

D. O'KEEFE.
ACETYLENE GAS GENERATOR.
APPLICATION FILED APR. 8, 1907.

970,100.

Patented Sept. 13, 1910.

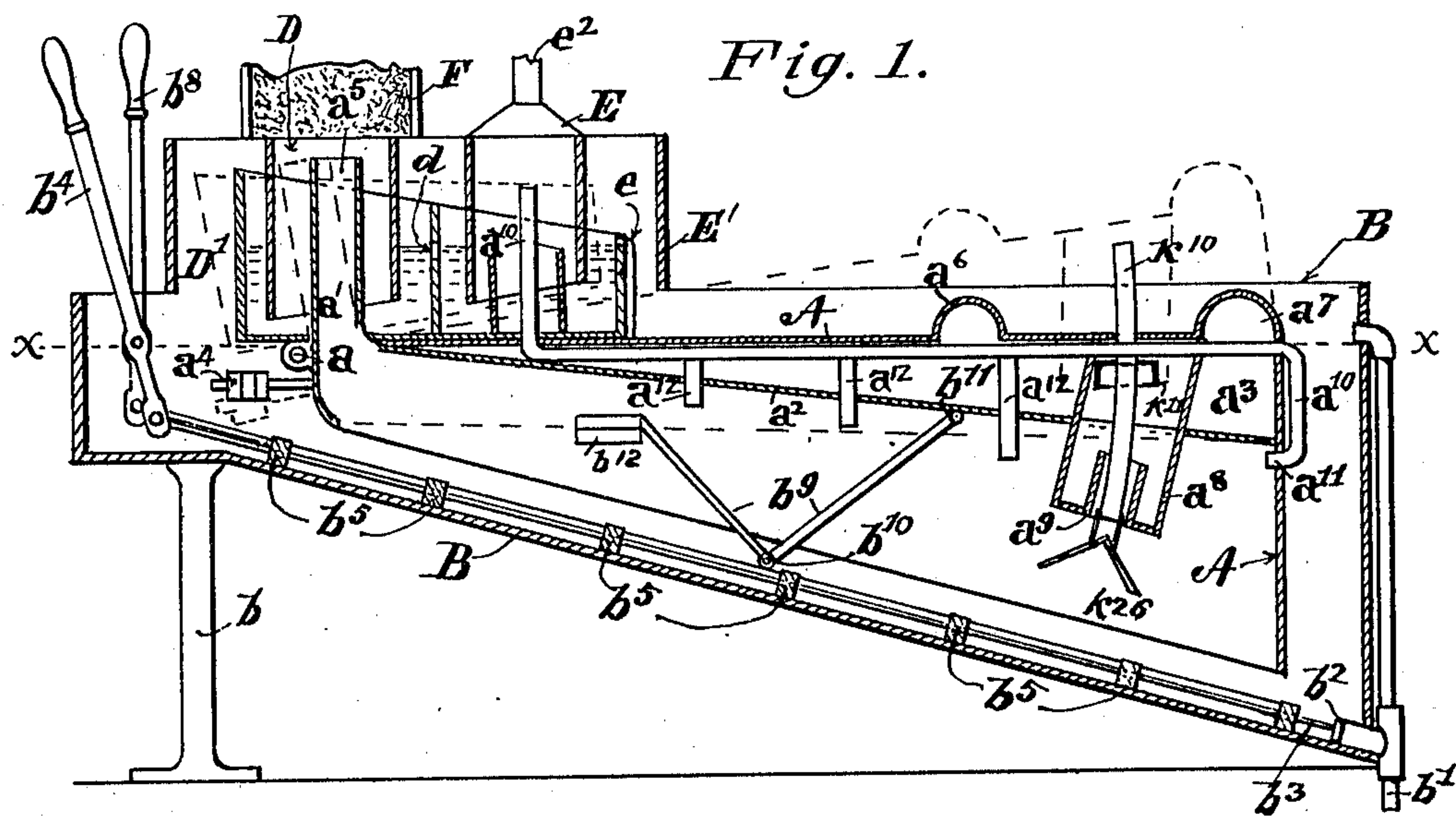


Fig. 2.

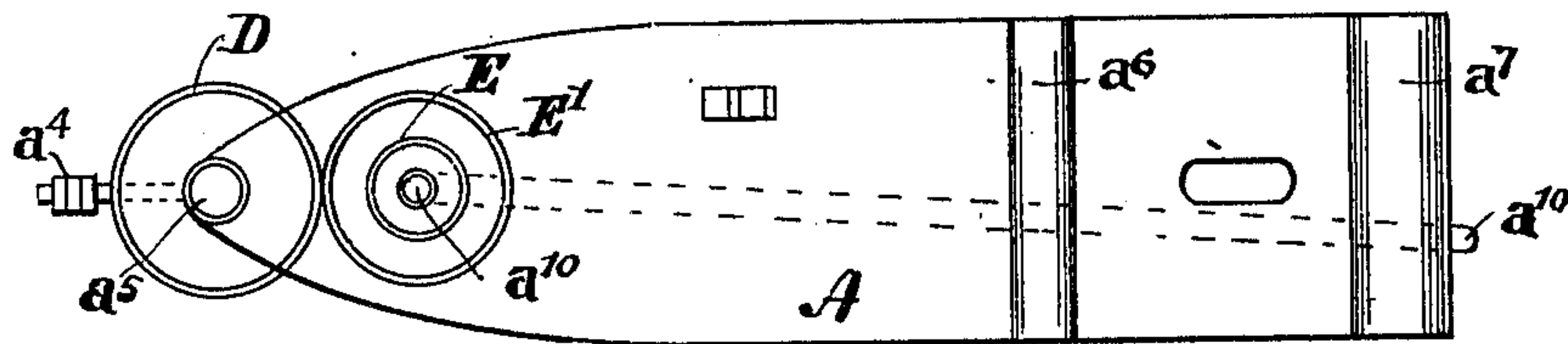
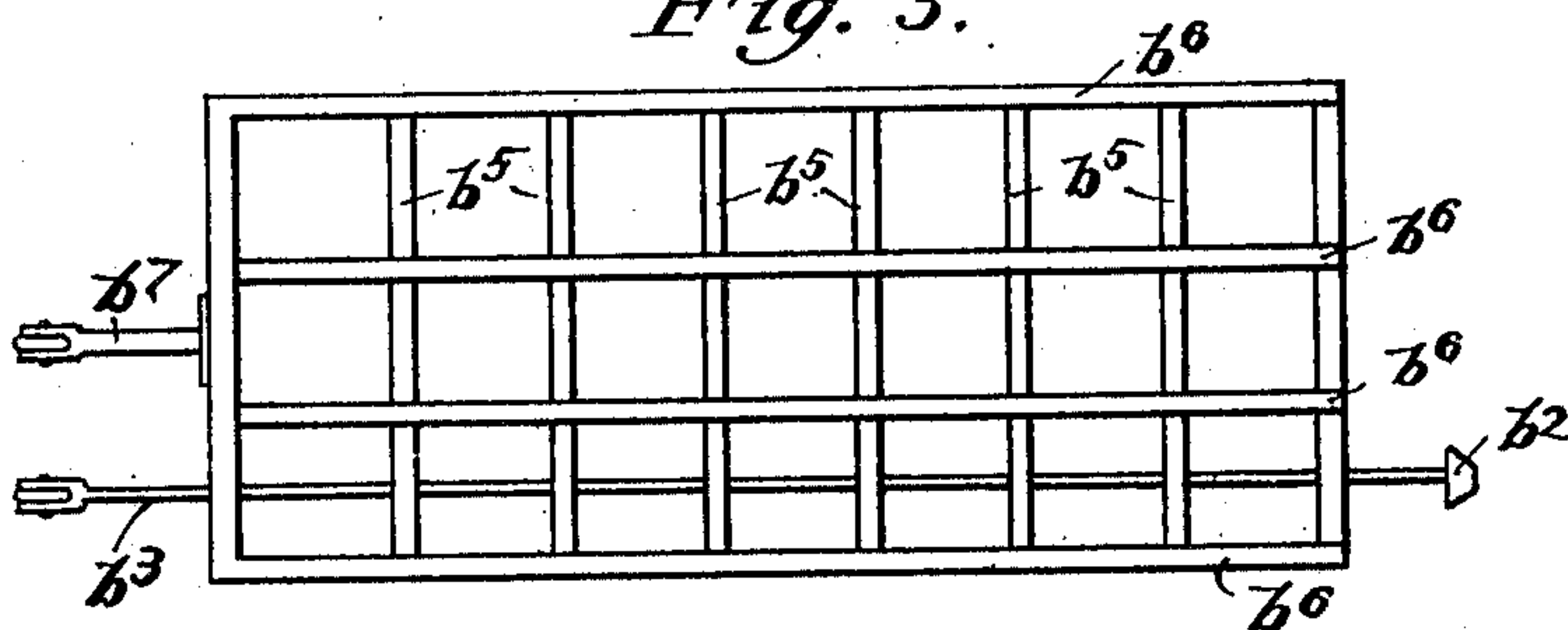


Fig. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

DANIEL O'KEEFE, OF CINCINNATI, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
EDWIN McFARLAND.

ACETYLENE-GAS GENERATOR.

970,100.

Specification of Letters Patent. Patented Sept. 13, 1910.

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To all whom it may concern:

Be it known that I, DANIEL O'KEEFE, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented new and useful Improvements in Acetylene-Gas Generators, of which the following is a specification.

My invention relates to apparatus for the manufacture of acetylene or other gas for illuminating purposes, produced by treating calcium carbide or similar gas-producing substance with a liquid; its object being to secure efficient regulation of gas-production according to the varying requirements of use, including provision for safety by efficient sealing of gas receptacles; and also provision for purification of the gas produced, by washing and cooling preparatory to delivery to the burners. Provision is also made for the automatic escape of any excess of gas from the receptacles and for emptying the said receptacles at will.

My invention is illustrated in the accompanying drawings in which—

Figure 1 is a vertical elevation in section of the tank and the pivoted gasometer in position thereon. Fig. 2 is a plan view of the gasometer detached from the tank; and Fig. 3 is a detail plan view of the agitator employed in the inclined bottom of the tank.

In the drawings, A designates the gasometer and B, the open tank in which it rises and falls with the varying of the gas pressure. The normal water height in the tank B, is indicated by the line x , x . The gasometer is hinged or pivoted at one end at a , permitting the opposite end to freely oscillate in a generally vertical direction; the pivot, a , being so placed and the oscillation so limited that the water seal is never broken at the discharge orifice a^1 , of the gasometer, but at all times the gas which escapes into said discharge filters up through a body of water. To secure buoyancy, the gasometer is provided with a false top a^2 so placed as to make the plane of its under surface slope toward the discharge a^1 , in any position of the gasometer, thus avoiding the collection of a sheet or pockets of gas. The air chamber a^3 , and any suitably placed weight a^4 , tend to lessen the dead weight of the gasometer and render it more sensitive to gas pressure. A bent le-

ver b^9 pivoted at b^{10} to any convenient part of the tank B, and slidably connected at one end b^{11} to the gasometer A carries a weight b^{12} at the other end, which further tends to balance the weight of the gasometer. The discharge orifice a^1 is provided with a pipe a^5 which extends upward to deliver gas into a chamber hereinafter to be described.

Gas tight pockets extend through both false and true tops of the gasometer, forming domes a^6 , a^7 above, and connect with the main body of the gasometer below. Down through and fixed to the top of the gasometer also extends a cylindrical member a^8 whose lower opening, which admits the carbide feed pipe k^{10} hereinafter described, is surrounded by a cupped flange a^9 adapted to carry sufficient water to form a proper seal when the gasometer A rises, and the flange a^9 enters the inverted cup k^{11} fixed to the feed pipe k^{10} . The feed pipe k^{10} has attached to it in any suitable manner, a cone k^{26} terminating clear of the scraper and short of the cylinder a^8 and adapted to scatter the falling carbide and carry it beyond the line of the cylindrical member a^8 .

Fixed to the top of the gasometer A is an open ended by-pass pipe a^{10} , one end of which is bent upward so as to enter a hood E hereinafter described, and the other end is bent downward and pierces A at a^{11} below the normal water level. Connected with the pipe a^{10} are pipes a^{12} which extend down into A and terminate below the normal water level, but like a^{11} will rise above the water level and permit the escape of gas without breaking the seal, whenever the gasometer A is raised too high by an excess pressure of gas therein.

The tank B is supported by any suitable framework b , and is provided with a waste or drain pipe b^1 which opens into the tank just above the normal water line. The tank B whose bottom is inclined to correspond with the shape of the gasometer A, is provided with an opening at its lowest point and this opening is provided with a plug valve b^2 , attached to a rod b^3 , pinned at its upper end to a lever b^4 by which said valve may be actuated. A plurality of suitable agitators b^5 are connected together by bars b^6 into a frame work, to the upper end of which a rod b^7 is attached, and this rod is pinned to a lever b^8 by which the agitator frame work is moved up and down against

the slanting bottom of the tank to agitate the residuum and clean the bottom of the tank.

Upon suitable frame work b independent of or attached to the tank B are mounted the gasometers D and E, whose lower ends are adapted to remain submerged sufficiently for sealing purposes in the fluids contained in the tanks D¹, E¹ respectively, which are attached to the top of the gasometer A and rise and fall with it. These tanks are connected by the opening d , so as to maintain the same water level in both tanks, which level is determined by the pipe e which conveys excess water from the tank E¹ to the tank B. The gasometer E receives the gas from the waste pipe a^{10} and conveys it through the flue e^2 to the exterior of the building.

Above the gasometer D and freely communicating therewith is the filter F open above and filled with coke, cotton, wool or some other filtering material to remove moisture, dust and such other impurities from the gas as can be removed by physical means.

The operation is as follows: Carbid is fed by means of suitable feeding apparatus (not shown), through the feed pipe k^{10} , falling by gravity upon and distributed by the cone k^{26} , over the inclined base of the tank B on which it may be further agitated and comminuted by the movable frame or screen operated by the lever b^8 . As the carbid is decomposed by the water, the freed acetylene gas rises through the water into the pivoted gasometer A against the inclined false top a^2 , whence it finds its way gradually toward and through the exit throat a^5 , the gasometer, meanwhile being lifted into the position shown by dotted lines (Fig. 1), in which the false bottom still has a slight upward inclination toward the outlet. In both positions, as will be seen, the water in the open cups upon the

gasometer A forms a seal to prevent escape of gas passing out. The ultimate receptacles, purifying devices, etc., are not herein shown, except a portion of the gas filter a^5 , wherein charcoal or coke, etc., is used as a screen.

The false top a^2 , forms, in connection with the top and sides of the gasometer A, an air chamber by which proper buoyancy of the gasometer is secured, further regulated by the weights a^4 .

The accumulated debris is discharged through the waste pipe b^1 , on opening the waste cock, b^2 , by its lever b^4 . The waste pipe is extended upward and connects with the tank B as an overflow pipe to maintain the water at the level of the line $x-x$, at all times.

I claim as my invention and desire to secure by Letters Patent of the United States;

1. A gasometer having a bell and a tank, the former pivoted to the latter at one side below the level of liquid in said tank, and a normal outlet for gas contiguous to said pivot and at all times submerged.

2. A gasometer having in combination a tank with a sloping bottom, a bell hinged to the tank at the side next the highest portion of the tank bottom, with gas outlet adjacent to the hinge and normally submerged.

3. In a gasometer, in combination with a tank with a slanting bottom and a bell provided with a gas outlet, said bell pivoted to one side of the tank in such a manner as to keep the gas outlet submerged, an agitator slidably seated upon the slanting bottom of the tank.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

DANIEL O'KEEFE.

Witnesses:

EDWIN MCFARLAND,
HARRY CURRIE SMITH.