No. 654,084. Patented July 17, 1900.

F. WINDHAM & E. FRY.

ACETYLENE GAS GENERATOR.

(Application filed Feb. 14, 1898.)

(No Model.)

FIG. 1

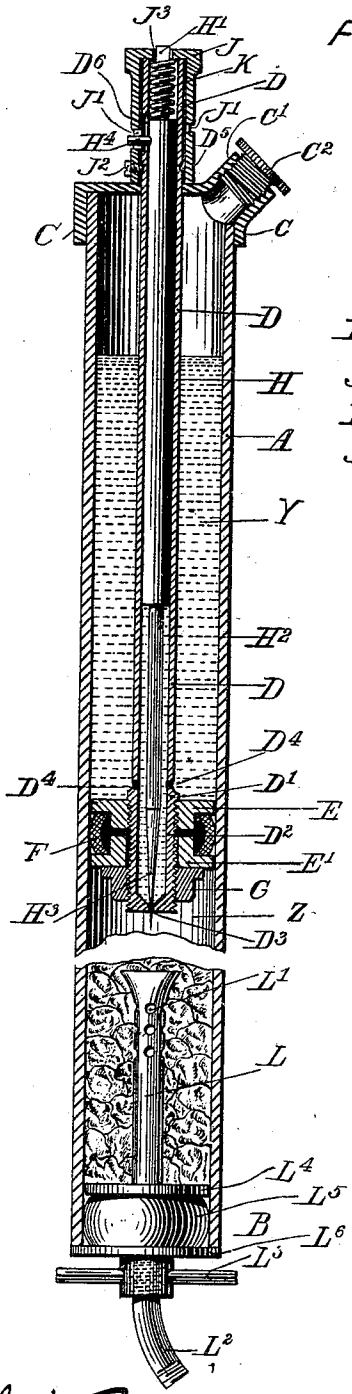
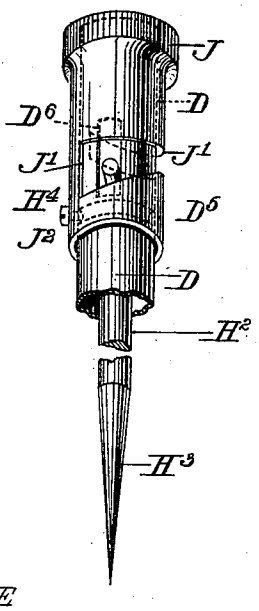


FIG. 2.



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UNITED STATES PATENT OFFICE.

FRANCIS WINDHAM AND ERNEST FRY, OF LONDON, ENGLAND; SAID FRY ASSIGNOR TO SAID WINDHAM.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 654,084, dated July 17, 1900.

Application filed February 14, 1898. Serial No. 670,270. (No model.)

To all whom it may concern:

Be it known that we, FRANCIS WINDHAM and ERNEST FRY, subjects of the Queen of England, residing at London, England, have invented certain new and useful Portable Apparatus for Producing Gas from Carbid of Calcium, of which the following is a specification.

This invention relates to portable apparatus for producing gas from carbid of calcium, and has for its object to provide apparatus of simple construction and few parts in which the amount of water supplied to the carbid can be easily regulated.

The generator preferably comprises two chambers, one above the other, the lower containing carbid of calcium and the upper one water. Communication between the two chambers may be made by means of a conical opening controlled by a conically-pointed plunger, which is regulated by a screw or equivalent device. The end of the conical point passes through the opening and forms a pricker or cleaning-plug, which keeps the opening free from any deposit tending to clog it and also acts as a drip-point for the water. The resultant gas caused by dropping small and regulated quantities of water on the carbid is led to a suitable burner.

In the accompanying drawings, Figure 1 is a sectional elevation of one construction of generator according to this invention. Fig. 2 is a perspective view, on a larger scale, of the cap controlling the valve shown in Fig. 1.

Like letters indicate like parts throughout the drawings.

With reference to the drawings, A is a tubular vessel, which in the construction illustrated is merely a length of plain tubing. This tube A is provided with a gas-tight plug or cover B at its lower end. The upper end of the tube A is covered by a cap C, having a neck C′, closed by a screwed plug C^2. The cap C does not necessarily make a gas-tight joint on the tube A. It may, if desired, be made gas-tight; but preferably it merely slips on, and thus provides means for the gas to escape if excessive pressure is set up. A small tube D passes through a hole in the center of the cap C and is provided at its lower end with a shoulder D′ and a screwed portion D^2. The bottom of this tube is pierced by a small conical opening D^3. A flanged collar E is screwed onto the threaded portion D^2 of the tube D, the flanged part being against the shoulder D′. A loose collar E′, also flanged, slips over the screwed portion D^2 under the screwed collar E, with its flanged part downward. An expansible ring of rubber or like material F fits between the flanges of the collars E and E′, and when by means of a nut G, operated by a long key from the lower end of the tube, the loose collar E′ is forced upward the ring F is forced outward and makes a gas-tight division or diaphragm in the tube A. The space Y above this diaphragm constitutes the water-chamber, the carbid being placed in the space Z below it. Holes D^4 are made in the tube D to allow water to pass from the water-chamber to the inside of the said tube. A rod H fits inside the tube D. It is reduced in diameter, as at H′ H^2, and the lower part is formed into a conical point H^3, terminating in a needle-point. The extreme end or needle-point of this conical point H^3 projects through the opening D^3 in the bottom of the tube D, and this opening is completely closed when the rod is in its lowest position. The fact that the needle-point projects through the opening is of great advantage, as it acts as a pricker to clear away any deposit which may form around the hole and also as a drip-point for the water.

The rod H is provided with a small pin H^4, which passes through a vertical slot D^6 in the tube D and also through a spiral slot J′ in a cap J, which fits over the top of the tube D. This cap is prevented from rising on the tube D by a small screw J^2, which is screwed through the wall of the cap J and engages in an annular groove D^5 in the tube D. The reduced end H′ of the rod H passes through a hole J^3 in the cap J, and a spiral spring K is placed upon this end of the rod, inside the tube D, in such a manner that it bears against the under surface of the top of cap J and the shoulder of the rod H. This spring will tend to keep the rod H in its lowest position. The rod is raised by rotating the cap J, and thus

lifting the pin H^4 on the bottom edge of the spiral slot J'. In Fig. 1 the rod is shown in its lowest position, and it should be noted that the bottom edge of the slot J' is below the pin H^4, and consequently the spring K is forcing the valve-point H^3 as far as possible through the conical hole D^3, which is thus quite closed. The spiral slot J' is made very wide at its lower end in order that if when the valve is closed any abnormal pressure of gas should arise in the carbid-chamber the pressure may lift the valve, and thus the gas may pass through the water-chamber and harmlessly into the air.

The gas is led away from the bottom of the carbid by means of a pipe L, having a closed upper end and side perforations L'. This pipe L passes through the gas-tight cover B and is shown as ending in a nozzle L^2, to which a rubber pipe may be attached. It is obvious that a burner communicating through a cock with the pipe L may, if desired, be affixed to any convenient part of the generator, thus making it a complete portable lamp.

The cover of plug B is made gas-tight in the following manner: L^4 is a fixed collar upon the gas-outlet pipe L. L^5 is an expansible ring of rubber or other suitable material, and L^6 is a loose collar or cover. The collars are flanged in a similar way to those belonging to the separating-diaphragm. The lower part of the tube L' is screwed, and a nut L^3 serves, when screwed up, to decrease the distance between the collars L^4 and L^6 and to make the plug gas-tight by causing the ring L^5 to expand.

The fact that the plug B and the diaphragm separating the water and carbid chambers are easily and quickly removed is very important, as the construction is thereby cheapened and the cleaning of the tubular vessel facilitated.

We claim—

An acetylene-gas generator comprising a closed casing of substantially-uniform interior diameter, a removable, hermetic diaphragm dividing the casing into two chambers one of which is a gas-generating chamber and the other a water-chamber, a removable hermetic closure for the outer end of the gas-chamber, a cap loosely fitting the outer end of the water-chamber, a tube extending through said diaphragm and provided with a valve-seat, a spring-pressed valve for controlling communication between the two chambers through the tube, means to actuate the valve in opposition to the normal action of the spring, and a gas-delivery pipe leading from the gas-chamber, substantially as set forth.

In testimony whereof we have hereto set our hands in the presence of the two subscribing witnesses.

FRANCIS WINDHAM.
ERNEST FRY.

Witnesses:
ALFRED J. BOULT,
HARRY BRIDE, Jr.