th day of May, A. D., 1911.

JOHN B. BURDETT.

Witnesses:
LEMUEL M. SHIELDS,
A. W. JONES.