AUTOMATIC FLUID DISPENSING APPARATUS WITH MANUAL OVERRIDE

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ABSTRACT
An apparatus for dispensing a predetermined volume of fluid under pressure with provision for modifying the dispensing time of the fluid to compensate for changes in the pressure on the fluid. Further provision is made to selectively dispense one of a plurality of predetermined liquid volumes, and to record the number of dispensing cycles made of each said predetermined liquid volume.

10 Claims, 11 Drawing Figures
AUTOMATIC FLUID DISPENSING APPARATUS WITH MANUAL OVERRIDE

BACKGROUND OF THE INVENTION

The present invention relates generally to the automatic dispensing of predetermined volumes of fluid under pressure, and more particularly, to the dispensing of liquids, namely beverages, and it is the general object of the invention to provide an improved and altogether satisfactory dispensing system of the character of that disclosed in U.S. Pat. No. 3,107,075 to S. G. Isserstedt.

In the Isserstedt patent, there is disclosed a dispensing system for beverage which dispenses a predetermined volume of the beverage during each successive pour cycle. The system further provides for modifying the time of the pour cycle to ensure that the predetermined volume of beverage will be poured during any particular pour cycle irrespective of variations in the pressure on the beer. This patent still further discloses the actuation of counters during each pour cycle whereby the proprietor of the establishment serving the beer is able to determine precisely how many glasses were served during any particular period of time.

While the apparatus of the Isserstedt patent has utility for the purpose heretofore mentioned, the particular structure, both mechanical and electronic, disclosed therein has been found to be highly inefficient in actual operation and may actually be prohibited by health codes. The actuation of the Isserstedt device is accomplished by the rim of the glass contacting a switch underlying the faucet when the glass is raised up to the faucet for pouring. The insertion of a glass in this manner, so as to make contact with the switch on the faucet and thus activate the timing cycle, is considered unsatisfactory and thus undesirable from both the point of view of the beverage industry and local health authorities.

The Isserstedt device utilizes air pressure to open the faucet valve during the pour cycle, and accordingly, an air compressor or tanks of compressed air are required to be present at the installation of an Isserstedt device. This requirement is considered undesirable from several aspects since many beverage dispensing facilities require the use of CO₂ gas as a means of keeping the beverage fresh and at the right degree of carbonation. Thus, both bottled CO₂ gas and a source of air pressure, either bottled or compressor, must be present. It is highly unlikely that the Isserstedt device could operate under CO₂ gas since the temperature of CO₂ gas could result in the freezing of the valve mechanism thus causing the faucet to become inoperative. In addition, in the case of a slightly defective seal, the CO₂ gas could enter the faucet spout and over carbonate the beverage being served. Furthermore, air pressure cannot be used to dispense beer which eliminates the CO₂ requirement since the use of air pressure to dispense beer would cause the beer to become flat tasting and stale. Also, air pressure used in beer results in additional bacteria being formed which is highly undesirable from a health standpoint and does not allow the beer to be stored after being opened or tapped. This could result in a large waste of beer if not all of a tapped or open keg was dispensed in one business day.

Still another undesirable feature of the Isserstedt device is that during the automatic operation of the dispenser, the faucet is locked in an ON position and manual operation of the faucet can only be accomplished when the handle is unlocked. Accordingly, in the event of a failure of Isserstedt's timing circuit or faucet mechanism, it is very possible that large amounts of beverage would be wasted since the valve could not be readily turned off under these conditions.

SUMMARY OF THE INVENTION

Accordingly, it is a principal aim of the present invention to provide an improved beverage dispensing system capable of precisely dispensing predetermined volumes of beverage. A collateral object of the invention is to provide a beverage dispensing system for automatically dispensing predetermined volumes of beverage with a manual override so that the system can continue to be used in the event of a mechanical or electrical failure or be manually deactivated at any time during the timing cycle.

Still another object of the invention is to provide an apparatus of the type referred to which accurately modifies the time of the dispensing cycle in order to insure that the predetermined volume of beverage will always be dispensed during said cycle irrespective of variations in pressure on the beverage.

Another important aspect of the present invention is to provide an apparatus of the type referred to which can be manually deactivated at any time during the pour cycle in the event of a mechanical or electrical failure thus preventing the waste of beverage or a flooded condition or if it is desired to dispense a lesser volume of beverage than that predetermined by the timer.

A further object of the invention is to provide a highly efficient photoelectric pressure transducer for use with the instant invention.

Still another aim of the invention is to provide an improved electronic timing circuit for use with the instant invention which is capable of controlling dispensing periods of a plurality of durations and yet which can be readily assembled in modular form for installation and servicing operations.

Another important advantage of the instant invention is the provision of automatically dispensing a plurality of predetermined volumes of beverage, said predetermined volumes being readily selected, and a permanent record being automatically maintained of the number of dispensing cycles of each predetermined volume.

BRIEF DESCRIPTION OF THE DRAWING

Other objects and advantages of the invention will appear from the following description taken in conjunction with the accompanying drawings in which:

FIG. 1 is an overall pictorial view of a beverage dispensing system embodying the features of the present invention;

FIG. 2 is a fragmentary perspective view of the dispensing head of the present invention taken in a non-dispensing mode;

FIG. 3 is a fragmentary sectional view taken substantially along line 3-3 of FIG. 2;

FIG. 4 is a view taken substantially along line 4-4 of FIG. 3;

FIG. 5 is a side view of a faucet valve being maintained in its dispensing mode by the dispensing head of the present invention;

FIG. 6 is a side view of the faucet and its associated apparatus in a non-dispensing mode;

FIG. 7 is a fragmentary view of the pressure transducer of the present invention;

FIG. 8 is a perspective view of the physical arrangement of the control circuitry of the present invention;

FIG. 9 shows a circuit board comprising the timer circuitry of the present invention;

FIG. 10 is a schematic diagram of the timer circuitry of the present invention; and

FIG. 11 is a schematic diagram of the power supply for the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIG. 1, an overall view of an exemplary beverage dispenser system of the present invention is illustrated. Beverage container 10 is depicted as a keg for beer and is shown connected to a tank 15, here shown as containing CO₂ gas. Flexible hose 17 connects tank 15 with container 10. A pressure gauge 19 and a manually operable valve 21 are
provided between tank 15 and hose 17. In this manner, it is possible to determine the pressure existing in tank 15; and in the event of problems, it is possible to turn off the pressure flow from the tank 15.

To insure a proper amount of beverage flow, flexible hose 17 is connected to connector tee 23 which is connected to the transducer unit 15. Electrical leads 27, 29 and 31 connect the transducer unit to the electronic control circuitry indicated generally at 35. The electronic control circuitry 35 is preferably installed in the office of the manager of the establishment. In this location, it will be most advantageous in ascertaining the use rate of the beverages and determining the inventory requirements. Furthermore, this facilitates an accurate accounting of the beverage business conducted by the establishment.

In use, the beverage in container 10 passes through hose 39 to beverage faucet actuating apparatus 42 and is dispensed from faucet 82. Handle 44 is utilized to operate the faucet 82 and dispense the beverage from the faucet actuating apparatus 42. A cover 46 is shown which encloses the mechanical parts within the beverage dispenser. Shown in dotted lines are micro-switch 48 which is connected to the electronic control circuitry 35 through leads 50 and 52, and solenoid 54 which is connected to the electronic circuitry 35 through leads 56 and 58. Also shown is micro-switch 60 which is connected to the electronic circuitry 35 through leads 62 and 64. The operation of these micro-switches and solenoids will be explained below.

In keeping with the objects of the instant invention, additional dispensers may be added as shown at 70 and 72 for obtaining additional capacity for dispensing beverages. As will be hereinafter explained, this can be accomplished without the necessity of installing additional cabinets and chassis for the control circuitry 35 of providing a plurality of power supplies to the same.

THE FAUCET ACTUATING APPARATUS

In accordance with one of the important aspects of the present invention, provision is made for activating a conventional fluid dispensing faucet for a period of time required to dispense a predetermined volume of fluid. This is accomplished by installing of faucet actuating apparatus 42 (FIG. 4) on faucet 82, a conventional type of manually actuated faucet which is operatively connected to a fluid container 10 (FIG. 1) by hose 39 which is connected to the rear of faucet 82 at the threaded portion 80.

In order to install the faucet actuating apparatus 42, it is positioned over the faucet 82, as best depicted in FIG. 4, and is secured thereto by means of straps 84. To the bonnet 110 of the faucet is removed when the faucet actuating apparatus 42 is positioned on the faucet and thereafter replaced to further secure the faucet to the base 86 of the faucet actuating apparatus.

To prevent access to the faucet actuating apparatus 42 by unauthorized personnel, the faucet actuating apparatus is provided with a cover 46 which may be locked by a key or special fastening device thus preventing beverage from being dispensed through the faucet without being accounted for and assuring accurate measurement of the number of beverage dispensing cycles that have occurred.

In order for the faucet actuating apparatus 42 to open the faucet 82, it is necessary that the faucet valve stem 98 be moved in a forward direction as illustrated in FIG. 5. The movement of the valve stem is accomplished by providing an aperture 95 in the top of bridge member 96 which is placed over the valve stem sleeve 100 and secured to the base 86 in a manner allowing the pivoting of the bridge member about pin 97. The bridge member 96 is biased by bridge return spring 102 to a normal upright position wherein the faucet is closed. In a conventional faucet arrangement, handle 44 would be connected directly to the valve stem 98 or would be connected to the bridge member 96 to operate the valve stem. However, in the faucet actuating apparatus 42 of the present invention, the handle 44 is pivotally connected at the yoke portion 45 to the base 86 by pins 112 and 114 so as to allow for the controlled operation of the valve stem 98 and the bridge member 96.

To control the operation of the bridge member 96, a finger latch 94 is provided which is attached to actuator 106 by pin 116. As can be best seen in FIG. 3, finger latch 94 has a notch 94-A on its upper surface and is stepped at its bottom surface at 94-B. Accordingly, when actuator 106 is in a rearward position, bridge member 96 will overlie the notch 94-A of finger latch 94 thereby properly locating finger latch 94 so that it will engage bridge member 96 upon being raised.

In order to raise finger latch 94 so as to engage bridge member 96, a lifting linkage 92 is provided having a U-shaped notch 92-A. The lifting linkage 92 is mounted on shaft 90 of rotary solenoid 54. The rotary solenoid 54 is mounted directly to an upright member of the base 86. Nut 90-A secures the lifting linkage 92 to the shaft 90 of rotary solenoid 54. Solenoid 54 is controllable by the electronic circuitry in a manner which will be hereinafter explained. It will also be readily apparent to one skilled in the art that any one of a number of motion actuating devices well known in the art such as linear solenoids, hydraulic and fluid responsive cylinders without departing from the spirit and scope of the instant invention.

To energize the solenoid 54, the electronic circuitry 35, shown in FIG. 1, is triggered by the closing of micro-switch 48. Switch 48 is closed when actuator 106 is moved forward thereby causing spring member 104 to release the plunger of micro-switch 48 thereby closing it. As depicted in FIG. 3, the energization of solenoid 54 rotates the lifting linkage 92 which is on the shaft of solenoid 54. Finger latch 94 is positioned within the U-shaped notch 92-A of lifting linkage 92. When actuator 106 has been moved forward by the action of handle 44 through common pin 114 and switch 48 has been closed to trigger the electronic circuitry to energize solenoid 54, finger latch 94 is moved also forward, such that when lifting linkage 92 is rotated, its U-shaped notch 92-A engages the stepped portion 94-B of the finger latch 94. This effects the engagement of notch 94-A with the bridge member 96.

When it is desired to dispense beverage, the handle 44 is moved completely forward, as depicted in FIG. 5. This moves actuator 106 forward which, in turn, moves finger latch 94 forward. The notch 94-A of finger latch 94 then engages bridge member 96, which causes the forward movement of valve stem 98 thereby opening the faucet 82 and allowing the flow of beverage therethrough.

In keeping with another important advantage of the invention, it is necessary to be able to immediately shut off the faucet when the desired amount of beverage has been dispensed. This improved electronic timing circuit 35 controls the dispensing time; and at the expiration of said time, terminates the beverage flow from the faucet. The solenoid 54 is energized by the electronic circuitry thereby rotating of lifting linkage 92 in a direction opposite to that herebefore described. This action downwardly rotates finger latch 94. When finger latch 94 has been rotated downward, its notch 94-A no longer engages bridge member 96. Thus, bridge return spring 102 forcibly returns the bridge member to its upright position, as shown in FIG. 6, thereby stopping the flow of the beverage. As can be readily seen, this operation occurs irrespective of the position of the handle 44 which originally causes the faucet to be turned on.

A further important feature of the instant invention is to be able to operate the faucet manually in the event of electronic equipment failure. To accomplish this, provision is made for the finger latch 94 to be maintained in an upright position irrespective of the energization of the solenoid 54. To this end, lifting linkage 92 has an L-shaped bracket 118 affixed thereto which has an aperture 119 therethrough, as shown in FIG. 3. Furthermore, base 86 has a recess 120 therein. To utilize the faucet manually, fail safe pin 122, having spring 124 therein, is positioned in aperture 119 and recess 120. This maintains the lifting linkage 92 in an upright position which effectuates
the engagement of notch 94-A with bridge 96. Spring 124 is provided on the fail safe pin 124 to render the lifting linkage under continuous tension. Thus, when handle 44 is moved forward to open the valve, the rotation of pin 114 causes the forward movement of actuator 106, which is connected to finger latch 94 through pin 116, and thereby causes the finger latch to be moved forward also, which moves the bridge member 96 forward to move the control stem 98 to open the faucet.

In the event of electrical or mechanical equipment failure, if it is still desired to use the faucet manually, the cover 46 normally is secured by a locking arrangement and can be removed only by an authorized employee and the fail safe member 122 can only be inserted by the proprietor when he has removed the dispenser cover 46.

The normal automatic operation of the faucet actuating apparatus is utilized when a glass of beverage is desired to be poured. Movement of the handle 44 forward closes switch 48 which triggers the timing control circuitry to maintain solenoid 54 energized for a predetermined period of time, corresponding to that time required to fill a glass. However, it may be desired to pour greater amounts of beverage than would normally flow into a glass, as, for example, into a pitcher. For this reason, micro-switch 60 is provided and is actuated by switch stem 126. Thus, in order to be able to obtain a greater quantity of beverage than that required for a standard glass, the operator pushes member 126 down to close switch 60. This sets the electronic control circuitry, as will be described below, so as to allow the solenoid 54 to remain energized for a longer predetermined period of time. Subsequent to the closing of switch 60, the operator need only manipulate the handle 44, as heretofore described.

In order to dispense an additional increased quantity of beverage, such as for a pitcher, it is necessary for switch 60 to again be closed by rod 126. After the larger quantity of beverage has been dispensed, the electronic circuitry resets to the predetermined time wherein a smaller quantity of fluid corresponding to a standard glass will be dispensed if the circuit is again energized.

During the time that the beverage is being dispensed, the operator may control the flow of beverage manually by pushing the handle 44 back to its resting position. This action moves the finger latch 94 back which allows the bridge return spring 102 to pull the bridge member 96 to an upright position and thus causes the valve stem 98 to move to a closed position. This feature is of particular importance since it can prevent the use of beverage or flooding the surrounding area should an equipment malfunction occur or a glass or pitcher become upset or broken during filing or, in addition, permit the dispensing of a lesser quantity of beverage than that predetermined by said timing circuitry.

After the operator has obtained the desired quantity of beverage, if it is required that another glass or pitcher be obtained, the handle 44 must be returned to its normal position, wherein actuator 106 rests against spring member 104, which causes the opening of switch 48, which, in turn, causes the timing circuit to be de-energized. Thereafter, when the handle 44 is moved forward, the timing circuit is energized causing the energization of the solenoid 54 and the timing circuit is reactivated.

In the event that the operator attempts to move the handle forward in the expectation of obtaining beverage flow through the faucet when the electronic timing circuit has been turned OFF, it is illustrated in FIG. 6 that the finger latch 94 is not in an upright position as would be caused by the rotation of lifting linkage 92, and therefore, finger latch 94 is not in a position to engage bridge member 96 and thereby cause the movement of valve stem 98 and the opening of the faucet.

From the above discussion, it will be readily apparent to those skilled in the art that the faucet actuating apparatus of the instant invention also permits the manual dispensing of any quantity of fluid less than the predetermined quantity controlled by the timing circuitry by merely manually returning the valve to closed position when this desired less than predetermined quantity is dispensed.

THE TRANSDUCER

Referring now to FIG. 7, an improved pressure transducer 25, finding use with present invention, is depicted. It is important for the transducer to accurately convert the available pressure to a signal to be conveyed to the electronic circuitry in order that the proper amount of beverage be allowed to flow from the faucet irrespective of the amount of pressure available. The pressure transducer is placed in the line between the source of gas pressure and the beverage container.

As the pressure in the container decreases, the pressure transducer 25 responds to this drop in pressure and sends a signal to the electronic circuitry, so that the time the solenoid 54 of the beverage dispenser 42 is energized will be increased so that the proper amount of beverage will be dispensed through faucet 82.

To provide that the transducer be responsive to the output of the pressure source, the connector tee 23, illustrated in FIG. 1, is connected to pressure intake means 120 of the transducer 25. The entrance of pressure causes the movement of the pressure diaphragm 122 upward forcing the pinion rod 124 to rotate on a stabilizing pin 126, which is attached to the base plate 128 of the pressure transducer. The movement of the stabilizing pin 126 causes cam 130 to also be moved. Cam 130 is precut to allow the passage of varying amounts of light depending upon its position, as will now be explained. By providing cam 130 rotating on an elongated stabilizing pin 126, it will be readily apparent to those skilled in the art that a relatively longer movement of the cam between the light source 134 and the light dependent resistor 132 permits a greater latitude of response and smoother transition thereof than would be available from prior art devices having a direct linear shutter movement such as for example, U.S. Pat. No. 3,159,750 to E. I. Kazaan.

In order to produce a varying electrical output from the transducer depending on the change in gas pressure, the cam 130 interrupts the passage of light from light source 134 to light dependent resistor 132. For this reason, it is important that the transducer housing be light tight. The light source 132, which may be a conventional light bulb, is inserted into a light cavity of a directional lightblock on the base plate (not shown). The light dependent resistor 132, which may also be a photo-resistive cell, varies its resistance with the amount of light that is received. The output from the cell 132 is connected to a resistor 136 and then to the electronic circuitry in a manner which will be set forth below. The operating level of light source 134 is set by a potentiometer 140 which sets the operating point to maintain the desired light level. A cam control spring 142 is connected to the base plate 128 and the cam arm 130-A so as to stabilize the movement of the cam arm 130-A.

Of primary importance, is the compensated pressure range that the pressure transducer will be operable over. If, for example, it is desired that 8 ounces of beverage be poured from the faucet, the pressure transducer will operate through a pressure range from 10 to 60 pounds per square inch and properly signal the electronic circuitry so that there is no deviation from the predetermined beverage quantity setting. This feature applies to any fluid under pressure including the pressure acting on a fluid by virtue of its relative height with respect to the dispensing faucet or outlet.

THE ELECTRONIC CIRCUITY

In keeping with another important aim of the invention, a compact, accessible enclosure for the electronic circuitry is provided. A rearward view of the electronic circuit housing 35 is illustrated in FIG. 8 with the cover removed. On the front panel 150, are mounted a plurality of counters, 152 and 154. One column of counters represents one faucet actuating apparatus 42. The upper counter 152 is used to indicate the amount of one quantity of beverage that has been dispensed through the faucet. The lower counter 154 is utilized to indicate the amount of another quantity of beverage that has been dispensed through the faucet. If it is desired that a plu-
rality of dispensers are to be utilized, then the front panel 150 has provisions for adding additional counters. An upper counter and a lower counter correspond to the different quantity amounts of beverage, drawn for glasses and pitchers, that have been poured from one dispenser unit. It is contemplated that one counter can also be utilized to indicate the total amount of beverage that has been dispensed through the faucet.

Also mounted on the front panel is a switch 156 which turns on the regulated power supply, the timing circuitry and a pilot light 158 to show that power is ON. Furthermore, a fuse 160 is shown, which finds use in the instant circuitry. Mounted on the base 126 of the electronic circuitry housing 35 is a transformer 164 utilized for the power supply, and a circuit board 166 containing the power supply components. Also on the base are a plurality of circuit board connectors 168 which have connector pins 170 mounted therein and which are adapted to receive circuit boards 172.

If it is desired to add additional dispenser units, it is only required to install additional counters 152 and 154, as previously discussed, and insert the appropriate timing circuit board 172 into the circuit board connector 168 mounted on the circuit housing 25. The power supply is suitable to handle a plurality of timing circuit boards, capacitance, such as the four depicted in the exemplary device illustrated in FIG. 8.

In the event of service problems encountered with the timing circuit, it is a simple expedient to merely remove the circuit board with the malfunctioning timing circuit from the circuit board connector and replace it with a new circuit board in order to restore operation to the system. Mounted on one side of the circuit board, which is of a standard construction, are a plurality of electrical components, for example, transistors 174, capacitors 176, resistors 178, diodes 180 and relay 182. The circuit board 172 has conductor foil on both sides of the board and makes contact with circuit board connector pins 170 on both sides of the board.

The preferable power supply that is used with the present invention is energized by a source of voltage, preferably 110 volts, which is introduced to transformer 164, as shown in FIG. 10, through fuse 160 and switch 156, which are mounted on the front panel 150 of the electronic circuitry housing 35. The voltage passes through transformer 164 and results in a lower voltage at the secondary, preferably in the range of 14 volts. This lower voltage is rectified to a DC voltage by diodes 202 and 204, which are connected in a full-wave rectifier arrangement. This voltage is then filtered at capacitor 206 and is then regulated. The DC voltage appearing at capacitor 206 turns transistors 208 ON. Transistor 208 then turns transistor 210 ON for biasing.

After series regulator control transistor 212 is turned ON, a voltage appears at the base 216 of control transistor 218 by means of voltage divider resistors 220 and 222. Current flow through transistor 218 is regulated by zener diode 224 which breaks down at a predetermined voltage point thereby limiting the amount of current flow through transistor 218 and adding to the stability of the voltage regulator.

In order to regulate the DC output voltage from the power supply, transistor 218 is used as a reference amplifier. When the voltage at the output drops due to an increase in load current requirements, transistor 218 conducts less thereby allowing transistor 208 to conduct more which, in turn, allows regulator transistor 212 to conduct more thus increasing the output voltage to its proper level. In the event that output voltage becomes too high, reference amplifier transistor 218 conducts more; and thereby, transistors 208 and 212 conduct less thus decreasing the output voltage to its proper level.

To protect against transients across the output XX¹ and provide stability to the voltage regulator, capacitor 226 is provided. Capacitor 228 is utilized to provide additional filtering at the output XX¹.

In accordance with another important aspect of this invention, an improved electronic timer is utilized, as illustrated in FIG. 11. Voltage is provided at terminals XX² from the output of the power supply. As previously discussed, this voltage is a regulated DC voltage which insures the stability of operation of the timer circuit.

In order to energize the timer, the handle 44 is moved from its resting position forward into its pour position so that micro switch 48 is closed. A gating circuit, comprised of resistors 240 and 242 and capacitor 244, is utilized to provide a positive pulse to the gate 246 of silicon controlled rectifier (SCR) 248. This causes the SCR to conduct and, therefore, energize rotary solenoid 54. This solenoid is mounted in the faucet actuating apparatus, as illustrated in FIG. 2. A diode 250 is connected, in parallel, across solenoid 54 to minimize the possibility of damage to the SCR when the solenoid, which is an inductive load device, is de-energized. Energization of SCR 248 causes transistor 252 to be turned OFF. Concurrently therewith, the current flows through resistor 253 through capacitor 256, which initially appears as a short circuit, and then to the base of transistor 254 thereby turning it ON and energizing counter 152 to indicate that a predetermined amount of beverage has been poured. Transistor 254 remains ON until capacitor 256 charges through resistor 253 thereby turning transistor 254 OFF. This causes counter 152 to be de-energized and thus registers only one count.

When handle 44 is moved back to its initial position, the micro-switch 48 is opened, and the valve 52 is turned OFF. The power circuitry is then put in a ready condition. As previously discussed, the voltage across the relay coil 258 is positive, and the relay coil is energized. The switching of relay coil 258 discharges resistor 259 and sets the zero point for the next cycle of operation. The current through the relay coil 258 then decreases.
will be in. The switching of relay switch 280 allows capacitor 286 to be placed in the circuit. The switching of relay switch 282 allows the pitcher count to be connected into the circuit.

In order to pour the beverage and after switch 60 has been actuated, the handle 44 of the dispenser unit is then moved forward thereby closing switch 48 and commencing the timing cycle. This time, however, when transistor 254 is turned ON, it causes counter 284 to be energized thereby indicating that an amount of beverage approximating a pitcher has been poured.

As heretofore described, in order to determine the energization time of the solenoid 54, the pressure transducer 25 measures the pressure in the connecting line and changes it to a current represented by the amount of light exposed to light dependent resistor 134, and this current is utilized to charge capacitor 286. Capacitor 286 is generally ten times larger than capacitor 260 in order to give longer time constant. When capacitor 286 has been sufficiently charged, transistor 262 turns ON, as before, and again provides a pulse, turning transistors 264 and 266 ON. The turning ON of transistor 264 causes SCR 248 to cease conduction and thereafter causes the de-energization of solenoid 54. The turning ON of transistor 266 causes transistor 272 to turn OFF thereby de-energizing relay 274 and causing relay switches 276, 278, 280 and 282 to return to their former positions.

It can be readily understood why switch 60 must be actuated each time it is desired to obtain a larger amount of beverage from the faucet actuating apparatus, inasmuch as relay 274 is de-energized at the conclusion of the timing cycle and relay switches 276, 278, 280 and 282 are restored to their initial positions.

To minimize the possibility of damage to transistor 254 when it switches OFF the inductive load of the counters, diode 294 is connected, in parallel, across either counter 152 or counter 284, depending on which one is in the circuit. Diode 296, which is connected across relay 274, functions similarly.

From the foregoing, those skilled in the art will readily understand the nature of the invention, its construction and operation, and the manner in which it achieves and realizes the objects and the damages as set forth in the foregoing.

The foregoing disclosure is representative of preferred forms of the invention and is to be interpreted in an illustrative rather than a limiting sense.

1. Apparatus for dispensing predetermined quantities of fluid under pressure from a conventional faucet having a mechanically actuable manual valve comprising: selectivity engageable mechanical interlock means adapted to be mounted proximate to the conventional faucet and operatively connected to the handle of the conventional faucet; manually operable handle means operatively connected to said interlock means whereby when said interlock means is engaged, said manually operable handle means is in direct mechanical connection with the handle on the conventional faucet; and means for selectively disengaging and engaging said interlock means whereby upon said disengagement, said manually operable handle means is mechanically disconnected from the handle on the conventional faucet whereby the handle on the conventional faucet returns to an off position irrespective of the position of said manually operable handle means.

2. The apparatus as set forth in claim 1 wherein said manually operable handle means is pivotally mounted on said interlock means.

3. The apparatus as set forth in claim 1 wherein said means for selectivity engaging and disengaging said interlock means includes latching means pivotally connected to said manually operable handle means, and bridge means operatively engaging the handle of the conventional valve, said latching means being mechanically engageable and disengageable with said bridge means.

4. The apparatus as set forth in claim 3 further including means normally biased said bridge means in a position generally corresponding to the handle position of the conventional valve when it is closed.

5. The apparatus as set forth in claim 4 wherein said latching means includes lifting means for accomplishing said selective engagement and disengagement of said manually operable handle means with the handle of the conventional valve.

6. The apparatus as set forth in claim 5 further including fail safe means whereby said manually operable handle means can be maintained in an operative engagement with the conventional valve irrespective of the normally functioning engagement of disengagement of said interlock means.

7. The apparatus as set forth in claim 5 wherein said fail safe means comprises a pin member insertable between said latching means and a fixed reference point on said interlock means whereby said latching means is maintained in engagement with said bridge means.

8. The apparatus as set forth in claim 5 wherein said lifting means is actuated by electro-mechanical means.

9. The apparatus as set forth in claim 8 wherein said electro-mechanical means comprises a solenoid.

10. The apparatus as set forth in claim 8 further including first electrical switch means actuable by selective positioning of said manually operable handle means for actuating said electro-mechanical lifting means.

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