No. 621,647. Patented Mar. 21, 1899.

E. P. GARDNER.

ACETYLENE GAS GENERATOR.

(Application filed June 27, 1898.)

(No Model.)

Fig. 1.

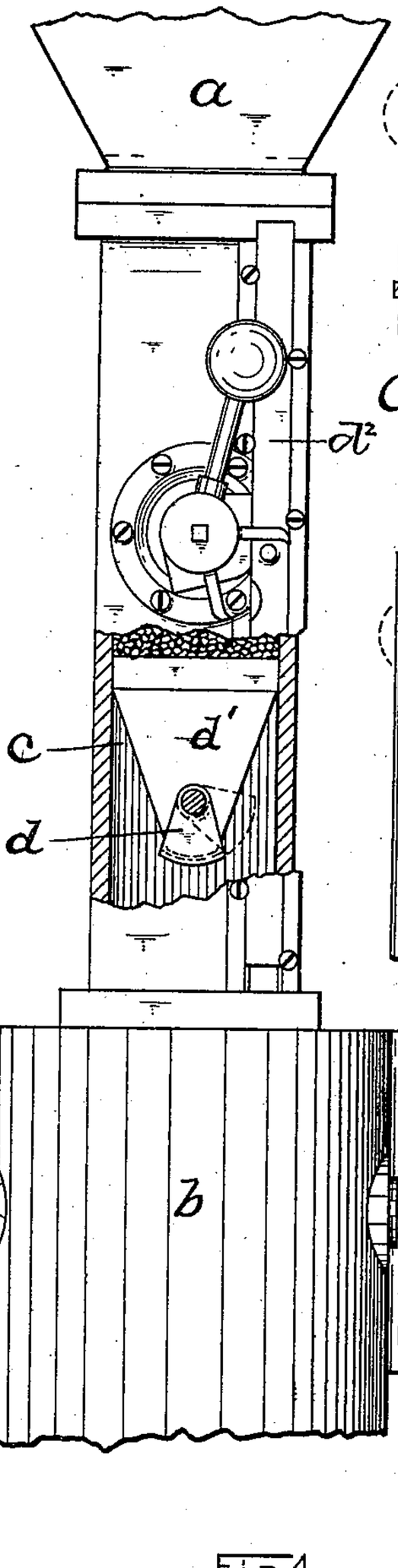


Fig. 3.

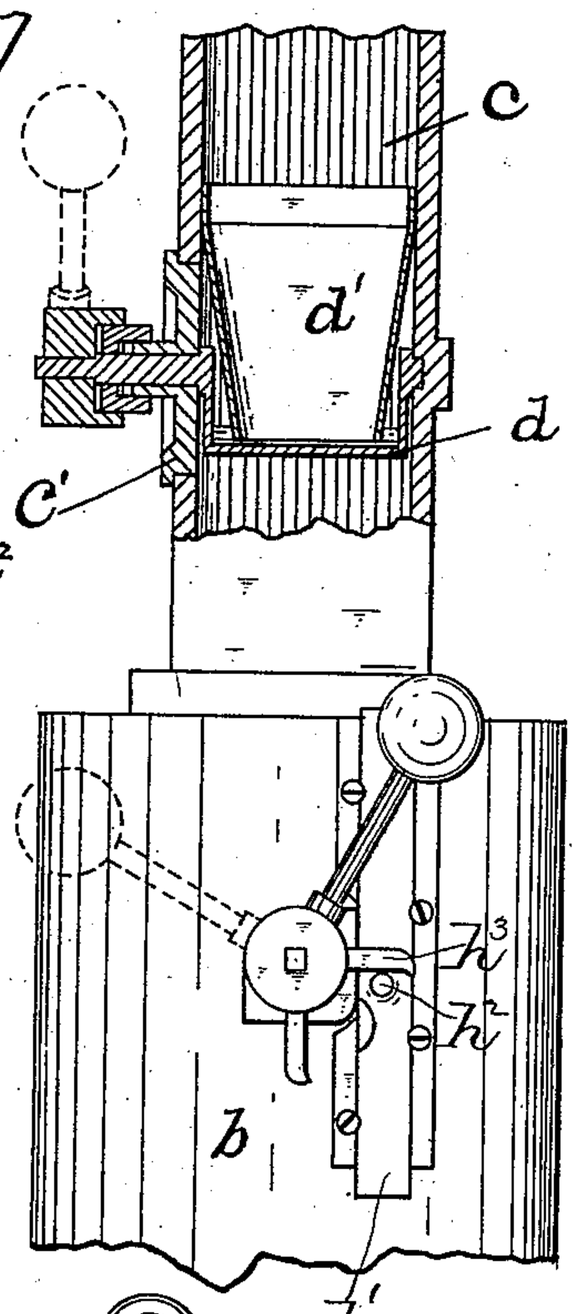


Fig. 2.

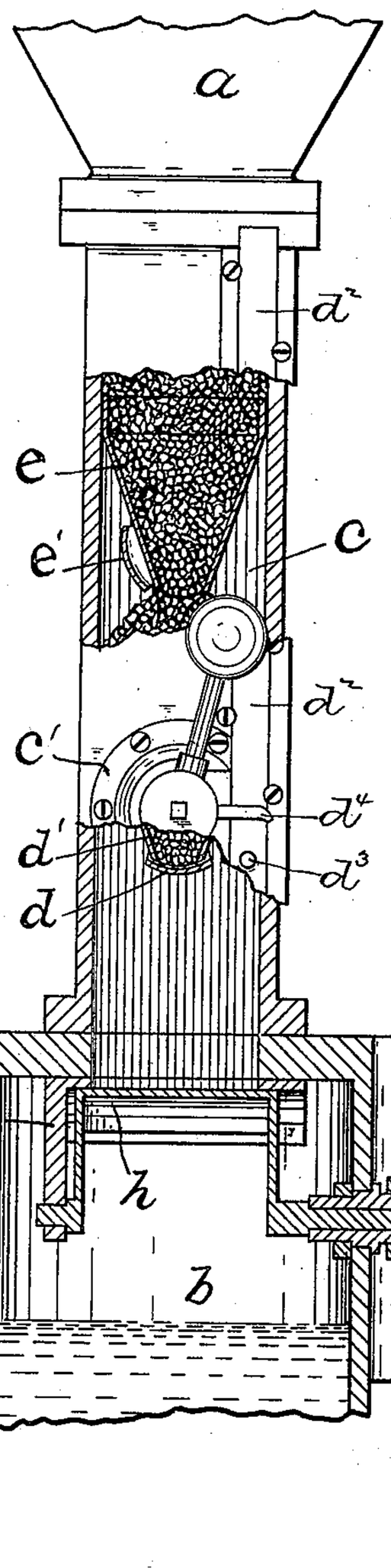


Fig. 5.

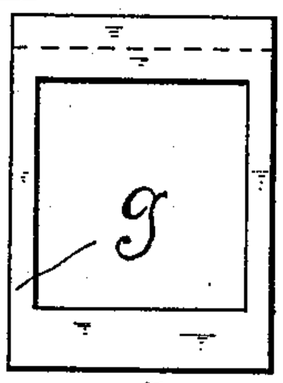
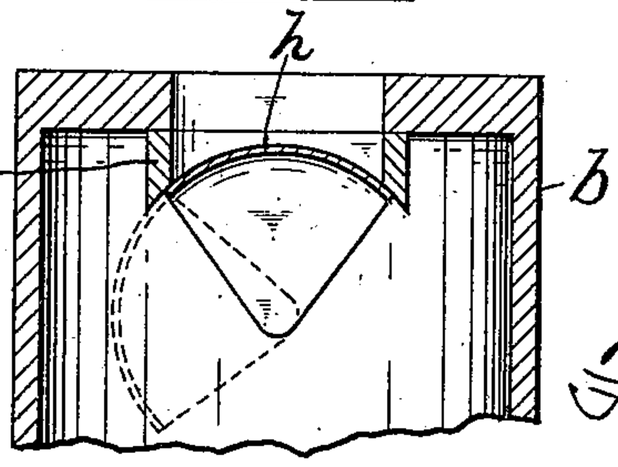


Fig. 4.



WITNESSES

Alonzo M. Luther.

May F. Ritchie.

INVENTOR,

Edwin P. Gardner,

BY

Frank H. Allen

ATTORNEY.

UNITED STATES PATENT OFFICE.

EDWIN P. GARDNER, OF NORWICH, CONNECTICUT, ASSIGNOR OF ONE-HALF TO TIMOTHY KELLY, OF SAME PLACE.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 621,647, dated March 21, 1899.

Application filed June 27, 1898. Serial No. 684,612. (No model.)

To all whom it may concern:

Be it known that I, EDWIN P. GARDNER, a citizen of the United States, residing at Norwich, in the county of New London and State of Connecticut, have invented certain new and useful Improvements in Acetylene-Gas Apparatus, of which the following is a full, clear, and exact description.

This invention is in acetylene-gas apparatus, and has for its particular object the provision of a cut-off or separator located between the water in the generating-chamber and the carbid-feeding mechanism, whereby all moisture in said generating-chamber is prevented from rising into contact with the carbid held in reserve. I have found in practice that when a charge of carbid is dropped into the water of the generating-chamber ebullition takes place and the space in said chamber above the water is immediately filled with vapor, which seeks to rise and if not checked soon passes upward into contact with the supply of carbid held in reserve, resulting in dampening the carbid and causing its particles to adhere to each other and soon become a pasty mass that refuses to pass downward by gravity. My present invention overcomes this serious difficulty by interposing between the water and the carbid-feeding mechanism a positive cut-off that is closed immediately after a charge of carbid is fed into the generating-chamber and remains closed until it is time to drop another charge into said chamber.

For the purpose of explaining my invention clearly I have provided the annexed sheet of drawings, in which—

Figure 1 is a side elevation of those portions of the carbid-reservoir, feeding mechanism, and generating-chamber that are immediately connected with my new cut-off device; and Fig. 2 is a similar view, largely in section, exposing the interior parts. Fig. 3 is an elevation of the feeding mechanism and generating-chamber in a plane at a right angle to the views of the preceding figures. Fig. 4 is a sectional view of the upper part of the generating-chamber, showing the cut-off located therein; and Fig. 5 is a plan view of a certain plate located, as here shown, within the generating-chamber and adapted to cooperate with my said cut-off.

Referring to the drawings, the letter *a* denotes the reservoir proper, in which a supply of carbid is stored. *b* is the generating-chamber, and *c* is an inclosed passage connecting the said reservoir and generating-chamber. Within the passage *c* is a gate *d*, that operates, as here shown, with the lower (open) end of a tapered chute *d'*, said gate being supported on trunnions mounted at one end in a bearing in the walls of the passage *c* and at the opposite end in a disk *c'*, secured to said wall. The particular form and arrangement of the gate *d'* is, however, not material so long as it serves to release and cut off at proper times the carbid held in reserve.

Should it be deemed necessary to measure the carbid and deliver the same to the generating-chamber in given quantity, a second chute *e* with coacting gate *e'* may be provided in the passage *c* immediately over the chute *d'*, already described, in which case the upper gate *e'* is opened to allow a sufficient quantity of the carbid to pass downward to fill the lower chute, the lower gate being meanwhile closed. The upper gate is then closed and the lower gate opened, when the contents of the lower chute pass by gravity down into the generating-chamber. The lower gate is then closed and the upper gate again opened to allow another charge of carbid to pass downward into the lower chute.

Because of the fact that the carbid is usually fed in the form of granules it is not practicable to adjust the gate *d* so that it will fit snugly against the mouth of the chute when said gate is swung forward to its closed position. I preferably set the gate away from the chute a distance about equal to the size of the granules of carbid. Said granules are thus prevented from wedging between the end of the chute and the advancing gate, for the reason that they may be freely pushed before the moving gate if not otherwise displaced. It should be understood that the power obtainable (in apparatus of this particular class) for automatically operating the gates is very limited, and it is therefore imperative that

provision be made for the practically unobstructed movement of said gates, and this I accomplish by the proper regulation of the space between the upper chute and its coacting gate, as I have just described. This arrangement of the gate and chute, however, has the serious disadvantage of providing an opening through which the vapor, already referred to, may pass upward into contact with the carbid, and in order to prevent such a result my new cut-off is provided. Said cut-off is best seen in Figs. 2 and 4 of the drawings. I have illustrated it as located entirely within the generating-chamber *b;* but it could as well be located at any point between the water in said chamber and the delivery end of the chute *d'*.

The upper end of the generating-chamber is formed with a rectangular opening that registers with passage *c*. Depending from the top plate of the generating-chamber is a rectangular frame *g*, whose lower edges are curved to coöperate with a curved cut-off *h*, of gate form, that is suitably supported by trunnions, as best seen in Fig. 2, said cut-off being thus adapted to be swung into the position shown in full lines in Fig. 4 to close the opening leading upward to passage *c* and to be swung downward, as shown in dotted lines in the same figure, to provide an unobstructed opening between the generating-chamber and said passage *c*. Gate *h* is so fitted with relation to the curved lower edges of the frame *g* that a practically tight cut-off is provided, thus preventing positively the passage of vapor from the generating-chamber upward to the carbid held in reserve. The carbid is therefore kept perfectly dry, and I find in practice that it is always free to pass downward by gravity so soon as the gate *d* is opened.

The gate *d* is operated by a vertically-sliding bar d^2, which bears a stud d^3, that coacts with an arm d^4, connected with the shaft that supports the said gate *d*, and the moisture cut-off *h* is operated by a similar vertically-movable bar *h'*, that bears a stud h^2, that coacts with an arm h^3, connected with the shaft that supports the said cut-off *h*, and in practice I connect the sliding bars d^2 and *h'*, so that they are caused to move in unison. When said bars are moved upward, the stud h^2 engages arm h^3 and rocks it sufficiently to swing the moisture cut-off *h* open, and just at the instant when said cut-off *h* is thus brought to a full opening the stud d^3 engages arm d^4 and rocks it sufficiently to swing the gate *d* open to allow the charge of carbid in chamber *d'* to pass downward into the generating-chamber *b*. So soon as the charge is dropped into the generating-chamber, the bars d^2 *h'* move quickly downward, closing the cut-off *h* and gate *d*, and thus effectually preventing the moisture from passing upward into the carbid-storage chamber.

The moisture cut-off *h* may be caused to operate in unison with the sliding bar d^2 by a simple connecting-rod extending from said bar d^2 to the free end of the radial arm h^3 and so that the initial movement of said bar d^2 will cause the shaft of the cut-off *h* to rock sufficiently to open said cut-off just before the gate *d* is opened.

Having thus described my invention, I claim as new and wish to secure by Letters Patent—

1. In an acetylene-gas apparatus, a reservoir for the carbid, a generating-chamber located below the reservoir, an inclosing passage connecting the reservoir and chamber, a gate for controlling the flow of the carbid, a weighted counterbalance connected to the shaft of the gate, and two arms connected with the trunnions of the gate, combined with an endwise-moving bar provided with a stud which operates in connection with the arms, a moisture cut-off placed at the lower end of the passage, a counterweight connected with the gate, arms extending from the trunnions of the gate, and a vertically-moving bar also provided with a stud to engage with the arms of the moisture cut-off, substantially as shown.

2. In an acetylene-gas apparatus, a reservoir, a generator located below the reservoir, a connecting-passage between the reservoir and the generator, a tapered chute placed in the passage, a pivoted swinging gate operating in connection with the lower end of the chute, a counterbalance connected to the gate, two arms extending from the trunnions of the gate, combined with a vertically-moving bar provided with a stud which operates in connection with the two arms, a moisture cut-off placed at the bottom of the passage, a counterweight connected thereto, arms projecting from the edge of the trunnion of the cut-off, and a second moving bar also provided with a stud to operate in connection with the arms which project from the arms connected with the cut-off, substantially as specified.

3. In an acetylene-gas apparatus, a reservoir, a generator, a passage connecting the reservoir and the generator, a tapered chute, placed in the passage, a pivoted swinging gate operating in connection with the lower end of the chute, a counterweight, and two arms placed at an angle to each other and extending from the trunnion of the gate, combined with a vertically-moving bar provided with a stud which alternately engages with the arms connected with the gate, and by means of which bar the gate is alternately opened and closed as the bar is moved endwise, substantially as set forth.

Signed at Norwich, Connecticut, this 21st day of June, 1898.

EDWIN P. GARDNER.

Witnesses:

ALONZO M. LUTHER,

MAY F. RITCHIE.