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Patented Sept. 25, 1900.

E. M. RODENBERGER & J. S. SEELY.

ACETYLENE GAS GENERATOR.

(Application filed June 21, 1899.)

(No Model.)

2 Sheets—Sheet 1.

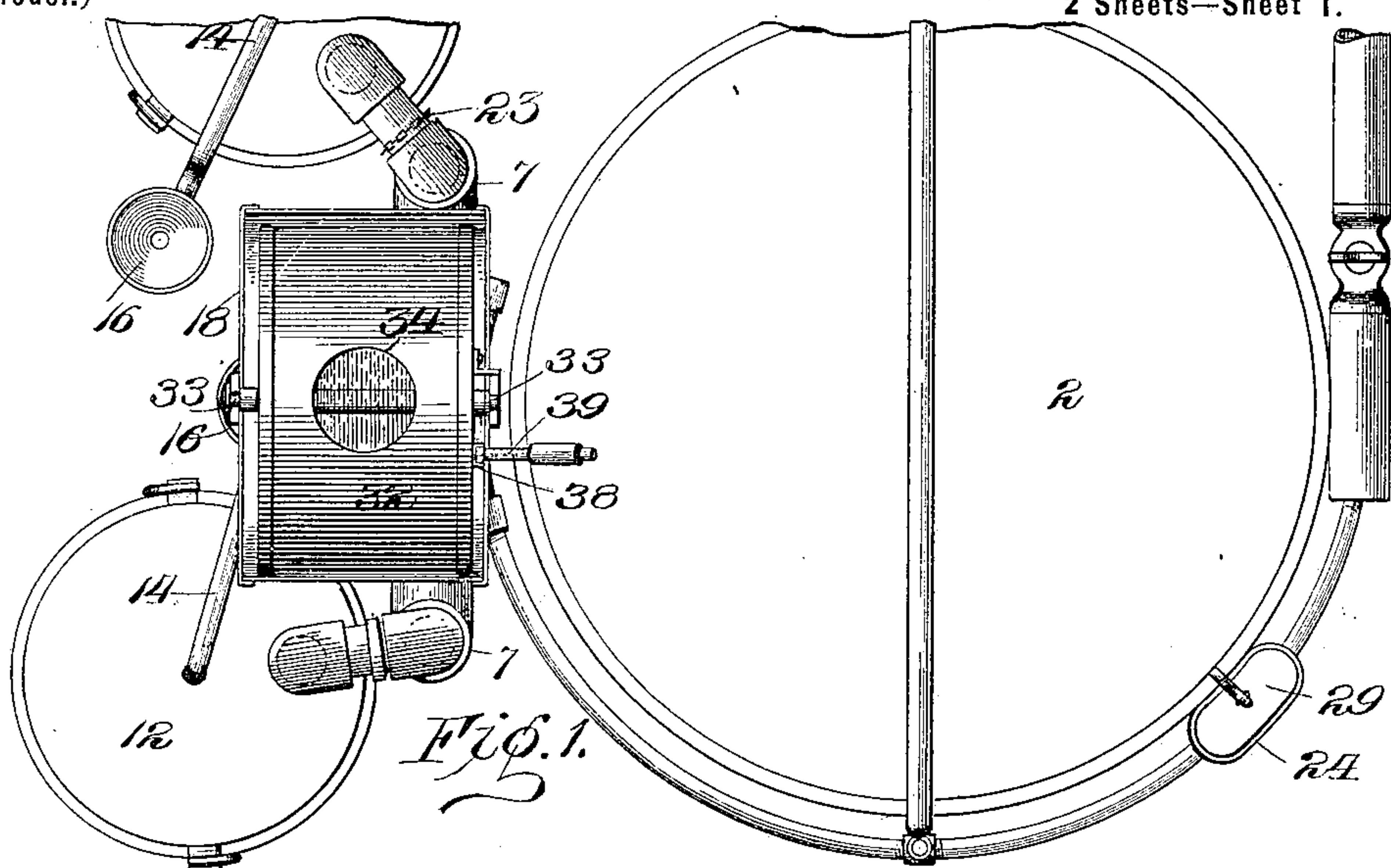


Fig. 1.

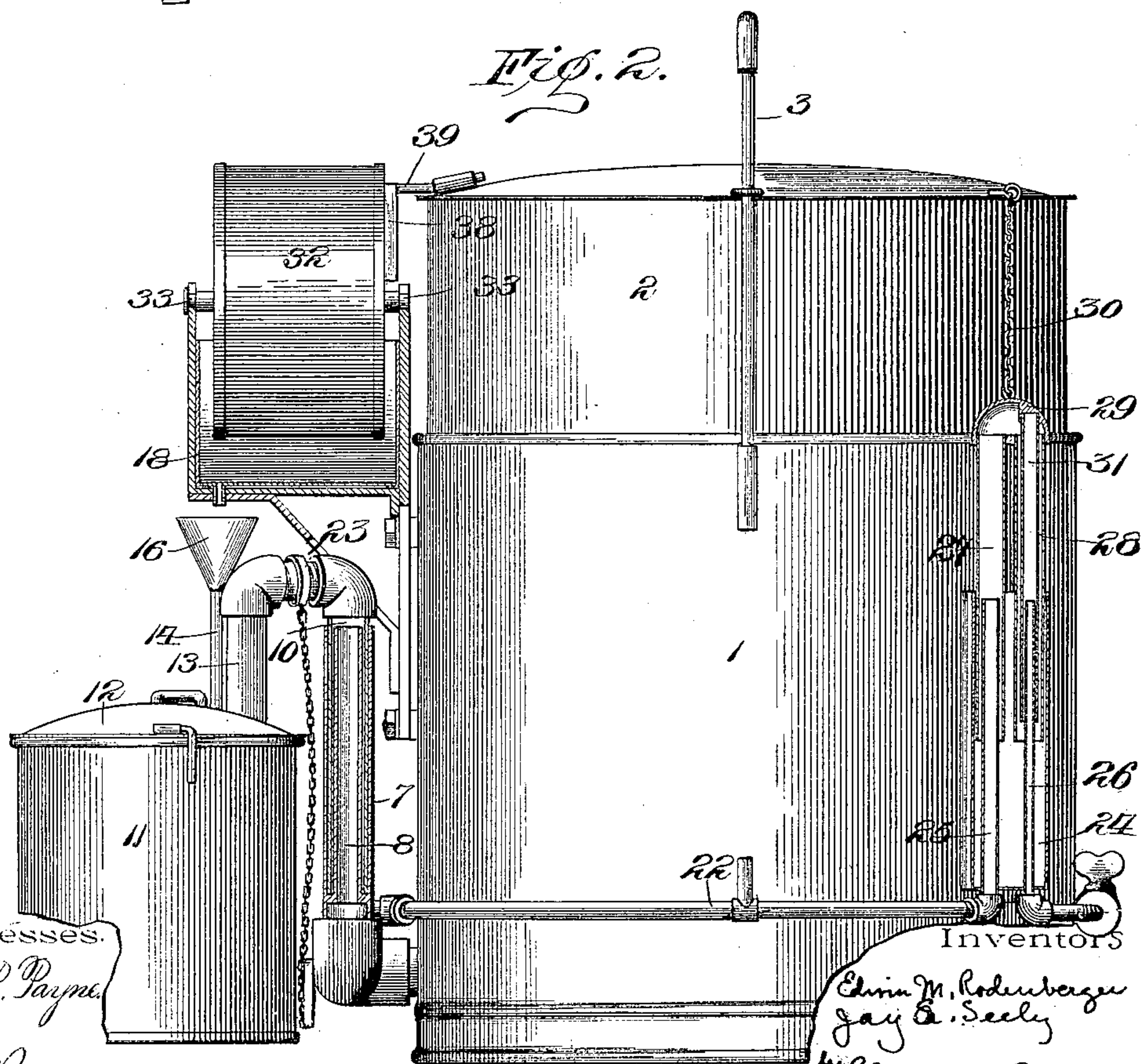


Fig. 2.

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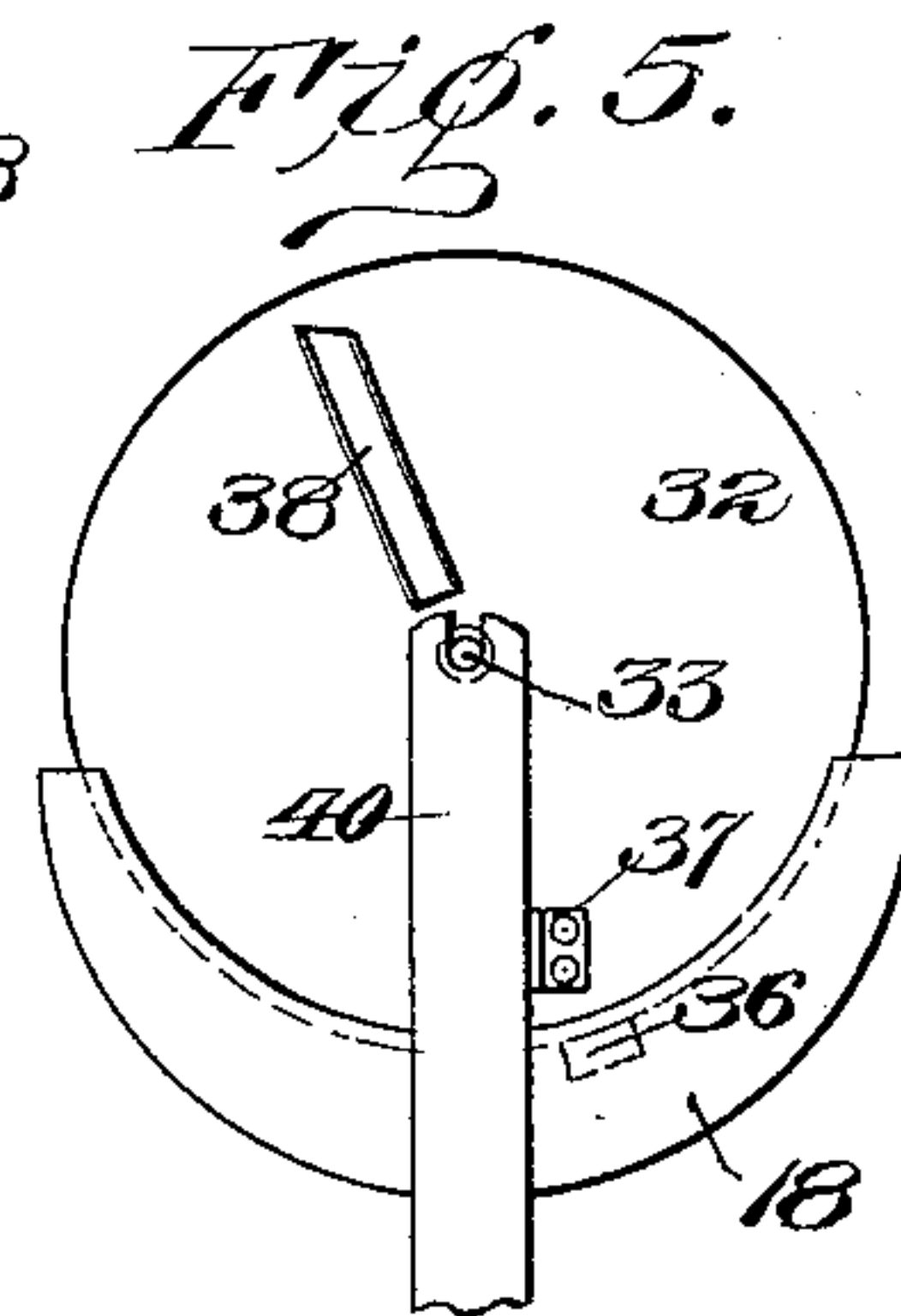
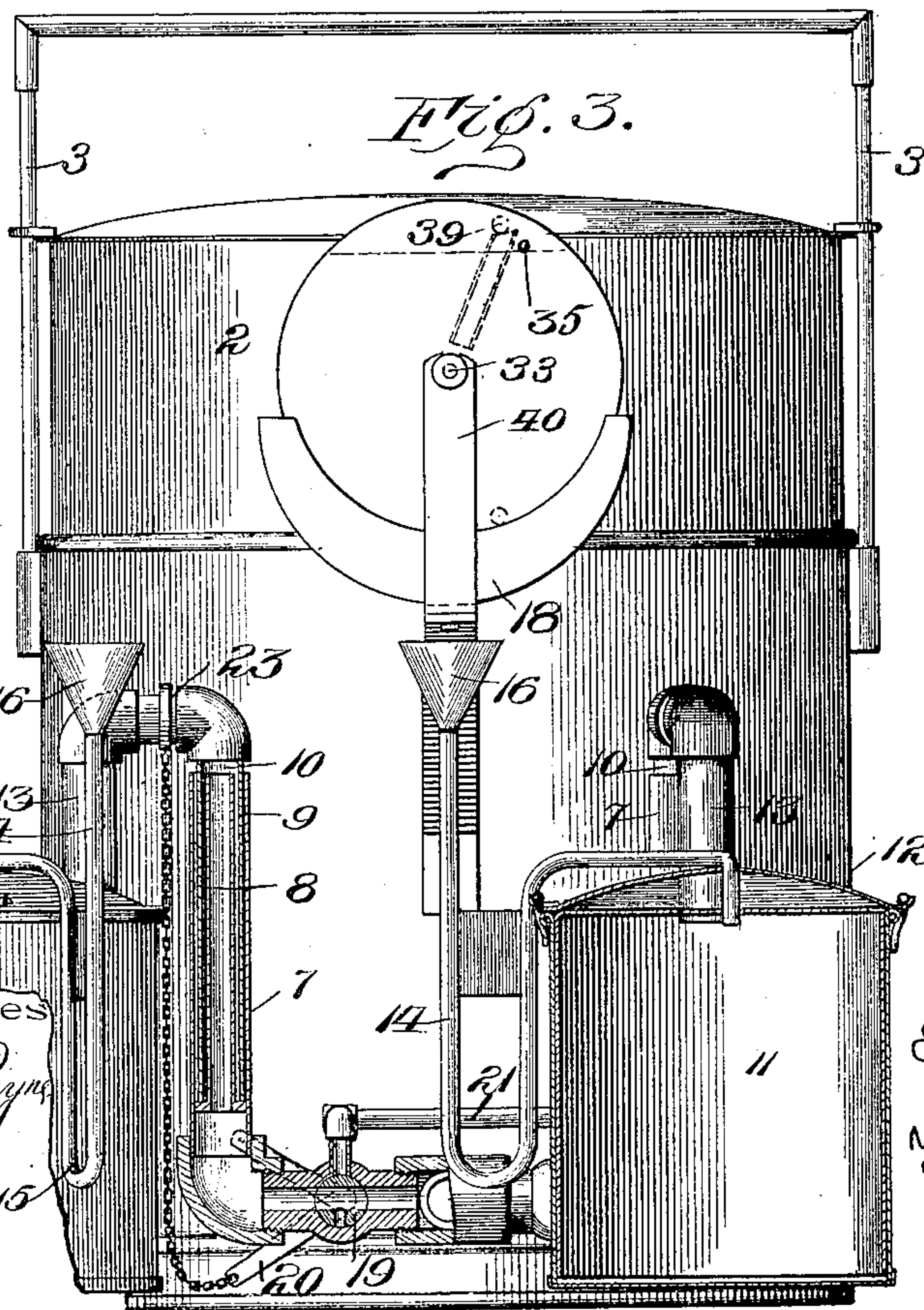
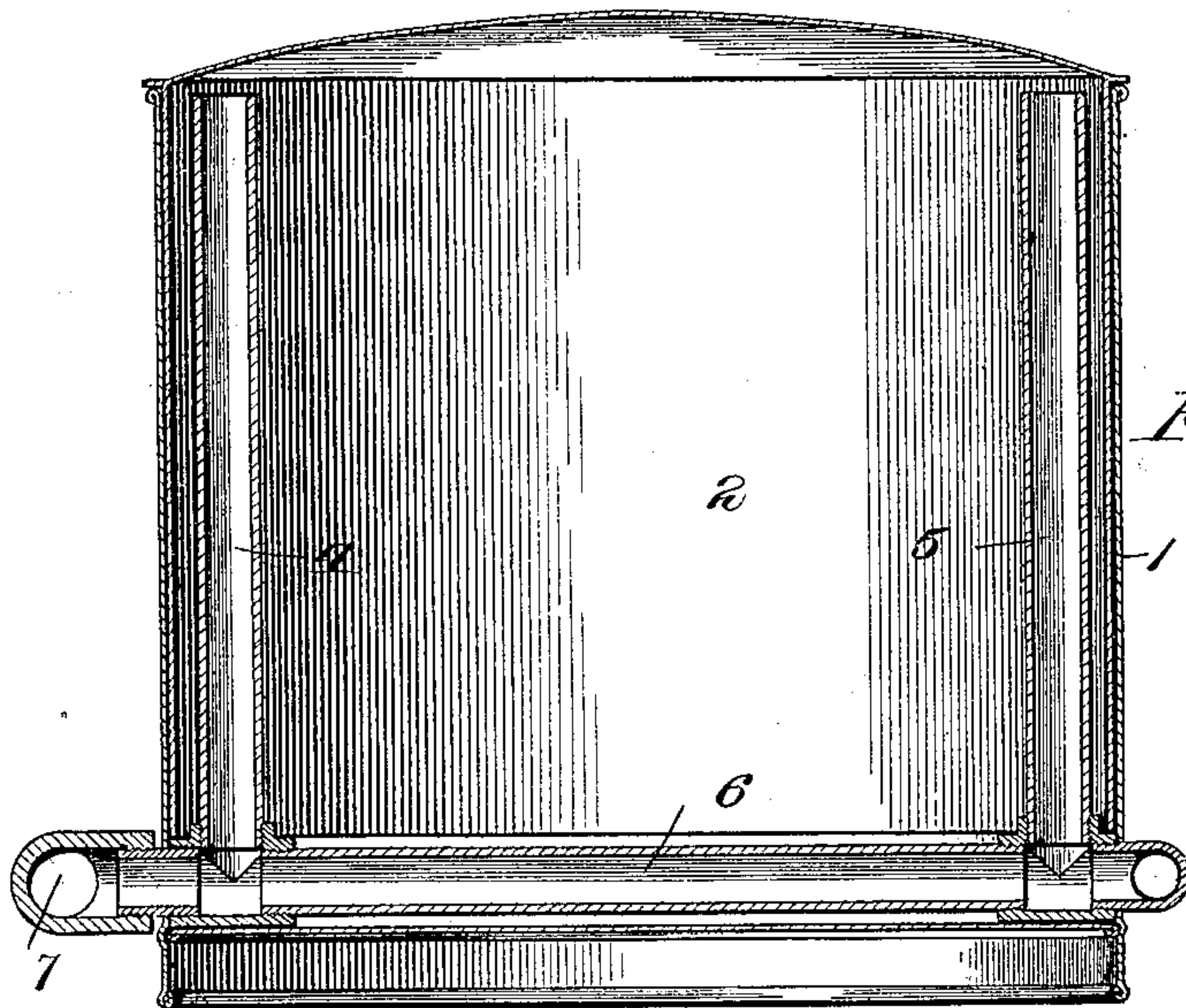
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UNITED STATES PATENT OFFICE.

EDWIN M. RODENBERGER, OF WALWORTH, AND JAY S. SEELY, OF
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ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 658,677, dated September 25, 1900.

Application filed June 21, 1899. Serial No. 721,372. (No model.)

To all whom it may concern:

Be it known that we, EDWIN M. RODENBERGER, of Walworth, in the county of Wayne, and JAY S. SEELY, of Syracuse, in the county of Onondaga, State of New York, have invented certain new and useful Improvements in Acetylene-Gas Generators; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference-numerals marked thereon.

Our present invention has for one object to provide an improved generator for gas, such as acetylene, formed by the combination of a liquid and another material, as calcium carbide, in which the water or other liquid necessary for the generation of the gas is supplied in an economical manner and by the operation of but few parts, said liquid-supply being controlled by the pressure of the gas in the reservoir or receiver; and the invention further has for its object to provide removable generating-chambers which may be applied to the apparatus and removed therefrom for the purpose of recharging, and also further consists in improvements looking toward the simplification and cheapening of the apparatus, all as will be hereinafter described, the novel features being pointed out in the claims at the end of this specification.

In the drawings, Figure 1 is a plan view of our improved apparatus, showing also the gas holder or reservoir; Fig. 2, a side elevation of the same with the relief devices for excessive pressure shown in section; Fig. 3, a front elevation of the apparatus; Fig. 4, a vertical sectional view through the gas-holder; Fig. 5, a detail view of the water-supply devices.

Similar reference-numerals in the several figures indicate similar parts.

In the drawings, 1 indicates the lower and 2 the upper section of a telescoping gas receiver or reservoir, the lower section containing water forming a water seal between the sections, and said upper section being guided in its vertical movement by the uprights 3. Arranged in the lower portion of the reservoir are the vertical pipes 4 and 5, both preferably in communication with the

pipe 6, extending transversely of the reservoir and having its outer end connected with the exit-pipe leading to the burners. The other end of the pipe 6 extends to the exterior of the reservoir-casing and is provided with two, or more, if desired, laterally-extending branch pipes 7, the outer ends extending vertically and having the inner smaller pipes 8 connecting at the bottom of the exterior pipe 7, so as to form a water-chamber 9 between them and into which dips the depending end 10 of the pipe leading from the generating-chambers 11 and forming a water-sealed connection. These generating-chambers consist of suitable receptacles, preferably of sheet metal, provided with carrying-handles and having the cover 12, from which extends the vertical pipe 13, connected to or forming part of the pipe 10 and adapted to conduct the gas from said chambers into the reservoir. The tops of the generating-chambers are provided with the water-pipes 14, each bent down, as shown at 15, to form a trap and extending upward therefrom and having a funnel 16 at the upper end, as shown. In the drawings we have shown two of these generators, both of which are, through the trapped connection, connected with the gas-reservoir; but it is usually desirable to employ but one of the generators at a time, and when in use it is moved around into the position shown at the right in Fig. 3, with its funnel 16 beneath an aperture in the bottom of the crescent-shaped trough or gutter 18, supported upon the side of the reservoir. When one of the generators is not in operation, if it is desirable to cut off communication between it and the gas-holder, and for this purpose we employ in each of the pipes 7 a three-way valve 19 (shown in Fig. 3) similar to an ordinary stop and waste valve, the plug of which is provided with a transverse passage and also with a lateral passage. Connected to the plug of the valve is a handle or lever 20 for operating it to cut off communication between the generator 11 and the pipe 6 and at the same time to connect said generator with an exit-pipe 21, having a branch pipe 22 leading to the open air outside of the room in which the generating apparatus is located. In order to prevent

the possibility of removing one of the generators 11 without closing the pipe from it to the reservoir, we prefer to connect the valve-arm 20 with the generator in such a way that when the latter is lifted off for the purpose of refilling or otherwise the valve 20 will be moved from the position shown in full lines in Fig. 3 to that shown in dotted lines. This connection may be formed in any suitable way; but we prefer to provide upon the elbow connecting the pipes 10 and 13 a loose ring 23, connected by a chain or flexible connection with the valve-arm 20, so that the upward movement of the pipe-elbow will close the valve and open communication between the generating-chamber and the air, as described. The valve could of course be operated by hand; but the arrangement shown insures its automatic operation. Arranged at the side of the reservoir is a water-chamber 24, closed at the lower end and into which extends a pipe 25 in communication with the pipe 22 to the open air, and alongside this pipe 25 in the chamber 24 is a pipe 26, open at its upper end and communicating with the interior of the gas-reservoir. The water in the chamber 24 is maintained at a level a short distance below the upper ends of the pipes 25 and 26, and fitting over the ends of said pipes are the pipes 27 and 28, connected at their upper end by a cap or connection 29, which is in turn connected by a flexible chain 30 with the upper movable section 2 of the reservoir. Located within the pipe 28 is a smaller pipe 31, fitting over the pipe 26 and closed at its upper end, said pipe 31 being a little shorter than the pipe 28, the device just described constituting a relief mechanism for preventing damage to the reservoir from an excess of pressure therein. It will be understood that when the upper reservoir-section reaches its extreme upper limit of motion the lower end of the pipe 31 will rise above the level of the water in the receptacle 24 and allow the excess of gas to pass from the pipe 26 through pipes 28, 27, 25, and 22 to the open air without entering the room in which the apparatus may be located. If desired at any time to permit the escape of gas or air from the reservoir, the pipes 27 and 28 may be raised by hand.

The means for supplying water to the carbid in the generating-chambers 11 and which constitutes one of the important features of our invention consists of a hollow cylinder 32, pivoted on trunnions 33 at its ends in a suitable support 40 on the side of the reservoir and capable of rotation thereon over the trough 18. This cylinder is provided at its upper side with a large filling-aperture 34 and just below it on one end with a small perforation 35, and its lower portion is weighted, as at 36, to keep the apertures normally at the highest elevation, and it is provided with a stop 37 to prevent oscillation in but one direction. It will be seen that by tilting the cylinder on its pivots the water contained

therein will be permitted to pass out through the aperture 35 and to trickle down into the trough 18, from whence it is conducted to the carbid in the generators, as previously described. This cylinder may be tilted by any suitable means, and being perfectly balanced and the body of water being practically stationary, while the cylinder only moves, very little force is required for the purpose; but we prefer to arrange upon one end an inclined track or way 38, in which is adapted to operate a projection 39, secured to the upper movable section 2 of the reservoir, and as the weight 36 normally maintains the cylinder in the position shown in full lines in Fig. 3 it will be seen that when the reservoir-section 2 falls the cylinder will be tilted to spill out the water, and as the pressure of gas in the reservoir increases the cylinder will be tilted back to normal position with the discharge-aperture above the level of the water. During the normal operation of the device sufficient water will be supplied to generate gas in sufficient quantity only to keep the aperture in the cylinder 32 about on a level with the water.

It is entirely immaterial what kind of a carbid-receptacle is contained within the gas-generating chambers 11; but it is eminently desirable, although not necessary, that said chambers be capable of bodily removal; but further than this said generators may be of any suitable construction, although we prefer the form shown.

We claim as our invention—

1. The combination with a pivoted liquid-receptacle having a discharge-aperture at its upper portion, and a projection thereon, of a gas-holder having a movable portion operated by the pressure of the gas, a projection on said movable portion engaging that on the receptacle to tilt the latter, a generating-chamber, and a passage leading to it from the liquid-receptacle.

2. The combination with the pivoted liquid-receptacle having the discharge-aperture, and the guide thereon, of the gas-holder having the movable portion provided with the projection entering the guide to tilt the receptacle, a generator and a passage for conveying liquid spilled from the receptacle to the generator.

3. In a gas apparatus, the combination with the gas-holder having the movable section, and a single liquid-supply controlled by the latter, of two movable generating-chambers removable from the gas-holder, each having gas-pipes movably connected to the holder and provided with liquid-receiving pipes arranged to be moved successively to receive liquid from the supply by a movement of the generating-chambers.

4. In a gas apparatus, the combination with the gas-holder having the movable section, and a single liquid-supply controlled by the latter, of two movable generating-chambers removably connected with the gas-hol

and having gas-pipes connected to the holder by liquid-sealed connections and separate receiving-pipes adapted when the receptacles are moved into position to receive liquid successively from the supply.

5. The combination with a gas-holder having the two upwardly-extending gas-pipes leading thereto, the water-chamber around their outer ends, a movable section on said holder, and a single liquid-supply connected to and governed by the latter, of two generating-chambers, each having downwardly-extending gas-pipes coöperating with gas-pipes on the holder, and upwardly-extending water-pipes adapted to be moved successively beneath the water-supply.

6. The combination with a gas-holder having an upwardly-extending gas-pipe, and a water-chamber around its end, of a generator having a downwardly-extending gas-pipe coöperating with the pipe on the holder and extending into the water-chamber around it, a valve governing the passage of gas between the generator and holder and a positive connection between the former and the latter, whereby the valve will be positively closed by the movement of the generator when disconnected from the holder.

7. The combination with a gas-holder having a gas-inlet pipe, a movable generator having a gas-outlet pipe, and a liquid-sealed detachable connection between said pipes, of a valve between the generator and holder, and connections between the valve and generator, whereby as the latter is removed, the former will be positively operated to close the communication with the gas-holder.

8. The combination with the gas-holder having the movable section, a liquid-supply connected to and operated by the movable section and two gas-inlet pipes leading to the holder, of two generators movably and detachably connected to the gas-inlet pipes by liquid-sealed connections, each generator having a liquid-inlet pipe adapted to be brought beneath the liquid-supply, and valves between the generators and holder and connected to the former adapted to close communication between them when the generator is removed from the holder and the sealed connection broken.

9. The combination with a gas-holder, two vertical gas-pipes leading thereto, a single

water-supply, of two generating-chambers removably connected with the gas-holder and pivotally connected with the vertical gas-pipes and provided with liquid-receiving pipes arranged to be moved successively to receive water from the water-supply when the receptacles are moved into position.

10. The combination with the gas-holder, two vertical gas-pipes leading thereto, and a single liquid-supply, of two generating-chambers removably connected with the gas-holder and pivotally connected with the vertical gas-pipes and provided with a water-sealed joint between them, said generators having liquid-receiving pipes and adapted to be moved with the receptacles to successively receive the liquid from the supply.

11. The combination with a gas-holder having a gas-inlet pipe, of a generator having a gas-outlet pipe detachably and pivotally connected to said inlet-pipe, whereby the generator is permitted an independent rotary movement about the latter, a valve for shutting off communication between the generator and holder having a by-pass leading to the external air, and connections between said valve and the generator for automatically causing the positive operation of the former when the generator is removed so as to shut off communication between the generator and holder and to connect the generator with the external air.

12. In an acetylene-gas apparatus, the combination with the reservoir having the movable section, the water-chamber 24, the pipe 22 leading to the open air, the pipe 26 leading to the reservoir, of the movable pipes 27 and 28 connected at their upper ends, the pipe 31 in the pipe 28 fitting over the pipe 26 and closed at its upper end and terminating above the lower end of the pipe 28, and a connection between the pipes 27 and 28 and the movable section of the reservoir.

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