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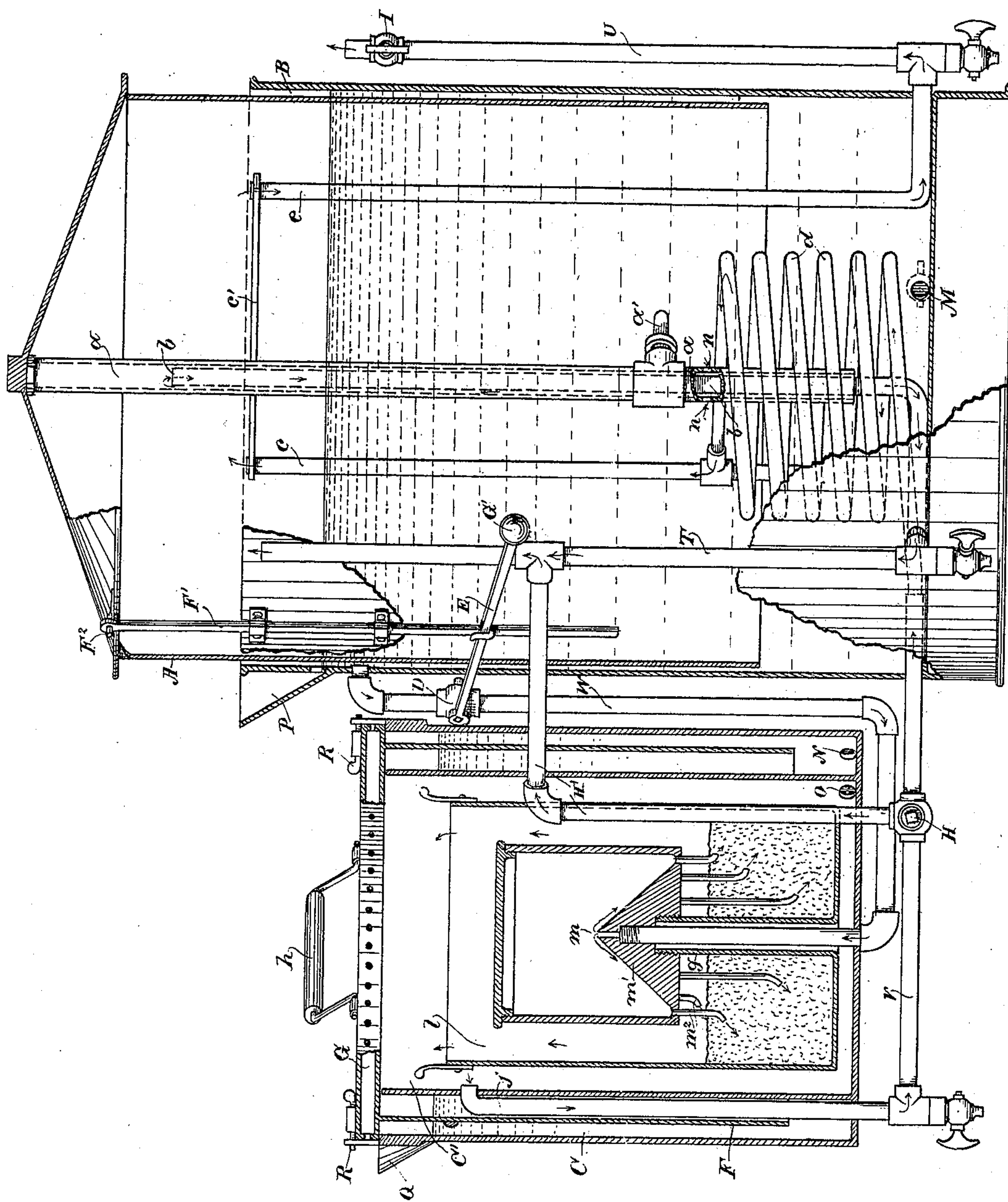
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L. E. LEE.

ACETYLENE GAS GENERATING APPARATUS.

(Application filed Mar. 24, 1898.)

(No Model.)



Witnesses,

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ACETYLENE-GAS-GENERATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 619,046, dated February 7, 1899.

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To all whom it may concern:

Be it known that I, LOUIS E. LEE, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Acetylene-Gas Apparatus; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an apparatus which is especially designed for the manufacture of acetylene gas.

It consists, essentially, in a novel arrangement of the carbid-chamber, with means for distributing water to all parts of the carbid contained therein, means for conducting the gas to a gasometer, means for cooling the gas before it is delivered into the gasometer, and automatic mechanism connecting with the gasometer and controlled by its movements, whereby the supply of water to the carbid-chamber is controlled and by which it is cut off either when the gasometer is full or when the carbid is exhausted and the gasometer sinks to the bottom of its tank.

It also comprises details of construction, which will be more fully explained by reference to the accompanying drawing, in which the figure is a sectional view of the apparatus.

The object of my invention is especially to provide for a more efficient and rapid production of gas for a given quantity of carbid which is employed for the purpose, so as to secure the gas from all parts of the mass simultaneously, a means for automatically regulating the flow of water which is supplied from the gasometer-tank to the carbid-holder, a coil of pipes within the gasometer-tanks through which the gas passes and wherein it is cooled before being delivered into the gasometer, and a safety device for discharging any accidental surplus of gas beyond the capacity of the gasometer.

In the accompanying drawing, A is the gasometer or gas-holder, and B is the tank, in which it is vertically movable. In the center of the tank is a hollow guide-stem *b* and in the upper part of the gasometer is a vertical tube, which fits over this hollow stem, and the two serve to guide the gasometer and maintain it centrally within the tank. This device also serves the purpose of a safety ap-

paratus, the pipe *b* connecting at the bottom with a pipe T, which leads outwardly to the open air or to any proper discharge for the purpose of allowing the escape of a surplus of gas in case the gasometer has risen to the top and more gas is still arriving. In order to effect this, I make a hole or holes *n* in the tube *a* at such a point that when the gasometer has reached its highest point these holes will be above the surface of the water in the tank and will then allow the gas to escape into the tube *a*, thence into the top of the tube *b*, and thus pass to the escape-pipe T.

Upon the side of the tube *a* is a projection *a'*, and connecting the top of the inlet and discharge pipes *c* and *e* within the gasometer is a transverse bar *c'*, so located that when the gasometer has risen to the greatest allowable height the lug *a'* will contact with this bar *c'* and thus prevent the gasometer rising any farther. At this point the openings *n* will be exposed for the escape of gas.

The generator consists of an exterior chamber C, an interior annular chamber C', and the interior carbid-holder L. The space between the outer and inner annular cylinders C and C' forms a water chamber or seal, into which the cylindrical top portion F enters, the lower edge being submerged in the water. Upon the upper part of this section F is a double top or cover G, the periphery of which rests upon the edges of one or both of the cylinders C and C', and it has holes made around the edges for a free circulation of air within the top to keep this part cool. *h* is a handle by which it may be taken out when desired, and R are bolts or other suitable fastenings by which it is secured in place.

A supply-pipe W leads from the tank of the gasometer to a point below the center of the cylinder C, and it extends up into this cylinder and discharges through the distributor *m*, which is screwed upon its upper end, so as to make a tight joint. A larger pipe *g*, forming a vertical interior extension of the carbid-chamber, surrounds the pipe W, and this also extends up into the base of the distributor, into which it is screwed. The carbid and distributing chambers may thus be simultaneously screwed off from the pipe W for cleaning and recharging. At the upper end of this tubular extension is a distributor *m*,

into which the water is delivered. The lower part of this distributor has a cone m' formed in it, so that the water delivered at this apex flows down over the sides to the periphery at the bottom of the distributor-chamber m . From the bottom of this chamber pipes m^2 extend downwardly, these pipes being of different lengths and having their discharge-openings at different distances from the center of the carbid-chamber l , so that the water after flowing down the distributing-cone m passes out through these pipes and is delivered into the mass of carbid contained within the chamber at points all through the mass. The mass of carbid is thus acted upon by the water at all points and will produce gas simultaneously through the whole mass. I thus achieve two points—first, in the rapid manufacture of the gas, and, secondly, in the utilization of the whole mass of carbid and avoid the retardation of the work, which is caused by a crust forming upon the top of the body of carbid when the water is only supplied at one or two points. The gas thus produced in this chamber is led therefrom by a pipe j , which passes down outside of the cylinder C' through the water contained between it and C , and thence through a pipe V , which leads into the lower part of the gasometer-tank. Within this tank it connects with a coiled leaden pipe d , with a great number of turns, through which the gas passes and is exposed to the water, so that it is cooled before entering the pipe c , which delivers it into the upper part of the gasometer.

e is a pipe which conveys the gas from the gasometer to the house supply-pipe, which is shown at U , exterior to the gasometer-tank and which is controlled by a cock I .

The pipe V , which carries the gas to the gasometer, has a three-way cock H fixed in it. When in its normal position, this allows the gas to pass directly from the generating apparatus into the gasometer; but, if desired, the cock may be turned so as to connect the generator through a pipe H' with the safety-pipe T when recharging with carbid.

M , N , and O are trap-screws for draining, respectively, the gasometer-tank, the water-jacket for the carbid-generator, and the section of the generator which holds the carbid-receptacle.

Water is supplied to the gasometer-tank and to the generator water-jacket from time to time by means of spouts P and Q , respectively. The supply of water to the carbid-chamber passing through the pipe W from the gasometer-tank is controlled by a cock D , having a lever-arm E extending from its turnable plug, and this lever-arm is connected by a hook or otherwise with a vertically-slidable bar F' , which moves in suitable guides upon the exterior of the gasometer-tank. The upper end of this bar is connected by a pin F^2 or otherwise with the gasometer itself, and is thus movable in unison with it.

The plug of the valve D is so constructed

that when the gasometer is at its lowest point or exhausted the lever-arm E , being moved down by the movement of the slide F' , will have turned the plug so as to close the supply to the carbid-chamber, and, similarly, when the gasometer is at its highest point and full the lever-arm E will have been moved upward by its connection with the slide F' and will have again closed the valve at this point. The valve is fully opened when the bar E stands approximately in a horizontal position. The end of the bar or lever E is here shown as provided with a weight G' , so that it will move downward by gravitation when the gasometer sinks, and thus act to close the valve.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an apparatus for making acetylene gas, a carbid-containing chamber and generator, and a water-distributor supported within the carbid-chamber and having projecting downwardly from its lower portion, a plurality of pipes of different lengths adapted to discharge at different points within the mass of carbid contained within the chamber.

2. In an apparatus for making acetylene gas, a carbid-containing chamber and generator, and a water-distributor therein and including vertically-disposed pipes of different lengths adapted to discharge at different points within the mass of carbid contained within the chamber.

3. In an apparatus for making acetylene gas, a carbid-containing chamber and generator, a water-distributor within the chamber and rigid therewith to enable both to be removed together, and a series of pipes depending from the bottom of the distributor and having different lengths whereby they discharge at different points within the mass of carbid contained within the chamber.

4. In an apparatus for the generation of acetylene gas, the carbid-containing chamber and generator, a pipe extending thereinto, a distributor into which the water is delivered from said pipe, the distributor having an interior cone, at the apex of which the water is delivered so as to flow downward and outward therefrom, a series of pipes connecting with the distributor around the base of the cone, said pipes being made of different lengths and discharging at different points within the mass of carbid contained within the chamber.

5. In a generator for acetylene gas, a carbid-containing chamber and generator, a water-supply pipe extending upwardly through the bottom, a distributing-chamber of larger diameter having a conical downwardly-diverging surface with an opening at the top of the cone through which the water from the supply-pipe is delivered so as to flow downwardly and outwardly upon the surface of the cone, a series of pipes communicating with the distributor around the base of the cone

and having their discharge ends open at various points above and throughout the mass of the carbid.

6. In an apparatus for the production of acetylene gas, a carbid-containing chamber, a water-distributor contained therein and provided with a conical bottom and a series of pipes of different lengths, adapted to supply water throughout the body of carbid, chambers surrounding the exterior of the carbid-chamber with the outer chamber containing water, an open-bottomed top section dipping into the water and forming a seal, a gasometer and a tank therefor, and a pipe for conducting the gas from the intermediate chamber to the gasometer.

7. In an apparatus of the character described, a carbid-containing chamber, exterior chambers, the outer one of which contains water, an open-bottomed section dipping into said water from above and forming a seal, said section having a double top or cover to form an air-space with means for admitting air thereto, means for locking the top or cover in place and means for admitting water to the carbid consisting of a water-chamber within and rigid with the carbid-chamber and provided with vertical pipes of different lengths for discharging water at different points within the mass of carbid.

8. In an apparatus of the character described, a generating-chamber, a gasometer and tank adapted to receive the gas from the generator, a pipe leading from the gasometer-tank to the generator to supply water thereto, a regulating-valve in said pipe and a mechanism comprising a weighted lever-arm connected with the stem of the valve and a slidably-mounted arm on the said tank and connected with the gasometer and lever-arm whereby the water-supply to the generator is cut off when the gasometer is at its highest or its lowest point.

9. In an apparatus for the generation of acetylene gas, a generator of the character described, a gasometer, a pipe leading from the water-tank of the gasometer to the generating-chamber, a cock having a turnable plug, a lever-arm connecting with said plug, a vertically-slidable bar on the exterior of the water-tank with which said arm is connected, having its outer end weighted to cause it to fall by gravity to open the valve as the gasometer falls, said slidable bar being connected with the gasometer so as to rise and fall with it, whereby the plug is so turned as

to admit water to the generating-chamber when at its middle position and to close so as to cut off the water-supply both at the highest and lowest points of the gasometer.

10. In an apparatus for the production of acetylene gas, a carbid-containing chamber, a water-distributor therein, having a conical bottom and series of depending pipes of different lengths discharging water into the mass of carbid at different points, a gasometer and tank therefor, a pipe connecting the water-tank with the distributor and having a separable connection with the latter, a pipe conveying the gas to the gasometer and a safety-pipe and means for discharging surplus gas after the gasometer is filled.

11. In an acetylene-gas generator, a carbid-receptacle having an interior central sleeve extending upwardly from the bottom, a water-pipe of smaller diameter extending above the top of the sleeve and having its lower part fixed in the exterior casing, a distributing-chamber secured upon the top of the sleeve so as to be movable in unison with it and the carbid-receptacle, said distributor having screw-threads by which it and the carbid-receptacle are removably secured upon the water-pipe.

12. In an apparatus of the character described, a generator, a gasometer and water-tank in which it rises and falls, gas inlet and discharge pipes vertically disposed within the gasometer, an open-topped tubular guide-pipe centrally located in the gasometer-tank and connecting at the bottom with an exterior escape-pipe, a tubular sleeve fixed centrally in the upper part of the gasometer and slidable over the guide-stem, openings made in said sleeve which are normally submerged in the water of the tank, but which are exposed to admit gas when they rise above the surface of the liquid so that the gas may pass to the central hollow guide and safety-pipe, a lug or pin projecting from the tubular sleeve and a stop-bar connecting the said gas inlet and discharge pipes and lying in the path of movement of said lug or pin, and against which said lug contacts when the gasometer has risen to the greatest allowable height.

In witness whereof I have hereunto set my hand.

LOUIS E. LEE.

Witnesses:

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JESSIE C. BRODIE.