

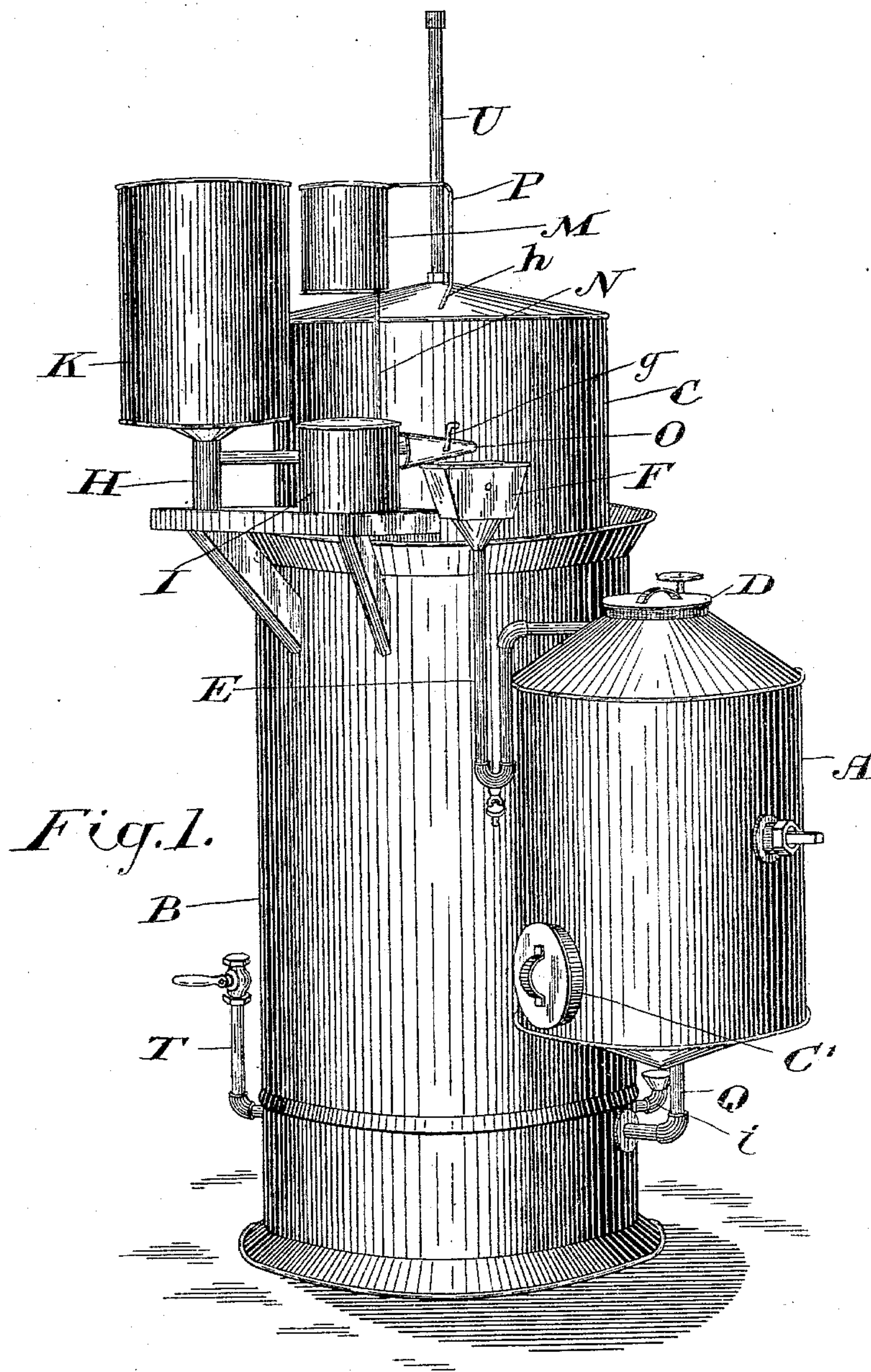
(No Model.)

3 Sheets—Sheet 1.

H. J. BELL.
ACETYLENE GENERATOR.

No. 597,937.

Patented Jan. 25, 1898.



Witnesses

W. G. McMillan
A. J. Colbourne

Inventor

Harold J. Bell.
by Ridout & Mayhew
Attys.

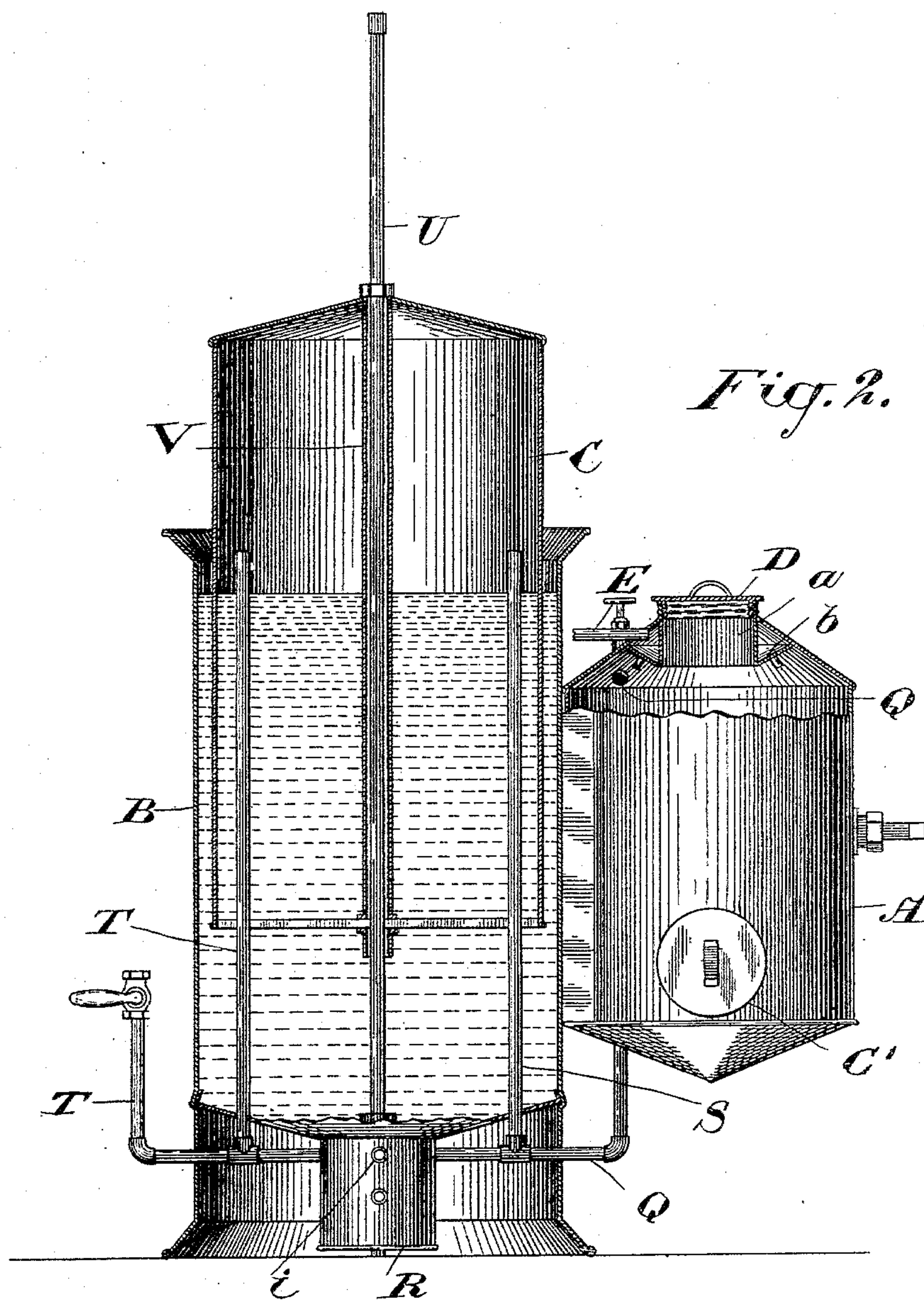
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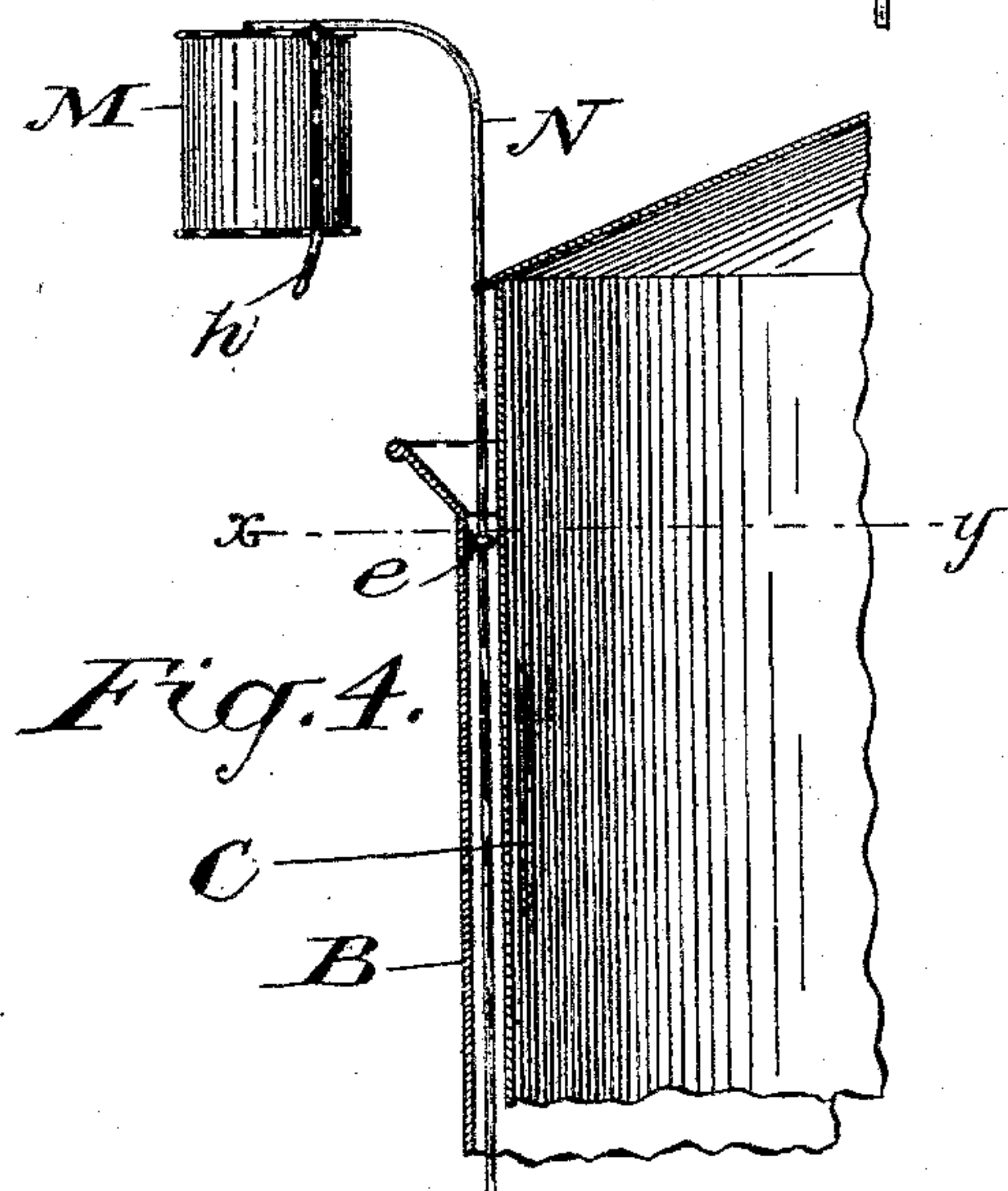
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UNITED STATES PATENT OFFICE.

HAROLD J. BELL, OF NIAGARA, CANADA, ASSIGNOR TO THE NIAGARA FALLS ACETYLENE GAS MACHINE COMPANY, OF SAME PLACE.

ACETYLENE-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 597,937, dated January 25, 1898.

Application filed August 12, 1897. Serial No. 648,008. (No model.)

To all whom it may concern:

Be it known that I, HAROLD J. BELL, temporarily of the town of Niagara Falls, in the county of Welland and Province of Ontario, Canada, have invented a certain new and Improved Apparatus for the Production and Storage of Acetylene Gas, (for which I have applied for British Letters Patent, No. 19,411, of August 23, 1897,) of which the following is a specification.

The object of my invention is to devise a machine for generating and storing acetylene gas which will be simple in construction and effective in operation; and it consists more especially in an improvement in the means of feeding measured quantities of water to the generator and in such other details of construction as are hereinafter more particularly described and then definitely claimed.

Figure 1 is a perspective view of my improved machine. Fig. 2 is a vertical cross-section of the same. Fig. 3 is a sectional elevation of the water-feeding device on a larger scale. Fig. 4 is a sectional detail showing the means for supporting the float of the water-feeding device. Fig. 5 is a sectional detail showing the means for withdrawing the lime from the machine, and Fig. 6 is a section through the line xy in Fig. 4.

In the drawings like letters of reference indicate corresponding parts in the different figures.

A is the generator, which may be of any approved form, although I prefer the one shown in the drawings, which has the screw-top D; B, the tank of the gas-holder, and C the dome of the gas-holder. A short cylinder a extends through the top for the admission of carbide. An annular plate b connects the cylinder with the conical top of the generator. This plate is perforated and provided with suitable teats for the discharge of the water upon the carbide.

E is the water-supply pipe, which enters the space above the plate b , as indicated in Fig. 2. This water-supply pipe is provided with a suitable trap and petcock and terminates in a small water-tank F, within which is journaled the tip-tank G, provided with a stop G'. This tip-tank G is journaled at a point which is above and to one side of the center of grav-

ity when empty and below and to the other side of the center of gravity when filled, so that when it becomes full it will, owing to the change of the center of gravity, automatically tip into the position shown in dotted lines in Fig. 3 and empty, thus discharging its contents into the tank F. When it empties, it instantly assumes its normal position, as shown in full lines in Fig. 3, and to maintain it in said position when empty the above-mentioned stop G' is provided.

Supported upon a tray suitably connected to the tank B are the water-chambers H and I, suitably connected by a pipe J, so that the water-level will always be the same in each.

K is a closed water-holder having a short pipe L extended from its lower end within the water-chamber H, the bottom of the holder normally resting upon the flaring top of the said chamber. From this construction it will be seen that the water-level in the chambers H and I will always be maintained at the level of the lower end of the pipe L. In order to prevent the contents of the holder escaping when it is being placed into position or removed, I connect a cap c to a wire d , extending through the pipe L and resting upon the bottom of the chamber H. When the holder is raised, the cap drops over the upper end of the pipe L, and thus prevents the escape of water. The lower end of the wire is preferably provided with a small button to prevent injury to the bottom of the chamber.

M is a displacer or displacement-float carried by a rod N, connected to the dome C of the gas-holder. This rod preferably extends down the side of the dome and passes through the guide e , connected to the inside of the tank B.

Extending from the side of the water-chamber I is the discharge-spout f , opening into the chamber slightly above the normal level of the water therein.

O is a conical sleeve journaled upon the spout f and provided with a crank-arm g , whereby it may be rocked. When in the position indicated in Fig. 3, the sleeve O will discharge any liquid passing from the spout into the tip-tank G. When, however, it is dropped to the position shown in dotted lines in Fig. 100

3, the water in the spout will flow into the tray supporting the water-chambers. This device prevents any leakage passing into the chamber and thus generating an undue quantity of gas.

In order to operate the sleeve O, I connect a wire P to the displacer M and bend a portion thereof to form an inclined plane *h*. When the dome is raised, the sleeve is in the position shown in Fig. 1. When the gas is nearly exhausted and the dome falls to its lowest position, the incline *h* engages the crank *g* and tilts the sleeve into the position shown in Fig. 3. At the same time the displacer M descends into the water-chamber I and displaces a portion of its contents. The water so displaced flows through the spout *f* and sleeve O into the tip-tank G, which becomes filled and then tips and discharges its contents into the generator.

The object of interposing the tip-tank between the chamber I and the generator is that unless the measured quantity of water displaced by the displacer be discharged in bulk into the generator an insufficient quantity of gas would be generated to raise the displacer from the water-chamber I; and unless the displacer is so raised the water-level in the chamber H will not drop sufficiently to permit of the discharge of a further quantity of water from the water-holder K.

Q is the gas-exit pipe from the generator, which passes to the safety-trap R, and need not be further described. From the pipe Q a vertical pipe S ascends above the water-level in the tank B. The gas-supply pipe T, running to the house, is also connected with the safety-trap R.

U is a vertical rod connected at its lower end to the tank B. The upper end of this pipe extends through an opening in the top of the dome C.

V is a sleeve connected to the top of the dome and extending around the rod U. This sleeve extends downwardly to the bottom of the dome and is suitably braced thereto. The rod U thus forms the vertical guide for the dome C, which is held from turning by the construction shown in Fig. 4, which has been previously described.

W is a pipe extending outside the safety-trap R, through which the trap may be filled as found necessary.

In Fig. 5 is shown the device for removing the lime from the machine without creating a disagreeable dust and odor. A cylinder A' with a closed top and open bottom is provided. From an opening in the top extends an L-shaped pipe B', which is adapted to fit closely about the wall of the opening C'. A scraper E' extends through the vertical wall of the L-shaped pipe B', and which may be used to rake the lime from the generator through the pipe B' and cylinder A' into any suitable receptacle, such as D'.

From the above construction it will be seen

that I have devised a very simple and efficient acetylene-gas generator and holder in which measured quantities of water may be discharged with great precision into the generator and in which absolute immunity is insured from any undue generation of gas caused by water leakage.

It will also be seen that I have devised efficient means for removing the lime from the machine without causing any annoyance and for the introduction of both water and carbide at the same point at the top of the machine.

It should be mentioned that in Fig. 3 the displacer M, as shown, is dropped very low in the water in the chamber I, as it would appear when the carbide is almost exhausted. Under ordinary circumstances its position would be so adjusted that its fall will only displace enough water to fill the tip-tank G once, or, at most, twice. In the same figure it will be noticed that a petcock is located at the bend of the U-trap in the pipe E. The outer limb of this trap is longer than the inner, as, owing to the pressure of gas in the generator, the water always stands higher in the outer limb. When the generator is open and the pressure removed, this extra water will flow back into the generator and cause a generation of acetylene gas, which goes to waste. By putting a petcock in the trap the extra water can be drawn off when the generator is open and all waste avoided.

What I claim as my invention is—

1. In a machine of the class described, a generator and a water-supply tank therefor, a tip-tank interposed between said water-tank and generator and arranged to deliver measured quantities of water to the said generator in combination with a displacer controlled by the supply of gas and arranged to enter said tank and discharge a portion of its contents, substantially as described.

2. In a machine of the class described a generator; a water-supply pipe for the generator; a tank discharging into said pipe; a tip-tank journaled in said tank and a water-chamber adapted to discharge into said tip-tank in combination with a displacement-float controlled by the supply of gas and adapted when the gas-supply is low to enter the water in the said chamber and discharge a portion of its contents substantially as and for the purpose specified.

3. In a machine of the class described a generator; a water-supply pipe for the generator; a tank discharging into said pipe; a tip-tank journaled in said tank; a water-chamber; a spout for said chamber; a suitably-journaled tiltable sleeve surrounding the said spout; and means for automatically tilting the said sleeve to discharge into the said tip-tank when the gas-supply is low or to waste when the supply is large; in combination with a displacement-float controlled by the supply of gas and adapted when the gas-supply is low to enter the water in the

said chamber and discharge a portion of its contents substantially as and for the purpose specified.

4. In a machine of the class described a generator; a gas-holder; a pipe connecting the generator and gas-holder; a water-supply pipe for the generator; a water-chamber; a spout for said chamber adapted to discharge into said pipe; a suitably-journaled tiltable sleeve surrounding the said spout; a crank-arm connected to the said sleeve; a rod connected to the dome of the gas-holder and formed with an inclined plane to engage the said crank-arm in combination with a displacement-float connected to the dome of the holder, and adapted when the gas-supply is low to enter the water in the said chamber and discharge a portion of its contents substantially as and for the purpose specified.

5. In a machine of the class described a generator in combination with a cylinder having an open bottom and an upward L-shaped extension adapted to fit the wall of the lime-opening of the generator; and a scraper-rod passing through an opening in the vertical wall of the L-shaped extension substantially as and for the purpose specified.

6. In a machine of the class described the generator A, having a lime-opening C', formed therein in combination with the cylinder A', with a closed top and open bottom; the receptacle D, fitting closely about the cylinder A'; the L-shaped pipe B', extending from an

opening in the top of the cylinder and adapted to fit the wall of the lime-opening therein; and the scraper E' extending through the vertical wall of the L-shaped pipe B', substantially as and for the purpose specified.

7. In a device of the character described, a water-tank, a displacer coacting therewith and arranged to displace water therefrom by entering therein, a generator, a pipe to convey the water from said tank to the generator, a gas holder and tank, a guide connected with the holder-tank, a rod secured to the gas-holder and moving therewith and passing through said guide, the said rod supporting the said displacer at its upper end, whereby the said rod, through its guide and connections with the gas-holder, maintains the said water-tank and displacer in their relative positions, substantially as described.

8. In a generator a short cylinder extending through the top of the generator and provided with a suitable cap in combination with a perforated annular plate extending from the side of the cylinder to the generator so as to inclose an annular water-space; and a pipe communicating with the said space substantially as and for the purpose specified.

Toronto, August 6, 1897.

HAROLD J. BELL.

In presence of—

J. EDW. MAYBEE,
A. J. COLBOURNE.