

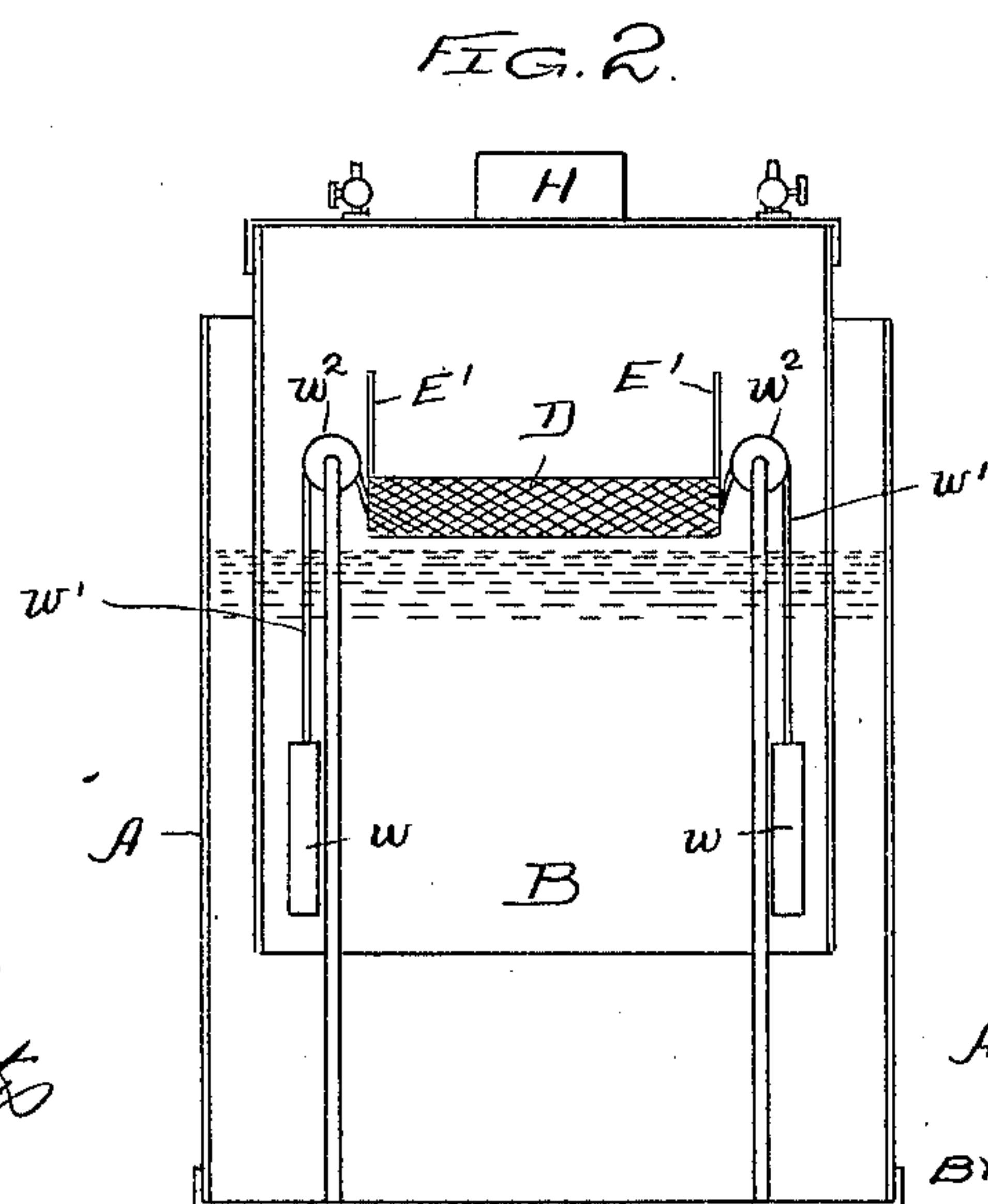
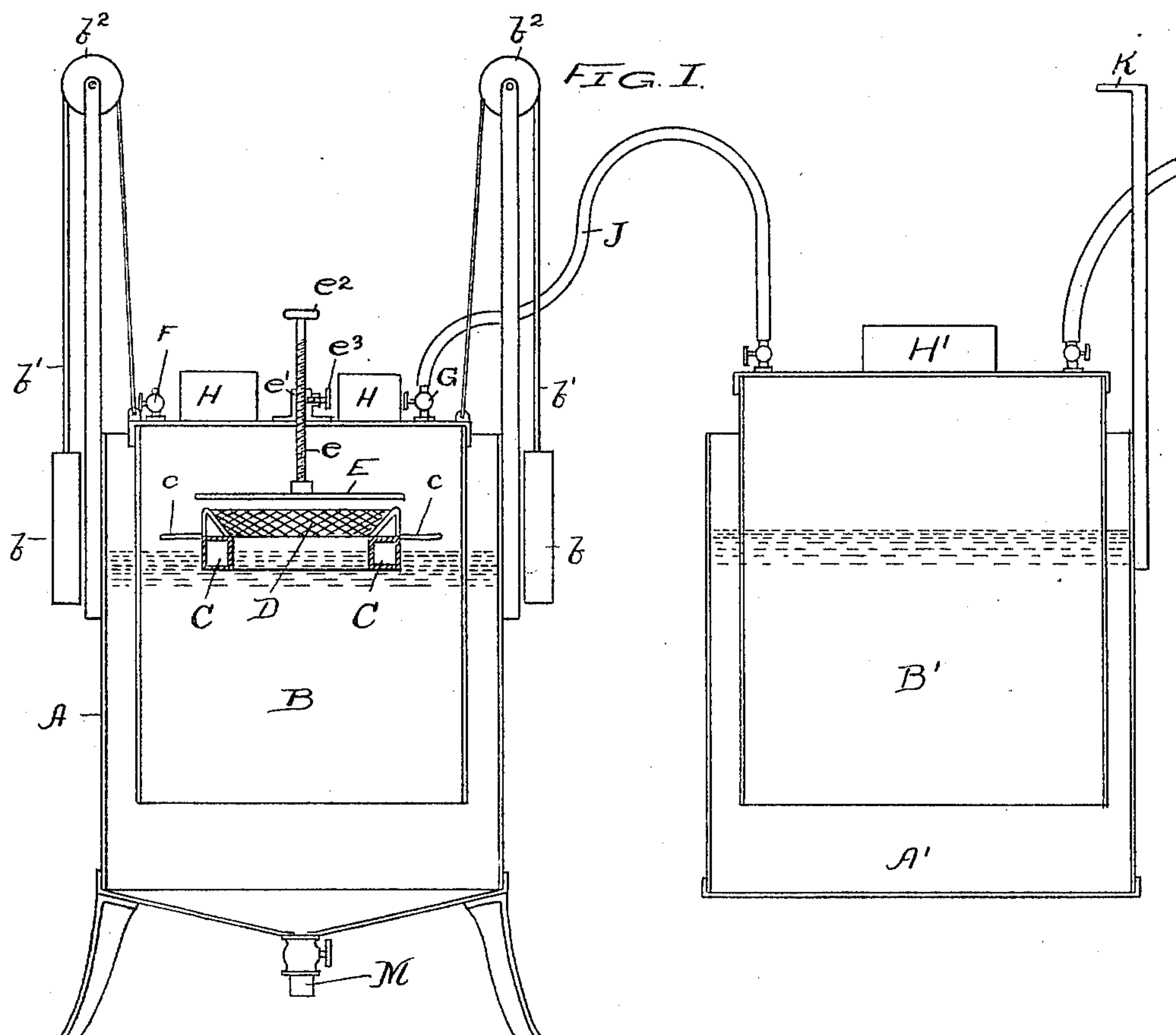
(No Model.)

A. F. DODDRIDGE.

APPARATUS FOR GENERATING ACETYLENE GAS.

No. 581,699.

Patented May 4, 1897.



WITNESSES:

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APPARATUS FOR GENERATING ACETYLENE GAS.

SPECIFICATION forming part of Letters Patent No. 581,699, dated May 4, 1897.

Application filed March 13, 1896. Serial No. 583,677. (No model.)

To all whom it may concern:

Be it known that I, ALBERT F. DODDRIDGE, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Apparatus for Producing and Controlling Acetylene Gas, of which the following is a specification.

This invention relates to an apparatus for automatically producing and controlling acetylene gas by the chemical action resulting when calcium carbide is brought into contact with water; and the invention consists in the novel devices and novel combinations of parts and devices herein shown and described, and more particularly pointed out in the claim.

In the accompanying drawings, forming a part of this specification, Figure 1 is a sectional view of my improved apparatus, and Fig. 2 is a sectional view of a modified form of the same containing some of the features of the invention.

In said drawings, A is a water vessel, and B an inverted gas-chamber, these two members constituting an ordinary telescoping gas-holder. Counterbalancing-weights b , attached to cords b' , which pass over pulleys b^2 and are connected to the inverted holder B, may be employed, as is sometimes customary, to give greater sensitiveness to the movements of the gas-holder, if desired.

C is a float resting on the surface of the water in the gas-holder. I make this preferably of metal and hollow. This float C should have buoyancy enough to sustain out of contact with the water the wire-mesh basket D and also the additional weight of whatever amount of calcium carbide it is intended to place in the apparatus. An excess of buoyancy in the float beyond this necessary amount is, within reasonable limit, no detriment. The function of the wire-mesh basket D is to contain the calcium carbide in such manner that the chemical may be maintained out of contact with the water by the buoyancy of the float or immersed in the water to more or less extent when this buoyancy is overcome by any means.

E is a submerging bar or plate placed above the float and basket and connected to a rod

e , which passes up through a stuffing-box e' , and has a handle e^2 on the outside of the inverted gas-holder. A set-screw e^3 serves to fix the submerger E at any desired position. 55

F is a cock for letting the air out of the holder when it is to be set, and G is a similar cock for making the desired gas connection to the holder.

H H are weights placed on top of the inverted holder to cause the same to sink. 60

c c are guards extending from the float to prevent the float escaping from its proper central position.

The operation is as follows: A quantity of calcium carbide is placed in the basket D. The submerger E is raised to its highest position, and the weights H H are applied to the top of the inverted holder. These weights are or should be sufficient in amount to push the holder down, the air-cock F being opened, until the submerger E comes in contact with the basket and to push down the float, submerging it until the basket containing the calcium carbide is brought into contact with the water and the calcium carbide at its lower parts also into contact with the water, which passes through the meshes of the wire basket. The acetylene gas is immediately thereupon generated and begins to fill the holder. 65
The air-cock F is then closed and the gas-cock G opened, whereupon the gas will pass off to the place it is to be stored or used through the cock G. A constant pressure will be maintained in the holder, or a practically constant one, by reason of the fact that as soon as pressure enough to raise the weight of the holder and the superadded weights H H is created the submerger E will be lifted from the basket, and the buoyancy of the float coming into operation will lift the basket and its contained calcium carbide out of contact with the water, and the further generation of gas will cease, or practically cease; and when the pressure diminishes again the weights will again push down the holder and again submerge the float and bring the calcium carbide into contact again with the water, causing the gas to be again generated and the pressure to be increased, and so on until the calcium carbide is completely exhausted. 70
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It will be noticed that the operation of this apparatus is the same when a large weight of calcium carbide is contained in the basket as when a small weight is contained therein—
5 that is to say, the change of the weight of the chemical as it is consumed in the generation of the gas cannot affect the balance or sensitiveness of the movements of the inverted gas-holder B, because the calcium carbide is not
10 supported from said holder in any manner, but is independently supported by the float upon which it rests.

The purpose of having the submerger E adjustable as to height is simply in order that
15 a larger amount of gas may be contained in the upper portion of the holder without affecting the sensitiveness of operation of the apparatus. Thus when said holder begins to fill with gas and thus to raise the submerger
20 E may be adjusted to a lower point, so that the escape or using of a small amount of gas and the consequent small drop or lowering of the holder will submerge the float and set up generation again. By means of this ad-
25 justable submerger it will be seen that a considerable quantity of gas may be kept in the upper part of the holder.

Where the output is required to be fluctuating, and consequently a still greater supply
30 of gas is required to be kept in store, I employ in conjunction with the apparatus just described a second non-generating holder and controller comprising the two vessels A' B', having the weight H' and connected to
35 the generating apparatus by the pipe J, which may be a flexible tube. This apparatus has a stop K to prevent the rise of the holder B' beyond a given point, and the weight of the holder B', including its superadded weight
40 H' or the pressure per square inch of gas within it required to raise it, is fixed at a little below the weight of the generating holder and its superadded weights H or the pressure required to raise it. The consequence is that
45 the holder B' will fill and rise slightly in advance of the generating holder, which latter will not rise until the receiving holder has reached its uppermost limit and encountered the stop K, and in the converse operation as
50 the gas is used or escapes from the storing holder B' this holder will not sink until the generating holder has sunk. By this simple

means a larger body of gas may be kept on hand and at the same time a nicer adjustment and control of the operation main- 55 tained.

Although I prefer to use the float as being the simplest means of maintaining the calcium carbide out of contact with the water as required when the pressure is great enough, 60 some of the advantages of my invention may be arrived at by the means indicated in Fig. 2, where the wire-mesh basket containing the chemical is held up out of the water by means of counterbalancing weights W, connected 65 by a cord or chain W' to the basket D, passing over pulleys W²; and in this modification instead of the adjustable submerger E, I have provided upright submerger-rods E', attached to the basket, and which come in 70 contact with the top of the holder when the latter descends far enough. Otherwise the apparatus may be the same in all particulars. This modification of the submerger dispenses with the necessity of the stuffing-box and may 75 be used in conjunction with the float form of the apparatus, if desired. The bottom of the vessel A, as shown in Fig. 1, is provided with a draw-off cock M for drawing off the pre- 80 cipitates in cleaning out the generator, and said bottom is for this purpose inclined from all points toward said draw-off cock. This is a desirable addition to the apparatus.

By the means I have described an automatic generator and controller quite unchang- 85 ing in its operation and of a very simple, cheap, and easily-maintained character is produced.

I claim—

In an automatic apparatus for generating 90 and controlling acetylene gas, the combination with a telescoping gas-holder, of a calcium-carbide container movably suspended within said gas-holder independently thereof and in such manner that said container may 95 be lowered into contact with the water in the gas-holder or raised out of contact therewith whereby the gas-holder is relieved of the weight of said container and its contents, substantially as specified.

ALBERT F. DODDRIDGE.

Witnesses:

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