No. 837,737. PATENTED DEC. 4, 1906.

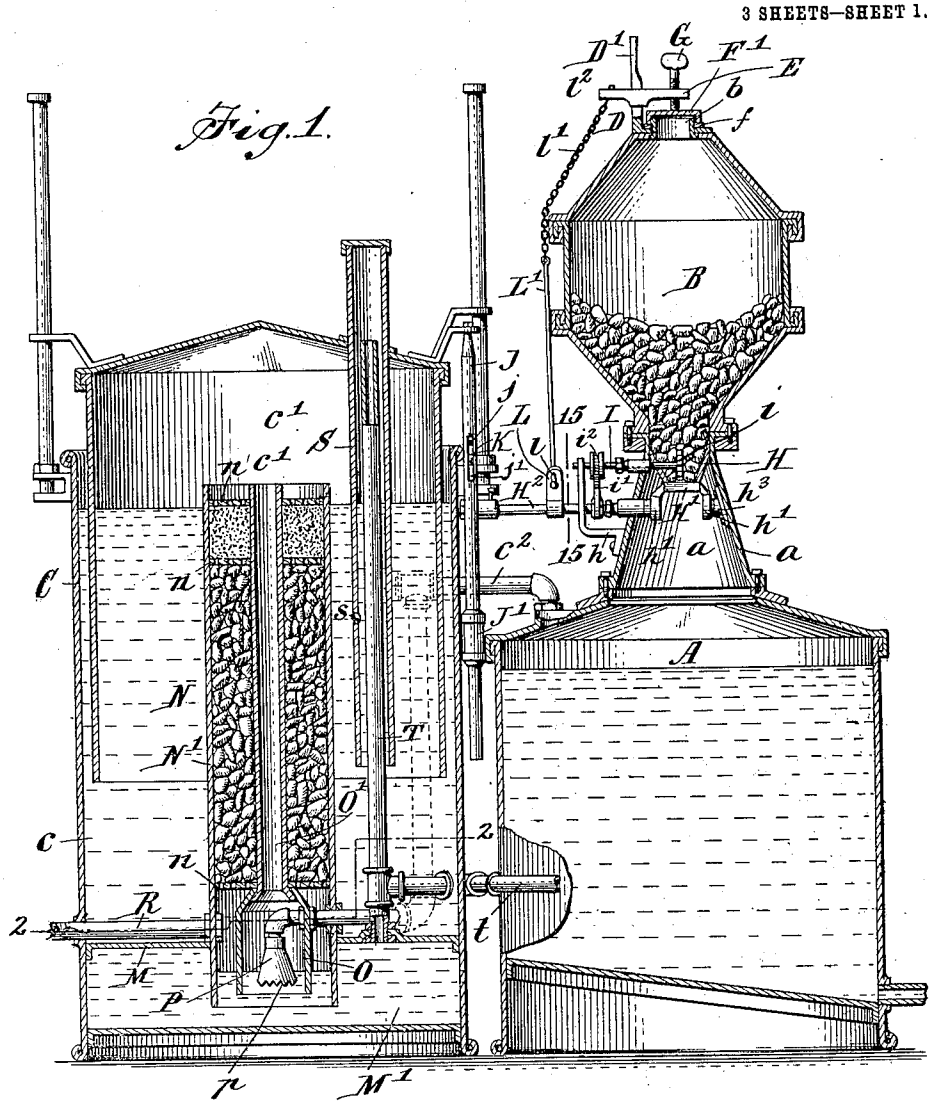
A. E. SCHLIEDER.

ACETYLENE GAS GENERATOR.

APPLICATION FILED OCT. 5, 1904.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

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M. Sewert

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Inventor.

By Neubert & Lankenau Attorneys.

No. 837,737. PATENTED DEC. 4, 1906.

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3 SHEETS—SHEET 2.

Fig. 2.

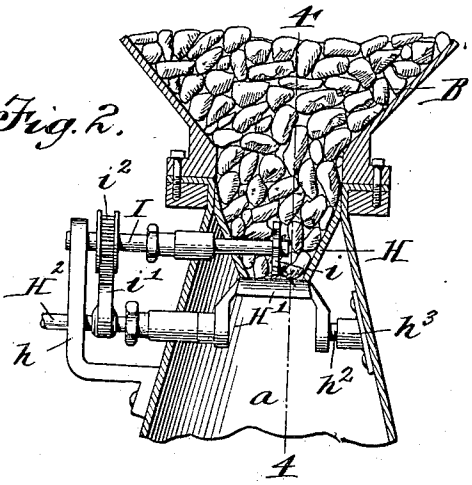


Fig. 4.

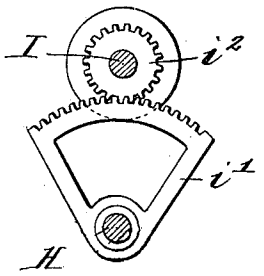


Fig. 3.

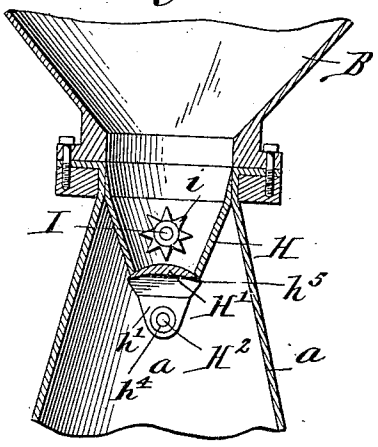


Fig. 6.

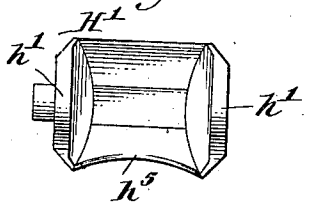


Fig. 7.

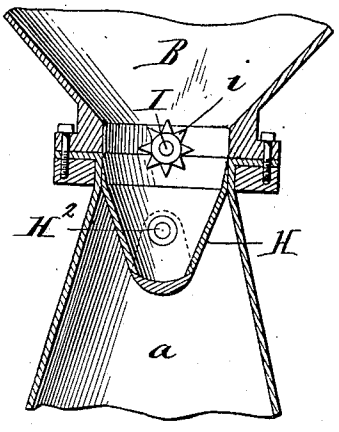
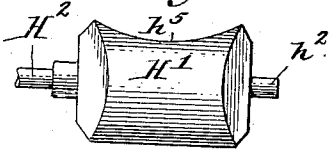


Fig. 5.



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No. 837,737. PATENTED DEC. 4, 1906.

A. E. SCHLIEDER.

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APPLICATION FILED OCT. 5, 1904.

3 SHEETS—SHEET 3.

Fig. 8.

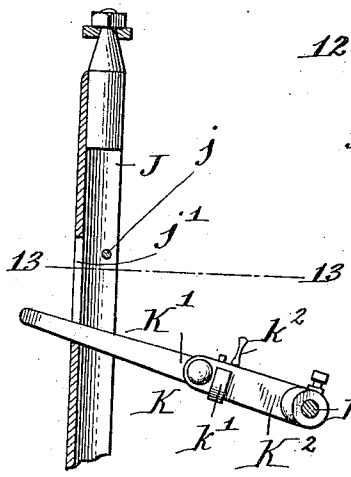


Fig. 9.

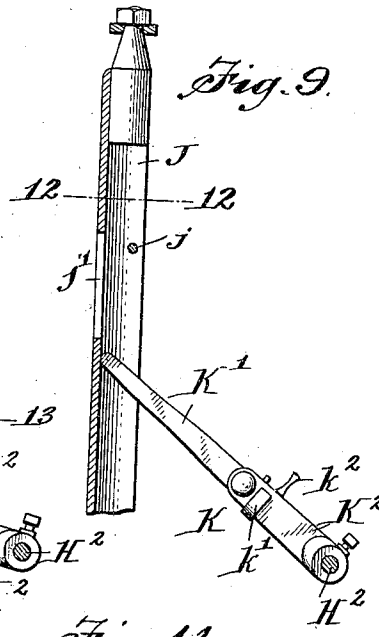


Fig. 10.

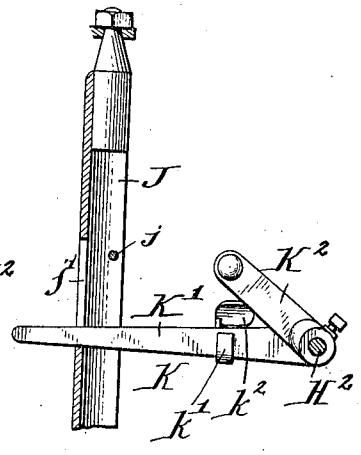


Fig. 11.

Fig. 12.

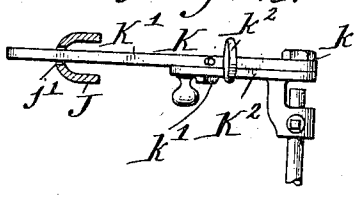


Fig. 13.

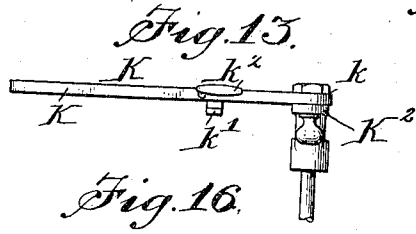


Fig. 14.

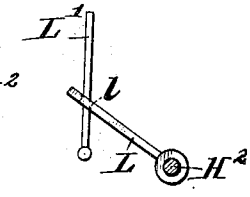


Fig. 16.

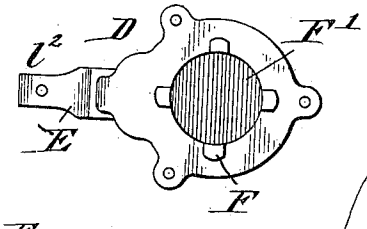


Fig. 15.

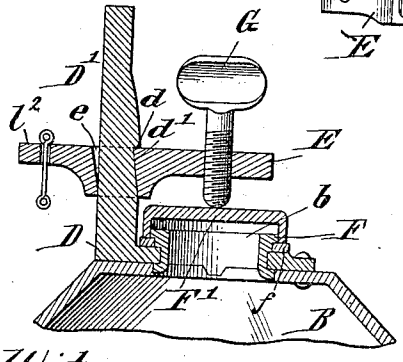
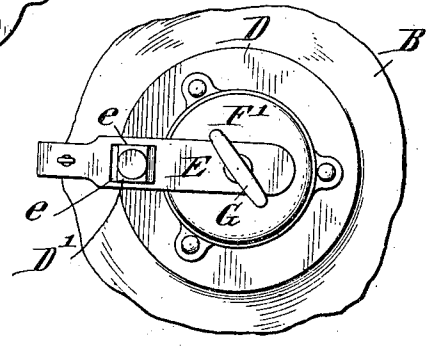


Fig. 17.



Witnesses:

Julius Lenker

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By Neukert & Burkhart Attorneys.

UNITED STATES PATENT OFFICE.

AUGUSTUS E. SCHLIEDER, OF BUFFALO, NEW YORK, ASSIGNOR TO MONARCH ACETYLENE GAS COMPANY, OF OMAHA, NEBRASKA, A CORPORATION OF NEBRASKA.

ACETYLENE-GAS GENERATOR.

No. 837,737. Specification of Letters Patent. Patented Dec. 4, 1906.

Application filed October 5, 1904. Serial No. 227,237.

To all whom it may concern:

Be it known that I, AUGUSTUS E. SCHLIEDER, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, 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 type in which the calcium carbid is automatically fed to the water-receptacle or gas-generator in accordance with the consumption of gas.

The objects of my invention are to provide improved means whereby the refilling of the carbid-receptacle is prevented when the feed opening or outlet thereof is open, to provide a simple and effective agitator for the carbid, and to otherwise improve on gas-generators of this type whereby high efficiency and simplicity and economy of construction and operation are attained.

To these ends the invention consists in the novel construction, arrangement, and combination of parts to be hereinafter described, and particularly pointed out in the subjoined claims.

In the drawings, Figure 1 is a central vertical elevation of my improved generator. Fig. 2 is an enlarged vertical section of the lower end of the carbid-receptacle and the neck or upper portion of the generating-chamber. Fig. 3 is a vertical section taken on line 4 4, Fig. 2. Fig. 4 is a side elevation of the mechanism whereby the carbid-agitator is operated. Fig. 5 is an enlarged top plan view of the carbid-cut-off valve. Fig. 6 is a bottom plan view of the same. Fig. 7 is a view similar to Fig. 3, showing a modified form of cut-off valve. Figs. 8, 9, and 10 are enlarged vertical sections of the controller-rod which governs the opening and closing of the cut-off valve, said rod being shown in connection with the controller-lever and both being shown in different positions. Fig. 11 is a cross-section taken on line 12 12, Fig. 9. Fig. 12 is a horizontal section taken on line 13 13, Fig. 8. Fig. 13 is a top plan view of the valve-controller lever. Fig. 14 is an enlarged section taken on line 15 15, Fig. 1. Fig. 15 is an enlarged vertical section of the upper portion of the carbid-receptacle and the closure therefor. Fig. 16 is a bottom plan view of the closure attached to the upper end of the carbid-receptacle. Fig. 17 is a top plan view of said closure, showing the same secured to the carbid-receptacle.

Referring to the drawings in detail, like letters of reference refer to like parts in the several figures.

The reference-letter A designates the gas-generating chamber, having a gradually-tapering neck *a*, on which the carbid-receptacle B is secured.

C designates the gasometer, which is of the usual type, comprising a suitable fluid or sealing receptacle *c*, containing water, oil, or any other suitable fluid, and a gas bell or holder *c'*, which rises and falls in accordance with the gas-pressure. A gas-supply pipe c^3 connects the gas-generator with the gasometer.

The carbid-receptacle B may be constructed in any suitable manner, but as shown has its upper and lower ends tapered, its upper end being provided with an opening *b* for replenishing the supply of carbid.

A suitable frame D is secured to the upper end of the carbid-receptacle, and formed thereon is a lock-post D', having a notch, as at *d*, to provide an inclined bearing-face *d'* for a lock-bar E, which is provided with an opening *e* between its ends to permit of its being slid over the lock-post and to be held thereon. Secured to the frame D is a bushing F, around which a rubber gasket *f* is placed, and bearing against said gasket is a cover F', by means of which the supply-opening in the carbid-chamber is closed. A thumb-screw G is passed through a threaded opening in the lock-bar and is adapted to be screwed against the cover F' to securely lock the same. When the thumb-screw comes in contact with the said cover, the lock-bar E is elevated, and the upper edge of the opening *e* engages the notch *d*, formed on the lock-post and checks the further movement of the lock-bar, while permitting the screw to lock against the cover.

Held in the upper end of the neck *a* of the generating-chamber is a hopper H, and closing the lower end of said hopper is a cut-off valve H', secured to a rock-shaft H^2, journaled in the neck of the generating-chamber and in a bracket *h*, secured to said neck. The valve H' is provided with a convex valve-

plate having angular ends h', one of which is provided with a stub-shaft h^2, which enters a bearing h^3, secured to the wall of the neck a, and the other end having a socket h^4, into which the rock-shaft H^2 is secured. The cut-off edge h^5 of the valve-plate is curved and sharpened to a knife-edge. By this construction the carbid is fed gradually to the generating-chamber when the valve is being opened, and when the valve is being closed the valve-plate shears the carbid and prevents particles of carbid from lodging between the valve and its seat.

I designates a shaft which is journaled in the bracket h and in the neck a of the generating-chamber, and secured to said shaft is an agitator i in the form of a star-wheel, which loosens the carbid and prevents wedging of the same in the hopper H. The said shaft I is revolved through the medium of a gear-segment i', secured to the rock-shaft H^2, and a pinion i^2, secured to the shaft I, with which said segment is engaged. On the rocking of the rock-shaft the shaft I is revolved.

The gas bell or holder c' has secured thereon a controller-rod J, which is guided in its movement by a guide-bracket J', secured to the fluid-receptacle c. Said rod is by preference formed U shape in cross-section and is provided with a transverse pin j and a vertical slot j', through which a controller-lever K passes at certain times. The said lever is secured to the rock-shaft H^2 and comprises two sections K' K^2, the latter section being secured to said rock-shaft and the section K' being pivotally connected to the section K^2, as at k. The section K' is longer than the section K^2, and the free end thereof coacts with the controller-rod J. This construction permits the cut-off valve to be closed by hand without changing the relation of the section K' to the controller-rod, which is essential when the carbid-receptacle requires replenishing, and the gas bell or holder c' is in such position that through the medium of its attached controller-rod the controller-lever, and the rock-shaft the cut-off valve is opened. Such manipulation prevents the escape of gas from the generating-chamber while refilling the carbid-receptacle, thereby preventing possible explosion. The pivoted section K' of the controller-lever, which has its free end in engagement with the controller-rod, is provided with a stop k', against which the section K^2 is held, and with a lock k^2, by means of which said section K^2 is locked against said stop, thereby locking the two sections together. When thus locked, the controller-bar is operated by the movement of the gas bell or holder, which when filled and elevated to a certain point is positioned relatively to the controller-lever K, as shown in Fig. 10, in which position or when in a more elevated position the cut-off valve is closed. When the gas stored in the gas-bell is being consumed, the said bell and the attached controller-rod drops and the free end of the controller-lever K enters the slot j' in the controller-rod, and as the controller-rod is lowered still further the said lever moves downward with the rod and causes the cut-off valve to be opened, thereby allowing a quantity of carbid to be deposited in the generating-chamber and causing generation of gas, which is led to the gasometer through the pipe c^2.

As shown in Fig. 11, the two sections of the controller-lever are disposed in different directions, the section K' being in proper relation with the gas bell or holder c', while the section K^2 is swung upward and held in such position by the lock k^2. When the parts are thus positioned, the cut-off valve H' is closed, while the remaining coöperating parts retain the positions they assume when the cut-off valve is open, thereby preventing the escape of gas from the generator, while replenishing the supply of carbid. If for any reason the lever K is held against free action and fails to lower with the controller-rod as it enters the slot j' therein, the transverse pin j in said rod will engage the said lever and force the same downward, the weight of the gas-bell c' being sufficient to overcome any binding of the valve-actuating mechanism. By this arrangement the charging of the gas-generator is assured under any condition.

In order that the supply of carbid may not be replenished while the cut-off valve H' is open, I provide means to prevent the opening of the carbid-receptacle unless the cut-off valve is closed. This is accomplished by the use of a lever L, secured to the rock-shaft H^2, and by providing said bar with an aperture l, through which the lower end of a rod L' projects, said rod having its lower end enlarged to prevent its withdrawal through said aperture and having attached to its upper end a chain l', which is secured to the free end l^2 of the lock-bar E. When the rock-shaft H^2 is rocked to open the gas-valve, the lever L is moved downward and in its movement engages the enlarged lower end of the rod L', thereby tightening the chain l' and drawing downward on the free end of the lock-bar E, which prevents the disengagement of said bar from the notch on the lock-bar, and consequently prevents removal of the cover F'.

The fluid-receptacle c is provided with a partition M near its lower end to form a fluid sealing-chamber M', which is filled with water, oil, or any other suitable fluid, and secured in an opening formed centrally in said partition is a filter N of any suitable shape, but herein shown as comprising a cylindrical casing N', extending from a point near the bottom of the chamber M' to within a short

distance of the upper end of the fluid-receptacle *c* and having three perforated partitions *n*, the lower one of which has secured or formed thereon a depending hood O, having its lower edge on a level slightly above the lower edge of the filter-casing N′. Extending from the upper end of said hood centrally through the perforated partition is a gas-conduit O′, which connects said hood with the gas-bell *c*′.

The inlet of the gas-supply pipe c^2 terminates in the hood O and is provided with a flaring open-ended head P, having its lower edge serrated, as at *p*, to permit the gas to pass gradually around the lower end thereof, thence up through the gas-conduit O′ into the gas-bell *c*′. The head P is so positioned that the lower serrated edge thereof is slightly above the lower edge of the hood O, and by thus arranging the said head within the hood O and similarly arranging the hood within the cylindrical filter-casing the lower end of the latter is immersed deeper in the fluid than the lower end of the hood, which, however, is immersed deeper in the fluid than the lower end of the serrated head P. The generated gas passing around the serrated end of the head P rises above the surface of the fluid within the hood O and passes up through the gas-conduit into the gas-bell. In thus sealing the gas-inlet the escape of gas from the gas-bell is prevented, the pressure therein being insufficient to displace the fluid and free the inlet.

Within the filter-casing N′ and surrounding the gas-conduit between the lowest perforated partition and the intermediate perforated partition I interpose charcoal or other suitable material, and between the uppermost partition and the intermediate partition a quantity of batting, cotton waste, or other suitable material is placed.

Entering the filtering-casing N′ between the lowermost perforated partition and the surface of the fluid in the chamber M′ is a gas-supply pipe R, which may be led to any place for use. The gas stored in the gas-bell *c*′ is forced through the filtering material and out through the supply-pipe.

A safety device is provided to allow the escape of excess pressure from the gas-bell, and it comprises a tube S, secured to and carried with the gas-bell *c*′. Said tube is closed at its upper end and is provided with an aperture *s* near its lower end, which is immersed in the fluid in the tank *c*. An escape-pipe T, open at both ends, is secured with its lower end in the partition M and extends up into the tube S, and when the gas is generated excessively the gas-bell *c*′ will be elevated until the aperture *s* in the tube S is brought above the surface of the fluid in the gasometer, which permits the escape of excess generation through said aperture into the escape-pipe and out through a connection *t* thereof, which is led into the open air. The excess generation will also cause displacement of the water in the lower end of the filter-casing and break the seal to permit the escape of gas through the lower end of the filter-casing and out through the lower end of the escape-pipe T into the open air.

In Fig. 8 of the drawings I have shown the valve H′ reversed, in which case the angular extensions thereof lie on opposite sides of the hopper H and the carbid rests on the concaved surface of the valve.

I do not wish to confine myself to the exact construction or arrangement of parts shown, but hold myself at liberty to make such changes as fairly fall within the scope of my invention, limited only by the appended claims construed according to the prior art.

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. In a gas-generator, a carbid-receptacle having a supply-opening, a cover for said opening, a lock-post secured to said receptacle in proximity to said cover and having a notch formed thereon, a lock-bar having an opening therein and being held on said lock-post and adapted to engage said notch, a thumb-screw passing through one end of said lock-bar and bearing against said cover to lock the same, and a chain secured to the other end of said lock-bar, said chain when drawn taut serving to prevent disengagement of said lock-bar from the notch on the lock-post.

2. In a gas-generator, the combination of a carbid-receptacle, a generating-chamber connected with said carbid-receptacle, a gasometer connected with said generating-chamber, a vertically-slotted rod secured to said gasometer and being adapted to rise and fall therewith, a rock-shaft suitably journaled, a valve secured to said rock-shaft and serving to open and close communication between the carbid-receptacle and the generating-chamber, and a lever comprising two sections locked together and being secured to said rock-shaft, said lever being adapted to lie against said slotted rod and at certain times enter the slot therein, and being also adapted to have its sections unlocked to permit the rock-shaft to be rocked manually.

3. In a gas-generator, the combination with a carbid-receptacle, a generating-chamber connected with said carbid-receptacle, and a gasometer connected with said generating-chamber, of a rock-shaft suitably journaled, a valve secured to said rock-shaft and serving to open and close communication between the carbid-receptacle and the generating-chamber, and a lever comprising two sections and actuated by the rise and fall of the gasometer, one of said sections being secured to the rock-shaft and the other section being pivoted to the first-mentioned section coincident with the axis of said rock-shaft.

4. In a gas-generator, the combination with a carbid-receptacle, a generating-chamber connected with said carbid-receptacle, and a gasometer connected with said generating-chamber, of a rock-shaft suitably journaled, a valve secured to said rock-shaft and serving to open and close communication between the carbid-receptacle and the generating-chamber, and a lever comprising two sections normally locked together and actuated by the rise and fall of the gasometer, one of said sections being secured to the rock-shaft and the other section being pivoted to the first-mentioned section coincident with the axis of said rock-shaft.

5. In a gas-generator, the combination with a carbid-receptacle, a generating-chamber connected with said carbid-receptacle, and a gasometer connected with said generating-chamber, of a rock-shaft suitably journaled, a valve secured to said rock-shaft and serving to open and close communication between the carbid-receptacle and the generating-chamber, and a lever comprising two sections and actuated by the rise and fall of the gasometer, one of said sections being secured to the rock-shaft and the other section being pivoted to the first-mentioned section coincident with the axis of said rock-shaft and extending beyond the end of said first-mentioned section, said lever embodying means to permit of locking both sections together.

6. In a gas-generator, the combination with a carbid-receptacle, a generating-chamber connected with said carbid-receptacle, and a gasometer connected with said generating-chamber, of a rock-shaft suitably journaled, a valve secured to said rock-shaft and serving to open and close communication between the carbid-receptacle and the generating-chamber, a lever actuated by the rise and fall of the gasometer and comprising a short section secured to the rock-shaft and a long section pivoted to said short section coincident with the axis of said rock-shaft, and locking means on the long section to lock both sections together.

7. In a gas-generator, the combination with a carbid-receptacle, a generating-chamber connected with said carbid-receptacle, and a gasometer connected with said generating-chamber, of a rock-shaft suitably journaled, a valve secured to said rock-shaft and serving to open and close communication between the carbid-receptacle and the generating-chamber, and a lever actuated by the rise and fall of the gasometer and comprising a part secured to the rock-shaft and a part pivoted to the first part coincident with the axis of the shaft, said lever embodying means to permit of locking both parts together, so that the said valve is actuated during both the rise and fall of the gasometer.

In testimony whereof I have affixed my signature in the presence of two subscribing witnesses.

AUGUSTUS E. SCHLIEDER.

Witnesses:

BERT MASON,

EDWIN MAIER.