

No. 633,027.

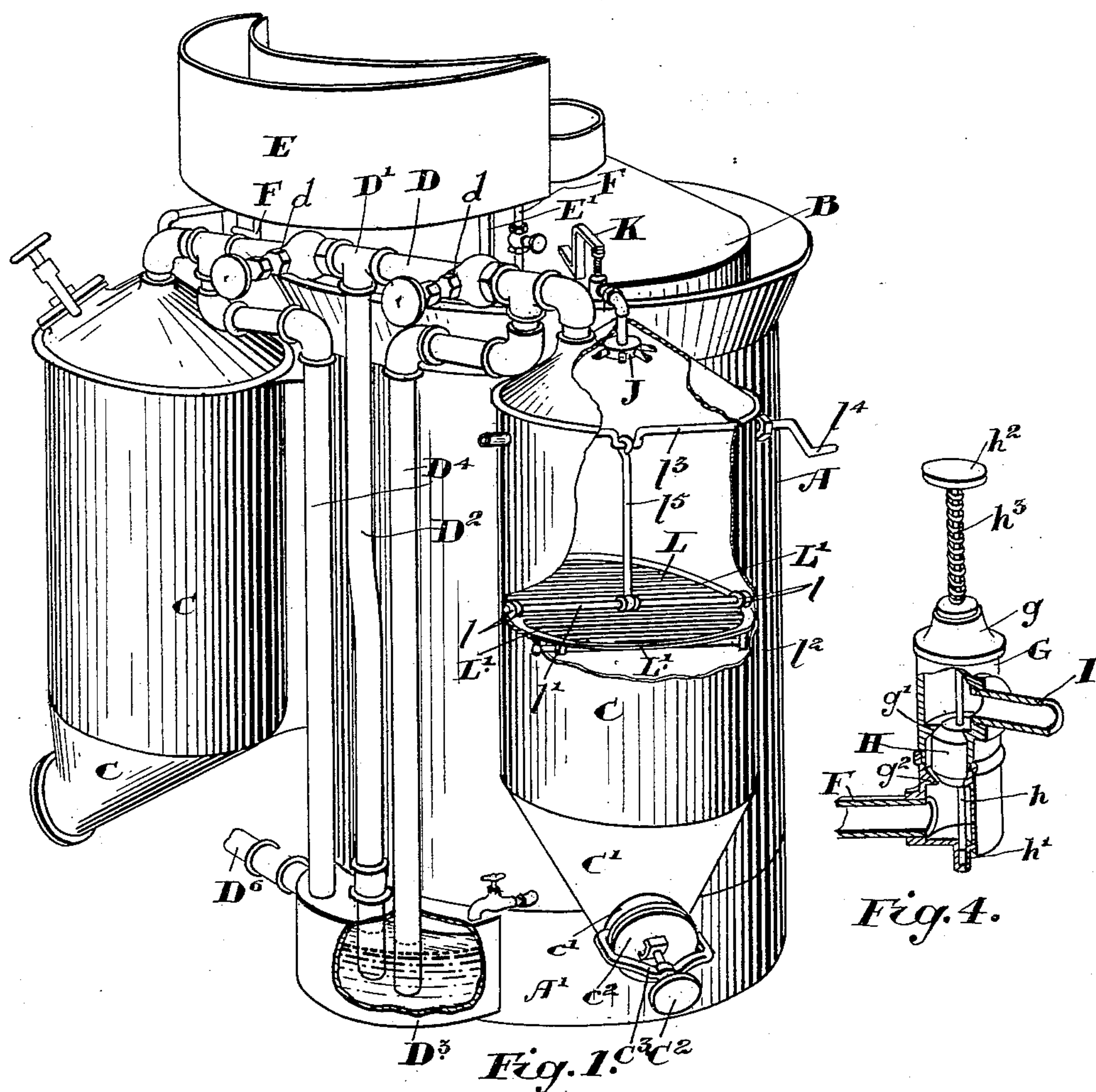
Patented Sept. 12, 1899.

W. F. MUDGE.
ACETYLENE GAS GENERATOR.

(Application filed Jan. 29, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

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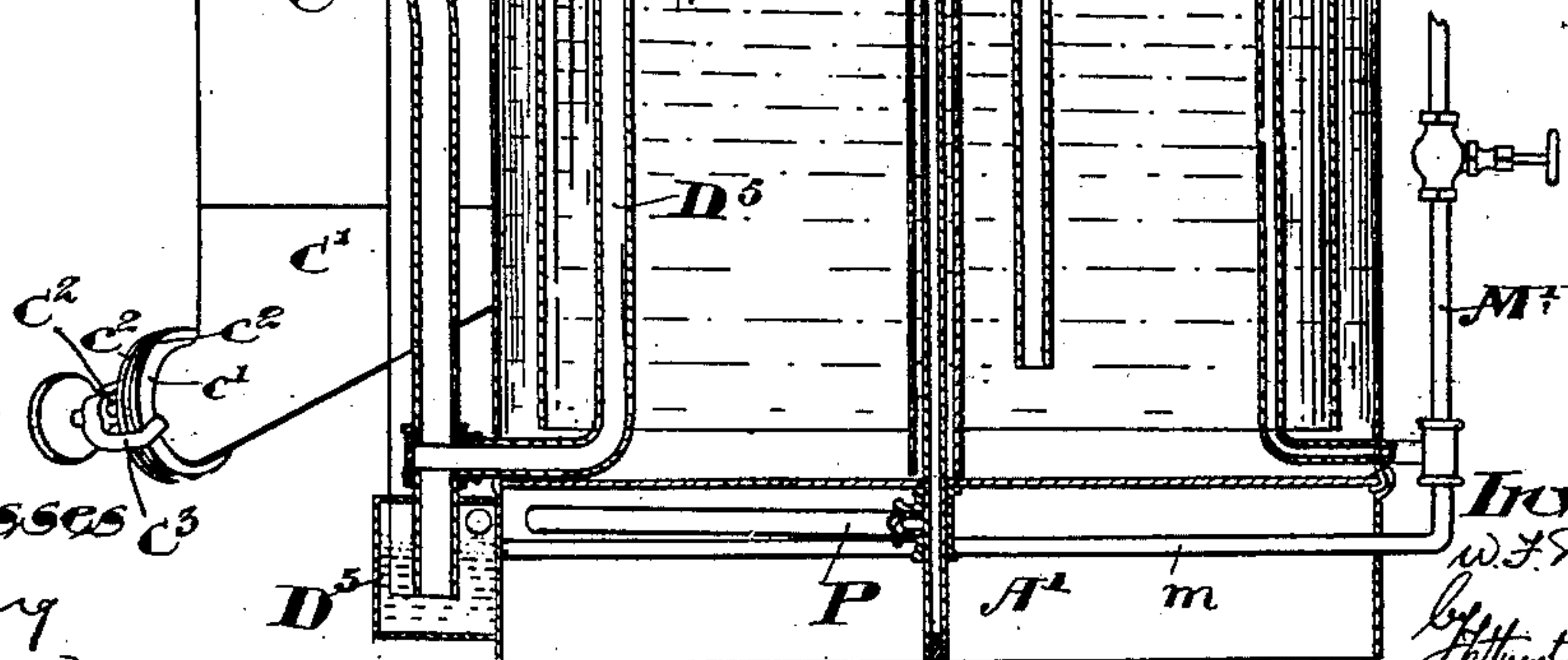
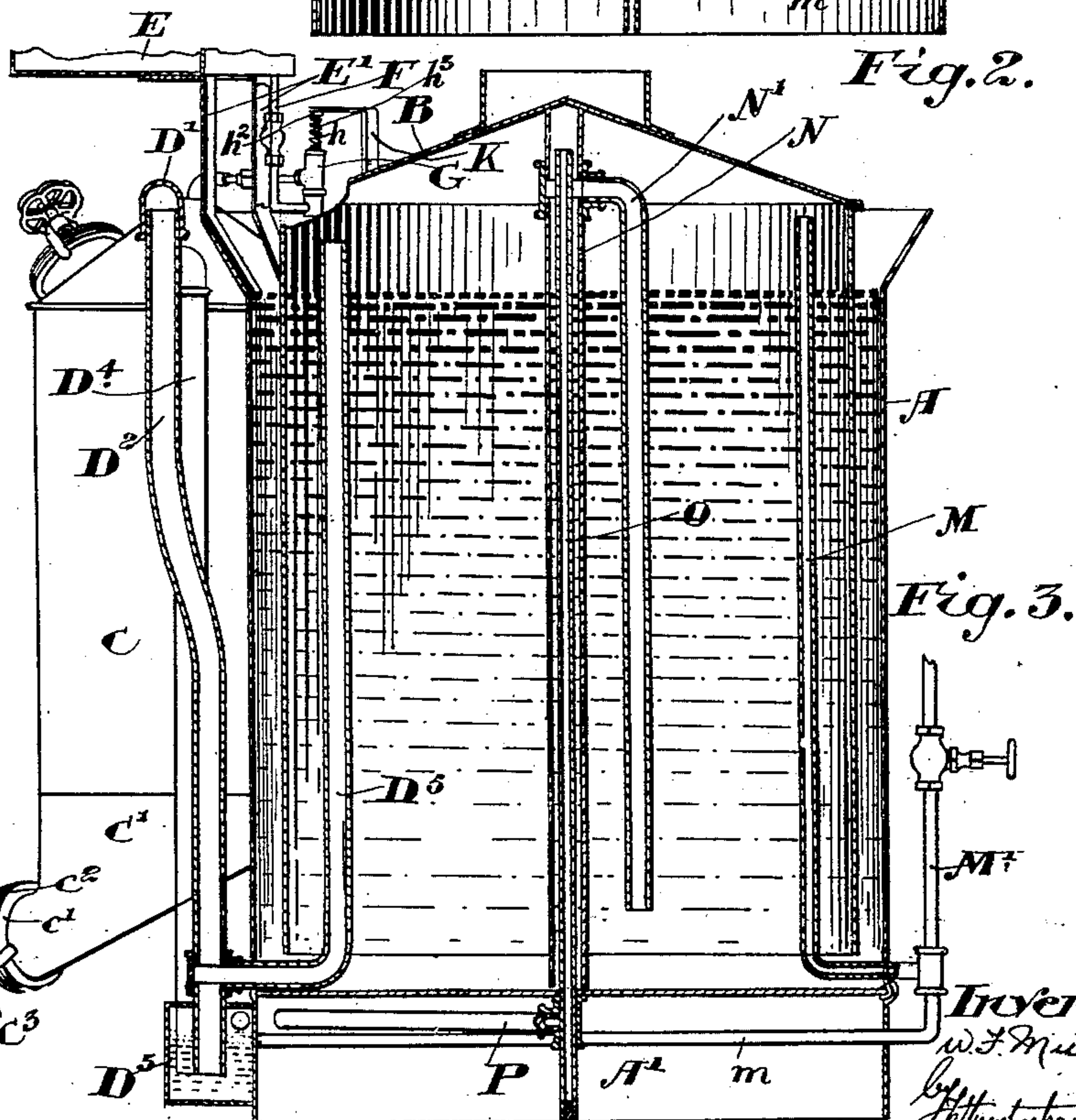
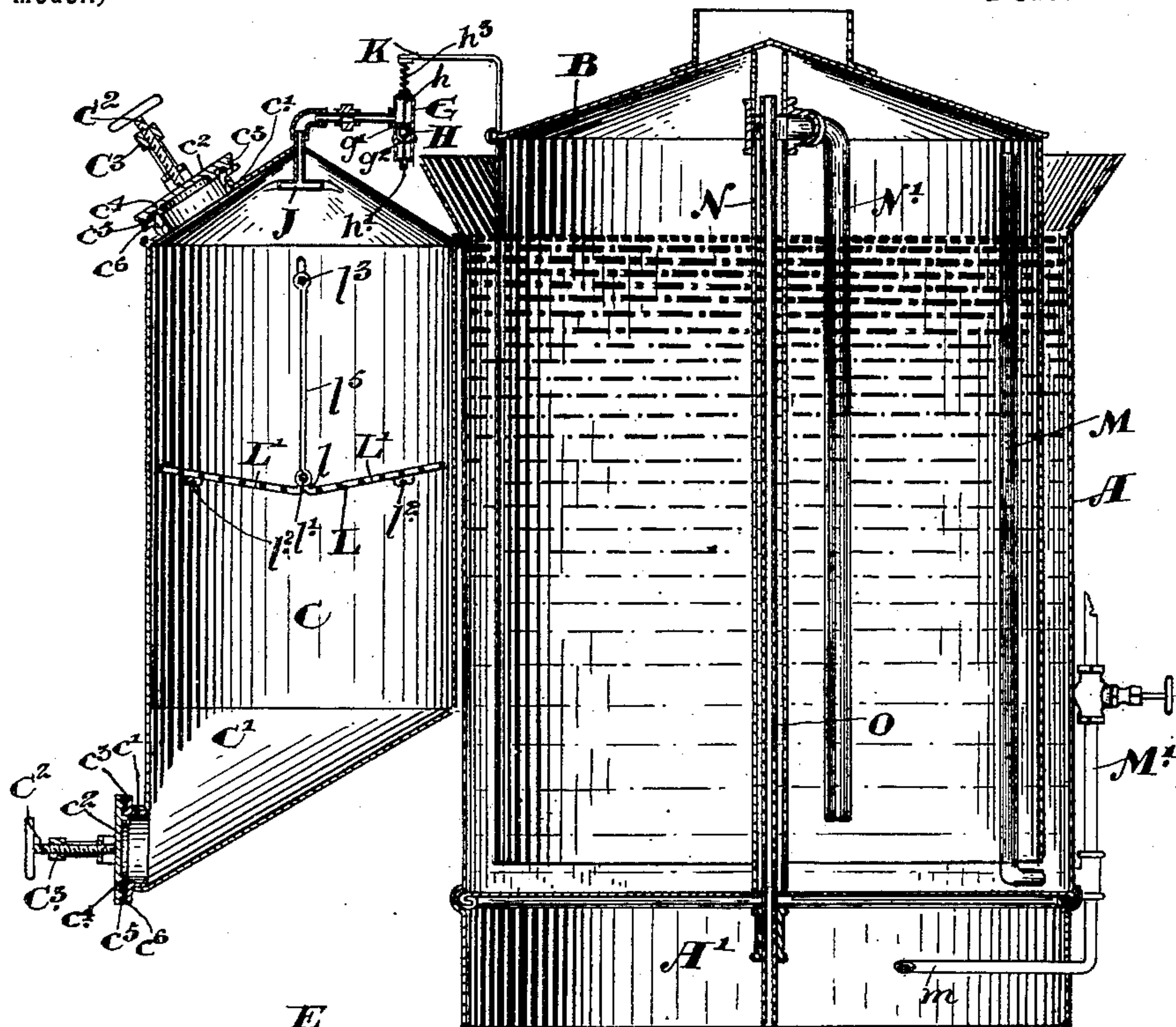
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2 Sheets—Sheet 2.



Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM FRANKLIN MUDGE, OF WELLAND, CANADA.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 633,027, dated September 12, 1899.

Application filed January 29, 1898. Serial No. 668,455. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM FRANKLIN MUDGE, of the town of Welland, in the county of Welland, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Acetylene-Gas Generators, of which the following is a specification.

My invention relates to improvements in generators more particularly adapted for the production of an acetylene gas; and the objects of the invention are, first, to devise a simple means to regulate to a nicety the supply of water on the carbid of calcium in the generator; secondly, to provide an improved form of generator and holder in same for the carbid whereby all sediment may be removed in a dry state expeditiously without disturbing the carbid, and, thirdly, to provide a safety device in connection with the generator whereby all danger of explosion in the generator is absolutely avoided; and it consists, essentially, first, of a double-acting valve located intermediately of the length of the pipe leading from the reservoir through the top of the generator, such valve being designed to be operated by an arm attached to the top of the gasometer as such gasometer sinks; secondly, of a rocking grate connected to a central bar and supported on side bars, such central bar being connected by a rod to a crank-rod journaled in the generator and provided at one end with a crank-handle, the bottom of the generator being funnel-shaped, offset to one side, and with the opening thereof substantially vertical, so that the sediment falling from the grate when shaken may be readily removed, and, thirdly, of providing a supplemental pipe leading from the gas-supply pipe to a water-trap at the bottom, such supplemental pipe being connected to such gas-pipe leading from the generator between the gas-supply-controlling valve and the generator, a further supplemental pipe being also provided in the gasometer, having an open lower end and being connected to the central pipe of the gasometer near the top, through which runs an open-ended central pipe connected at the bottom also to the water-trap, which in itself is connected by a pipe to any point outside the building, the parts being otherwise constructed and ar-

ranged in detail, as hereinafter more particularly explained.

Figure 1 is a perspective view of a gasometer constructed in accordance with my invention, portions being broken away to exhibit the internal construction. Fig. 2 is a vertical section through the center of one generator and the gasometer. Fig. 3 is a vertical section through the gasometer and center gas-supply pipe and water-trap. Fig. 4 is a detail of the double-acting valve.

In the drawings like letters of reference indicate corresponding parts in each figure.

A is the tank, which is filled with water in the usual manner, and B is the gas-holder, which is placed in the tank in the usual manner.

The tank A is provided with depending flanges A', forming a hollow space underneath the tank.

C are the generators, of which I provide, preferably, two in number, which are connected together at the top by the cross-pipe D, having the depending ends, and connected by a T-joint D' at the center.

d are controlling-valves located one on each side of the center of the T-joint D' on the pipe D.

D² is the down-pipe, which leads from the joint D' down into the water-trap D³, located at the bottom of the tank, being securely attached to the flange A' at the bottom thereof.

E is a reservoir supported on suitable brackets E', secured at one side of the tank at the top. The tank E is filled with water and may be provided with any suitable ball-cock where the water is under pressure.

F is a pipe leading from the bottom of the tank E to the valve-casing G below the valve H. The valve-casing G is provided with the usual stuffing-box g at the top and two upper and lower tapered seats g' and g². The valve H is in the form of a plug having tapered upper and lower ends, a valve being located between the seats g' and g².

h is a central rod of the valve, which extends into the extension h' at the bottom and through the bushing at the top of the valve-casing.

The top of the rod H is provided with a button h², and between the buttons h² and the

bushing g and encircling the rod h I provide a spiral spring h^3 .

I is the pipe leading from the valve-casing above the valve down through the center of the top of the generator C, where such pipe is provided with radially-arranged spraying-nozzles J.

K is an arm secured in the top of the gas-holder and designed to come in contact with the button h^2 at the top of the rod II when the gas has become so low in the generator that there is but sufficient to supply the lights. Upon the arm K striking the rod it forces it down and throws the valve from off its upper seat, allowing the water to pass around the same from the pipe F and out by the pipe I through the nozzle J into the generator upon the carbid, as will hereinafter appear. Immediately the gas begins to rise in the gas-holder by passing from the generator the gas-holder will of course rise and bring the valve back upon its upper seat g' , thereby immediately shutting off the supply of water. If there is no more carbid in the generator, the arm K will hold the valve down upon its lower seat, and thereby prevent the generator being filled with water. I find in practice this is a very sensitive form of valve and suits to a nicety to cut off the supply of water, so that not more than the exact amount necessary need be utilized to produce the required supply of gas for the lights in use.

In order to support the carbid underneath the spraying-nozzles J, I provide centrally-jointed circular grate-bars L, made in two portions L' L' . The abutting ends of the two portions L' L' have adjacent lugs l with holes in them, through which passes the central rocking rod l' . The outer sides of the portions L' L' of the grate-bars are supported on the cross-rods l^2 , which cross-rods are suitably held in the sides of the generator.

l^3 is a crank-rod extending across the generator parallel to the cross-rod l' , suitably journaled in the generator, and provided with a crank-handle l^4 . The crank of the rod l^3 is pivotally connected by a rod l^5 to the center rod l' .

The grate L is intended to contain the carbid, and as it is utilized and the gas thrown off from same the crank-handle l^4 may be turned, so as to shake the grate, and thereby sift the sediment from the carbid, so that it will be deposited in the offset funnel C' , formed at the bottom of the generator. The offset funnel C' is provided with a substantially vertical orifice to the outside thereof and collar c' , upon which is fitted a cap c^2 . The collar c' is provided with a flange c^3 , located to the inside of the end of the collar. The cap c^2 is provided with two ring-flanges c^4 and c^5 , one fitting inside of the collar and the other at the outside upon the flange c^3 . A washer c^6 , of rubber, is provided between the flange c^3 and the flange c^4 , so that when the cap is pressed into position the orifice C

will be hermetically sealed. The pressure is brought upon the cap by means of the screw-spindle c^2 working through the bracket-clamp C^3 . It will be seen that as the offset funnel-shaped bottom of the channel has the orifice entirely to one side all the sediment will be precipitated toward the orifice, from which it may be very conveniently removed. At the top of the generator I provide an identically similar collar and closing device, which it is not necessary to describe.

D^4 are the supplemental down-pipes leading from the pipes D D down into the water-trap D^3 . It will of course be understood that the valve d must be always closed in recharging the generator, so as to prevent the gas returning back from the gas-holder. It will be noted that these pipes are connected to the pipes d between the valves D and the generator, and therefore the valve d if accidentally not turned on, so as to allow of the gas generated in the generator to pass down through the pipe D^2 and up through the pipe D^5 into the gas-holder, there will be no danger of an explosion, as the generated gas will pass through the pipe D and through the pipe D^4 down into the water-trap D^3 , through which it will force its way out by the pipe D^6 , connected to the water-trap, into the street. By this means all danger of explosion is absolutely avoided. It will be noticed that the pipe D^5 is connected at the bottom to the pipe D^2 and extends through the tank up into the gasometer above the level of the water.

M is a pipe leading from the supply-pipe M' outside of the gasometer into the tank and up through and above the level of the water in the gas-holder.

m is a drip-pipe leading from the pipe M' to the water-trap D^3 .

N is the central pipe of the gas-holder, and N' is a branch pipe connected thereto at the top and leading down to near the bottom. O is a central pipe having an open upper end and closed at the bottom leading through the central pipe N. P is a pipe leading from the pipe O to the water-trap D^3 . As the gas accumulates in the gas-holder above the water of course the gas-holder is caused to ascend, and when it reaches the level of the bottom of the pipe it is prevented going any farther, as the gas immediately blows off through the pipe N' and pipe O and pipe P into the water-trap, thence out by the pipe D^5 . This safety device very effectually prevents any danger of the gas blowing the gas-holder out of place.

From this description it will be seen that I provide a very effectual means whereby the supply of water to the generator is regulated to a nicety. The sediment is also very readily removed from the carbid, and the safety devices hereinbefore described render my generator absolutely safe.

I have preferably, as hereinbefore described, provided two generators, so that in

case of the carbide in one becoming exhausted the other may be utilized, or they can be used alternately.

What I claim as my invention is—

5 1. In combination, the gasometer, independent generators supported thereby at one side of the same, a horizontal pipe connecting the top of said generators, a water-trap
10 at the base of said gasometer, a pipe intermediately coupled to said horizontal pipe leading into said water-trap having a connection above said trap leading into said gasometer, a valve in the horizontal pipe interposed between each generator and the vertical pipe,
15 and supplemental pipes leading from the horizontal pipe at points intermediate of the valves and the generators, said pipes discharging into said water-trap, substantially as described.

20 2. In a gas-generator, the combination with the water-reservoir, the generator and pipe leading from the reservoir into the top of the generator, of the valve-casing having an inlet-pipe leading to the lower end of the valve-
25 casing and the outer pipe leading from the upper end of the casing, the double valve-seats situated in the casing between the two pipes, the double-tapered valve-plug located between the seats and designed to have movement between them, the stem supported in
30 suitable bearings in the top and bottom of the casing and means connected with the gas-holder for throwing it against the lower seat as and for the purpose specified.

35 3. In a generator the combination with the generator proper and spraying-nozzle extending into the top of the same, of a circular

open grate formed in two parts diametrically, the cross-bars for supporting each part, the central connection for each part of the grate 40 and means for imparting a rocking independent movement to each part toward the center and sides alternately, as and for the purpose specified.

4. In a generator, the combination with the 45 generator proper and spraying-nozzle extending into the top of the same, of the circular open grate provided with cross-bars connected together by lugs and having a pivotal central cross-bar, cross-bars located intermediately between the center of the grate 50 and the sides and designed to form rocking supports for the two sides of the grate and means for imparting the desired movement to the grate upon the stationary supporting- 55 bars as and for the purpose specified.

5. In a generator, the combination with the generator proper and spraying-nozzle extending into the top of the same, of the circular open grate provided with cross-bars 60 connected together by lugs and having a pivotal central cross-bar, cross-bars located intermediately between the center of the grate and the sides and designed to form rocking supports for the two sides of the grate, a 65 crank-rod suitably journaled in the generator provided with a suitable crank and crank-handle and a rod connecting the crank to the central rod of the double rocking grate as and for the purpose specified.

WILLIAM FRANKLIN MUDGE.

Witnesses:

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