

No. 630,722.

Patented Aug. 8, 1899.

P. P. H. MACÉ & L. L. H. GÉRARD.
ACETYLENE GAS GENERATOR.

(Application filed Dec. 28, 1897.)

(No Model.)

FIG. 1.

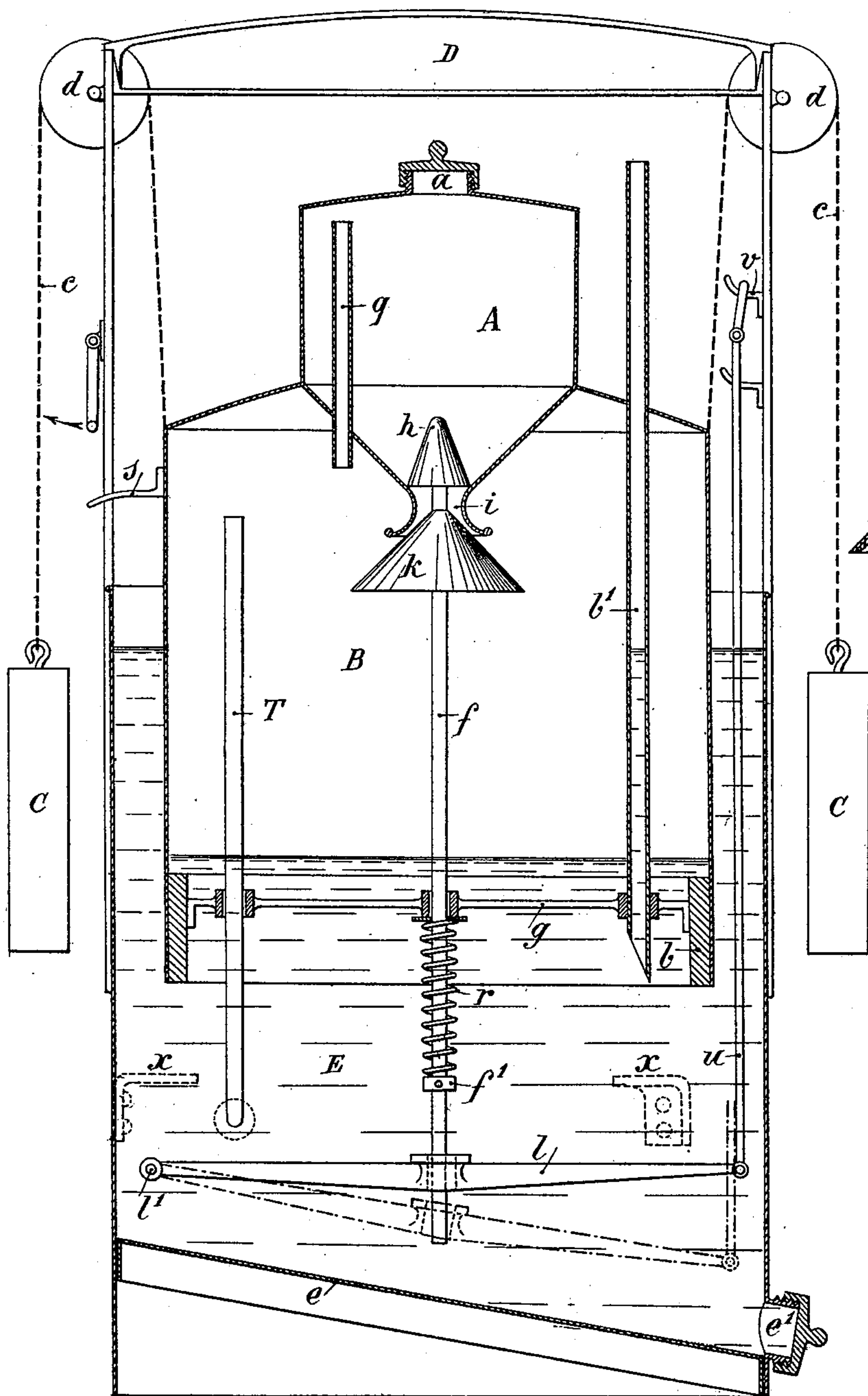
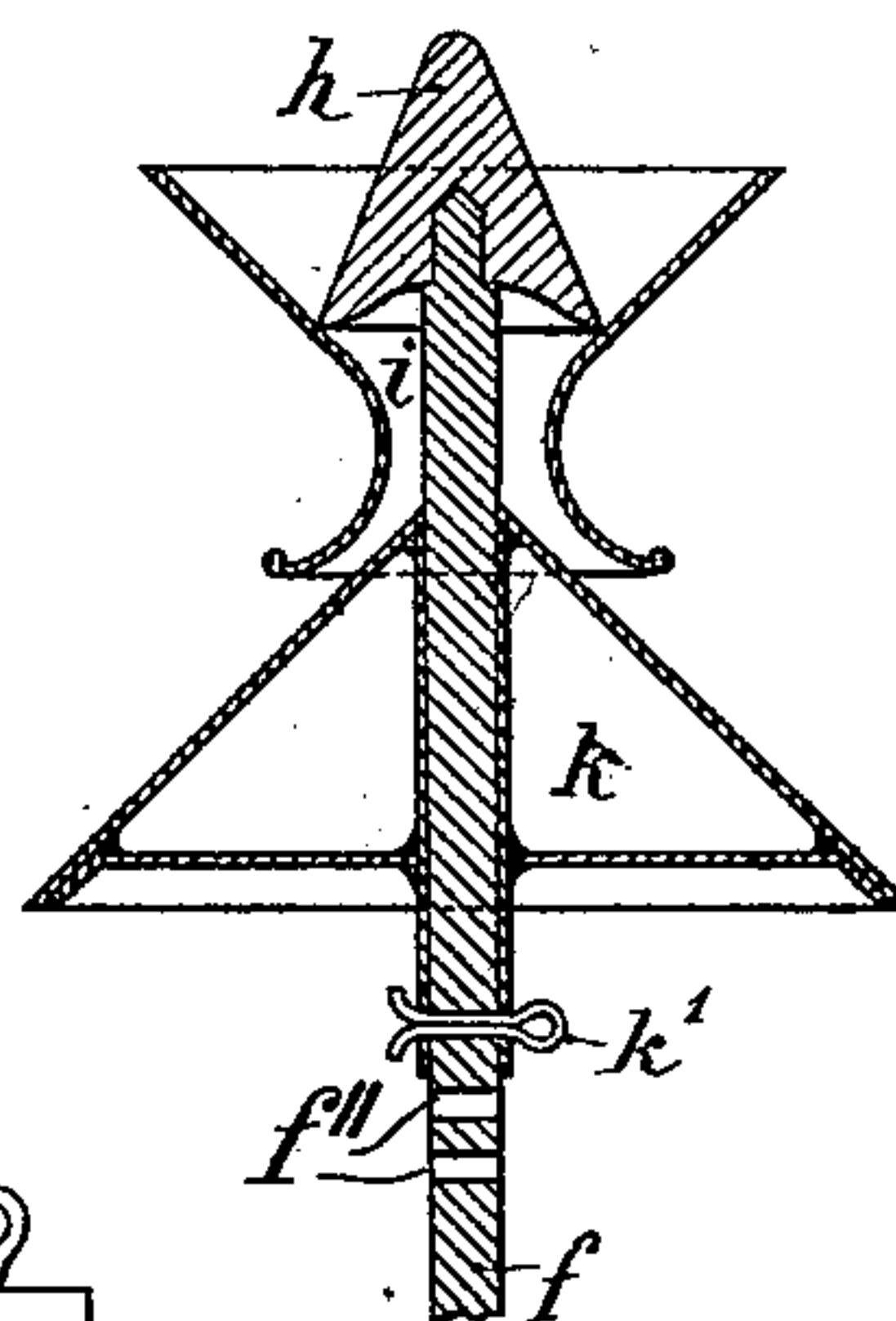


FIG. 2.



Witnesses
Edwin Drew Bartlett
Frank J. Ames.

Inventors
Paul Philippe Honoré Macé & Louis Léon
Hector Gérard
per Herbert Sefton Jones
Attorney

UNITED STATES PATENT OFFICE.

PAUL PHILIPPE HONORE MACÉ AND LOUIS LEON HECTOR GÉRARD, OF
PARIS, FRANCE, ASSIGNORS TO LA SOCIÉTÉ INTERNATIONALE DE
L'ACÉTYLÈNE, OF BRUSSELS, BELGIUM.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 630,722, dated August 8, 1899.

Application filed December 28, 1897. Serial No. 664,022. (No model.)

To all whom it may concern:

Be it known that we, PAUL PHILIPPE HONORE MACÉ, engineer, of 63^{bis} Rue de la Victoire, and LOUIS LEON HECTOR GÉRARD, engineer, of 16 Rue des Grandes Carrières, Paris, in the Republic of France, have invented Improvements in Apparatus for the Production of Acetylene Gas, (for which we have obtained a patent in France, dated the 8th of January, 1897, No. 262,899; in England, dated the 4th of February, 1897, No. 3,013; in Austria, dated the 10th of March, 1897, No. 47/835; in Hungary, dated the 21st of February, 1897, No. 9,113; in Germany, dated the 20th of February, 1897, No. 95,275; in Belgium, dated the 24th of February, 1897, No. 126,574; in Spain, dated the 4th of June, 1897, No. 20,850, and in Luxemburg, dated the 17th of November, 1897, No. 3,012,) of which the following is a specification.

This invention relates to improvements in apparatus for the production of acetylene gas, and has for its object to insure perfect regularity of working and to render the construction simpler and more practical.

It consists, on the one hand, in a novel arrangement for regulating the feed of the calcium carbide and, on the other hand, in a special arrangement of the various parts of the apparatus for the several purposes herein-after specified.

The invention will now be described with reference to the accompanying drawings, in which—

Figure 1 is a vertical section of the apparatus, and Fig. 2 a vertical section of the double feed-valve.

In this improved apparatus calcium carbide finely crushed is contained in a receptacle A, arranged on the upper part of a bell or gasometer B, the diameter of which is sufficiently great not to allow of the decrease of weight resulting from the consumption of carbide during a given period of time sensibly modifying the pressure of the gas produced. A tap placed on the gas-discharge pipe allows of this pressure being exactly regulated according as may be thought desirable. This bell is strongly weighted or ballasted in its lower part by means of a metal ring b in order to

insure its being maintained perfectly vertical, and it is partially counterbalanced by means of two counterweights C, placed symmetrically at each side of the apparatus, the suspension-chains c of which weights, after being passed over pulleys d, arranged on suitable supports D, are fixed to the top of the bell, which avoids the use of guide-rollers.

The bell, provided as usual with a safety-tube b', is immersed in a reservoir E of sufficient dimensions to contain a sufficiently large volume of water and having an inclined bottom e to facilitate the discharge of the mud or waste substances through the discharge-opening e'.

The apparatus being preferably arranged in the manner hereinbefore described, the automatic feed arrangement will now be described. This consists, essentially, in the use of two cones mounted on a weighted and guided rod and acting the one above and the other below the discharge-opening of the carbide-container A. For this object a rod f is employed, guided by a cross-bar g and having at its upper end a cone h, forming a valve which serves for regulating the discharge of the crushed carbide contained in the container hereinbefore mentioned, the bottom of said container in the form of a hopper being terminated by an opening i, having a doubly-tapering form. At a short distance below this opening a second cone k, of larger dimensions, is arranged on the rod f, the distance of which cone from the opening may be regulated by means of a pin k' and a series of holes f'' in the rod f, into which holes the pin can be inserted. The rod f, which is constantly depressed by the weight of the two cones h and k and by the action of a spiral spring r, passes through an opening in the center of a fixed horizontal lever l, the use of which will be hereinafter described. Finally the rod f is provided with an adjustable stop f', which comes in contact with the lever when the bell descends sufficiently. The working of this arrangement takes place as follows: When the cone or upper valve h is lowered, it prevents any discharge of pulverulent carbide into the water of the reservoir E; but when in consequence of the discharge of gas by the

discharge-pipe T the bell B descends the stop f' encounters the lever l and the rod f is raised, and, the upper cone h being also raised, causes the fall of a certain quantity of carbid and consequently the production of a corresponding quantity of gas. As soon as the bell B rises this cone or valve closes under the action of the spring r and interrupts the feed until another lowering of the bell produces the same action. The same effect will obviously be obtained by an additional weight arranged on the rod f instead of the spring r .

In order to allow of the free flow of the carbid, the moment the upper cone h rises a tube q establishes free communication between the upper part of the carbid-reservoir and the bell, which insures equality of pressure of the gas above and below the discharge-opening i .

The action of the lower cone k , movable at a short distance below the opening i of the carbid-container, will now be examined. As soon as the bell B has descended to a certain extent the second cone k closes the lower part of the opening i and interrupts the supply of carbid. As soon, however, as the bell rises it again allows a certain quantity of carbid to pass through up to the moment when the upper cone h again closes. In this manner the fall of carbid is divided into two successive periods, which renders regular the production of gas and avoids any sudden variation of pressure in the apparatus. This lower cone k , the diameter of which is of considerable size, has also the effect of distributing over a larger surface of the liquid the pulverulent carbid, the fall of which at a single point would cause a sudden effervescence of the water and a deleterious release of vapor.

The lower cone k by reason of its large metallic surfaces serves also for condensing the steam which may be contained in the gas inclosed in the bell, and it has, further, the advantage of keeping closed the orifice of the carbid-reservoir when in consequence of any accident the cone h or upper valve ceases to close itself automatically.

Another improvement consists in the arrangement of catches serving to maintain the bell fixed when desired and particularly during the charging of carbid into the container A, arranged at its upper part. This object may be attained either by raising or lowering the bell, as follows: When it is desired to operate by the rising of the bell, it is provided at each side with catches or spurs s , which when it is raised to a certain extent engage in rings pivotally arranged on the supports D of the counterweights C, as indicated at the left of Fig. 1.

In order to effect the charging of the container A with carbid, the bell is sufficiently raised to allow the pressure of gas which it contains to become equal to the pressure of the atmosphere and of its being held and maintained fixed at this height by means of

the catches s hereinbefore mentioned. The carbid-reservoir may then without trouble be opened and filled by means of the opening a . When this operation is completed, it is sufficient to release the catches s , which maintain the bell raised in order to allow the apparatus again to commence working in the manner hereinbefore described.

When it is desired to operate by the lowering of the bell, the lever l is utilized, which, as may be seen in Fig. 1 of the drawings, is pivoted at one end on a spindle l' , fixed in the interior of the water-reservoir E and at the other end to a rod u , which rises to a height above the said reservoir, where when working normally it is fixed to a fixed hook v , placed at any desired height, so that the lever l may assume a horizontal position. When it is desired to render the bell B immovable, the lever l is lowered into the position shown in dotted lines, so that the stop f' hereinbefore mentioned can no longer be encountered by the lever at the moment when the bell descends, and then a portion of the water contained in the reservoir E is discharged by the opening e' . The bell B descends accordingly, and its catches s bear against the edge of the reservoir E, or, if preferred, projecting catches x may be fixed in this reservoir, on which the bell will rest. By allowing a certain quantity of water to be discharged the pressure of gas will be lowered in the bell which has been rendered immovable. When it has become equal to the atmospheric pressure, the reservoir A may be opened without inconvenience and a fresh charge of carbid introduced therein. In order to restart the apparatus, it is sufficient to introduce into the reservoir E a quantity of water equal to that which was withdrawn, and then to raise the lever l into its original position, causing a fall of carbid, which will reestablish the pressure of gas to the desired extent in the bell.

We declare that what we claim is—

An apparatus for the production of acetylene gas, comprising a water-reservoir E a bell or gasometer B partially counterbalanced by means of a counterweight C a carbid-receptacle A, two cones or feed-valves h and k the cone h arranged over the opening i , the cone k adjustable below the opening i of the receptacle A, a rod f carrying the two cones h and k and induced to descend by means of a spring, an adjustable stop f' fixed on the rod f , a lever l pivoted on a spindle arranged in the water-reservoir and serving as stop for the rod f a rod u serving to regulate the position of the lever l and catches s serving to maintain the bell immovable.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

PAUL PHILIPPE HONORE MACÉ.
LOUIS LEON HECTOR GÉRARD.

Witnesses:

LOUIS TAILFER,
JACQUES CONDOMY.