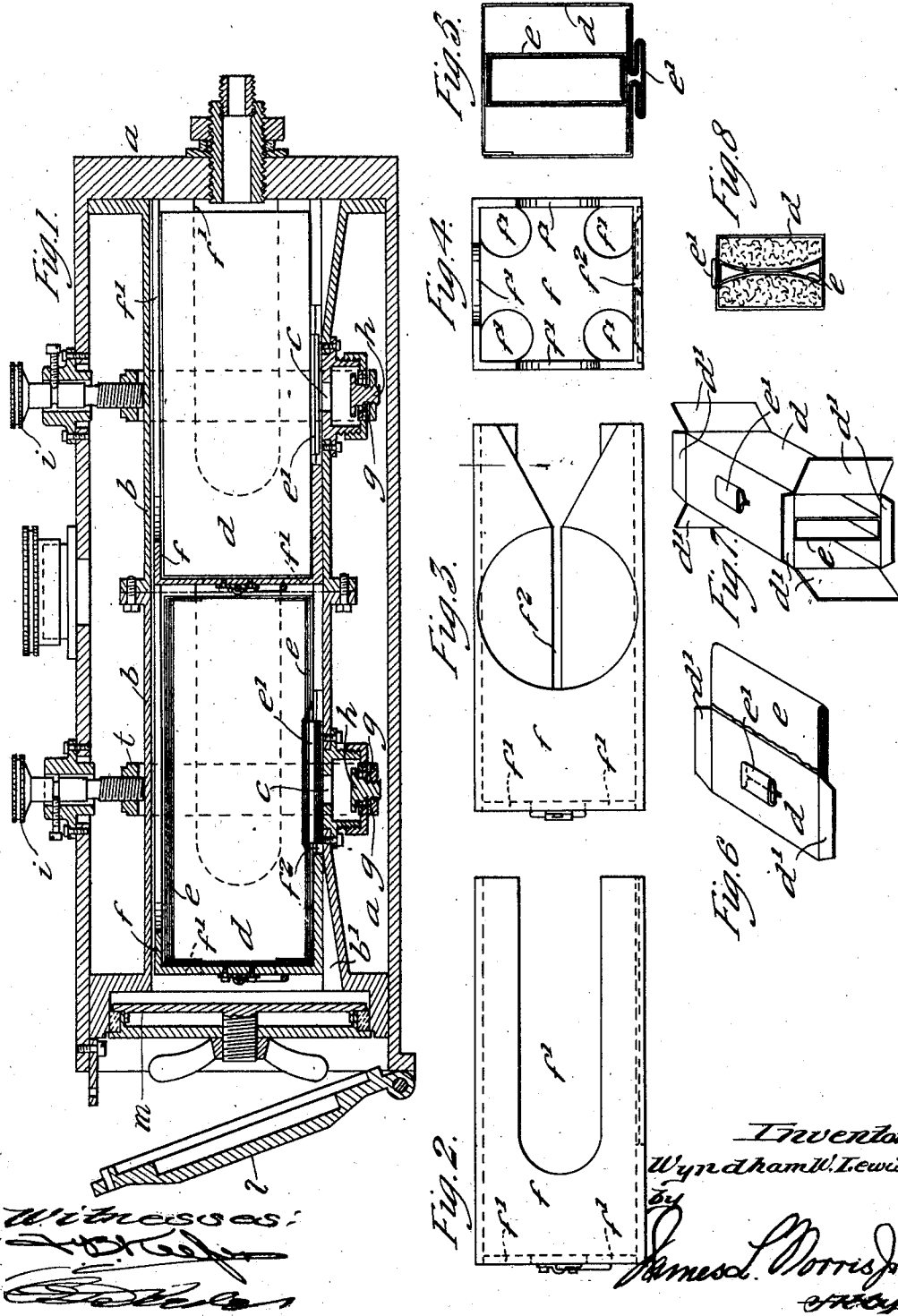


W. W. LEWIS.
ACETYLENE GAS GENERATOR.
APPLICATION FILED FEB. 25, 1911.

1,021,612.

Patented Mar. 26, 1912.



Witnesses:
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WYNDHAM WILLIAM LEWIS, OF HIGHGATE, LONDON, ENGLAND.

ACETYLENE-GAS GENERATOR.

1,021,612.

Specification of Letters Patent.

Patented Mar. 26, 1912.

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To all whom it may concern:

Be it known that I, WYNDHAM WILLIAM LEWIS, a subject of the King of Great Britain, residing at 19 Claremont road, Highgate, in the county of London, England, engineer, have invented certain new and useful Improvements in Acetylene-Gas Generators, of which the following is a specification.

10 This invention relates to acetylene generators of the type in which the water is introduced into the carbid chamber by transpiration along an absorbent wick, and is applicable either to the type of generator in
15 which the rate of generation of the gas is controlled by means of a valve regulating the flow of water to the carbid chamber through a drip orifice, or to that type in which the generation of the gas is controlled
20 automatically by the variation of the pressure of the gas varying the level of water in the water reservoir.

25 One of the objects of the invention is to provide a hollow wick of absorbent material which is adapted to admit the free flow of water throughout the whole length of the carbid chamber while permitting expansion of the calcium carbid within the chamber.

30 Another object is to provide for controlling the admission of water to the gas generating chamber by the pressure of the generated gas.

35 Another object is to combine such a wick with the cartridge casing which may be supplied either charged with calcium carbid or uncharged and in a collapsible form. The cartridge may be placed directly within the generating chamber, or it may be inserted in a holder or container, which also forms
40 part of the present invention and which is provided with the necessary openings for the escape of gas.

45 The invention is illustrated in the accompanying drawings as applied to a double generator of the horizontal type, Figure 1 being a central longitudinal section of such a generator, Fig. 2 a side elevation of the cartridge casing holder, Fig. 3 a plan view of the underside of the holder, Fig. 4 an end
50 elevation looking at the open end of the holder, Fig. 5 a central transverse section of a cartridge casing, Fig. 6 a perspective view of an empty collapsed cartridge casing, Fig. 7 a perspective view of a cartridge casing ready to receive a charge of calcium
55 carbid, and Fig. 8 a cross section of a used

cartridge showing the way in which the calcium carbid expands while maintaining a free passage for the water along the whole length of the cartridge. Figs. 6, 7 and 8
60 are drawn on a small scale and show the cartridge casing in the inverted position.

Referring particularly to Fig. 1, the water is contained in a reservoir *a* surrounding the gas generating chambers *b* and communicating therewith through apertures *c* in the floors of the respective chambers. The cartridge casing is in the form of an elongated receptacle *d* usually of square section fitting loosely in the correspondingly
65 shaped generating chamber *b*, and the wick *e* (Figs. 1 and 5) consists of suitable unsized paper folded to cellular shape so as to permit it to collapse under pressure due to expansion of the carbid. The wick extends
70 substantially coterminous in length with the receptacle *d* but occupies only a portion (which may be the central portion, as shown in Figs. 5 and 7) of the width of the receptacle *d*. This wick is fastened along two
75 opposite sides of the cartridge casing, for example, along the top and the bottom, and may consist simply of a sheet of unsized paper folded to form an open-ended parallelepiped, and a separate strip *e'*, of the
80 same material but of considerably less length, is folded on itself, and the two ends passed through a longitudinal slit in the floor of the cartridge casing *d* and turned
85 outwardly under the lower side of the parallelepiped so as to be in contact therewith. The loop projecting through the slit in the under side of the cartridge casing is then opened out and refolded so as to lie flat against the outer side of the cartridge casing
90 and the inner side of the gas generating chamber. The wick *e, e'*, is designed so that it may be collapsed or folded flat for transport purposes, or by means of end flaps *d'*, (Fig. 7), can be held substantially rigid in
95 the open or expanded position.

The cartridge may be inserted directly into the generating chamber *b*, but it may be placed in a holder *f* adapted to fit the generating chamber and provided with
105 openings *f'* for the escape of gas, and a longitudinal slit *f''* for the accommodation of the flap *e'* of the wick *e*. When the generator as shown in Fig. 1 is of the type in which the admission of water to the carbid
110 chamber is controlled by the pressure inside of the gas generator, excess generation

of gas produces a pressure which tends to close the flap *e'* over the aperture *c* in the bottom of the generating chamber *b* so as to retard the flow of water to the wick *e* and thus reduce the rate of generation of the gas.

To eliminate the danger of the flap *e'* of the wick being torn off in inserting the cartridge container in the generating chamber *b*, the floor of the latter is recessed as shown at *b'* to provide sufficient clearance for the flap *e'* when the container is inserted in the carbid chamber. Water may be fed into the reservoir *a* through the opening *j* which is provided with a cap *k*. To charge the chamber *b* the lid *l* is released, the stopper *m*, if there be one, removed, the cartridge, with or without holders, placed within the chambers and the stopper and lid replaced. The gas generated, on the admission of water, passes out of the chambers *b* through outlet *n*.

In order that the water may be completely shut off from the generating chamber, there is provided below the aperture *c* through which the water enters a second aperture *g* forming the seating of the valve *h*, which is accommodated between the two apertures and which can be actuated through suitable mechanism. For instance, the valve *h* may be carried by a frame *t* placed around the chamber *b*, with clearance to allow the frame to be moved relatively to the chamber, then by means of a lever or thumb-screw *i* outside the casing of the generator the frame *t* and valve *h* may be raised and water admitted through openings *g* and *c* and wick *e* to the interior of the generating chamber *b*. Or the valve *h* may be forced down onto its seating to cut off completely access of water from the reservoir *a* to the interior of the generating chamber *b*.

Fig. 8 is a drawing of an actual spent cartridge, and clearly shows two longitudinal passages at the upper and lower sides of the cartridge through which water from

the reservoir *a* has free access to the whole of the carbid even when the latter is completely spent.

I claim as my invention:

1. In acetylene gas generators, a receptacle adapted to contain carbid and a hollow absorbent wick folded to form an open-ended parallelepiped adapted to collapse under pressure of the expanding carbid.
2. In acetylene generators, the combination of a water reservoir, a receptacle for calcium carbid communicating with the reservoir, a hollow wick of absorbent material within the receptacle adapted to collapse under pressure of the expanding carbid and to provide for the free flow of water to the carbid throughout its length.
3. In acetylene generators, the combination of a water reservoir, a receptacle for calcium carbid communicating with the reservoir, a hollow wick of absorbent material positioned within the receptacle and adapted to collapse under pressure of the expanding carbid, and means for automatically controlling the flow of water from the reservoir to the wick by the pressure of the gas within the receptacle.
4. In acetylene generators, the combination of a water reservoir, a chamber communicating with the reservoir, a holder having openings for the escape of gas and admission of water and adapted to fit the chamber, a casing within the holder and containing calcium carbid and a hollow wick adapted to collapse under pressure of the expanding carbid and means for automatically controlling the flow of water from the reservoir to the wick by the pressure of gas within the casing.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WYNDHAM WILLIAM LEWIS.

Witnesses:

JOSEPH MILLARD,
WALTER J. SKERTEN.