C. H. CURTIS.

MACHINE FOR VENDING LIQUIDS.

APPLICATION FILED DEC. 17, 1909.

990,344. Patented Apr. 25, 1911.

3 SHEETS—SHEET 1.

Fig. 1.

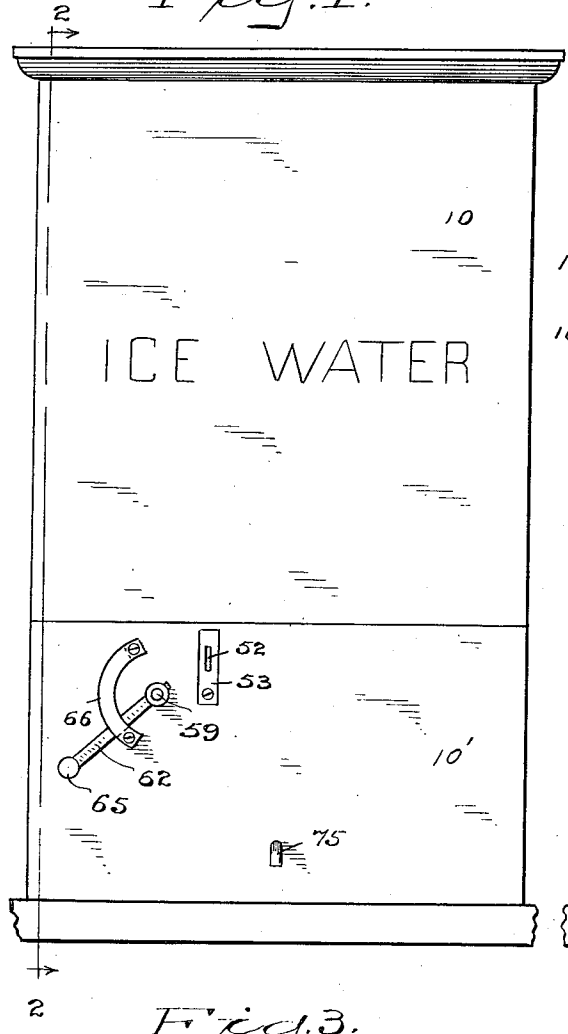


Fig. 2.

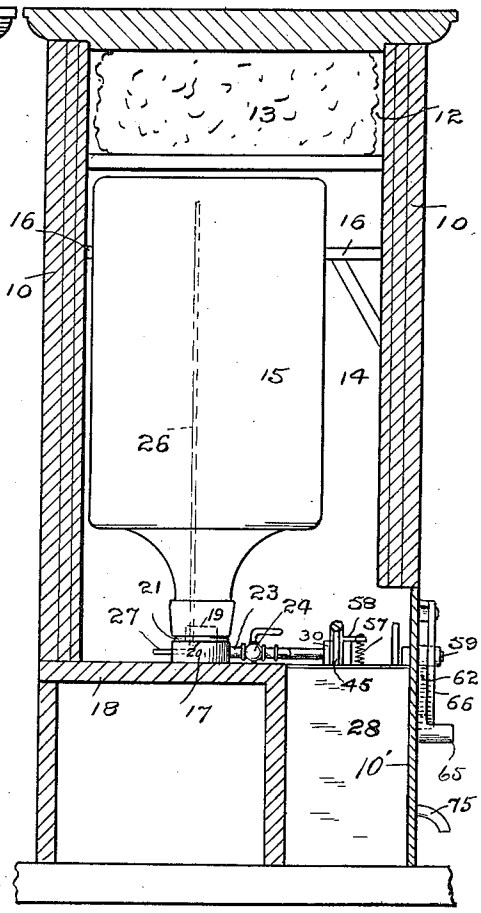


Fig. 3.

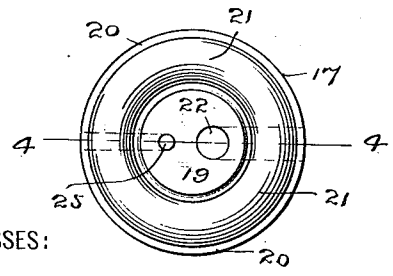
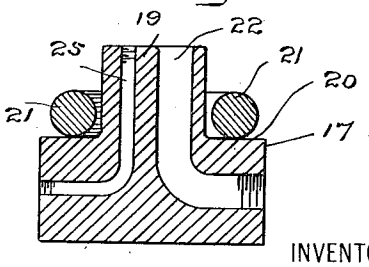


Fig. 4.



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3 SHEETS—SHEET 2.

Fig. 5.

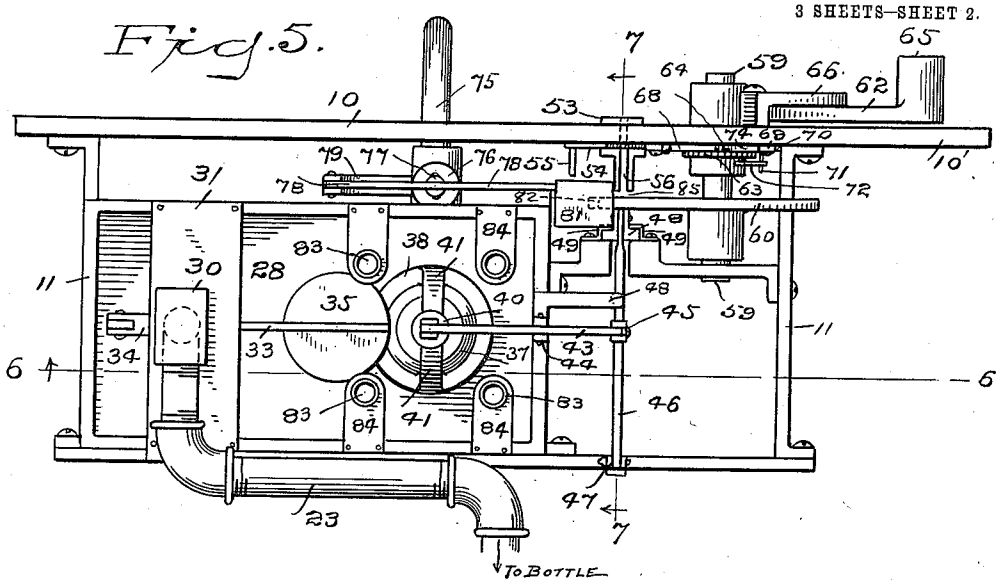
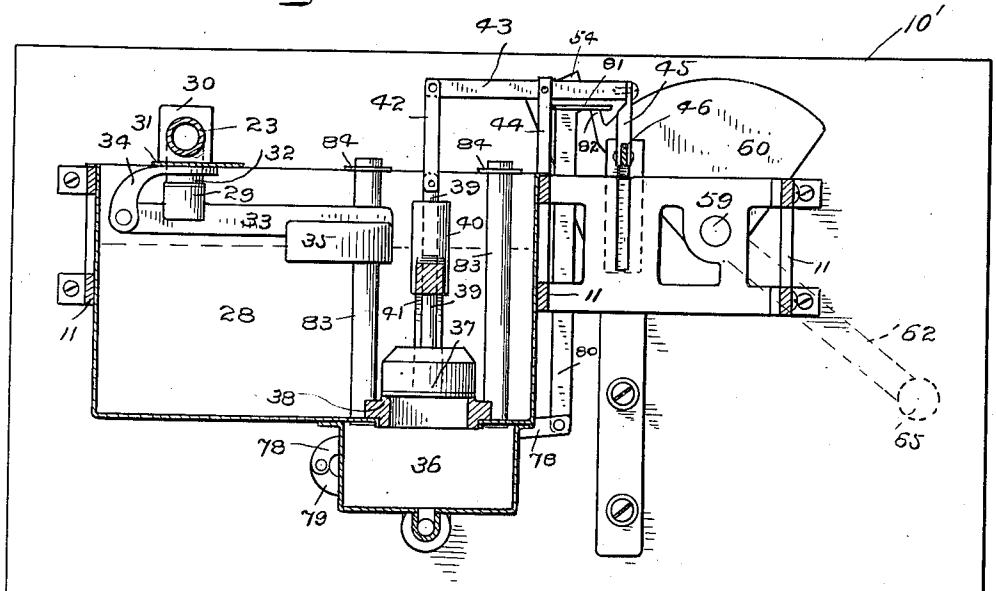


Fig. 6.



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3 SHEETS—SHEET 3.

Fig. 7.

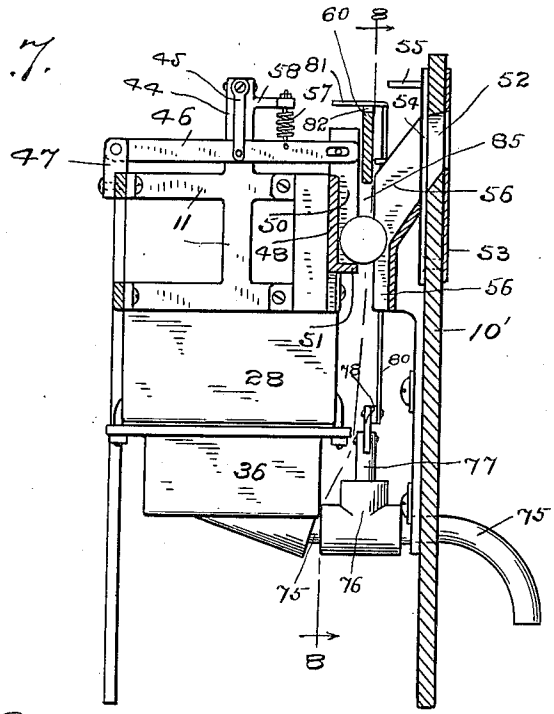


Fig. 9.

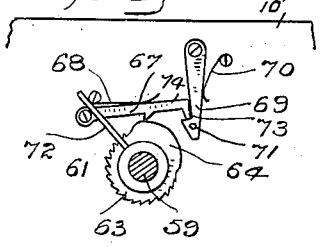
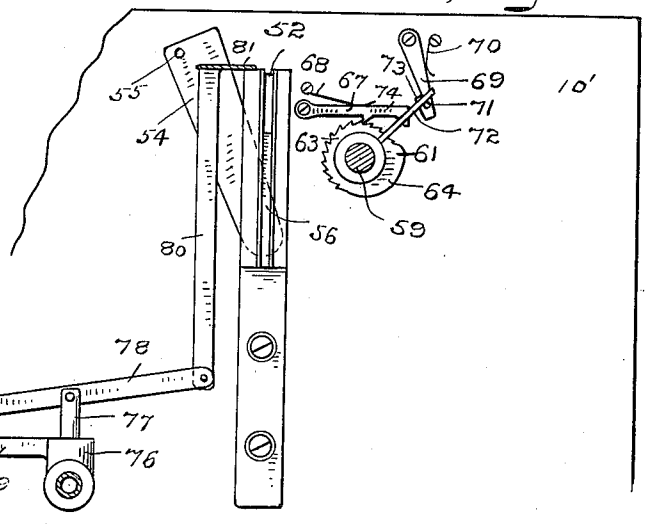


Fig. 8.



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MACHINE FOR VENDING LIQUIDS.

990,344. Specification of Letters Patent. Patented Apr. 25, 1911.

Application filed December 17, 1909. Serial No. 533,556.

To all whom it may concern:

Be it known that I, CHARLES H. CURTIS, a citizen of the United States, residing at Derby, county of New Haven, State of Connecticut, have invented an Improvement in Machines for Vending Liquids, of which the following is a specification.

This invention has for its object to provide a coin-operated machine for measuring and dispensing liquids as for vending beverages from any source of supply either within or without the machine and especially adapted for vending water from a large bottle placed within the machine. It is, of course, well understood that in the streets of cities, in public buildings and wherever there are large gatherings of people there is often much inconvenience and no small amount of suffering from thirst, especially by women and children. My present invention enables me to provide lemonade, root beer or any beverage of that character and more especially to provide pure cool water which will be automatically dispensed by the machine upon payment of a minimum fee, as for example one cent, and the operation of a lever.

With the above and other objects in view I have devised the novel liquid vending machine which I will now describe, referring to the accompanying drawings forming a part of this specification and using reference characters to indicate the several parts:

Figure 1 is a front elevation of my novel machine as in use; Fig. 2 a section on the line 2—2 in Fig. 1 looking in the direction of the arrows, showing a form of the machine in which water is dispensed from a large bottle, ordinarily from a five-gallon bottle; Fig. 3 a plan view on an enlarged scale of the bottle rest detached; Fig. 4 a section on the line 4—4 in Fig. 3; Fig. 5 a plan view on an enlarged scale of the operating mechanism detached; Fig. 6 a longitudinal vertical section on the line 6—6 in Fig. 5, looking in the direction of the arrows; Fig. 7 a transverse vertical section on the line 7—7 in Fig. 5 looking in the direction of the arrows; Fig. 8 a detail vertical section on the line 8—8 in Fig. 7 looking in the direction of the arrows, showing the normal position of the parts, and Fig. 9 is a detail view showing the position of the parts when the pawl is locked out of operative position.

10 denotes a casing and 11 framework within the casing by which the operative parts are carried.

10′ is that portion of the casing directly in front of the operating parts.

Within the casing at the upper portion thereof is an ice chamber 12, ice being indicated by 13, and below the ice chamber in the form shown is a chamber 14 which receives a bottle 15 placed in inverted position and held by suitable supports 16.

17 denotes the bottle rest, which is secured to a suitable fixed support indicated by 18. The bottle rest comprises a hub 19 which passes within the neck of the bottle and a shoulder 20 upon which the bottle rests, a rubber ring or gasket 21 being interposed between the end of the bottle neck and the shoulder. The bottle rest is provided with a passage 22 threaded to receive a pipe 23 through which water passes from the bottle and which I term the supply pipe. A valve 24 is preferably provided in the supply pipe to shut off the flow of water from the bottle or other source of supply if required. An air passage 25 is also provided in the bottle rest shown as threaded at both ends for the attachment of pipes, a pipe 26 extending from the rest upward nearly to the bottom of the bottle so as to permit air to pass into the bottle above the water and an inlet pipe 27 being used or not as preferred.

It will, of course, be understood that the special shape and size of the casing and the arrangement of the liquid supply are not essential features of the invention. As for example, the casing may be much smaller and supply pipe 23 may lead from a tank or source of supply outside the casing and may or may not be coiled within the casing for the purpose of cooling the liquid as preferred. In case no bottle is used the ice chamber may be dispensed with if preferred and the liquid cooled outside the casing which would then simply be made large enough to contain the operating mechanism. Ordinarily, however, an ice chamber will be provided within the casing.

For convenience I will describe the machine as used in vending water, although it will of course be understood that any other liquid may be dispensed in the same manner.

When valve 24 is opened water passes freely from the source of supply into a re-

ceiving tank 28 until the tank is filled when the supply is cut off by a valve 29. I have shown supply pipe 23 as connected to a hub 30 carried by a cross piece 31 attached to the receiving tank. On the under side of hub 30 is a seat 32 for valve 29. This valve is carried by a lever 33 pivoted to an arm 34 projecting from any fixed portion of the machine, in the present instance from cross piece 31. At the end of the long arm of the lever is a float 35 which controls the valve. Below the receiving tank is a measuring tank 36 which is made of sufficient capacity to just hold the quantity of water to be delivered; for example, a large tumblerful. When water is caused to pass from the receiving tank to the measuring tank water will pass from the supply pipe through hub 30 into the receiving tank. When the measuring tank is filled, the passage of water thereto is cut off by a valve 37 as will presently be explained. As the water flows into the receiving tank the float will be raised until valve 29 is placed in engagement with seat 32, which will stop the passage of water to the tank and prevent overflowing. The instant valve 37 is again opened, however, the passage of water to the measuring tank will cause the float to drop down and permit water to pass to the receiving tank again, the receiving tank being made large enough so that the machine may be kept in continuous operation, delivering water from the measuring tank, the water, as already explained, being cooled either at a source of supply outside of the machine or within the machine if preferred by an ice chamber.

The vending operation is performed by mechanism I will now describe.

Between the receiving and the measuring tanks is a seat 38 for valve 37. The stem 39 of the valve slides in a guide 40 carried by a yoke 41 secured to and extending upward from the valve seat.

42 denotes a link pivoted to the valve stem and to a lever 43 which has its fulcrum in a standard 44 and the other end of which is connected by means of a link 45 to the mid length of a lever 46 extending at right angles to lever 43. One end of lever 46 is pivoted to a bracket 47 on the framework and the other end is pivoted to a slide 48 which moves in ways 49 on the framework. The slide is provided with a slot 50 at the bottom of which is a ledge 51, the ledge, and the back and one wall of the slot being clearly shown in Fig. 7. The upper end of the slot extends entirely through the slide and receives the end of lever 46 as clearly shown in Figs. 5 and 7. The front of the casing is provided with a coin slot 52 extending through from the outer side. 53 is a face plate on the outer side of the casing having a corresponding coin slot which is made just long enough to receive a coin of the required denomination, as for example, a penny. Upon the inner side of the casing is a swinging cover plate 54 having a handle 55 for convenience in operation. This cover plate is adapted to be swung over the coin slot to close it on the inner side so as to prevent coins from being passed into the slot should the machine be out of order or the supply of water or other beverage be exhausted. Ordinarily the cover plate lies backward out of the way as in Fig. 8 leaving the coin slot open. When a coin is passed through the coin slot it enters a way 56, the upper portion of which is inclined and the lower portion vertical. When the coin reaches the vertical portion of the way it will be stopped by ledge 51 in slide 48, the coin resting upon the ledge and one edge of the coin lying within and being supported by the vertical portion of the way, the other edge of the coin lying in and being supported by the walls of slot 50 in the slide which is normally held at its raised position by means of a suitable spring 57. In the present instance I have shown for this purpose a coil spring, one end of which is connected to lever 46 and the other end to an arm 58 extending from standard 44.

59 denotes an operating shaft journaled in the framework and in the front of the casing. This shaft carries an operating plate 60 and a combined ratchet and cam plate 61 within the casing and an operating lever 62 outside the casing.

63 denotes the ratchet portion of the plate 61 and 64 the cam portion.

The operating lever is provided with a handle 65 for convenience in operation and is inclosed by a guard plate 66 which limits its movement in each direction. Backward movement of the operating shaft before its forward movement has been completed, as will be more fully explained, is prevented by a pawl 67 pivoted on the inner side of the casing and retained in engagement with ratchet 63 by a spring 68. Near the end of the forward movement of the operating lever (in the present instance an upward movement) pawl 67 is raised out of engagement with the ratchet by the cam and is locked in the raised position by a dog 69 which is retained in the locking position by a spring 70. This leaves the operating shaft unlocked and the operating lever may then be swung backward. Near the end of the backward movement of the operating lever and shaft, a pin 71 on the dog is engaged by a pin 72 extending from the operating shaft (in the present instance from the hub of plate 61) and the dog is swung backward against the power of spring 70 releasing the pawl which at once engages the ratchet again, spring 68 insuring its engagement should it not drop by gravity. The special form of engagement of the locking dog with

the pawl 67 is of course unimportant so far as the principle of the invention is concerned. I have shown the dog as provided with a shoulder 73 and the pawl as provided with an arm 74 which is adapted to engage the shoulder. The construction may be greatly varied, however, without departing from the principle of the invention.

Water passes from the measuring tank by means of a pipe 75 extending through the front of the casing, the end of which is curved downward to form a spout.

76 denotes a valve of any suitable construction in pipe 75 whose stem 77 is pivoted to a lever 78 which has its fulcrum on an arm 79 extending from any fixed portion of the structure, as for example, from valve 76 (see Fig. 5).

80 denotes a lifting bar which is pivoted to the free end of lever 78 and is provided at its upper end with a plate 81 lying in the horizontal plane which is adapted to be engaged by a lug or finger 82 extending from operating plate 60. In the normal position of the parts lug or finger 82 holds the lifting bar and lever 78 in the raised position and valve 76 is open (see Fig. 6 in connection with Fig. 5). The instant the operating lever is swung upward, however, the lug passes from under plate 81 and the lifting bar and lever drop closing valve 76 by gravity, the closing of said valve taking place before valve 37 which lets water pass from the receiving tank to the measuring tank, is opened, as will be more fully explained.

83 denotes air pipes, four being shown in the present instance, which extend upward through the receiving tank and permit air to enter the measuring tank freely. These pipes are shown as supported by braces 84 which extend from the top of the receiving tank.

The operation of the machine as a whole is as follows: The operator places a coin in the slot which drops down in the coin way until it rests upon ledge 51 in slide 48, the rear edge of the coin lying in the upper end of the vertical portion of the coin way as clearly shown in Fig. 7. The operator then swings the operating lever upward. The first effect of this movement is to release plate 81 and the lifting bar 80 and cause valve 76, which closes the measuring tank, to close by gravity. An instant later the lower edge of operating plate 60 (see Fig. 7) presses the coin and slide 48 downward until the coin passes below the lower end of the vertical portion of the coin way when it drops out into the casing or into a suitable receptacle (not shown). This operation will be readily understood from Fig. 7 which shows the position of the parts before the movement of the operating plate commences. It will be noted that the coin rests upon ledge 51 and lies partly in slot 50 in the slide and partly in the vertical portion of the coin way, the operating plate swinging in the space indicated by 85 between the coin way and the slide. Juggling with the machine is prevented by the engagement of pawl 67 with the ratchet portion of plate 61. The purpose of this pawl is to prevent any backward movement of the operating lever and operating shaft until after the coin has dropped out of the coin way and slide and into the receptacle. Near the end of the upward movement of the operating lever and the downward movement of the operating plate the cam portion 64 of plate 61 will engage pawl 67 and raise it out of engagement with the teeth of the ratchet portion of said plate in which position it is locked through the engagement of shoulder 73 on dog 69 with arm 74 on the pawl. The pawl will remain in this disengaged position until pin 71 on the dog is engaged by pin 72, extending from the operating shaft, near the end of the return movement of the operating lever, operating shaft and operating plate. At the commencement of the operating movement as soon as the operating plate and coin commence to move slide 48 downward, lever 46 which is pivoted to the slide will commence to move downward also and through link 45, lever 43 and link 42 which is pivoted to the stem of valve 37 will raise said valve and permit water to pass from the receiving tank to the measuring tank. It will be understood, however, that no water can pass from the measuring tank for the reason that the first effect of the movement of the operating lever and operating plate is to release plate 81, which normally holds valve 76 open, and permit said valve to close by gravity. As already explained as soon as water commences to flow from the receiving tank to the measuring tank the float in the receiving tank will drop down which will open valve 29 and permit water to flow from the source of supply to the receiving tank. This flow will continue, however, only until the receiving tank is filled, when the rising of the float will again close valve 29, so that no harm can be done and there will be no overflow from the receiving tank even if the water in the measuring tank is not drawn off. It should be noted furthermore that during the upward movement of the operating lever as soon as the coin drops out from the slide and coin way, spring 57 will at once return lever 46 and the slide to their normal position and will also actuate links 45 and 42 and lever 43 and return valve 37 to its closed position which shuts off the passage of water to the measuring tank. It is not necessary that the operating lever should be swung to the extreme of its forward movement although in practice it will ordinarily be thrown upward until its movement is

stopped by the guard plate. The forward movement of the operating lever must, however, be continued until the cam portion of plate 61 has raised pawl 67 out of its operative position and it has been locked there by dog 69. After pawl 67 has been locked out of operative position the operating lever may be swung backward again and near the end of the backward movement pin 71 extending from the operating shaft will engage pin 72 on dog 69 and will cause said dog to release pawl 67, and lug 82 on the operating plate will engage plate 81 on the lifting bar 80 which will open valve 76 and permit the contents of the measuring tank to pass out through pipe 75 and into a tumbler or other drinking vessel.

Having thus described my invention I claim:

1. A machine of the character described comprising a receiving tank, a measuring tank, a valve for controlling the liquid passing from said receiving tank to said measuring tank, a valve controlling the outlet of said measuring tank, levers for independently operating said valves, a slide connected with the levers of the first mentioned valve, and a single member provided with means to actuate said slide in its forward movement and to actuate the levers of the second valve on its return movement.

2. A machine of the character described comprising a receiving tank, a measuring tank, a valve for controlling the liquid passing from said receiving tank to said measuring tank, a valve controlling the outlet of said measuring tank, levers for independently operating said valves, a slide connected with the levers of the first mentioned valve, a lifting plate connected with the levers of the other valve, and a single member provided with means for alternately actuating said slide and said lifting plate.

3. A machine of the character described comprising a receiving tank, a measuring tank, a valve for controlling the liquid passing from said receiving tank to said measuring tank, a valve controlling the outlet of said measuring tank, levers for independently operating said valves, a slide connected with the levers of the first mentioned valve, a lifting plate connected with the levers of the other valve, and a single member provided with means for alternately actuating said slide and said lifting plate, and means for preventing reverse movement of said plate while the valve of the receiving tank is opened.

4. A machine of the character described comprising a receiving tank, an outlet valve therefor, a measuring tank, an outlet valve for said measuring tank, a lifting plate for operating said measuring tank valve, a single operating member for alternately actuating said receiving tank valve and said lifting plate, and means for seating said receiving tank valve independently of the movement of said operating member.

5. A machine of the character described comprising a receiving tank, an outlet valve therefor, a measuring tank, an outlet valve for said measuring tank, a lifting plate for operating said measuring tank valve, a member for operating said receiving tank valve and provided with a finger adapted to raise said lifting plate.

6. A machine of the character described comprising a receiving tank, an outlet valve therefor, a measuring tank, an outlet valve for said measuring tank, a slide for operating said receiving tank valve, a lifting member for operating the measuring tank valve, and an oscillating member provided with means for operating said slide when moved in one direction and for operating said lifting plate when moved in the opposite direction.

7. A machine of the character described comprising a receiving tank, an outlet valve therefor, a measuring tank, an outlet valve for said measuring tank, a slide for operating said receiving tank valve, a lifting member for operating the measuring tank valve, and an oscillating member provided with means for operating said slide when moved in one direction and for operating said lifting plate when moved in the opposite direction, and means for returning said slide to its normal position independently of the movement of said oscillating member.

8. A machine of the character described comprising a receiving tank, an outlet valve therefor, a measuring tank, an outlet valve for said measuring tank, a single operating member for both valves, and means for closing said receiving tank valve independently of the movement of said operating member, a ratchet member operatively connected with said operating member, a pawl for engaging said ratchet, a cam for disengaging said pawl, a dog for catching said pawl when disengaged, and means for disengaging said dog from said pawl.

9. A machine of the character described comprising a receiving tank, an outlet valve therefor, a measuring tank, an outlet valve for said measuring tank, a single operating member for both valves, an operating shaft for said operating member, a plate secured to said shaft and having a ratchet portion and a cam portion, a pawl for engaging said ratchet, said cam being so located as to periodically lift said pawl, a dog for catching said pawl when lifted, and means for disengaging said dog and pawl.

10. A machine of the character described comprising a receiving tank, an outlet valve therefor, a measuring tank, an outlet valve for said measuring tank, a slide for operating the receiving tank valve, a single oper-

ating member for moving said slide in one direction and alternately operating said measuring tank valve, and means for returning said slide independently of the movement of said operating member, a pawl and ratchet mechanism for preventing reverse movement of said operating member while in engagement with said slide, means for rendering said pawl and ratchet mechanism inoperative when said operating member and slide are out of engagement, whereby said operating member may return to its normal position, and means for rendering said pawl and ratchet mechanism operative when the return movement of the operating member is completed.

11. The combination with a casing having a bottle holding chamber, a rest located therein for receiving a bottle in an inverted position and having a supply conduit communicating with the interior of the bottle, a receiving tank connected with the delivery end of said conduit, a valve controlling the said conduit, a valve controlling the outlet from said receiving tank, an oscillating member for operating said receiving tank valve, means for seating said receiving tank valve independently of the operation of said operating member, and means for automatically opening and closing the conduit valve as the receiving tank valve is opened and closed.

12. The combination with a casing having a bottle holding chamber, a rest located therein for receiving a bottle in an inverted position and having a supply conduit communicating with the interior of the bottle, a receiving tank connected with the delivery end of said conduit, a valve controlling the said conduit, a valve controlling the outlet from said receiving tank, an oscillating member for operating said receiving tank valve, means for seating said receiving tank valve independently of the operation of said operating member, and a float controlling the operation of said conduit valve.

13. The combination with a casing having a bottle holding chamber, a rest located therein for receiving a bottle in an inverted position and having a supply conduit communicating with the interior of the bottle, a receiving tank connected with the delivery end of said conduit, a valve controlling the said conduit, a valve controlling the outlet from said receiving tank, a measuring tank, an outlet valve therefor, an oscillating member for operating said receiving tank valve and said measuring tank valve, means for closing the receiving tank valve independently of the movement of said operating member, and means for automatically operating said conduit valve in time with said receiving tank valve.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES H. CURTIS.

Witnesses:
BYRON W. WHEELER,
ALMON L. MINER.