C. C. WAKEFIELD.

ACETYLENE GENERATOR.

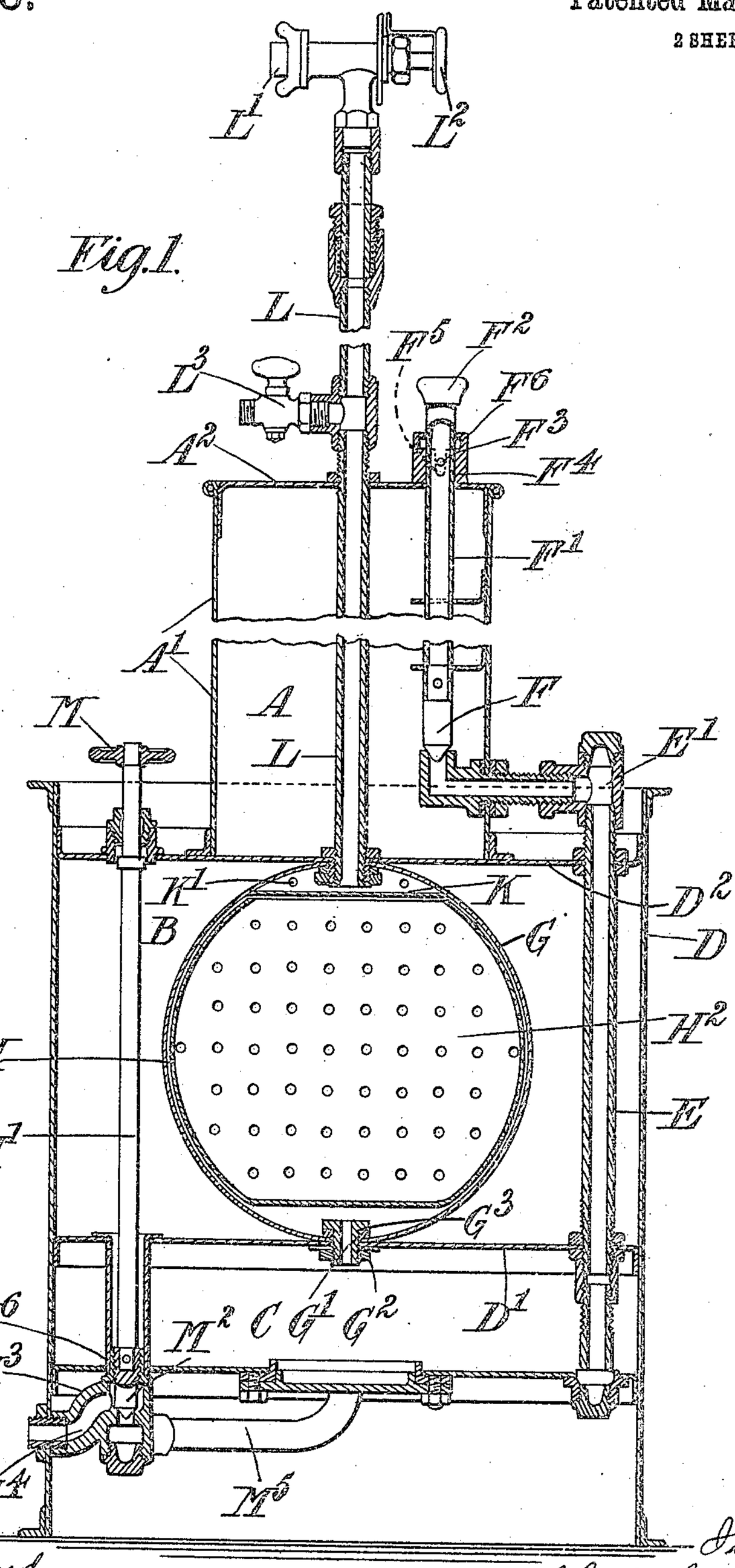
APPLICATION FILED MAR. 30, 1908.

952,286.

Patented Mar. 15, 1910.

2 SHEETS—SHEET 1.

Fig. 1.



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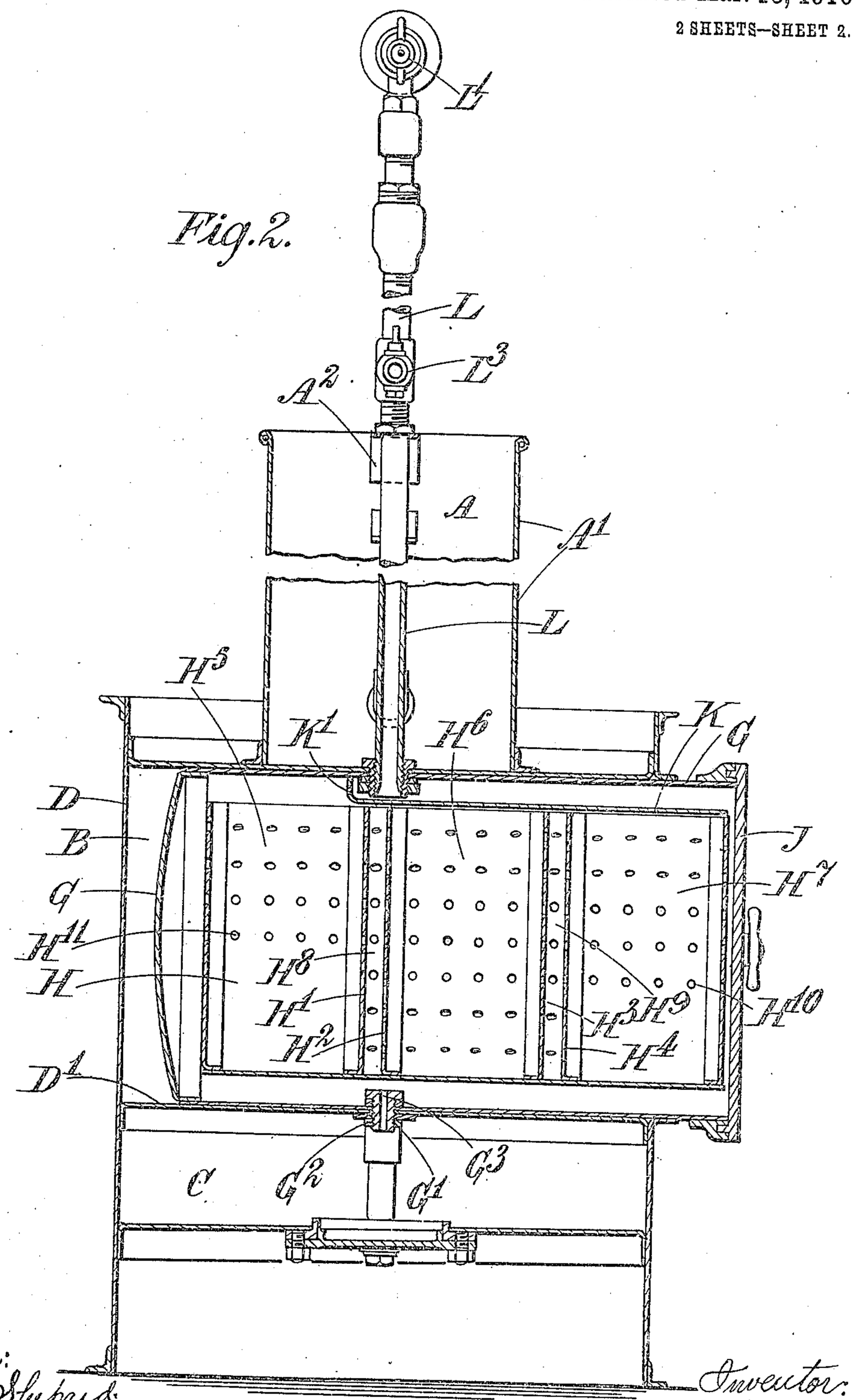
2 SHEETS—SHEET 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

CHARLES CHEERS WAKEFIELD, OF LONDON, ENGLAND.

ACETYLENE-GENERATOR.

952,286. Specification of Letters Patent. Patented Mar. 15, 1910.

Application filed March 30, 1908. Serial No. 424,253.

To all whom it may concern:

Be it known that I, CHARLES CHEERS WAKEFIELD, merchant, of 27 Cannon street, in the city of London, England, have invented certain new and useful Improvements in or Relating to Acetylene-Generators, of which the following is a specification.

This invention is for improvements in or relating to acetylene generators, and is particularly applicable to those lamps generally known as flare lamps.

This invention has reference to the type of generator wherein the water is stored in a chamber above the gas-generating chamber and is admitted to a chamber below the same before it enters the gas-generating chamber. The arrangement is such that as the gas is generated the water is forced out of the gas-generating chamber back into the lower chamber and thence back to the upper chamber whereby an automatic control of the generation of the gas is obtained.

According to this invention the carbid is stored in a horizontally disposed carrier, preferably cylindrical in form, and which is made a loose fit in a correspondingly cylindrical gas-generating chamber as heretofore, but this carrier, instead of providing one compartment only and admitting water at all points, is divided into several compartments, preferably three, and the perforations in the wall of the carrier for admitting the water are arranged at different heights in the various compartments. This allows the carbid to be attacked in each compartment in succession.

As has been heretofore common practice, the lower portion of the casing of the flare-light, that is the part containing the gas-generating chamber and the lower water-chamber, is preferably cylindrical in shape and is of greater diameter than the casing of the upper water-chamber which is also cylindrical and is concentrically disposed relatively to the lower portion of the casing. Further, instead of a drain pipe in the lower chamber which was situated near the foot of the flare-light, the valve for controlling the discharge is connected to an operating handle situated at the top of the casing that contains the carbid-chamber and the lower water-chamber. The details of these parts are hereinafter fully described with reference to the drawings.

In the accompanying drawings:—Figure 1 is a central vertical section through a flare-light constructed according to this invention, and Fig. 2 is a central vertical section through the flare-light at right angles to the section shown in Fig. 1.

Like letters indicate like parts throughout the drawings.

The casing of the flare-light is cylindrical in form and it is divided into three compartments, A, B and C respectively. The lower chambers B and C are contained in a cylindrical shell D that is divided transversely by a diaphragm D^1 and is closed at the top by a plate D^2. Secured to the plate D^2 is a second cylindrical shell A^1 having a bridge-piece A^2 at the top, and which constitutes the upper water-chamber. This chamber A communicates with the lower water-chamber C by way of a conduit E. The lower end of the conduit E reaches nearly to the bottom of the chamber C and the upper end extends through the plate D^2 and is provided with an elbow E^1. One end of this elbow communicates with the chamber A and is provided within said chamber with a seating for a conical valve F. This valve is carried by a rod F^1 whose upper end extends through the plate A^2 at the top of the chamber A. The end of the rod is provided with a handle F^2 and has a cross-pin F^3. This pin coöperates with a socket F^4 that is secured to the plate A^2 and is slotted vertically at F^5, and above the vertical slot has a shouldered portion F^6. The rod F^1 is free to slide and turn in the socket F^4 and when it is in such position that the cross-pin F^3 lies in the vertical slot F^5, the valve F rests upon the seating formed in the elbow E^1 and thus the communication between the chambers A and C is closed so that water cannot flow from the former to the latter. By raising the valve F, however, by means of the handle F^2 and turning it so that the cross-pin rests on the shouldered portion F^6, the valve is maintained in the raised position off the seating in the elbow E^1 and thus communication is established between the chambers A and C so that the water flows into the latter.

Within the chamber B a horizontally disposed cylindrical shell G is secured and this constitutes the gas-generating chamber. Within this shell is a correspondingly horizontally disposed cylindrical carbid-carrier H. In the base of the shell G and extending through the plate D^1 is a fastening G^1

that is secured by a nut G^2 and connects these two parts together. The fastening is bored through at G^3 and thus serves as a means for establishing communication between the chambers B and C.

The carbid-carrier H is divided by partitions H^1 H^2 and H^3 H^4 respectively. These partitions are arranged in pairs and together divide the carrier into three compartments H^5 H^6 and H^7 respectively. The pair of partitions H^1 H^2 thus serve as one double partition, the elements whereof are separated by a space H^8. Similarly the elements H^3 H^4 constitute another double partition and between them is a space H^9. The wall of the carrier is perforated and in the case of the metal compartment H^6 the perforations extend to the bottom of the carrier as above. The part of the wall which lies opposite the spaces H^8 H^9 is also perforated to the bottom and the elements H^2 H^3 of the partitions are similarly perforated to the bottom. It thus follows that as the water enters the chamber formed by the shell G it can flow freely into the compartment H^6 of the carrier from all sides. The perforations, however, which provide communication with the compartment H^7 do not extend to the bottom of the carrier, the lowest perforations being situated at H^{10}. Similarly the perforations in the element H^4 of the partition for this compartment only extend down to the same level and this also applies to the perforations that are provided in the end wall of the carrier. The perforations for the compartment H^5 are provided only in the upper half of the carrier so that they do not extend down as far as the point H^{10} the lowest being disposed on the level indicated at H^{11}. This applies to the perforations in the element H^1 of the partition for this compartment and also the end plate as well as the cylindrical wall of the carrier. It will be seen from this arrangement that the carbid in the compartment H^6 will first be attacked and then, as the carbid therein becomes exhausted and the water rises, that in the compartment H^7 will next be attacked and finally the water will enter the compartment H^5. It should be noted, moreover, that as the water rises to the level of the perforations in any one of the compartments, it is free to enter such compartment from all sides.

The operation of this generator is the same as that of other generators belonging to the same class, that is, as the gas is generated the water is forced back through the orifice G^3 into the chamber C and thence by the conduit E into the upper chamber A. As, however the gas is drawn off and the pressure thus reduced, the water again flows down the conduit E into the chamber C and thence into the gas-generating chamber and re-attacks the carbid. One end of the gas-generating chamber is closed by a door J that permits access to the carrier for the purpose of charging the same.

The top of the carrier is open although it is preferably covered by a baffle K. One end of this baffle is perforated at K^1 and the gas can also escape around the opposite end of the same to the uptake L. This uptake extends throughout the length of the chamber A and may be carried any desired height above the same. At its upper end is a burner L^1 that may be of any convenient construction and combined with the burner is a regulating cock L^2. At a convenient point in the uptake L and above the top of the chamber A is a stop tap L^3. This permits a flexible tube to be connected with the uptake for the purpose of supplying a separate burner which may be used either with the burner L^1 or in place of the same.

The cylindrical shell D is of greater diameter than the cylindrical shell A^1 and in that part which extends laterally beyond the shell A^1 a handle M is situated. This handle is connected with a rod M^1 that carries a valve M^2. The valve rests on a seating in a block M^3 which is bored to provide a discharge-orifice M^4. The block has secured to it one end of a discharge-pipe M^5 whose other end has communication with the chamber C. When the valve M^2 is raised off the seating, free communication is established between the discharge pipe M^3 and the outlet M^4. For raising or lowering the valve, the latter is screw-threaded at M^6 and engages the correspondingly threaded portion in the block M^3. Thus by rotating the handle M the valve is screwed away from or advanced toward the seating. By situating the controlling handle above that portion of the shell D which extends laterally beyond the shell A^1, it is rendered readily accessible and prevented from damage whereas if a drain-cock were provided at the outlet M^4, this, through its necessarily being situated near the foot of the flare-light and extending a considerable distance beyond the same, is likely to become damaged.

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

1. In an acetylene gas generator the combination of a gas generating chamber, a water chamber communicating therewith, means to control the flow of water to the gas generating chamber, a carbid container within the gas generating chamber and a double partition in the container whereby the latter is divided into compartments, those parts of the walls of the carbid container that inclose the space between the elements of the double partition being perforated to allow of free communication between the gas generating chamber and the space that is inclosed between the double partitions, the sides of the compartments

being also perforated and such perforations terminating at different levels, for the purpose of allowing the water to attack the carbid from all sides including that of the double partition, substantially as set forth.

2. In an acetylene gas generator the combination of a horizontally disposed gas generating chamber, a horizontally disposed carbid carrier, open at the top and removably mounted within the gas generating chamber, a conduit communicating with the top of the gas generating chamber and extending to the point of consumption, a baffle secured to the gas generating chamber and extending over the open top of the carbid carrier between the carrier and the point at which the conduit for conveying the gas to the point of consumption enters the gas generating chamber, a water chamber communicating with the gas generating chamber, means to control the flow of water to the gas generating chamber, and a double partition in the carbid container whereby the latter is divided into compartments, those parts of the walls of the carbid container that inclose the space between the elements of the double partition being perforated to allow of free communication between the gas generating chamber and the space that is inclosed between the double partitions, the sides of the compartments being also perforated and such perforations terminating at different levels, for the purpose of allowing the water to attack the carbid from all sides including that of the double partition, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES CHEERS WAKEFIELD.

Witnesses:
H. D. JAMESON,
F. L. RAND.