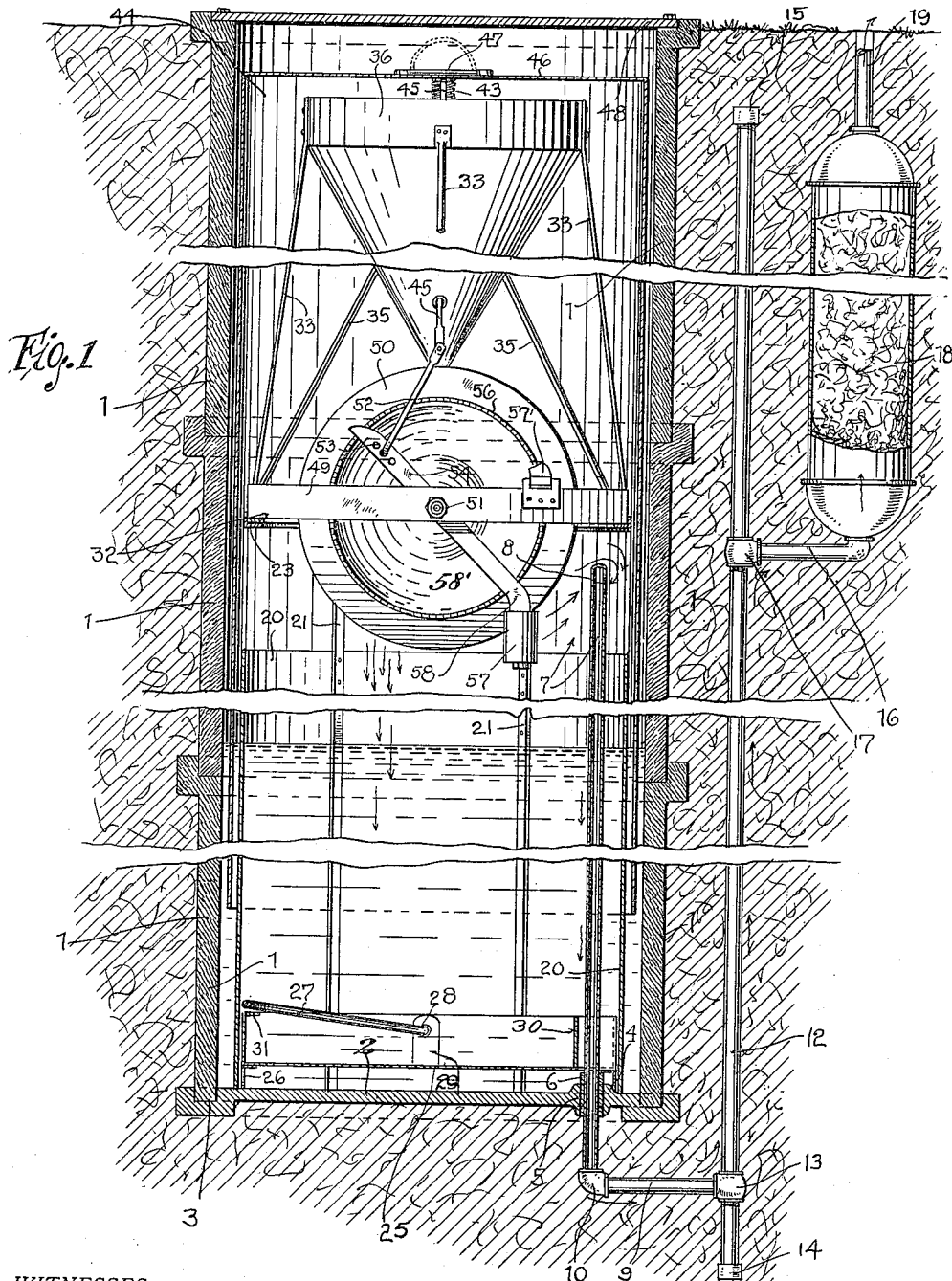


A. D. LONG & L. D. HARPER.
ACETYLENE GENERATOR.
APPLICATION FILED OCT. 22, 1912.

1,159,968.

Patented Nov. 9, 1915.

3 SHEETS—SHEET 1.



WITNESSES
Robert M. Sutphen.

Irving L. Cathran.

INVENTORS

H. D. Long

L. D. Harper.

By E. C. Crooman, Their Attorney.

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Fig. 2

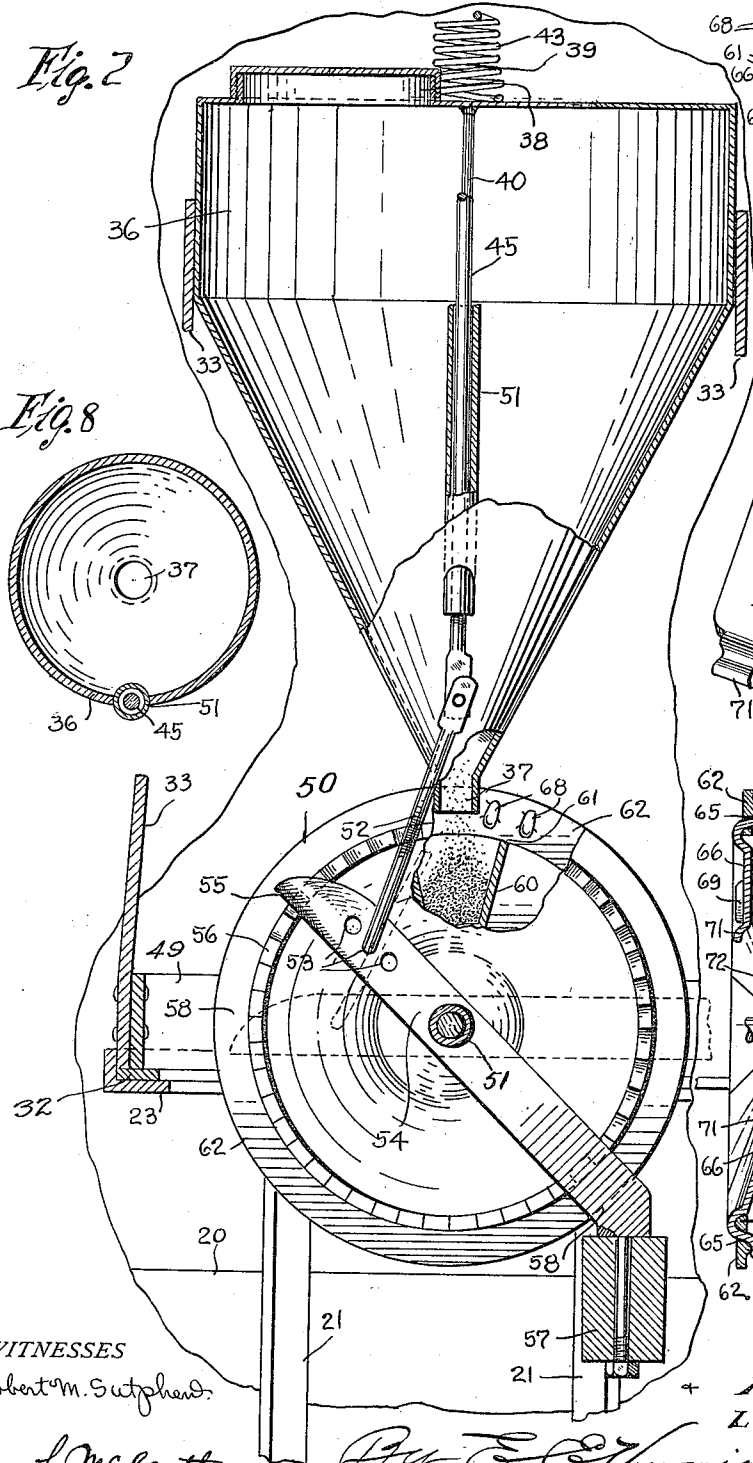


Fig. 8

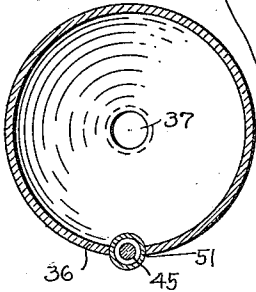


Fig. 7

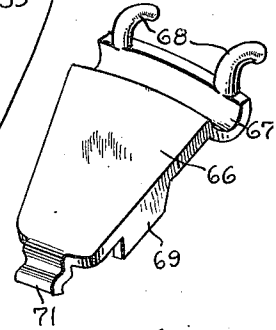
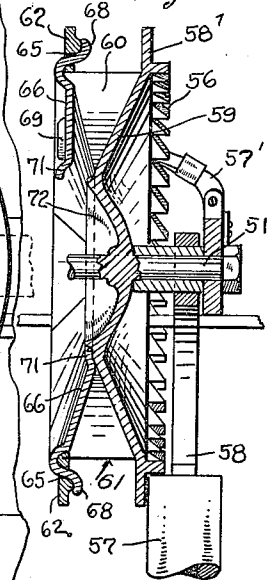


Fig. 5



WITNESSES
Robert M. Sutphen

J. W. L. McCallister

INVENTORS

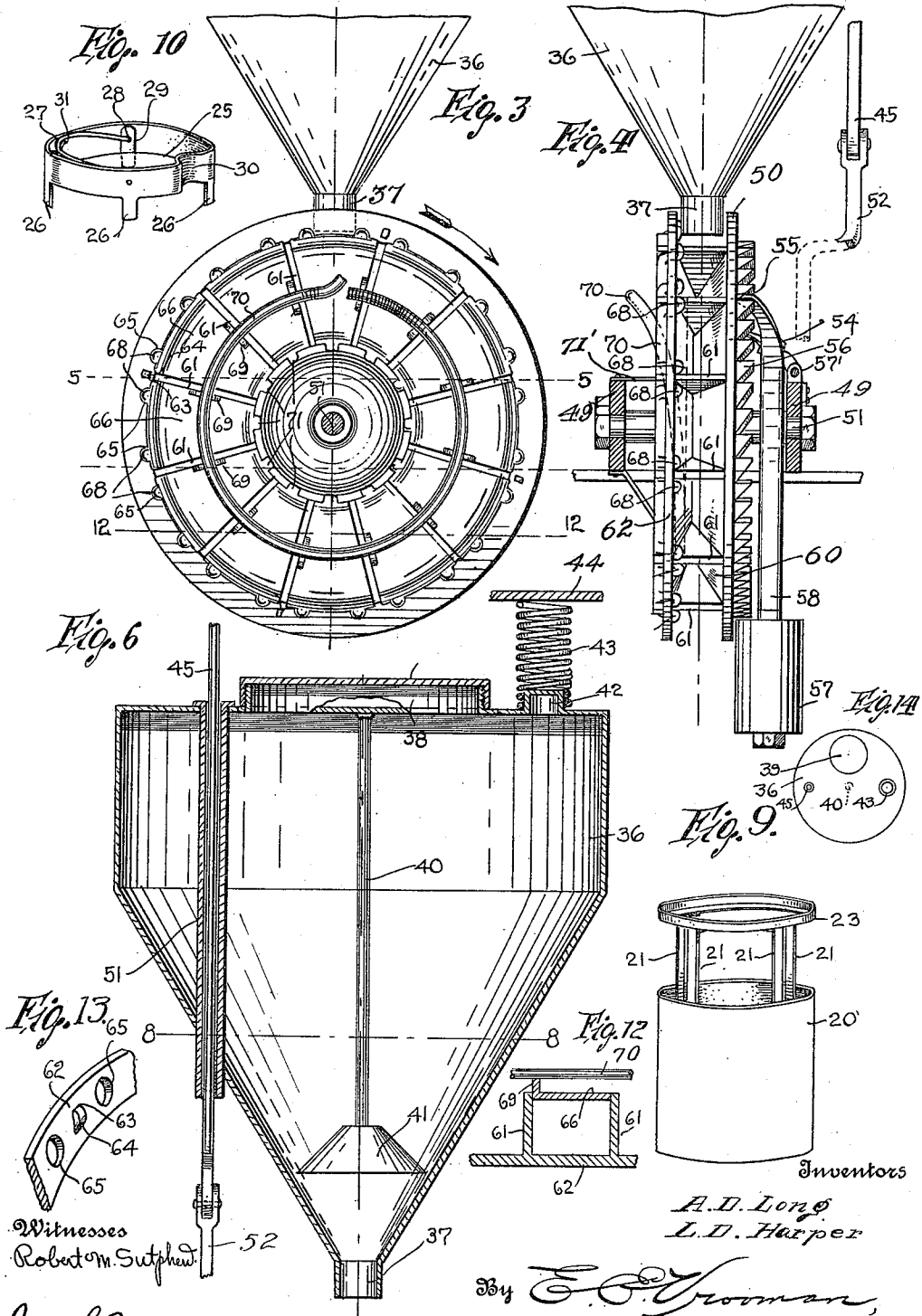
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3 SHEETS—SHEET 3.



Witnesses
Robert M. Sutphen

Inv. L. M. Cathran

Inventors
A. D. Long
L. D. Harper

By E. C. Freeman,
Their Attorney

UNITED STATES PATENT OFFICE.

ARTHUR D. LONG AND LESLIE D. HARPER, OF FAIRFIELD, IOWA.

ACETYLENE-GENERATOR.

1,159,968.

Specification of Letters Patent.

Patented Nov. 9, 1915.

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To all whom it may concern:

Be it known that we, ARTHUR D. LONG and LESLIE D. HARPER, citizens of the United States, residing at Fairfield, in the county of Jefferson and State of Iowa, have invented certain new and useful Improvements in Acetylene-Generators, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to acetylene gas generators, and has for its object the production of an efficient generator which will automatically cause the carbid to be fed into the gas generating chamber as soon as the volume of the gas allow the gas bell to fall below a predetermined point.

Another object of this invention is the production of an efficient feeding mechanism whereby the carbid will be discharged into the gas generating chamber in equally measured amounts so as to have the gas delivered from the generator to have an even flow.

With these and other objects in view, the invention consists in general of certain novel details of construction and combinations of parts hereinafter fully described, illustrated in the accompanying drawings, and specifically claimed.

In the drawing, Figure 1 is a vertical central sectional view of the casing showing the arrangement of the several parts of the generator. Fig. 2 is an enlarged side elevation of the feeding mechanism shown partly in section. Fig. 3 is a side view of the discharge side of the carbid delivery wheel. Fig. 4 is a side elevation of the structure as illustrated in Fig. 3. Fig. 5 is a section taken on line 5—5 of Fig. 3. Fig. 6 is a vertical section through the carbid reservoir. Fig. 7 is a detailed perspective of one of the doors closing one of the delivery compartments of the carbid delivery wheel. Fig. 8 is a section taken on line 8—8 of Fig. 6. Fig. 9 is a detailed perspective of the supporting casing for the carbid delivering mechanism. Fig. 10 is a detailed perspective of the drainage pan carried within the receptacle for receiving the sludge. Fig. 11 is a detailed perspective of the upper end of the carbid delivery wheel showing the manner of automatically opening and closing the doors to the compartments of the carbid delivery wheel. Fig. 12 is a transverse section through one of the carbid containing compartments.

Fig. 13 is a fragmentary perspective view of a portion of the door supporting band. Fig. 14 is a top plan view of the carbid reservoir.

By referring to the drawings by numerals, it will be seen that the generating apparatus is placed within an outer casing or wall made up of a plurality of pipe sections 1 which are interlocked in the ordinary manner, and these sections are preferably made of vitrified tile and their connecting joints are preferably cemented with water proof cement for preventing the passage of drainage from the ground into the casing in which the carbid mechanism is placed. A bottom supporting plate 2 also constitutes a portion of the outer casing and this supporting plate 2 is provided with a circumferential channel 3 near its outer edge in which channel 3 fits the lower edge of the lower pipe section 1. These joints, like the other joint casings, are cemented together with water proof cement for preventing leakage of the material within the casing through to the outside, or preventing the leakage of the liquid or water into the receptacle. This bottom plate is preferably formed of cast iron although it is not necessary to restrict the present structure to any specific material. The bottom which is provided near one side with a thickened boss 4 in which is formed an aperture 5. A pipe section 6 is placed within this aperture 5, and is secured therein by being cast in or otherwise fixed. A gas outlet pipe 7 passes through this pipe section 6 and is supported thereby, and this pipe 7 extends upwardly within the carbid or gas generating receptacle in such a manner as to convey the gas from the generating receptacle to a place of consumption. The upper end of the pipe 7 is closed so as to prevent drippings from falling into the pipe 7, but this pipe 7 is provided upon one side thereof, near the upper end, with an aperture 8 for allowing the passage of gas into the pipe 7. This pipe 7 extends for a short distance below the bottom 2 and is connected with a right angularly extending pipe section 9 by means of an elbow 10. This pipe section 9 in turn connects to a vertically extending gas supply pipe 12 by means of a T joint 13. The lower end of the pipe 12 extends below the pipe section 9 and is closed by means of a cap 14 and this constitutes a drain receiving portion for receiving any drippings which might pass through either the pipes 7 or

12. The upper end of the pipe 12 is also closed by means of a cap 15, and a right angularly extending pipe 16 is connected to the pipe 12 intermediate its ends by means of a T joint 17.

5 A filter casing 18 is connected to the right angularly extending pipe 16, and this casing 18 extends parallel with the pipe 12. This casing 18 is preferably filled with felt, 10 hair or other material for the purpose of filtering the gas as the same passes through the casing so as to free the gas from moisture or of dust which might be carried thereby. A supply pipe 19 is connected to the 15 filter casing 18 for conveying the gas to a place of consumption where the same may be utilized.

As will be clearly understood by carefully considering the drawings, the present device 20 is placed below the level of the ground in the manner as illustrated, thereby making the same perfectly safe, and at the same time keeping the generator out of the way of foreign objects and at the same time preventing the same from becoming materially 25 affected by the ordinary atmospheric changes. By having the generator placed below the level of the ground there will be less danger of the water contained within the tank of 30 freezing.

The supporting casing for the carbide delivering mechanism comprises a tubular body 20 which is spaced from the side walls of the casing 1, and this tubular body 20 carries 35 a plurality of upwardly extending arms 21, which arms support an angular circular rim 23. The upper ends of the arms 21 support the angular rim 23.

A drainage pan 25 is supported upon the 40 bottom 2 of the casing within the tubular body 20 as illustrated in Fig. 1 in such a manner as to catch all of the refuse carbide from which has been extracted all of its chemical properties. In this manner it will 45 be seen that the drainage pan 25 will prevent the carbide from sticking to the bottom of the casing. The pan 25 is supported by a plurality of angle legs 26 which are secured to the bottom of the pan, and a handle 50 27 is secured to the side of the pan 25 by having its angular ends 28 fitting in the journal portions 29. One side of the pan 25 is provided with an inwardly folded portion 30 which portion fits around the vertically 55 extending pipe 7, and in this manner holds the pan 25 in a set position within the casing. A bracket 31 is carried by one of the side walls of the pan 25 and upon this bracket rests the bail or handle 27 so as to 60 prevent the handle from dropping into the pan.

The carbide containing mechanism comprises a lower supporting disk 32 which carries a plurality of vertically extending arms 65 33. Diagonally extending braces 35 are also

connected to the disk or rim 32 and these braces and arms support the carbide reservoir 36 which is of an inverted conical structure having a lower tubular discharge spout 37. The carbide reservoir is provided with 70 an open upper end 38, which end is closed by means of a threaded cap 39. Suspended from the top of the carbide container is a rod 40, which rod carries a substantially conical-shaped distributor 41 for causing the carbide 75 to be spread around the lower end of the reservoir 36 and for discharging from the lower end of the reservoir. The upper end of the reservoir 36 is also provided with an upwardly extending lug 42 and a coil spring 80 43 normally is engaged by the gas bell 44 for equalizing the pressure on the gas bell when it descends and this coil spring bears upon the reservoir 36. The spring is arranged so that when the bell descends it bears evenly 85 on the lug and the spring and bell will not catch on the sides of the casing 1. The spring is to be of the same height as the rod 45 and to be of strength equal to the pressure required to depress the rod 45. 90

The gas bell 44 is of an elongated tubular structure having an upper closed end 46 and a handle 47 is carried by the upper end of the bell 44 to facilitate the removal of the bell from the casing when it is so desired. 95 The upper end of the casing 1 is closed by means of the top 48 of any desired structure.

A pair of transversely extending spaced members 49 are carried by the disk or rim 100 32 and between these spaced members is journaled a carbide delivery wheel 50 upon a supporting pin 51. The carbide reservoir 36 is provided with a vertically extending tube 51' and through this tube 105 extends a vertically extending operating rod 45 previously described, and this rod connects to a link rod 52, which link rod in turn is adjustably connected in one of the apertures 53 of the ratchet lever 54. This lever 110 54 is provided with an intumed tooth engaging end 55 which is adapted to engage the ratchet teeth 56 formed upon one side of the carbide delivery wheel. The lever 54 is journaled upon the journal pin 51, and 115 carries a weight 57 upon its angle end 58. It will, therefore, be seen that as the bell 44 descends within the casing 1, the rod 45 will be forced downwardly thereby causing the upper end of the ratchet pawl 54 to be forced 120 against the ratchet teeth 56 which will, of course, cause the carbide delivery wheel to rotate. The carbide will then be delivered into the generating chamber as will be hereinafter described, and as the bell 44 again 125 rises, the rod 45 will be released and the weight 57 will throw the lever 54 to its normal position. A spring pawl 57' is carried by one of the transversely extending members 49 and engages the ratchet teeth 56 for 130

preventing rotation of the wheel 50 in one direction.

The carbid delivery wheel comprises a body portion 58' which extends inwardly from its outer edge as indicated at 59 for constituting inclined rear walls for the carbid containing compartments 60 formed on the periphery of the carbid delivery wheel 50. These carbid compartments 60 are formed by the spaced partitions 61 and these partitions carry near their outer edge a circular band 62, which band is provided with a plurality of apertures 63 into which fit the lugs 64 formed on some of the partitions 61 for holding the band 62 thereon. This band 62 is also provided with a plurality of door supporting apertures 65, which apertures are arranged in pairs so as to have one pair of apertures positioned between each partition 61 and the one next to it.

Each of the compartments 60 are closed by means of the doors 66, which doors taper toward their outer ends to conform to the shape of the compartments 60, and are provided near their upper ends with a beaded portion 67, which beaded portion overhangs the inner edge of the band 62 in such a manner as to allow the plate to fit snugly over the discharge side of the carbid containing compartment. This beaded portion 67 is provided with a pair of curved arms 68 which arms fit in the apertures 65 and thereby constitute an efficient hinge for allowing the doors 66 to swing outwardly when released by the mechanism to be hereinafter described. These doors are each provided upon one side with an outwardly extending flange 69, which flange engages a cam ring 70 for controlling the opening and closing of the doors. A lifting lug 71 is also formed upon the outer end of each door for allowing the door to be manually opened when so desired. This lifting lug 71 will constitute a stop for limiting the inward swinging of the doors upon the compartments 60. The journal pin 51 is preferably formed integral with the carbid delivery wheel, and the body of the carbid delivery wheel upon the discharge side of the compartments 60 is preferably concave to facilitate the dropping of the carbid from the carbid delivery wheel provided the carbid should fall around the journal pin 51. This pocket is illustrated as indicated at 72 in Fig. 5.

From the foregoing description it will be seen that the doors 66 may be readily removed from the band 62 when so desired, but owing to the peculiar hinged fingers 68 the doors will be prevented from accidentally being displaced from the carbid delivery wheel 50.

A cam ring or band, previously referred to, 70, is carried by one of the transversely

extending members 49, and this band is placed upon the machine in front of the carbid delivery wheel and normally bears against the doors 66 which close the carbid compartments 60. This cam ring 70 is supported by a plurality of brackets 71' which firmly grip one of the transversely extending members 49 and hold the cam band or ring 70 in a set position. The cam ring 70 is split so as to have one end lie snugly against the flanges 69 of the doors 66, and the other end of the band is curved outwardly so as to form a space between the ends of the ring for facilitating the opening of the doors after the carbid delivery wheel rotates. Since the ring 70 at all times remains stationary, it will be seen that the carbid compartments 66 will only be opened so as to allow the carbid to be discharged therefrom when the doors register with the opening formed by means of the out-turned end of the cam ring 70. This cam ring, by having one end turned outwardly, will also facilitate the closing of the door to the empty compartments after the carbid has been discharged therefrom, for the reason that the door will ride over the cam surface formed by the out-turned end of the cam ring. As soon as the next door reaches the open portion of the ring, the same will immediately fall open in such a manner as to allow the carbid to be discharged from the next compartment, and in this way the operation of the device is continuous, one compartment of carbid being discharged at a time. This discharge of carbid is, however, controlled by the vertical rod 45 previously referred to, since this rod controls the rotation of the carbid delivery wheel. The doors 66 are so hinged as to have their inner ends extending inwardly at an angle when in a closed position. In other words, the hinged portion of these doors projects beyond the inner free ends of the doors, and these inner ends are only held in a closed position by means of the cam ring 70. It will, therefore, be seen that the doors 66 will be caused to open by means of their weight since the door will have a tendency to hang vertical as soon as the pressure of the ring has been released from the inner ends. Since the inner walls of the carbid compartments are also inclined, it will be seen that every portion of the carbid within the receptacles will be discharged therefrom as soon as the doors become automatically opened. The weight of the carbid will have a tendency to force the doors open as soon as the doors have been released from the pressure of the cam ring 70.

From the foregoing description it will be seen that a very efficient and durable, quick acting, automatic, machine has been produced which will instantaneously feed the carbid to the gas generating chamber since

the gas bell 44 falls in such a manner as to cause the rod 45 to be depressed. After this operation is continued from time to time, and the carbid delivery wheel is rotated, the carbid will be discharged from the compartment 60, and as the compartments again come to the discharge spout 37 of the reservoir, the compartments will again be filled so that this operation may be kept up until the carbid reservoir 36 has become empty.

By use of the present device, it will be seen that the greatest difficulty which is very often experienced in apparatus of the present character is overcome by reason that the carbid in the present device is discharged into the gas generating chamber in equal quantities so as to prevent a great waste of the carbid. Since only a small amount of carbid is delivered into the generating chamber at one time, it will be seen that a continuous flow or an even flow of gas may be obtained, and that the carbid will not be permitted to run out into the gas generating chamber in unmeasured quantities so as to cause not only the waste of the carbid, but also cause the generation of more gas than is necessary, hence waste considerable of the gas.

Of course, it should be understood as illustrated in Fig. 1, that the lower end of the bell 44 is positioned or immersed within the water contained within the lower portion of the casing. In this manner it will be seen that a perfect seal will be produced for the generator whereby gas will be prevented from escaping from the generator. The water contained within the tubular body 20 will constitute, with the carbid, the gas generator material, whereby the water between the outer face of the tubular body and the inner face of the outer casing will constitute a liquid seal. It should be understood that the disk or carbid delivery wheel 50 is adapted to rotate in the direction of the arrow indicated in Fig. 3 and that the pockets of the carbid delivery wheel 50 will be emptied upon the second movement of the disk or wheel 50 after the pocket has been first filled with carbid from the carbid reservoir 36.

Of course, it should be understood that this invention may be modified in its mechanical construction without departing from the spirit of the invention.

Having thus described the invention, what is claimed as new, is:—

1. A generator of the class described comprising

a casing, a carbid delivery wheel comprising a plurality of compartments, each compartment having an inclined rear wall, a band formed around the periphery of said carbid delivery wheel, doors hinged to said band and extending inwardly toward the center of said carbid delivery wheel, a cam ring associated with said carbid delivery wheel and provided with an out-turned end, said cam ring normally holding said doors in a closed position and allowing one of said doors to open at a time when said door reaches said outwardly bent end of said cam ring.

2. A generator of the class described comprising a casing, a carbid delivery wheel comprising a plurality of compartments, each compartment having an inclined rear wall, a band formed around the periphery of the carbid delivery wheel, detachably mounted hinge doors secured to said band and extending inwardly toward the center of said carbid delivery wheel, a cam ring supported adjacent said carbid delivery wheel and provided with an outwardly turned end, said cam ring normally fitting against said doors for holding the same in a closed position and allowing one of said doors to open at a time when said door reaches said outwardly bent end of said cam ring.

3. A generator of the class described comprising a carbid delivery wheel comprising a plurality of compartments, each compartment having an inclined rear wall, means for delivering carbid to said compartments, a plurality of hinge doors secured near the periphery of said delivery wheel and extended inwardly toward the center of said carbid delivery wheel, each door provided with an outwardly extending flange, a cam ring supported adjacent said delivery wheel and normally bearing against said flanges of said doors, said ring provided with an outwardly turned end, said ring adapted to normally hold said doors in a closed position by bearing upon said flanges and allowing one of said doors to open at a time when said door reaches said outwardly bent end of said cam ring.

In testimony whereof we hereunto affix our signatures in presence of two witnesses.

ARTHUR D. LONG.
LESLIE D. HARPER.

Witnesses:

RAY ECKERMAN,
B. F. SIMMONS.