United States Patent

Weston

[15] **3,666,143**

[45] **May 30, 1972**

[54] AUTOMATIC FLUID DISPENSING APPARATUS WITH MANUAL OVERRIDE

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[73] Assignee: **Fred Fisher, Van Nuys, Calif., part interest**

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[21] Appl. No.: **48,327**

[52] **U.S. Cl.** **222/61**, 222/37, 222/70

[51] **Int. Cl.** **B67d 1/12**

[58] **Field of Search** 222/30, 37, 61, 70; 137/624.12

[56] **References Cited**

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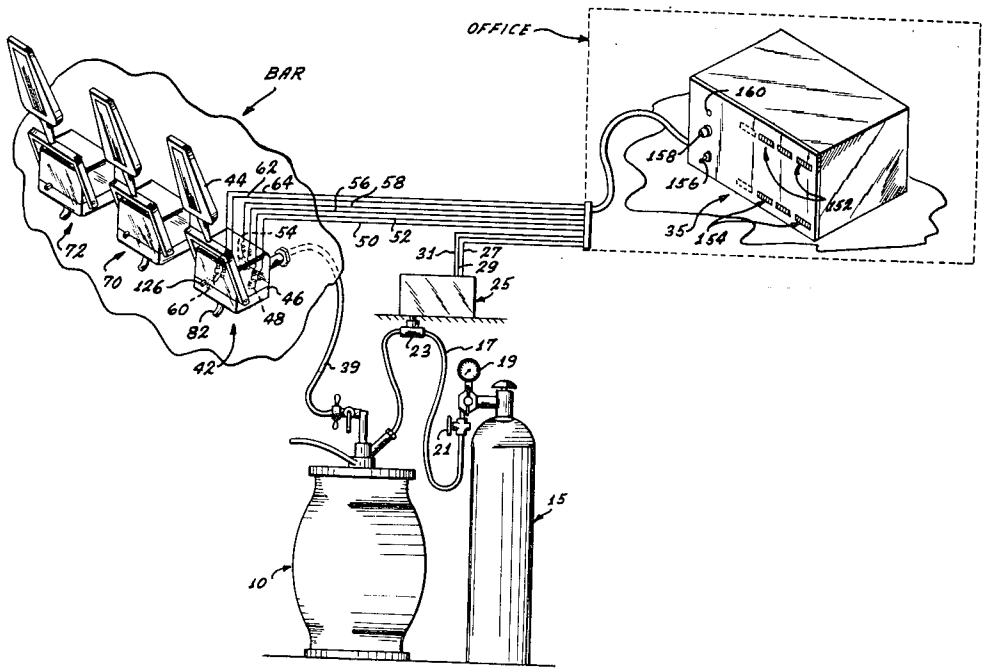
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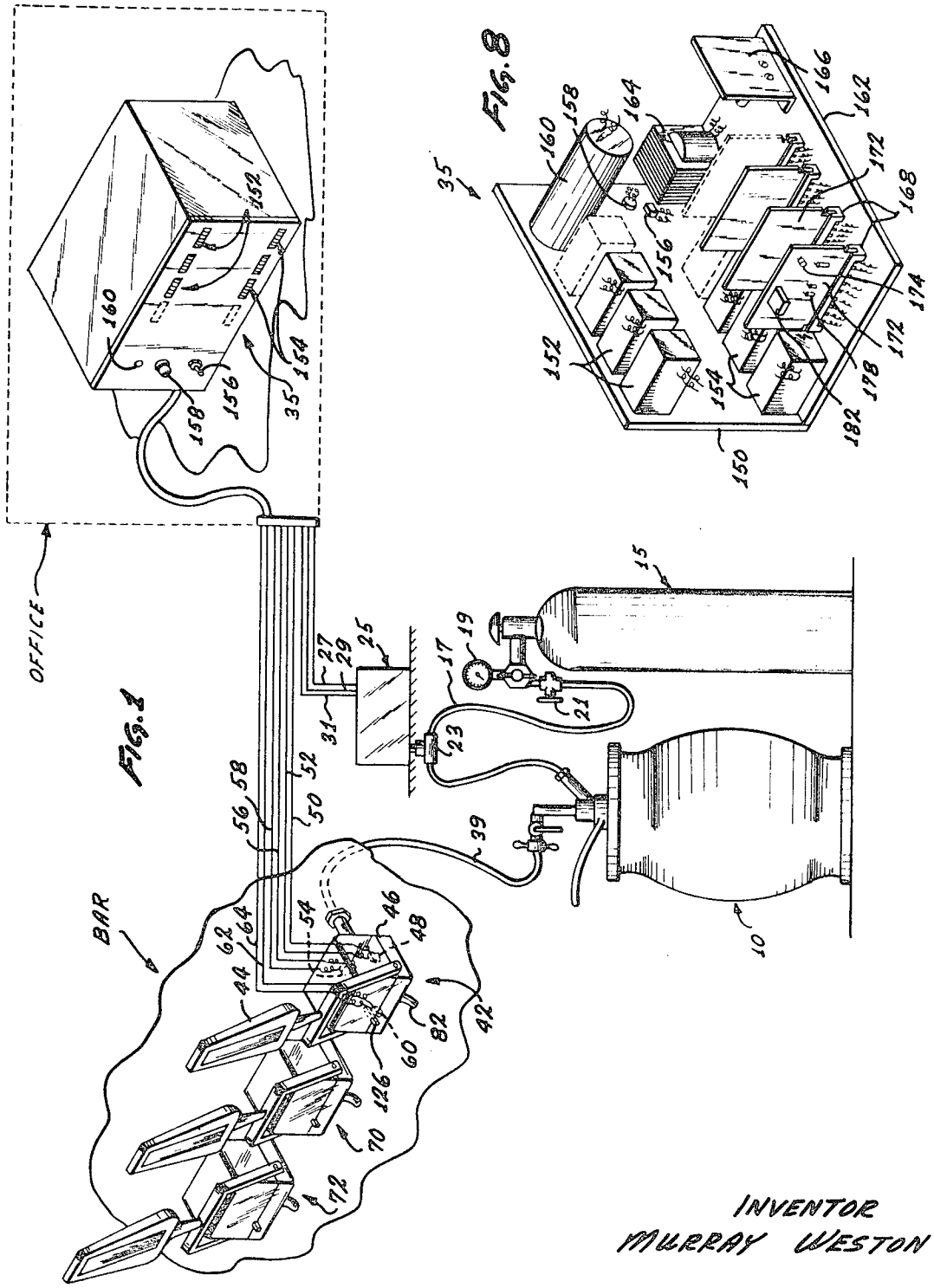
Primary Examiner—Robert B. Reeves
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[57] **ABSTRACT**

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




OFFICE
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Fig. 1
Fig. 8
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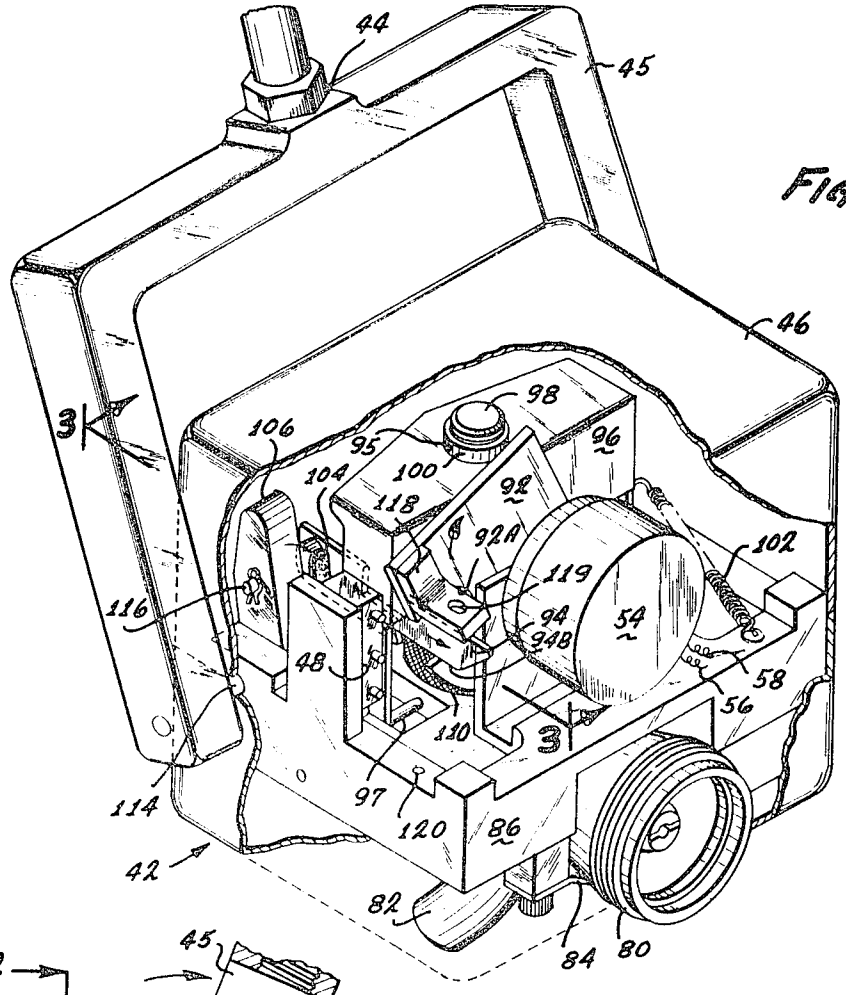


FIG. 2

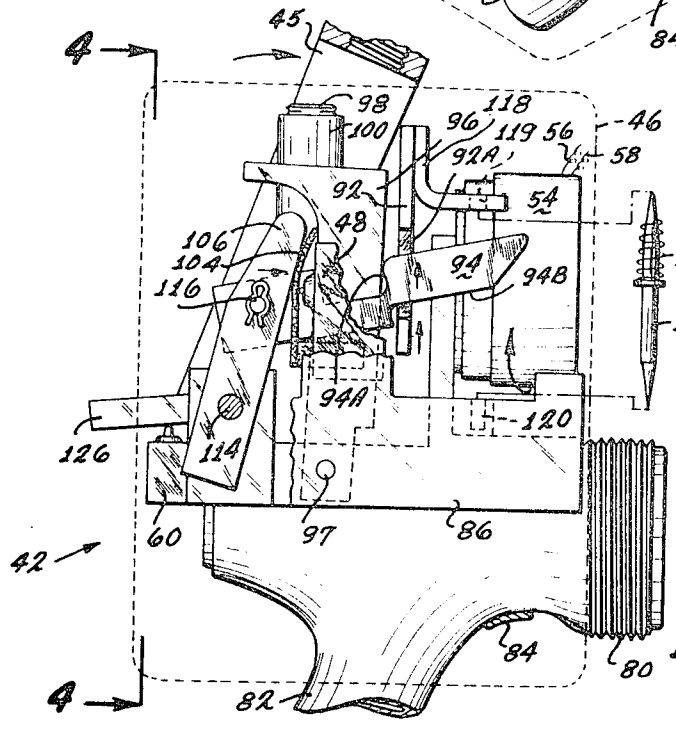


FIG. 3

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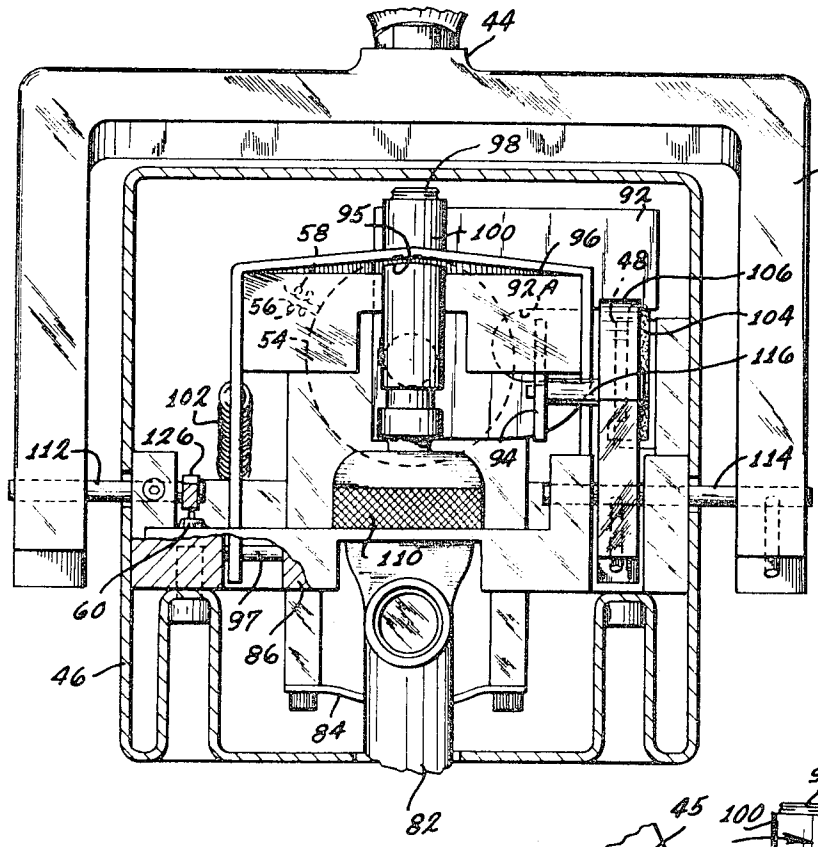


FIG. 4

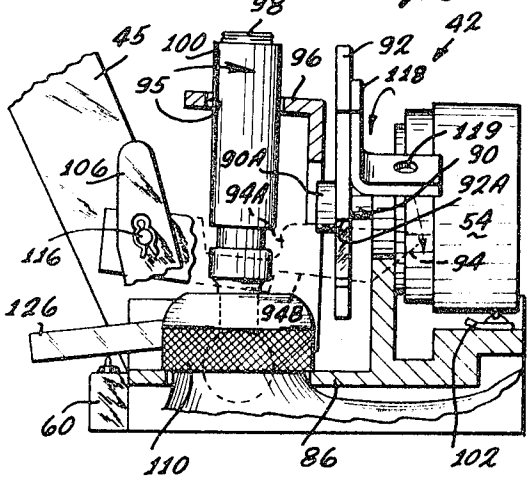


FIG. 6

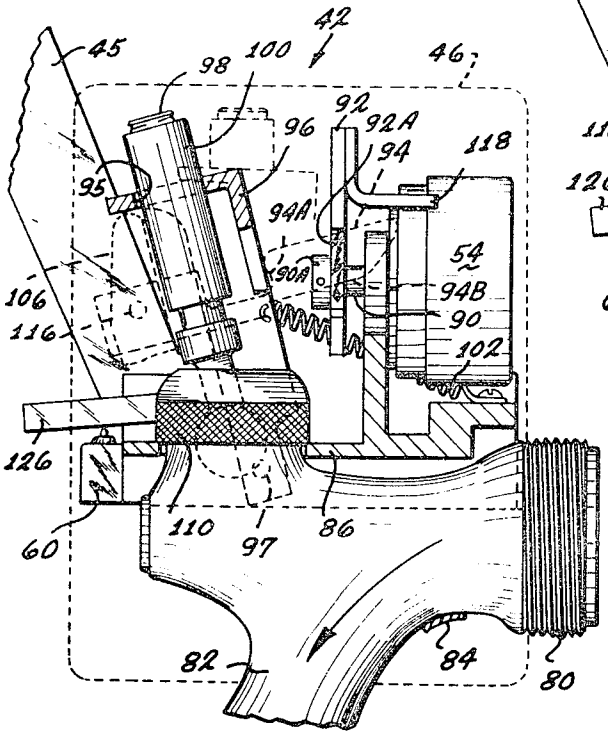


FIG. 5

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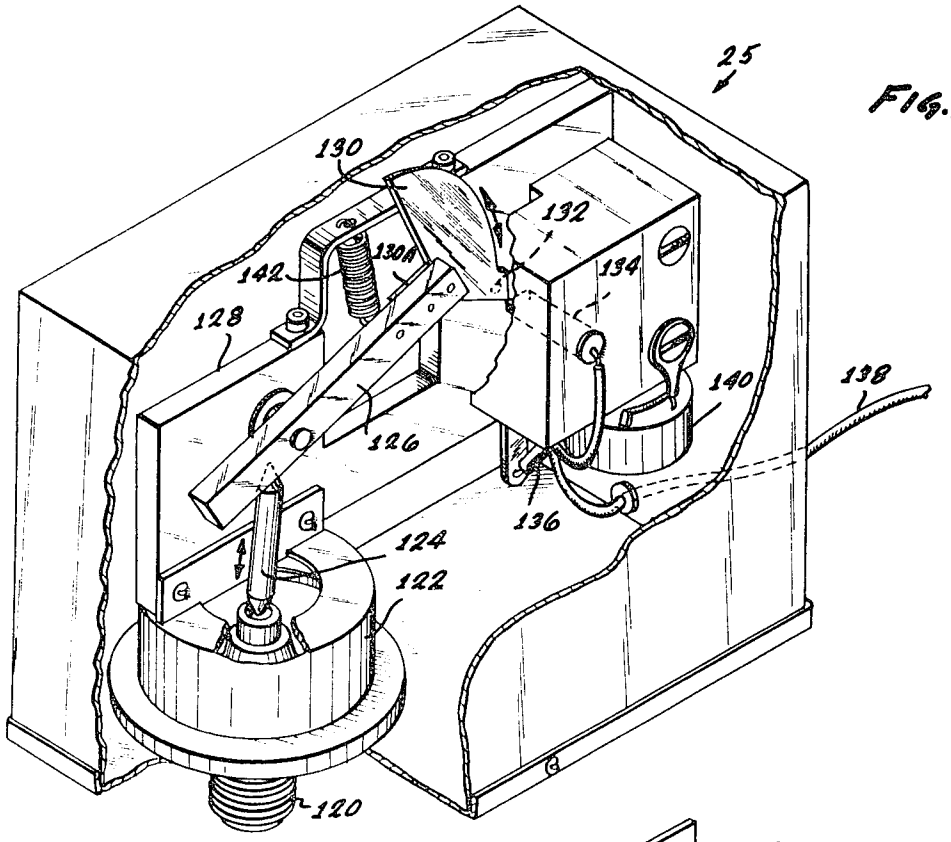


FIG. 7

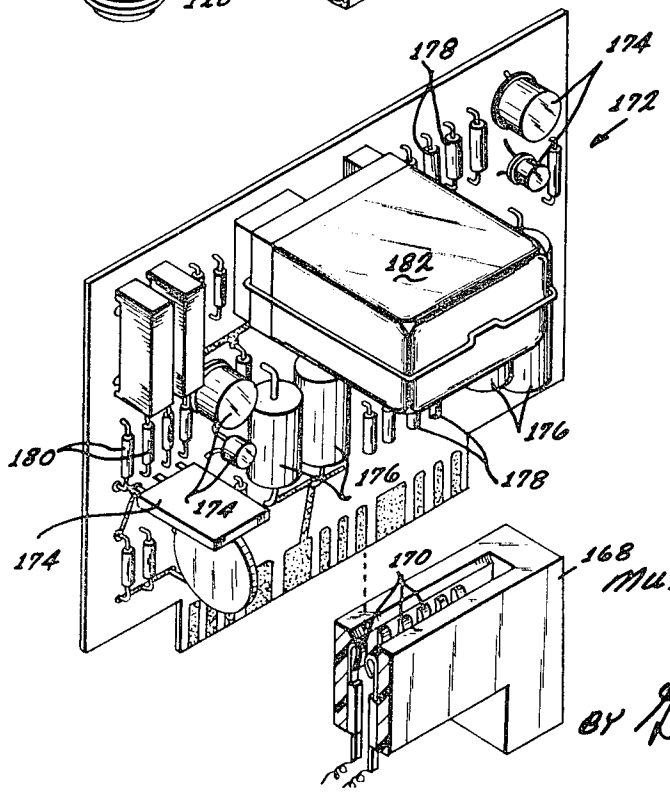


FIG. 9

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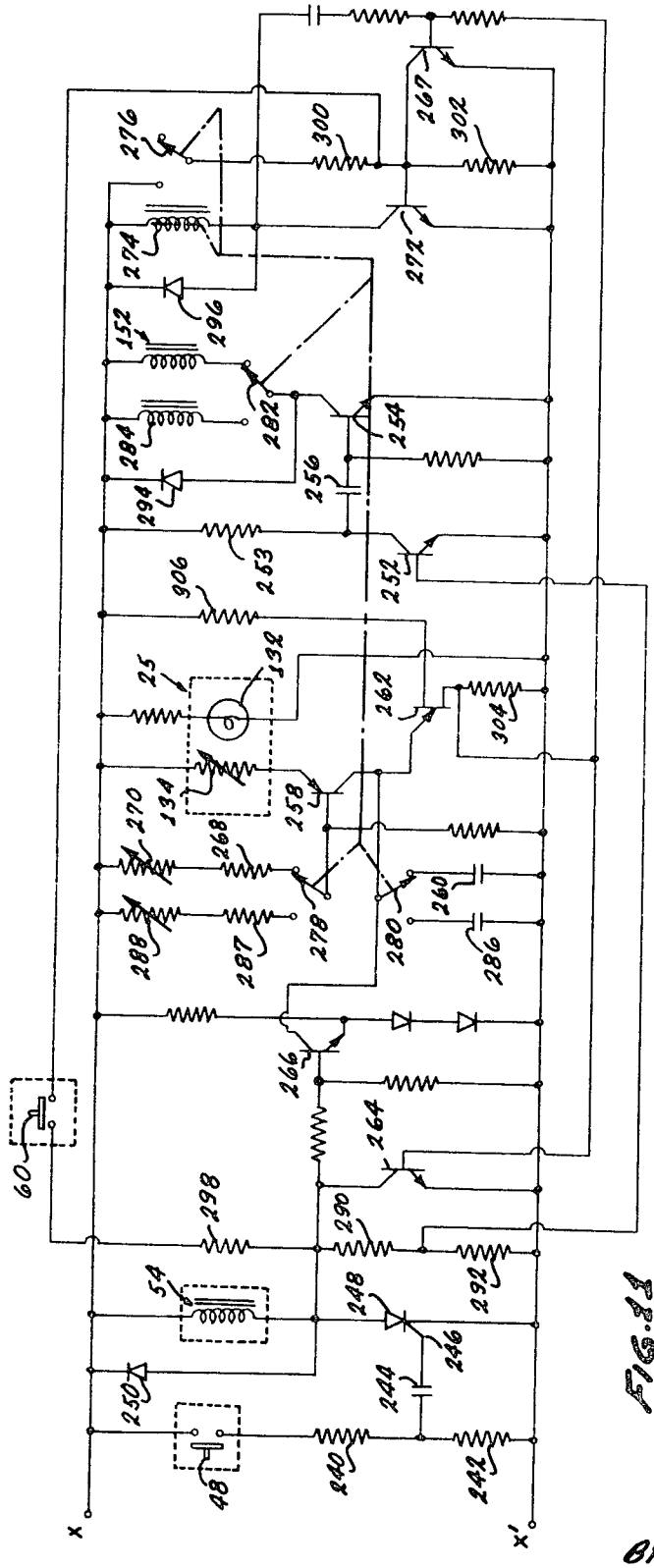


FIG. 11

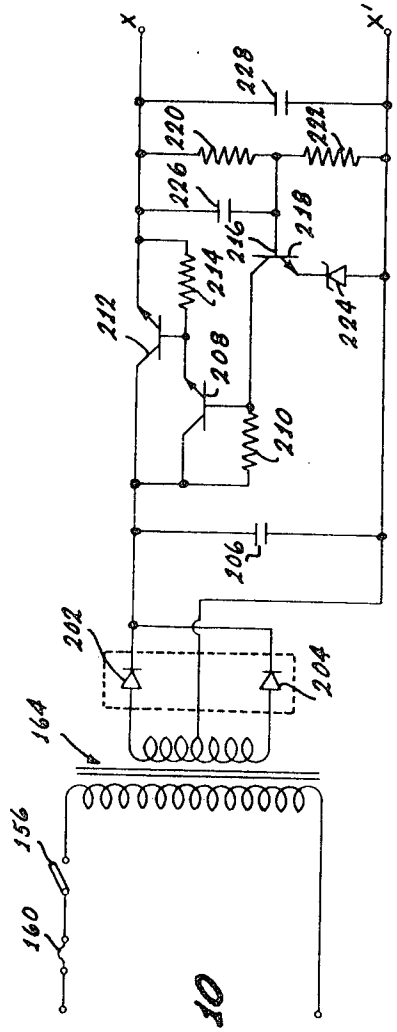


FIG. 10

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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. 3,107,705 to S. G. Isserstedt.

In the Isserstedt patent, there is disclosed a dispensing system for beer 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 insure that the predetermined volume of beer 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 unsanitary 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 CO_2 gas as a means of keeping the beverage fresh and at the right degree of carbonation. Thus, both bottled CO_2 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 CO_2 gas since the temperature of CO_2 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 CO_2 gas could enter the faucet spout and over carbonate the beverage being served. Furthermore, air pressure cannot be used to dispense beer thus eliminating the CO_2 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 a further 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 is characterized by its high efficiency and reliability in operation, which is simple, compact and economical in construction and which can be readily installed on pre-existing beverage dispensing equipment without extensive modification thereof.

It is still another aim of the invention 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 CO_2 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 solenoid 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 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 activated 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 strap **84**. 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 is 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 conclusion of said time, terminates the beverage flow from the faucet. The solenoid **54** is deenergized by the electronic circuitry thereby rotating of lifting linkage **92** in a direction opposite to that heretofore 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** thereon, 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 control member **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 waste of beverage or flooding the surrounding area should an equipment malfunction occur or a glass or pitcher become upset or broken during filling 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 circuitry 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 circuitry 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 **35**, 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. Kazan.

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 beam. A cam control spring **142** is connected to the base plate **128** ad to 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 CIRCUITRY

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 circuitry 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 circuitry housing **35**. The power supply is suitable to handle a plurality of timing circuit boards **172**, 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 transistor **208** ON. Transistor **208** then turns transistor **212** ON. Resistors **210** and **114** are used 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 XX′ and provide stability to the voltage regulator, capacitor **226** is provided. Capacitor **228** is utilized to provide additional filtering at the output XX′.

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 XX′ 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 resistor **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 no beverage is being poured and prior to the actuation of micro-switch **48**, the current flow passes through solenoid **54** and, in turn, through resistors **290** and **292** which form a voltage divider arrangement to energize transistor **252**. This maintains transistor **254** OFF which prevents any indication from being made in the counter.

In order to determine the energization time of the solenoid **54**; and therefore, the beverage flow time at the faucet actuating apparatus **42**, it is necessary to take into account the amount of pressure available. Accordingly, the pressure transducer **25** measures the pressure and gives a corresponding output of resistance versus pressure. As the light received by light dependent resistor **132** from light source **134** changes, the current through transistor **258** changes which, in turn, varies the charging time of capacitor **260**. The degree of conduction that transistor **258** is in while capacitor **260** is charging is dependent upon fixed resistor **268** and variable resistor **270**.

In achieving the timing determination, after capacitor **260** has charged to a predetermined level, uni-junction transistor **262** turns ON and discharges the capacitor through resistor **304**; and in turn, a positive trigger pulse is provided to the bases of transistor **264** and **266** turning both of these transistors ON. When capacitor **260** has discharged, the uni-junction transistor **262** turns OFF which causes the de-energization of solenoid **54**, as will be explained. Resistors **306**, **304** and the parameters of the uni-junction transistor **262** set the level at which the uni-junction transistor **262** will break down and allow discharge of capacitor **260**. When transistor **264** turns ON, it then diverts current flow from SCR **248**. This causes SCR **248** to turn OFF as there is not enough current to maintain it in conduction. At this time, the solenoid **54** is maintained energized by the ON condition of transistor **264**. When capacitor **260** discharges, transistor **262** turns OFF thereby turning transistor **264** OFF which causes the de-energization of solenoid **54**. At this time, transistor **266** is turned ON thereby preventing any charge from being built up on capacitor **260**.

In order to be able to pour enough beverage to fill a larger container, it is necessary to actuate switch **60**, as previously described. When switch **60** is actuate, the current flow passes through solenoid **54**, resistor **298**, and switch **60** and thereby turns ON transistor **272**. As transistor **272** is turned ON, relay **274** is turned ON and causes the switching of relay switch **276**, which allows current to pass through resistors **300** and **302** thereby providing a voltage divider arrangement and maintaining transistor **272** in an ON condition after switch **60** is de-actuated. Energization of relay **274** also causes the switching of relay switches **278**, **280** and **282**.

The switching of relay switch **278** allows resistors **286** and **288** to determine the degree of conduction that transistor **258**

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 counter 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 b 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.

I claim:

1. Apparatus for dispensing predetermined quantities of fluid under pressure from a conventional faucet having a mechanically actuable manual valve comprising:

selectively 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 selectively 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 biasing 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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