J. K. RUSH.

FEEDING DEVICE FOR ACETYLENE GENERATORS.

APPLICATION FILED APR. 27, 1906.

908,700. Patented Jan. 5, 1909.

2 SHEETS—SHEET 1.

FIG. 1.

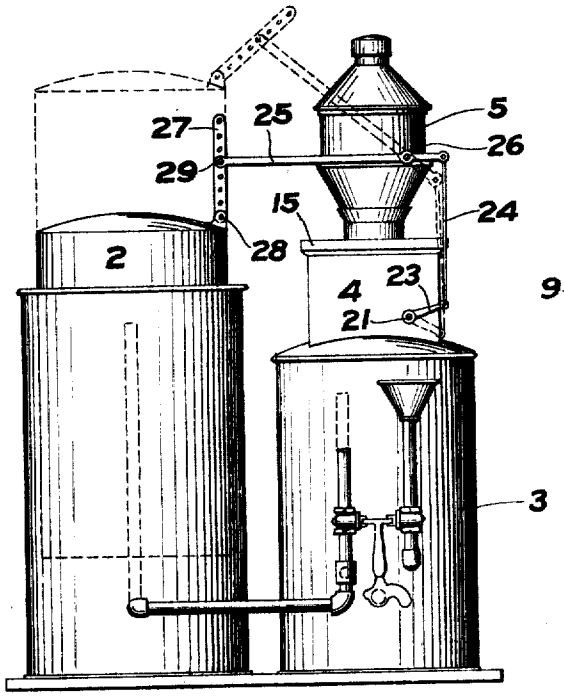


FIG. 4.

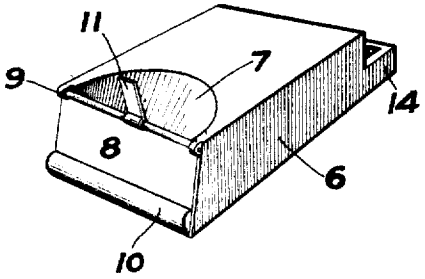


FIG. 2.

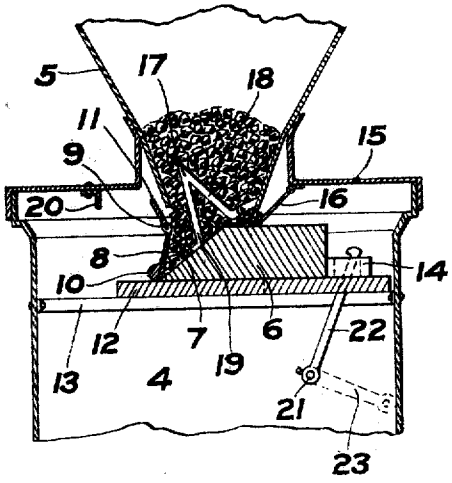
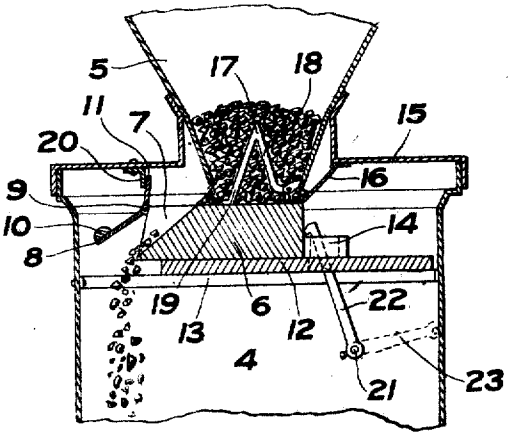


FIG. 3.



WITNESSES:

Clarence W Carroll

L. Gurnee.

INVENTOR:

Joseph K. Rush

by Osgood & Davis

his attys

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2 SHEETS—SHEET 2.

FIG. 5.

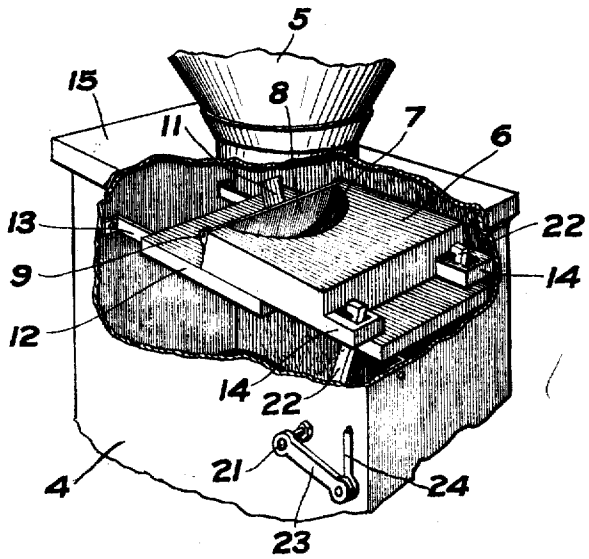
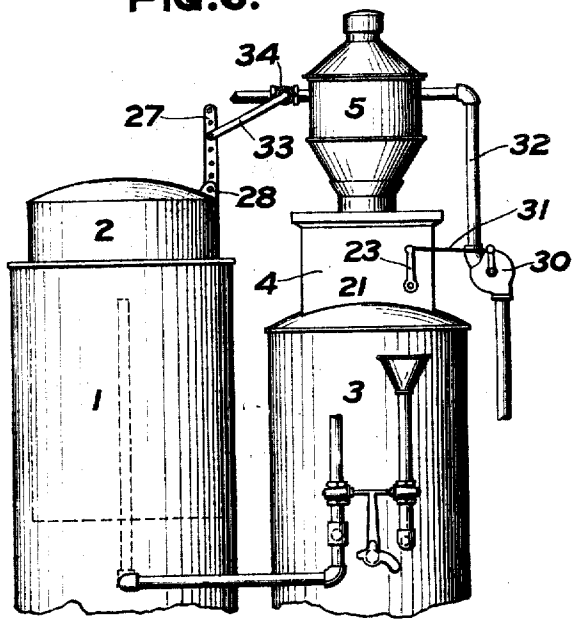


FIG. 6.



WITNESSES:

Clarence W. Carroll.

M. Gurnee.

INVENTOR:

Joseph K. Rush

by Osgood & Davis his attys

UNITED STATES PATENT OFFICE.

JOSEPH K. RUSH, OF CANANDAIGUA, NEW YORK.

FEEDING DEVICE FOR ACETYLENE-GENERATORS.

No. 908,700. Specification of Letters Patent. Patented Jan. 5, 1909.

Application filed April 27, 1906. Serial No. 313,946.

To all whom it may concern:

Be it known that I, JOSEPH K. RUSH, a citizen of the United States, and resident of Canandaigua, in the county of Ontario and State of New York, have invented certain new and useful Improvements in Feeding Devices for Acetylene-Generators, of which the following is a specification.

This invention relates to feeding devices for acetylene generators, and particularly to the type in which the generator is separate from the gas holder.

The invention consists in means for delivering measured charges of calcium carbid to the body of water in the generator, and to other features that will be described.

The object of the invention is to provide a safe and accurately controllable feeding device for the carbid.

In the drawings:—Figure 1 is an elevation of a device embodying this invention; Fig. 2 is a vertical section through the bottom of the hopper and through the feeding device, when the feeding device is receiving its charge of carbid from the hopper; Fig. 3 is a vertical section on the same line as Fig. 2, showing the parts in the discharging position; Fig. 4 is a perspective view of the slide of the feeding device; Fig. 5 is a perspective view of the feeding device in its casing, parts being broken away to exhibit construction; and Fig. 6 is an elevation of an acetylene gas apparatus, embodying a modified form of the same invention.

The embodiment of this invention disclosed in the drawings accompanying this specification shows a gas holder 1 having a rising and falling bell 2 connected in a suitable manner with a separate generator 3, which is adapted to contain a body of water, into which calcium carbid is delivered for the production of the acetylene gas. It is important to deliver the carbid in definitely measured charges, with a frequency dependent upon the consumption of the acetylene gas, and it is further important that the measuring mechanism for the charges of the carbid shall not be capable of opening a discharge passage from the hopper or reservoir for carbid, to permit a continuous stream of carbid to flow out therefrom.

In the drawings, above the generator 3 is the casing 4 on top of which is placed the hopper or reservoir 5 for containing a quantity of carbid sufficient to permit the continuous production of acetylene for any desired number of hours. The hopper preferably has its lower portion of an inverted conical form, so as to guide the carbid to the desired point. Underneath the hopper is the charge measure, consisting of the block 6 having at one end the pocket 7, which is open on top and has an inclined bottom. On the end of the block is the gate 8, pivoted at 9 near the upper edge of the block, and having a suitable weight 10 at its lower edge to keep the gate closed. A lever or trip finger 11 projects above the pivotal line of the gate. The weight 10 is heavy enough to keep the gate closed, when the charge of carbid is in the cup or pocket 7. The block 6 has a plane lower face, and slides upon a shelf 12 supported in any suitable manner inside the casing 4, and preferably upon supports 13. The block 6 has also a flat or plane upper face, and ears 14 project from the rear end of said block for a purpose to be described.

Preferably the top 15 of the casing 4 is removable in order to give access to and permit removal of the slide and its support the plate or body 12. To the top 15 is pivoted a scraper 16, whose lower edge rests upon the top of the block 6, and is adapted to make close contact therewith at a point back of the rear edge of the pocket 7, when the parts are in the position shown in Fig. 2. The inclination of the scraper 16 is such as to maintain this close contact, and when the block 6 is moved from one of its positions to the other, said scraper prevents the carbid from flowing toward the back end of the block or slide 6.

An agitator is provided for moving the carbid in the bottom of the hopper 5, so as to prevent "bridging" and an improper flow thereof. In the present case, the agitator is a V-shaped bar 17, with the apex of the V upward, and which is pivoted at the extremity of one leg 18 to the lower edge of hopper 5, or to any other suitable part of the apparatus. The other leg 19 is adapted to descend into the pocket 7, when the slide is reciprocated in the position shown in Fig. 2, and thus to tilt the apex of the agitator, but when the slide is moved into the position shown in Fig. 3 the extremity of the free leg slides on the inclined bottom of the apex 7 and then upon the top of the slide 6, as shown in Fig. 3. Thus at each reciprocation of the slide 6, the

agitator moves to stir the carbid in the bottom of the hopper.

The casing 4 is preferably rectangular, and the bed plate 12 extends from one side thereof to the other, and the slide or block 6 also extends from one side thereof to the other. The bed plate 12 is shorter than the length of the casing 4, as shown in Figs. 2 and 3, so that the carbid may fall through and into the body of the water underneath.

To a suitable part of the casing is fastened a lug 20, which is engaged by the trip finger 11 of the gate 8 when the slide reaches a discharging position, as shown in Fig. 3, and this opens the gate 8. In the present case, the lug 20 is fastened to the top 15 of the casing 4.

Suitable means are provided for operating or reciprocating the slide or block 6. In the present case, they consist of a shaft 21 pivoted transversely in the casing and having one or more arms 22, which pass upward through the bed plate 12 and engage the sliding block 6, so that as the shaft 21 is rocked, the slide or block 6 is reciprocated. In the present case, the lugs 14 are perforated and the arms 22 pass through the said perforations.

In order to operate the shaft 21 a crank 23 is provided outside the casing 4, which is connected in suitable manner to be rocked by the movement of the bell 2 of the gas holder, so that when the gas is exhausted to a suitable degree a new charge of carbid will be delivered into the water into the generator 3, and when the gas has accumulated in the bell to a desired degree, the carbid feeding apparatus is reset to take a new charge of carbid ready for delivery upon the movement of the bell above mentioned, after exhaustion of gas to the desired degree from the gas holder. In the present case, a crank 23 is connected by a link 24 to a lever 25 pivoted between its ends at 26 to a suitable stationary support, such as the hopper 5, and at the end opposite the connection of the link 24, the said lever is connected to the bell 2.

In order to adjust and to vary the adjustment of the movement of the bell, with reference to the discharge of carbid, I provide a variable connection between the lever 25 and the bell 2, such as the link 27 having a series of perforations therethrough, pivoted at 28 at one end to the bell. A pin or pivot 29 serves to connect the free end of the lever 25 with any one of the perforations of said series. According as the lever 25 is connected with the link 27 nearer to its pivot 28, so much the more quickly will the slide 6 discharge its carbid, because the shorter will be its stroke and the sooner will the exhaustion of the bell operate said slide after the delivery of the charge of carbid from said slide.

In Fig. 6 is shown another operating device for the charge delivering apparatus. Instead of operating the crank 23 on the shaft 21 by a lever connected to the bell 2, a water motor 30 may be employed having a link connection 31 to said crank 23, whereby when a stream of water flows through the inlet pipe 32 to said water motor, the slide 6 will be caused to reciprocate. In order to cause the motor to be operated when the supply of gas is exhausted from the bell to the desired degree, and also to shut off and stop the motor when the bell is filled to the desired degree, the link 27 pivoted to the bell 2 at 28 is employed, and said link is connected to an arm 33 adapted to open and close a valve 34 in the inlet connection to the motor. The valve is so set that when the bell is exhausted to the predetermined degree, the valve will open, and when the bell 2 is filled to the predetermined degree, the motor is stopped.

What I claim is:—

1. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide under said discharge orifice having a pocket therein and a portion adapted to stop flow from said hopper, a gate on the slide through which the contents of said pocket may be discharged, means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for opening said gate when said pocket has been moved from under said discharge orifice, and means for reciprocating said slide.

2. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide under said discharge orifice and having a pocket therein and a portion adapted to stop flow from said hopper, a gate pivoted to said slide for closing one side of said pocket, means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for opening said gate when said pocket has been moved from under said discharge orifice, and means for reciprocating said slide.

3. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide under said discharge orifice having a pocket therein, a flat top adapted to stop flow from said hopper when under said discharge orifice, a gate on the slide through which the contents of said pocket may be discharged means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for opening said gate when said flat top is under said discharge orifice, and means for reciprocating said slide.

4. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide under said discharge orifice having a pocket therein and a flat top adapted to stop flow from said hopper, a pivoted gate on the slide adapted to close one side of said pocket,

means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for opening said gate when said flat top is under said discharge orifice, and means for reciprocating said slide.

5. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide under said discharge orifice having a pocket at one end thereof, a gate on the slide through which the contents of said pocket may be discharged, means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for opening said gate when said pocket has been moved from under said discharge orifice, means for stopping flow from said hopper when said pocket has been moved from under said discharge orifice, and means for reciprocating said slide.

6. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide having a pocket therein, a gate on the slide through which the contents of said pocket may be discharged, means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for stopping flow from said hopper when said pocket has been moved from under said discharge orifice, means for opening said gate when said pocket has been moved from under said discharge orifice, and means for reciprocating said slide.

7. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide having at one end a pocket provided with an inclined bottom, a gate on the slide closing said pocket and through which the contents thereof may be discharged, means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for opening said gate when said pocket has been moved from under said discharge orifice, means for stopping flow from said hopper when said pocket has been moved from under said discharge orifice, and means for reciprocating said slide.

8. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide under said discharge orifice having a pocket therein, and a portion adapted to stop flow from said hopper, a gate on the slide through which the contents of said pocket may be discharged, means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for opening said gate when said pocket has been moved from under said discharge orifice, a gas holder, and means controlled by the increase and decrease of gas in the gas holder for reciprocating said slide.

9. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide under said discharge orifice and having a pocket therein and a portion adapted to stop flow from said hopper, a gate pivoted to said slide for closing one side of said pocket, means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for opening said gate when said pocket has been moved from under said discharge orifice, a gas holder, and means controlled by the increase and decrease of gas in the gas holder for reciprocating said slide.

10. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide under said discharge orifice having a pocket therein, a flat top adapted to stop flow from said hopper when under said discharge orifice, a gate on the slide through which the contents of said pocket may be discharged means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for opening said gate when said flat top is under said discharge orifice, a gas holder, and means controlled by the increase and decrease of gas in the gas holder for reciprocating said slide.

11. In an acteylene generator, a tank for water, a hopper having a discharge orifice, a slide under said discharge orifice having a pocket therein, and a flat top adapted to stop flow from said hopper, a pivoted gate on the slide adapted to close one side of said pocket, means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for opening said gate when said flat top is under said discharge orifice, a gas holder, and means controlled by the increase and decrease of gas in the gas holder for reciprocating said slide.

12. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide under said discharge orifice having a pocket at one end thereof, a gate on the slide through which the contents of said pocket may be discharged, means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for opening said gate when said pocket has been moved from under said discharge orifice, means for stopping flow from said hopper when said pocket has been moved from under said discharge orifice, a gas holder, and means controlled by the increase and decrease of gas in the gas holder for reciprocating said slide.

13. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide having a pocket therein, a gate on the slide through which the contents of said pocket may be discharged, means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for stopping flow from said hopper when said pocket has been moved from under said discharge orifice, means for opening said gate when said pocket has been moved from

under said discharge orifice, a gas holder, and means controlled by the increase and decrease of gas in the gas holder for reciprocating said slide.

14. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide having at one end a pocket provided with an inclined bottom, a gate on the slide closing said pocket and through which the contents thereof may be discharged, means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for opening said gate when said pocket has been moved from under said discharge orifice, means for stopping flow from said hopper when said pocket has been moved from under said discharge orifice, a gas holder, and means controlled by the increase and decrease of gas in the gas holder for reciprocating said slide.

15. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide under said discharge orifice having a pocket therein and a portion adapted to stop flow from said hopper, a gate on the slide through which the contents of said pocket may be discharged, means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for opening said gate when said pocket has been moved from under said discharge orifice, a gas holder having a rising and falling bell, and means for reciprocating said slide in correspondence with the falling and exhaustion of said gas holder.

16. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide under said discharge orifice and having a pocket therein and a portion adapted to stop flow from said hopper, a gate pivoted to said slide for closing one side of said pocket, means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for opening said gate when said pocket has been moved from under said discharge orifice, a gas holder having a rising and falling bell, and means for reciprocating said slide in correspondence with the falling and exhaustion of said gas holder.

17. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide under said discharge orifice having a pocket therein, a flat top adapted to stop flow from said hopper when under said discharge orifice, a gate on the slide through which the contents of said pocket may be discharged means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for opening said gate when said flat top is under said discharge orifice, a gas holder having a rising and falling bell, and means for reciprocating said slide in correspondence with the falling and exhaustion of said gas holder.

18. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide under said discharge orifice having a pocket therein and a flat top adapted to stop flow from said hopper, a pivoted gate on the slide adapted to close one side of said pocket, means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for opening said gate when said flat top is under said discharge orifice, a gas holder having a rising and falling bell, and means for reciprocating said slide in correspondence with the falling and exhaustion of said gas holder.

19. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide under said discharge orifice having a pocket at one end thereof, a gate on the slide through which the contents of said pocket may be discharged, means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for opening said gate when said pocket has been moved from under said discharge orifice, means for stopping flow from said hopper when said pocket has been moved from under said discharge orifice, a gas holder having a rising and falling bell, and means for reciprocating said slide in correspondence with the falling and exhaustion of said gas holder.

20. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide having a pocket therein, a gate on the slide through which the contents of said pocket may be discharged, means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for stopping flow from said hopper when said pocket has been moved from under said discharge orifice, means for opening said gate when said pocket has been moved from under said discharge orifice, a gas holder having a rising and falling bell, and means for reciprocating said slide in correspondence with the falling and exhaustion of said gas holder.

21. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide having at one end a pocket provided with an inclined bottom, a gate on the slide closing said pocket and through which the contents thereof may be discharged, means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for opening said gate when said pocket has been moved from under said discharge orifice, means for stopping flow from said hopper when said pocket has been moved from under said discharge orifice, a gas holder having a rising and falling bell, and means for reciprocating said slide in

correspondence with the falling and exhaustion of said gas holder.

22. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide under said discharge orifice having a pocket therein and a portion adapted to stop flow from said hopper, a gate through which the contents of said pocket may be discharged, means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for opening said gate when said pocket has been moved from under said discharge orifice, gas holder having a rising and falling bell, a link pivoted to said gas holder, a lever adapted to be connected to different points along said link, and connections from said lever to said slide for reciprocating the latter.

23. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide under said discharge orifice and having a pocket therein and a portion adapted to stop flow from said hopper, a gate pivoted to said slide for closing one side of said pocket, means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for opening said gate when said pocket has been moved from under said discharge orifice, a gas holder having a rising and falling bell, a link pivoted to said gas holder, a lever adapted to be connected to different points along said link, and connections from said lever to said slide for reciprocating the latter.

24. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide under said discharge orifice having a pocket therein, a flat top adapted to stop flow from said hopper when under said discharge orifice, a gate through which the contents of said pocket may be discharged means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for opening said gate when said flat top is under said discharge orifice, a gas holder having a rising and falling bell, a link pivoted to said gas holder, a lever adapted to be connected to different points along said link, and connections from said lever to said slide for reciprocating the latter.

25. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide under said discharge orifice having a pocket therein and a flat top adapted to stop flow from said hopper, a pivoted gate adapted to close one side of said pocket, means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for opening said gate when said flat top is under said discharge orifice, a gas holder having a rising and falling bell, a link pivoted to said gas holder, a lever adapted to be connected to different points along said link, and connections from said lever to said slide for reciprocating the latter.

26. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide under said discharge orifice having a pocket at one end thereof, a gate through which the contents of said pocket may be discharged, means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for opening said gate when said pocket has been moved from under said discharge orifice, means for stopping flow from said hopper when said pocket has been moved from under said discharge orifice, a gas holder having a rising and falling bell, a link pivoted to said gas holder, a lever adapted to be connected to different points along said link, and connections from said lever to said slide for reciprocating the latter.

27. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide having a pocket therein, a gate through which the contents of said pocket may be discharged, means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for stopping flow from said hopper when said pocket has been moved from under said discharge orifice, means for opening said gate when said pocket has been moved from under said discharge orifice, a gas holder having a rising and falling bell, a link pivoted to said gas holder, a lever adapted to be connected to different points along said link, and connections from said lever to said slide for reciprocating the latter.

28. In an acetylene generator, a tank for water, a hopper having a discharge orifice, a slide having at one end a pocket provided with an inclined bottom, a gate closing said pocket and through which the contents thereof may be discharged, means for reciprocating said slide to move said pocket under and from under said discharge orifice, means for opening said gate when said pocket has been moved from under said discharge orifice, means for stopping flow from said hopper when said pocket has been moved from under said discharge orifice, a gas holder having a rising and falling bell, a link pivoted to said gas holder, a lever adapted to be connected to different points along said link, and connections from said lever to said slide for reciprocating the latter.

29. In a device for feeding carbid to a body of water, a hopper having a discharge orifice, a slide reciprocating under said hopper for delivering charges from said hopper to said water, and a vibrating stirrer having a stationary abutment and projecting into said orifice, and an arm adapted to move into the path of said slide whereby at each

movement of said slide in one direction the carbid in said discharge orifice is stirred.

30. In a device for feeding carbid to a body of water, a hopper having a discharge orifice, a slide reciprocating under said discharge orifice, and a stirrer supported on the hopper and projecting into said orifice and having an arm adapted to move into and out of the path of said slide for actuating said stirrer.

31. In a device for feeding carbid to a body of water, a hopper having a discharge orifice, a slide reciprocating under said discharge orifice, a scraper having a stationary pivotal support adapted to make contact with the top of said slide whereby material is scraped from said slide and said material is prevented from passing said scraper, and a stirrer supported on said hopper and projecting into said orifice and having an arm adapted to move into and out of the path of said slide for actuating said stirrer.

32. In a device for feeding carbid to a body of water, a hopper having a discharge orifice, a stationary shelf under said orifice, a slide reciprocating upon said shelf and under said discharge orifice, and a stirrer having a stationary pivotal support and an arm adapted to move into and out of the path of said slide for actuating said stirrer.

33. In a device for feeding carbid to a body of water, a hopper having a discharge orifice, a stationary shelf under said orifice, a slide reciprocating upon said shelf and under said discharge orifice and having an inclined end, and a stirrer having a stationary pivotal support and an arm adapted to move on said inclined end for actuating said stirrer.

J. K. RUSH.

Witnesses:
D. GURNEE,
H. L. OSGOOD.