Feb. 20, 1968 G. L. MANKE 3,369,704

PRINTER AND REGISTER CONTROL MECHANISM

Filed Sept. 7, 1965 4 Sheets-Sheet 1

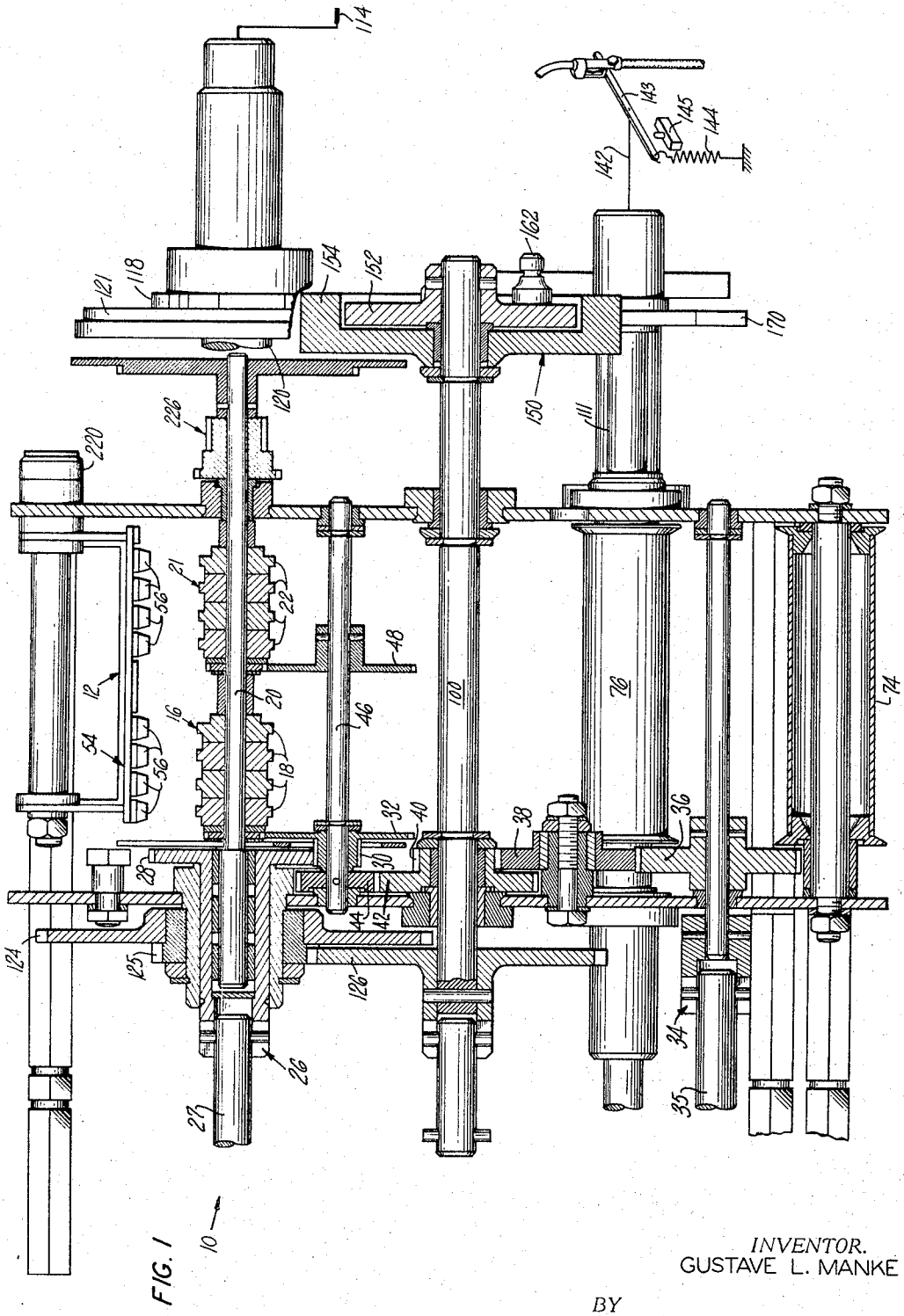


FIG. 1

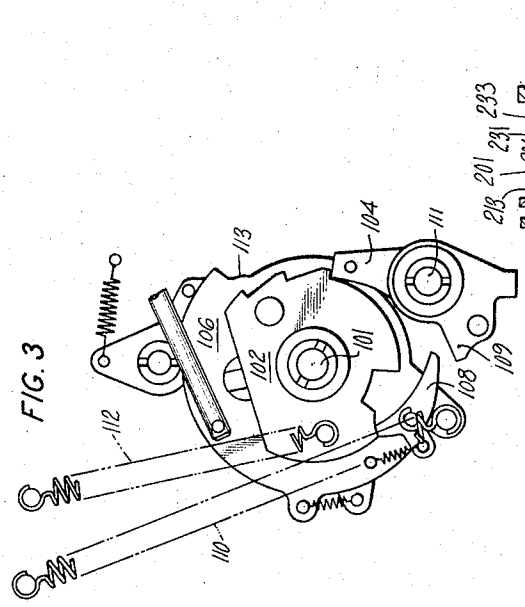
INVENTOR.
GUSTAVE L. MANKE

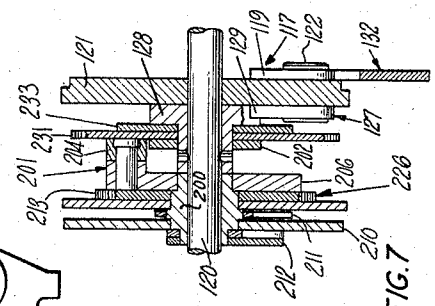
BY
Lindsey, Pautzman and Hayes
ATTORNEYS

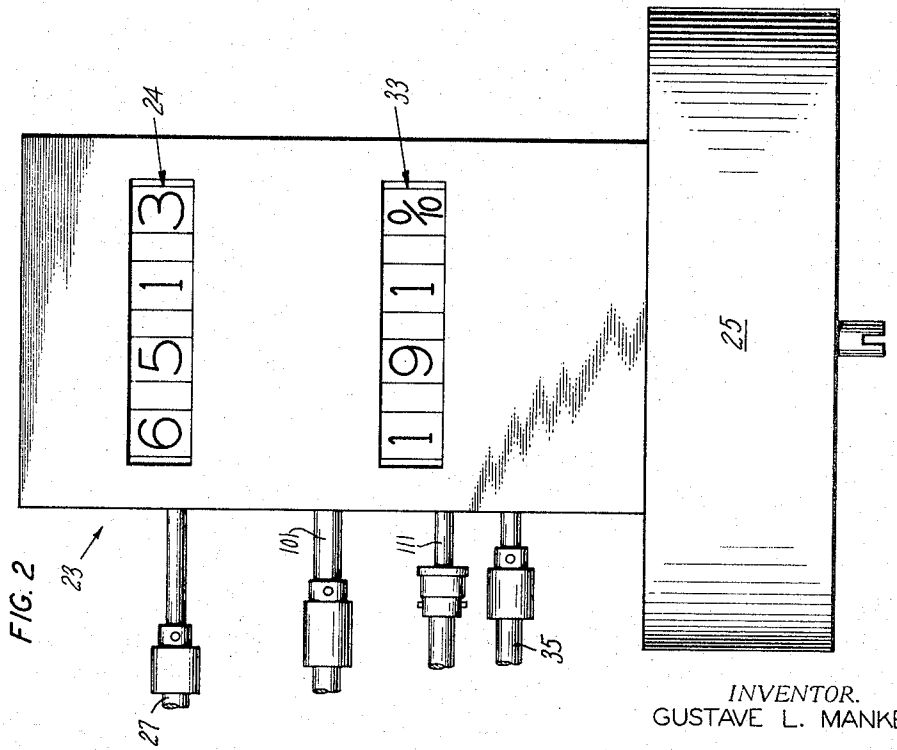
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PRINTER AND REGISTER CONTROL MECHANISM

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INVENTOR.
GUSTAVE L. MANKE

BY
Lindsey, Pautzman and Hayes
ATTORNEYS

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PRINTER AND REGISTER CONTROL MECHANISM

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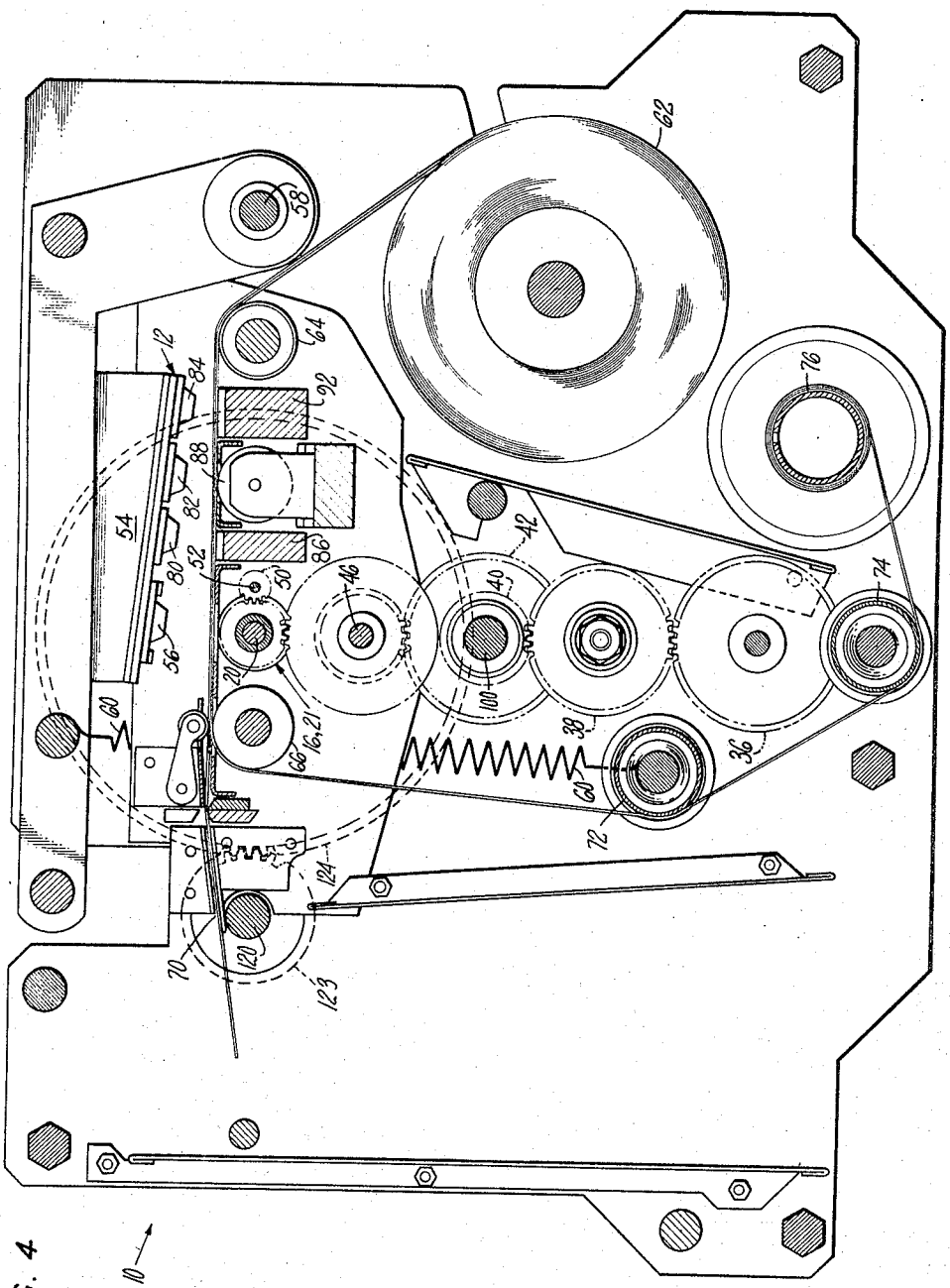


FIG. 4

INVENTOR.
GUSTAVE L. MANKE

BY
Lindsey, Pautzman and Hayes
ATTORNEYS

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PRINTER AND REGISTER CONTROL MECHANISM

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FIG. 5

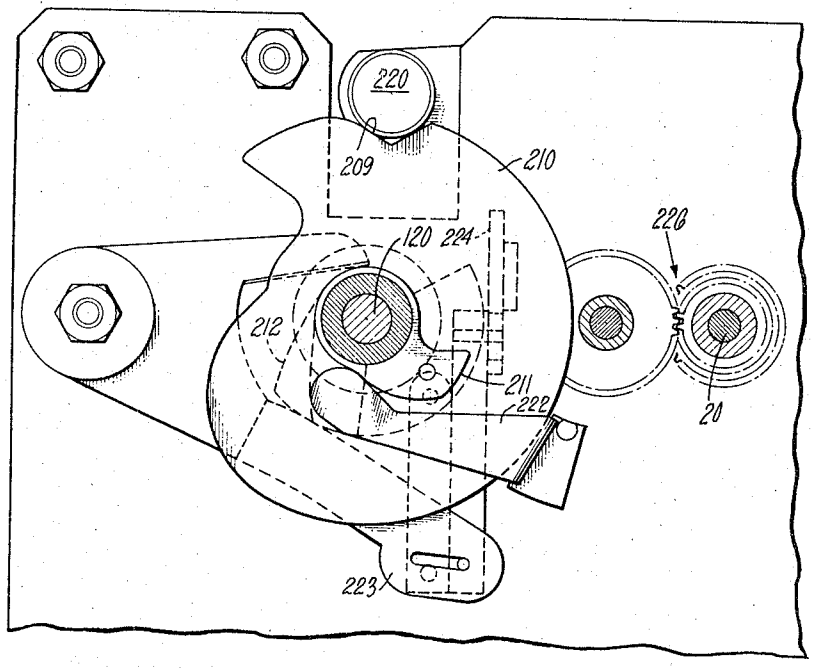
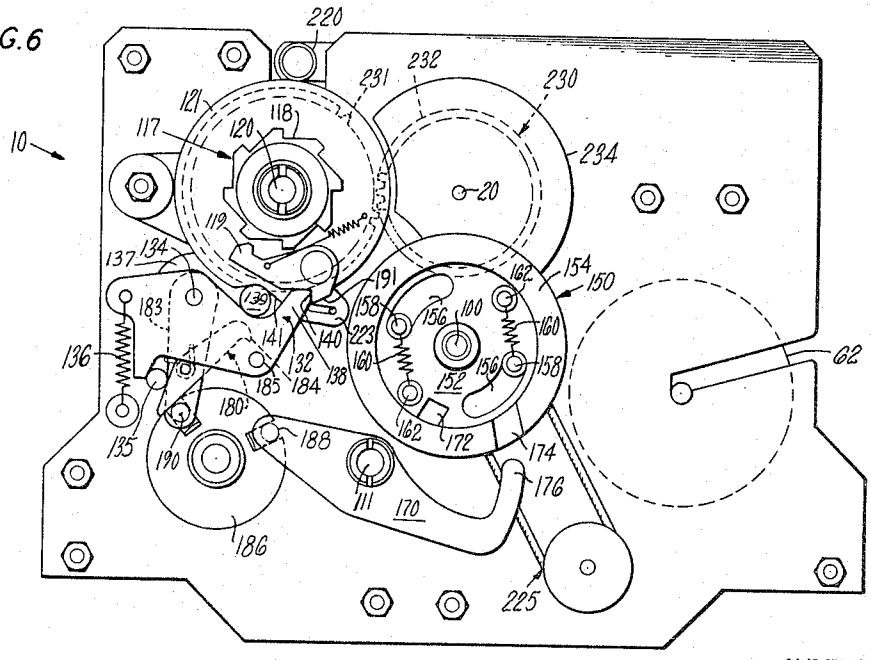


FIG. 6



INVENTOR.
GUSTAVE L. MANKE

BY
Lindsey, Prutzman and Hayes
ATTORNEYS

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3,369,704

PRINTER AND REGISTER CONTROL MECHANISM

Gustave L. Manke, Bloomfield, Conn., assignor to Veeder-Root Incorporated, Hartford, Conn., a corporation of Connecticut

Filed Sept. 7, 1965, Ser. No. 485,385
21 Claims. (Cl. 222—30)

ABSTRACT OF THE DISCLOSURE

A combined printer and register for fuel dispensing equipment which is adapted to register the amount of each fuel delivery and to print a ticket with the amount of the fuel delivery. A handle is employed for operating the printer and for simultaneously loading a reset spring, and a control mechanism responsive to the operation of the handle and of the placement and removal of the fuel dispensing nozzle in its storage receptacle provides for ensuring that the printer is operated before the register is reset and the apparatus is conditioned for being inoperative for dispensing fuel after a prior delivery is completed and until the printer is operated and the register is reset.

The present invention relates to control mechanisms having particular utility with fluid dispensing apparatus of the type employing a register for registering each fluid delivery and a printer for recording each fluid delivery.

It is a principal aim of the present invention to provide a new and improved printer and register control mechanism for such fluid dispensing apparatus for timely controlling the reset and counting phases of the register for registering the quantity and/or cost of the fluid delivered, and for timely controlling the printing and counting phases of the printer for recording the quantity and/or cost of the fluid delivered.

It is another aim of the present invention to provide a printer and register control mechanism for fluid dispensing apparatus which provides for operating the printer to print the quantity and/or cost of the fluid delivered and for resetting the register and the printer after the completion of a prior delivery and before the initiation of a succeeding delivery.

It is a further aim of the present invention to provide a printer and register control mechanism of the type described which is adapted to be powered by a single manually operable handle.

It is another aim of the present invention to provide an improved printer and register control mechanism of the type described which employs a new and improved interlock mechanism for preventing operation of the printer while fluid is being dispensed, for providing timely operation of the printer to record the quantity and/or cost of the delivery after it is completed and for resetting the register and printer before a succeeding delivery.

It is another aim of the present invention to provide a printer and register control mechanism of the type described which is useful with the register reset mechanisms which are presently widely used in the fuel dispensing industry.

Other objects will be in part obvious and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereafter set forth, and the scope of the application of which will be indicated in the appended claims.

In the drawings:

FIG. 1 is a partial showing of a fuel dispensing unit showing a longitudinal section view, partly broken away and partly in section, of a combined printer and control mechanism subassembly incorporating an embodiment of a printer and register control mechanism of the present invention;

FIG. 2 is a view, partly broken away, showing a register and computer subassembly of the fuel dispensing unit of FIG. 1;

FIG. 3 is a view, partly broken away, showing a portion of the reset mechanism of the register of FIG. 2;

FIG. 4 is a view, partly broken away and partly in section, showing a transverse section of the combined printer and control mechanism subassembly of FIG. 1;

FIG. 5 is a view, partly broken away and partly in section, showing an enlarged partial transverse section of a portion of the printer operating mechanism of the combined printer and control mechanism subassembly of FIG. 1;

FIG. 6 is a reduced end view of the combined printer and control mechanism subassembly of FIG. 1 showing the sequencing mechanism thereof; and

FIG. 7 is a view showing an enlarged partial longitudinal section of a portion of the printer operating mechanism of the combined printer and control mechanism subassembly of FIG. 1.

Referring now to the drawings in detail, an embodiment of a printer and register control mechanism of the present invention, generally denoted by the numeral **10**, is shown associated with a printer **12** (FIGS. 1 and 4) having a cost counter **16** with four print wheels **18** rotatably mounted on a counter shaft **20** and a quantity or volume counter **21** having four print wheels **22**, also rotatably mounted on the counter shaft **20**. In the significant application of the present invention, where the control mechanism is installed for controlling the operation of a register **23** of a fuel dispensing apparatus, the lowest order print wheel **18** of the cost counter **16** is driven with the lowest order number wheel of the cost counter **24** of the register **23** through a coupling **26** which is suitably connected through a shaft **27** (FIG. 2) to the money shaft of the computer **25** employed in such apparatus and by a gear train including the gears **28**, **30** and **32**. The lowest order print wheel **22** of the volume counter **21** is similarly driven with the lowest order number wheel of the volume counter **33** of the register **23** through a coupling **34** suitably connected through a shaft **35** (FIGS. 1 and 2) to the volume shaft of the computer **25** and by a gear train including the gears **36**, **38**, **40**, **42**, **44**, shaft **46** and gear **48**. The remaining higher order print wheels **18** and **22** of the cost and volume counters are indexed in a conventional manner with transfer pinions **50** (FIG. 4) mounted on a transfer pinion shaft **52**. Therefore, the cost counter **16** is adapted to register the cost of the fuel dispensed and the volume counter **21** is adapted to register the volume of the fuel dispensed, and thus the printer is adapted to record the

cost and volume of each delivery by suitably printing these amounts at the end of the delivery.

A printer platen **54** (FIG. 4) provided with suitable print hammers **56** is mounted on a shaft **58** for pivotal movement away from the print wheels **18**, **22** for storing motive power within the tension springs **60** for printing. A two-ply paper roll **62** is shown mounted in operative association with the printer, and suitable rolls **64**, **66** are provided for feeding the paper from the roll **62** to between the counters **16**, **21** and the printer platen **54**. The outer ply of paper is fed outwardly through a chute **70**, as for example to provide a record of the fuel delivery for the purchaser, and the inner ply of the paper roll is fed over suitable rolls **72**, **74** and onto a takeup roll **76**, as for example to provide a record for accounting purposes. Additional print hammers **80**, **82**, **84** may be provided on the platen **54** as for printing the identification mark of the printer with a fixed bar **86**, the date with the print wheels of a date counter **88**, and the name of the fuel delivery station with a fixed bar **92**.

Referring particularly to FIGS. 1 and 3, a control shaft **100** of the control mechanism is suitably coupled to a reset shaft **101** of the register to connect the control shaft **100** to a drive plate **102**, as for example the drive plate of a counter reset mechanism of the type shown and described in U.S. Patent No. 2,814,444 of Harvey N. Bliss dated November 26, 1957 and entitled Register. More particularly, the control shaft **100** is directly connected for rotating the reset shaft **101** and therefore the drive plate **102** approximately 70°, in the counterclockwise direction as viewed in FIG. 3, from an initial position to a reset or loaded position shown in FIG. 3 where it is held by a latching pawl **104**. As more fully explained in U.S. Patent No. 2,814,444 such counterclockwise rotation of the drive plate **102** is adapted to rotate a control plate **106** in the counterclockwise direction through a drive pawl **108** to load a reset spring **110** for resetting the number wheels of the register. When the drive pawl **108** is tripped by a suitable pivotal trip pawl **109** mounted on a shaft **111**, the control plate **106** is released and the tension spring **110** rotates the control plate from its loaded position shown in FIG. 3 to reset the number wheels of the register. Also, after the control plate **106** has returned to its initial position and thus after the number wheels have been reset, the latching pawl **104** is actuated by the cam lobe **113** on the control plate to release the drive plate **102** for being returned as by a tension spring **112** to its initial position established by a suitable stop (not shown) and to concomitantly rotate the reset shaft **101** and control shaft **100** to their intial angular position.

In accordance with the present invention the control mechanism **10** provides (1) for timely rotating the drive plate **102** to its extended or loaded position for loading the reset spring **110**; (2) for timely operating the printer **12** for printing the cost and volume of the fuel delivered; (3) for timely resetting the printer and register prior to a succeeding delivery; and (4) for timely reactivating or rendering the dispensing apparatus operative for dispensing fuel after the printer and register have been reset so that fuel may thereafter be dispensed, for example, with the usual trigger operated fuel nozzle provided in fuel dispensing apparatus. In the shown embodiment the control mechanism **10** is manually operable by a crank handle **114** (FIG. 1) which is coupled to rotate a drive ratchet wheel **118** (FIG. 6) of a ratchet mechanism or drive clutch **117**. A ratchet pawl **119** pivotally mounted on a disc **121** with a pivot pin **122** biased into engagement with the ratchet wheel **118** by a suitable spring to provide a disengageable clutch between the handle **114** and the disc **121** and to provide a one-way drive for rotating the disc, in the clockwise direction as viewed in FIG. 6. Also, a one-way drive or ratchet mechanism **127** (FIG. 7) is provided between the disc **121** and a drive shaft **129** shown mounted coaxially with the handle **114** to provide for rotating the drive shaft **120**, in the clockwise direction as viewed in FIG. 6. This ratchet mechanism **127** comprises a ratchet wheel **128** fixed to the drive shaft **120** and a ratchet pawl **117** mounted on the pivot pin **122** for pivotal movement with the ratchet pawl **119**. Referring to FIGS. 1 and 4, spur gears **123**, **124**, **125** and **126** provide a drive connection between the drive shaft **120** and the control shaft **100** and in the shown embodiment provide a reduction gearing of approximately 5:1 so that upon rotation of the manual crank **114** sufficiently to rotate the disc **121** one full revolution, the drive control shaft **100**, reset shaft **101** and plate **102** are rotated approximately 70°, in the counterclockwise direction as viewed in FIG. 3, and sufficiently to ensure that the drive plate **102** is properly latched by the pawl **104** and the reset spring **110** is properly loaded.

At the end of one full revolution of the disc **121** the ratchet pawls **119**, **129** are pivoted outwardly from the ratchet wheels **118**, **128**, respectively, to disengage the disc **121** from the handle **114** and to disengage the shaft **120** from the disc **121**. This disengagement is brought about by a lockout pawl **132** (FIG. 6) rotatable on a pivot pin **134** and biased by a tension spring **136** to an extended position in engagement with a post **135** where its outer end **138** is adapted to engage the shoulder **140** of the ratchet pawl **119** and thereby disengage the ratchet mechanisms **117**, **127** after one full revolution of the disc **121**. Also, a detent arrangement (FIG. 6) is provided for holding the disc **121** against rotation by the drive shaft **120** after the disc **121** has been rotated one full revolution by the crank handle **114** and the ratchet pawls **119**, **129** have been disengaged from the ratchet wheels **118**, **128** respectively. This detent arrangement comprises a peripheral V-shaped notch **141** in the disc **121** and a pivotal detent lever **137** with a detent roller **139** biased by a suitable spring (not shown) into engagement with the peripheral edge of the disc.

The trip pawl **109** is adapted to be pivoted to release the control plate **106** and therefore to reset the number wheels of the register by a trip shaft **142** which is suitably coupled to the trip pawl shaft **111**. The trip shaft **142** is preferably connected for being actuated, as with a lever **143** (FIG. 1), by the fuel nozzle of the fuel dispensing apparatus to withdraw the trip pawl when the fuel nozzle is placed within the usual nozzle storage receptacle. The nozzle-actuated lever **143** is also preferably employed for alternatively activating and deactivating the associated dispensing apparatus, or in other words, for alternatively rendering the dispensing apparatus operative for dispensing fuel with the trigger operated fuel nozzle and inoperative for dispensing fuel, as by the actuation of a switch **145** which is suitably connected for energizing the usual pump motor (not shown). In the alternative, the lever **143** could be suitably connected to a fuel shut-off valve as where the dispensing apparatus employs a remote fuel pump for supplying fuel to several dispensing units. A tension spring **144** is connected to the lever **143** for urging the trip shaft **142** and trip pawl **109**, in the clockwise direction as viewed in FIG. 3, for releasing the control plate **106** and therefore for resetting the number wheels of the register.

A sequencing mechanism **150** provides for timely operation of the trip pawl **109** for resetting the counter and for preventing such operation of the trip pawl until after the reset spring **110** has been fully loaded and the printer has been operated to print the cost and volume of the preceding delivery. The sequencing mechanism **150** comprises a multiple disc interlock having an inner disc **152** mounted on the control shaft **100** for angular movement with the drive plate **102** and an outer coaxial disc **154** mounted for limited angular movement relative to the inner disc **152** which is substantially equal to the angular travel of the drive plate **102** between its initial and extended or latched positions. This limited relative angular movement of the outer coaxial disc **154** is provided by a pair of angular slots **156** in the inner disc **152** and

a pair of pins 158 mounted on the outer disc 154 for receipt within the slots. The outer disc 154 is urged, in the counterclockwise direction as viewed in FIG. 6, to an angular limit position relative to the disc 152 shown in FIG. 6 by tension springs 160 connected to the pins 158 and to pins 162 mounted on the inner disc 152.

A control lever 170 of the sequencing mechanism 150 is mounted on the trip shaft 142 for cooperation with the interlock discs 152, 154 to prevent pivotal operation of the trip pawl 109 by the tension spring 144 until after the reset spring 110 has been fully loaded and to prevent actuation of the pump motor switch 145 until after the register has been fully reset as indicated by the return angular movement of the drive plate 102, reset shaft 101, and control shaft 100 to their initial position. For this purpose the inner and outer discs 152, 154 are provided with radial slots 172, 174 which are adapted to be aligned from their offset positions shown in FIG. 6 by locking the outer disc 154 with the outer arcuate end or nose 176 of the control lever 170 and by rotating the drive plate 102 to its initial or unloaded position and thereby rotate the inner disc 152, in the counterclockwise direction as viewed in FIG. 6. In this regard, when the control lever 170 is pivoted by the tension spring 144 to insert its outer end 176 into the outer slot 174, the shaft 142 is rotated sufficiently to release the control plate 106 with the trip pawl 109 and after the following return of the drive plate 102 to its initial position and the resulting alignment of the radial slots 172, 174, the control lever 170 is pivoted further by the tension spring 144 to insert the outer end 176 within the slot 172 and thereby pivot the shaft 142 sufficiently to activate the dispensing apparatus with the switch 145.

After the succeeding delivery and when the lever 170 is pivotally withdrawn by replacing the nozzle in the storage receptacle, the outer disc 154 is biased by the springs 160 to a position offset from the inner disc 152. Consequently, the trip pawl 109 and switch 145 cannot be reactuated, due to the abutment of the control lever 170 with the periphery of the outer disc 154, until after the reset spring 110 has been loaded with the handle 114 and due to the abutment of the control lever 170 with the periphery of the inner disc 152 when the reset spring is loaded, until after the associated register has been fully reset, respectively. This ensures that the associated register is reset after each delivery and before a succeeding delivery.

Therefore, since the inner disc 152 is connected for angular oscillation with the drive plate 102 of the reset mechanism, the trip pawl shaft 111 and therefore the lever 143 may not be pivoted by the tension spring 144 to render the dispensing apparatus operative for dispensing fuel unless the drive plate 102 is in its initial position (and therefore when the register is conditioned for registering the delivery of fuel). Also, due to the interaction between the outer disc 154 and the control lever 170, once the dispensing apparatus has been rendered inoperative for dispensing fuel by returning the fuel nozzle to its storage receptacle, the trip pawl shaft 111 is prevented from being rotated sufficiently to operate the trip pawl 109 until after the reset spring 110 has been fully loaded by rotation of the manual crank 114 one full revolution since the radial slot 174 of the outer disc 154 is aligned to receive the outer end 176 of the control lever 170 only when the reset spring 110 is fully loaded.

Moreover, it can be seen that the control lever 170 is held in its withdrawn position shown in FIG. 6 when the fuel nozzle is in its storage receptacle, and when the fuel nozzle is removed from its storage receptacle, the angular position of the control lever 170 is controlled by the sequencing discs 152 and 154. Thus, if the fuel nozzle is removed before the crank handle 114 has been rotated to load the reset spring, the outer end 176 of the control lever 170 will abut the outer periphery of the outer disc 154. Thereafter, as soon as the crank handle 114 has been rotated one full revolution to load the reset spring 110, the radial slot 174 in the outer disc 154 will be aligned to receive the outer end 176 of the control lever 170 to permit the trip pawl 109 to be rotated sufficiently to release the control plate 106 to reset the register. And when the register has been reset and the drive plate 102 has been returned to its initial position by the spring 112, the radial slot 172 on the inner disc 152 will be aligned to receive the outer end 176 of the control lever 170 to permit the lever 143 to be rotated sufficiently to render the dispensing apparatus operative for dispensing fuel.

The sequencing mechanism 150 also provides for timely releasing the ratchet pawls 119, 129 for reconnecting the handle 114 to the drive shaft 120. For this purpose the control lever 170 is connected for pivoting the lock-out pawl 132 clockwise, as viewed in FIG. 6, against the bias of the tension spring 136 to release the ratchet pawls 119, 129 for re-engagement with their respective ratchet wheels. Once the ratchet pawls 119, 129 are released, the detent shoulder 140 on the ratchet pawl 119 is pivoted out of alignment with the end 138 of the lock-out pawl 132 so that the ratchet mechanisms 117, 127 will remain engaged until the disc 121 has been rotated substantially a full revolution, in the clockwise direction as viewed in FIG. 6, with the handle 114.

A catch 180 pivotally mounted on a pivotal arm 183 is provided with a hooked end 184 for engaging a pin 185 fixed to the lock-out pawl 132 and thereby withdraw the lock-out pawl 132 for releasing the ratchet pawls 119, 129 when the arm 183 is pivoted about its supporting pin 134. The catch 180 is biased clockwise, as viewed in FIG. 6, by a suitable torsion spring and is adapted to timely engage the post 135 to pivotally withdraw the catch, as seen in FIG. 6, and thereby release the lock-out pawl 132 after the ratchet pawls 119, 129 have been released. The arm 183 is connected to the control lever 170 by a disc or bell crank 186 having radial slots therein receiving the pins 188, 190 mounted in the outer ends of the control lever 170 and the arm 183, respectively, so that when the control lever 170 is pivoted by the fuel nozzle to its withdrawn position shown in FIG. 6 the arm 183 is pivoted sufficiently to provide for withdrawing the lock-out pawl 132 from the ratchet pawl 119 and for releasing the lockout pawl for engagement with the outer edge portion 191 of the ratchet pawl 119. When the control lever 170 is pivoted, in the counterclockwise direction as viewed in FIG. 6, the arm 183 is pivoted to return the hooked end 184 of the catch 180 into operative engagement with the pin 185. Preferably, however, the catch 180 is not repositioned for withdrawing the lock-out pawl 132 until after the control lever 170 is pivoted sufficiently to insert its outer end 176 within the inner disc slot 172.

The printer 12 is operated in timely sequence with the operation of the reset mechanism of the register and the associated dispensing apparatus to provide (1) for operating the printer with the handle 114 to record the cost and quantity of each fuel delivery while the reset spring is being loaded, and (2) for resetting the print wheels 18, 22 after the printing phase and during the return movement of the drive plate 102 to its initial position.

Referring now to FIG. 7, a collar 200 rotatably mounted on the drive shaft 120 is adapted to be rotated by the handle 114 through a ratchet mechanism 201 comprising a single tooth ratchet wheel 202 driven by the drive shaft 120 and a ratchet pawl 204 pivotally mounted on a disc 206 fixed on the collar 200 and biased by a suitable torsion spring into engagement with the ratchet wheel 202. Cams 210–212 and gear 213 are fixed for rotation with the collar 200 for actuating the various mechanisms of the printer as the handle 114 is operated to rotate the drive shaft 120, in the clockwise direction as viewed in FIG. 5. A roller or follower 220 mounted on the pivotal printer platen 54 engages the periphery of

the cam 210, and the cam 210 is contoured to provide a peripheral detent notch 209 to hold the cams 210, 212 in their normal position shown in FIG. 5 and to ensure that the cam assembly is rotated a full revolution by the handle 114. It should be noted however that as the drive shaft 120 is rotated in the opposite angular direction in conjunction with the return angular displacement of the drive plate 102 to its initial position by the return spring 112, the one-way drive provided by the ratchet mechanism 201 becomes disengaged and therefore the collar 200, cams 210–212 and gear 213 remain in their angular positions shown in FIG. 5. The cam 210 is also contoured to provide for releasing the platen for printing during approximately the first 50° of angular movement of the crank handle 114 and thus to provide for recording the prior delivery while the reset spring 110 is being loaded, and to provide for fully withdrawing the platen during the following 295° for storing energy for the succeeding printing cycle.

The cam 211 provides for timely aligning the lowest order print wheels of the cost and volume counters with the aligning lever 222, and the cam 212 provides for timely actuation of the lever 223 for shearing the outer ply of paper with the pivotal shear blade 224. The gear 213 (FIG. 7) is the input of an intermittent gear train 226 which provides for holding the paper stationary during the printing phase and which provides for rotating the paper roll 66 to index or feed the paper forwardly after the paper has been printed. Also, a suitable belt and pulley drive 225 (FIG. 6) between the paper roll 66 and the takeup roll 76 provides for rotating the takeup roll sufficiently to maintain the paper under slight tension.

Intermittent gearing 230 which includes the gears 231, 232, (FIG. 6) and associated locking discs 233, 234 are provided between the drive shaft 120 and the print wheel shaft 20. This intermittent gearing is employed for resetting the print wheels by rotation of the print wheel shaft 20 in the counting direction, in the clockwise direction as viewed in FIG. 4. With this intermittent gearing 230 the print wheel shaft is held against rotation during the printing phase and is rotated approximately 405° in the angular direction opposite to the direction of counting during the following rotation of the drive shaft 120 with the crank handle 114. Consequently, when the drive shaft 120 is returned to its initial angular position with the drive plate 102, the print wheel shaft 20 will be rotated in the counting direction approximately 405° to reset or zero the print wheels and thereby condition the printer for registering a succeeding fuel delivery.

Thus it can be seen that the printer and register control mechanism of the present invention provides for sequencing the delivery and reset phases of the associated dispensing apparatus. More particularly, the printer and register control mechanism provides for ensuring that the printer is operated to record a preceding delivery and the printer and register are reset before a succeeding delivery. Additionally, in the described embodiment the control mechanism of the present invention provides a single manually operable handle for operating the printer and the register reset mechanism and wherein the handle is automatically disengaged when the manual operation is completed and held disengaged until after a succeeding delivery to avoid inadvertent damage to the mechanism by untimely operation of the handle. Further, the printer and register control mechanism of the present invention is useful with register reset mechanisms of the type described which are presently widely used in the fuel dispensing industry.

As will be apparent to persons skilled in the art, various modifications and adaptations of the structure above described will become readily apparent without departure from the spirit and scope of the invention, the scope of which is defined in the appended claims.

I claim:

1. In a fluid dispensing apparatus adapted to be rendered operative and inoperative for dispensing fluid and having a resettable register for registering the fluid dispensed, a register reset mechanism including a rotatable resetting member operable for resetting the register upon forward and reverse angular rotation thereof between initial and extended angular positions respectively, spring means biasing the resetting member in its reverse angular direction to its initial angular position, and releasable latch means for retaining the resetting member in its extended position; a control mechanism comprising first and second relatively rotatable coaxial sequencing members, one of the sequencing members being connected with the resetting member for rotation between first and second angular positions upon rotation of the resetting member between its initial and extended positions respectively, means interconnecting the sequencing member adapted to rotate the second sequencing member to an angular position relative to the first sequencing member whereat the second sequencing member is positioned in first and second angular positions when the first sequencing member is in its first and second angular positions respectively, control means cooperative with the sequencing members for releasing the latch means when the second sequencing member is in its second angular position, said control means including means for rendering the dispensing apparatus operative for dispensing fluid when the first sequencing member is in its first angular position so that fluid may thereafter be dispensed.

2. In the fluid dispensing apparatus of claim 1 further having a resettable printer operable for recording the fluid dispensed and wherein the control mechanism comprises a disengageable drive for operating the printer to record the fluid dispensed and for rotating the resetting member from its initial to its extended angular position, and means for disengaging the drive when the resetting member is rotated to its extended position; and wherein the control means includes means for concomitantly rendering the dispensing apparatus inoperative for dispensing fluid and for re-engaging the drive.

3. In the fluid dispensing apparatus of claim 1 wherein the control means comprises a pivotal lever which is pivoted forwardly from a withdrawn position to an intermediate pivotal position when the second sequencing member is in its second position and which is pivoted forwardly from its intermediate position to an extended position when the first sequencing member is in its first position; said pivotal lever being connected to render the dispensing apparatus inoperative for dispensing fluid when in its withdrawn pivotal position, to release the latch means when in its intermediate position, and to render the dispensing apparatus operative for dispensing fluid when in its extended position.

4. In a fluid dispensing apparatus adapted to be rendered operative and inoperative for dispensing fluid and having a dispensing nozzle for the delivery of fluid, a storage receptacle for storing the nozzle between fluid deliveries, a resettable register for registering the fluid deliveries, a printer for recording the fluid deliveries, a register reset mechanism including a rotatable resetting member operable for resetting the register by rotation thereof in forward and reverse angular directions between initial and extended angular positions respectively, spring means biasing the rotatable resetting member in its reverse angular direction to its initial angular position, and releasable latch means for retaining the rotatable resetting member in its extended angular position; a reset control mechanism comprising first and second rotatable coaxial sequencing members connected with said rotatable resetting member for rotation to first and second angular positions respectively in conjunction with the rotation of the resetting member to its initial angular position, and to third and fourth angular positions respectively in conjunction with the rotation of the resetting member to its extended angular position; control means cooperative with the coaxial sequencing members for operative dis-

placement from a withdrawn position to an intermediate position when the second coaxial sequencing member is in said fourth angular position, and from its intermediate position to an extended position when the first coaxial sequencing member is in said first angular position; means operative for releasing the latch means when the control means is displaced to its intermediate position and for rendering the dispensing apparatus operative for dispensing fluid when the control means is displaced to its extended position; means operative upon placing the nozzle in its storage receptacle for displacing the control means to its withdrawn position; a rotatable manually operable handle; drive means including a disengageable clutch for connecting the rotatable handle to said rotatable resetting member for manually rotating the resetting member from its initial angular position to its extended angular position and for operating the printer to record the fluid delivery; means for disengaging the clutch upon rotation of the resetting member to its extended angular position; and means operative upon the displacement of the control means from its extended position to its withdrawn position for re-engaging the disengageable clutch.

5. In the fluid dispensing apparatus of claim 4 wherein the coaxial sequencing members have radially extending slots therein, and wherein the control means includes pivotal lever means receivable in the radially extending slots to permit pivotal movement thereof from said withdrawn position to said intermediate position with the second sequencing member in said fourth angular position and to permit pivotal movement thereof from said intermediate position to said extended pivotal position with the first sequencing member in said first angular position.

6. In the fluid dispensing apparatus of claim 4 wherein the drive means further includes a rotary printer drive connected for being rotated by the manually operable handle for recording the fluid delivery before the rotatable resetting member is fully rotated by the manually operable handle to its extended angular position.

7. In the fluid dispensing apparatus of claim 4 wherein the printer is resettable, and wherein the reset control mechanism comprises intermittent gear means connected for being driven in conjunction with the rotation of the rotatable resetting member for resetting the printer after the printer is operated to record the fluid delivery.

8. In a fluid dispensing apparatus adapted to be rendered operative and inoperative for dispensing fluid and having a dispensing nozzle for the delivery of fluid, a storage receptacle for storing the nozzle between fluid deliveries, a resettable register for registering the fluid deliveries, a resettable printer for recording the fluid deliveries, a register reset mechanism including a rotatable resetting member operable for resetting the register by rotation thereof in forward and reverse angular directions between initial and extended angular positions respectively, spring means biasing the rotatable resetting member in its reverse angular direction to its initial angular position, and releasable latch means for retaining the rotatable resetting member in its extended angular position, a reset control mechanism comprising first and second relatively rotatable coaxial sequencing members, said first coaxial sequencing member being connected with said rotatable resetting member for rotation between a first angular position and a second angular position in conjunction with the rotation of the resetting member between its initial and extended angular positions respectively, means interconnecting the sequencing members adapted to rotate second coaxial sequencing member to a first angular position thereof when the first coaxial sequencing member is in its second angular position; pivotal control lever means cooperative with the coaxial sequencing members for forward pivotal movement from a withdrawn pivotal position to an intermediate pivotal position when the second coaxial sequencing member is in its first angular position, and from its intermediate pivotal position to an extended pivotal position when the first coaxial sequencing member is in its first angular position; means operative for releasing the latch means when the control lever means is pivoted to its intermediate pivotal position and for rendering the dispensing apparatus operative for dispensing fluid when the control lever means is pivoted to its extended pivotal position; means operative upon placing the nozzle in its storage receptacle for pivoting the control lever means to its withdrawn position, a rotatable manually operable handle, drive means including a disengageable clutch for connecting the rotatable handle to the rotatable resetting member for manually rotating the resetting member from its initial angular position to its extended angular position and for operating the printer to record the fluid delivery, means for disengaging the clutch when the rotatable resetting member is rotated to its extended angular position, means for resetting the printer in conjunction with the reverse rotation of the resetting member from its extended angular position to its initial angular position, and means operative upon the pivotal movement of the control lever means from its extended position to its withdrawn position for re-engaging the disengageable clutch.

9. In a fluid dispensing apparatus adapted to be rendered operative and inoperative for dispensing fluid and having a dispensing nozzle for delivering fluid, a storage receptacle for storing the dispensing nozzle between deliveries, a resettable register for registering the fluid dispensed, a printer for recording the fluid dispensed, a register reset mechanism including a rotatable resetting member operable in forward and reverse angular directions between initial and extended positions respectively for resetting the register, a reset spring connected to rotate the resetting member in the reverse angular direction to its initial angular position, a rotatable drive connected for rotating the resetting member in its forward angular direction for loading the reset spring, and releasable latching means for retaining the resetting member in its extended angular position; a control mechanism for operating the printer for recording the fluid dispensed and for releasing the latching means for resetting the register comprising manually operable drive means including a disengageable clutch for rotating the reset member from its initial angular position to its extended angular position; a sequencing device comprising first and second sequencing members connected to the rotatable resetting member, and a control means cooperative with the sequencing members and operable between a withdrawn position for rendering the dispensing apparatus and engaging the clutch, a partially extended position for releasing the latching means, and a fully extended position for rendering the dispensing apparatus operated for dispensing fluid; and means operable by the placement of the nozzle in the storage receptacle for withdrawing the control means and thereby render the dispensing apparatus operative for dispensing fluid and engage the clutch; the first of the sequencing members providing for operation of the control means from its withdrawn position to its partially extended position when the rotatable resetting member is in its extended angular position, and the second of the sequencing members providing for operation of the control means from its partially extended position to its fully extended position when the rotatable resetting member is in its initial angular position.

10. In a fluid dispensing apparatus adapted to be rendered operative and inoperative for dispensing fluid and having a dispensing nozzle for the delivery of fluid, a storage receptacle for storing the dispensing nozzle between fluid deliveries, a resettable register operable for registering the fluid delivered, a printer for recording the fluid delivered, and a reset mechanism having a reset cycle for resetting the register and a rotatable member rotatable in forward and reverse angular directions between initial and extended angular positions respectively during the reset cycle; a printer and register control mechanism comprising a disengageable drive connected to the reset

mechanism for rotating the rotatable member from its initial angular position to its exended angular position to initiate a reset cycle and for operating the printer to record the fluid delivery; control means operable for rendering the fluid dispensing apparatus inoperative for dispensing fluid when the nozzle is placed within its storage receptacle, for operating the reset mechanism to return the rotatable member from its extended angular position to its initial angular position to complete the reset cycle, and for rendering the dispensing apparatus operative for dispensing fluid when the nozzle is removed from its storage receptacle; sequencing means interconnecting the rotatable member, the control means and the disengageable drive for disengaging the drive when the rotatable member is rotated to its extended position, and for maintaining the dispensing apparatus rendered inoperative for dispensing fluid until the reset cycle is completed and for thereafter re-engaging the drive when the nozzle is replaced within the receptacle.

11. In the fluid dispensing apparatus of claim **10** wherein the disengageable drive comprises a manually operable drive, a disengageable clutch connecting the manually operable drive with the reset mechanism for rotating the rotatable member in the forward angular direction from its initial to its extended angular position, and printer operating means driven by the manually operable drive for operating the printer to record the fluid delivery.

12. In the fluid dispensing apparatus of claim **11** wherein the printer has a reset shaft, a plurality of print wheels rotatable on the reset shaft adapted to be reset by rotation of the reset shaft in a resetting angular direction, and wherein the printer and register control mechanism further comprises means operable with the rotation of the rotatable member in its forward angular direction for rotating the reset shaft more than 360° in the angular direction opposite to its resetting angular direction and operable with the rotation of the rotatable member in its reverse angular direction for rotating the reset shaft in its resetting angular direction for resetting the print wheels of the printer.

13. In the fluid dispensing apparatus of claim **10** wherein the sequencing means comprises a first rotatable sequencing member connected for rotation with the rotatable member, a second rotatable sequencing member mounted for coaxial relative rotation with respect to the first rotatable sequencing member, means interconnecting the coaxial sequencing members adapted to maintain the second rotatable sequencing member in an angular offset position relative to the first rotatable sequencing member, and means interconnecting the control means, the coaxial sequencing members and the disengageable drive and operable by the first rotatable sequencing member to maintain the dispensing apparatus rendered inoperative for dispensing fluid while the rotatable member is in its extended angular position, and operable by the first and second rotatable sequencing members to maintain the drive disengaged until the reset cycle is completed.

14. In the fluid dispensing apparatus of claim **10** wherein the printer and register control mechanism further comprises printer reset means operable to reset the printer as the rotatable member is rotated in the reverse angular direction to its initial position.

15. In a fluid dispensing apparatus adapted to be rendered operative and inoperative for dispensing fluid and having a resettable register for registering the fluid delivered, a reset spring for resetting the register, a rotary reset member rotatable from an initial angular position to an extended angular position for loading the reset spring, a releasable latch means for retaining the reset member in its extended angular position, and a printer for recording the fluid delivered; a register and printer control mechanism comprising a rotary drive operable for rotating the reset member from its initial to its extended angular position and for operating the printer to record the fluid delivery, control means for alternatively rendering the dispensing apparatus operative and inoperative for dispensing fluid and for releasing the latch means, and sequencing means connected to the rotary reset member and to the control means and adapted for preventing operation of the rotary drive while the dispensing apparatus is rendered operative for dispensing fluid and for preventing rendering the dispensing apparatus operative for dispensing fluid until the rotary reset member is rotated from its initial to its extended position to load the reset spring and the register is reset by releasing the latch means.

16. In the fluid dispensing apparatus of claim **15** wherein the rotary drive comprises a rotary input, an intermediate rotary element connected for rotating the rotary reset member to its extended angular position, a disengageable one-way drive interconnecting the rotary input and intermediate rotary element for rotating the intermediate rotary element in one angular direction and thereby rotate the reset member from its initial to its extended angular position; means driven by the intermediate rotary element upon rotation thereof in said one angular direction for operating the printer for recording the fluid delivered, and upon rotation thereof in the opposite angular direction for resetting the printer, and spring means for rotating the intermediate rotary element in said opposite angular direction for resetting the printer.

17. In the fluid dispensing apparatus of claim **15** wherein the sequencing means comprises a pair of relatively rotatable coaxial sequencing members connected for rotation in conjunction with the rotation of the rotary reset member, and wherein the control means is cooperable with the pair of coaxial sequencing members for rendering the dispensing apparatus operative for dispensing fluid after the rotary reset member is rotated to its initial angular position by the reset spring.

18. In a fluid dispensing apparatus adapted to be rendered operative and inoperative for dispensing fluid and having a resettable register operable for registering the fluid delivered, a printer operable for recording the fluid delivered, and a register reset mechanism having a reset spring adapted to be loaded and then triggered for resetting the register; a printer and register control mechanism comprising disengageable drive means for operating the printer to record the delivery and for loading the reset spring, control means for alternatively rendering the dispensing apparatus operative and inoperative for dispensing fluid and for triggering the reset spring for resetting the register while the dispensing apparatus is rendered inoperative for dispensing fluid, and sequencing means for disengaging the drive means while the dispensing apparatus is rendered operative for dispensing fluid and for maintaining the dispensing apparatus rendered inoperative for dispensing fluid during the loading of the reset spring and resetting of the register.

19. The fluid dispensing apparatus of claim **18** further having a dispensing nozzle for delivering fluid, and a storage receptacle for storing the dispensing nozzle between deliveries, and wherein the control means is operated to render the dispensing apparatus inoperative for dispensing fluid when the nozzle is stored in its storage receptacle and is operated to trigger the reset spring when the dispensing nozzle is removed from its storage receptacle.

20. The fluid dispensing apparatus of claim **18** wherein the sequencing means comprises a pair of cooperating interlocks connected for operation with the reset mechanism and operable respectively to prevent triggering the reset spring until the reset spring is loaded and to prevent rendering the dispensing apparatus operative for dispensing fluid until after the register is reset.

21. In the fluid dispensing apparatus of claim **20** wherein the pair of cooperating interlocks are coaxially mounted for relative rotatable movement, said coaxial interlocks having relatively offset angular positions and relatively aligned angular positions, a first of the coaxial interlocks being connected to be rotated as the reset

spring is loaded and the register is reset; and wherein the sequencing means further comprises means interconnecting the coaxial interlocks adapted to rotate a second of the coaxial interlocks to said relatively offset angular position, and a control lever cooperable with the coaxial interlocks to restrain the second interlock as the register is reset and to thereby position the second interlock in relative angular alignment with the first interlock, said control lever being connected to the control means to render the dispensing apparatus operative for dispensing fluid when the coaxial interlocks are in angular alignment.

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ROBERT B. REEVES, *Primary Examiner.*

N. L. STACK, *Assistant Examiner.*