

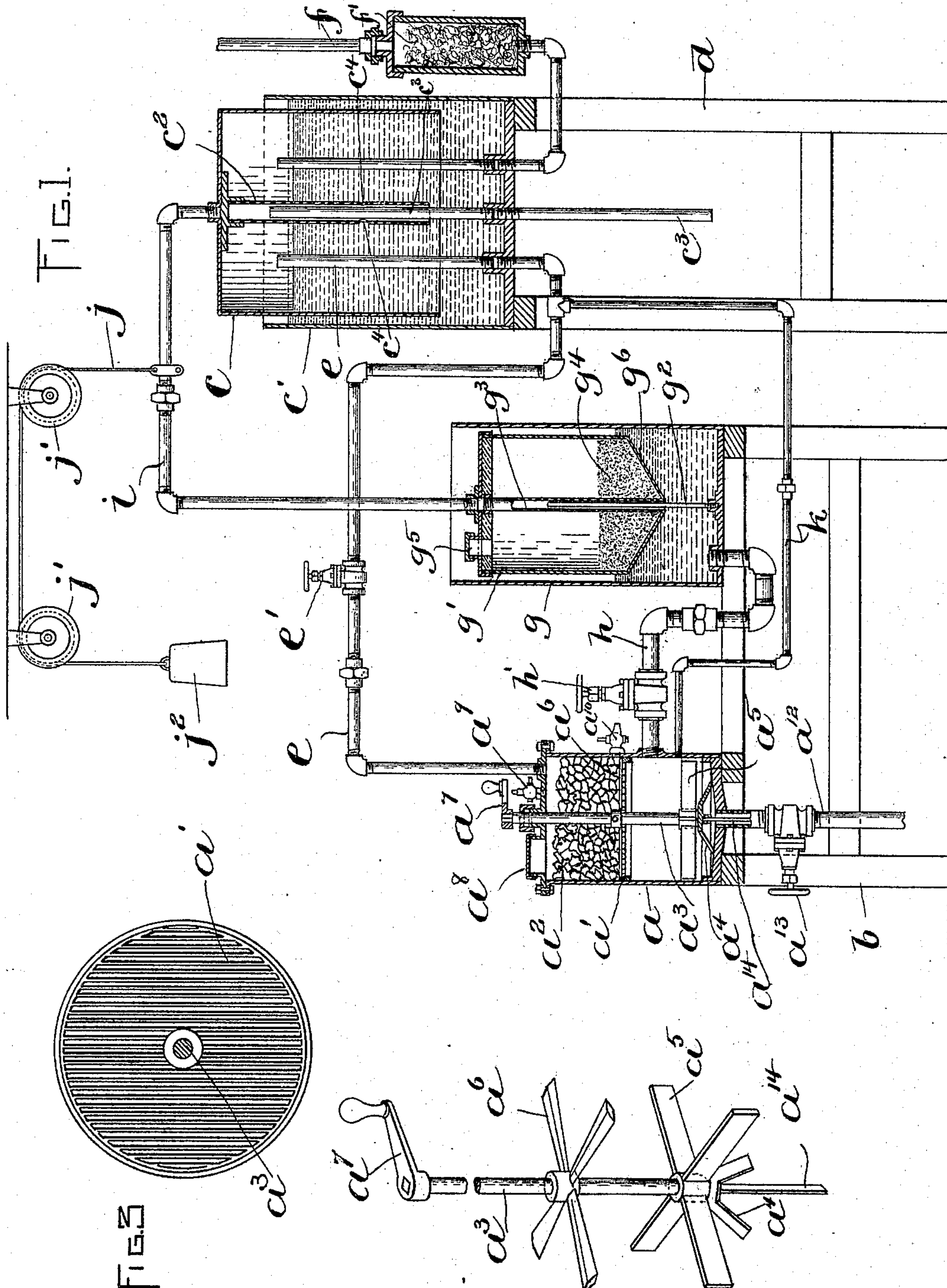
No. 638,834.

Patented Dec. 12, 1899.

A. F. CHACE.
ACETYLENE GENERATING APPARATUS.

(Application filed Jan. 19, 1899.)

(No Model.)



WITNESSES:
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FIG. 2.

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UNITED STATES PATENT OFFICE.

ALBERT F. CHACE, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE CHACE CARBIDE AND GAS GENERATOR COMPANY, OF SAME PLACE.

ACETYLENE-GENERATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 638,834, dated December 12, 1899.

Application filed January 19, 1899. Serial No. 702,670. (No model.)

To all whom it may concern:

Be it known that I, ALBERT F. CHACE, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Acetylene-Generating Apparatus, of which the following is a specification.

This invention has relation to apparatus for generating acetylene gas; and it has for its object to provide improved automatic regulating devices in the same, and, further, to provide improvements in the construction of apparatus of this class, as will be more fully hereinafter described.

The invention consists in the several novel features of construction and arrangement which I shall now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a vertical sectional view of a gas-generating apparatus constructed in accordance with my invention. Fig. 2 represents a detail perspective view, on a larger scale, of the agitator and scraper employed in the generating-receptacle. Fig. 3 represents a section of the generating-receptacle, taken above the grating for supporting the carbide.

The same reference characters indicate the same parts in all the figures.

Referring to the drawings, *a* designates the generating-receptacle, mounted upon a supporting framework or platform *b* and having supported inside of it a grating *a'*, above which is placed a body of calcium carbide *a''* and below which is the water chamber or compartment.

c designates a vertically-movable receiver or holder consisting, as usual, of an inverted tank, said holder moving in a tank *c'*, which contains water. The receiver communicates with the generating-chamber by means of a pipe *e*, and a second pipe *f* leads from said receiver to the illuminating apparatus or other recipient for the gas.

d designates a framework or platform supporting the tank and receiver.

e' designates a gate-valve in the pipe *e*.

Supported alongside of the generating-chamber *a* on the platform *b* is a leveling-tank *g*, in which operates a large piston or

"displacer" *g'*, consisting of a large tank or hollow receptacle having a conical bottom *g''*. The displacer *g'* is guided in its vertical movements by means of a rod *g'''*, attached to the bottom of the tank *g* and projecting upwardly therefrom, and a tubular socket or pipe *g''''*, attached to and passing centrally through the displacer *g'* and surrounding said rod *g'''*. The lower part of the tank *g* communicates with the generating-receptacle *a* below the grating *a'* by means of a large pipe *h*, containing a gate-valve *h'*, which is normally open when the apparatus is in operation.

i is a rigid connection between the receiver *c* and the displacer *g'*, the said connection comprising, as shown in the drawings, sections of pipe jointed together and secured to the respective members by any suitable means, preferably screw-threads, as shown. The receiver and displacer are counterbalanced by means of a weight *j''*, attached to a cord *j*, which passes over pulleys *j'*, mounted on a suitable overhead support, and is secured at its other end to the connection or frame *i*. The receiver *c* is guided in its vertical movements by a tubular socket *c''*, attached to the roof of the receiver, and a pipe *c'''*, attached to the bottom of the tank *c'*, said pipe in the present instance being a safety vent-pipe designed to relieve excessive pressure in the receiver *c*, the gas when under undue pressure passing through holes *c''''* in the side of the tube *c'''* and out into the atmosphere through a lower extension of the pipe *c'''*. The whole moving apparatus may be weighted to a greater or less extent by introducing sand or other ballast *g'''''* into the interior of the displacer *g'* through a filling-aperture *g''''''* in the top thereof.

k designates a drip-pipe attached at one end to the carrying-pipe *e* where the latter passes downwardly in a loop to enter the receiver *c*, said drip-pipe being looped or bent downwardly itself and then upwardly and passing into the generating-receptacle *a* below the grating *a'*.

Inside the generating-receptacle *a* is mounted a vertical shaft *a'''*, which is stepped in a lower bearing *a''''* and carries at its lower end above said bearing a paddle *a''''''*, which when the shaft is rotated acts as an agitator to stir

up the contents of the lower compartment of the generator. Above the grating a' is a scraper a^6 , attached to the shaft a^3 and comprising a number of radial arms or blades 5 which may, if desired, be inclined fanwise, as shown, so as to tend to force material down through the grating. At the upper end of the shaft a^3 is a handle a^7 , by means of which said shaft may be rotated to operate the 10 scraper and the agitator.

a^{12} is an outlet or waste pipe leading from the lower part of the generating-receptacle a and containing a gate-valve a^{13} . A gas-burner a^9 may be provided in the top of the generat- 15 ing-receptacle a to give an index of the generation of gas. Above the grating a' , at about the level to which it is desired that the water shall rise in the generating-receptacle, is placed a cock or faucet a^{10} .

20 The apparatus operates as follows: Water is introduced into the leveling-tank g from a suitable source of supply and, flowing through the pipe h , it reaches a level in the generat- ing-receptacle a the same as its level in the 25 tank g . The proper level for the water is such as to bring it normally into contact with the body of calcium carbide a^2 , supported on the grating a' , so that gas may be generated by the action of the water on said carbide and 30 flow through the pipe e into the receiver c . If the gas generates faster than it can be used, the pressure in the receiver c increases and causes said receiver and the displacer g' to rise. The rising of the displacer or piston g' 35 lessens the amount of its immersion in the water of the tank g and causes the level of the water in the tank and in the generating-receptacle a to be reduced. The reduction of level proceeds until the water falls below the 40 grating a' , and in time the generation of gas accordingly ceases. When the pressure of gas in the receiver is again reduced by the drawing off of said gas through the pipe f , the receiver c and the displacer g' fall until the 45 water in the generating-receptacle a again rises above the grating a' and the gas again starts to generate. The regulation of the pressure in the receiver is therefore auto- matic.

50 From time to time the tendency of the slaked carbide to clog up the grating a' may be overcome by turning the handle a^7 and thereby rotating the scraper a^6 , which causes the slaked carbide to pass through the grating 55 and brings fresh carbide into contact therewith. The rotation of the paddle a^5 agitates the contents of the lower part of the receptacle a , stirring up and loosening the solid residuum which has fallen through the grating 60 a' and lodged in the bottom of the generating-receptacle. This agitation facilitates the passage of the solid matter through the waste-pipe a^{12} when the gate-valve a^{13} is opened, and to further assist the exit of the residuum 65 I may attach to the lower end of the shaft a^3 a flat vertical blade or agitator a^{14} , which oc-

cupies the upper end of the waste-pipe a^{12} and loosens up the material in the pipe when the shaft a^3 is rotated.

The cock a^{10} may be opened to indicate the 70 level of the water in the generating-receptacle at the time said receptacle and the tank g are being filled or at any subsequent time.

The vapor, which may pass over with the gas through the pipe e and which condenses 75 in said pipe, is returned by means of the drip-pipe k to the generating-receptacle a below the grating a' .

The lower end g^6 of the displacer or piston g' is made conical in shape, so as to have a 80 gradual effect in changing the level of the water in the leveling and generating tanks.

f' designates a scrubber of ordinary construction attached to and forming a part of 85 the outlet-pipe f from the receiver.

Having thus explained the nature of my invention and described a way of construct- ing and using the same, although without having attempted to set forth all the forms in 90 which it may be made or all the modes of its use, I declare that what I claim is—

1. In acetylene apparatus, a generator, a leveling-tank communicating therewith, a displacing-piston in said tank consisting of a hollow casing having a conical bottom, and 95 provided with an upper opening whereby ballast may be introduced, and means for closing said opening, a vertical pipe or tube extending centrally through said hollow casing, a rod or guide projecting from the bottom of 100 said tank and extending into said pipe or tube, a movable receiver, and a connection between said receiver and said piston constructed to make the two rise and fall in unison.

2. In acetylene apparatus, a generator, a 105 leveling-tank communicating therewith, a movable displacer in said tank comprising a hollow casing provided with a central tube or socket, means for introducing ballast into said casing, a rigid rod projecting into said 110 tube or socket, a movable receiver communicating with the generator and also having a central tubular socket and a rigid guide working therein, a connection between said receiver and the displacer constructed to 115 make the two move in unison, and means for counterbalancing said receiver and displacer.

3. In acetylene apparatus, a generating-receptacle, a grating therein for supporting carbide, a vertical shaft in said receptacle, a 120 scraper attached to said shaft above the grating, an agitator attached to said shaft below the grating, a vertical waste-pipe leading from the bottom of said receptacle, and a flat vertical blade or agitator carried by said shaft 125 and projecting into said waste-pipe.

In testimony whereof I have affixed my signature in presence of two witnesses.

ALBERT F. CHACE.

Witnesses:

C. F. BROWN,

A. D. HARRISON.