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2 SHEETS—SHEET 1.



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FEED FOR ACETYLENE GAS GENERATORS.

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2 SHEETS—SHEET 2.

Fig. 2

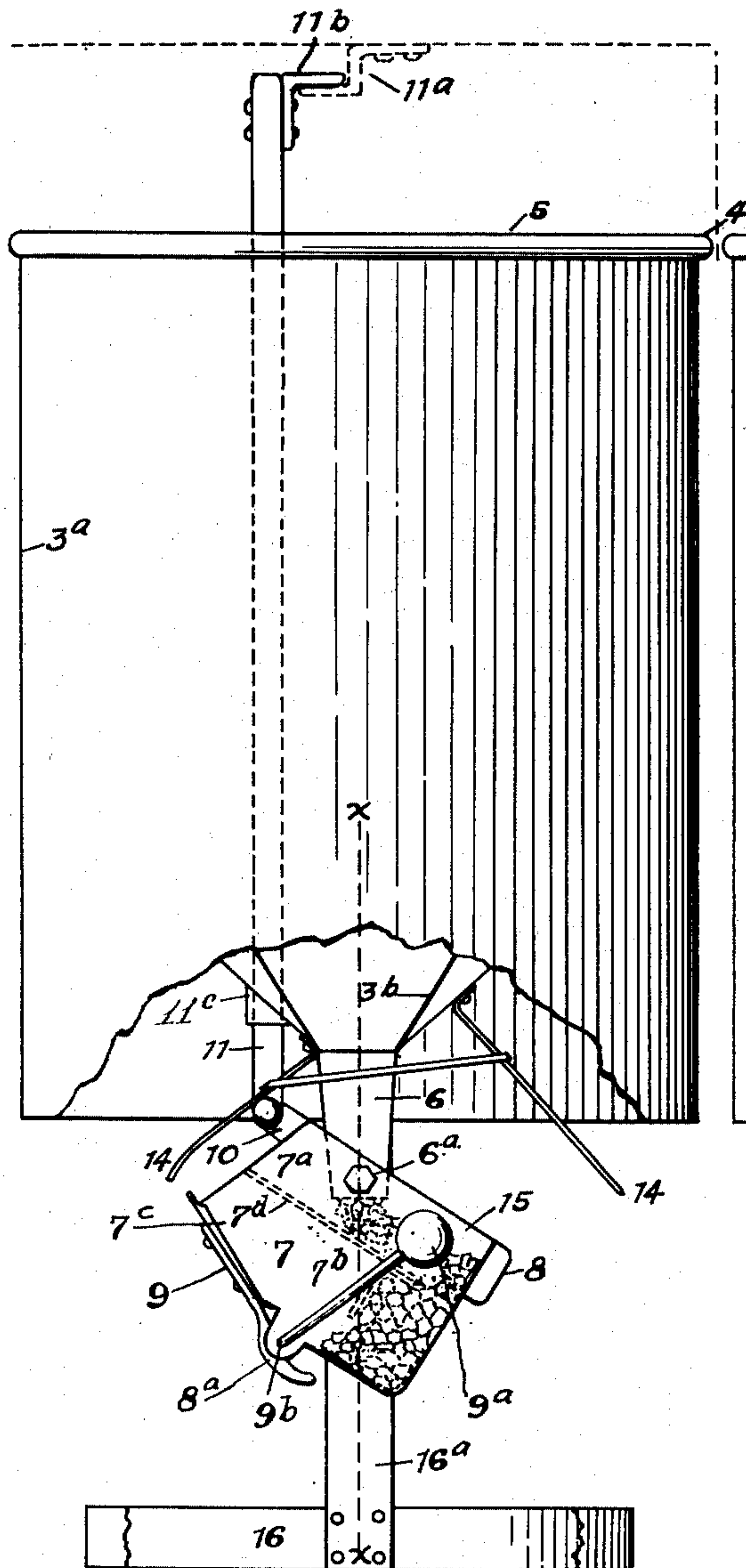
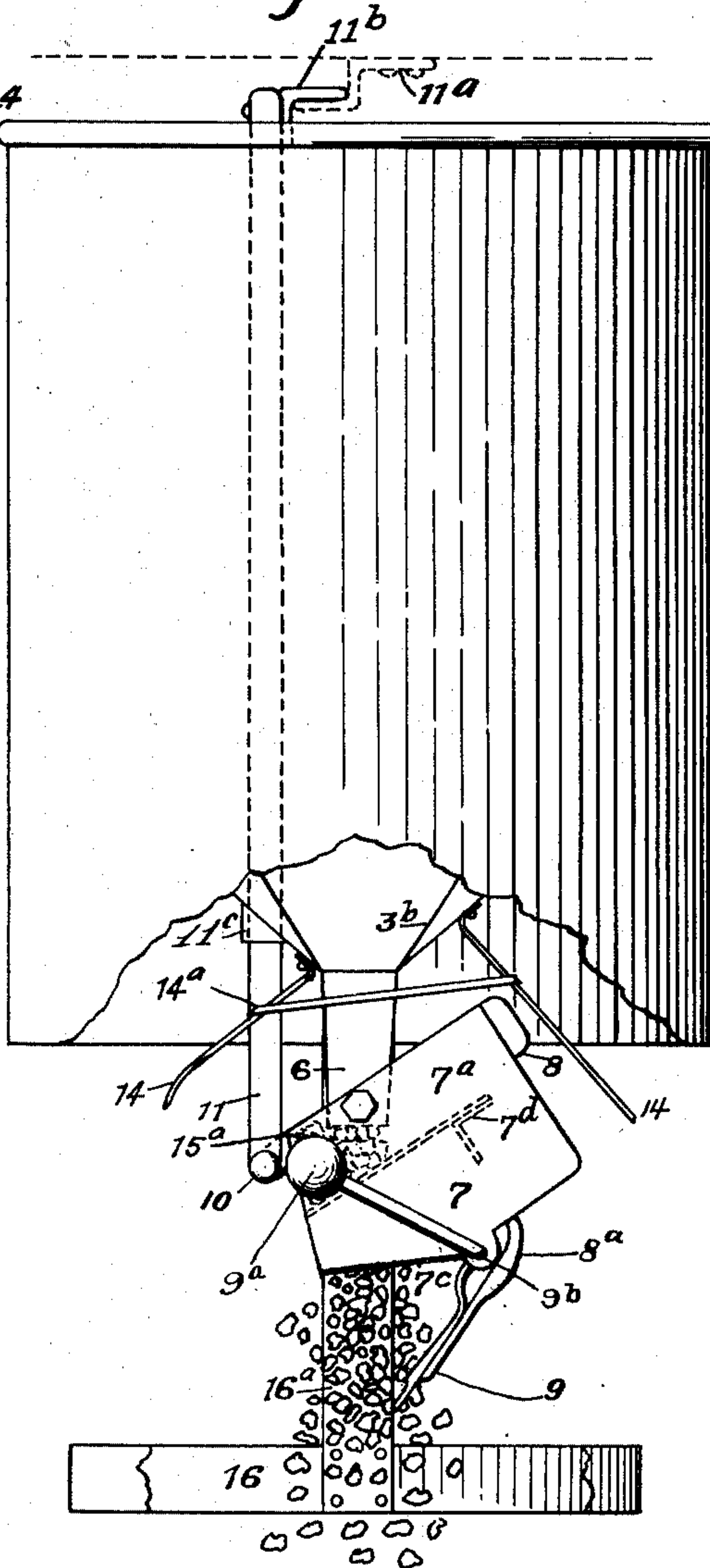


Fig. 3



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UNITED STATES PATENT OFFICE.

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FEED FOR ACETYLENE-GAS GENERATORS.

No. 928,022.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, JOHN BOLAND and WILLIAM A. HINKLE, citizens of the United States, and residents of Decatur, Macon county, State of Illinois, have invented certain new and useful Improvements in Feeds for Acetylene-Gas Generators; and our preferred manner of carrying out the invention is set forth in the following full, clear, and exact description, terminating with claims particularly specifying the novelty.

This invention is an improvement in acetylene gas generators, and it consists essentially in mechanism for delivering the carbide from the holder to the generating chamber in charges at intervals determined by the consumption of the gas and the consequent descent of the seal cap, or upon movement of any other movable part of the apparatus responsive to changes in pressure of the gas in the generating chamber.

To this end it consists especially in details of construction of the parts more particularly constituting the carbide feed, all as set forth in the following specification and illustrated in the drawings herein.

Figure 1 is a general elevation of the entire machine with the principal parts of the gas generator shown in section; and Figs. 2 and 3 are enlarged side elevations of the seal cap broken away at its lower end, and the basket forming part of the carbide feed shown in greater detail.

Referring to the drawings, the reference numeral 1 designates the wall of the generating chamber whose lower end, it will not be necessary to illustrate for the purposes of describing the present invention, and the numeral 3 designates a cylindrical carbide holder whose wall 3^a has a rim 4 at its upper end which curls outwardly and rests upon the upper end of the chamber 1 and is supported thereby, and said rim has also the open handles 5. Its lower end is open, and from it depend legs or straps 16^a 16^b to a base 16 upon which it can rest when it is removed bodily from the generating chamber. The skeleton base 16 thus provided is of particular advantage in connection with the holder 3, which, as will hereinafter appear, is provided with a rocking charge receiver and deliverer, which would not permit the holder 3 to stand upright were it not for the provision of the skeleton base 16, which depends below the delivery point of the holder and the charge receiver and de-

liverer. Internally it is provided with a downwardly converging hopper 3^b leading to a central delivery spout 6 whose lower end or mouth preferably stands slightly above the lower end of the cylindrical body 3 as shown in Fig. 1. Within the downwardly converging hopper 3^b I preferably place a central conical part 3^c, the purpose of which is to obviate the tendency of the carbide, which is hygroscopic, and consequently prone to massing and sticking together, forming a bridge or arch across the hopper and seriously interfering with the feed. The cone 3^c effectually destroys any bridging across the hopper and insures the feeding of the particles of carbide down around the circumference of this part 3^c, as clearly shown in Fig. 1.

The numeral 2 designates the seal cap which fits loosely over the generating chamber 1 and whose lower end rests in a liquid seal in a manner well known in the art and not necessary to illustrate and describe here. Its cover 2^a is closed as usual, and it is provided with an inlet opening 2^c with removable closure, through which the hopper 3^b within the holder 3 can be filled from time to time.

The gas passes through suitable pipes and valves not necessary to define in the present application, into a receiving tank whose bell 17 is illustrated herein as provided with an upright rod 16 at its upper end guided in a fixed bracket 18. To said rod at 13 is pivoted the center 13^a of a feed lever 12, one end 12^b of which has lost motion in its fulcrum by moving between the upper and lower ends of 13^b and 13^c of a slot in the bracket 18 and the other end 12^a of which rests upon the seal cover 2^a. The rod 11 passes through a tube 11^c which extends from the bottom of the holder to the cross-handles at the top, said tube 11^c being flattened or of such size as to allow for play of the rod 11 in its actuating movements. Hence when the bell rises by the accumulation of gas within the receiving tank the lever is raised bodily until its end 12^b strikes the upper end 13^b of the slot, when its other end 12^a is raised off the seal cover 2^a. On the other hand, as the bell 17 descends, the center of the lever is depressed until its end 12^b strikes the lower end 13^c of the slot in the bracket, after which its left end 12^a is caused to descend upon the seal cover 2^a and press the latter downward. It is to be understood

that the seal cap has vertical movements independent of those of the bell and in addition thereto, but the bell being larger and more powerful in its action, its rise and fall will by lever 12 cause a forcible descent of the seal cover in case the latter should stick in place. In other words, while under normal conditions the bell and the seal cap are adapted for independent movement, nevertheless, by the arrangement just described, an abnormal condition of the parts will result in the bell actuating the seal cap in order to correct such abnormal condition.

Coming now more particularly to the present invention, the numeral 7 designates a basket charge receiver and deliverer which we have shown as a tilting or rocking receiver and deliverer which is pivoted at 6^a to the spout 6 near its lower end and is open at its upper side so that the spout can deliver thereinto about midway between its ends which latter are closed. The right half of its bottom is closed, and the left half is covered by a gate 9 which is counter-balanced as at 8^a and whose shaft or axis 9^b extends at right angles and carries a weighted arm 9^a adapted to pass over the center 9^b and throw the gate to either an open or closed position. The right end of the basket also carries a weight 8 which makes it heavier than the left end, and from the latter projects a rod or pin 10 connected to a rod 11 which passes upwardly through the holder 3 and carries a hook 11^b at its upper end adapted to engage with the hook 11^a inside the seal cover 2^a. The basket 7 is also provided internally with the transverse partition 7^b dividing it into compartments 7^a and 7^b which are respectively choke chambers and delivery chambers for the charge receiver, and the partition does not extend quite to the right hand end as best seen in Fig. 3. By preference, this partition also has near its right hand end a depending wing 7^d whose function is to choke the passage around that end of it.

The operation of this much of our improved device is as follows: Carbide being fed in at 2^c, partially fills the holder 3 as illustrated in Fig. 1, and flows through the hopper and its spout into the basket which stands in the position shown in Fig. 2. Flowing into the chamber 7^a, the carbide falls upon the partition and moves to the right thereon around its extremity as shown at 15, past the wing 7^d, and falls upon the bottom and right hand lower corner of the basket which forms the charge deliverer and receiver,—in the position which it occupies at that time,—accumulating there until it sets back around the partition and chokes the spout 6 so as to prevent its further flow from the hopper. Any movement, such as the consumption of gas, which causes the descent of the seal cap, thereby depresses the rod

which through pin 10 rocks the basket on its pivot 6^a and moves it from the position shown in Fig. 2 to that shown in Fig. 3. During this movement, the partition 7^b changes its angular relation with respect to the mouth of the spout 6 and effectually prevents it from delivering any further carbide, and eventually the partition moves over to the position shown in Fig. 3, after which a little carbide will run out the spout and accumulate upon the partition in the chamber 7^a as shown at 15^a. During this movement, the hinge line 9^b of the gate 9 has passed the central vertical line marked X, and the weight 9^a has been brought up to and finally past the said line until it falls over to the position shown in Fig. 3, and causes the opening of the gate, resulting in the delivery into the water beneath of the accumulated carbide at the right hand end of the basket. As is well known to those familiar with devices of this kind, this charge of carbide immediately generates additional acetylene gas which is passed into the receiving tank, and thereby causes the bell 17 to rise. The rise of the bell releases the pressure upon the seal cover 2^a of the left end 12^a of the feed lever 12, and accumulation of gas also causes the seal cap 2 to rise. In this movement, the hooks 11^a and 11^b engage and lift the rod 11, and through the pin 10 finally move the basket to the position shown in Fig. 2. When it reaches that position, the accumulated carbide at 15^a of Fig. 3 slides down the partition 7^b and around its right hand end, and the operation is repeated.

If for any reason the seal cap should stick or not work with sufficient speed, the bell 17 will, through the instrumentality of the feed lever 12, as above described, forcibly cause the descent of the seal cap and the rocking of the basket as just set forth.

Access to the interior of the generating chamber or the holder is obtained by first removing the seal cap entire; and in order to be sure that the gas within the receiving tank shall not accidentally escape at this time, we provide a valve 19^b in the pipe between the generating chamber and the tank, and lead a rod 19 therefrom through bearings 20 to a hook 19^a at its upper end. The position of the hook is such that it must necessarily be turned aside to permit the removal of the seal cap, and in so turning it the valve 19^b is closed—hence a most careless operator could not permit the escape of the accumulated gas within the tank.

As best seen in Fig. 2, the shank of the hook 11^a which is secured beneath the seal cover 2^a stands at its center while the bill of the hook projects radially therefrom. The entire rod 11 rises from the pin 10 through an opening in the holder 3 which is remote from its axis, and the bill of the hook 11^a at the upper end of this rod projects toward the

axis as shown in this figure. The result of this construction is that, when access to the interior is desired and the seal cap must be removed, it is first rotated on its axis until its hook 11^a is disengaged from beneath the hook 11^b, after which it can be lifted out of place. In restoring it to position it is manipulated in a reverse direction as will be understood.

10 In the generation of the gas caused from the action of the water upon the carbide there is considerable moisture which rises and collects on the under side of the holder. To prevent this moisture from coming in contact with the carbide contained within the basket 7 and prior to its being fed into the generating chamber, we provide the shields 14 which are made fast to the exterior of the hopper 3^b of the holder 3, and extend obliquely outward any given distance beyond both ends of the basket 7, being held more permanently in position by the tie or binder 14^a.

25 Otherwise than as above described, the details of construction are unimportant, and considerable change may be made therein without departing from the spirit of our invention.

Claims:

30 1. In an acetylene gas generator, the combination with a generating chamber and seal cap, and a carbide holder having a hopper with a spout; of means for delivering the carbide from the spout in charges, a rod for actuating said means, a hook on said rod, and a second hook beneath the cover of the seal cap detachably engaging the first.

40 2. In an acetylene gas generator, the combination with a generating chamber and seal cap, and a carbide holder having a hopper with a spout; of means for delivering the carbide from the spout in charges, a rod for actuating said means, said rod rising from the holder off its axis and having a hook projecting toward said axis, and a hook whose shank is secured beneath the cover of the cap at its axis while its bill projects radially therefrom so as to engage the other hook or to be disengaged therefrom by partial rotation of the cap on its axis.

50 3. In an acetylene gas generator, the combination with a generating chamber and seal cap, and a carbide holder having a hopper with a spout; of a basket having an open top and two closed ends between which it is pivoted to said spout, a transverse partition therein extending from one end nearly to the other so as to leave a passage near its free end, and a wing depending from the partition near said passage, the bottom of the basket beneath the passage at one end being closed and at the other end being open.

60 4. In an acetylene gas generator, the combination with a generating chamber and seal cap, and a carbide holder having a hopper

with a spout; of a basket having an open top and two closed ends between which it is pivoted to said spout, a transverse partition therein extending from one end nearly to the other so as to leave a passage around its free end, the bottom of the basket beneath the passage at one end being closed and at the other end being open, a weight at that end of the basket adjacent said passage, a pin projecting from the other end, and a rod connecting said pin with the seal cap.

5. In an acetylene gas generator, the combination with a generating chamber and seal cap, and a carbide holder having a hopper with a spout; of a basket having an open top and two closed ends between which it is pivoted to said spout, a transverse partition therein extending from one end nearly to the other so as to leave a passage around its free end, the bottom of the basket beneath the passage at one end being closed and at the other end being open, a gate adapted to close this opening, a weighted arm projecting from the axis of the gate and adapted to pass over said axis as the latter moves under the pivot of the basket, and means for turning said basket on its pivot by the movement of the seal cap.

6. In an acetylene gas generator, the combination with a generating chamber and seal cap, and a carbide holder having a hopper with a spout; of a basket having an open top and two closed ends between which it is pivoted to said spout, the bottom of the basket at one end being closed and at the other end being open, a gate adapted to close this opening, a weighted arm projecting from the axis of the gate and adapted to pass over said axis as the latter moves under the pivot of the basket, and means for turning said basket on its pivot by the movements of the seal cap.

7. In an acetylene gas generator, the combination with a generating chamber and seal cap, and a carbide holder having a hopper with a spout; of a basket having an open top and two closed ends between which it is pivoted to said spout, a transverse partition therein extending from one end nearly to the other so as to leave a passage around its free end, the bottom of the basket beneath the passage at one end being closed and at the other end being open, a gate adapted to close this opening, a weighted arm projecting from the axis of the gate and adapted to pass over said axis as the latter moves under the pivot of the basket, a weight at one end of the basket, a pin projecting from the other end, and a rod connecting said pin with the seal cap.

8. In an acetylene gas generator, the combination with a generating chamber and seal cap, and a carbide holder having a hopper with a spout; of a basket having an open top and two closed ends between which it is

pivoted to said spout, a transverse partition therein extending from one end nearly to the other so as to leave a passage around its free end, a wing depending from the partition near said passage, the bottom of the basket beneath the passage at one end being closed and at the other end being open, a counterbalanced gate adapted to close this opening, a weighted arm projecting from the axis of the gate and adapted to pass over said axis as the latter moves under the pivot of the basket, a weight at one end of the basket, a pin projecting from the other end, and a rod connecting said pin with the seal cap.

9. In an acetylene gas generating machine, the combination with the generator including a seal cap, the receiving tank including the bell, the cap and bell being capable of independent movement, the carbid holder, and means controlled by the descent of the cap for delivering the carbid therefrom in charges; of a feed lever bearing upon but free to rise off said cap, and connections for depressing the lever by the descent of the bell.

10. In an acetylene gas generating machine, the combination with the generator including a seal cap, the receiving tank including the bell, the cap and bell being ca-

pable of independent movement, a carbid holder, and means controlled by the descent of the cap for delivering the carbid therefrom in charges; of a feed lever having one end bearing upon but free to rise off the cap and whose other end is mounted with certain lost motion in a fulcrum, and connections between its ends and the bell, for the purpose described.

11. In an acetylene gas generating machine, the combination with the generator including a seal cap, the receiving tank including a bell, the cap and bell being capable of independent movement, a carbid holder, and means controlled by the descent of the cap for delivering the carbid therefrom in charges; of a fixed bracket having an upright slot, a rod on the bell, and a feed lever centrally pivoted to said rod and having one end mounted with certain lost motion in said slot and the other end extending over the cover of the seal cap.

In testimony whereof we have hereunto subscribed our signatures this the 30th day of July A. D. 1907.

JOHN BOLAND.

WILLIAM A. HINKLE.

Witnesses:

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