

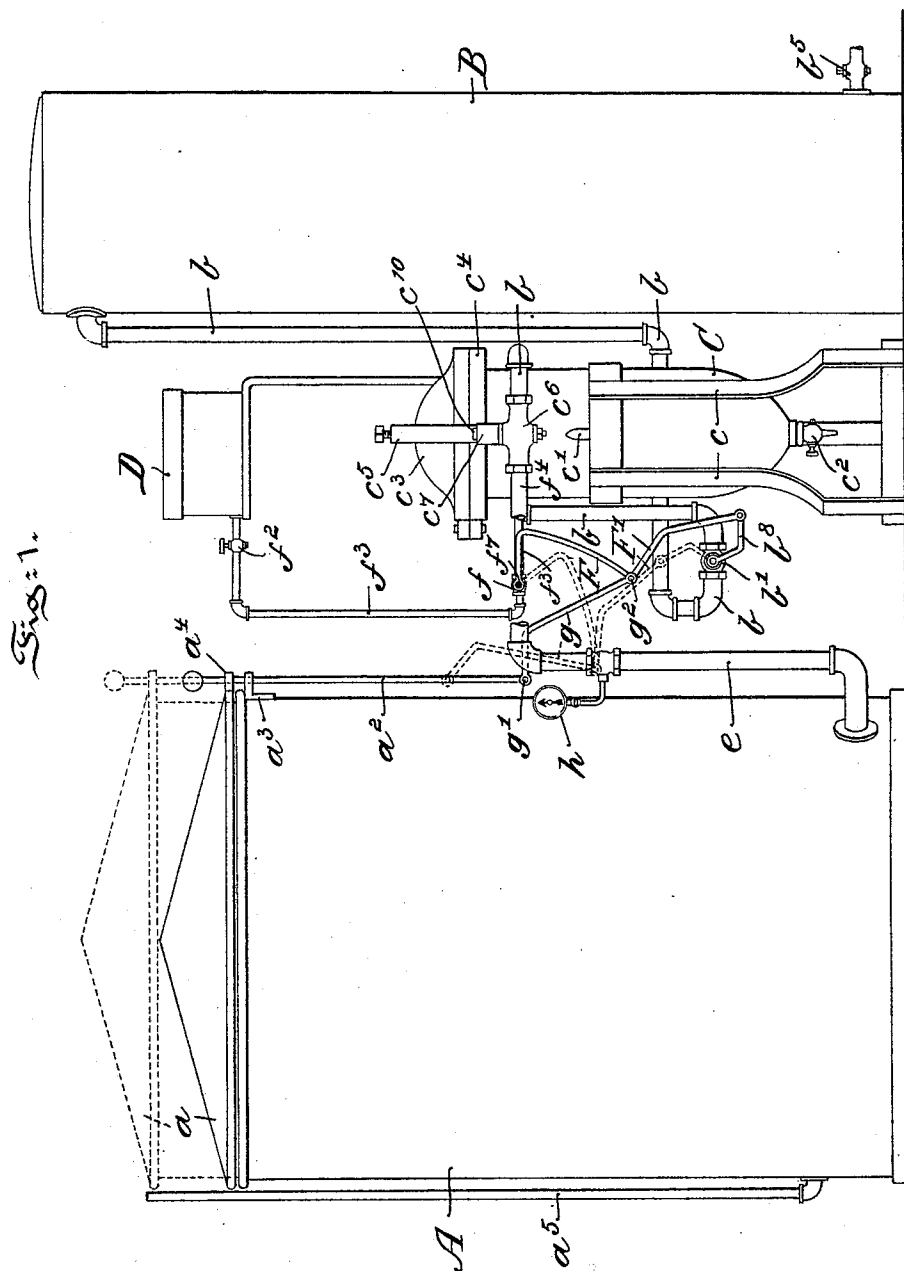
(No Model.)

2 Sheets—Sheet 1.

R. LUCKENBACH.
ACETYLENE GAS APPARATUS.

No. 584,946.

Patented June 22, 1897.



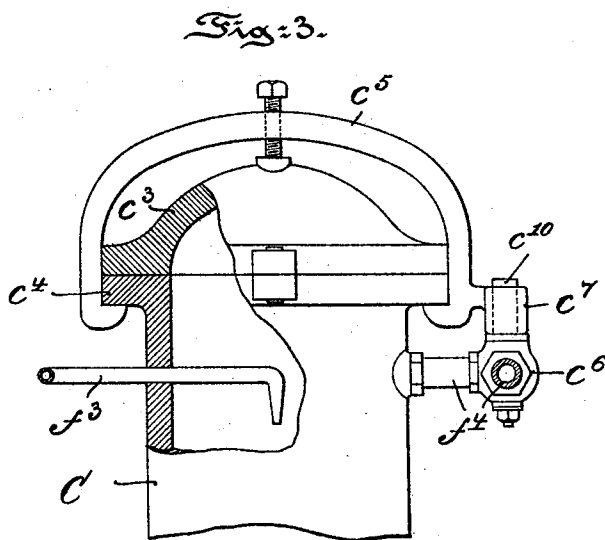
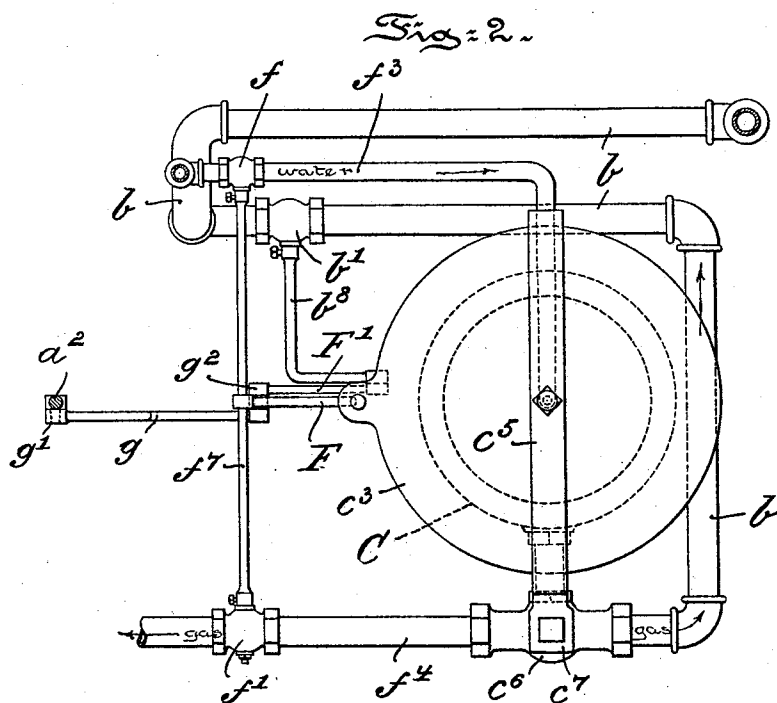
Witnesses:
Thomas M. Smith.
Richard C. Maxwell.

Inventor:
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UNITED STATES PATENT OFFICE.

ROYER LUCKENBACH, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR, BY
MESNE ASSIGNMENTS, TO CORNELIUS E. BAIRD, OF SAME PLACE.

ACETYLENE-GAS APPARATUS.

SPECIFICATION forming part of Letters Patent No. 584,946, dated June 22, 1897.

Application filed December 23, 1896. Serial No. 616,795. (No model.)

To all whom it may concern.

Be it known that I, ROYER LUCKENBACH, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Acetylene-Gas Apparatus, of which the following is a specification.

My invention has relation to an apparatus for generating and controlling the production and distribution of acetylene gas for illuminating and other purposes and to means actuated from a gas-retort and connected with a gasometer and an auxiliary holder, whereby the escape or backflow of gas from either of said members into said retort and the atmosphere is prevented; and in such connection it relates to the construction and arrangement of such an apparatus for the said purposes.

The principal objects of my invention are, first, to provide a simple, economical, and efficient apparatus for the generation of a gas for illuminating and other purposes by the mutual decomposition of a fluid, as water, with solid matter, as an acetylid or carbid, such as carbid of calcium, the apparatus being arranged with means operating automatically from the holder or gasometer to cause the generation of gas in the retort to be supplied therefrom under perfect control and when the limit of capacity of the gasometer or holder has been reached so arranged as that the pipe connection from the retort with the gasometer or holder and with the water-supply to the retort is automatically cut off, thereby preventing further supply of gas to the gasometer or holder and also further generation of gas in the retort, and the gas remaining in the retort during the moments or period of cut-off to the said gasometer or holder being introduced into preferably an auxiliary receiver or holder, to be utilized therefrom or allowed to escape into the atmosphere, whereby, due to such arrangement of the apparatus, the dangers hitherto experienced in the handling of acetylene gas is prevented and an economical production and utilization of the same insured, and, second, to provide in an apparatus for generating acetylene or other gas a retort with a removable cap or cover having rotatable clamping and lifting means asso-

ciated therewith for controlling a valve adapted for cutting off or turning on the flow of gas from the gasometer or holder to a retort and from an auxiliary receiver or holder to the retort during the time of filling of said retort or while the cap or cover of the retort is removed, thereby preventing waste of the gas stored up within the gasometer or holder as well as in the auxiliary receiver or holder.

My invention, stated in general terms, consists of an acetylene-gas apparatus when constructed and arranged in substantially the manner hereinafter described and claimed.

The nature and general scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, in which—

Figure 1 is a view, partly in side elevation and partly in section, of an apparatus embodying main features of my invention. Fig. 2 is a top or plan view of the gas-retort and valved-pipe connections to and from said retort; and Fig. 3 is an elevational view of a portion of the retort partly broken away, showing the fluid-pipe entering the same, the cap of the retort clamped thereto, and in connection therewith means keyed to a valve which upon the rotary movement of the clamp and then removal of the same, the said valve in the pipe connection connecting the gasometer or holder with the retort and the latter with the auxiliary receiver or holder, are cut off or in from and to the retort to thereby prevent wasteful escape or loss of the generated and stored gas in the members of said apparatus.

Referring to the drawings, A is the gasometer, partially filled with water and provided with a dome *a*, adapted to extend downward into the same.

B is an auxiliary gas receiver or holder.

C is a gas-retort, and D is a fluid or water reservoir. The retort C is mounted in a tripod standard *c* and rests upon lugs *c'*, provided on the exterior surface of the retort. This retort has in the bottom thereof a stop-cock *c²* for drawing off matter therefrom as may be required, and at the top of the retort is a hinged cap or cover *c³*, resting on the flanged rim *c⁴* of the retort by means of a

clamp, which embraces the same by extending downward under the rim c^4 , as clearly illustrated in Figs. 1 and 3 of the drawings. The gas is generated in the retort C by the intimate decomposition of a fluid, such as water, with a solid, as an acetylid or carbid. The water is permitted to flow into the retort C in, preferably, drop form through the pipe f^3 , extending into said retort in the manner illustrated in Fig. 3, when the stop-cock f^2 has been opened to afford such flow of the fluid or water. The solid matter, such as acetylid or carbid, for example, carbid of calcium, or some other equivalent material, it is to be understood, is placed in the retort before the cap or cover is clamped thereto, as illustrated in Fig. 1. When the water and carbid are brought together, there is given off as one of the elements of the decomposition what is known as "acetylene gas," which is adapted to give a flame of great brilliancy or luminosity.

The auxiliary gas receiver or holder B is connected by means of a pipe b with the retort C, and which pipe preferably enters the holder B at the top thereof and is provided with a valve b' of any preferred form, as clearly illustrated in Figs. 1 and 2 of the drawings. The gas generated in the retort C is conducted therefrom by means of the pipes f^1 and e to the lower part of the gasometer or holder A, rising through the water therein and causing thereby the bell or dome a of the gasometer or holder A to be elevated and a vertical rod a^2 to be actuated in a bearing a^3 , extending from the gasometer or holder A. The rod a^2 is secured to an eye a^4 , which projects from the bell or dome a of the holder A. This rod a^2 is pivoted at g' to the curved lever-arm g , and the latter is in pivotal connection at g^2 with the double bell-cranked levers F and F'. These levers actuate valves f and f' , which are connected with one another by means of a rod f^7 . The said levers also control a valve b' by means of a curved arm b^8 , the said valves f , f' , and b' being located in the pipes f^3 , f^4 , and b , leading, respectively, from the water or fluid reservoir to the retort C and from the retort to the gasometer or holder A, and also to the auxiliary gas receiver or holder B, these valves being designated as the "water" and "gas" controlling valves of the apparatus and to the particular arrangement of which valves my present invention appertains and constitutes one of the main features thereof in conjunction with the dome of the gasometer for controlling the supply of water or fluid to the retort C, as well as the flow of the gas from the retort to the gasometer or holder A and to the auxiliary gas receiver or holder B or into the atmosphere.

The flow of the gas for utilization in any preferred manner is from the gasometer or holder A by means of the pipe a^5 and from the auxiliary gas receiver or holder B by the pipe b^5 . The clamp c^5 of the retort is pro-

vided with a keyway c^7 , engaging the key c^{10} of the valve c^6 , located in the pipe connections f^4 and b , extending from the gasometer or holder to the retort C and from the latter to the auxiliary gas receiver or holder B, whereby upon the unloosening and rotary turning of the clamp c^5 , normally engaging the cap of the retort C, the valve c^6 is operated to cut off the backflow of gas from the gasometer or holder A and from the auxiliary gas receiver or holder B through the retort C into the atmosphere. By then restoring the cap to the top of the retort and applying the spanning clamp c^5 thereto with the keyway in engagement with the key of the valve c^6 the valve will be operated to then permit of the flow of gas in the manner hereinbefore explained from the respective holders A and B through the connections from the retort C to the said members of the apparatus.

h is an ordinary gas-pressure gage located in connection with the gas-pipe from the retort C.

In operation the dome is caused to assume a position in the gasometer or holder A, with the vertical rod a^2 in the position indicated in full lines in Fig. 1, and the double bell-cranked levers F and F' will then assume the position indicated in full lines in said figure and the connected valves f and f' in the pipe connections f^3 , f^4 , and e will be automatically and simultaneously opened from the water-reservoir D and from the retort C to the gasometer or holder A, and the valve b' in the pipe b will be automatically and simultaneously closed from the retort C to the auxiliary gas receiver or holder B. By the decomposition effected through the mixture or commingling of the water in drop form with the carbid or similar material will thus be given off a gas which will flow from the retort C through the pipe f^4 and branch e thereof to the gasometer or holder A, rising therein through the water in a cool state and causing the dome or bell a to be elevated until the space between the water and the top of the dome is filled with the gas which is utilized therefrom through the pipe a^5 , and when the dome or bell a has assumed the position indicated in dotted lines in Fig. 1, with the vertical rod a^2 likewise in the position indicated in said dotted lines, the double bell-cranked levers F and F', with their connected curved arms having been caused to assume the position illustrated in said dotted lines, the water and gas valves of the pipes f and f' will be closed and the valve b' in the pipe b will be opened to permit of the flow of gas through the said pipe into the upper portion of the auxiliary gas receiver or holder B, whence it may be utilized therefrom through the pipe b^5 , located in the lower portion thereof.

It may be here remarked that the apparatus is so constructed that the gas generated in the retort C is supplied to either the gasometer or holder A or the auxiliary gas receiver or holder B in a cool state, thereby

avoiding corrosion of the parts and affording greater safety in the utilization of the gas, owing to the character thereof and the inherent heat-units contained therein as compared with the ordinary coal or water gas for illuminating and many other purposes.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

10 1. In a gas apparatus, a retort mounted in a tripod or standard, a hinged cap provided with a spanning clamp and connected with a valve located in a pipe connection from said retort with a holder, a gasometer provided
15 with a dome, means connected with said dome for controlling double bell-cranked levers operating valves of pipe connections from said retort with said gasometer, holder and a water-reservoir, substantially as and for the purposes described.

20 2. The combination with a retort provided with a cover, a clamping device for said cover provided with a keyway and a pipe connection provided with a valve having a key, substantially as and for the purposes described.

3. The combination with a retort and a holder, pipe connections having a valve with a key connecting said retort with said holder, a removable cap on said retort, a clamp spanning said cap and provided with a keyway, 30 and said clamp adapted to be turned in connection with the cap of said retort, substantially as and for the purposes described.

4. The combination with a gasometer provided with a dome having an operating-rod, 35 a retort provided with a cover having a clamping device provided with a keyway, a pipe connection having a valve with a key, a water-supply, pipe connections provided with valves connecting said retort with said gas- 40 ometer and a double bell-crank device actuated by said dome-operating rod, substantially as and for the purposes described.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses. 45

ROYER LUCKENBACH.

Witnesses:

J. WALTER DOUGLASS,
RICHARD C. MAXWELL.