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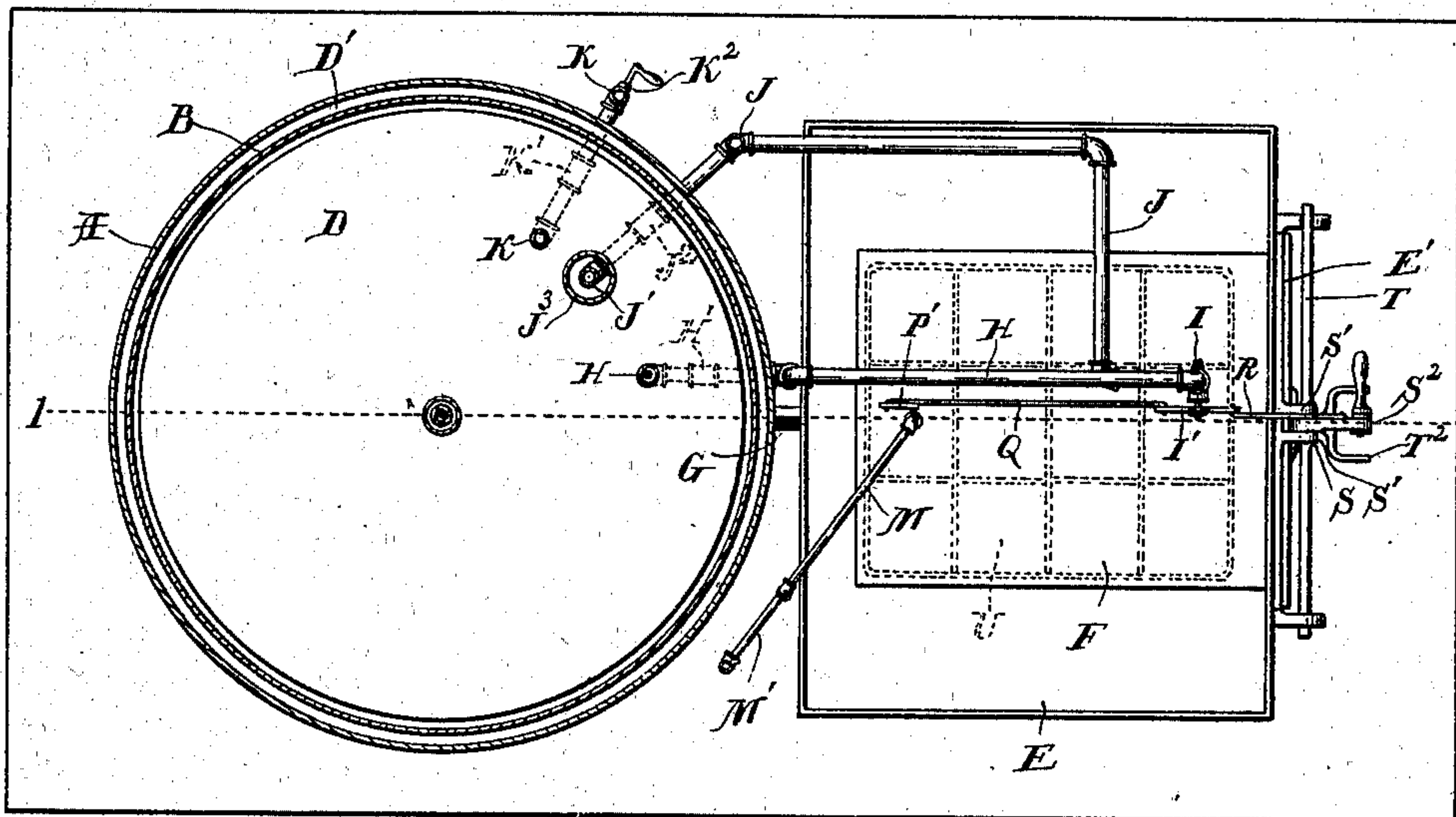
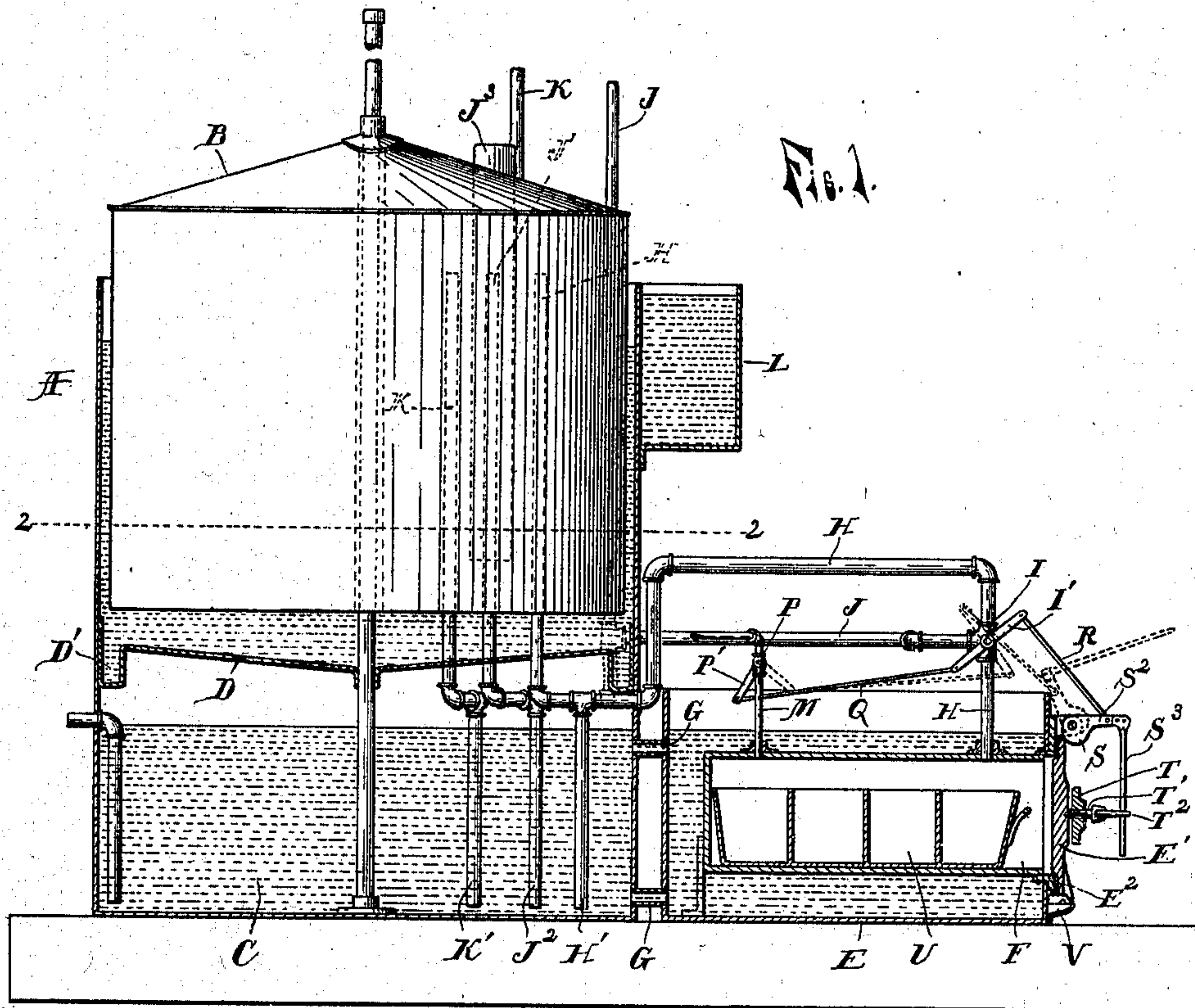
Patented Sept. 23, 1902.

J. C. CHARBENEAU.
ACETYLENE GAS GENERATOR.

(Application filed Nov. 22, 1901.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES.

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Fig. 2.

INVENTOR.

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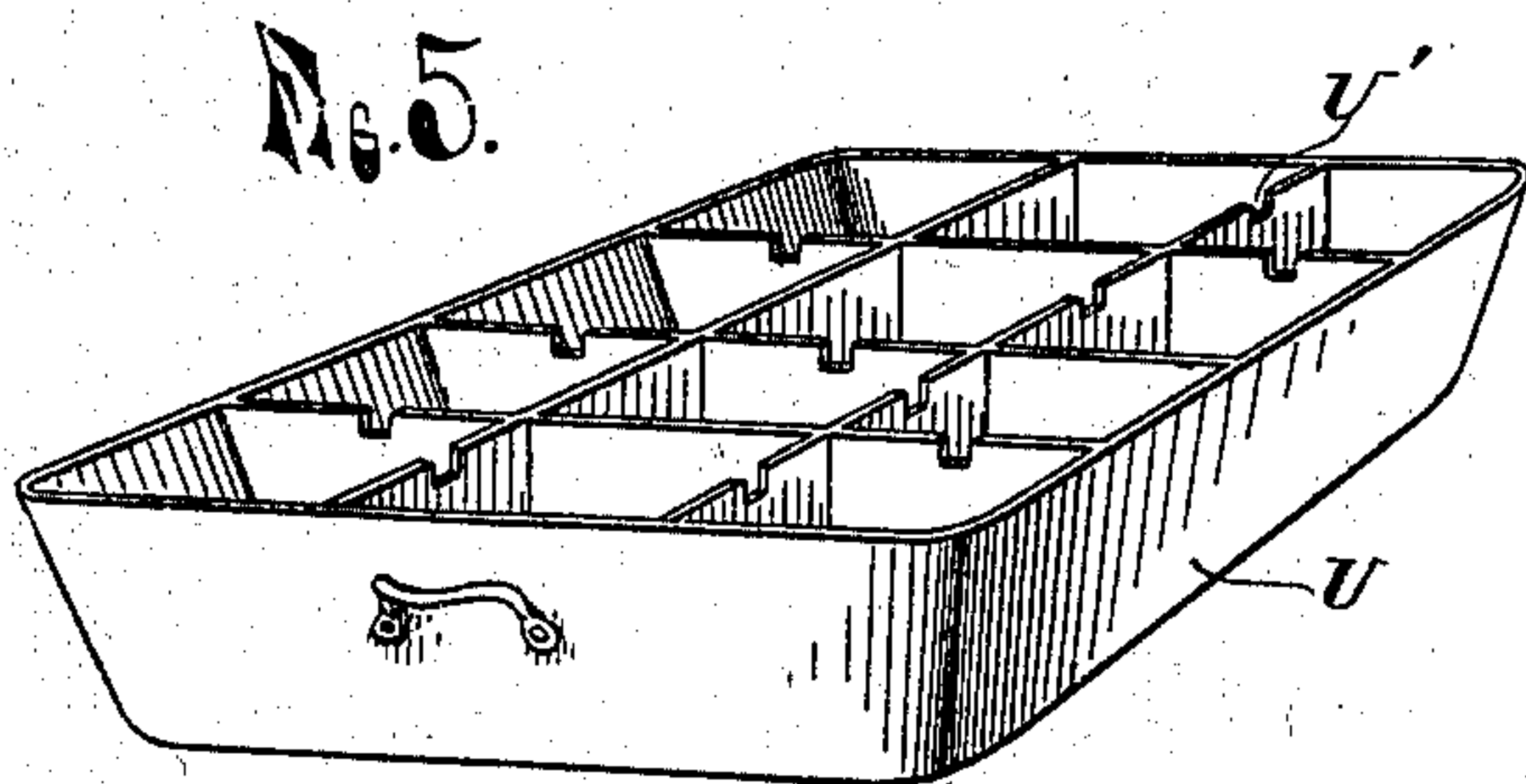
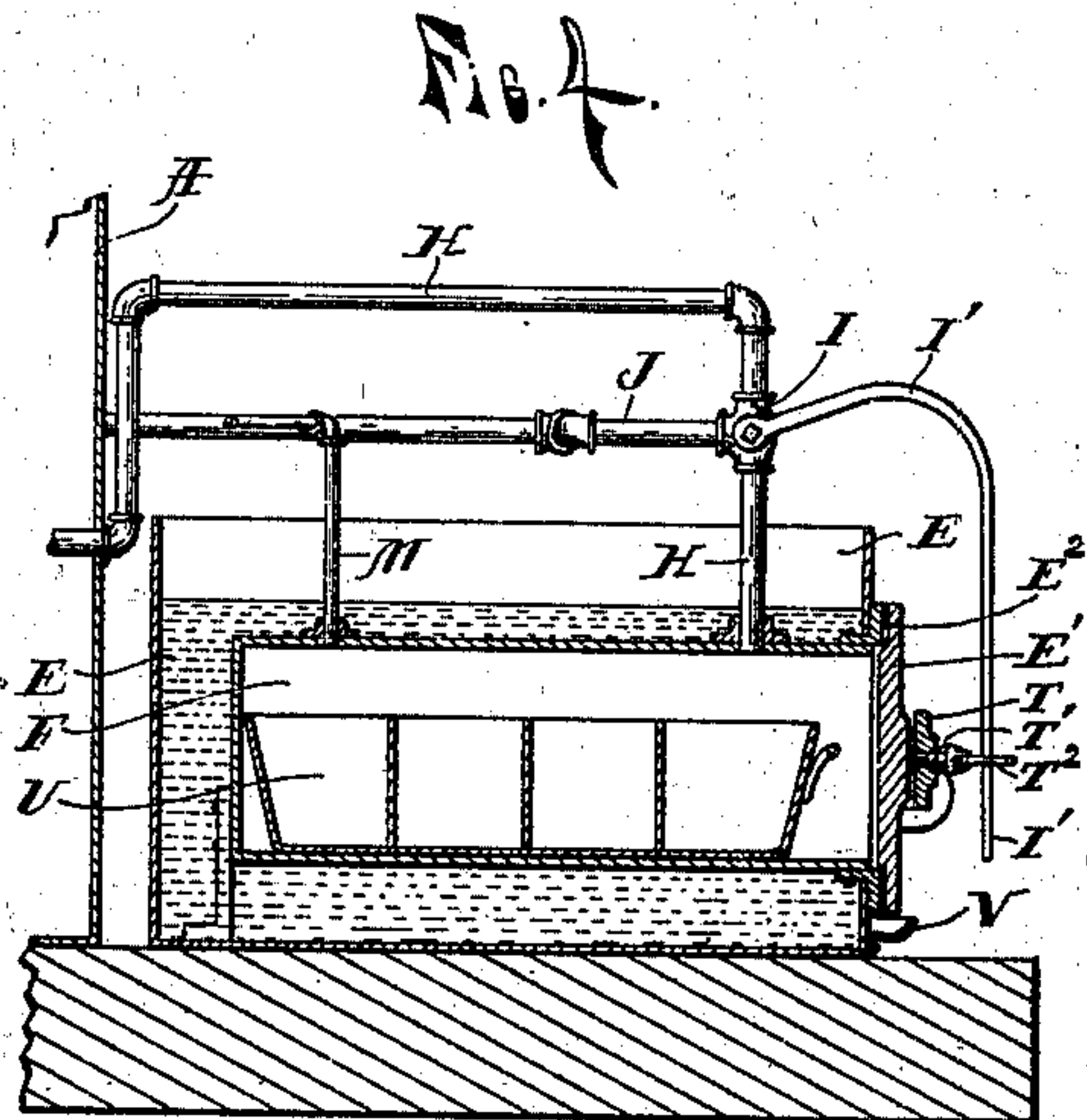
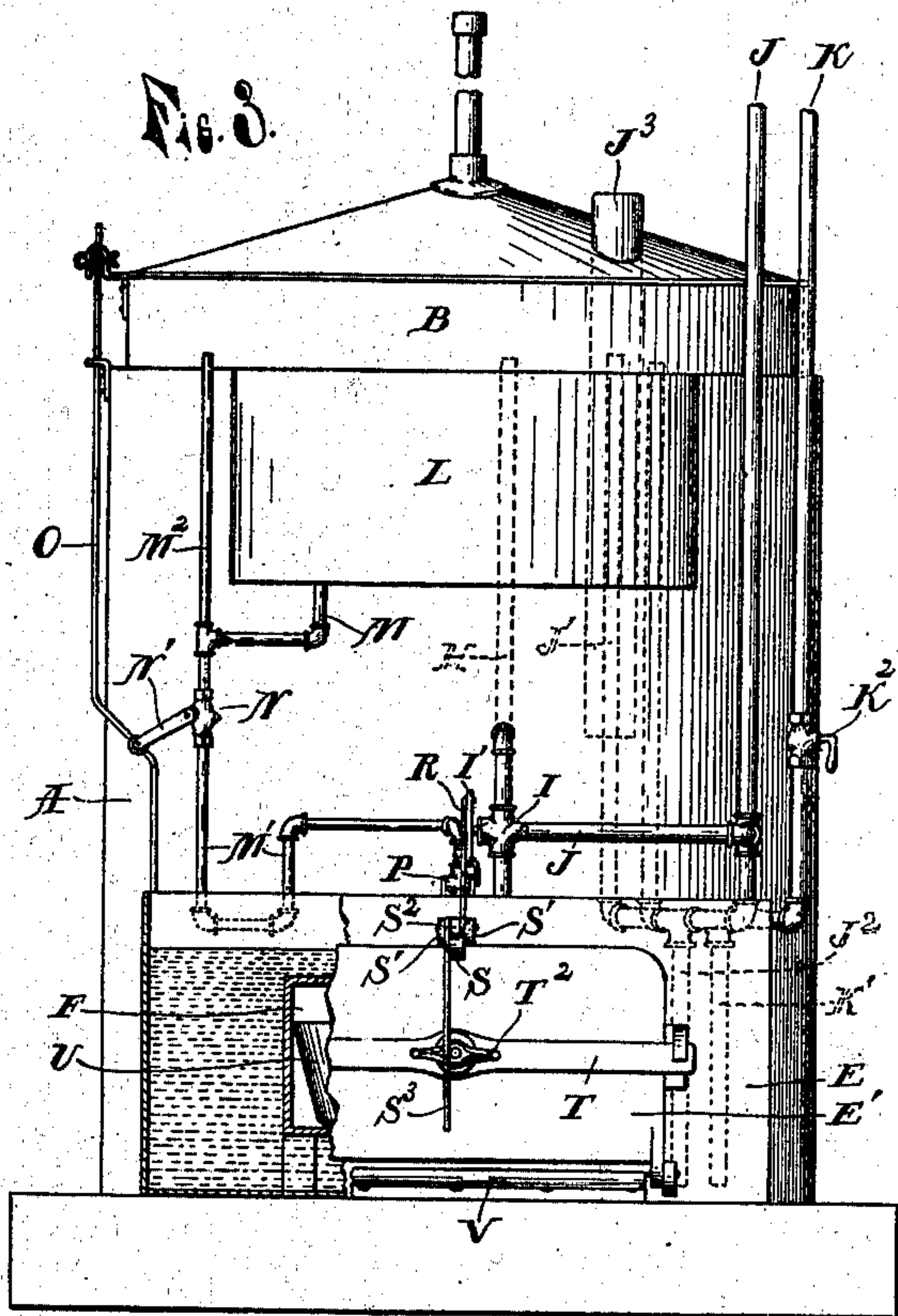
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2 Sheets—Sheet 2.



WITNESSES.

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UNITED STATES PATENT OFFICE.

JOHN C. CHARBENEAU, OF MOUNT CLEMENS, MICHIGAN.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 709,470, dated September 23, 1902.

Application filed November 22, 1901. Serial No. 83,221. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. CHARBENEAU, a citizen of the United States of America, residing at Mount Clemens, in the county of Macomb and State of Michigan, have invented certain new and useful Improvements in Acetylene-Gas Generators, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in acetylene-gas generators; and its object is to provide a simple and compact machine which is reliable in its operation and safe, the invention consisting more particularly in providing against the contingency of a leak in the tank of the gas-holder and the consequent draining of the tank and escape of the gas; in connecting the drip-chamber, which is located in the bottom of the tank of the gas-holder, with the cooling-tank of the generator to provide a greater cooling body of water and cause a circulation of the same; in providing a fastening for the door of the generator, which fastening is so connected with the valves controlling the flow of water to the generator and the escape of the gas therefrom that the manipulation of said fastening to open said door will shut off the water, close the pipe leading to the gas-holder, and open the vent-pipe leading from said generator, and in providing the device with certain other new and useful features, all being hereinafter more fully described, and particularly pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a central vertical section on the line 1 1, Fig. 2, of a device embodying my invention; Fig. 2, a section on the line 2 2 of Fig. 1, showing the same in plan; Fig. 3, a front elevation of the same with parts broken away to show the construction; Fig. 4, a longitudinal vertical section through the generator, showing a modified construction thereof; and Fig. 5 is a perspective view of the pan for holding the carbid.

A is the tank, and B the bell, of the gas-holder. A drip-chamber C is formed in the bottom of the tank A by providing said tank with a false bottom D, which bottom is provided with a peripheral channel D', made by forming the sheet metal of the bottom with a depending U-shaped channel and securing

the vertical outer side of said channel to the tank side. The channel D' is so located and of such width and depth as to adapt it to receive the lower end of the bell B when said bell falls to its lowest position, which would happen should there be a leak which would allow the water in the tank forming the water seal to escape. In case of such an accident the channel D' would still retain water enough to form a seal for the bell and prevent the escape of the gas, the channel being much less liable to leak than the joint formed by the junction of the side and bottom of the tank and the joints between the bottom of the tank and the pipes passing therethrough, as it is formed from the solid sheet of metal forming the bottom D.

E is a rectangular open tank provided with a door E' in one side, and extending inward from said door and supported by suitable legs at its inner end is a rectangular generator-chamber F. Pipes G connect the top and bottom of said tank E with the drip-chamber C to allow the water in said tank and chamber to circulate freely, and thus a comparatively small cooling-tank E may be used, as the volume of water in the drip-chamber is utilized as a cooling medium for the generator-chamber, which chamber is contacted by the water on all sides except that closed by the door E'.

H is the gas-supply pipe, which connects the generator with the bell of the gas-holder, said pipe being secured to the top of the generator and extended upward and rearward over the cooling-tank, thence downward to a point below the bottom D, where it is extended through the wall of the tank into the drip-chamber C, and thence through the said bottom and upward into the bell, a drip-pipe H' extending downward from a T-coupling in that portion of the said pipe within the drip-chamber.

I is a two-way valve in the vertical portion of the pipe H above the generator, and J is a branch or vent pipe leading rearwardly from said valve, thence upwardly, and opens into the atmosphere. The vertical portion of the vent-pipe J has a downward continuation J', which extends laterally through the wall of the tank into the drip-chamber, where it is provided with a drip-pipe J², and thence

upward through the bottom D and into the lower open end of a larger tube J³, secured to the bell, said pipe J' serving to connect the interior of the bell with the vent-pipe to form a blow-off when the bell is lifted sufficiently by the pressure of stored gas to raise the lower ends of the tube J³ out of the water.

K is the service-pipe, which conducts the gas from the bell to the burners, said pipe extending downward through the bottom D into the drip-chamber, where it is provided with a drip-pipe K', thence laterally through the side of the tank, and upward to the burners, a shut-off K² being provided in the vertical portion of said pipe outside the tank and within easy reach of the operator. The water in the drip-chamber seals the drip-pipes and prevents the escape of the gas therefrom, and an overflow-pipe is provided to prevent the water from getting too high.

L is a feed-water tank secured to the side of the tank A near its top, and connected to the bottom thereof is the downwardly-extending feed-pipe M, having a regulating-valve N and adapted to conduct the water from the tank to the interior of the generator to wet the carbid. Said pipe M is provided with a U-shaped bend M' to form a water seal and with an upwardly-extended vent-pipe M² with which said feed-pipe communicates when the valve N is closed to stop the flow of water. The valve N is provided with an operating-handle N', adapted to be actuated by a rod O on the bell B.

The two-way valve I is adapted to connect in one position the generator with the gas-holder, and in its other position it is adapted to connect the generator with the vent-pipe J, it being necessary to close the pipe leading to the gas-holder and open the vent to allow the gas in the generator to escape before the generator is opened in the operation of recharging. It is also quite necessary that the flow of water from the feed-pipe M be cut off when the generator is opened to prevent the making of gas from the new carbid before the generator can again be closed and also to prevent the flooding of the bottom of the generator during the operation of recharging. To insure the performance of these necessary operations before the generator is opened, I provide a shut-off valve P in the vertical portion of the feed-pipe M and provide said valve with an operating-lever P'. The valve I is also provided with an operating-lever I', secured to the stem of said valve intermediate its ends, one end of said lever I' being connected to the lever P' of the valve P by a rod Q, and the opposite end of said lever I' being connected to the handle of a cam S by a rod R.

The generator-door E' is hinged at its lower side to the tank E, and on said tank, adjacent to each end of said door, is a rigid hook adapted to engage the spanner-bar T, which bar is provided at its middle with a screw-threaded opening to receive the screw T'. Said screw engages the door at its inner end

to hold the same securely against the gasket E² and prevent the escape of gas, and to aid in holding the upper side of the door to its seat the cam S is provided, which cam is pivoted between ears S' on the tank, adjacent to the door, and adapted to be turned by means of the handle S² to bring its eccentric side in engagement with the door with increasing force as the said handle is forced downward. Rigidly secured to said handle S² is a rod S³, extending at right angles thereto, and the screw T' has an outer forked handle portion T², adapted to receive the rod S³ when the cam S is turned to engage the door, so that the cam-handle S² must be turned up to disengage the cam from the door and also to disengage the said rod S³ from the handle T² before the screw T' can be turned to unfasten the door. It will thus be seen that before the spanner-bar T can be released and the door opened to gain access to the interior of the generator it is necessary to throw the handle S², which operation not only releases the screw T', but through the medium of the connecting-rod R turns the valves P and I to shut off the water and connect the generator with the open air.

In Fig. 4 I have shown a modified construction in which the operating-lever I' is extended and curved downward to engage the forked handle T², thus dispensing with the cam S; but the use of the cam compels the opening of the valve I to its full extent before the door can be opened, as said door will not pass the cam until its handle is thrown up to turn the eccentric side of said cam from the path of the door.

To hold the carbid, a pan U is provided having longitudinal and transverse partition-walls dividing the same into compartments. The water from the feed-pipe M falls into one of these compartments, and when that compartment is filled and the carbid exhausted the water overflows into an adjacent compartment through a notch U', cut in the top of one of its walls, which compartment is in turn gradually filled until the water overflows into another compartment, and so on until the compartments have all in turn become filled and the carbid exhausted. Two or more of these pans may be provided, so that in recharging one pan may be removed and a full pan slipped into its place.

Secured to the tank E beneath the door E' is a trough V to catch any drip which may escape from the generator when the door is opened.

What I claim as my invention is—

1. In an acetylene-gas generator, having a gas-holder consisting of a tank and a bell, and having a gas-generator consisting of a cooling-tank open at the top and a generator-chamber within said cooling-tank, a false bottom in the tank of the gas-holder to form a drip-chamber in the lower end thereof, an annular channel around the edge of said bottom and depending below the same adapted

to receive the lower end only of the gas-bell and form a water seal, and pipes connecting the drip-chamber with the cooling-tank at the top and bottom respectively to cause a circulation of water therein.

2. In an acetylene-gas generator, in combination, a gas-holder, a generator-chamber, a door hinged to said chamber, a water-feed pipe to supply water to said chamber, a shut-off in said water-feed pipe, an operating-lever for said shut-off, a gas-supply pipe leading from said chamber, a two-way valve in said gas-supply pipe, a vent-pipe leading from said valve, an operating-lever for said valve, a rod connecting said levers, a cam pivoted on said chamber and adapted to engage said door to hold the same closed, a rod connecting said cam and the lever on said valve and means whereby the operation of said valve is necessitated before the said door may be unfastened.

3. In an acetylene-gas generator, in combination, a gas-holder, a generator-chamber, a water-feed pipe to supply water to said cham-

ber, a gas-supply pipe leading from said chamber, a two-way valve in said gas-supply pipe, a vent-pipe leading from said valve, an operating-lever for said valve, a door hinged at its lower side to said chamber, hooks on said chamber adjacent to the ends of said door, a spanner-bar to engage said hooks and having a screw-threaded opening, a screw engaging said opening and provided with a forked handle, ears on said chamber adjacent to the upper side of said door, a cam pivoted between said ears and provided with an operating-handle a rod pivotally connecting the operating-lever on said valve and said cam-handle, and a rod rigidly secured to said cam-handle and adapted to project into the fork of the handle of said screw.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN C. CHARBENEAU.

Witnesses:

OTTO F. BARTHEL,
JOSEPH A. NOELKE.