

UNITED STATES PATENT OFFICE.

EMMANUEL LARTIGNE, OF CANDÉLAN, FRANCE.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 657,663, dated September 11, 1900.

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To all whom it may concern:

Be it known that I, EMMANUEL LARTIGNE, a citizen of the Republic of France, residing at Candéran, France, have invented certain
5 new and useful Improvements in Automatic Apparatus for Producing Acetylene Gas, of which the following is a specification.

This invention relates to acetylene-gas-producing apparatus, one object being to provide
10 a device of this kind in which acetylene gas is automatically produced by means of carbide of calcium dropped into water, the feed of carbide being regulated so as to obtain a sufficiently-steady pressure within the apparatus and said regulation being effected au-
15 tomatically by the direct pressure of gas without any mechanical intermediate.

A further object of the invention is to avoid the necessity of more or less complicated
20 mechanism and devices—such as springs, diaphragm, levers, gears, or like parts—subject to deterioration.

A still further object of my invention is to produce small volumes of gas, the production
25 proceeding according to the consumption, whereby the usual gas-holder may be avoided, and to provide means whereby the gas-pressure cannot be raised beyond a predeterminate pressure without employing special de-
30 vices therefor, such as safety-valves or the like.

These objects are attained by the novel construction, combination, and arrangement of parts fully described hereinafter, and specifically pointed out in the claims.
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In order that this my invention may be the more readily understood and carried into practical effect, reference is hereby made to the accompanying drawing, showing an elevation of the improved apparatus, with por-
40 tions broken away to disclose the main parts thereof.

The improved apparatus is composed of a water-reservoir containing water to decom-
45 pose carbide of calcium, a carbide-receptacle, a regulating-bell for regulating the feed of carbide, and an annular water-tank into which the bell is inverted.

The water-reservoir A, preferably made of
50 cylindrical shape and arranged vertically, is mounted on any suitable support or frame A' and terminates at its lower end in a cone-

like part A², closed by means of a well-tight plug C, provided with a cock or equivalent C', through which the reservoir may be emp-
55 tied, if required. The upper part of reservoir A is provided with a tubing B, closed by a removable plug B' and through which the reservoir will be filled with water. The capacity of reservoir A is such that if the same
60 is completely filled the volume of water contained in the reservoir will be able to decompose the entire amount of carbide adapted to be contained in the carbide-receptacle. The upper end of reservoir A is provided with a
65 horizontally-projecting circular flange A³, to which the bottom of the water-tank, hereinafter described, may be easily secured in any preferred way.

The carbide-receptacle F is formed of a cy-
70 lindrical casing having an inclined apertured bottom F', the aperture of which may be closed or opened by means of a suitable valve G, rigidly secured to the top of the regulat-
75 ing-bell by means of valve-stem G', secured to a cross-piece K of a tube-section J, which in turn is rigidly secured to the top of said regulating-bell. The upper end of said re-
80 ceptacle is closed by a plate F², suitably secured to the main body thereof and provided with a central open tubing H, through which said tube-section J passes loosely. The re-
85 ceptacle-top is provided with a number of horizontally-projecting lugs or equivalents F³, resting upon the upper rim of the inner wall of the annular tank hereinafter described. The carbide is preferably employed in a granular state.

The regulating-bell is formed of two cylin-
90 ders I I', having different diameters and connected together by means of an annular plate I². The regulating-bell is adapted to move freely up and down, its movement being guided by three or more projecting lugs or equivalents O, secured to and near the lower
95 end of cylinder I, as shown, and a vertical rod I³, suitably secured to removably-mounted plate I⁴, closing tube-section J, said rod I³ passing loosely through an eye I⁵, secured to the end of the overhanging arm V' of post V,
100 the lower end of which is suitably secured to the annular water-tank of the apparatus. It will be seen that the length of valve-stem G' is adjusted so that, the regulating-bell being

in its lowermost position and the lugs F^3 of receptacle F resting upon the upper rim of the annular tank, valve G will be brought away from the discharge-opening of the receptacle and carbid allowed to drop into reservoir A . As the bell moves upward said valve G will again close said discharge-opening, and as the bell rises still farther it will carry said receptacle with it.

On two opposite sides of the regulating-bell and secured thereto are two brackets L M , carrying pivotally-mounted vertical bolts L' M' , the lower ends of which are turned at right angles with the vertical shanks of said bolts and adapted to rest on the annular shoulder E^3 of the water-tank to lock the regulating-bell in a position in which the lugs F^3 of receptacle F are lifted above the upper rim of the inner wall of said water-tank, said receptacle then resting upon valve G . In either position said regulating-bell communicates with the interior of reservoir A through the annular space between said receptacle and the inner wall of the water-tank.

The water-tank of the apparatus is annular in cross-section. The inner wall of same is formed of a vertical cylinder E , and the outer wall is formed of two cylinders E' and E^2 , connected by annular plate E^3 . Said annular water-tank will be filled with water until the level thereof rises to the bottom of cylinder E^2 , so that if the regulating-bell merges into the water a hydraulic joint is formed and the inner space of the apparatus tightly closed. The water-tank is provided with a suitable cock X (on the right in the drawing) for emptying the same. The acetylene gas produced within reservoir A flows upward in the direction of the arrows and enters the mouth of a vertical pipe N , located between the inner wall E of the water-tank and the wall of the regulating-bell and having a horizontally-turned part extending through the outer wall E' of said water-tank and discharging the acetylene gas into the lower part of a suitable filter N' , having a gas-outlet N^2 and a waste-cock N^3 , as shown.

The operation of the improved apparatus will be easily understood from the foregoing description, and I deem it unnecessary to give further explanation thereof; but it may be still stated that before starting the apparatus the air contained therein may be expelled as follows: After having filled the reservoir A and tank E and charged the carbid-receptacle F the removable plate or plug I^4 will be removed from tube-section J and the regulating-bell with said receptacle put in place, so that a small quantity of carbid will drop into reservoir A . The regulating-bell will then be lifted again and locked into this position by means of the bolts L' M' . The acetylene gas produced will force out the air contained within the apparatus through said tube-section J . The complete evacuation of air will be noticed by the odor of acetylene gas at the tube-section J . The latter will

then be closed by means of said plug I^4 after passing the rod I^3 through eye I^5 , and the bell will be slowly lowered after disengaging the locking-bolts L' and M' . The apparatus will thus be started and operate automatically.

As it is evident that many changes in the construction and relative arrangement of parts might be resorted to without departing from the spirit and scope of my invention, I would have it understood that I do not restrict myself to the particular construction and arrangement of parts shown and described, but that such changes and equivalents may be substituted therefor.

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

1. In an apparatus of the character described, the combination of a water-reservoir, a water-tank supported upon the reservoir, a carbid-receptacle arranged within the said tank and adapted for vertical movement and having a discharge-opening at its lower end, a regulating-bell surrounding the tank and adapted for vertical movement, a valve arranged to close partially or entirely the discharge-opening of the carbid-receptacle, and a connection between the carbid-receptacle and the valve whereby when the said receptacle rises it will cause the valve to first partially close the discharge-passage, then entirely close it and finally cause the said receptacle to rise.

2. In an apparatus of the character described, the combination of a water-reservoir, a water-tank supported upon the reservoir, a carbid-receptacle arranged within the said tank and adapted for vertical movement and having a discharge-opening at its lower end, a regulating-bell surrounding the tank and adapted for vertical movement, a valve arranged to close partially or entirely the discharge-opening of the carbid-receptacle, and a connection between the carbid-receptacle and the valve whereby when the said receptacle rises it will cause the valve to first partially close the discharge-passage, then entirely close it and finally cause the said receptacle to rise, and means for supporting the regulating-bell in raised position with the valve entirely closing the discharge-passage of the carbid-receptacle.

3. In an apparatus of the character described, the combination of a water-reservoir, a water-tank supported thereon, and comprising cylindrical portion E , and cylindrical portions E' E^2 , and a plate E^3 connecting said latter portions, a carbid-receptacle arranged within the tank and adapted for vertical movement and having a discharge-passage at its lower end, a regulating-bell surrounding the tank and adapted for vertical movement, a valve arranged to close partially or entirely the discharge-opening of the carbid-receptacle, a connection between the carbid-receptacle and the valve, adapted to

operate the valve in the rising and falling movements of the said bell, and means carried by the bell adapted to engage over and be supported by the plate E³ when the bell
5 has been raised to a point where the valve entirely closes the discharge-passage of the carbid-receptacle and the latter is supported by the said valve.

10 4. In an apparatus of the character described, the combination of a water-reservoir, a water-tank supported thereon and comprising inner and outer cylindrical portions, a carbid-receptacle arranged within the inner

portion of the tank and having a discharge-passage in its lower end, a valve arranged to
15 control said passage, a bell arranged over the carbid-receptacle, a tube-section secured in the top of said bell, a rod secured to the tube-section and passing down within the carbid-receptacle and secured to the valve, and a
20 plug removably closing the upper end of the tube-section.

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Witnesses:

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