C. W. BECK.

ACETYLENE GAS GENERATOR.

APPLICATION FILED FEB. 17, 1908.

1,033,863.

Patented July 30, 1912.

3 SHEETS—SHEET 1.

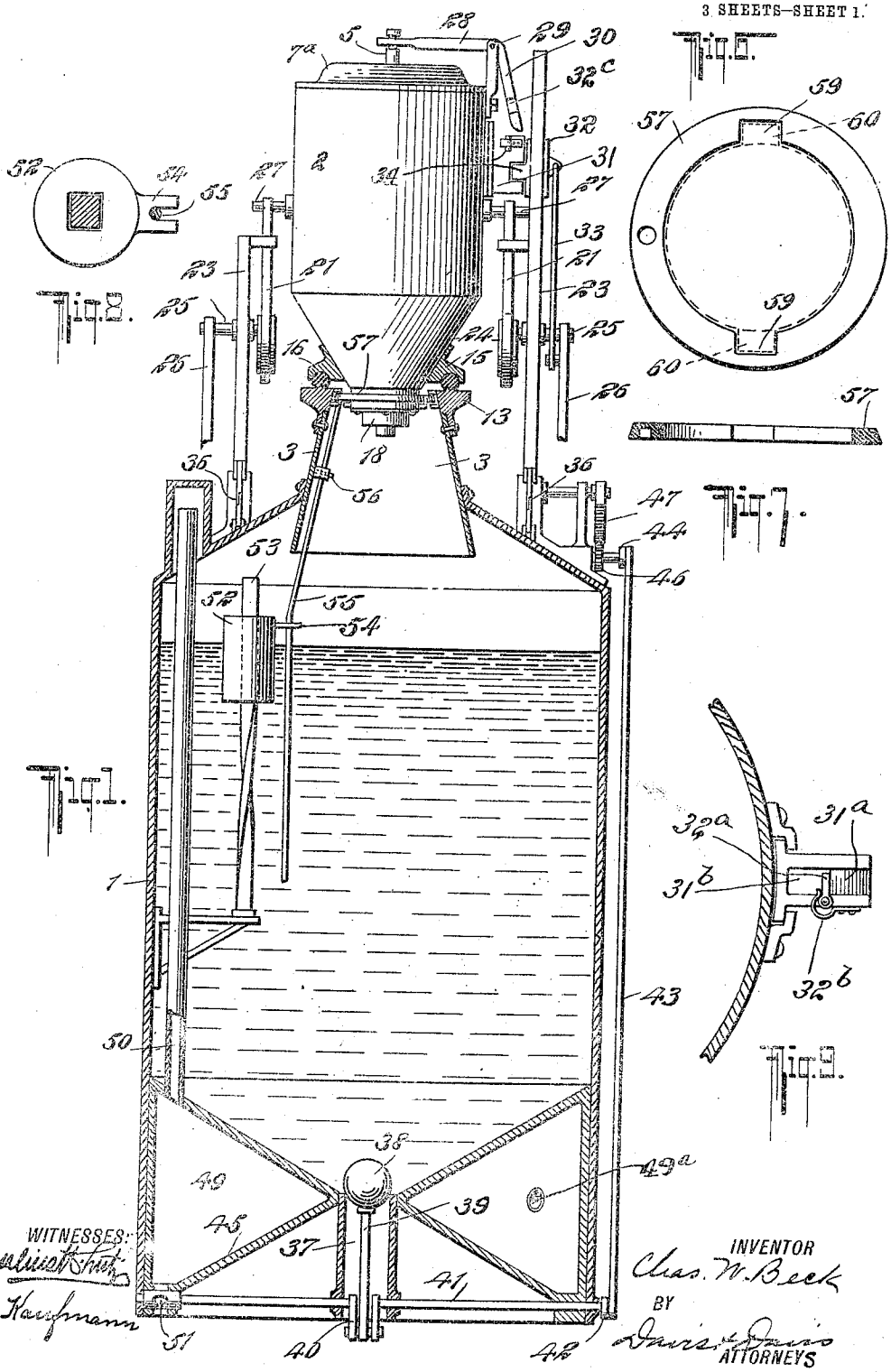

Fig. 1.

Fig. 2.

Fig. 6.

Fig. 7.

Fig. 8.

WITNESSES:

Julius A. Finch

E. Kaufmann

INVENTOR

Chas. W. Beck

BY

Davis & Davis

ATTORNEYS

C. W. BECK.

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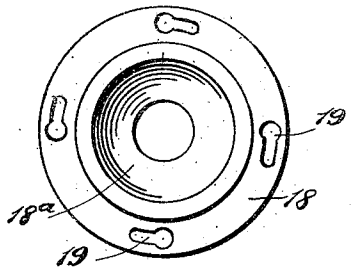

Fig. 4.

Fig. 2.

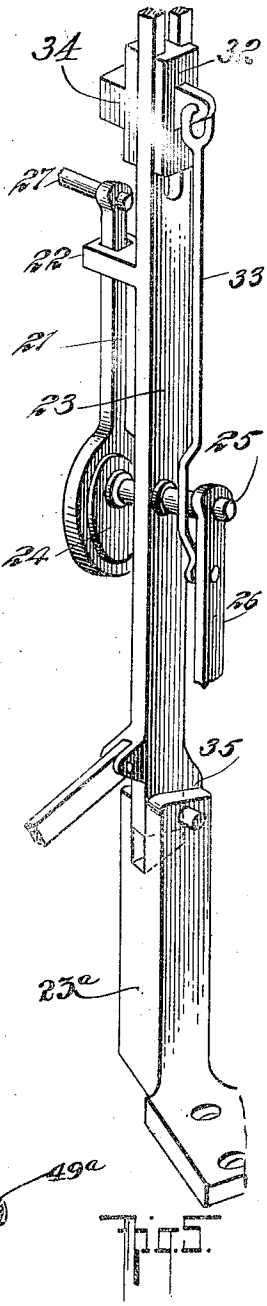

Fig. 3.

WITNESSES:

Julius H. Smith

E. Kaufmann

INVENTOR

Chas. W. Beck

BY

Davis & Davis

ATTORNEYS

C. W. BECK.

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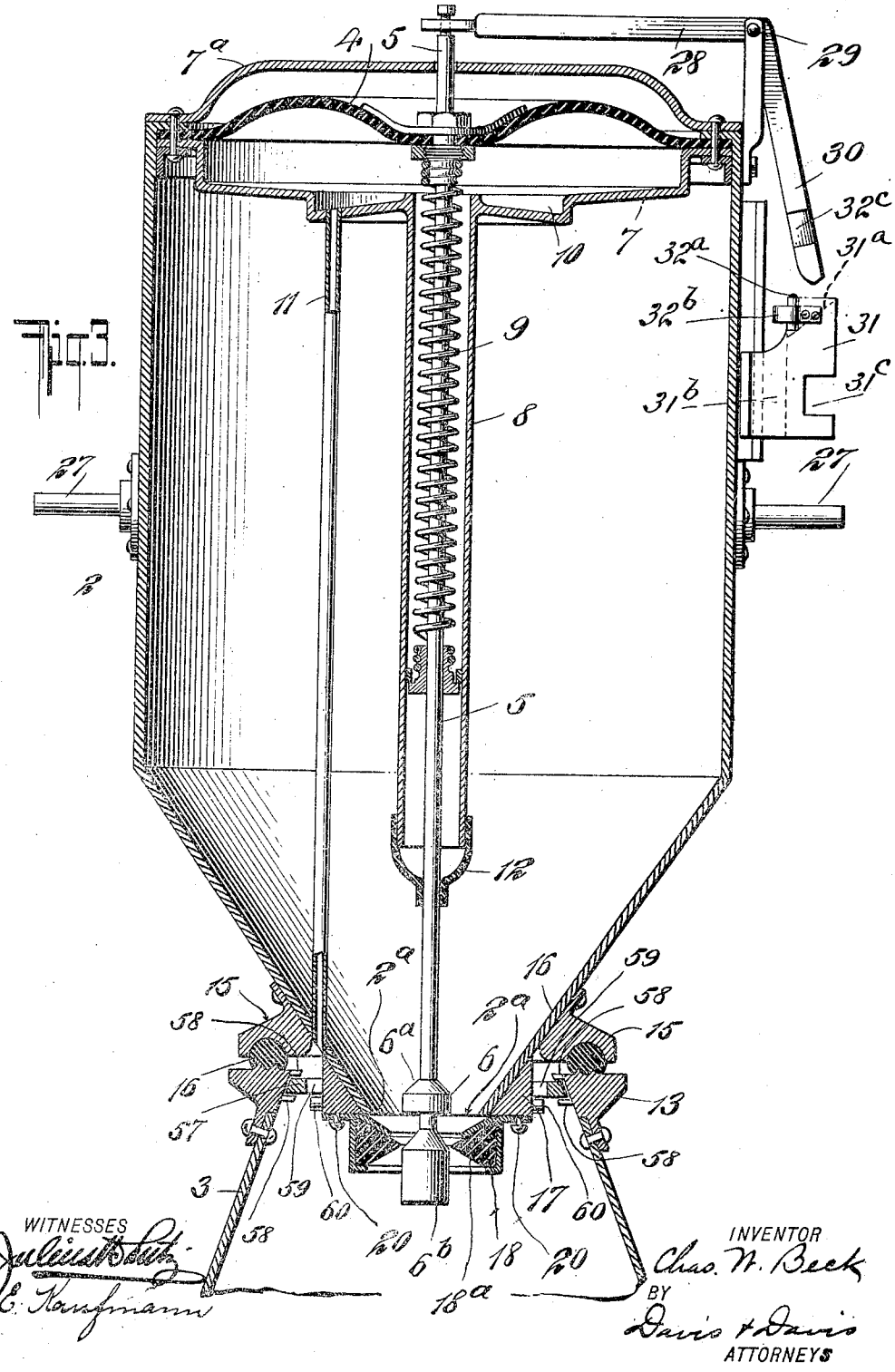
3 SHEETS—SHEET 3.

Fig. 3.



WITNESSES

Julius Bleibtreu

E. Kaufmann

INVENTOR

Chas. W. Beck

BY

Davis & Davis

ATTORNEYS

UNITED STATES PATENT OFFICE.

CHARLES W. BECK, OF ROCKVILLE CENTER, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO OXWELD ACETYLENE COMPANY, A CORPORATION OF WEST VIRGINIA.

ACETYLENE-GAS GENERATOR.

1,033,863. Specification of Letters Patent. Patented July 30, 1912.

Application filed February 17, 1908. Serial No. 416,252.

To all whom it may concern:

Be it known that I, CHARLES W. BECK, a citizen of the United States, residing at Rockville Center, county of Nassau, and State of New York, have invented certain new and useful Improvements in Acetylene-Gas Generators, of which the following is a specification, reference being had therein to the accompanying drawings, in which—

Figure 1 is a vertical sectional view of my improved generator, the carbid holder being shown in side elevation; Fig. 2 a side elevation of the generator; Fig. 3 a vertical sectional view of the carbid holder showing its connection with the water holder; Fig. 4 a plan view of the detachable valve seat casing; Fig. 5 a detail perspective view of the means for moving the carbid holder away from the water holder and for supporting the carbid holder; Fig. 6 a detail plan view of the guard ring; Fig. 7 a transverse sectional view of the guard ring; Fig. 8 a detail of the float; and Fig. 9, a detail view of the locking dog.

This invention relates to improvements in carbid feed acetylene gas generators wherein carbid is fed to water in response to changes or variations in gas pressure or volume.

One of the main objects of the invention is to provide such a generator wherein the charging device will be entirely dispensed with and the carbid holder permanently sealed except, of course, as the said carbid holder may be in communication with the water holder and the generating chamber.

As carbid feed acetylene gas generators have been heretofore constructed the carbid holder was provided with a charging device which permitted the carbid holder to be charged with carbid. This charging device usually was only a cap or other detachable closure means for sealing a charging opening formed in the top or upper part of the carbid holder. Charging devices of this character are a source of great danger, and many devices have been designed to lock said so called charging devices closed during the operation of the generator and to prevent the opening of said charging devices except under proper conditions. There is also great danger of gas leakage because of the improper fitting of the external caps or charging devices. To avoid these objections and difficulties I have designed a generator in which the external charging device or cap is entirely dispensed with. This enables me to completely and permanently seal the carbid holder except of course, as the same may be in communication with the generating chamber and water holder. By this means I avoid the necessity of locking the carbid charging device, and avoid all danger of gas leakage through said device.

A further object of the invention is to provide a generator wherein the carbid holder must be completely detached from the generating chamber and water holder before it may be recharged. I prefer to so form my carbid holder that it may be charged through its bottom, and to so place the charging opening that the carbid holder will be sealed and the charging opening entirely inclosed when the carbid holder is connected to the water holder or generating chamber, whereby the carbid holder must be detached from the water holder before it can be recharged. By this means I prevent the feeding of carbid during the operation of recharging the carbid holder and provide an opening through which fresh water may be introduced into the water holder, whereby the generating chamber and water holder and carbid holder may be entirely sealed except for the one opening through which the carbid is fed and by which the two parts of the generator are placed in communication with each other. It is obvious that this reduces the danger of gas leakage to a minimum and prevents the recharging of the apparatus with either carbid or water when the feed mechanism is in operative position.

A further object of the invention is to provide means whereby when the carbid holder and the water holder are disconnected from each other and the water holder has been emptied the two holders cannot be connected together until the water holder has been properly charged with water to a predetermined level. The advantages of this feature of my invention are obvious.

Another object of the invention is to provide means for controlling the flush-out valve whereby the water holder must be discharged or emptied each time the carbid holder is being recharged, said flush-out valve being closed before the carbid holder can be reconnected to the water holder. The

purpose of this is to force the cleaning of the residuum from the water holder every time the carbid holder is recharged.

There are other objects of the invention which are of importance and which will be more fully hereinafter set forth.

Referring to the various parts by numerals, 1 designates the water holder, the upper part of which constitutes a generating chamber; and 2 the carbid holder. To the upper part of the water holder is secured a downwardly enlarging neck 3 which constitutes a feed chute and condenser through which carbid is fed from the carbid holder and through which water is introduced into the water holder when charging the apparatus.

The inner wall of the feed chute constitutes a condensing surface on which the moisture from the gas will be condensed when the gas contacts therewith. The outer surface of this feed chute below the top of the water holder also constitutes a condensing surface on which moisture carried by the gas will be condensed. The lower end of the feed chute extends a suitable distance down into the water holder and below the top wall thereof so that the condensed moisture will be led by said wall to a point within the water holder and below the top wall thereof. This downwardly projecting portion of the feed chute also serves as a protector and prevents, to some extent, water splashing upward to the feed valve.

The lower end of the carbid holder is detachably connected to the upper contracted end of the feed chute by means which are readily separable and which will be more fully hereinafter described. In the bottom of the carbid holder and below its connection with the neck 3 so that it will be entirely inclosed within the generator when the two parts are connected together is a feeding and discharging opening 2^a. This feed opening constitutes also a charging opening whereby carbid is charged into the carbid holder when the two parts of the apparatus are disconnected and the carbid holder is inverted. Except for this feeding and charging opening the carbid holder is hermetically sealed above the joint ring whereby access to its interior can be had only by disconnecting the carbid holder from the water holder and then inverting the carbid holder. This is a very important feature of my invention. In the drawings I have shown a carbid holder formed with a single feeding and charging opening 2^a, said opening being a feeding opening when the generator is in operation and a charging opening when the carbid holder is detached from the water holder and inverted. It will be readily understood, however, that in generators of large size it may be desirable to have a charging opening in addition to the feeding opening so that the feed valve need not be displaced each time the carbid holder is recharged. In this case, however, the charging opening will be formed below the connecting ring and in such a position that it will be entirely inclosed within the generating chamber when the two parts of the generator are connected together.

Across the top of the carbid holder is secured a flexible diaphragm 4 to the center of which is connected the stem 5 of the feed valve 6. Below the diaphragm is secured a rigid wall 7; and above the diaphragm is a protecting wall 7^a. These walls inclose the diaphragm and limit its movements in response to changes in gas pressure, the upper wall 7^a protecting it when it is raised by gas pressure, and the lower wall 7 supporting it when the gas pressure is reduced and the diaphragm is depressed. To the center of the lower wall 7 is connected a central depending tubular housing or protector 8 through which the valve stem 5 extends and by which said stem is protected from the carbid. Within this housing is arranged a coil spring 9, one end of which is secured to the valve stem, or to the diaphragm, its other end being connected to the housing near the lower end thereof, this spring normally holds the diaphragm and the valve connected thereto depressed, or in their lower positions. The wall 7 is depressed around the upper end of the housing 8 to form a condensation well 10. This well is connected to the gas space below the carbid holder by a pipe 11. Gas from the generating chamber will flow freely through said pipe to the chamber below the diaphragm so that the gas pressure in the generating chamber and the chamber below the diaphragm will be equal and any changes in gas pressure in the generating chamber will almost immediately take place in the chamber directly below the diaphragm. This pipe 11 also serves as a drain through which the water of condensation collected in the well 10 will pass down into the water holder.

The lower end of the housing 8 is closed by a flexible closure device 12 which frictionally engages the stem 5 and prevents carbid passing into said housing when the carbid holder is inverted and charged, as will be more fully hereinafter described.

The upper end of the neck 3 or feed-chute is provided with a joint ring 13, a co-acting joint ring 15 being connected to the lower end of the carbid holder, this latter ring carrying a gasket 16 by which the gas-tight joint between said rings is secured. The lower ring 13 is formed with a series of upstanding annular ribs on which the gasket 16 rests, said ribs insuring a gas-tight connection between the gasket and said ring.

The lower end of the carbid holder is

downwardly tapered and terminates at the feed opening 2^a. Secured to the outer side of said holder below the joint ring 15, and adapted to be inclosed within the feed chute 3, is a valve holding ring 17. A valve-seat casing 18 is provided at its upper end with slots 19 which are adapted to engage headed studs 20 carried by the valve ring, whereby the valve seat casing is detachably connected to the valve-holding ring. A valve ring 18^a is carried by the valve seat casing 18, the opening through the valve ring being adapted to receive the feed valve 6. This opening is of much smaller diameter than the diameter of the feeding and charging opening 2^a in the bottom of the carbid holder, whereby when the feed valve casing is removed the larger charging opening will be uncovered.

The valve 6 is provided with two stops 6^a and 6^b with an intermediate reduced part between them, said stops being so positioned that the upper one will stop the feed when the diaphragm is depressed, and the lower one will stop it when the diaphragm is raised, carbid being fed when the valve is in its intermediate position.

To detachably connect the two parts of the generator together I provide links 21 which are mounted to move vertically in guides 22 carried by standards 23 on the water holder. In the lower ends of these links eccentrics 24 are mounted, said eccentrics being carried by shafts 25 mounted in the standards. The outer ends of these shafts are connected together by a rocking frame 26, whereby both of said shafts may be simultaneously rocked in their bearings to turn the eccentrics in the links 21. The upper ends of the links 21 are connected to the carbid holder by means of pins 27, said pins forming pivotal supports for the carbid holder, whereby said carbid holder may be inverted when it is detached from the water holder, as will be hereinafter described. It will thus be seen that by swinging downward the rocking frame the eccentrics will be so rotated as to draw downward the links 21 and consequently force the lower end of the carbid holder down on the upper part of the neck 3, the two joint rings being brought together to form a gas-tight joint, and by moving the rocking frame upward the action of the parts will be reversed and the two parts of the generator separated. The throw of the eccentrics is such that the carbid holder and its valve will be freed from the water holder to permit it to be rotated on its pivots. It will also be understood that any suitable means may be employed for clamping the carbid holder to the water holder, the means shown being used merely by way of illustration, and as a convenient means for accomplishing the described result.

Connected to the valve stem 5 above the diaphragm 4 is a lever 28, pivoted at 29 and provided with a depending arm 30. By means of this lever the feed valve may be reciprocated. It is desirable to provide means for automatically closing the feed valve and locking it closed when the two parts of the generator are separated and to hold it in its locked position until the two parts of the generator are connected. The object of this is to make it impossible to start the feed mechanism when the two parts of the generator are separated and until they are securely clamped together. To accomplish this I provide means adapted to be operated through the rocking frame 26. This means consists of a slide 32 provided with an operating lug 34. This slide is mounted to move vertically in one of the standards 23 and is connected to the frame 26 by a link 33 so that it has a vertical movement when said rocking frame is operated. Mounted to slide vertically on the side of the carbid holder is a locking dog 31. This dog is provided with upwardly and outwardly beveled cam surface 31^a at its upper end, and with a vertical recess or opening 31^b between said beveled portion and the side of the carbid holder. This locking dog is also provided in its outer edge with the horizontal slot 31^c which is adapted to receive the lug 34 on the operating slide. When the rocking frame is raised, the locking dog, by reason of its connection with the slide 32, moves upwardly and the beveled surface 31^a thereof engages the end of the lever arm 30 and forces said arm inwardly toward the carbid holder. Said arm is received in the vertical opening or slot in the dog after the beveled surface of the dog has passed upward beyond the end of said lever. When the rocking frame is swung downward the movement of the locking dog is reversed and the lever arm 30 released. The spring 9 connected to the diaphragm will, when the lever arm is released, throw said lever arm outwardly.

It is desirable that the feed valve shall not be released from the locking dog until the two parts of the generator have been clamped together by the movement of the rocking frame 26. To insure this I pivot across the top of the locking dog an inwardly swinging latch 32^a which is held in its normal or closed position by means of a small spring 32^b. It will be noted that when the locking dog is raised the end of the lever arm 30 will engage the latch on its outer surface and swing said latch inwardly as the said arm travels down the beveled surface 31^a. When the locking dog has reached the limit of its upward movement the latch will enter a recess or slot 32^c cut in the lever arm and will then be permitted to swing outwardly to its normal position. It will thus

be seen that when the locking dog is again moved downward by the rocking frame, and the two parts of the generator are clamped together, the latch is on the outer side of the arm 30 thereby holding said arm in and the valve closed until after said latch is moved below the lower end of the lever. The latch is so mounted that it cannot swing outwardly, but is free to swing inwardly when engaged by the lever during the upward movement of the locking dog.

The lug 34 on the slide is loosely engaged in the slot of the locking dog in order to permit the carbid holder to be swung down on its standards. It will be readily seen that the locking dog will be disconnected from the slide by the swinging movement of the carbid holder; and that when the carbid holder is returned to its normal vertical position the slide will be brought back and the lug 34 engaged in the slot 31^c. When the lug is disconnected from the locking dog the said dog will be maintained in its position by the outward pressure of the lever thereon. It will be readily understood that the spring 9 connected to the valve will exert sufficient force on the lever to hold the dog 31 in position on the side of the carbid holder.

To permit the carbid holder to be swung down to one side of the water holder to a convenient position to charge it with carbid the standards 23 are jointed near their lower ends, as at 35, these joints being in the form of rule joints so that when the standards are brought to an upright position the carbid holder is in proper position to be connected to the water holder. A hinged and jointed brace 36 serves to hold the standards in their upright positions.

The bottom of the water holder is inclined inwardly and downwardly to a central discharge pipe 37. This pipe is closed by valve 38 mounted on the upper end of a valve stem 39. The lower end of this stem is connected to a crank 40 of a rock shaft 41, whereby the discharge pipe 37 will be opened or closed according to the movement of the rock shaft. This rock shaft is provided with a crank 42 which is connected by a rod 43 to a crank 44 mounted on a short shaft 45 carried by the rigid portion 23^a of one of the standards 23. On the shaft 45 is secured a small gear 46 which meshes with a geared segment 47 carried by the pivot 48 of the standard 23. The segment and the gear are so proportioned with respect to each other that the gear will be given a one-half turn when the carbid holder is swung down to receive its charge of carbid. It will thus be seen that when the upper parts of the standards are swung forwardly and downwardly to lower the carbid holder the discharge valve will be opened through the segment 47, gear 46, cranks 44 and 42, and the connecting rod 43. It is also clear that when the standards are moved to their upright position to permit the carbid holder to be again connected to the water holder the discharge valve will be again closed. This is a great advantage in that it insures the fresh charging of the water holder for each fresh charge of carbid placed in the carbid holder.

The water holder is provided with a false bottom 45 which inclines upwardly and inwardly, and together with the true bottom of the water holder forms a gas cooling and condensing chamber 49 into which the gas passes through pipe 50. The rock shaft 41 is continued through the lower end of this chamber and is formed with an aperture 51 which serves as an outlet valve to permit the condensation water to escape from the cooling chamber when the discharge valve 38 is open. The chamber 49 is provided with a gas outlet pipe 49^a through which the gas may pass to the service pipes.

In the water holder is mounted a vertically movable float 52 on an upright rod 53, said rod being twisted longitudinally so that the float will be given a slight rotation during its vertical movement. The float carries the substantially horizontal finger 54 which engages a rod 55 during the vertical movement of the float. Near its upper end and within the feed chute 3 the rod 55 is pivoted at 56. The upper end of the rod 55 loosely engages a horizontal freely movable guard ring 57 which is loosely supported between lugs 58 carried by the feed chute at the upper end thereof. The guard ring is provided with diametrically opposite slots 59. The carbid holder is provided with outwardly extending diametrically opposite lugs 60 which are adapted to pass through the slots 59 of the guard ring, as shown clearly in Fig. 3 and in dotted lines in Fig. 6.

In operation when the water in the water holder is at the proper level, the float is near the upper end of the vertical rod 53 and the rod 55 is held in such a position that the slots 59 of the guard ring will register with the lugs 60 carried by the carbid holder. When the water is drained from the water holder the float drops on the rod and is given a partial rotation and the finger 54 swings the rod 55 laterally on its pivot and partially rotates the guard ring. This movement of the guard ring takes the slot 59 out of register with the lugs on the carbid holder so that it will be impossible to replace the carbid holder on the water holder until the float has been raised to its proper height. It will, of course, be understood that the water cannot be drained from the water holder until the carbid holder has been detached therefrom, so that the guard ring will not lock the carbid holder to the water

holder but serves only as a guard ring to prevent the connection of the two parts of the generator until sufficient water has been placed in the water holder to raise the float to its proper level. It will thus be seen that the guard ring serves also as a water level indicator as well as serving to prevent the connection of the two parts until the water holder is properly filled. It will also be seen that, as the feed valve cannot be released for operation until the two parts of the generator are connected together, it will be impossible not only to connect the two parts of the generator, but to release the feeding means until the water holder is filled with water to the proper level. This is a very important feature of my invention. I consider it of special importance to automatically lock the feeding means and maintain it locked until the generator is properly charged for operation. To recharge the apparatus the rocking frame 26 is raised thereby moving upward the slide 32 and dog 31, bringing the dog into engagement with the lever arm 30. The feed valve is closed, through the lever, and the carbid holder is lifted sufficiently to permit it to be rotated on its pivots 27. The upper parts of the standard 23 are then swung forward to lower the carbid holder within convenient reach of the operator and to permit it to be inverted. The valve ring is then removed and the carbid holder charged through its lower end. The movement of the upper parts of the standards 23 opens the flush-out valve 38 and also the drainage valve 51. After recharging the carbid holder the valve seat is replaced and the standards 23 returned to their normal upright positions. This closes the flush-out valve and the drainage valve so that the water holder may be recharged with fresh water to bring the guard ring to proper position. Water is run into the water holder through the upper end thereof before the carbid holder is brought down into position to be clamped thereto. The water holder may be charged before the carbid holder is returned to its normal upright or operative position. After the water holder is fully charged the carbid holder is then rotated on its pivots to restore it to its normal upright position over the water holder and the rocking frame is then swung downward. This clamps the two parts of the generator together and releases the lever arm 30 so that the valve 6 may be depressed and moved to its open position by the spring 9. The feed valve will be closed automatically when the desired pressure has been secured.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. An acetylene gas generator comprising an upper carbid holder, a lower water holder, means for detachably connecting together said parts, a feed mechanism, means whereby said feed mechanism will be automatically locked when the two parts of the generator are separated, the carbid holder being hermetically sealed above its connection with the water holder whereby it can be recharged only when it is disconnected from the water holder.

2. An acetylene gas generator comprising a water holder, a carbid holder above the water holder, means for feeding carbid, means for detachably connecting the carbid holder to the water holder, and means for simultaneously separating the two parts of the generator and locking the feed in its inoperative position.

3. A carbid feed acetylene gas generator comprising a water holder, a carbid holder, means for detachably connecting said holder to the water holder, a feed mechanism adapted to feed carbid through the bottom of the carbid holder, said carbid holder being adapted to be charged through its bottom, and means for rotatably supporting said holder.

4. A carbid feed acetylene gas generator comprising a carbid holder hermetically sealed except for its connection with the water holder, and means for rotatably mounting said carbid holder whereby it may be inverted for charging.

5. An acetylene gas generator comprising a carbid holder, a feed mechanism operating in response to changes in gas pressure, means for detachably connecting the carbid holder to the water holder, and means for automatically locking the feed when the carbid holder is separated from the water holder.

6. An acetylene gas generator comprising a water holder, a carbid holder, means for pivotally supporting said carbid holder, and means for vertically moving said carbid holder to disconnect it from the water holder.

7. An acetylene gas generator comprising a carbid holder, means for pivotally supporting the same, the carbid holder being hermetically sealed except at its lower end where it is adapted to be connected to a water holder, and means for detachably connecting said carbid holder to a water holder.

8. An acetylene gas generator comprising a carbid holder, means for pivotally supporting the same, the carbid holder being hermetically sealed except at its lower end where it is adapted to be connected to a water holder, means for detachably connecting said carbid holder to a water holder, and means operating to interrupt the carbid feed when the carbid holder is disconnected from the water holder.

9. An acetylene gas generator comprising a water holder, a carbid holder hermetically

sealed except at its lower end where it is connected to the water holder, jointed standards for supporting said carbid holder and means for pivotally supporting the carbid holder in said standards, and means for clamping the carbid holder to the water holder.

10. An acetylene gas generator comprising a water holder, a carbid holder hermetically sealed except at its lower end where it is connected to the water holder, jointed standards for supporting said carbid holder, means for pivotally supporting the carbid holder in said standards, means for clamping the carbid holder to the water holder, and means for locking the feed mechanism when the carbid holder is disconnected from the water holder.

11. An acetylene gas generator comprising a water holder, a carbid holder hermetically sealed except at its lower end where it is connected to the water holder, jointed standards for supporting said carbid holder, means for pivotally supporting the carbid holder in said standards, means for clamping the carbid holder to the water holder, a flush-out valve in the bottom of the water holder, and means whereby said valve will be opened when the carbid holder is moved toward one side of the water holder and away from the charge opening thereof.

12. An acetylene gas generator comprising a water holder, a carbid holder hermetically sealed except at its lower end where it is connected to the water holder, jointed standards for supporting the carbid holder, means for pivotally supporting the carbid holder in said standards, means for clamping the carbid holder to the water holder, a flush-out valve in the bottom of the water holder, and means connecting said valve to the pivoted standards whereby said valve will be opened when the carbid holder is swung toward one side of the water holder.

13. An acetylene gas generator comprising a water holder, means for feeding carbid thereto, a gas cooling chamber at the bottom of said water holder, a discharge valve for the water holder and a drain plug for the cooling chamber, and means for simultaneously opening and closing said valve and drain plug.

14. An acetylene gas generator comprising a water holder, a carbid holder, pressure controlled feed mechanism, mechanism for moving said carbid holder vertically to connect and disconnect it from the water holder, and means for locking the feed when the carbid holder is moved to disconnect it from the water holder.

15. A carbid feed generator comprising a carbid holder, a water holder, a feed mechanism, means for locking the feed when the two parts of the generator are separated, cams for pivotally supporting the carbid holder whereby the carbid holder may be inverted for recharging without unlocking the feed.

16. An acetylene gas generator comprising a water holder, a movably supported carbid holder, means for clamping the carbid holder to the water holder, a discharge valve in the bottom of the water holder, and means for opening said discharge valve when the carbid holder is moved away from its connection with the water holder, said means being operatively connected to the discharge valve and to the carbid holder.

17. An acetylene gas generator comprising a water holder provided at its upper end with a connection ring, a carbid holder provided at its lower end with a corresponding connecting ring, cams for drawing the two parts of the generator together, a feed mechanism carried by the carbid holder, a cam device for locking said feed mechanism when the two parts of the generator are separated, and means connecting the feed locking device to the means for drawing the two parts of the generator together.

18. A carbid feed acetylene gas generator comprising a water holder, a carbid holder adapted to be charged through its bottom, means for detachably connecting the carbid holder to the water holder in operative position, and means for rotatably supporting the carbid holder independently of its detachable connections with the water holder, whereby the carbid holder may be inverted for charging when disconnected from its operative position with respect to the water holder.

19. A carbid feed acetylene gas generator comprising a carbid holder adapted to be charged through its bottom, a water holder, a feed mechanism, and means for simultaneously separating the carbid holder from the water holder and locking the feeding mechanism in its inoperative position.

20. A carbid feed acetylene gas generator comprising a carbid holder, means for clamping said holder to a water holder said clamping means serving also as means to lift the carbid holder above and clear of the water holder when separating the two parts.

21. A carbid feed acetylene gas generator comprising a carbid holder hermetically sealed except at its lower end and adapted to be charged through said lower end, and a clamping means to clamp said carbid holder to a water holder, said clamping means also serving as a lifting means to separate the carbid holder from the water holder.

22. A carbid feed acetylene gas generator comprising a carbid holder, a water holder, a carbid feed mechanism, the carbid holder being hermetically sealed except at its lower end and adapted to be charged through its lower end, a clamping means to secure the carbid holder to the water holder, said

clamping means also serving as a lifting means, and means actuated from said clamping means to lock the feed when the generator is open.

23. A carbid feed acetylene gas generator comprising a carbid holder adapted to be charged through its bottom, means for connecting and disconnecting said carbid holder to a water holder, said connecting means serving also as a means for lifting the carbid holder free of the water holder when opening the generator.

24. A carbid feed acetylene gas generator comprising a carbid holder, a water holder, means for supporting the carbid holder to permit it to be moved to one side of the water holder, a flush-out valve in the water holder, and means operatively connected to the carbid holder for opening said valve when the carbid holder is moved away from the water holder and for closing said valve when the carbid holder is moved back into position over the water holder.

25. A carbid feed acetylene gas generator comprising a carbid holder, a water holder, means for detachably connecting the carbid holder to the water holder, swinging supports for the carbid holder, a flush-out valve in the water holder, and means for opening and closing said flush-out valve when the carbid holder is moved in its swinging supports.

26. An acetylene gas generator comprising an upper carbid holder, a lower water holder, means for drawing the carbid holder to the water holder to form a gas-tight connection therewith, said means serving to support the carbid holder when it is disconnected from the water holder.

27. An acetylene gas generator comprising a water holder, a detachable carbid holder, and a cam actuated means for forcing the carbid holder toward the water holder to form a gas tight connection between said parts, said means serving to support the carbid holder disconnected from the water holder.

28. An acetylene gas generator comprising a water holder, a carbid holder, a joint ring between the two, and cam actuated means for vertically moving the carbid holder to connect and disconnect the carbid holder from the water holder.

29. An acetylene gas generator comprising a water holder, a carbid holder, a joint ring between the two, cam actuated means for vertically moving the carbid holder, and means for rotatably supporting the carbid holder, whereby it may be inverted when disconnected from the water holder.

30. An acetylene gas generator comprising a water holder, a carbid holder, a carbid feed mechanism, means for moving the carbid holder to disconnect it from the water holder, and means actuated by the carbid holder moving means to lock the feed mechanism when the carbid holder is moved.

31. An acetylene gas generator comprising a water holder, a carbid holder, cam-actuated means for vertically moving the carbid holder to detach it from the water holder, a feed mechanism, and means operated from the carbid holder-moving means to lock the feed mechanism when the carbid holder is separated from the water holder.

32. An acetylene gas generator comprising a water holder, a carbid holder, cam actuated means for vertically moving the carbid holder to detach it from the water holder, a feed mechanism, and means operated from the carbid holder-moving means to lock the feed mechanism when the carbid holder is separated from the water holder, and means independent of the cam-actuated means for holding the feed in its locked position.

33. An acetylene gas generator comprising a water holder, a carbid holder, means for supporting the carbid holder above the water holder independently of its detachable connection to the water holder, means for detachably clamping the carbid holder to the water holder, and means connected to and movable with said clamping means to interrupt the carbid feed when the carbid holder is detached from the water holder.

34. An acetylene gas generator comprising a water holder, a carbid holder, means for feeding carbid into the water holder, a flush-out valve in the bottom of the water holder, a condensation chamber formed at the bottom of the water holder, the bottom of the water holder constituting the top of the condensation chamber, a drainage valve for the condensation chamber, and means for simultaneously operating a flush-out valve and the valve in the condensation chamber.

35. An acetylene gas generator comprising a water holder, a carbid holder having a charging opening at its lower end whereby the charging opening will be inclosed within the generating chamber when the two parts are connected together, the carbid holder being hermetically sealed upon its connection with the water holder, a carbid feeding mechanism, means for bodily moving the carbid holder toward and from the water holder to connect and disconnect it from the water holder, and means actuated by the carbid holder-moving means to lock the carbid feeding mechanism.

36. An acetylene gas generator comprising a water holder, a carbid holder, means for detachably connecting together said holders, a float in the water holder, a guard device, and means connecting the float to the guard device whereby the two holders

cannot be connected together until the float has been raised to a predetermined position.

37. An acetylene gas generator comprising a water holder, a carbid holder detachably connected to the water holder, a guard ring normally permitting the carbid holder to be attached to the water holder, and means whereby the guard ring will be moved to prevent the connection of said two holders when the water is below a predetermined level.

38. An acetylene gas generator comprising a water holder, a carbid holder, means for detachably connecting said holders together, a guard device, and means to move said device to prevent the connection of said two holders when the water is below a predetermined level in the water holder.

39. An acetylene gas generator comprising a water holder, a carbid holder, means for detachably connecting together said holders, and means to prevent the connection of said two holders when the water is below a predetermined level in the water holder.

40. An acetylene gas generator comprising a water holder, a carbid holder, means for movably supporting said carbid holder, mechanism for connecting the carbid holder to the water holder, a flush-out valve in the bottom of the water holder when disconnected from the water holder, and means whereby said valve will be opened when the carbid holder is moved on its support away from the water holder.

41. An acetylene gas generator comprising a water holder, a carbid holder, means for connecting the carbid holder to the water holder, a discharge valve in the bottom of the water holder, and means operated by the movement of the carbid holder for opening said discharge valve when the carbid holder is removed from the water holder.

42. An acetylene gas generator comprising a water holder, a carbid holder, means for connecting said holders together in operative relation, and means carried by one of said holders and operating until said holder is charged, to prevent the two holders being connected together in operative relation.

43. An acetylene gas generator comprising a water holder, a carbid holder detachably connected to the water holder, a flush-out valve in the bottom of the water holder, means for opening said flush-out valve by the movement of the carbid holder when disconnected from the water holder, and means to prevent the connection of the carbid holder and the water holder until the water holder is charged.

44. A carbid feed acetylene gas generator comprising a water holder provided with an opening through which carbid may be fed, a carbid holder adapted to be charged through its bottom, means for clamping the bottom of said carbid holder over the opening in the water holder to seal said opening, a pressure controlled carbid feeding means adapted to discharge carbid from the bottom of the carbid holder into the water holder, socket actuated means carried by the water holder and arranged to prevent the connection of the carbid holder to the water holder until the water holder has been charged to a predetermined depth, means to lock the carbid feeding means, and means to prevent the unlocking of said feeding means when the carbid holder is in vertical position directly over and disconnected from the water holder.

45. A carbid feed acetylene gas generator comprising a water holder provided with an opening through which carbid may be fed, a carbid holder adapted to be clamped to the water holder to close the feeding opening therein, a feed valve in the carbid holder, means for clamping the carbid holder to the water holder, a feed valve locking means and means for locking the feed valve when the carbid holder is separated from the water holder.

46. A carbid feed acetylene gas generator comprising a water holder provided with an opening through which carbid may be fed, a carbid holder adapted to be charged through its bottom, means for clamping the bottom of said carbid holder over the opening in the water holder to seal said opening, a pressure controlled feeding means, and a float actuated means controlled by the water in the water holder and arranged to prevent the connection of the carbid holder to the water holder until the water is charged therein to a predetermined depth.

In testimony whereof I hereunto affix my signature in the presence of two witnesses this 15th day of February 1908.

CHARLES W. BECK.

Witnesses:
A. K. KAPPES,
M. GOLDNICK.