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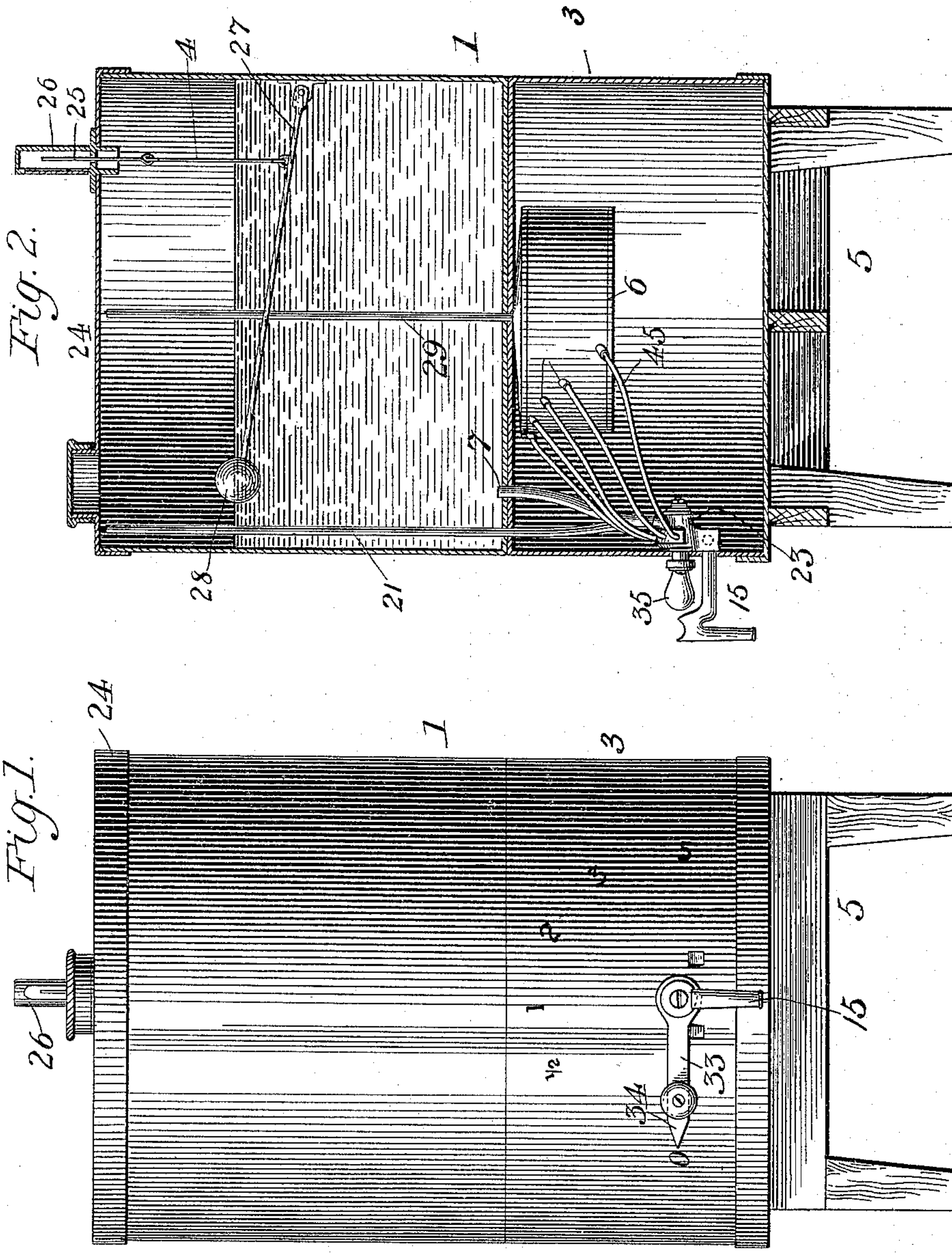
Patented Oct. 18, 1898.

R. D. & H. C. BEMAN.  
LIQUID DISPENSING VESSEL.

(No Model.)

(Application filed Oct. 26, 1897.)

2 Sheets—Sheet 1.



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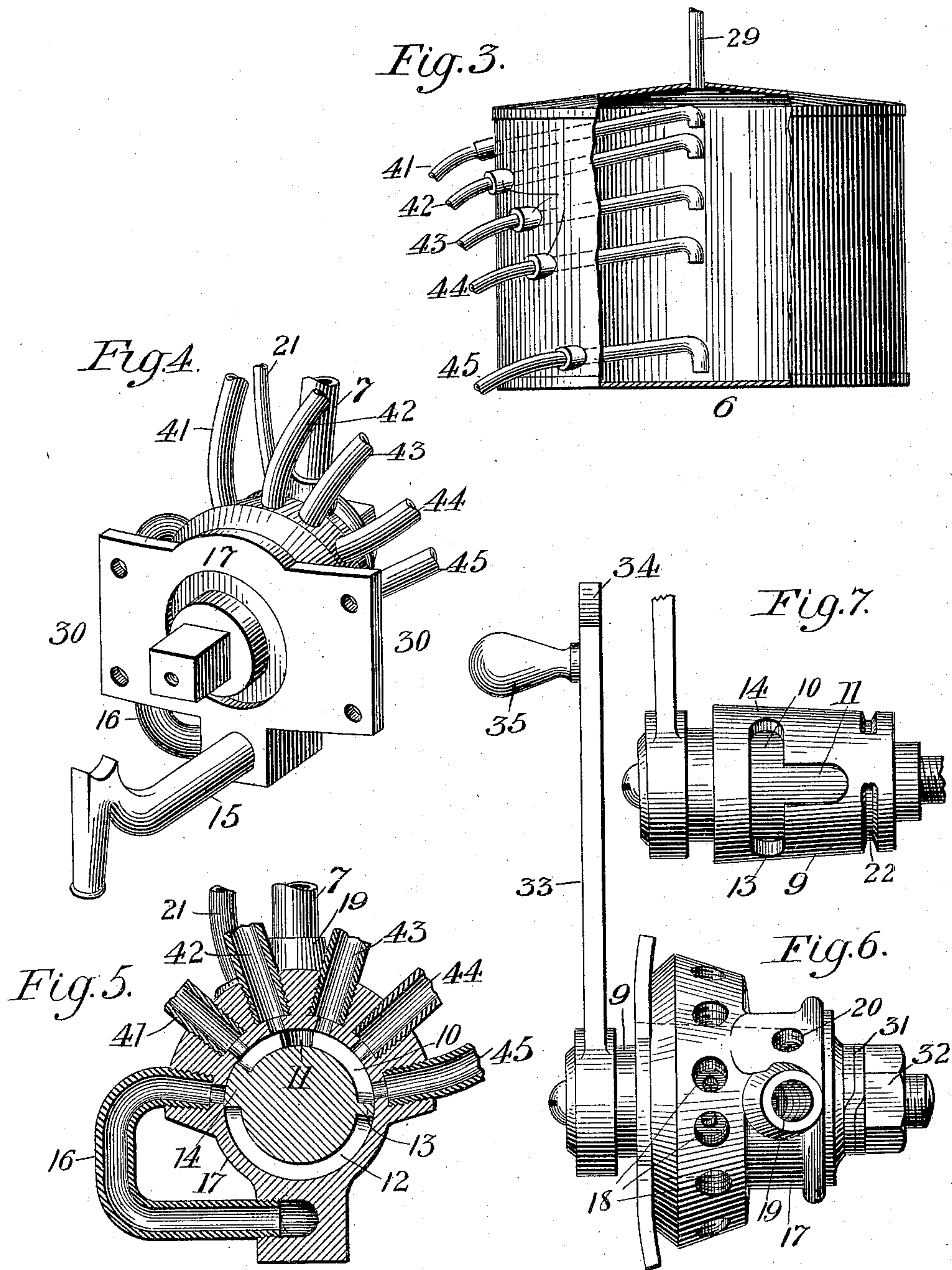
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# UNITED STATES PATENT OFFICE.

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## LIQUID-DISPENSING VESSEL.

SPECIFICATION forming part of Letters Patent No. 612,477, dated October 18, 1898.

Application filed October 26, 1897. Serial No. 656,421. (No model.)

*To all whom it may concern:*

Be it known that we, ROY DOUGLAS BEMAN and HENRY CLAY BEMAN, citizens of the United States, residing at Meadville, in the county of Crawford and State of Pennsylvania, have invented certain new and useful Improvements in Liquid-Dispensing Vessels; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to self-measuring vessels, the object being to provide an air-tight liquid-containing vessel with auxiliary apparatus adapted to measure and discharge predetermined quantities of liquid, thus rendering the use of separate measuring vessels unnecessary and avoiding waste of the liquid by evaporation or when being drawn.

The characteristic features of the invention will be fully described hereinafter and defined in the appended claims; and are embodied in the construction illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of a vessel provided with our improvements. Fig. 2 is a vertical section thereof, partly in elevation. Fig. 3 is a side elevation of the measuring-receptacle, partly broken away, showing the vertical central arrangement of the siphons therein. Fig. 4 is a perspective view illustrating the valve and its pipe connections. Fig. 5 is a vertical transverse section of the valve with the connecting-pipes broken away. Fig. 6 is a plan view of the valve-casing, valve, and operating-lever; and Fig. 7 is a plan view of the valve removed from its casing.

Similar numerals of reference indicate similar parts throughout the several views.

The main body portion of the apparatus consists of a reservoir or tank 1 and a subjacent hollow base 3, preferably supported upon a stand or bench 5. The upper compartment or tank 1 is adapted to contain the oil or other liquid to be dispensed, while within the lower compartment or base 3 are arranged the measuring-receptacle, the valve, and siphon-pipe connections between said receptacle and valve.

6 designates the measuring-receptacle,

which may conveniently be of cylindrical form with slightly-conical top and which is secured to the under side of the top wall of the compartment or base 3. This receptacle is of a capacity greater than the largest quantity of liquid to be dispensed and is supplied with liquid from the supply-chamber 1 by means of a supply-pipe 7, the upper end of which leads from the supply-chamber, while its lower end communicates with the measuring-receptacle through the intermediacy of the valve and connecting siphon-pipes, as hereinafter described.

The receptacle 6 is provided with a series of siphon discharge-pipes 41 42 43 44 45, arranged at different heights, as shown, to permit the discharge of liquid from different levels and having their inner ends arranged in a vertical central line within the measuring vessel. The siphons severally communicate, as shown, with corresponding passages 18 in the casing of a multiway valve. (Shown best in Figs. 5 and 6.) The plug 9 of this valve is provided on its upper side with a circumferential groove or passage 10, which extends partly around its periphery and communicates with the outer end of a short longitudinal groove 11. The lower end of the supply-pipe 7, which leads from the tank 1, connects with the longitudinal groove 11 and through the passage 10 with the lower ends of the pipes 41 to 45, said passage 10 being of sufficient length to communicate with all of the pipes at the same time in a certain position of the plug. The plug of the valve 9 is also provided on its under side with a circumferential groove 12 in the same vertical plane with the groove 10, but separated from the latter by the walls 13 and 14. This groove is longer than the groove 10 and is of sufficient length to place all of the pipes 41 to 45, or any one or more of them, in communication with a siphon discharge-spout 15 through a pipe 16, opening into the valve-casing in line with and at one end of the row of pipe-openings 18.

The valve-casing 17 is bored to receive the plug 9 and is formed with a series of internally-threaded openings 18, adapted to receive the treaded ends of the pipes 41 to 45. The valve-casing is also provided with a threaded socket 19 to receive the lower end of the



liquid-supply pipe 7, which leads from the main reservoir, and with a small opening 20, into which is fitted the lower end of an air-pipe 21, which takes air from a point within  
 5 and near the top of the supply-tank 1 and delivers it to the measuring-chamber 6. A groove or air-passage 22 is formed circumferentially in the plug part way around near its inner end to register with the air-opening 20  
 10 in the valve-casing and the pipe 21 when the plug is in position to draw off liquid through any one of the pipes and to be always in register with an opening 23 in the valve-casing nearly diametrically opposite to the opening 20, that is open to the outer air.  
 15

The top of the supply-tank 1 is closed by a cap or cover 24, which is air-tight when in position.

The quantity of liquid in the tank 1 is indicated by a gage-rod 25, which extends into  
 20 a glass tube 26, while its lower end is connected by a link 4 to a lever 27, fulcrumed at one end to the inner wall of the tank and carrying at its opposite end a float 28. An  
 25 air-tube or equalizing-tube 29, communicating at its lower end with the topmost part of the measuring-receptacle 6, rises within the supply-tank 1 to a point near the top of the latter and permits the air to pass freely from  
 30 the compartment 6 into the top of the tank. The valve-casing is provided with lateral extensions 30 to facilitate its attachment to the inner wall of the compartment 3, and the rear end of the plug extends beyond the inner end  
 35 of the valve-casing to receive a spiral spring or split washer 31 and a securing-nut 32.

To the front end of the plug 9 is secured one end of a lever or handle 33, the free end 34 of which is of pointer form to serve as an  
 40 indicator in connection with a series of figures, as "0," " $\frac{1}{2}$ ," "1," "2," "3," and "5," arranged on an arc on the front of the tank in the path of movement of the pointer 34. A knob or finger-piece 35 is provided at the free  
 45 end of the lever 33 to facilitate the movement of the lever and the rotation of the valve 9, attached thereto.

The location and arrangement of the inner ends of the siphon in a vertical central line  
 50 within the measuring-receptacle are important, for the reason that by this arrangement the apparatus will measure accurately and discharge the exact quantity desired, even though the tank may not set level. Any tip-  
 55 ping of the tank from a strictly horizontal position adds at one side of the mouth of the siphons a quantity of liquid equal to that displaced at the other side, thus insuring an accurate discharge. Again, the siphon-shaped  
 60 discharge-spout 15 insures a complete cut-off of the flow and prevents dripping of the liquid after the desired quantity has been drawn off.

The operation of the apparatus is as follows: The capacity of the receptacle 6, as  
 65 above stated, is greater than the largest quantity of liquid to be dispensed, and the relative locations of the siphon-pipes from the

topmost part of the receptacle 6 determine the quantity each siphon will discharge. In  
 the vessel shown in the drawings five siphon-  
 70 pipes are shown, corresponding to a half-gallon and one, two, three, and five gallons, respectively. The first or highest siphon discharge pipe or tube 41 is capable of discharg-  
 75 ing only a half-gallon of liquid—that is to say, as soon as a half-gallon of liquid has been siphoned off through the pipe 41 the surface of the liquid in the vessel 6 will be below the mouth of its siphon, and hence the  
 80 flow through said pipe instantly ceases. The other siphons are in like manner arranged at the proper distances below the top of the vessel 6 to deliver the varying quantities indicated by the figures on the front of the vessel, the mouth of the lowest one, 45, being ar-  
 85 ranged near the bottom of the vessel 6, so as to discharge a quantity of liquid equal to five gallons. When the lever 33 is in the position shown in Fig. 1, with its pointer at zero, the passage 11 registers with the supply-pipe  
 90 7 and the fluid passes from the tank 1 through said pipe 7 and the passages 11 and 10 to the several pipes 41, 42, 43, 44, and 45 to the receptacle 6 until the latter is filled, the air in vessel 6 passing upward through the equal-  
 95 izing-tube 29 into the supply-tank, taking the place of the liquid passing downward through pipe 7 to the measuring-receptacle. When liquid is to be drawn off, the lever 33 is turned until the pointer indicates the quantity de-  
 100 sired—say, a half-gallon. The turning of the plug for this purpose moves the passage 11 out of register with the supply-pipe 7, thus cutting off the flow of liquid from the tank to the measuring vessel and bringing the pipe  
 105 41 into register with the escape-passage 12, leading from the measuring vessel to the discharge-siphon 15 and at the same time bringing the air-passage 22 in the plug in register with the air-opening 20 and pipe 21, so that  
 110 free vent is established from the outside air to the inside top of supply-tank through the opening 23 and air-tube 21, whence it finds its way into the measuring-receptacle through the pipe 29 to supply the place of the liquid  
 115 drawn out. After the required quantity is drawn off the pointer is turned back to zero, thus restoring the plug to its first position and permitting the vessel 6 to again fill through the pipe 7, and at the same time cut-  
 120 ting off the admission of air into the pipe 21 and making the tank perfectly air-tight. It is obvious that the turning of the pointer to the figure on the indicator representing the quantity of liquid to be drawn off operates  
 125 to open communication between the corresponding siphon discharge-pipe and the discharge-passage of the valve.

It will be clear from the foregoing description that the apparatus not only delivers the  
 130 liquid in exact predetermined quantities, but automatically replenishes the measuring-receptacle after each withdrawal of liquid, leaving it all air-tight, while the gage and float



device serve to indicate any undue depletion of the liquid in supply-tank 1.

Having thus described our invention, what we claim is—

5 1. In a liquid-dispensing apparatus, the combination of a storage-reservoir, a measuring-receptacle, a supply-pipe between the reservoir and receptacle, and a plurality of  
10 valved siphon-pipes for drawing off predetermined portions of the contents of the receptacle, the bent ends of said pipes being arranged at different levels in a vertical line centrally of the receptacle.

2. In a liquid-dispensing apparatus, the  
15 combination of an air-tight storage-reservoir, a measuring-receptacle, a single-valve casing, a supply-pipe leading from the reservoir to the casing and thence to the receptacle, a draw-off pipe leading from the receptacle to  
20 the casing and thence to the outer air, a pipe leading from the casing to the reservoir for admitting air, and a single valve in the casing for controlling the outflow from the receptacle and simultaneously controlling the  
25 entrance of air into the reservoir through the air-pipe.

3. In a liquid-dispensing apparatus, the combination of an air-tight storage-reservoir, a measuring-receptacle, a single-valve casing,  
30 a supply-pipe leading from the reservoir to the casing and thence to the receptacle, a draw-off pipe leading from the receptacle to the casing and thence to the outer air, a pipe leading from the casing to the reservoir for  
35 admitting air, and a single valve in the casing for simultaneously supplying liquid to the receptacle from the reservoir and shutting off the admission of air to the latter, and simultaneously admitting air to the reservoir  
40 and drawing off liquid from the receptacle.

4. In a liquid-dispensing apparatus, the combination of an air-tight storage-reservoir, a measuring-receptacle, a valve-casing, a supply-pipe leading from the reservoir to the  
45 receptacle through the casing, a plurality of siphonic draw-off pipes leading from the receptacle to a spigot or other outlet through the valve-casing, the bent ends of said pipes being arranged at different levels one over another in the vertical central line of the receptacle, an open-air-pressure-equalizing pipe  
50 leading from the receptacle to the top of the reservoir, a pipe for the admission of external air leading from the valve-casing to the  
55 top of the reservoir, and a valve in said casing

for shutting off the admission of air to the reservoir and simultaneously permitting the latter to supply liquid to the receptacle, and for drawing off the contents of the receptacle from one or another of the siphon-pipes, 60 the receptacle supply-pipe and the pipe for admitting air to the reservoir being meanwhile open.

5. In a liquid-dispensing apparatus, the combination of a storage-reservoir, a measuring-receptacle, a pipe for supplying liquid from the former to the latter, a valve-casing into which said liquid-supply pipe opens, a plurality of discharge-pipes leading from the measuring-receptacle to said valve-casing, a  
65 rotary valve in the casing, a peripheral groove in said valve adapted to register with any or all the liquid-discharge pipes, and a longitudinal groove in the valve leading into said peripheral groove, and adapted to register  
70 with said liquid-supply pipe at one point only in the position of the valve.

6. In a liquid-dispensing apparatus, the combination of a storage-reservoir, a measuring-receptacle, a pipe for supplying liquid  
80 from the former to the latter, a valve-casing into which said liquid-supply pipe opens, a plurality of discharge-pipes leading from the measuring-receptacle to said valve-casing, a pipe for supplying air to the storage-reservoir  
85 also opening into the valve-casing, an air-pipe leading from the top of said reservoir to the top of the measuring-receptacle, an inlet for the outer air into the valve-casing, an outlet therefrom for the liquid, and a rotary valve  
90 in the casing, said valve having a peripheral groove adapted to register with any or all the liquid-supply pipes, a second peripheral groove adapted to register with the liquid-outlet, a longitudinal groove adapted to register  
95 with the liquid-supply pipe when the outlet-pipe in the casing is closed, and a third peripheral groove which always registers with the air-inlet in the casing, and is adapted to register with the air-supply pipe to the storage-reservoir whenever the valve is in the  
100 position to open the liquid-outlet from the casing.

In testimony whereof we affix our signatures in presence of two witnesses.

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HENRY CLAY BEMAN.

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