J. M. CROWNER.

ACETYLENE GAS GENERATOR.

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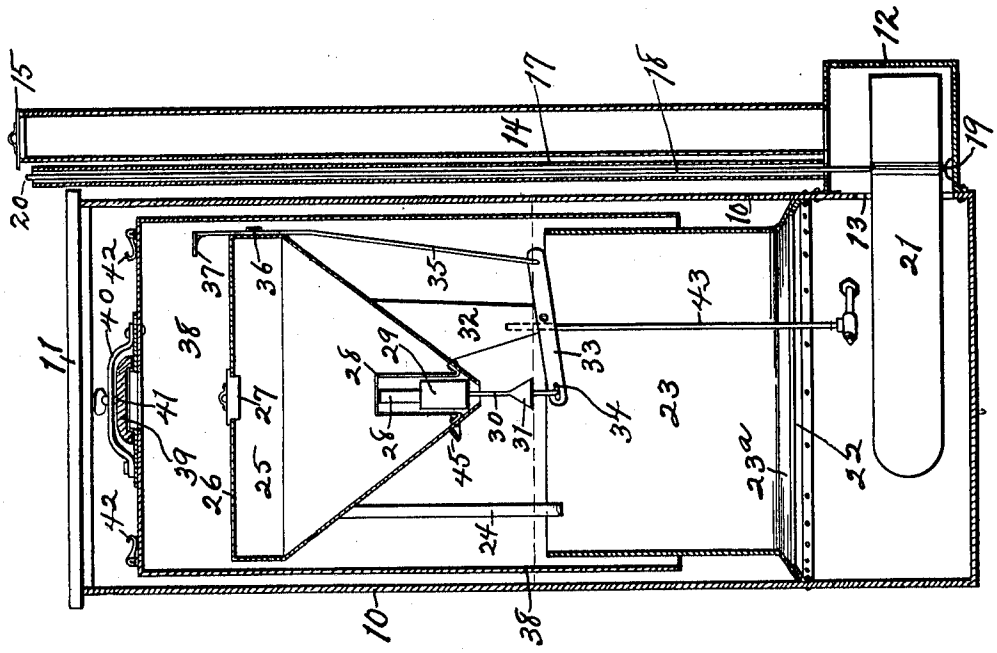
1,022,356. Patented Apr. 2, 1912.



Attest:
Edw. W. Miller
N. W. Winters.

Inventor:
James M. Crowner.
By Thomas G. Orwig & Co.
Attys

UNITED STATES PATENT OFFICE.

JAMES M. CROWNER, OF BATAVIA, IOWA, ASSIGNOR TO ATLAS ACETYLENE LIGHTING COMPANY, OF OTTUMWA, IOWA, A CORPORATION OF IOWA.

ACETYLENE-GAS GENERATOR.

1,022,356. Specification of Letters Patent. Patented Apr. 2, 1912.

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To all whom it may concern:

Be it known that I, JAMES M. CROWNER, citizen of the United States, residing at Batavia, in the county of Jefferson and State of Iowa, have invented a new and useful Acetylene-Gas Generator, of which the following is a specification.

The object of this invention is to provide an improved construction for acetylene gas generators.

My invention consists in the construction, arrangement and combination of elements hereinafter set forth, pointed out in my claim and illustrated by the accompanying drawing, in which the view is a vertical section of the generator, all of the parts thereof in position for practical use.

In the construction of the generator and its correlative parts as shown the numeral 10 designates a casing, preferably of cylindrical form and provided with a relatively heavy cover 11 fitted to and adapted to close the upper end portion thereof. A compartment 12 is formed on and extends laterally from the lower end portion of the casing 10 and preferably is approximately square on all of its faces. The compartment 12 is open to and communicates with the cylinder 10 through an aperture 13. A pipe 14 communicates at its lower end through the top of the compartment 12 and extends from the compartment to a point preferably above the horizontal plane of the cover 11. The pipe 14 preferably is closable at its top by a removable cap 15. A pump (not shown) may be provided of such size and shape as to be inserted, when the cap 15 is removed, in the open upper end portion of the pipe 14. A tube 17 communicates at its lower end through the top of the compartment 12 between the pipe 14 and cylinder 10 and rises from said compartment preferably to a point above the horizontal plane of the cover 11. A rod 18 is mounted in and longitudinally of the tube 17 and extends vertically across the compartment 12. The rod or shaft 18 is journaled in the pipe 17 and may be journaled at its lower end in a bearing 19 on the bottom of the compartment 12. The upper end portion of the rod 18 is bent laterally to form a handle 20 projecting laterally from the upper end portion of the tube 17 and said handle is adapted for manual actuation to oscillate the rod rotatively. An agitator or blade 21 is fixed intermediate of its ends to the lower end portion of the rod 17. A shorter end portion of the agitator or blade 21 crosses within the compartment 12 while a larger portion of said agitator extends partially across and within the lower end portion of the casing 10. It is the function of the agitator or blade 21 to stir and agitate the liquid and residuum contents of the casing 10 and compartment 12. A flange 22 is fixed in horizontal position to and extends inward from the inner surface of the casing 10 in a plane above the agitator or blade 21. A shell 23, of cylindrical form and of materially less diameter than the casing 10, is mounted removably and replaceably within said casing and is provided with an outwardly flaring lower end portion 23^a adapted to engage and rest loosely upon the flange 22. The lower end portion 23^a of the shell 23 and the flange 22 are fitted to each other so that when said shell is deposited on said flange it will assume automatically a concentric relation to the inner surface of the casing 10.

Standards 24 are fixed to and rise from the upper portion of the shell 23 and a carbid holder 25 is fixed to and carried by said standards. The carbid holder 25 preferably is cylindrical in its upper portion and partakes of the shape of an inverted truncated cone in its lower portion. The carbid holder 25 preferably does not exceed in extreme diameter the diameter of the shell 23 and when supported on said shell occupies a position concentric with the inner surface of the casing 10. The carbid holder 25 is closed at its top by a plate 26 having a central opening into which is screwed a cap 27. A pair of yokes 28, crossing each other at right angles, is mounted within the carbid holder 25 and said yokes are formed with feet adapted to engage and be fixed to the inner surface of the conical portion of said carbid holder in such manner as to hold the yokes over the apex thereof and centrally of the holder. The truncated apex of the conical portion of the carbid holder 25 is open and occupies a position immediately above the center of the shell 23. A valve 29 is mounted slidingly in and guided by the yokes 28 and the lower end portion of said valve is adapted to engage the inner surface of the conical portion of the carbid holder 25 and prevent

flowing of carbid from said holder. A stem 30 is fixed to and depends from the valve 29 through the open apex of the conical portion of the carbid holder and a conical valve 31 is fixed to said stem below the carbid holder. It is the function of the valve 31 to close the discharge port in the lower end of the carbid holder 25 at times, as hereinafter described. A bracket 32 is fixed to and depends from the carbid holder 25 and a lever 33 is fulcrumed intermediate of its ends on the lower end of said bracket and is pivotally connected at one end to the lower end portion of the stem 30. The pivotal connection between the lever 33 and stem 30 is by means of a slot 34 in the lever so that the movement of that end portion of the lever through an arc will not disturb the alinement of the stem and valves in the carbid holder. An actuating rod 35 is pivoted at its lower end to that end portion of the lever 33 opposite to the slot 34. The actuating rod 35 extends upward from the lever 33 through a slide bearing or keeper 36 on the carbid holder 25 and is formed with a head 37 on its upper end, said head normally being located in a plane above the top plate 26 of the carbid holder. A gas bell 38 is mounted in the casing 10 and extends concentrically therewith into the space between the inner surface of said casing and the outer surface of the shell 23. The gas bell may come to a position of rest at times with its lower end portion in contact with the flaring lower end portion 23^a of the shell 23. The gas bell 38 incloses the upper portion of the shell 23, the standards 24, the carbid holder 25, cap 27, valves, stem, lever and actuating rod above described. The top of the gas bell 38 is formed with a central aperture of a diameter sufficient to admit the hand of an operator or a lifting tool for the purpose of removing and replacing the cap 27 in the top 26 of the carbid holder and also to permit the removal of such cap through said aperture. The aperture in the top of the gas bell 38 is closable by a cap 39 held in place by a swinging yoke 40 pivoted and latched to the top of the gas bell and a screw 41 in said yoke, the cap 39, yoke 40 and screw 41 being shown of conventional and common form. The gas bell 38 is provided with hooks 42 on either side of its top and said hooks normally lie inoperative on said top of the bell. It is the function of the hooks, however, to support the gas bell in elevated position by engaging with the upper margin of the casing 10 when the cover 11 is removed, thus providing means for relieving pressure from gas within the bell during the operation of recharging the carbid holder 25. A service pipe 43 extends laterally through the wall of the casing 10 between the shell 23 and agitator 21 and also extends upwardly through the shell to a point within the gas bell above the water line in the casing. The service pipe 43 also may extend outside the casing to any point where the gas generated in this apparatus may be desired for use.

A flange 45 is fixed to the outer surface of the lower end portion of the carbid holder 25. It is the function of the flange to receive and divert any moisture caused by sweating or condensation on the outer surface of the carbid holder and permit the same to fall, drop by drop, into the body of water in the casing and prevent it from entering the carbid holder through the open mouth thereof.

In practical use the parts are assembled substantially as shown, the carbid holder being charged or supplied with carbid before the caps 27 and 39 are placed in position. The casing or cylinder 10 is supplied with water through the pipe 14 and compartment 12 to the desired depth. Then the cap 15 is placed in closing position on the pipe 14. Then the gas bell 38 is lowered manually (the cover 11 being removed) by means of the hooks 42 until the top of said bell engages the head 37, depresses the rod 35, oscillates the lever 33, lifts the stem 30 and valve 29 and permits a quantity of carbid to flow from the holder into the water in the casing. In this connection it may be well to suggest that the casing 10 in use partakes of the characteristics of a water tank, and may hereinafter be referred to in such terms. When it is believed a sufficient quantity of carbid has been discharged into the water the gas bell 38 temporarily is suspended by engagement of the hooks 42 with the upper rim of the casing. Gas is generated and rises within and lifts the bell 38. Thereupon the hooks 42 may be detached from the casing 10 and the cover 11 be applied to said casing. From this point forward the operation of the device is automatic so long as the supply of water and carbid is maintained. In such operation the weight of the gas bell supplies pressure for the discharge of gas through the service pipe 43 to points of use at burners variously distributed. As the supply of gas is reduced and before it becomes exhausted, the bell 38 descends into operative engagement with the head 37, and again operates the rod 35, lever 33, stem 30 and valve 29 to the end of lifting said valve and permitting a further quantity of carbid to be discharged from the holder 25 into the water in the tank. This further supply of carbid, when acted upon by the water in the tank, replenishes the supply of gas and causes the gas bell to rise away from the head 37, whereupon the valve 29 will reseat in closing position by gravity. In the event that the supply of gas becomes so reduced as to

permit a considerable downward movement of the bell 38 and rod 35, the valve 31 will enter and close the discharge port of the carbid holder and prevent the supply of an excessive amount of carbid to the water. In like manner the valve 38 will close such port when the supply of carbid in the holder is exhausted and the supply of gas in the bell is exhausted to an extent permitting said bell to come to a position of rest on the flaring end portion 23ª of the shell 23. Thus the supply of gas to the service pipe automatically is maintained until the carbid holder is exhausted. Thereupon the cover 11 is removed, the bell is raised by the hooks 42 and suspended by said hooks on the casing 10, the caps 39 and 27 are successively removed and the carbid holder is recharged with carbid. The bell 38 is then released from the casing, the cover 11 is replaced, and the automatic operation of the device is continued. When it is desired to remove the residuum from the casing 10 the agitator 21 is oscillated through manual actuation of the rod 18; the cap 15 is removed, the pump is inserted in the pipe 14 and the portion of the water and residuum in suspension therein is withdrawn by the pump from the compartment 12. Then the pump is removed, a fresh supply of water is introduced through the pipe 14 and the cap 15 is replaced.

I claim as my invention—

In an acetylene gas generator, a casing, a flange rigidly mounted on and extending inwardly from said casing, a shell formed with a flaring lower end adapted to be loosely supported on said flange, said shell being spaced from and within said casing, standards carried by said shell, a carbid holder carried by said standards and formed with a discharge port centrally of the shell, valve devices controlling said discharge port, a gas bell mounted loosely within the casing and inclosing said carbid holder and overlapping and surrounding the upper portion of said shell, said gas bell adapted to operate said valve devices, a cover for said casing, means for supplying water to and removing sludge from said casing, and a service pipe leading from said casing.

JAMES M. CROWNER.

Witnesses:
J. E. LEWIS,
G. E. DAVIDSON.