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Patented Apr. 10, 1900.

P. SURET & C. G. GRANDJEAN.

ACETYLENE GAS GENERATOR.

(Application filed Aug. 10, 1898.)

(No Model.)

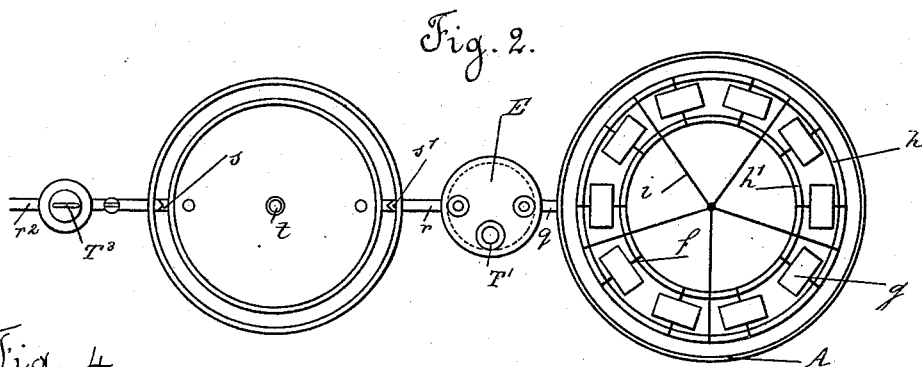
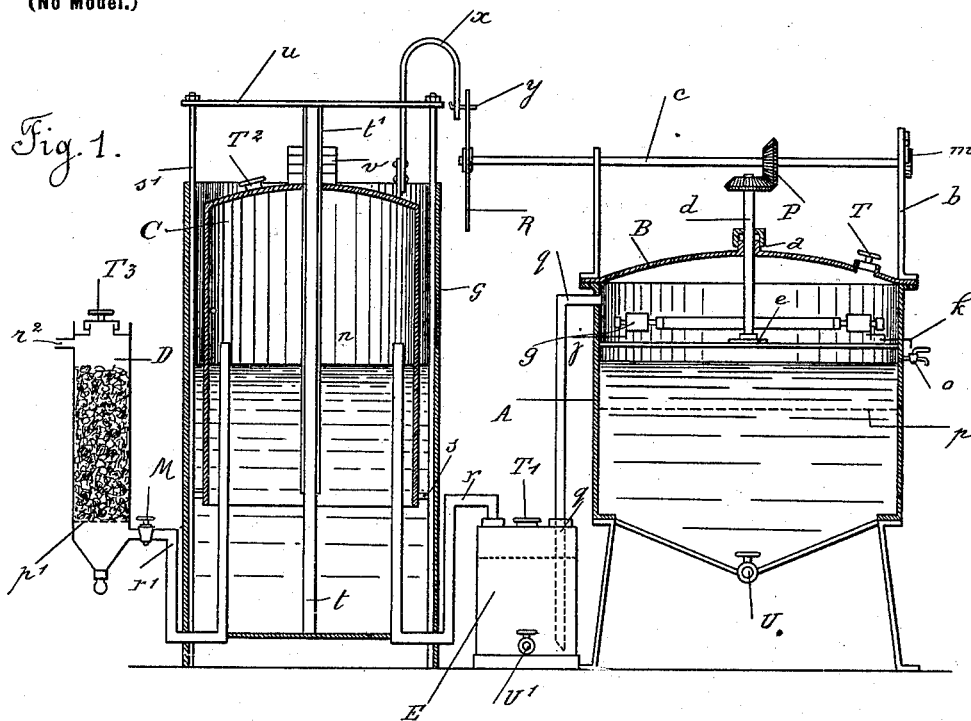


Fig. 4.

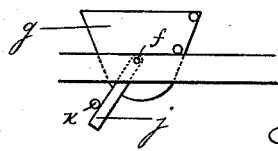
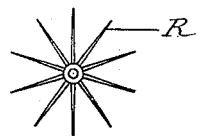
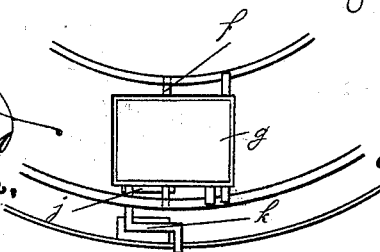


Fig. 3.

Witnesses:
J. A. Richmond
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UNITED STATES PATENT OFFICE.

PIERRE SURET AND CHARLES GUILLAUME GRANDJEAN, OF BORDEAUX,
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ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 647,338, dated April 10, 1900.

Application filed August 19, 1898. Serial No. 689,052. (No model.)

To all whom it may concern:

Be it known that we, PIERRE SURET and CHARLES GUILLAUME GRANDJEAN, citizens of the French Republic, residing at 81 Cours St. Médard, Bordeaux, France, have invented certain new and useful Improvements in Apparatus for the Production of Acetylene Gas; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to apparatus for generating acetylene gas from calcium carbide; and the invention consists in the improved gas-generator hereinafter described. It further consists in novel means or apparatus combined with said generator for automatically feeding the carbide.

Our improved apparatus—that is to say, the generator proper—has the general form of a vat and is sealed at the top by a hermetically-closed cover, provided with any suitable means for the introduction of the carbide. Below the cover is arranged a series of buckets which rotate on a central axis or shaft directly below the charge-opening. Motion is imparted to said shaft from a counter-shaft located above the vat through the medium of bevel-gears, said counter-shaft being itself operated by means of a star-wheel which is moved by the impact of a pawl carried on the bell of the gasometer. The buckets are each provided with a strip which upon their rotation impinges against a stationary part of the vat and upsets the buckets.

The invention is illustrated in the drawings accompanying and forming a part of this specification, wherein—

Figure 1 is a vertical section through the apparatus; Fig. 2, a plan view, the top of generator and the operating mechanism being omitted. Fig. 3 shows details of the bucket devices, and Fig. 4 is a detail of the star-wheel.

Referring to the drawings and to the letters of reference marked thereon, A designates the generator proper, and B its cover, which is provided with a stuffing-box *a*, through which passes a vertical shaft *d*, which

rotates in the socket-bearing *e* and carries a plurality of buckets *g*. Said buckets are loosely mounted on pins *f* in suitable supports *h l*, arranged in the form of a circle on the spokes *i*, and each is laterally provided with a stem *j*, projecting therefrom at an angle, so as to impinge at intervals against lugs *k* on the inner periphery of the vat and thereby overturn the buckets. The opening T on top of the generator closed by a suitable screw-plug permits the introduction of the carbide to the buckets. A cock *o* controls the level of the water in the generator. A sieve or perforated double bottom *p* receives the carbide as it decomposes and prevents the same from mingling with the water. The water in the false bottom eventually becomes saturated with lime and can be discharged from a tap U.

The gas-holder comprises the vat G, filled with water to the level *n*, and the bell or gas-receptacle C. The bell is guided in its upward and downward movements by two lugs *s s*, sliding on stationary angle-iron standards *s' s'*, and by a rod *t*, secured to the bottom of the vat and to the cross-bar *u*, connecting the two standards. Said rod *t* is received in the central tube *t'*, soldered to the top of the gas-receptacle. A neck T² on top the bell permits the escape of air present in the receptacle and also the introduction of a layer of oil to isolate the gas from the water.

Motion is transmitted to the vertical shaft *d* from a counter-shaft *c*, mounted in bearings *b* above the generator, through the medium of bevel-gears P. A ratchet-tooth *m* at one end of said shaft *c* prevents the same from turning in the wrong direction. A star-wheel R is carried at the opposite extremity of said shaft, said star-wheel being intermittently turned by the impact of a pawl *v*, mounted on the yoke *x*, secured to the bell of the gasometer. When the bell ascends, the pawl bears against one of the points of the star-wheel, inclines, and passes off. As the bell descends the pawl presses on the star-wheel and forces it down one point, thereby causing the overturning of one bucket.

The apparatus operates as follows: A quantity of carbide equal to the capacity of one of

the buckets is dropped through opening T directly into the water. Gas is at once generated and emanating from the generator passes through a purifier E through the medium of pipe *q*, the end of which pipe is beveled and perforated like a hose-nozzle and extends to near the bottom of said purifier. Here the gas is injected into a layer of water or other liquid and conducted by a pipe *r* to the generator. A port T' is used to introduce the liquid and the tap U' serves to discharge the same. Weights *v* are employed to regulate the pressure. The gas is led out of the gasometer for consumption through a tube *r'*, which is a cylindrical reservoir having a perforated bottom *p'*, on which rests a quantity of loose cotton or equivalent material powdered with chlorid of calcium. The removal of plug T³ permits the introduction of these materials, while the pipe *r*² allows the passage of the gas into the distributing-pipes. When a diminution of pressure occurs, the bell descends, the star-wheel is turned by impact of the pawl, and the operation continues, as herein described, the buckets having previously been filled with carbid.

Having thus described our invention, what we claim, and desire to secure by Letters Patent of the United States, is—

1. In an acetylene-gas generator, the combination with a receptacle for water, of a carbid-container located above the same comprising a revoluble circular frame having a series of buckets pivotally mounted therein on axes substantially radial of the said frame, and stationary means engaged by the buckets in the revolution of the container to auto-

matically and successively upset said buckets, substantially as described.

2. In an acetylene-gas generator, the combination with a receptacle for water, of a rod revolubly mounted in said generator, a gas-holder having a bell, means operated by the movement of the bell for revolving said rod, a carbid-container mounted on said rod to turn therewith and comprising a circular frame having a series of buckets pivotally mounted therein on axes substantially radial of the said frame, and stationary means engaged by the buckets in the revolution of the container to automatically and successively upset said buckets, substantially as described.

3. In an acetylene-gas generator, the combination with a receptacle for water, of a rod revolubly mounted in said generator, a counter-shaft above the generator, operatively connected with said rod, a star-wheel rigid on said counter-shaft, a gas-holder having a bell, means operated by the movement of the bell for revolving the star-wheel, a carbid-container mounted on said rod to turn therewith and comprising a circular frame having a series of buckets pivotally mounted therein on axes substantially radial of the said frame, and stationary means engaged by the buckets in the revolution of the container to automatically and successively upset said buckets, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

PIERRE SURET.

CHARLES GUILLAUME GRANDJEAN.

Witnesses:

FÉLIX LEMONTIERE,

JEAN EMILLE.