E. M. ROSENBLUTH.

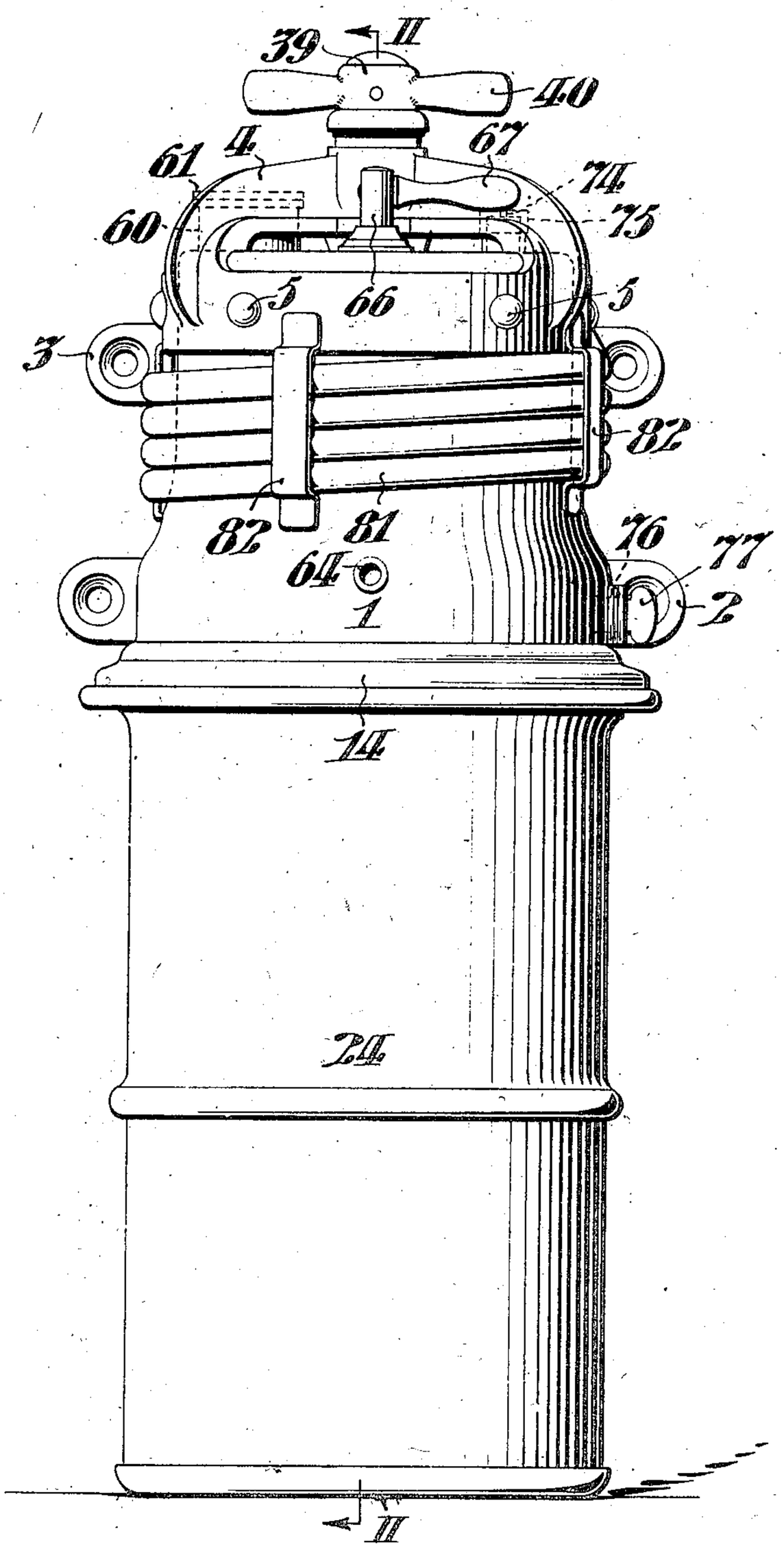
ACETYLENE GAS GENERATOR.

APPLICATION FILED NOV. 29, 1907.

903,507. Patented Nov. 10, 1908.

5 SHEETS—SHEET 1.

FIG. I.



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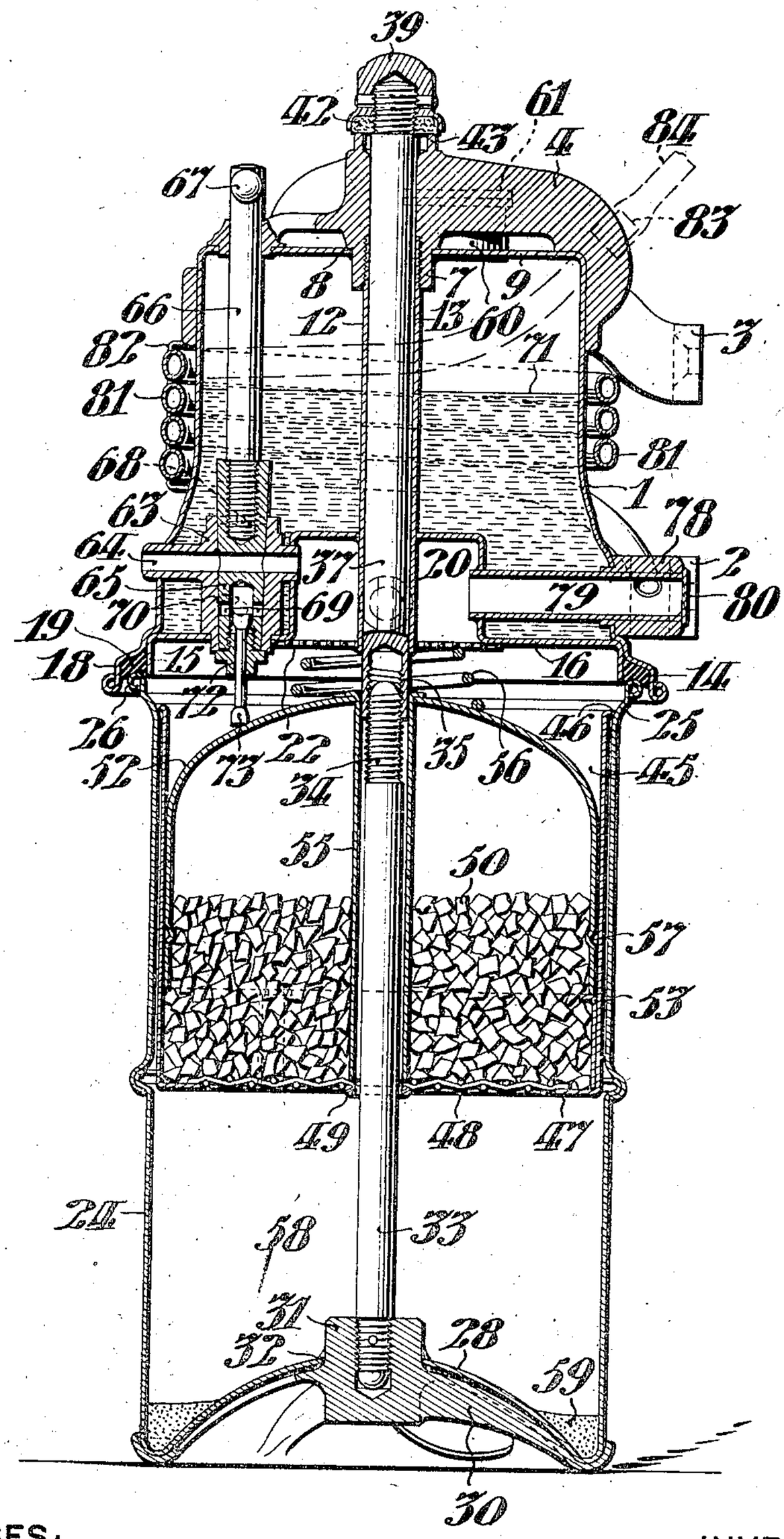
6 SHEETS—SHEET 2.

FIG. II.



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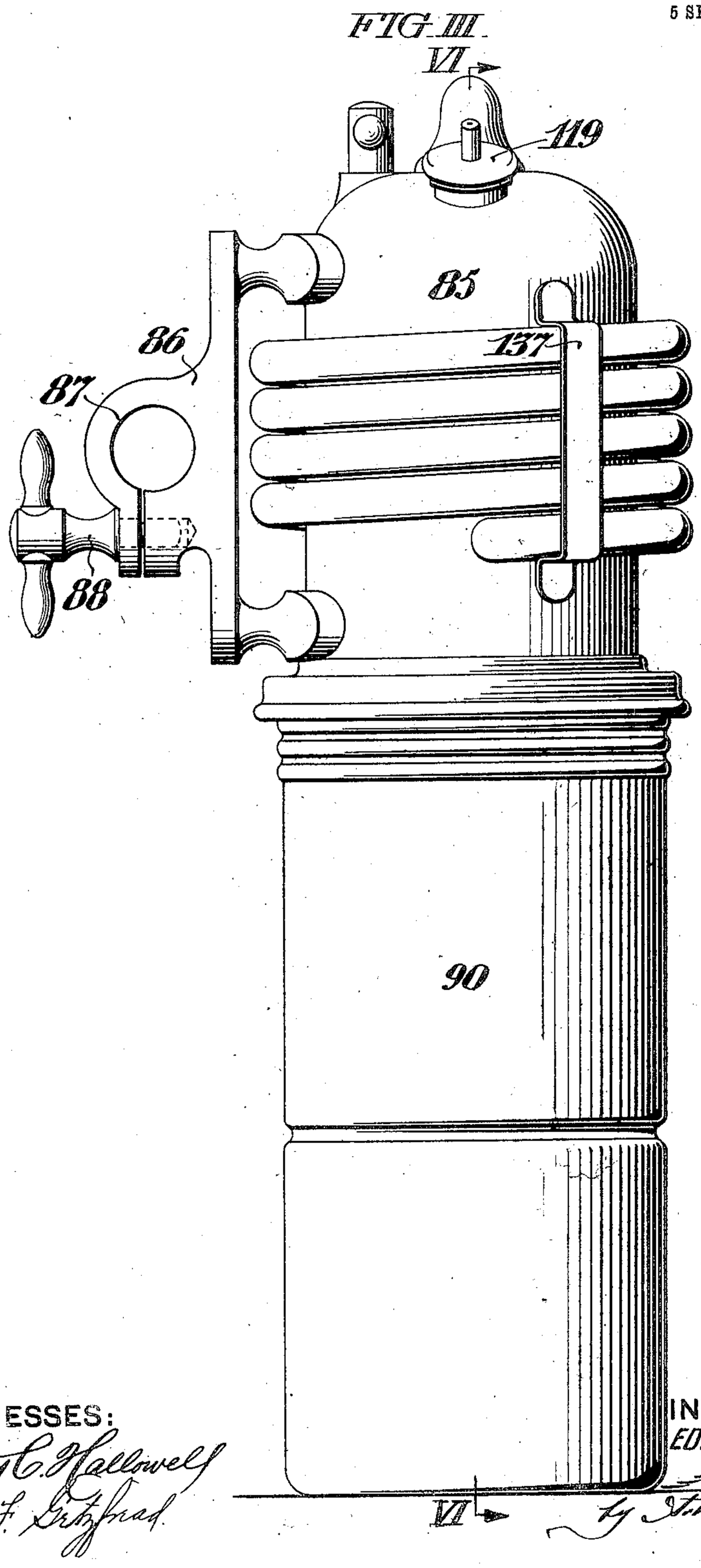
5 SHEETS—SHEET 3.

FIG. III.



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5 SHEETS—SHEET 4.

FIG. IV.

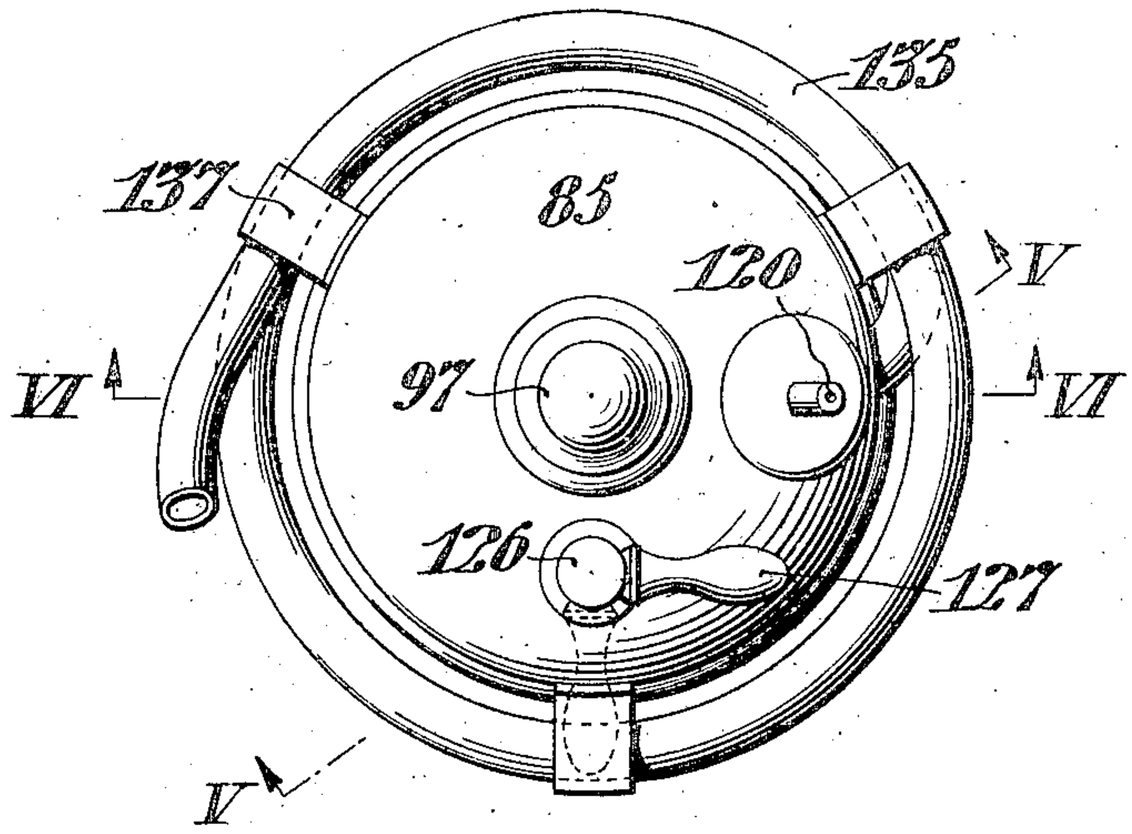
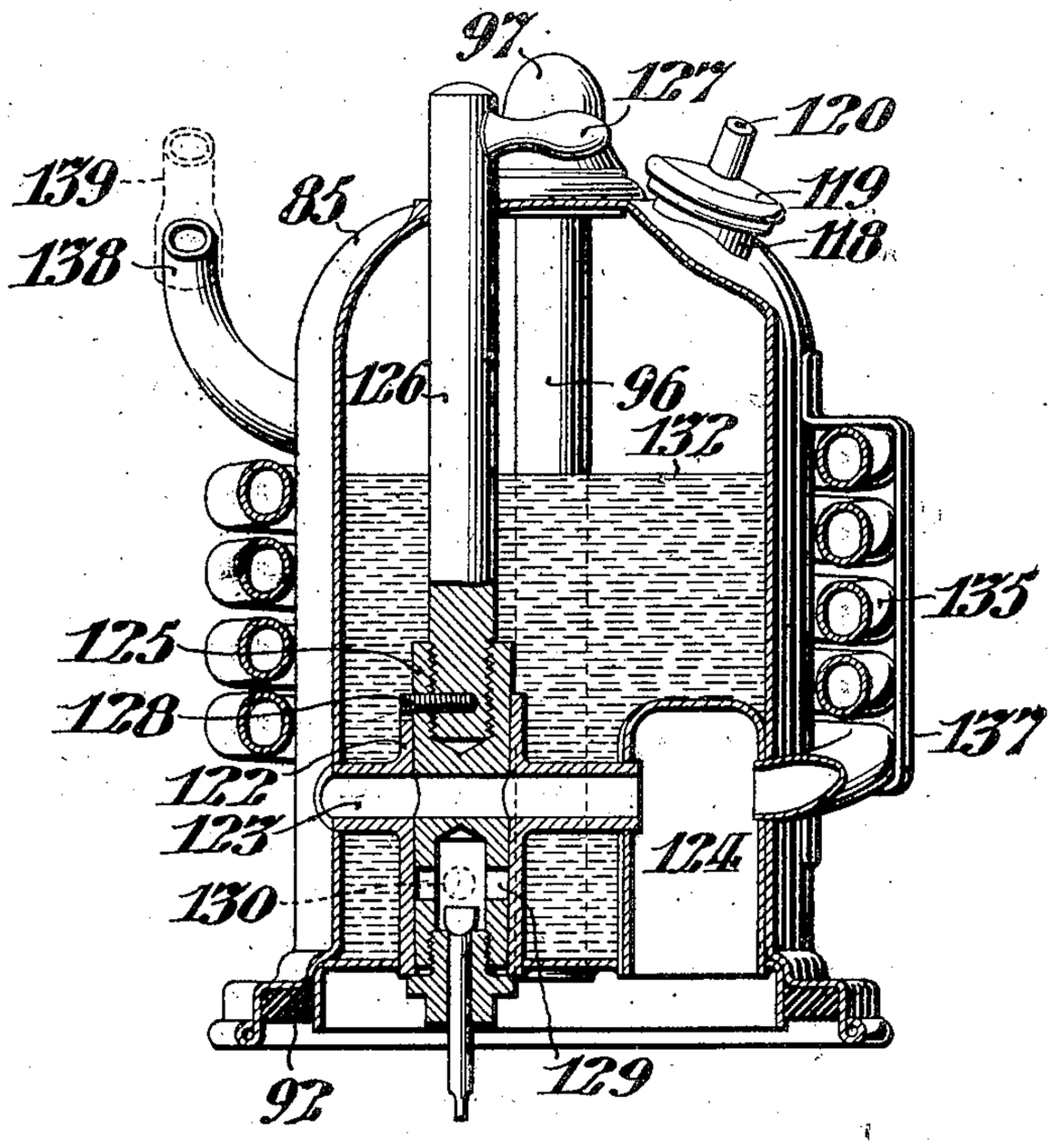


FIG. V.



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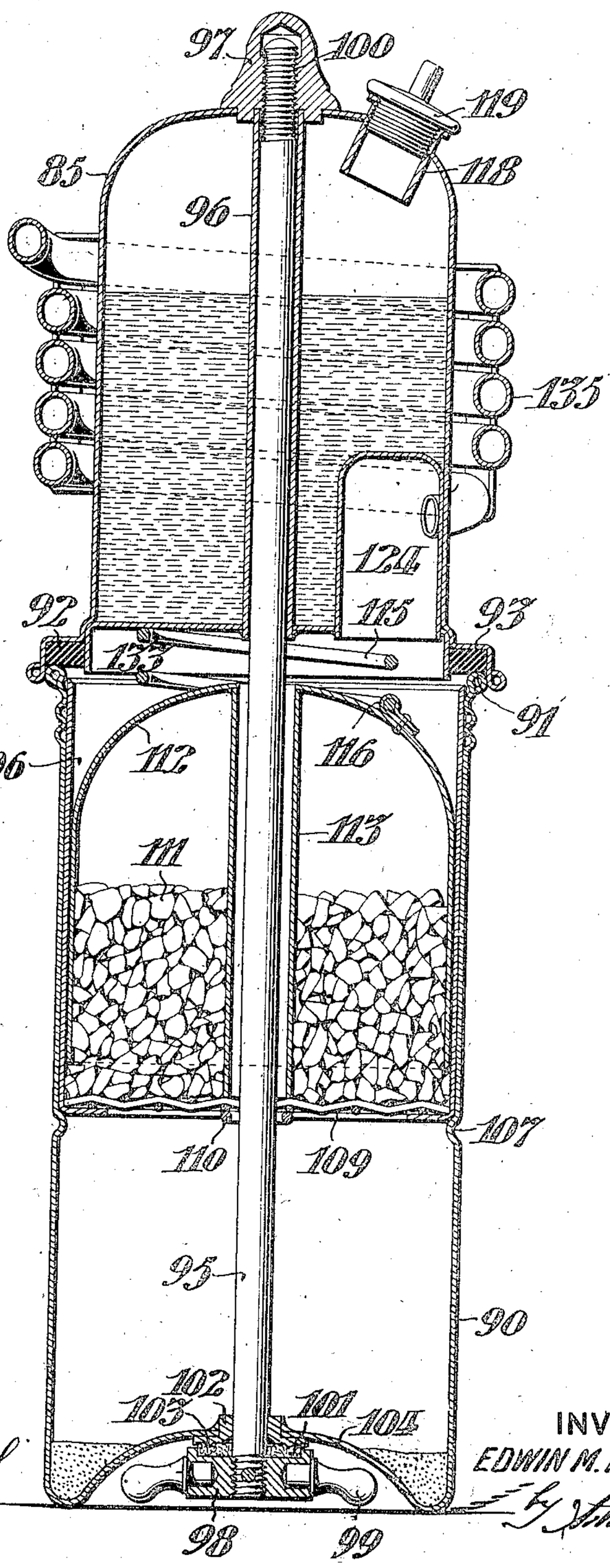
5 SHEETS—SHEET 5.

FIG. VI.



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UNITED STATES PATENT OFFICE.

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ACETYLENE-GAS GENERATOR.

No. 903,507. Specification of Letters Patent. Patented Nov. 10, 1908.

Application filed November 29, 1907. Serial No. 404,368.

To all whom it may concern:

Be it known that I, EDWIN M. ROSENBLUTH, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in Acetylene-Gas Generators, whereof the following is a specification, reference being had to the accompanying drawings.

My improvement is particularly applicable to acetylene gas generators wherein the water receptacle is superimposed upon the carbid casing and the water is permitted to gravitate upon the carbid to decompose the latter; one of the disadvantages of such construction being that during the operation of the generator, the water in said receptacle is maintained at a temperature above that of the surrounding atmosphere by the heat liberated from the decomposing carbid. The gas being generated at high temperature, carries considerable water as vapor, and it has been found in practice that means for absorbing or filtering the water from the gas at the generator fail to eliminate moisture which is then vaporized, but which is subsequently precipitated when the gas is cooled in contact with the gas conduit remote from the generator.

Therefore, it is an object of my invention to combine with an acetylene gas generator, means local to the generator, wherein the gas will be cooled to a temperature as low as it will attain at any time before reaching the burner, so as to separate from the gas and deposit in a predetermined location, from which it may be discharged at will, all of the moisture which will be precipitated therefrom prior to its combustion and thus avoid choking the gas conduit with condensate deposited therein.

As hereinafter described, the means for effecting the condensation of the moisture from the gas, comprises a gas outlet pipe extending from the generator in a coil exposed to the atmosphere exterior to said generator so that said coil is air cooled.

As gas has been heretofore directed from an acetylene gas generator through a pipe submerged in water, either in the generator or in a separate tank; I note that in accordance with the present invention the condensing pipe is neither submerged in water nor inclosed, but is exposed to the atmosphere so as to be air cooled. It may be observed that the aforesaid construction or arrangement which is characteristic of the prior art fails of its purpose, because, the temperature of the condensing pipe surrounded by the water is raised to such a degree that the entrained moisture is carried through the same without precipitation. On the contrary, by the construction or arrangement which is characteristic of my invention, the temperature of the air cooled condensing pipe is substantially constant and such that the moisture is continuously precipitated.

The acetylene gas generator hereinafter described, is so constructed that the water receptacle and the condensing coil may be permanently located in rigid relation with each other in connection with an automobile, and the carbid casing be rigidly connected therewith and disconnected with respect thereto; such connection and disconnection being effected by rotation of a rod extending centrally in said water receptacle.

My invention comprises the various novel features of construction and arrangement hereinafter more definitely specified.

In the drawings, Figure I, is a front elevation of an acetylene gas generator, conveniently embodying my improvement. Fig. II, is a central vertical sectional view, taken on the line II, II, in Fig. I. Fig. III, is a side elevation of a modified form of generator. Fig. IV, is a plan view of the generator shown in Fig. III. Fig. V, is a vertical sectional view of said generator taken on the line V, V, in Fig. IV. Fig. VI, is a central vertical sectional view, taken on the line VI, VI, in Figs. III and IV.

In the form of my invention shown in Figs. I and II, the generator comprises the water receptacle 1, which is provided with the supporting brackets 2 and 3, the latter being in unitary relation with the spider frame 4, surrounding the upper region of said water receptacle 1, and rigidly secured thereon by the rivets 5. Said spider frame 4, comprises the tubular boss 7, depending through the aperture 8, in the upper wall 9, of said water receptacle, and, the tube 12, which is rigidly secured in said boss, extends through the water receptacle and forms a central vertical passageway 13, therethrough. The lower edge of said water receptacle 1, comprises the depending flange 14, which with the depending flange 15, of the bottom wall 16, of said receptacle 1, forms the channel 18, holding the rubber gasket 19. Said bottom wall 16, is provided with the central gas dome 20, which extends upwardly into said water re-

ceptacle 1, and has the foraminous floor 22, secured to said bottom wall 16, and said tube 12, as shown in Fig. II.

Subjacent to the water receptacle 1, and secured thereto in removable gas tight relation is the carbid casing 24, which is outwardly flared at 25, and comprises the returned upper edge 26, arranged to engage the annular rubber gasket 19, above described.

The concaved bottom wall 28, of the carbid casing 24, is reinforced by the casing frame 30, which comprises the boss 31, extending through the aperture 32, in said bottom wall and is rigidly secured to the latter. The upwardly extending stem 33, is rigidly secured in said boss 31, and is provided with the screw threads 34, at its upper end arranged to be engaged by the threaded socket 35, in the lower extremity of the connecting rod 37, which is in removable relation with the generator, and arranged to be inserted through said central passageway 13. Said connecting rod has the head 39, and wings 40, whereby it may be rotated, and said head is recessed to receive the resilient gasket 42, which tightly engages the annular bead 43, formed upon the spider frame 4, surrounding the passageway 13, to prevent the escape of gas through the tube 12. The carbid receptacle 45, is loosely fitted in said casing 24, and is provided with the outwardly turned flange or lip 46, which rests upon the flared region 25, of said casing 24; whereby said receptacle 45 is supported. Said receptacle 45, is also provided with the inwardly turned bottom flange 47, arranged to support the foraminous floor 48, having within the reinforcing ring 49, a central aperture for the stem 33.

As shown in Fig. II, the foraminous floor 48, supports the carbid 50, which is covered by the dome shaped cap 52, loosely fitted within said receptacle 45, and conveniently supported therein by the knee brackets 53, secured to the cylindrical wall of said carbid receptacle. Said cap 52, is provided with the central tube 55, depending below the cylindrical wall of said cap close to the foraminous floor 48. Said cap 52, is conveniently maintained upon the brackets 53, by the coiled spring 56, which is secured thereto and bears against the foraminous diaphragm 22, and said cap conveniently comprises the inner bead 57, extending parallel with its lower edge. The lower chamber 58, in the carbid casing 24, is arranged to receive the ashes 59, which fall through said foraminous floor 48.

The water receptacle 1, has the inlet 60, which is normally closed by the screw cap 61. Said receptacle is also provided with the valve casing 63, having the outlet 64, arranged to connect the gas dome 20, with the atmosphere. Said outlet is controlled by the valve plug 65, having the stem 66, and handle 67, whereby it may be conveniently rotated, and, the stop pin 68, arranged to limit its movement. Said plug also comprises the water passageway 69, arranged to register with the opposed water passageways 70, in the casing 63, and thus permit water 71, to pass from the water receptacle 1, to the carbid. It may be noted that when said water passageways 70, are closed by the plug 65, the gas outlet 64, is contemporaneously opened to permit the escape of the after generated gas, and vice versa.

The water passageway 69, leads to the restricted water outlet 72, opening into the carbid receptacle 45, and arranged to direct the water onto the dome shaped cap 52, on which it flows down in a thin film between the walls of said cap and said carbid receptacle to the carbid 50. Said outlet 72, is conveniently provided with the reciprocatory plunger 73, arranged to restrict the flow of water, and to be reciprocated by the vibration of the generator or manually to free any obstruction which may lodge therein. The vent 74, in the vent cap 75, mounted on the upper wall 9, of the water receptacle 1, insures a free flow of water through the outlet 72, when the valve is opened, and the outlet 76, which is normally closed by the removable screw cap 77, in the cylindrical wall at the bottom of said water receptacle, permits the convenient discharge of the unused water. Said bracket 2, comprises the tubular boss 78, which extends through the wall of the water receptacle 1, and through which the tube 79, extends from the gas dome 20. The outer end of said tube and boss is closed by the cap plate 80, which may be secured by solder. The condensing coil 81, azimuthally encircles the water receptacle 1, having its lower end connected with the tube 79, and conveniently maintained in position by the cleats or brackets 82. As shown in dash lines in Fig. II, said coil 81, is upturned at its gas discharge end 83, and is arranged to receive the end of a flexible conduit 84, leading to the burner.

Referring to the form of my invention shown in Figs. III to VI, inclusive, the generator comprises the water receptacle 85, provided with the bracket 86, having the aperture 87, whose diameter may be conveniently varied by the set screw 88, whereby it may be clamped to any suitable support. Subjacent to the water receptacle 85, and secured thereto in removable gas tight relation is the carbid casing 90, whose upper turned over edge 91, is arranged to engage the rubber gasket 92, in the seat 93, formed at the lower edge of said water receptacle 85. The carbid casing 90, is arranged to be secured to the water receptacle 85, by the connecting rod 95, which extends centrally through said carbid casing and through the tube 96, in the water receptacle 85, and is in screw threaded

engagement with the nut 97, in the top of the receptacle 85. Said rod 95, is provided with the head 98, having wings 99, whereby it may be rotated to engage the threaded end 100, of the rod 95, with the nut 97. Said head is recessed to receive the resilient washer or gasket 101, which tightly engages the bushing 102, having the circular bead 103, against which said gasket bears and thereby insures a gas tight joint. As shown in Fig. VI, the bottom wall 104, of the carbid casing 90, extends inwardly to receive said head 98. The carbid receptacle 106, which is loosely fitted in the carbid casing 90, and supported upon the bead 107, in said casing, is provided with the foraminous floor 109, having a central aperture reinforced by the ring 110, similar to that shown in Fig. II. Said floor supports the carbid 111, which is covered by the dome shaped cap 112, loosely fitted within the carbid receptacle. Said cap has the central depending tube 113, which extends slightly below said cap, rests upon the foraminous floor 109, and forms a passageway for the connecting rod 95. Said cap 112, is normally pressed downward by the coiled spring 115, which is secured thereon by the clip 116, as shown in Fig. VI. The water receptacle 85, has the inlet 118, closed by the screw cap 119, comprising the vent 120. Said receptacle is also provided with the valve casing 122, having the outlet 123, arranged to connect the gas dome 124, with the atmosphere. Said outlet is controlled by the valve plug 125, having the stem 126, and handle 127, whereby it may be rotated, and, the stop pin 128, arranged to limit its movement. Said plug also comprises the water passageway 129, arranged to register with the water passageway 130, in the casing 122, and thus admit water 132, to the carbid. Said gas dome 124, extends eccentrically into the water receptacle 85; opens into the gas chamber 133, above the carbid 111; and is connected with the condensing coil 135, which surrounds the water receptacle 85. Said condensing coil 135, is maintained in proper position by the brackets 86, and 137, on the receptacle 85, which also serve to protect said coil from being crushed or otherwise damaged. As best shown in Fig. V, said coil 135, is upturned at its gas discharge end 138, to receive the flexible end of a conduit 139, leading to a burner.

I do not desire to limit myself to the precise details of construction and arrangement herein set forth, as it is obvious that various modifications may be made therein without departing from the essential features of my invention, as defined in the appended claims.

I claim:—

1. In an acetylene gas generator, the combination with a carbid receptacle; of a water receptacle forming a gas chamber between said receptacles; a gas dome extending into said water receptacle; a condensing coil surrounding said water receptacle and having its lower end connected with said gas dome, and its upper end extended to receive a flexible conduit, substantially as set forth.

2. In an acetylene gas generator, the combination with a carbid receptacle; of a water receptacle, superimposed thereon and forming a gas chamber between said receptacles; a gas dome within said water receptacle; a condensing-coil surrounding said water receptacle and connected at its lower end with said gas dome and having its upper end extended to receive a flexible conduit; and a valve having opposed outlets respectively connected with said gas dome and with the atmosphere; whereby said dome may be alternately connected with the atmosphere or shut off therefrom, substantially as set forth.

3. In an acetylene gas generator, the combination with a carbid receptacle; of a water receptacle superimposed thereon and arranged to form a gas chamber between said receptacles; a valve having respective passageways for water and gas; said gas passageway connecting said gas chamber with the atmosphere, and said water passageway connecting said water receptacle with said carbid receptacle; a valve plug arranged to control said passageways; a condensing-coil surrounding said water receptacle, having its lower end connected with said gas chamber, and its upper end extended to receive a flexible conduit; and a bracket embracing said condensing-coil, substantially as set forth.

4. In an acetylene gas generator, the combination with a carbid casing; of a water receptacle fitted thereto in separable gas tight relation, and comprising a gas dome formed by its recessed bottom wall; a foraminous floor in said dome; a valve comprising a gas passageway connecting said dome with the atmosphere, and a water passageway connecting said water receptacle with said carbid casing arranged to contemporaneously control both of said passageways; an inlet for said water receptacle; an outlet normally closed by a screw cap arranged to discharge the unused water from said receptacle; a vent cap distinct from said inlet and comprising a vent arranged to permit the free flow of water through said valve and said outlet; and a condensing coil surrounding said receptacle, having its lower end in communication with said gas dome, substantially as set forth.

5. In an acetylene gas generator, the combination with a carbid casing; of a water receptacle whose bottom wall is recessed to form a gas dome; a foraminous floor in said dome; a valve controlling a gas passageway leading from said dome to the atmosphere and controlling a water passageway leading

from said water receptacle into the carbid casing, so arranged that when the gas passageway is opened the water passageway is closed and vice versa; and, a condensing coil surrounding said water receptacle and having its lower end in communication with said dome, substantially as set forth.

6. In an acetylene gas generator, the combination with a carbid casing; of a water receptacle; a gasket interposed between said receptacle and casing; a rod extending within said generator arranged to join said casing and receptacle together; means exterior to said casing arranged to rotate said rod to engage said casing and water receptacle, with pressure upon said gasket; a carbid receptacle, within said casing, comprising a foraminous floor through which the ashes of the carbid fall; means arranged to control the flow of water from said water receptacle to said carbid; a gas dome arranged to receive the gas generated; and, a condensing coil connected at its lower end with said dome and arranged to discharge the condensate therein, substantially as set forth.

7. In an acetylene gas generator, the combination with a water receptacle; of a carbid casing engaged with said water receptacle to form a gas chamber; a coil surrounding said water receptacle, exterior thereto, in communication with said chamber; and, a rod extending within the generator, and connecting said receptacle and casing in gas tight relation, substantially as set forth.

8. In an acetylene gas generator, the combination with a carbid casing; of a water receptacle having its bottom wall recessed to form a gas dome and provided with a tube forming a passageway through said receptacle and said dome; a foraminous floor in said dome, surrounding said tube; a valve controlling both a gas passageway leading from said dome to the atmosphere and a water passageway leading from said water receptacle into the carbid casing, so constructed and arranged that when the gas passageway is opened, the water passageway is closed, and vice versa; a rod extending through said tube arranged to engage said carbid casing with said water receptacle; and, a condensing coil encircling said water receptacle and having its lower end in communication with said dome, substantially as set forth.

9. In an acetylene gas generator, the combination with a carbid receptacle; of a water receptacle superimposed thereon, and arranged to form a gas chamber between said receptacles; a valve having respective passageways for water and gas, said gas passageway connecting said gas chamber with the atmosphere, and said water passageway connecting said water receptacle with said carbid receptacle; a valve plug arranged to control said passageways, and a condensing coil surrounding said water receptacle, having its lower end connected with said gas chamber, and its upper end extended to receive a flexible conduit, substantially as set forth.

10. An acetylene gas generator comprising a cylindrical casing, and containing a carbid chamber; a condensing coil exposed to the atmosphere, encircling the exterior of said casing in concentric relation therewith, having a gas outlet at its upper end and having its lower end arranged to direct the condensate into said carbid chamber; and, means arranged to direct gas from said generator through said coil.

11. An acetylene gas generator comprising a casing containing a carbid chamber and a helical condensing coil exposed to the atmosphere, azimuthally encircling the exterior of said casing, having a gas outlet at its upper end and arranged to direct the condensate into said carbid chamber; and, means arranged to direct gas from said chamber, through said coil.

12. An acetylene gas generator comprising a casing, having an exterior bracket provided with attaching means; a condensing coil exposed to the atmosphere, encircling the exterior of said casing, between said bracket and said casing; and, means arranged to direct gas from said generator, through said coil, substantially as set forth.

In testimony whereof, I have hereunto signed my name at Philadelphia, Pennsylvania, this 22nd day of November, 1907.

EDWIN M. ROSENBLUTH.

Witnesses:

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W. E. MANN.