

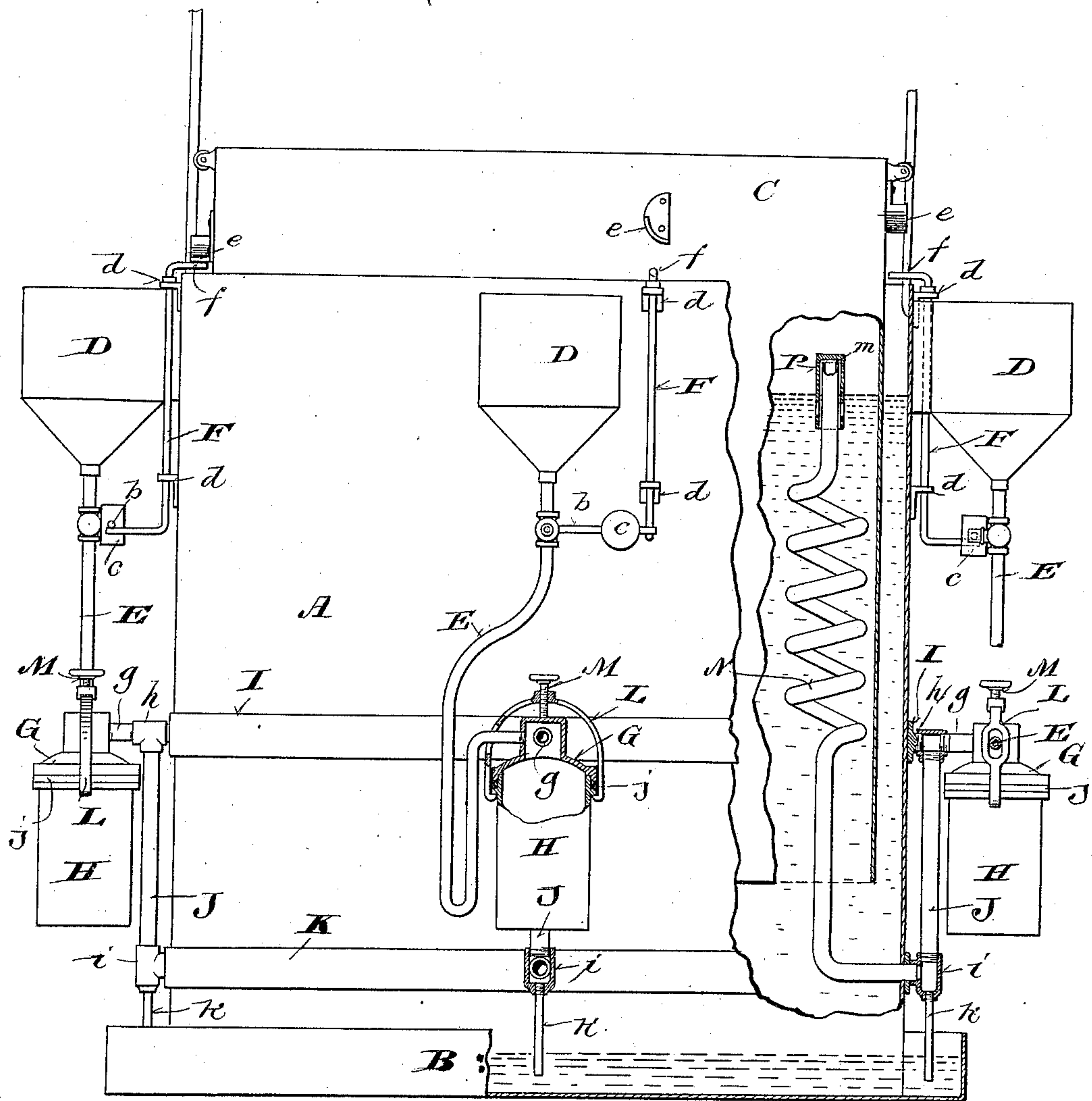
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Patented Nov. 5, 1901.

A. HALL.
ACETYLENE GAS APPARATUS.

(Application filed Dec. 13, 1900.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

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ACETYLENE-GAS APPARATUS.

SPECIFICATION forming part of Letters Patent No. 686,057, dated November 5, 1901.

Application filed December 13, 1900. Serial No. 39,622. (No model.)

To all whom it may concern:

Be it known that I, ALBERT HALL, a citizen of the United States, and a resident of Greenbay, in the county of Brown and State of Wisconsin, have invented certain new and useful Improvements in Acetylene-Gas Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has for its object to provide simple economical apparatus for storage and intermittent automatic generation of acetylene gas, said invention consisting in certain peculiarities of construction and combination of parts, hereinafter particularly set forth with reference to the accompanying drawing and subsequently claimed.

The drawing is a diagram representing an elevation of my improved acetylene-gas apparatus, partly in section.

Referring by letter to the drawing, A indicates an open-top tank set in a comparatively shallow pan-like receptacle B of greater diameter. The tank and receptacle aforesaid are partly filled with water or other suitable liquid, and an open-bottom shell C, partially submerged in said tank, constitutes a gas-holder.

Secured to the upper outer portion of tank A are a series of water-cups D, each of which has a discharge-pipe E, preferably in the form of a siphon controlled by a valve, the stem of which valve is provided with a crank *b*, upon which a weight *c* is supported. Loose in ears *d* on the tank are hook-rods F, by which the weighted valve-stem cranks *b* are held in horizontal position, the pipes E being then closed to prevent flow of the contents of the water-cups D aforesaid.

Rigid with the upper outer portion of gas-holder C at intervals, on planes one above another in successive order, are a series of strikers in the form of cams *e*, that operate upon the cranked upper ends *f* of hook-rods F, to swing the same in the direction necessary to release the weighted valve-stem cranks *b*, above specified.

Each of the pipes E aforesaid is coupled to a cap G of carbide-holders H, and nozzles *g* of the caps are in rigid union with couplings

h, rigidly connected to a band I of the tank A, these couplings being joined by vertical pipes J with other couplings, *i*, in rigid union with another band K on said tank, the latter band being lower than the one aforesaid. The rim of each carbide-holder fits snug in a recess of the corresponding cap, a packing-gasket *j* being interposed between the cap-rim and a shoulder of said carbide-holder. Vertically-slotted bails L are provided with hook ends that catch under the shoulders of the carbide-holders, and a hand-screw M, engaging each bail, is arranged to bear against an opposing cap G, proper adjustment of the screw serving to clamp said cap in gas-tight position on the corresponding carbide-holder. The bail-slots being engaged by siphon-pipes E, these pipes do not interfere with the gas-tight closing of the carbide-holders. A drain-nozzle *k* from each coupling *i* is partly submerged in the receptacle B, and thus sealed against escape of gas with residuum that deposits through said nozzle into said receptacle. A spirally-coiled pipe N, in union with each coupling *i*, extends upward within the confines of gas-holder C to constitute a condenser, the upper outlet end of this pipe being above the level of the liquid in tank A and covered by a check-valve in the form of a perforated loose cap P, partly submerged in said liquid. A packing-disk *m* is arranged in the cap opposite the outlet of the corresponding pipe, and the perforations of said cap are normally below the adjacent liquid-level.

In practice carbide is sealed up in the holders H, the weighted valve-stem cranks *b* elevated and caught by the hook-rods F after a sufficient quantity of gas has been generated to lift the holder high enough to have the cams *e* spirally arranged thereon clear the cranked upper ends *f* of said rods, the gas-holder being steadied and guided by the means herein shown, common in apparatus to which my improvements relate. Water is now placed in the cups D, the quantity in each cup being sufficient to decompose the carbide contained in the holder H, with which said cup has valve-controlled pipe connection. Owing to consumption of the gas the holder

C has automatic descent until one of its cams operates a hook-rod F to release the weighted crank of a valve-stem b, and thus open a pipe E, whereby water stored in the corresponding cup D siphons into the carbid-holder H, that has its cap coupled to said pipe. A decomposition of carbid now takes place, and the resulting gas finds outlet through pipes J N into the holder C, the pressure serving to unseat pipe-cap P, so that said gas may escape through the perforations in said cap and by its expansion again elevate said holder. When the gas-pressure in holder C exceeds that in a pipe N, the cap P of this pipe will be seated to prevent back-flow of said gas, and incidental to the flow of gas in said pipe there is a condensation and separation of residuum that drains into receptacle B aforesaid. The hook-rods F are successively operated by the intermittent descent of the gas-holder C, and thus the generation of gas is kept up at intervals for an indefinite period in proportion to the consumption. At any time before the carbid in all the holders has been exhausted the spent holders may be recharged, the previously-operated valves in pipes E reset, and the empty cups D filled with water, so that when the apparatus has been once started there need be no cessation of the intermittent automatic generation and storage of the gas, while said apparatus continues serviceable, it being understood that each carbid-holder and its attachments and each valve-trip mechanism is entirely independent of all the others in corresponding series.

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

1. The combination of a water-tank, a reciprocative gas-holder partly submerged in the tank, a series of water-cups secured to the outer upper portion of said tank, a corresponding series of carbid-holders connected to the outer lower portion of the tank, a

pipe connecting each water-cup with a carbid-holder, pipe-controlling valves having weighted stem-cranks, hook-rods loose in eyes on the tank to constitute supports for said cranks, the upper ends of these rods being cranked; condensing-coils within the confines of the tank and gas-holder having pipe connection with the carbid-holders, a check-valve governing outlet of each coil, and a series of cams spirally arranged on the gas-holder to operate against the cranked ends of the hook-rods when the latter are pivotally adjusted in their guides to support the valve-stem cranks aforesaid.

2. The combination of a pan, a water-tank having submergence in the pan, a reciprocative gas-holder partly submerged in the tank, a series of water-cups secured to the outer upper portion of said tank, a corresponding series of carbid-holders connected to the outer lower portion of the tank, a pipe connecting each water-cup with a carbid-holder, pipe-controlling valves having weighted stem-cranks, hook-rods loose in eyes on the tank to constitute supports for said cranks, the upper ends of these rods being cranked; condensing-coils within the confines of the tank, and gas-holder having pipe connection with the carbid-holders, drain-nozzles leading from the coil-and-pipe couplings into the pan to be partly submerged, a check-valve governing outlet of each coil, and a series of cams spirally arranged on the gas-holder to operate against the cranked ends of the hook-rods when the latter are pivotally adjusted in their guides to support the valve-stem cranks aforesaid.

In testimony that I claim the foregoing I have hereunto set my hand, at Greenbay, in the county of Brown and State of Wisconsin, in the presence of two witnesses.

ALBERT HALL.

Witnesses:

J. A. CUSICK,
G. BONG.