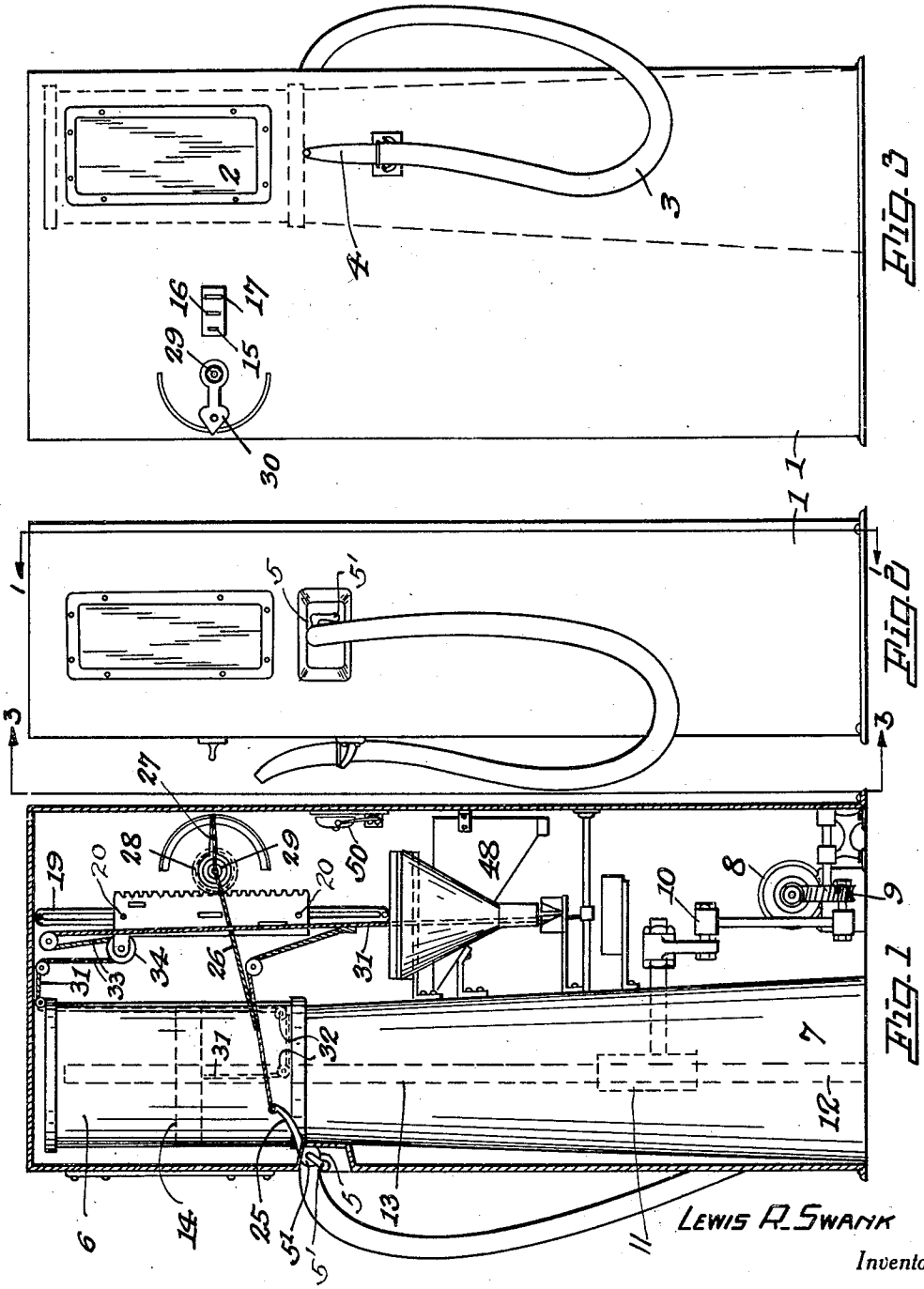
Nov. 17, 1931. L. R. SWANK 1,832,264

VENDING MACHINE

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VENDING MACHINE

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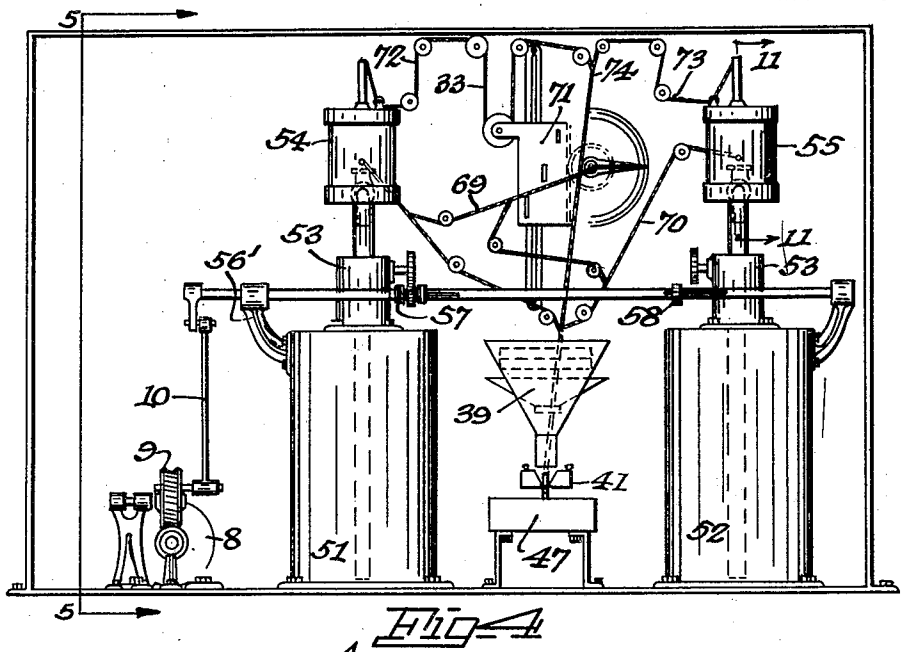


Fig. 4

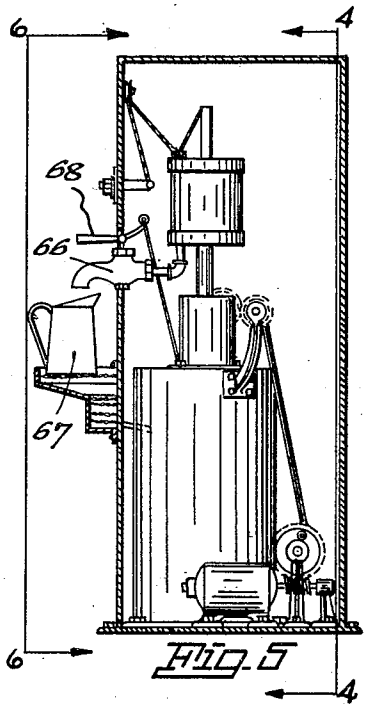


Fig. 5

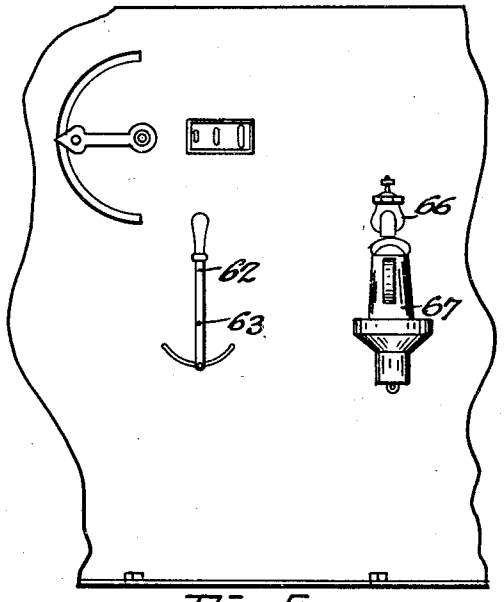


Fig. 6

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VENDING MACHINE

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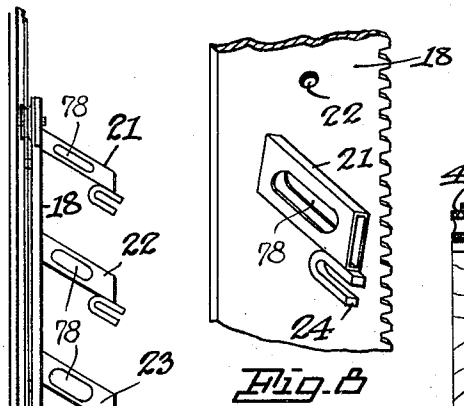


Fig. 8

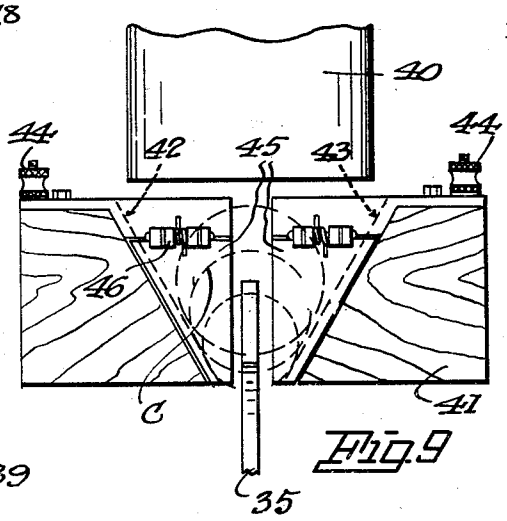


Fig. 9

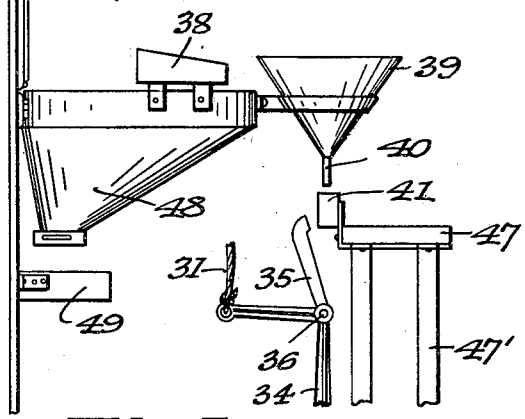


Fig. 7

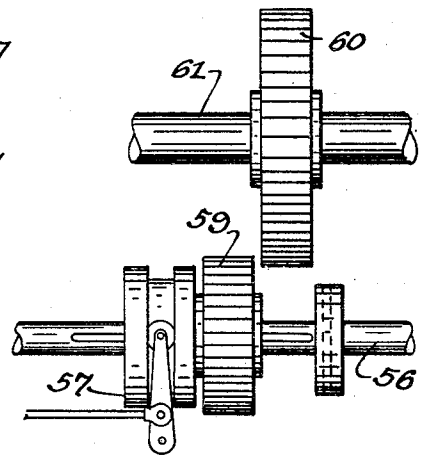


Fig. 10

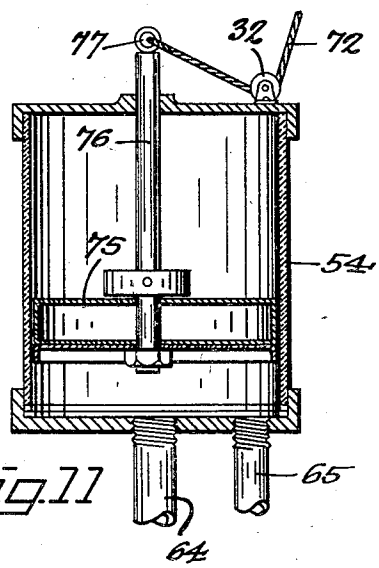


Fig. 11

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Patented Nov. 17, 1931 1,832,264

UNITED STATES PATENT OFFICE

LEWIS R. SWANK, OF LEWISTON, IDAHO

VENDING MACHINE

Application filed December 7, 1929. Serial No. 412,448.

My present invention relates to improvements in vending machines of the coin controlled type, and especially adapted for pumping and vending liquids, as for instance, gasoline, and oils, at an automobile service station or other place. In carrying out my invention the coin is used as a circuit maker for completing an electric circuit and operating an electric pump which fills, to a predetermined quantity, the vending or dispensing tank, and float controlled means in the liquid tank are used for actuating an ejector for the coin to break the motor circuit at the proper time or when the predetermined quantity has been pumped to the tank.

Provision is made for selected use of various coins of different denominations, such as a quarter dollar, a half dollar, and a dollar, and means are provided for closing the coin slots, and for moving or carrying the coin chutes to register therewith, according to the denomination of the coin used.

With the different denominations of coins used the pump is operated to supply a different quantity of the liquid to be dispensed or vended, and in a modified form of the invention duplex vending machines are operated to deliver different grades of liquid, as for instance lubricating oils for an automotive vehicle.

A manually controlled locking device is utilized for locking or latching the vending machine which device is under control of the manually operated discharge-valve of the vending tank, and other features are provided for facilitating the purchase of a predetermined quantity of gasoline or of oil and for accurately measuring the quantity to be vended.

My invention consists in certain novel combinations and arrangements of parts for accomplishing the results above noted as will hereinafter be more fully set forth and claimed. In the accompanying drawings I have illustrated one complete example of the physical embodiment of my invention wherein the parts are combined and arranged according to the best mode I have so far devised for the practical application of the principles of my invention. Changes and alterations, as for instance, in the modified form of my invention, may be made within the scope of my claims without departing from the principles of my invention.

Figure 1 is a view of the operating mechanism in elevation (with the casing in section as at line 1—1 of Figure 2) showing the gasoline tank partly filled with fifty cents worth of gasoline, and the discharge valve ready to be opened for discharging the purchased gasoline.

Figure 2 is a view in elevation at the discharge side of the machine with the hose hung and Figure 3 is a front view of the machine showing the coin slots, and an indicator scale and indicator for the amount or quantity purchased, as at line 3—3 of Figure 2.

Figure 4 is a detail view of the casing with its back wall omitted, as at line 4—4 of Figure 5, disclosing a modified form of the invention utilizing a duplex vending machine for two grades of oil, and Figure 5 is a view in side elevation of one of the duplex machines, the casing being cut through at line 5—5 of Figure 4. Figure 6 is a view showing the parts at the front of the machine, as at line 6—6 of Figure 5.

Figure 7 is an enlarged view in side elevation showing the carrier and its movable coin chutes, together with the coin controlled circuit maker, and the ejector for breaking the circuit, of the electric motor that operates the gasoline pump.

Figure 8 is a fragmental, detail perspective view of the chute carrier and one of the chutes.

Figure 9 is an enlarged front view of the coin controlled circuit maker for the motor circuit, showing by dotted lines three different sizes of coins, and showing also part of the coin ejector whereby the circuit is broken.

Figure 10 is a detail view of one of the shiftable clutches and gearing of the duplex vending machine for oil.

Figure 11 is an enlarged detail sectional view of one of the oil tanks with its float therein, as at line 11—11 of Figure 4.

I preferably equip the vending machine with a closure or casing 1 of suitable size and shape for the purpose, and provided with a

window as 2 in order that the interior parts may be viewed by the purchaser if desired. The usual hose 3 and nozzle 4 are provided, the hose being attached to a valve casing 5 having the valve stem or handle 5′ that is manually operated and accessible for use from the exterior of the casing. The valve casing is directly connected with the cylindrical gasoline tank 6 which is supported on its base or hollow pedestal 7 within the casing.

The casing is of course closed against intrusion, and it houses an electric motor 8 having driving gearing 9 and transmission mechanism 10 to operate the gasoline pump 11, which pump is connected to a gasoline reservoir by the gasoline supply pipe 12 that leads to the pump within the hollow base 7.

The discharge pipe 13 from the pump leads directly to the bottom of the gasoline tank, and the hose is used as the discharge pipe from the tank, under control of the discharge valve 5.

Within the gasoline tank is located a hollow, buoyant float 14, preferably in the form of a flat cylinder, that is lifted by pressure of gasoline from beneath, when the pump is operating, and which falls by gravity to the bottom of the tank as the purchased quantity of gasoline is dispensed from the tank.

In Figure 3 provision is made for deposit of three different denominations of coins, slot 15 for a quarter-dollar, 16, for a half-dollar, and 17, for a dollar in order that different quantities of gasoline may be purchased and vended from the machine. These deposit-slots or coin slots are closed at the inner side of the casing by a vertically reciprocable plate 18 forming a chute-carrier with an edge rack, and the carrier is slidable in guide grooves 19 in which the guide pins 20 of the carrier move. The pins project laterally from the carrier and the grooved guides 19 are retained in proper position to guide the carrier so that it may be elevated to cause coin chutes 21, 22, and 23, to register, respectively with coin slots 15, 16 and 17. These coin chutes are attached at the inner side of the chute carrier, and they decline from the carrier in order that the coin may roll down through its chute to and through the lower open end of the chute.

As a fraud preventing device, each chute is provided at its discharge end with a permanent or horseshoe magnet 24 that stops or retards the movement of the spurious coins and prevents them from reaching operative parts of the machine.

Each chute is also constructed with one side partially open as 78 and is placed a little to one side of a vertical line so that, should the coin be undersized, it will drop out of the chute through this opening, and fall into the spurious coin hopper 48.

The coin carrier is latched in inoperative position by closing valve 5, as indicated by its position in Figure 1. A crank arm 25 is connected to and moves with the valve handle 5′, and a release cable 26 which is connected to the crank arm, is also connected to a latch 27 that engages a rack wheel 28 on the shaft 29, the rack wheel being engaged with the toothed edge of the chute-carrier. The shaft 29 is journaled in suitable bearings at the inner side of the casing and one end of the shaft projects through the casing to receive an indicator needle 30 that points to the value of the coin on a scale at the outer side of the casing. In Figure 3 the pointer indicates that 50¢ worth of gasoline has been pumped into the tank of Figure 1 and will be discharged through the hose when the valve 5 is opened.

The chute-carrier is raised or lowered by the movement of the hand 30, by the purchaser, after he has opened valve 5, which unlocks the chute-carrier. Valve 5 is then closed and the coin inserted. This operates the pump motor and pump, whence the float 14 rises, the height of which is governed by the position of the chute-carrier, since pulley 34 acts as a slack take-up, and once its position is established, it does not move again during the complete operation. Float 14 rises and, being attached to a cable 31 at the underside of the float, which extends down to the bottom of the tank and around guide pulleys 32 that are located in various positions to guide the cable. After passing out through the top of the tank, the cable is formed in a hanging loop, 33 which passes under the pulley 34, that is journaled in bearings at the upper end of the chute-carrier, and it will be apparent that as the cable passes under and over the stationary guide pulleys 32, the height of the float is governed by the adjusted position of the pulley 34 attached to the chute-carrier.

After passing over the last guide pulley in Figure 1 the cable 31 extends down below the chute carrier to a coin ejector in the form of a bell crank lever 35 (Figure 7) that is pivoted at 36 on a suitable support or bracket 37, and is operated to break the motor circuit, and render inoperative the motor that operates the gasoline pump.

In Figure 7 is will be seen that when the coin rolls down through its chute and out through its open end the coin will fall or strike on an anvil 38 which is formed of marble or other suitable material, fashioned with a declining upper surface, and placed in the path of movement of the coin so that the latter will strike the anvil and bounce therefrom to fall into a coin hopper 39 in front of the anvil. The coin hopper has a guide chute 40, and as the coin freely falls into the funnel shaped hopper it is finally guided through the chute 40 in position to enter the circuit maker for the motor.

In Figure 9 where several different coins are designated C and shown by dotted lines, it will be understood that the coins fall singly from the hopper 40 to the circuit maker. The circuit maker includes a pair of blocks 41, or a divided block, between which are supported two fixed conductor plates 42 and 43 with terminal posts 44 for the wires of the motor circuit. At the discharge side of these fixed plates are arranged two doors 45, suspended by spring hinges 46 from overhead projections from the fixed plates 42 and 43; said doors forming guide plates to hold the coins in upright position with their edges resting on the plates 42 and 43, thus making electrical contact between them. For convenience of illustration the free end or head of the ejector 35 is shown in Figure 7 as spaced a slight distance from the circuit maker, but it will be understood that the head may project toward or into the circuit maker a sufficient distance as to prevent accidental displacement of the coin after it falls into the circuit maker. As the coin ejector 35 pushes on the coin from the opposite side, the hinged doors are pushed open, whence the coin drops to the coin receiving box 47 below. The coins remain in contact with the plates 42 and 43 until the float 14 reaches its predetermined height, whence the tension on cable 31 pulls up on the lever of ejector 35, which displaces the coin on the plates 42 and 43, whence, the contact being broken, the motor and pump stop.

The ejected coin falls into a receptacle 47 that is supported in stationary position on brackets or legs 47′, and as seen in Figure 7 the block 41 of the circuit maker is also supported on this receptacle beneath the guide chute 40 for the coin.

If a spurious coin, of magnetic metal, is deposited in a chute, the magnet 24 stops the coin in its movement toward the anvil, and the spurious coin drops into a receptacle 48. Below the receptacle 48 is a second circuit maker 49 that is closed in the presence of the spurious coin and this circuit maker closes a signal circuit to ring a bell as 50 in Figure 1.

After the required quantity of gasoline has been pumped to the tank 6, the circuit broken and the motor and pump stopped, the purchased gasoline is allowed to flow into the hose when the valve handle 5′ is turned to open the valve, and the hose may be used in suitable manner to empty the gasoline into a tank in the customary way.

After the tank has been emptied the valve should be left open. In this position the rack wheel 28 is unlatched, and the indicator hand is free to be set at the desired position. When this setting is made the valve must be closed before inserting a coin. In closing the valve it allows the coin ejector to fall back to position and at the same time locks the rack wheel 28.

Opening the discharge valve unlatches the rack wheel and at the same time pulls up the coin ejector, thereby preventing gas from being drawn during the operation of the pump. While the gasoline is flowing from the tank, the float is descending and continues until the purchased quantity is discharged.

In the modified form of the invention shown in Figures 4, 5, 6, 10 and 11, a duplex arrangement of vending machines is used for vending two different grades of oil from the oil reservoirs 51 and 52 enclosed within the cabinet 1.

Each of the oil reservoirs is equipped with a pump 53 located on top of the reservoir, and above the pumps are disposed the oil tanks 54 and 55. The pumps 53 are selectively operated to lift the desired quantity of oil from either reservoir 51 or 52 depending on the grade of oil desired. The motor 8, gearing 9 and transmission mechanism 10 are designed to revolve a clutch shaft 56 that extends across in front of the machines and is journaled in suitable bearings on brackets 56′. Two clutches 57 and 58 are slidable on the clutch shaft, and each clutch is provided with a driving pinion 59 to mesh with a pump gear 60 on the pump shaft 61.

In Figure 6 a clutch-shifting lever 62 is pivoted at 63, exterior of the casing, and this lever is shifted for the purpose of engaging a selected clutch device for starting the desired pump 53.

The pump lifts the oil from the reservoir through an inlet pipe 64 to the bottom of the oil tank, and the oil flows out at the bottom of the tank through the discharge pipe 65 to a faucet 66 exterior of the casing, and into a waiting oil can 67. The faucet is provided with an operating handle 68, each handle having a cable 69 and 70, either one of which will release the latch for the chute carrier 71 when the machine is manipulated as described for the gasoline vending machine.

The coins are also deposited in the same manner as described for the gasoline vending machine, and close the circuit at 41, but the ejector is operated through branch cables 72 and 73 and main cable 74 from the top of the float, instead of from the bottom as in the vending machine for gasoline. In Figure 11 it will be seen that the float 75 is provided with a stem 76 projecting upwardly from its top and passing through an opening at the top of the oil tank. The branch cable 72 is connected at 77 to the stem, and the guide pulleys 32 are arranged to conform to this change in the movement of the cable so that the loop performs the same function as is the case with the chute carrier 18 in Figure 1.

A plurality of chutes and coin slots are used for the vending of different quantities

of oil, and the closing and opening of the motor circuit is accomplished in the same manner as in the gasoline vending machine.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a vending machine for liquids, the combination with a coin-controlled circuit maker for a motor circuit comprising a pair of spaced conductor plates, having hinged guide plates supported thereon, of an ejector adapted to reciprocate between the guide plates, and float controlled means for operating the ejector to remove a coin from the circuit maker.

2. In a vending machine for liquids, the combination with a coin-controlled circuit maker for a motor circuit comprising a pair of spaced conductor plates having hinged, converging guide plates to receive a coin, of a pivoted coin-ejector adapted to reciprocate between the plates, a float, and a cable connecting the float and ejector.

3. In a vending machine for liquids having a plurality of coin-slots, the combination with a float, of a vertically movable carrier and height regulating connections between the float and carrier, a plurality of coin chutes mounted on the carrier and opening therethrough, and a coin controlled circuit maker adapted to receive a coin from the chute.

4. In a vending machine having a plurality of coin slots, the combination of a coin controlled circuit maker, a vertically movable carrier and operating means therefor, a plurality of spaced chutes mounted on the carrier for co-action with the slots, grooved guides for the carrier, guide pins on the carrier, a float, and height regulating connections between the float and carrier.

In testimony whereof, I affix my signature.

LEWIS R. SWANK.