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L. T. LEET

LIQUID VENDING MACHINE

Filed Oct. 11, 1924

2 Sheets-Sheet 1

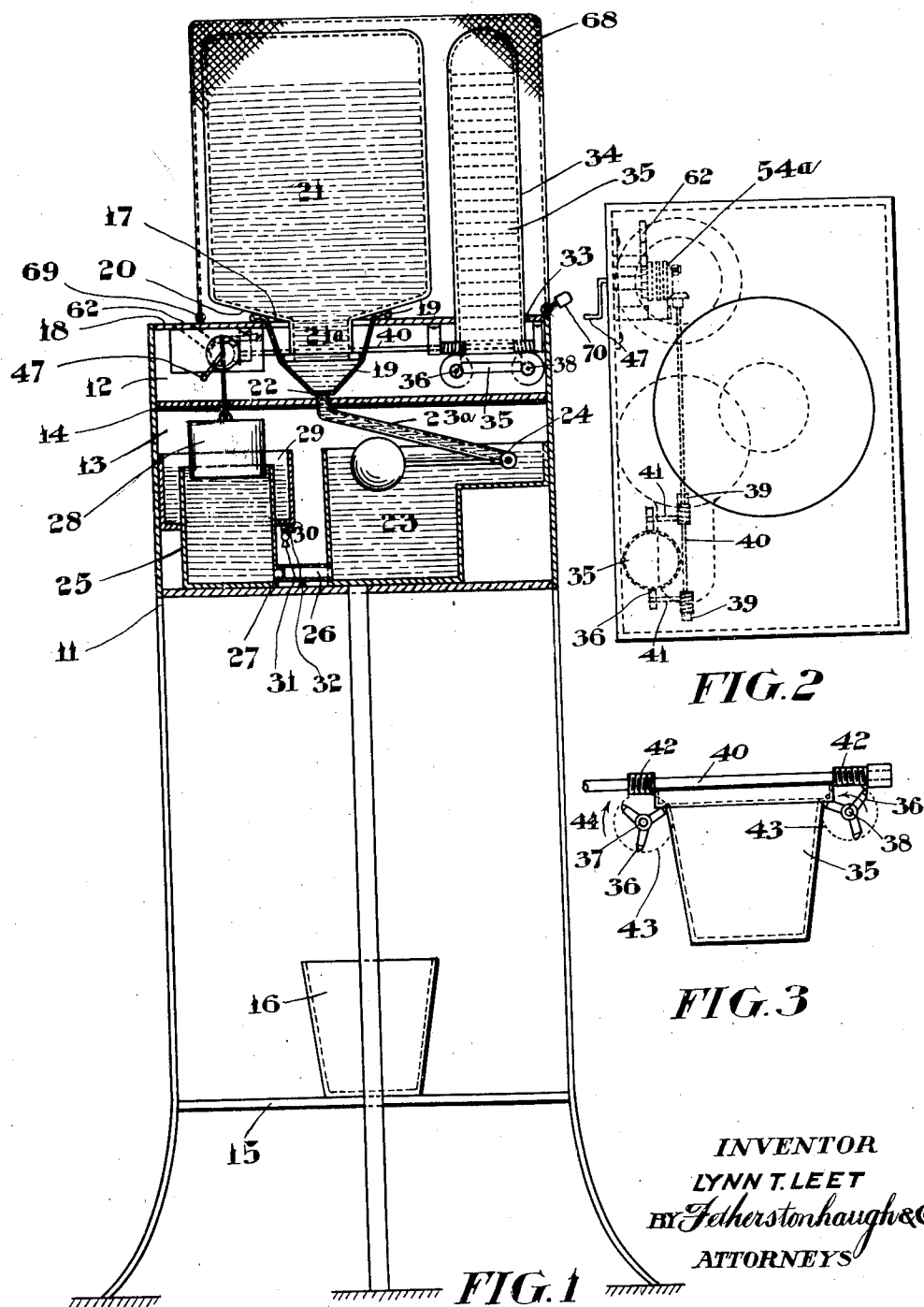


FIG. 2

FIG. 3

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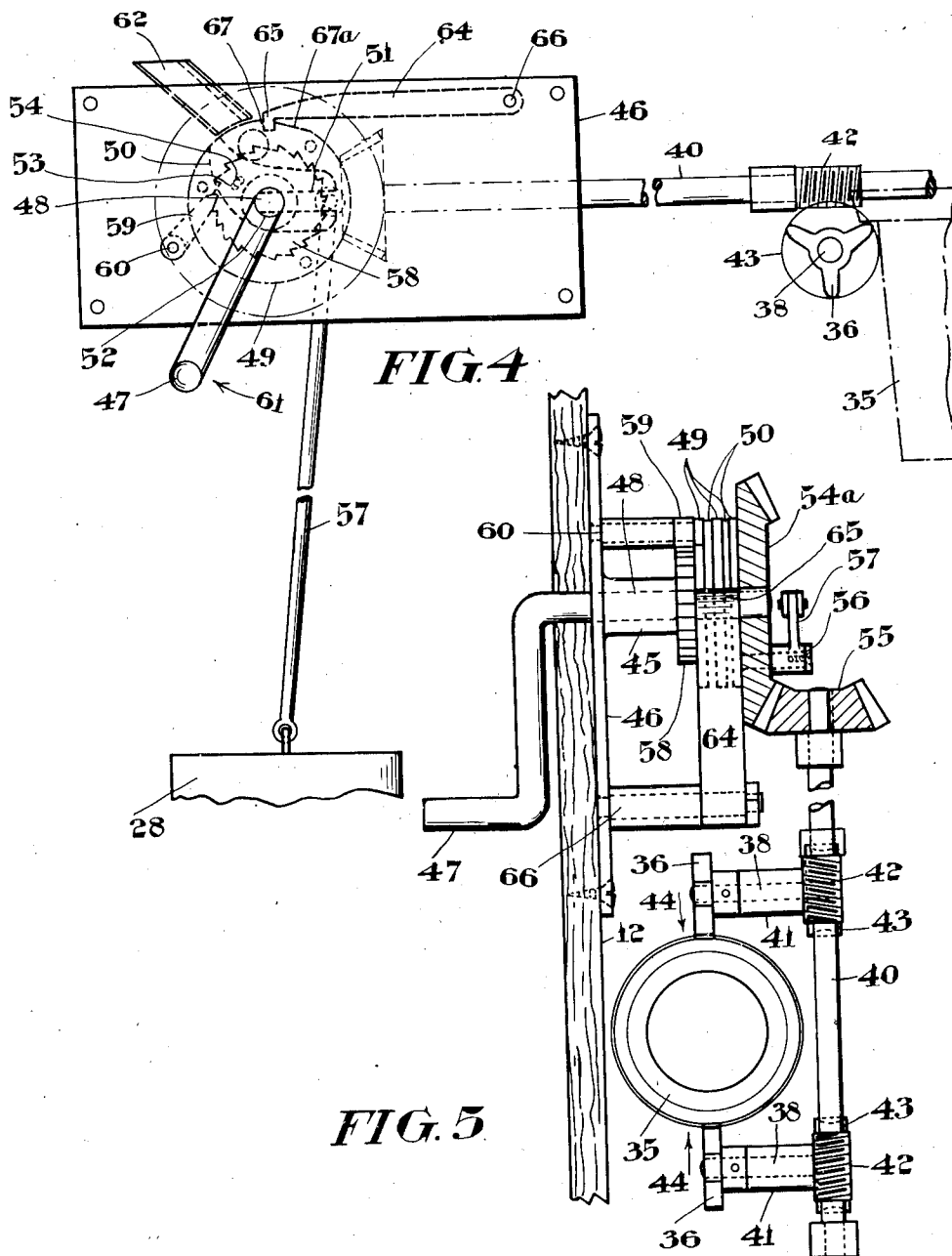
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UNITED STATES PATENT OFFICE.

LYNN T. LEET, OF MONTREAL, QUEBEC, CANADA.

LIQUID-VENDING MACHINE.

Application filed October 11, 1924. Serial No. 742,078.

This invention relates to new and useful improvements in liquid vending machines, and the object of the invention is to provide a vending machine of the class stated which will allow the operator to dispense a predetermined quantity of liquid and also provide himself with a fresh drinking container upon the insertion of a metal coin or disc of a certain value, said coin being adapted to release the locking mechanism of the machine and allow free working of the same.

Another object is to provide a simple, positively operated mechanism in which all the locking features are operated by gravity.

In my invention, I provide a stand upon which are mounted a liquid container and a cup reservoir. The open end of the container rests in a conical shaped holder, which is connected in such a manner that the liquid flows into a cooling chamber, means being provided to regulate the amount of liquid contained therein. Connected to the cooling chamber is the measuring chamber; within which is mounted a vertically operated plunger which displaces a predetermined quantity of liquid, which flows into a dispensing chamber, from which it can be drawn by the operator through a suitable valve. Means are also provided for supplying a cup for holding the liquid. The operation of the plunger and the cup supplying means are controlled from a common source which is operated by the rotation of a handle, upon which are mounted coin controlled mechanisms for releasing positively operated pawls, which are adapted to lock the mechanism against motion.

In the drawings:—

Figure 1 is a side elevation of my improved liquid vending machine, parts of said elevation being shown in section for illustrative purposes.

Figure 2 is a plan view of the device.

Figure 3 is an enlarged sectional view taken on the line 3—3 Figure 2.

Figure 4 is an enlarged elevation of the coin controlled mechanism shown in detail.

Figure 5 is an enlarged detail plan of the operating mechanism shown partly in section.

Referring more particularly to the drawings, 11 designates a stand, the upper portion of which is divided into two chambers 12 and 13 by means of an insulated partition 14. The legs of the stand are held

from independent movement by means of a shelf 15, upon which may be mounted a conically shaped receiver 16 for refuse, such as discarded drinking cups. The chamber 12 is adapted to contain the coin controlled operating mechanism and the lower chamber 13 is provided for the liquid displacing and cooling apparatus. Mounted in an aperture 17 formed in the cover 18 is the conically shaped support 19, the upper edge of which is adapted to engage with the shoulder 20 of the liquid supplying means 21 which in this case is shown as an inverted bottle, the neck 21^a of which is adapted to project into the support 19. The lower end of the support 19 is provided with an aperture 22 into which a pipe 23^a is inserted. The pipe passes through the insulating partition and is so positioned and formed that liquid passing through the pipe is fed into a cooling chamber 23 mounted in the compartment 13. The end of the pipe 23^a is provided with a ball float or such like valve 24. Also mounted in the chamber 13 is the measuring chamber 25 which is connected at its lowermost edge to the cooling chamber by means of the connecting tube 26. A ball valve 27 is mounted in the connecting tube to regulate the flow of liquid from the cooling chamber into the measuring chamber. The ball float valve also controls the level of the liquid in the measuring chamber and the ball valve 27 prevents liquid from returning to the cooling chamber. The plunger 28 is slidably mounted in the measuring chamber and is adapted to displace a predetermined quantity of liquid which flows over the top of the measuring chamber into the dispensing chamber 29 surrounding and positioned near the top of said measuring chamber. A draining tube 30 is attached to the bottom of the dispensing chamber and is adapted to pass through the wall of the compartment 13. The end 31 of the draining tube is provided with any of the standard spring operated hand controlled valves 32 which may be manipulated by the operator or buyer. The united areas of the tanks or chambers in the lower compartment 13 is smaller than the area of said compartment so that a quantity of ice may be placed therein for cooling during hot weather. Also mounted above an aperture 33 formed in the cover 18 is the cup protecting tube 34 surrounding the cups 35, the edges of which are supported on the

teeth 36 of sprocket wheels 37 secured to spindles 38 rotatably mounted in bearings 39 secured to the underside of the cover and in the compartment 12. Motion is transmitted to the spindles 38 by means of the worm shaft 40 which is rotatably mounted in bearings 41. The worm portions 42 engage with the worm wheels 43 secured to one end of each of the spindles in such a manner that on rotation of the shaft 40 the spindles 38 will revolve in the direction indicated by the arrows 44.

Rotatably mounted in the bearing 45 formed in the plate 46 secured to the front of the compartment 12 is the handle 47 which is the source of power for operating the cup delivery and measuring plunger. Loosely mounted on the spindle 48 made integral with the handle are the discs 49 between which are mounted the coin receiving pawls 50, one end of each of which is slotted and designated 51, the sides of the slots being adapted to engage with reduced portions 52 of the spindle 48, said reduced portions comprising flat surfaces formed in the spindle and adapted to transmit motion to the pawl 50 on rotation of the spindle. Apertures 53 are formed in the discs and are adapted to receive a pin or pins 54 securely fixed to the pawls 50. The apertures 53 are made slightly larger in diameter than the pins, so as to allow free movement of the handle to permit the coin to fall freely into place. Secured to the inner disc is the bevel wheel 54^a adapted to engage with the bevel pinion 55 secured to the worm shaft 40. Secured to the bevel wheel and adapted to rotate therewith is the pin 56, which is adapted to transmit motion to the measuring plunger through the medium of the link 57. Secured to the outer disc is the ratchet toothed wheel 58, the teeth of which are adapted to engage with the pawl 59 mounted on the pin 60 secured to the plate 46. The ratchet wheel and pawl mechanism are provided to prevent movement of the handle in the opposite direction to that shown by the arrow 61, which indicates the direction the handle must be moved to operate the device. Coin chutes 62 are provided and in the drawings two different sizes are shown, to suit the different sizes of coins of the same value which may be used. This is particularly directed to such coins as the five cent coins in Canada, the smaller coin being made of silver and the larger coin of nickel silver. The position of the coin receiving pawl is such that when the coin is inserted in the chute it falls between the discs in such a manner that its outer edge is flush with the outer edge of the discs, and adapted to engage with a locking pawl 64, one end of which is provided to engage with a slot or slots 67 cut in the disc, while the other end of the pawl is ro-

tatably mounted on a pin 66 secured to the plate 46. Reduced portions 67^a are formed in the rim of the disc to facilitate the engagement of the pawl projecting portions with the slot 67. Modifications may be made in the construction of the device without departing from the spirit of the invention. The operation of the device is very simple and is as follows: A coin or metal disc is placed in the coin chute and is guided into engagement with the coin receiving pawl in such a manner that the slightly free movement of the handle will allow enough movement to unlock the locking pawl from engagement with the discs. This allows the handle to be rotated in the direction of the arrow. The pawl which is secured to the handle spindle and to the discs carries the discs with it, one of which is provided with a ratchet wheel engaging with a pawl, to prevent rotation of the handle in the reverse direction to that shown by the arrow. Secured to the inner disc is the bevel wheel which transmits motion to the cup delivering device by rotating the sprocket wheels, the teeth of which engage with the edges of the cups. The ratio between the movement of the handle and the sprocket wheels is such that for one complete revolution of the handle the sprocket wheels make one-third of a revolution, in the example shown, so that only one cup may be delivered at a time. This is for illustrative purposes only and may be modified. The rotation of the bevel wheels also sets in motion the measuring plunger through the medium of the pin and link connection. The plunger displaces a predetermined quantity of liquid which flows into the dispensing chamber from which it can be withdrawn through the discharge pipe into the cup held under the discharge valve by the operator. It will be seen that the pawls for locking the device and for preventing movement of the handle in the reverse direction fall into their engaging position by gravity and no springs or the like are required in any part of the machine, all the moving parts of which are positively operated and of robust construction. The coin falls clear of the pawl into the bottom of the compartment 12 during the rotation of the operating handle. The level of liquid in the measuring chamber is controlled by a ball float valve positioned in the cooling chamber which is directly connected to the measuring chamber. A guard 68 may be placed over the bottle and the cup cover and may be attached by means of eye-bolts 69 through which padlocks or the like locking means 70 may be placed.

Having thus described my invention, what I claim is:—

1. A liquid vending machine comprising a liquid feed chamber, a liquid measuring chamber connected to the feed chamber, a

plunger adapted to displace the liquid from the measuring chamber, a dispensing chamber surrounding the measuring chamber and adapted to receive the displaced liquid, and means to control the discharge from the dispensing chamber.

2. A liquid vending machine comprising a liquid feed chamber, a liquid measuring and cooling chamber connected to the feed chamber, a plunger adapted to displace the liquid contained in the measuring chamber, a dispensing chamber surrounding the measuring chamber and adapted to receive the displaced liquid, means for controlling the discharge from the dispensing chamber, and means to automatically control the level of the liquid in the cooling and measuring chamber.

3. A liquid vending machine comprising a liquid feed chamber, a cooling chamber, means to control and regulate the flow of liquid from the feed chamber to the cooling chamber, a measuring chamber, means connecting the measuring chamber with the cooling chamber, means to prevent return of the liquid from the measuring chamber to the cooling chamber, a plunger slidably mounted in the measuring chamber and adapted to displace the liquid in the measuring chamber, a dispensing chamber adapted to receive the displaced liquid, and means to control the discharge of liquid from the last mentioned chamber.

4. A liquid vending machine comprising a liquid feed chamber, a measuring chamber in communication with said feed chamber, said measuring chamber being open at the top, a dispensing chamber comprising a vertical wall structure surrounding the upper part of the measuring chamber in spaced re-

lation thereto and a horizontal wall portion connecting said vertical wall portion to the measuring chamber at a point below the top of the latter and forming the bottom wall of the dispensing chamber, a displacement member movable within the measuring chamber and serving during downward movement to cause an overflow from the top of the measuring chamber into the dispensing chamber, means for controlling the level of liquid in both the feed chamber and the measuring chamber and means for controlling discharge of liquid from the dispensing chamber.

5. A liquid dispensing machine comprising a chamber open at the top, a dispensing chamber presenting a vertical wall structure surrounding the upper part of the measuring chamber in spaced relation thereto and a horizontal bottom wall portion extending between the lower edge of the vertical wall structure and the measuring chamber and located below the top of the latter, means for maintaining a predetermined quantity of liquid in said measuring chamber, a displacement piston movable vertically in the measuring chamber and adapted during downward movement thereof to cause an overflow from the top of the measuring chamber into the surrounding dispensing chamber, a horizontal shaft rotatably supported above the measuring chamber, a wheel fixed to said shaft, a pin carried by said wheel and a link having one end connected to said pin and the other end connected to said piston.

In witness whereof, I have hereunto set my hand.

LYNN T. LEET.