F. WOODRUFF.

LIQUID VENDING APPARATUS.

APPLICATION FILED MAR. 10, 1920.

1,404,418.

Patented Jan. 24, 1922.

4 SHEETS—SHEET 1.

Fig. 1.

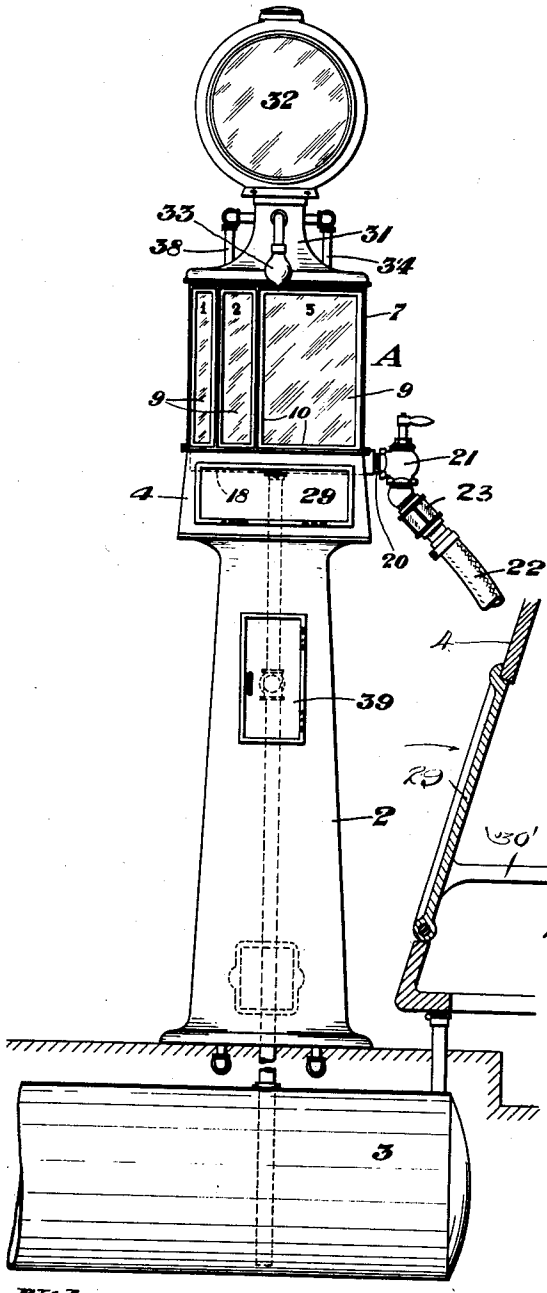


Fig. 2.

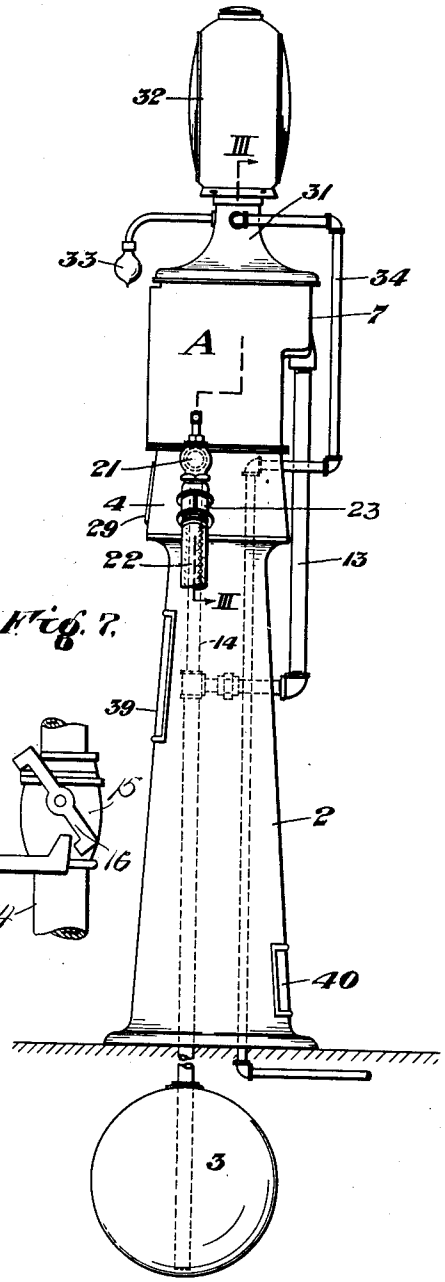


Fig. 7.

Witnesses:

Edwin Trueb

Lois Wineman.

Inventor:

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4 SHEETS—SHEET 2.

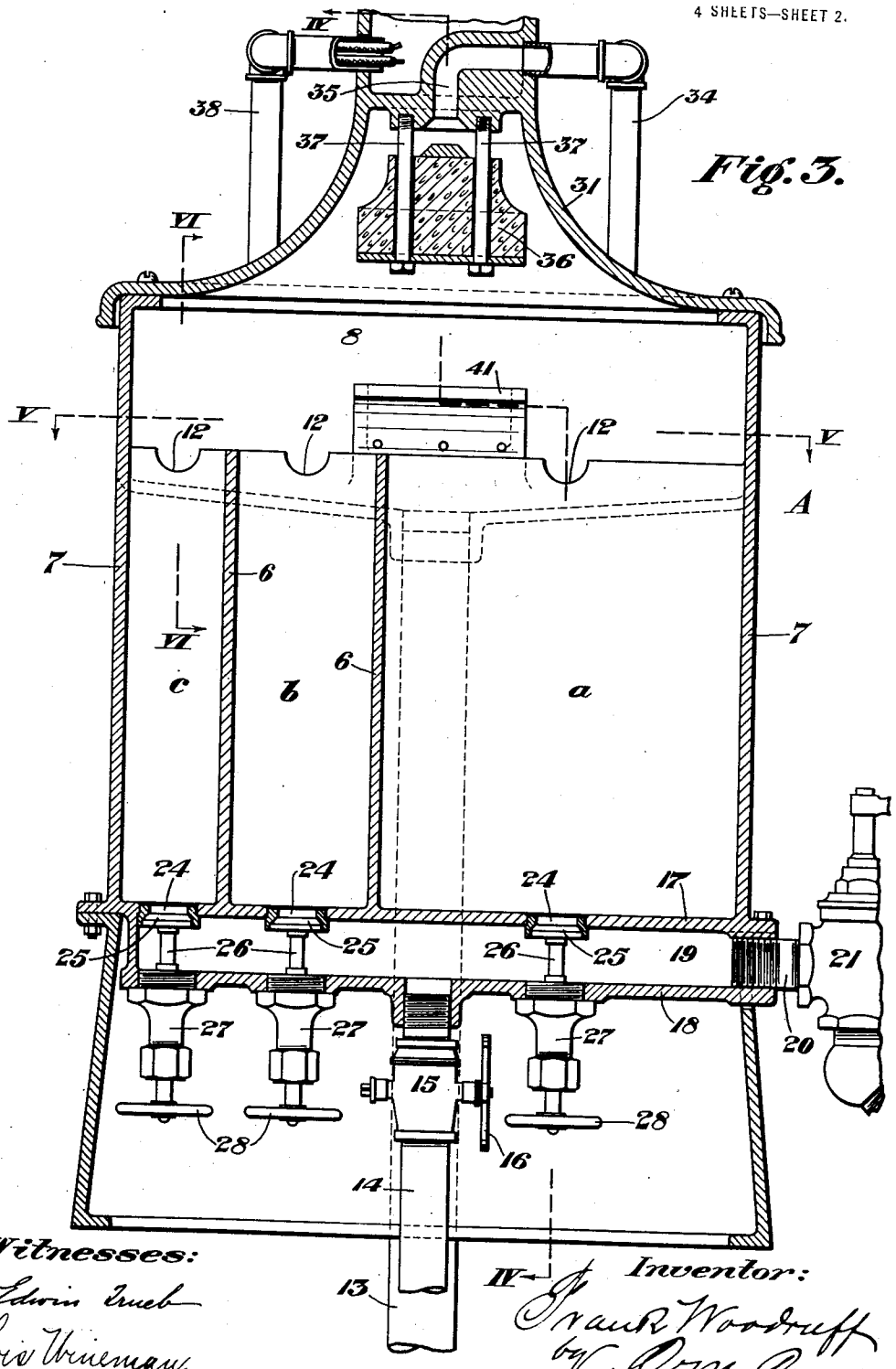


Fig. 3.

Witnesses:

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Inventor:

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4 SHEETS—SHEET 3.

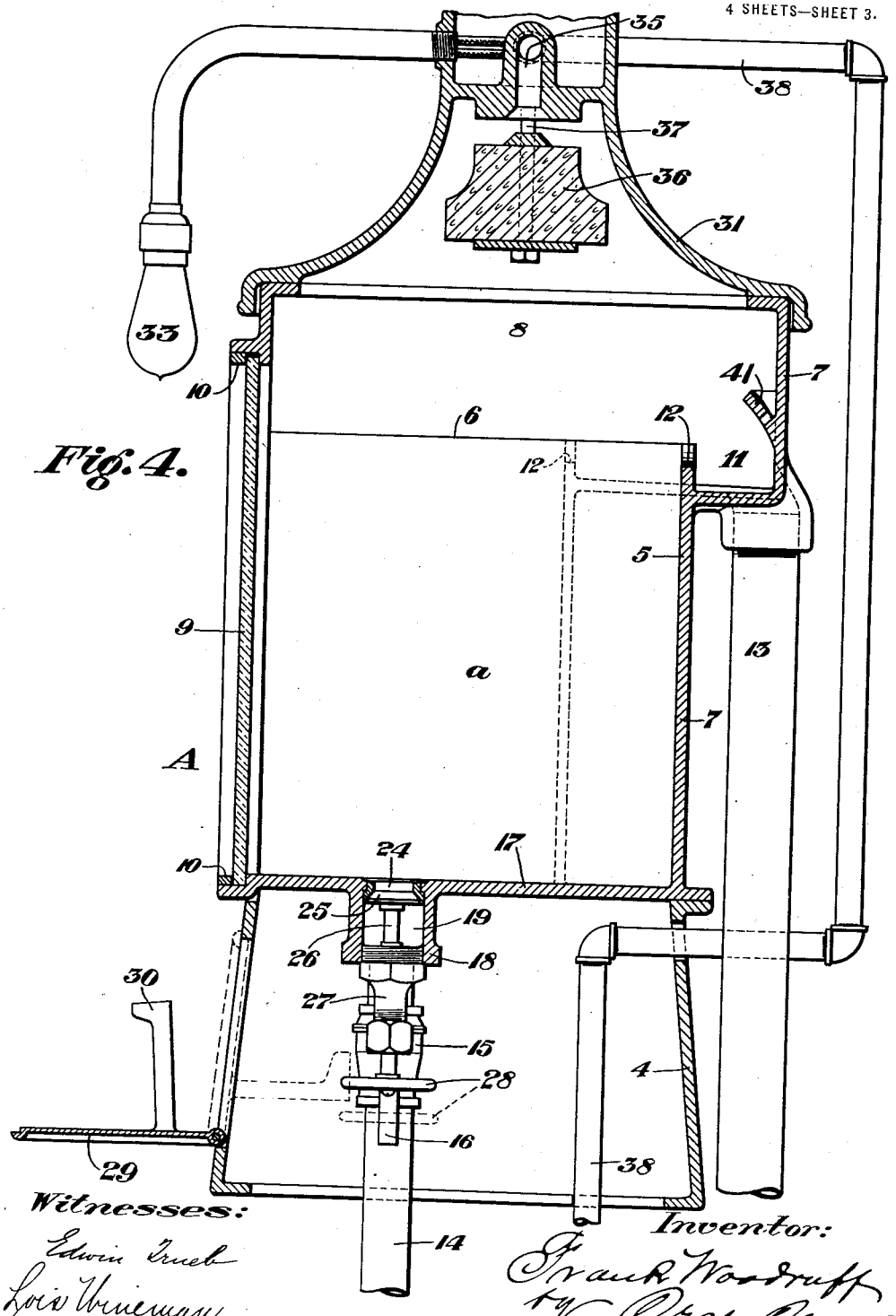


Fig. 4.

Witnesses:

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4 SHEETS—SHEET 4.

Fig. 5.

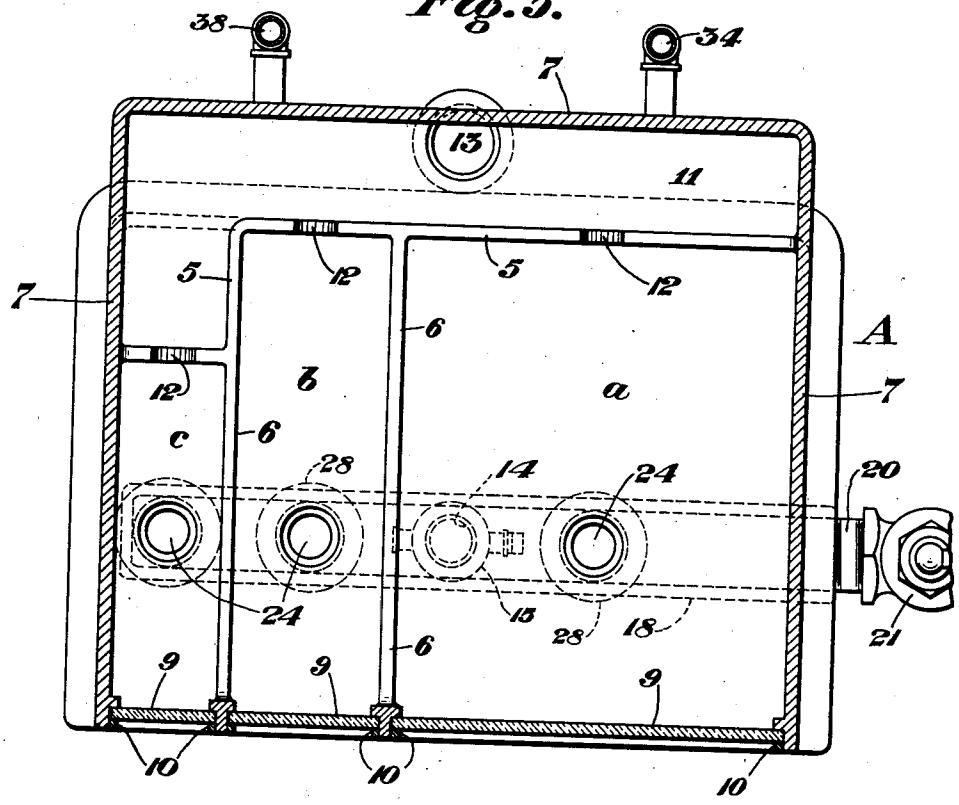
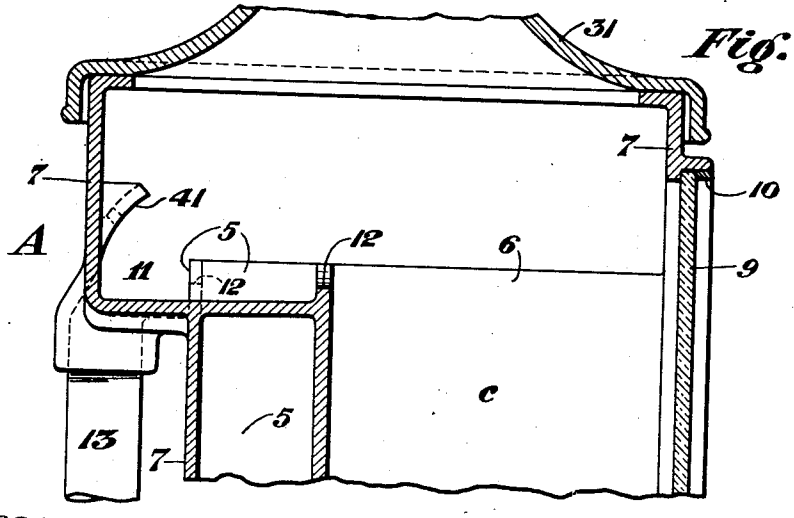


Fig. 6.



Witnesses:

Edwin Trueb

Lois Ulrieman

Inventor:

Frank Woodruff

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Atty.

UNITED STATES PATENT OFFICE.

FRANK WOODRUFF, OF ROCHESTER, PENNSYLVANIA, ASSIGNOR TO GUARANTEE LIQUID MEASURE COMPANY, OF ROCHESTER, PENNSYLVANIA, A CORPORATION OF DELAWARE.

LIQUID-VENDING APPARATUS.

1,404,418. Specification of Letters Patent. Patented Jan. 24, 1922.

Application filed March 10, 1920. Serial No. 364,693.

To all whom it may concern:

Be it known that I, FRANK WOODRUFF, a citizen of the United States, residing at Rochester, in the county of Beaver and State of Pennsylvania, have invented certain new and useful Improvements in Liquid-Vending Apparatus, of which the following is a specification.

My invention consists of an improvement in measuring apparatus of the kind used in vending measured quantities of liquid, as gasoline, oil, etc. It is designed to provide means for exactly measuring one or more unitary volumes of unvarying amount, in a container having visibility of the contents and means for delivering the amount measured to the purchaser. Also, means for returning any undelivered content to a main reservoir, means ensuring emptying of the measuring chamber or chambers upon closing a door, and various other features of improvement, as shall be more fully hereinafter described.

Referring to the drawings showing one preferred form of the invention,

Fig. 1 is a view of the machine in front elevation;

Fig. 2 is a side elevation;

Fig. 3 is an enlarged vertical section on the line III, III of Fig. 2;

Fig. 4 is a similar section on the line IV, IV of Fig. 3;

Fig. 5 is a transverse section on the line V, V of Fig. 3; and

Fig. 6 is a vertical section on the line VI, VI of Fig. 3;

Fig. 7 is a detail view showing the door abutment engaging the outlet valve.

The machine as a whole consists of a main supporting base 2 which is adapted to be mounted on any suitable foundation above a main storage tank 3, from which it is desired to withdraw measured amounts of liquid from time to time.

The measuring vessel A is mounted upon the base 2 with an intervening valve box 4, the several parts being fixedly connected by bolts or otherwise, as desired. Vessel A, as shown, has a plurality of compartments *a*, *b*, *c*, of varying cross area and capacity, as five, two, and one gallons respectively, but of uniform height, and each compartment is enclosed within and by the surrounding walls and partition 5, 6, and the main outer walls 7 of the vessel. The outer walls extend around three of the four rectangular sides, as shown, and somewhat above the upper edges of walls and partitions 5, 6, providing a common upper space or chamber 8.

At the front, each chamber or compartment *a*, *b*, and *c* is closed by a plate glass front 9 set into receiving rebates and hermetically sealed to the front of the casing, as at 10, making an air tight and fluid tight fit. At the rear of the several chambers, cavity 8 extends slightly below the upper edges of the rear walls 5, providing between them and the outer walls 7 a common supply and overflow return channel 11, and each cavity *a*, *b*, *c*, communicates with it through a gutter or cross notch opening 12. The bottom of each such opening is filed or otherwise regulated as to depth so as to allow just sufficient overflow back into channel 11 to leave exactly measured amounts in each chamber *a*, *b*, and *c*.

A supply pipe 13 leads upwardly from the main tank 3 to the bottom of channel 11, as shown, a branch pipe 14 connecting therewith inside the hollow base and which is provided with a valve 15 having a handle 16 for returning any surplus to the tank 3.

The bottom 17 of vessel A is provided with a sub or false bottom 18 and an intervening delivery chamber 19 connected by fitting 20 with an outlet control valve 21 of the delivery hose 22. Between the valve 21 and hose 22 is a short cylindrical casing 23 of glass, whereby to observe the flow of liquid from the machine, as delivered.

At its bottom, each compartment *a*, *b*, and *c* is provided with a valve seated outlet opening 24, each having an opening and closing valve 25, the stem 26 of which extends downwardly through a fitting 27 and is provided with a handle 28 of usual construction. Each valve 25 is therefore positively opened or closed, as to each compartment *a*, *b* or *c*, by positively manipulating its particular hand wheel 28 and stem 26, threaded in fitting 27 in the usual way. These several valves 25 and valve 15 are all enclosed within box 4 and are so located that the hinged door 29 cannot be closed unless all of the valves are open so as to completely drain the machine of its contents upon closing it up. Thus, the door

29 is provided with an inwardly extending arm or abutment 30, one for each valve 25 and adapted to interfere with each handle 28 unless it is opened wide, and a similar arm 30 is so arranged as to engage the handle 16 or valve 15 and positively open the valve, upon closing the door, as in Fig. 7.

A coping 31 closes and extends above the top of casing 7 and completes the measuring vessel A, being air tight therewith, and is surmounted by an electric light globe 32, of ornamental design, a supplemental lamp 33 preferably extending out above the front of the glass partitions.

While any suitable means may be employed for filling the several vessels *a*, *b*, and *c*, I prefer air pressure, either in excess of atmospheric pressure upon the contents of tank 3, or normal atmospheric pressure, by partially exhausting the air from the upper chamber.

For such purpose, an air exhaust pipe 34 is connected therewith, as by the conduit 35, a float valve 36 being utilized, on guide stems 37, to ensure against flooding by cutting off the suction. A conduit 38 serves to enclose the various conductor wires used for the lamps, etc., and with conduit 34 may be disposed within the hollow base 2 and led off from its bottom to any suitable connections. One or more doors 39, 40, open to the interior of the base, and it will, of course, be understood that the glass front of each compartment should be appropriately marked to indicate the level and amount of its measured contents. A deflector 41 above the delivery end of conduit 13 throws the liquid directly over into the several compartments and reduces any unnecessary splashing.

The construction and operation of the invention will be readily understood and appreciated from the foregoing description. It is comparatively simple, very exact and unvarying in amount, and not liable to get out of order.

The contents are visible to the purchaser, and each measuring vessel is capable of being filled and emptied, either as an individual or with the others. That is to say, all of the vessels *a*, *b*, *c*, may be filled, and one or more may be emptied at a time and again refilled, or two or three may be emptied together, giving their aggregate measured content, as desired. By my present construction, I avoid the necessity of any adjustable parts, floats, or complicated devices of any kind, and ensure full measure service at all times, to the satisfaction of the purchaser.

Various changes or modifications may be made in the design, proportions, or detail construction of the invention by the skilled mechanic, but all such changes are to be considered as within the scope of the following claims.

What I claim is:

1. A liquid vending machine provided with a measuring chamber, an overflow channel, a measure defining notch between the measuring chamber and the overflow channel, a supply and return conduit connected with the bottom of the overflow channel, and a withdrawal conduit below the measuring chamber in valve-controlled communication with the measuring chamber and with the supply and return conduit respectively.

2. A liquid vending machine provided with a plurality of measuring chambers of varying capacity, a common overflow channel therefor, a measure defining notch between each measuring chamber and the overflow channel, a supply and a return conduit connected with the bottom of the overflow channel, and a withdrawal conduit below the measuring chamber in valve controlled communication with each of the measuring chambers and with the supply and return conduit respectively.

3. A liquid vending machine provided with a closed measuring chamber having a transparent wall, an overflow channel, a measure defining notch between the measuring chamber and the overflow channel, a supply and return conduit connected with the bottom of the overflow channel, means for effecting upward flow of liquid through said conduit, and a withdrawal conduit below the measuring chamber in valve controlled communication with the measuring chamber and with the supply and return conduit respectively.

4. A liquid vending machine having a supply and overflow channel, a measuring compartment communicating with said channel, a conduit leading to said channel from a storage vessel, a subchamber below the measuring compartment provided with an intervening valve, and a conduit leading from the subchamber.

5. A liquid vending machine having a supply and overflow channel, a plurality of measuring compartments of varying capacity communicating at their tops with said channel, a conduit leading to said channel from a storage vessel, a common subchamber below the several measuring compartments provided with intervening individual outlet valves, and a conduit leading from the subchamber.

6. A liquid vending machine having a supply and overflow channel, a measuring compartment communicating with said channel, a conduit leading to said channel from a storage vessel, a subchamber below the measuring compartment provided with an intervening valve, a conduit leading from the subchamber, and a valve controlled re-

turn pipe leading from the subchamber to the conduit.

7. In combination with a liquid vending machine having an outlet valve within an enclosing box, a door for the box and provided with a terminal hand wheel having an inwardly extending projection adapted to interfere with said hand wheel and prevent closing of the door when the valve is closed, but adapted to pass inwardly to allow for closing of the door when the hand wheel is lowered by opening the valve.

In testimony whereof I hereunto affix my signature.

FRANK WOODRUFF.