

No. 654,731.

Patented July 31, 1900.

G. HARTMAN.
ACETYLENE GAS GENERATOR.

(Application filed July 31, 1899.)

(No Model.)

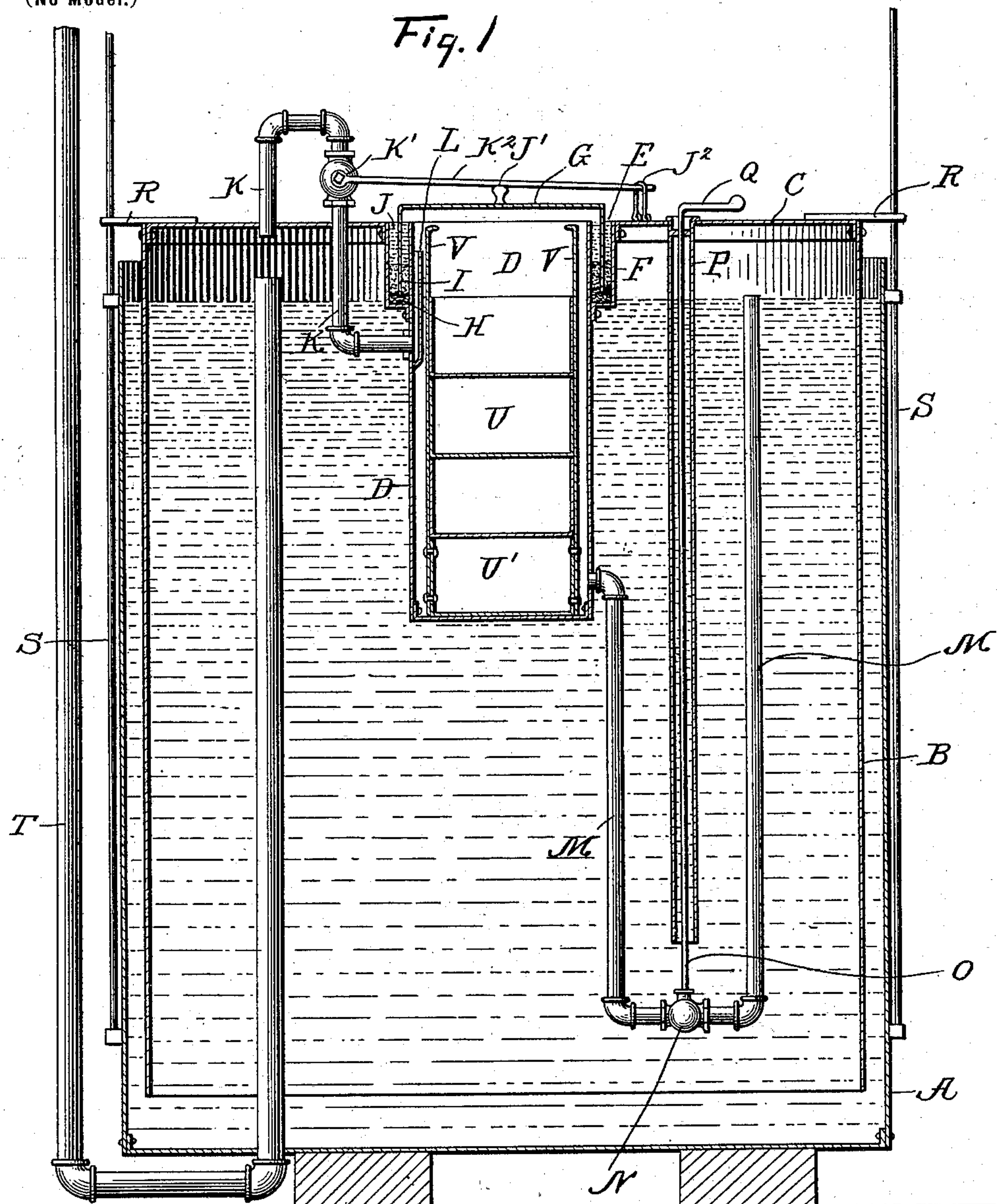
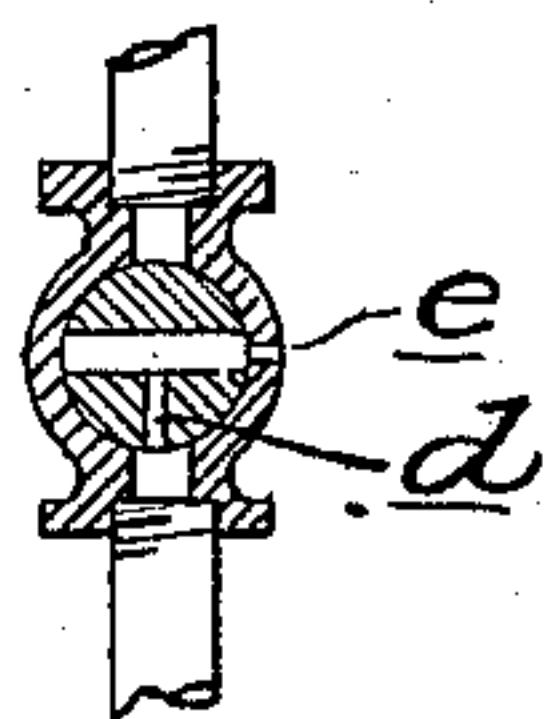


Fig. 2.



Witnesses

E. W. Erdman

S. Williamson

Inventor
Gus Hartman

Geo. H. Haystack
Attorney

UNITED STATES PATENT OFFICE.

GUS HARTMAN, OF ROCKWALL, TEXAS.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 654,731, dated July 31, 1900.

Application filed July 31, 1899. Serial No. 725,692. (No model.)

To all whom it may concern:

Be it known that I, GUS HARTMAN, a citizen of the United States, residing at Rockwall, county of Rockwall, and State of Texas, have
5 invented a certain new and useful Improvement in Acetylene-Gas Generators, of which the following is a specification.

My invention relates to a new and useful improvement in acetylene-gas generators, and
10 has for one object to provide an exceedingly-simple apparatus of this description in which the pipes and connections are closed, and thus protected from freezing by the effects of atmospheric changes; and a further object of
15 my invention is to remove the possibility of an explosion taking place during the manipulation of the machine.

A further object of my invention is to so construct the apparatus as to greatly facilitate the recharging thereof in order that the same may be accomplished in an exceedingly-short space of time; and a further object of my invention is to accomplish the results aimed at without the use of float-valves or
25 other mechanism dependent upon the automatic working of the apparatus for the generation of the gas, while at the same time providing for the positive flow of water to the carbide, which is regulated by the amount of gas
30 generated and used.

With these and other ends in view this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the
35 claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, the construction and operation will now be described in
40 detail, referring to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a vertical section of an apparatus made in accordance with my improvement, showing the various parts thereof; and
45 Fig. 2 a detail view of the gas-valve, showing the relief-holes for permitting the escape of the air in closing the carbide-chamber.

In carrying out my invention as here embodied, I provide a gasometer A, which consists of a cylindrical tank having the holder

B loosely fitted therein, so as to rise and fall with the increase or decrease of the supply of gas, and this holder is sealed in the usual manner by the outer cylinder being nearly filled
55 with water, as clearly shown.

C represents the top of the holder and has set in the center thereof the carbide-chamber D, the latter having formed around its upper portion an annular recess E by means of the
60 casing F. This casing is secured to the top C and to the carbide-chamber, so as to be gas-tight. The carbide-chamber is closed when not in use by the cap G, the flanges of which extend downward into the recess E, so as to seal
65 this chamber, which sealing is accomplished by the means of the rope or hemp packing H, placed in the bottom of the recess and upon which the edges of the flange of the cover rest, while upon this packing is placed a certain
70 amount of sand I, and finally the remainder of the recess is filled with water, as indicated at J. By this arrangement gas generated within the carbide-chamber cannot escape therefrom through the sealing, since the water
75 at J and the sand-bed cannot be disturbed, as the packing H prevents their displacement, as will be readily understood. The top C has secured therein the pipe K, which leads from
80 the carbide-chamber and opens into the upper portion of the holder, so as to deliver the gas thereto.

A housing L partially surrounds the lower end of the pipe K where it enters the carbide-chamber and is so arranged as to admit gas
85 to this pipe only from the upper portion of said chamber.

A valve K' is located in the pipe outside of the apparatus and is operated by a lever K², which when the valve is open lies across the
90 cover G and against the knob J', so that said cover cannot be removed until the lever is elevated, which closes the valve, thus preventing a forward flow of gas from the holder to the carbide-chamber, and this, as is obvious, will avoid the possibility of an explosion from the escape of gas from the apparatus when the cover is removed for recharging or other purposes. A suitable loop or link is pivoted to the cover and adapted to
100 engage the outer end of the lever K², thus holding it in its horizontal position, and also

holding the cover in place against the pressure of gas which may be generated within the apparatus.

M is the supply-pipe by which water is admitted to the carbid-chamber and is in the form of an inverted siphon and so attached as to rise and fall with the holder, the object of which will be hereinafter set forth.

A valve N is located in the pipe M and is operated by the valve-rod O, which passes upward through the tube P and terminates in the handle Q, so as to facilitate the operation of this valve from the outside of the apparatus.

The holder is guided in its vertical movements by the plates R, which run upon the rods S, secured to the sides of the apparatus and projecting upward to the desired height.

A delivery-pipe T leads to the apparatus and projects upward therein above the water-level, so as to permit the flow of gas from the generator to the point of consumption.

One of the principal features of my improvement is the arrangement for charging and recharging the carbid-chamber, and consists of providing two or more series of cells U, (but one of such series being shown,) the bottom cell U' of each series having secured thereto the strips V in any suitable manner, the upper ends of which are intumed for convenience in handling. Each cell is open at the top and may be suitably perforated for the admission of water, for the purpose hereinafter set forth. The proper amount of carbid is placed in each cell, and these cells are placed between the strips, one upon the other, and may then be inserted in the carbid-chamber by simply removing the cover thereof and seating the whole series upon the bottom of the chamber. The chamber may be of such a width as to receive two or more of these series, which proves to be a great convenience in practice, since thereby no time is lost in recharging the apparatus, and a greater or less charge may be inserted, as desired.

From the foregoing description the operation of my improvement will be obviously as follows: After the carbid-chamber has been charged and sealed, as set forth, there being no pressure within the holder, it will stand at its lowest point, and this will carry the end of the pipe M below the level of the water, thus causing the water to flow through said pipe to the carbid-chamber, and when reaching the last cell in each of the series will immediately generate gas by contact with the carbid in these cells, which gas will flow through the pipe K to the upper portion of the holder and elevate the same, which in turn will carry the upper end of the pipe M above the level of the water, cutting off a further flow of the carbid-chamber. When the gas generated by the carbid in the bottom cells has been drawn from the holder, it will again flow to a point that will carry the upper end of the pipe M below the surface

of the water, causing the latter to again flow to the carbid-chamber, and this flow of water will continue until it has reached the next-highest layer of cells and generated sufficient gas to again elevate the holder, thus repeating the operations just described until all of the carbid has been utilized. When the apparatus is to be recharged, the link J² is disengaged from the outer end of the lever K² and the latter swung upward to a vertical position, which closes the valve K', and thus shuts off a retrograde flow of gas from the holder to the carbid-chamber, so that when the cover G is removed only the residue of gas in the carbid-chamber will be permitted to escape. After the cover has been thus removed one or both series of the cells may be drawn from the chamber and others substituted therefor; but prior to the recharging of the carbid-chamber the water which may have accumulated therein should be removed, and this may be accomplished by means of a suitable bucket. By the peculiar shape of the pipe M a water seal is formed which permits the escape of the gas through this pipe without having to close the valve N when the cover is removed. Thus the water which runs through the pipe into the carbid-chamber cannot escape, thereby keeping the seal that is being used from overheating. The flow of water through the pipe M to the carbid-chamber is prevented when the apparatus is being recharged by shutting off the valve N, it being again opened when the apparatus is to be put in operation. An escape-hole d is formed in the valve K', and when the latter is closed by the turning of the lever K² to a vertical position this hole registers with that portion of the pipe K which leads from the carbid-chamber and the valve-opening registers with the hole e and permits the escape of air from said chamber when the cover G is being placed thereon, or otherwise this cover could not be displaced without compressing the air within the chamber.

Having thus fully described my invention, what I claim as new and useful is—

1. An acetylene-gas generator consisting of an outer casing or reservoir adapted to hold water, a holder fitted to loosely slide within said casing and be sealed by the water therein, a carbid-chamber carried by the holder, a water-sealed pipe leading from said chamber and adapted to admit water to the chamber when the holder reaches the lower limit of its movement, a valve located within the pipe, a valve-stem extending through the top of the holder whereby the valve may be controlled from the outside, a pipe leading from the carbid-chamber to the holder, a valve in said pipe, a lever for operating the valve and retaining the cover of the carbid-holder when the valve is open, and means for charging the carbid-chamber, as specified.

2. A gas-generator consisting of a suitable casing or reservoir being nearly filled with water, a holder loosely fitted within the cas-

ing and held by the water, means for guiding the holder in its vertical movements, a carbide-chamber carried by the holder, a casing surrounding the upper portion of the carbide-chamber so as to form a recess, a cover for closing the top of the carbide-chamber, the flanges of said cover adapted to project within the recess and rest upon a layer of hemp or the like, a sand and water seal resting upon the hemp, a pipe leading from the carbide-chamber through the top of the holder and returning to said holder, a valve located in the pipe, a lever connected with the valve for operating the same and adapted to hold the cover closed, a link for engaging the outer end of the lever to prevent its displacement, a trapped pipe leading from the carbide-chamber to a point at or near the level of the water when the holder is in its lowered position, a valve controlling the flow of water through this last-named pipe, and an outflow-pipe leading from the apparatus to the service-pipes, as specified.

3. In combination with the carbide-chamber of a gas-generator of the character described, a series of cells adapted to hold a suitable supply of carbide and be inserted within the chamber, that the material therein will be utilized in sections, strips secured to the bot-

tom cell of the series and confining the cells above the bottom cell, said cells being removably held by the strips and resting one on the other.

4. In combination with a gas apparatus of the character described, a carbide-chamber carried by the holder of the gasometer, a pipe carried by said carbide-chamber and so arranged as to admit water to said chamber upon the downward movement of the holder, and cut off said flow upon the upward movement thereof, a valve for controlling the flow through said pipe, a second pipe carried by the holder leading from the carbide-chamber so as to deliver the generated gas to the holder, a casing F surrounding the upper portion of the carbide-chamber so as to form a recess, a gas-bell, the flanges of which are adapted to fit within said recess, suitable sealing material surrounding the flanges, and means for holding the cover in place, as specified.

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

GUS HARTMAN.

Witnesses:

J. K. BROWNING,
R. M. PAYNE.