No. 782,369. PATENTED FEB. 14, 1905.

J. S. THOMAS & G. HUDSON.

ACETYLENE GAS GENERATOR.

APPLICATION FILED JULY 6, 1904.

Fig. 1.

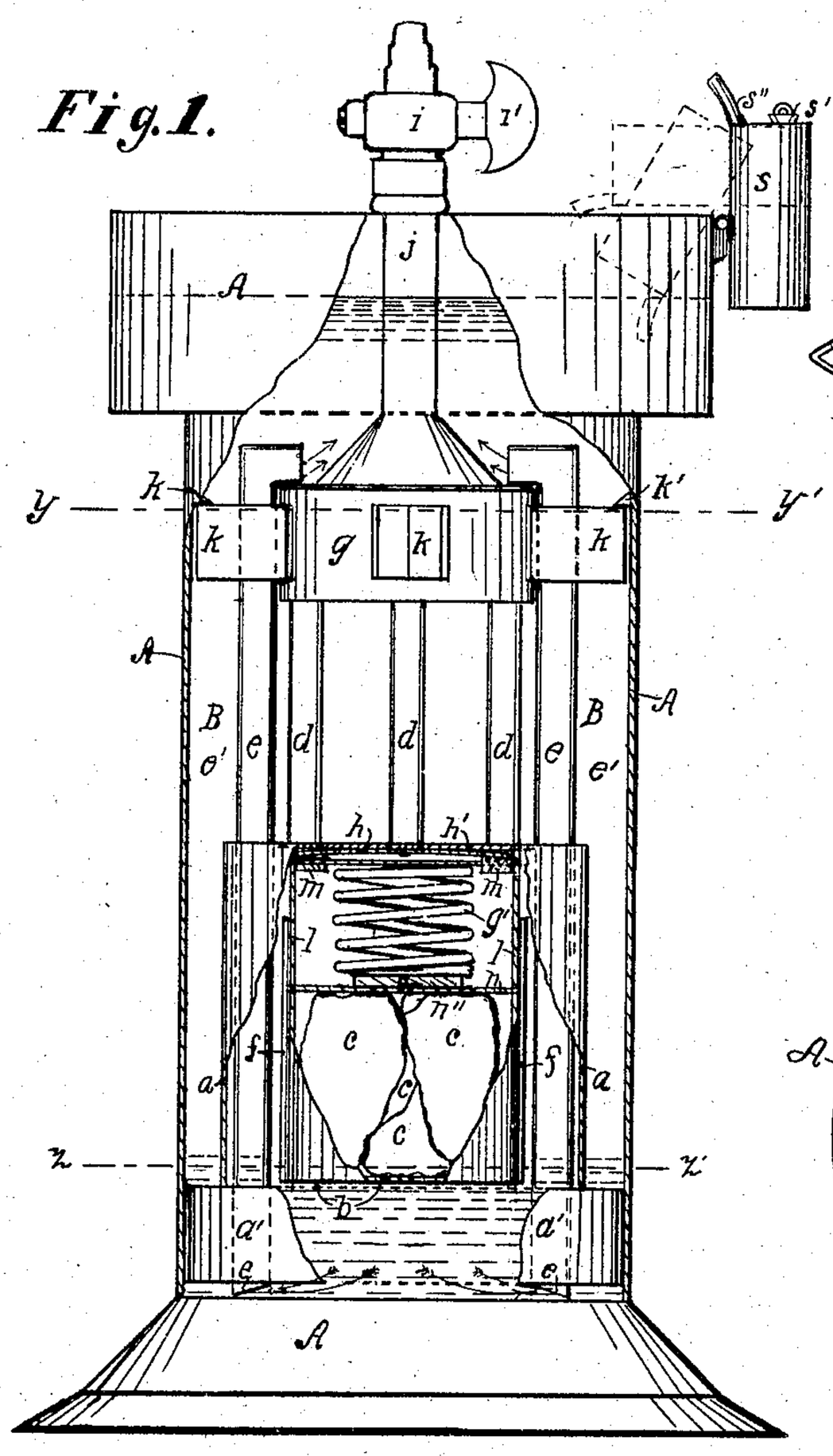


Fig. 2.

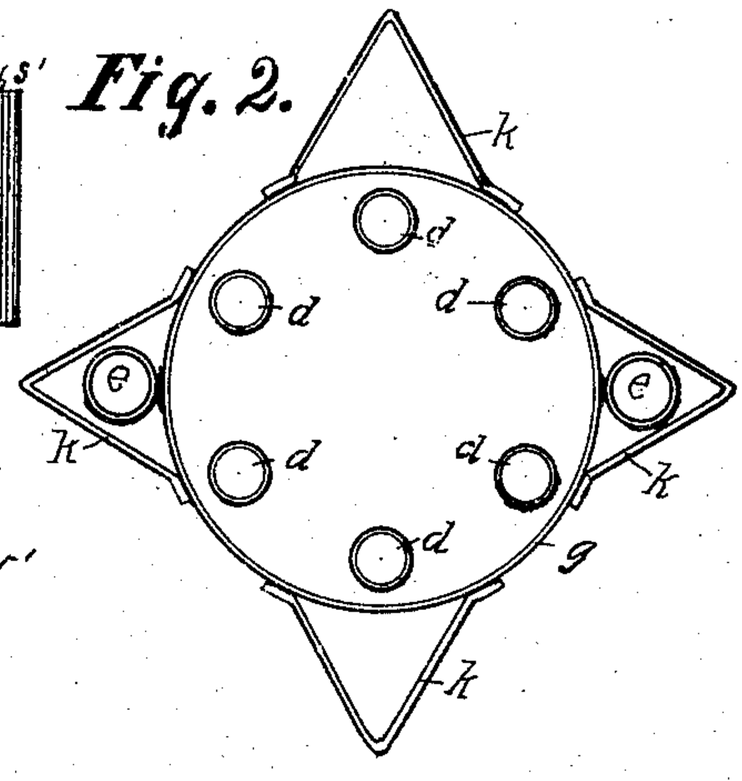


Fig. 3.

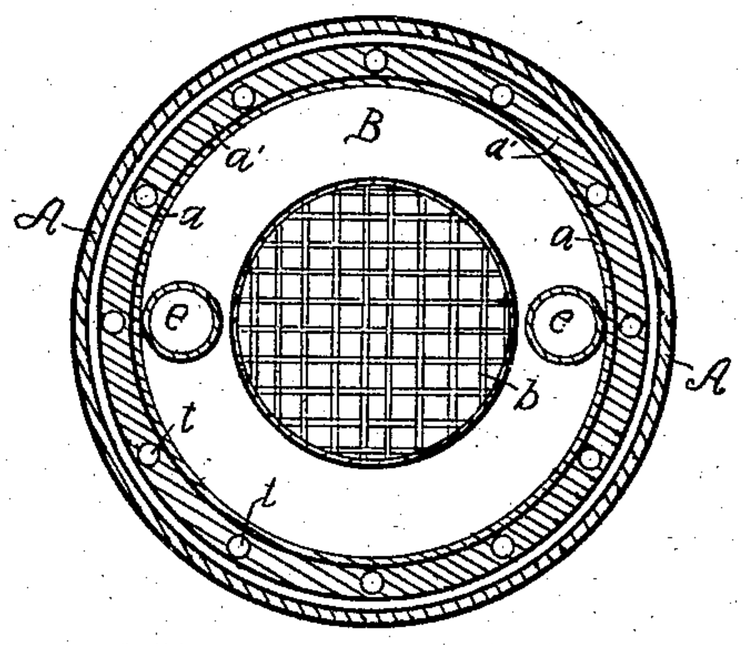


Fig. 4.

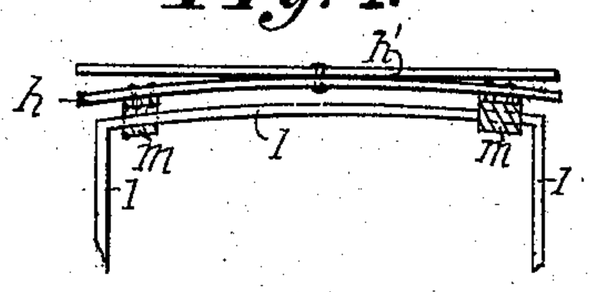


Fig. 5.

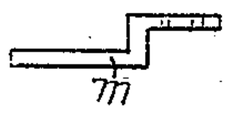


Fig. 6.

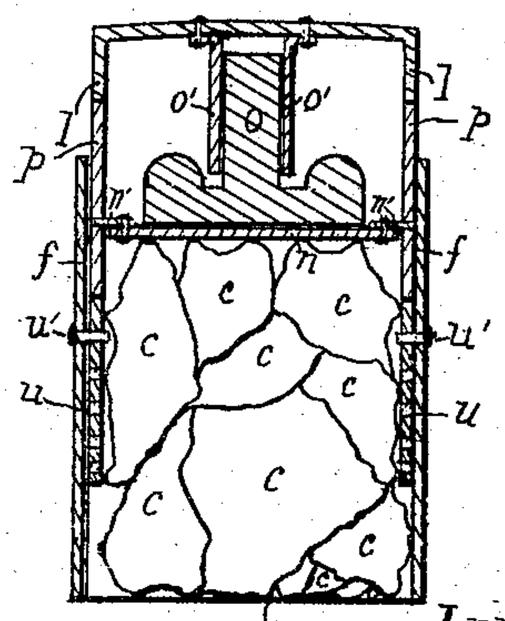
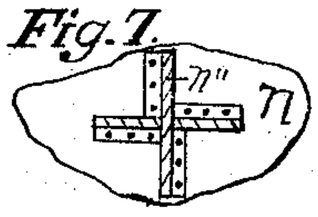


Fig. 7.



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No. 782,369. Patented February 14, 1905.

UNITED STATES PATENT OFFICE.

JOHN S. THOMAS, OF SOUTH McALESTER, AND GEORGE HUDSON, OF BLANCO, INDIAN TERRITORY.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 782,369, dated February 14, 1905.

Application filed July 5, 1904. Serial No. 215,294.

To all whom it may concern:

Be it known that we, JOHN S. THOMAS, residing at South McAlester, and GEORGE HUDSON, residing at Blanco, Indian Territory, citizens of the United States, have invented new and useful Improvements in Acetylene-Gas Generators, of which the following is a specification.

Our invention relates to acetylene-gas generators in which a water-tank, preferably cylindrical, open at its top, having within it a floating gas-tank centrally located, entirely submerged, and locked down, yet easily removed when desired, a calcium-carbid reservoir with means for applying a downward pressure upon the carbid, a device for holding the carbid-reservoir in place, a system of condensing flues or tubes and circulation pipes or tubes, a device for keeping the water at a a certain level, and also a drip-conveyer or canopy.

The objects of our invention are, first, to construct a generator for acetylene gas so that it will be simple, efficient, and safe; second, adapted to use in dwelling-houses, halls, galleries, tents, &c., and like places where good, portable, temporary lighting is desired at small cost. We attain these objects by the devices and mechanism illustrated in the accompanying drawings, constituting a part of this specification, in which—

Figure 1 is a vertical sectional view of the entire apparatus. Fig. 2 is a plan view on the line $y\ y'$ in Fig. 1. Fig. 3 is a plan view on the line $z\ z'$ in Fig. 1. Fig. 4 is a detailed view in elevation of roof of the gas-tank with the drip-conveyer or canopy attached thereto, the canopy having secured to its under surface right and left bail-hooks, Fig. 5. Fig. 6 is a vertical sectional view of the carbid-reservoir, the bail for suspending it, and the pressing-weight and pressing-plate, all of which are more fully described hereinafter. Fig. 7 is a plan view of the antiheater for the spiral spring to rest upon.

Similar characters refer to similar parts throughout the several views.

In the water-tank A is centrally located and submerged the gas-tank a, in the present case cylindrical in form and open at the lower end, its upper end having a roof h, perforated with a series of openings into condensing flues or tubes d, the upper ends of which terminate in the cooling-chamber g, in which the steam is condensed and impurities separate from the gas, the latter seeking the highest point, while the former passes down the flues and falls on the canopy h' and is conveyed to points near the wall of the gas-tank a. The roof of the cooling-chamber g is cone-shaped, having attached to its apex a jet-pipe j, provided with the usual stop-cock $i\ i'$.

To the periphery of the cooling-chamber g are securely attached guides k, which keep the gas-tank centrally located, and when submerged by a slight turn of the tank a the guides k pass under the lugs k', and thus prevent the tank from rising.

In the lower part of the gas-tank a is located the carbid-reservoir f, suspended by adjustable bail l from bail-hooks m, attached to under surface of the canopy h', which is secured to roof h of the gas-tank a. In Fig. 6 it will be seen that the bail l is provided with longitudinal slots p in each arm as guides for the pins $n'\ n'$, projecting from pressing-plate n. The arms of bail l are provided with right and left lateral slots $u\ u$ to engage pins or studs $u'\ u'$, secured to the sides $f\ f$ of the carbid-reservoir, which by a slight rotation of the bail l becomes engaged or disengaged, and by this device the reservoir may be suspended at different elevations, and the amount or degree of pressure upon the carbid and pressing plate n can be regulated when spring-pressure is used to force the carbid c down upon the bottom of the reservoir f, which being perforated or composed of netting all the carbid is forced out of the reservoir and descends to the bottom of the water-tank A, thus permitting the water to come in contact with the carbid at all times, preventing after generation and impediment of action.

In generators of small capacity, in which the chemically-generated heat is not excessive, we use a spiral spring g' for pressing the carbid against the bottom of the carbid-reservoir; but in large generators, in which the heat be-

comes intense, we use a weight *o*, having a cylindrical stem moving in a tubular guide *o'*. For preventing the spring *g'* from heating we place an antiheater *n''*, attached to the upper surface of the pressing-plate *n*. The spring *g'* rests on the edges of *n''*. (See Fig. 7.) This antiheater, as shown in Fig. 7, is constructed of two strips of tin or galvanized iron arranged at right angles to each other in the shape of a cross, the lower portions of which are also bent at right angles and provided with holes or openings for the reception of suitable rivets, whereby said strips are secured to the upper surface of the pressing-plate *n*, the lower end of the spiral spring *g'* being adapted to rest upon the upper edges of the strips or arms thus formed to prevent its immediate contact with said pressing-plate, and thereby reduce the heating of the spring *g'* to a minimum.

For the purpose of cooling the water or equalizing its temperature we use circulating pipes or tubes *e e*.

To maintain a uniform level of the water in the tank A, we provide a supplemental supply in the can *s*, having a water-tight opening *s'* for refilling and a spout *s''*, through which the water passes automatically when the can *s* assumes the position indicated by the dotted lines and the spout *s''* is below the water-level in the tank A.

B is a water-space, and *a'* is a weight or sinker provided with a series of openings *t t* and is securely attached to the lower end of the gas-tank *a*, and when the said sinker or weight possesses sufficient gravitation to equal the levitation of the gas and keep the gas-tank *a* immersed to any point between the cone of the cooling-chamber and the stop or jet cock *i* any convenient vessel, as a tub, barrel, or water-tight box, may be used in place of tank A, or the gas-tank *a* can be placed in a pond, river, or lake and maintain perfect action and a clear light.

The operation of our generator, as herein shown and described, is as follows: The apparatus being constructed and arranged as shown in Fig. 1 of the drawings, the carbid being in place, as shown, water may be introduced from any convenient source until the water-tank A is filled to about the point shown by shaded lines in the top part of said Fig. 1, when the generation of gas will commence. The cock *i'* may then be turned and the gas lighted. By turning water-can S, as shown in dotted lines, the water in tank A will always be kept at the proper level. When the carbid is exhausted, the water in tank A is turned out, the parts removed therefrom, the tank cleaned, a fresh supply of carbid placed in the carbid-reservoir, the parts described replaced, the water-tank A again filled with water, and the generation of gas will again commence, as first above mentioned.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. As an article of manufacture, an acetylene-gas generator, comprising: a water-tank open at the top and closed at the bottom, a submerged floating gas-generating tank, open at the bottom and having a perforated top, centrally located and secured in said water-tank, a carbid-reservoir secured within the gas-generating tank, means for holding the carbid-reservoir in place, means for applying a downward pressure on the carbid within said reservoir, a cooling-chamber having a cone-shaped roof secured within the water-tank above the generating-tank, condensing-pipes connecting the gas-generating tank and the cooling-chamber, circulating-pipes within the water-tank for cooling the water therein, a water-supplying can for maintaining the water in the water-tank at a uniform level, means for securing in and removing the interior parts mentioned from the water-tank, a jet-pipe for permitting the gas to flow out, and a stop-cock for regulating the flow of the gas, substantially as specified.

2. In an acetylene-gas generator, the combination with a water-tank of a submerged gas-generating tank, a canopy secured to the top of said gas-generating tank, a carbid-reservoir suspended within the gas-generating tank, a pressing-plate *n*, a spring secured between the canopy and said pressing-plate *n*, and an antiheater *n''* between the spring *g'* and pressing-plate *n*, for giving downward pressure on the carbid, substantially as specified.

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GEORGE HUDSON.

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