

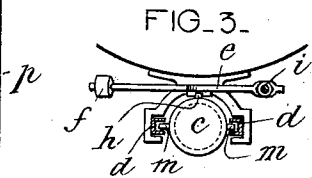
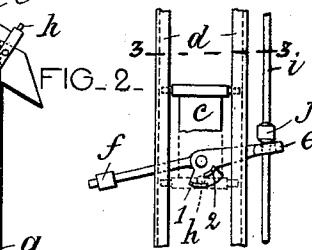
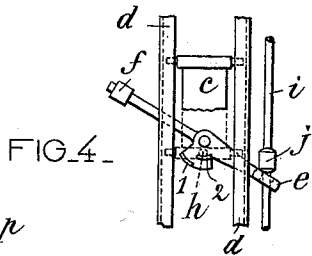
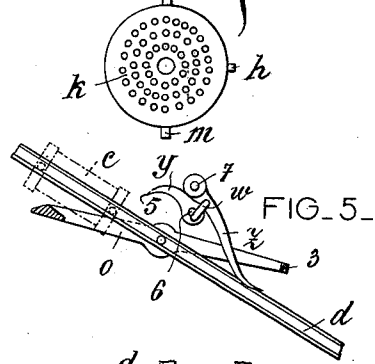
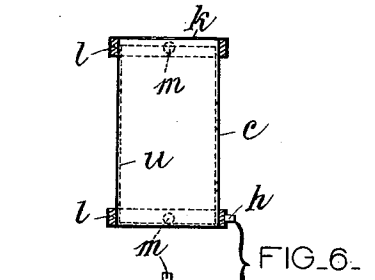
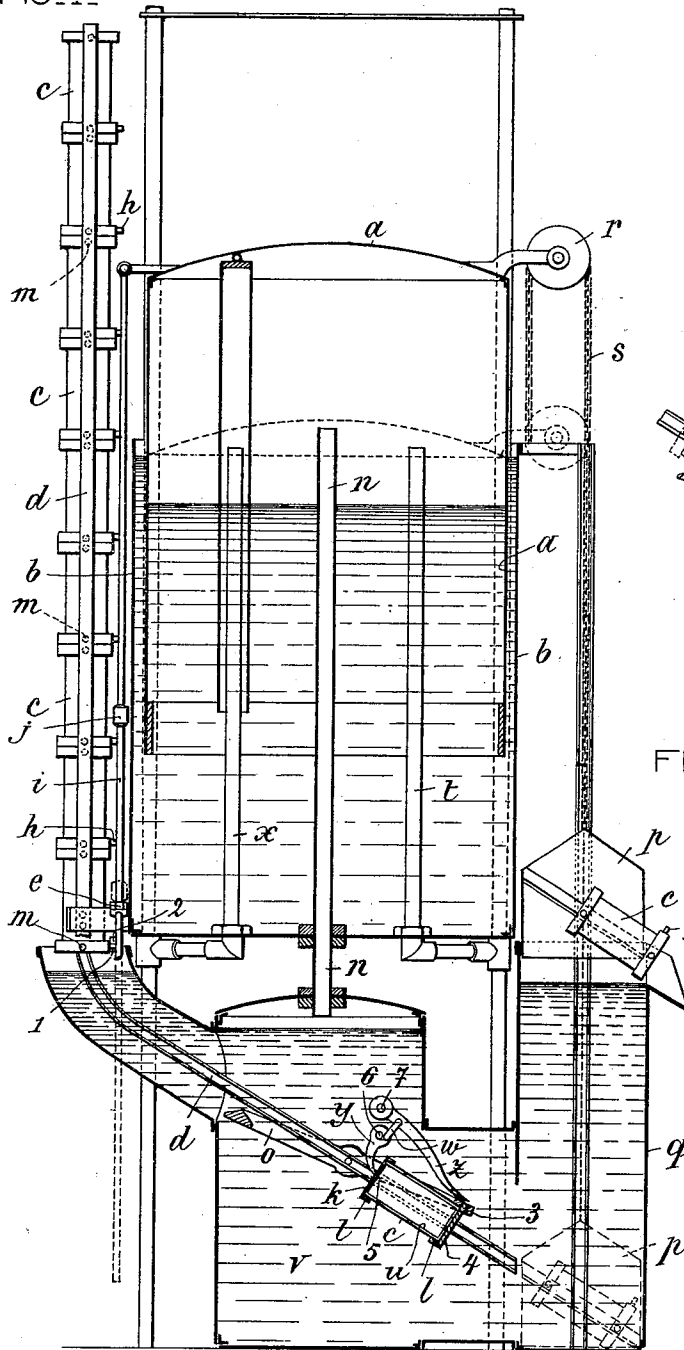
No. 635,544.

Patented Oct. 24, 1899.

G. A. HERVIEU.  
ACETYLENE GAS GENERATOR.

(Application filed Mar. 10, 1899.)

FIG. 1. (No Model.)



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# UNITED STATES PATENT OFFICE.

GASTON ALPHONSE HERVIEU, OF NAUTERRE, FRANCE.

## ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 635,544, dated October 24, 1899.

Application filed March 10, 1899. Serial No. 708,539. (No model.)

To all whom it may concern:

Be it known that I, GASTON ALPHONSE HERVIEU, of Nauterre, Seine Department, in the Republic of France, have invented certain new and useful Improvements in Acetylene-Gas Generators Operating Automatically, of which the following is a specification.

My invention relates to an acetylene-gas generator so arranged as to prevent any dangerous overproduction by means of a mechanism for distributing the carbid operated by the movements of the bell of a gasometer. The said generator is also characterized by a device which permits of the by-products or residues resulting from the manufacture of the gas being automatically evacuated and also by its general arrangement, which does away with the use of any cocks, valves, or other similar stoppers.

The apparatus comprises, essentially, a "generating-receptacle," properly so called, a water reservoir or tank, together with a gasometer-bell, an automatic distributor operated by the said bell, a device for receiving the carbid and placed within the generating-receptacle, a receptacle for first receiving and then carrying off the residues left by the spent carbid, and a mechanism operated by the said bell for ejecting the said residues. These different parts considered separately may vary in form and dimensions; but taken as a whole they operate in a well-defined manner, which is hereinafter described, their essential characteristic being that they are absolutely self-acting or automatic both in the matter of feeding the carbid and of evacuating the residues.

In the accompanying drawings, which show an example of my system of generator, Figure 1 is a vertical section showing the bell of the gasometer toward the middle of its vertical movement. Figs. 2 and 4 are detail views in elevation, showing different positions of the escapement mechanism of the carbid-distributor. Fig. 3 is a sectional plan view on line 3 3 of Fig. 2. Fig. 5 is a side elevation of the cartridge-perforator in its set or inactive position, and Fig. 6 is a longitudinal section and a plan of the cartridge.

The apparatus comprises a gasometer-bell *a*, sliding vertically in the tank *b*. The said gasometer serves to collect the gas generated.

The calcium carbid is inclosed in a series of tubes or cases *c*, which are hereinafter called "cartridges." The said cartridges are piled one on the other and guided by suitable slideways, such as *d*. The said cartridges *c* are closed at the bottom by an imperforate bottom and at the top by a perforated lid *k*. Trunnions or lugs *m*, integral with the cartridge or fixed to the same, are suitably placed on the sides of the cartridges in order to guide the latter in the slideways *d*. The said tubes, cases, or cartridges containing the carbid are prevented from moving down the slideways by an escapement mechanism, which in the example shown in the drawings is similar to a clockwork-escapement, the detail of the same being given in Figs. 2, 3, and 4. A lever *e*, Figs. 1 to 5, held in place by a weight *f* or a spring, is provided with two pins 1, 2, between which a stud *h*, fixed on each of the cartridges, becomes so engaged that the entire pile of cartridges is prevented from moving down by the lowermost cartridge of the pile, Fig. 2. A rod *i*, fixed to and moving with the gasometer-bell, is provided with a projection *j*, which presses on the lever *e* and causes the escape of the cartridges one by one at the proper time. The cartridges can only fall one by one, for when the said lever *e* is depressed by the rod *i* the stud *h* becomes disengaged from the lower pin 1, which has moved out of its way; but at the same time the upper pin 2 has come in the path of the stud *h* of the following cartridge and arrests the fall of the latter, Fig. 4. The released cartridge falls into the generator *v*, sliding down the inclined slideways *d*, and is brought to a stop in the position shown in the drawings by the stop-pin 3, fixed to the end of a lever or rocking frame *o*. The perforated lid *k*, mounted on a ring or rim *l*, fitted onto the cartridge by a bayonet-joint, allows the water to enter into the cartridge and attack the carbid. The gas given off moves up to the surface of the water in the generator and becomes washed and cooled in its passage upward, passing afterward into the gasometer-bell through the tube *n*. The said bell can hold a quantity of gas greater than that given off by a single cartridge which contains a predetermined quantity of carbid. The cartridge full of carbid when moving down the slide-

ways *d* has come in contact with the lever *o*, raised the same, and effected the release of the preceding cartridge, which has spent its carbid and now contains the by-products of the same, which by-products will be expelled from the generator at the same time as the cartridge containing the same. The spent cartridge moves down the slideways and then falls into the basket *p*, which is then at the bottom of the vessel *q*, adjacent to the generator *v*. The said basket is brought to the top of the said vessel *q* by the upward movement of the gasometer-bell. When arrived on a level with the upper opening of the vessel *q*, the basket empties itself of the cartridge, which falls into a bucket or any other suitable receptacle. After being washed the said cartridge is ready to be again loaded with carbid and then to be again placed in the slide-ways *d*, and so on.

A pulley *r*, over which passes a chain *s*, fixed at one end to the tank *b* and at the other to the basket *p*, serves to so move the said basket up and down that in case the bell should not be carried up to its utmost extent by the gas given off the spent cartridge would not remain in the apparatus.

The outlet for the gas from the gasometer is through the pipe *t*, attached to the frame of the apparatus, and then passes into the main.

To make the apparatus perfectly safe, I provide it with a pipe *x*, adapted to serve as an outlet for the excess of gas in case the gasometer-bell should become too full, although with my system of distributing the carbid there can be no overproduction of the gas.

The characteristic advantages of the hereinbefore-described apparatus are as follows: It is most easy to keep in repair, there being no cock to open or close, thus preventing any accident through inattention or forgetfulness. The carbid is fed in the simplest manner, for it is only required to fill the cartridges from time to time, which can even be done when the apparatus is in operation. At any time one can find out the quantity of gas the apparatus can produce before being reloaded. The extraction of the by-products requires no interference with the parts, thus preventing any accident through the introduction of air resulting from such interference. There is no fear of the apparatus becoming heated, the combination of the carbid with the water taking place in the middle of a great mass of water. The washing of the gas at the time of its formation is, moreover, advantageous, the quantity of light produced being the greater. The apparatus is always ready to operate, there being no cock or valve to open, and it can remain loaded any length of time without loss of carbid, which is inclosed in air-tight cartridges, which prevents the carbid from becoming hydrated.

In order to preserve the carbid in the best

possible manner from moisture, I may employ cartridges having a bottom provided with a rubber disk or ring *4*, Fig. 1, while the lid is formed by metal gauze *k*, mounted on a ring or rim *l*, fitted to the cartridge by a bayonet-joint, as hereinbefore described. In this manner when the cartridges are piled one above the other they become hermetically closed by the elastic joints supplied by the rings *4*, the lowermost cartridge in the pile being closed by a mock cartridge containing no carbid. Also instead of putting the carbid into the cartridges in ordinary or very small pieces I reserve to myself the right of inclosing the said carbid in inner cases *u*, Figs. 1 and 6, made of pasteboard or other suitable impermeable material, the said inner cases being closed at their ends by thin walls. The inner cases full of carbid are placed in metal cartridges, as before; but in order to give the water access to the carbid at the proper time I may provide a perforating device, such as shown in Figs. 1 and 5. This device comprises an arm *y*, having a point *5* and mounted on a pivot *6*, the said arm being connected by a link *w* with a lever *z*, on which the cartridge *c* acts on arriving into the generator. When the said lever *z*, which is pivoted at *7*, is raised, it gives a sharp movement of rotation to the arm *y*, the point *5* of which comes into contact with the lid of the inner case *u* and perforates the same.

Whether made of metal or of any other suitable material, the cartridges may be loaded not only with carbid either in small or large pieces, in powder, or in lumps, but also with any other product giving off, when in contact with water or any other suitable liquid, any kind of gas, whether inflammable or not, the operation of my apparatus not being affected in any way by the nature of the gases generated.

I claim—

1. An apparatus for generating acetylene gas, comprising a receptacle for generating gas, a water-tank having movable gasometer-bell, a distributor of carbid-cartridges operated by the movements of the bell, a device for receiving the cartridges in combination with a device for ejecting the residues, consisting of a basket having an inclined bottom and receiving the spent cartridges when issuing from the generator, a pulley carried by the gasometer-bell, a chain attached to the said basket and to a fixed point and passing over the said pulley in such a manner as to move the spent cartridge up out of the generator.
2. An apparatus for generating acetylene gas, comprising a receptacle for generating gas, a water-tank having a movable gasometer-bell, a self-acting distributor for the carbid-cartridges, a device for receiving the cartridges, a receptacle for carrying off the residues, a device for ejecting the residues, in combination with cartridges provided with a perforated lid and a full bottom faced with

rubber which makes an air-tight joint when the said cartridges are arranged in a pile one above the other.

3. An apparatus for generating acetylene gas, comprising a receptacle for generating gas, a water-tank having a movable gasometer-bell, a self-acting distributor for the carbid-cartridges, a device for receiving the cartridges, a receptacle for carrying off the residues, a device for ejecting the said residues, in combination with inner cases made of impermeable material, such as pasteboard, and containing the carbid, and with cartridges having a perforated lid and a device, operated by the movement of the cartridges, for perforating the ends of the said inner cases placed within the cartridges.

4. An apparatus for generating acetylene gas, comprising a receptacle for generating gas, a water-tank having a movable gasometer-bell, a self-acting distributor for the carbid-cartridges, a device for receiving the cartridges a receptacle for carrying off the residues, a device for ejecting the residues, in combination with cartridges having perforated lids, inner carbid-cases inclosed in the said cartridges, and a perforating device placed in the path of the cartridges at the

point where they pass into the generator, the said device consisting of two pivoted arms connected together by a rod in such a manner that, when one of the cartridges acts on one of said arms during its fall, the other arm is operated and perforates the inner carbid-case inclosed in the said cartridge, substantially as hereinbefore described and shown in the accompanying drawings, and for the purposes specified.

5. The combination of the generating-receptacle adapted to contain a liquid, the guideway leading to said receptacle and adapted to hold carbid-cartridges, and a cartridge-perforating device, operated by the movement of the cartridges.

6. The combination of the generating-receptacle adapted to contain a liquid, the guideway extending into said receptacle and adapted to hold carbid-cartridges, and a cartridge-perforating device, located within the receptacle adjacent to the guideway and operated by the movement of the cartridges.

Signed at Paris, in the Republic of France, this 9th day of February, 1899.

GASTON ALPHONSE HERVIEU.

Witnesses:

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