

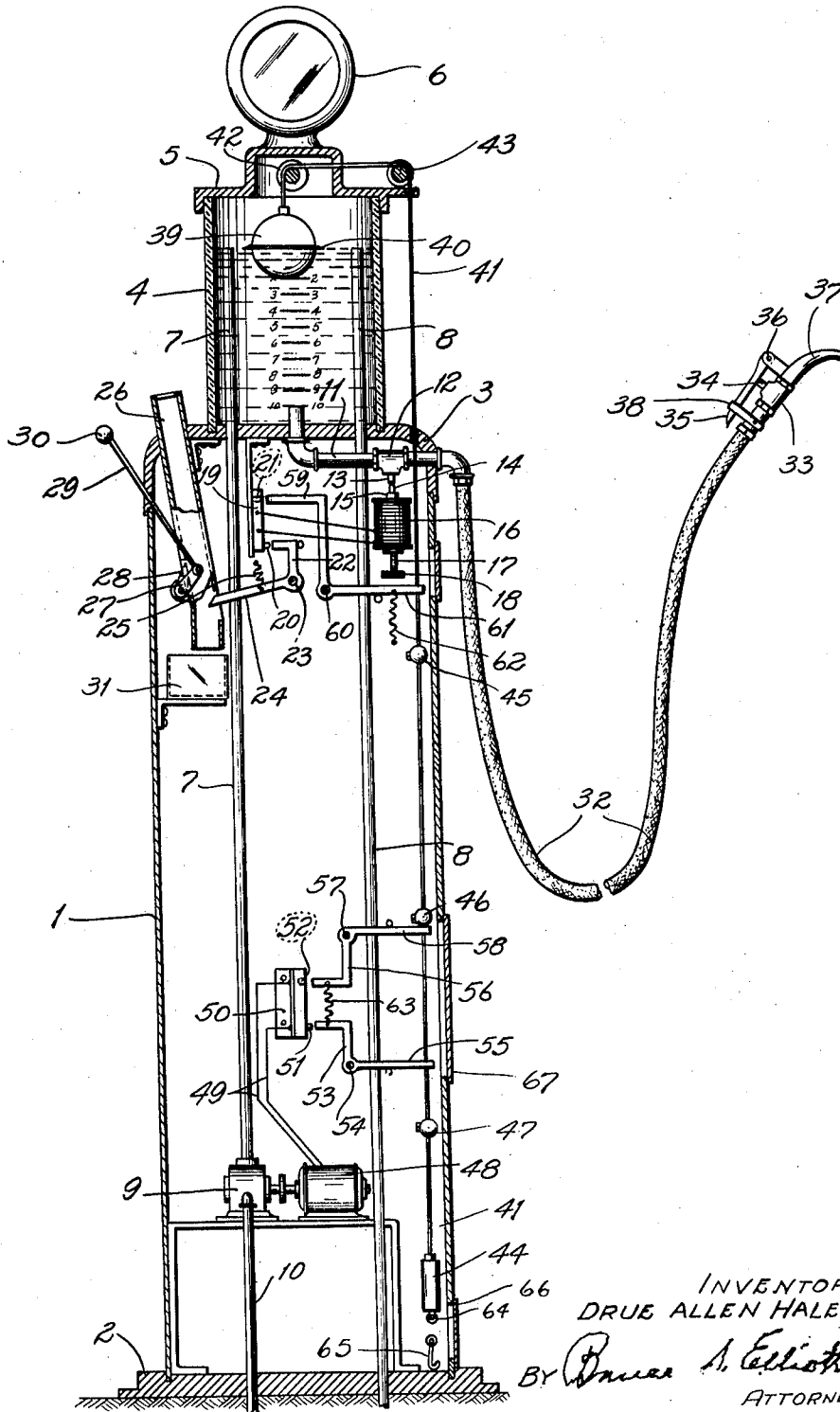
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COIN OPERATED LIQUID DISPENSING APPARATUS

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COIN-OPERATED LIQUID-DISPENSING APPARATUS

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This invention relates to certain new and useful improvements in liquid dispensing machines, and is particularly directed to providing an improved self-service, visible, measuring, vending machine for delivering a given quantity of gasoline upon the insertion of a coin.

The general object of the invention is to provide improved means for automatically shutting off the flow of gasoline when a predetermined amount has been delivered and simultaneously closing the circuit to the motor which operates a pump to replenish the supply tank.

Another object of the invention is to provide improved means for automatically breaking the circuit to the motor and thereby stopping the flow of gasoline to the supply tank when the requisite amount of gasoline has been delivered to the latter.

Another object of the invention is to provide a pump for gasoline filling stations which may either be used as a self-service pump, operable on the insertion of a coin, or which may be manipulated by an attendant in the ordinary way.

A detail object of the invention is to provide a motor for operating the pump to furnish gasoline to the supply tank with switch controlling members, which switch-controlling members are automatically operated when the machine is used as a coin-operated liquid vending machine, and which may be manually operated when the coin-operated feature is not used.

A further detail object of the invention is the provision of a valve on the delivery pipe in conjunction with means for maintaining the same constantly open when the machine is used as a coin-operated pump, or for opening the valve at will when the machine is used as an ordinary service pump.

Other objects of the invention relate to details of construction and to combinations and operations of parts, all of which will be more clearly understood from the detailed description to follow.

The above objects are attained by the mechanism illustrated in the accompanying

drawing, which shows a preferred embodiment of the invention.

In said drawing, the view is a vertical sectional view of an entire service pump constructed according to my invention.

Referring now to the drawing, the numeral 1 indicates a sheet steel jacket mounted at its lower end on a base 2 and supporting at its upper end a casting 3. The jacket 1 constitutes the main casing of the machine and encloses most of the operating mechanism. Mounted on the casting 3 is a glass liquid container 4 which is closed at its top by a casting 5 on which is usually mounted a glass globe or other similar device 6, which may contain the name of the gasoline being sold or any other advertising matter. The glass container or supply tank 4 is provided with numbered graduations in the usual way, so that an observer may see the amount of gasoline being delivered to him as the level thereof lowers in said container. This container houses the upper ends of a supply pipe 7 and an overflow pipe 8. The supply pipe 7 leads to a pump 9 which, in operation, draws in gasoline through a pipe 10 leading from the main source of supply and forces it up through said pipe 7 into the tank or container 4. If more than the desired amount of gasoline is pumped into the tank 4, it overflows through the pipe 8 and passes back to the main tank, so that a given quantity of gasoline, say ten gallons, is always maintained in the supply tank 4. Communicating through the casting 3 with the bottom of the supply tank 4 is a pipe 11 having therein a valve 12 provided on its lower side with a valve stem 13. The valve stem 13 is adapted to be raised by a plunger 14 mounted in the core 15 of a solenoid 16, when the latter is energized. The plunger 14 is screwthreaded in the core, as indicated at 17, and has at its lower end a milled head 18 by turning which the stem 13 may be raised to open valve 12 and maintain it in the open position. This is done when the machine is being used as an ordinary service pump. When the device is being used as a coin-operated vending machine, the plunger 14 is turned down-

ward to permit the valve stem 13 to fall and close valve 12, and as the solenoid 16 is energized, the core 15 and plunger 14 rise and lift valve stem 13 to open valve 12. The solenoid 16 is adapted to be energized and de-energized through the medium of a push button switch 19 having a circuit-making button 20 and a circuit-breaking button 21. The circuit-making button 20 is adapted to be actuated by a bell crank lever 22 pivoted at 23 and having an arm 24 normally held upward by a spring 25 and projecting into the slot of a coin tube 26, constituting part of the coin-operated apparatus. This part of the apparatus is shown somewhat conventionally, as, per se, it does not constitute part of the invention.

Mounted on the coin tube 26 is a bell crank lever 27 having an arm 28 which lies flush with the wall of the tube at one side thereof. Secured on the outer end of the bell crank lever 27 is a rod 29 having a knob 30 on its outer end which is adapted to be depressed to cause the coin to operate the switch mechanism. Thus, a coin being inserted in the tube 26, falls therein and rests upon the outer end of the arm 24. When the knob 30 is pressed inward, the bell crank lever 27 is turned downward, causing its arm 28 to engage the upper side of the coin and force the lever arm 24 downward, thereby turning the bell crank lever 22 into engagement with the push button 20 and forcing it inward. At this time, the coin passes by the arm 24 and falls into a suitable receptacle 31. When the push button 20 is pushed in as just described, the circuit is closed to the solenoid 16, the latter is energized, causing the core 15 and plunger 14 to rise and lift the valve stem 13 and open valve 12. This will permit the gasoline to flow through pipe 11. Secured to the pipe 11 is a flexible service pipe 32 provided on its outer end with a valve 33 having a valve stem 34 which is normally pressed inward to maintain the valve 33 open through the medium of an arm 35 pivotally mounted at 36 on a nozzle 37 and held in a position to hold the valve stem 34 pressed inward through the medium of a clip 38 engaging its outer end.

Prior to operating the machine as above described, the customer will place the nozzle 37 in the opening of the tank on his automobile, and having inserted a coin and operated the switch in the manner described, the amount of gasoline which will be delivered for the price represented by the coin will flow into his tank. Usually, the coin used will be a fifty-cent piece and the amount of gasoline to be delivered for fifty cents will be regulated, by the means hereinafter described, according as the price of gasoline changes from time to time. Assuming, for example, three gallons to have been delivered upon in-

section of the coin, if the buyer wishes more, he simply inserts another coin in the tube and the above operation is repeated. As the gasoline flows out of the container 4, a float 39, preferably provided with an indicating ring 40, descends therein, and by observing its descent past the graduations on the container, the customer can see the amount of gasoline being delivered to him. I will now describe the means for automatically stopping the discharge of gasoline and refilling the container 4.

Secured to the upper side of the float 39 is a cord 41 which passes over a pulley 42 on the inside of the casting 5 and a pulley 43 on the outside of said casting. Said cord then passes through an opening in the casting 3 and down into the main casing 1 and is provided at its lower end with a balancing weight 44. Adjustably mounted on the cord 41 at suitable intervals are stops 45, 46, and 47. The pump 9 is operated by an electric motor 48 from which lead wires 49 to a push button switch 50. This switch has a circuit-making button 51 and a circuit-breaking button 52. The circuit-making button is designed to be actuated by a bell crank lever 53 pivoted at 54 and having an arm 55, the outer end of which is bifurcated to embrace the cord 41. The circuit-breaking button 52 is designed to be actuated by a bell crank lever 56 pivotally mounted at 57 and having an arm 58 bifurcated at its outer end to embrace the cord 41. The circuit-breaking button 21, previously referred to, is adapted to be actuated by a bell crank lever 59 pivotally mounted at 60 and having an arm 61 bifurcated at its outer end to embrace the cord 41 and being normally held out of contact with the button 21 by a spring 62. In like manner, the bell crank levers 53 and 56 are held out of contact with the push buttons 51 and 52 by means of a coil spring 63 common to the two bell crank levers.

Assuming now the device to have been actuated in the manner previously described to deliver the gasoline in the container 4, as the indicator on the float reaches the graduation showing the amount of gasoline purchased, the stop 45 will engage the outer end of the arm 61 and turn the bell crank lever into engagement with push button 21 which operates to break the circuit to the solenoid 16, permitting the core 15, plunger 14 and valve stem 13 to fall, the latter operating to close valve 12 and prevent further flow of gasoline through pipes 11 and 32. Simultaneously with the closing of valve 12, the stop 47 will engage the outer end of arm 55 and turn the bell crank 53 into engagement with push button 51, which closes the circuit to the motor 48. The pump 9 is now placed in operation and a fresh supply of gasoline is delivered to the container 4, the float 39 rising, and as the indicator 40 thereon reaches the

level of the overflow pipe 8, the stop 46 will engage the arm 58 and turn the bell crank lever 56 into engagement with the push button 52 which operates to break the circuit to the motor and stop the supply of gasoline to the container.

Ordinarily, the machine will be used as a coin-operated vending apparatus during the night in order to dispense with the service of an attendant and yet accommodate tourists or others who may be out late at night and desire to replenish their gasoline supply. During the day time, the pump will be operated as an ordinary service pump.

In order to prevent the automatic operation of the device when it is used in the ordinary manner, I employ any means for preventing the operation of the float. This may be conveniently done by putting an eyelet 64 on the bottom of the balancing weight 44 and providing a hook 65 at the bottom of the casing to engage in said eyelet so as to prevent the fall of the float 39. A door 66 is provided at the bottom of the casing for this purpose. I also provide a door 67 giving access to the arms 55 and 58 of the bell crank levers 53 and 56. To operate the pump, the attendant simply opens the door 67 and raises the arm 55 to actuate the push button 51. When the container 4 is full, he then actuates the arm 58 to close push button 52 and stop the action of the motor. In using the pump as an ordinary service pump, the clip 38 will be removed from the arm 35 so that the valve 33 will normally be closed. The attendant places the nozzle 37 in the opening of the tank on the car and presses down on the arm 35 to open valve 33 in the usual manner.

It remains only to explain that the stops 45, 46 and 47 can be adjusted in position on the cord 41 to vary the amount of gasoline delivered according as the price of gasoline may rise or fall.

It will be understood that the particular mechanism I have shown is intended to be illustrative and not restrictive of the invention. The particular mechanism shown is the best form of the invention now known to me, but it is obvious that changes can be made in the particular actuating mechanisms shown without departing from the spirit of the invention as defined in the claims.

I claim:

1. In a coin-operated liquid vending machine, in combination with a liquid container, a delivery pipe for the liquid having a self-closing valve, a solenoid having a core adapted to open said valve when the solenoid is energized, a push button switch controlling the circuit to said solenoid and having an "on" and an "off" button, means actuated by the coin-operated mechanism for pushing in said "on" button to close the circuit to the solenoid and thereby open said valve, a float in said container, and means actuated in the

fall of said float to a predetermined level to push in said "off" button and thereby open the circuit to said solenoid and permit said valve to close.

2. In a coin-operated liquid vending machine, in combination with a liquid container, a delivery pipe for the liquid having a self-closing valve, a solenoid having a core adapted to open said valve when the solenoid is energized, a push button switch having an "on" and an "off" button, and controlling the circuit to said solenoid, a lever associated with said "on" button for actuating the same and caused to function by the coin-operated apparatus, a second lever associated with the "off" button, a float in said container, a cord connected thereto, and a stop on said cord for actuating said second lever when the float has fallen to a predetermined level to push in the "off" button of said switch and thereby open the circuit to the solenoid and permit said valve to close.

3. In a coin-operated liquid vending machine, in combination with a liquid container, a delivery pipe for the liquid having a self-closing valve, a solenoid having a core adapted to open said valve when the solenoid is energized, a push button switch controlling the circuit to said solenoid and having an "on" and an "off" button, a pump for delivering liquid to said container, an electric motor for driving said pump, a push button switch controlling the circuit to said motor and having an "on" and an "off" button, a pair of levers associated with each of said switches for operating the respective buttons thereof, a float in said container, an actuating cord connected to said float, coin-operated apparatus associated with one of the levers of the first named switch for actuating said lever to close the circuit to said solenoid, a stop on said cord adapted to engage the second of said levers when the float has fallen to a predetermined level to open the circuit to said solenoid and permit said valve to close, a second stop on said cord for simultaneously engaging one of said levers on the motor switch to close the circuit to said motor and cause a fresh supply of liquid to be pumped into said container, and a third stop on said cord adapted to engage the second lever of said motor switch to break the circuit to the motor when the float has risen to a predetermined level in said container.

4. In a coin-operated liquid vending machine, in combination with a liquid container, a delivery pipe for the liquid having a self-closing valve, a solenoid operating when energized to open said valve, means controlled by the coin-operated apparatus for energizing said solenoid, a float in said container, means actuated in the descent of said float to a given level to break the circuit to said solenoid and permit the valve to close, and a plurality of means for converting said machine into an

ordinary service pump, comprising a screw
for raising and holding the core of a solenoid
in a position to maintain said valve open,
means for preventing the actuation of the
float operated mechanism, and a manually
operated valve provided on the end of said
supply pipe.

In testimony whereof, I have hereunto set
my hand.

DRUE ALLEN HALEY.

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