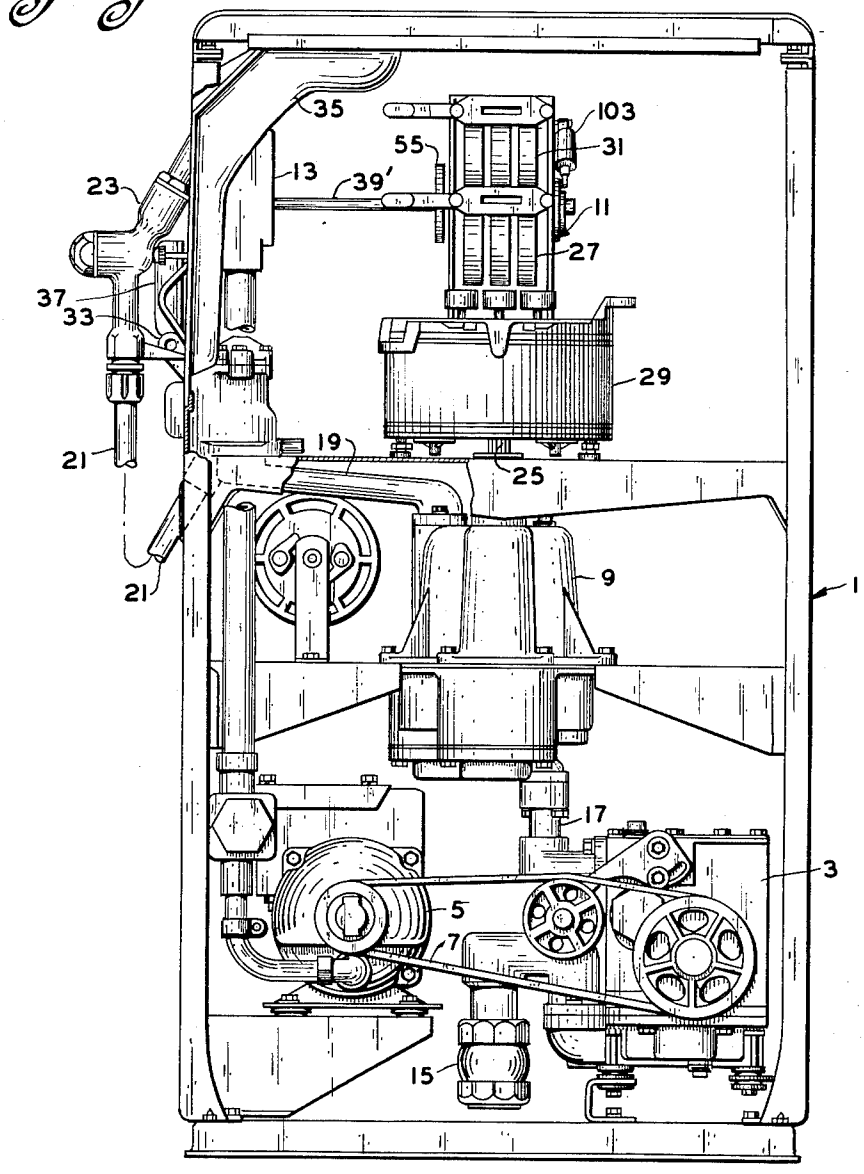
July 24, 1962 H. E. CARNAGUA ETAL 3,045,868

SINGLE LEVER DISPENSER CONTROL APPARATUS

Filed Sept. 9, 1959 7 Sheets-Sheet 1

Fig. 1



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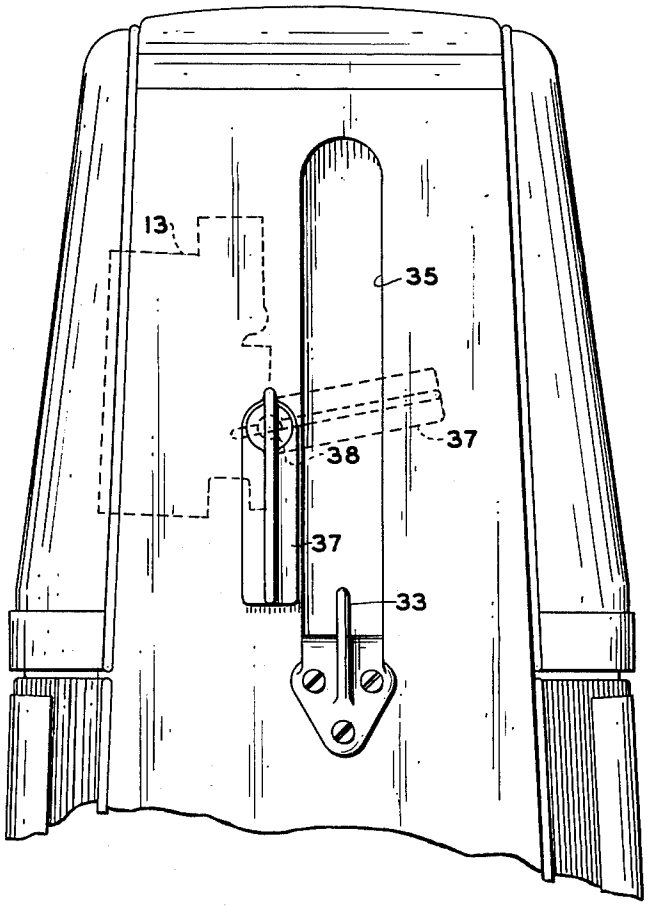
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SINGLE LEVER DISPENSER CONTROL APPARATUS

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Fig. 2



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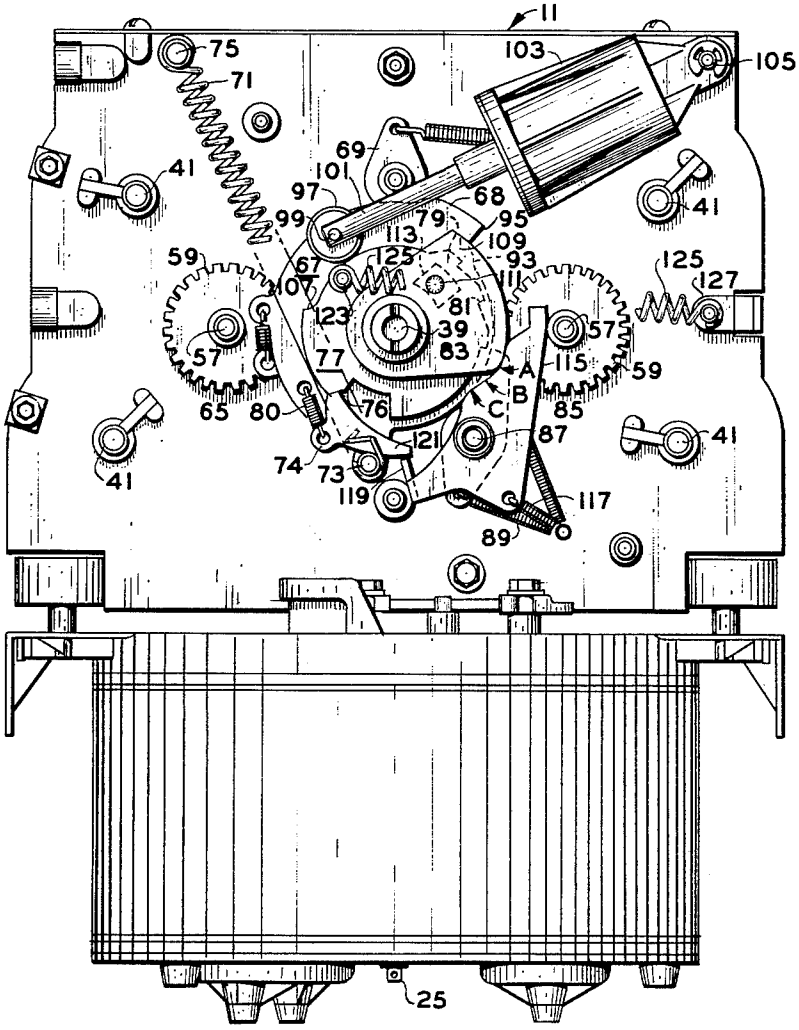
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SINGLE LEVER DISPENSER CONTROL APPARATUS

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Fig. 3



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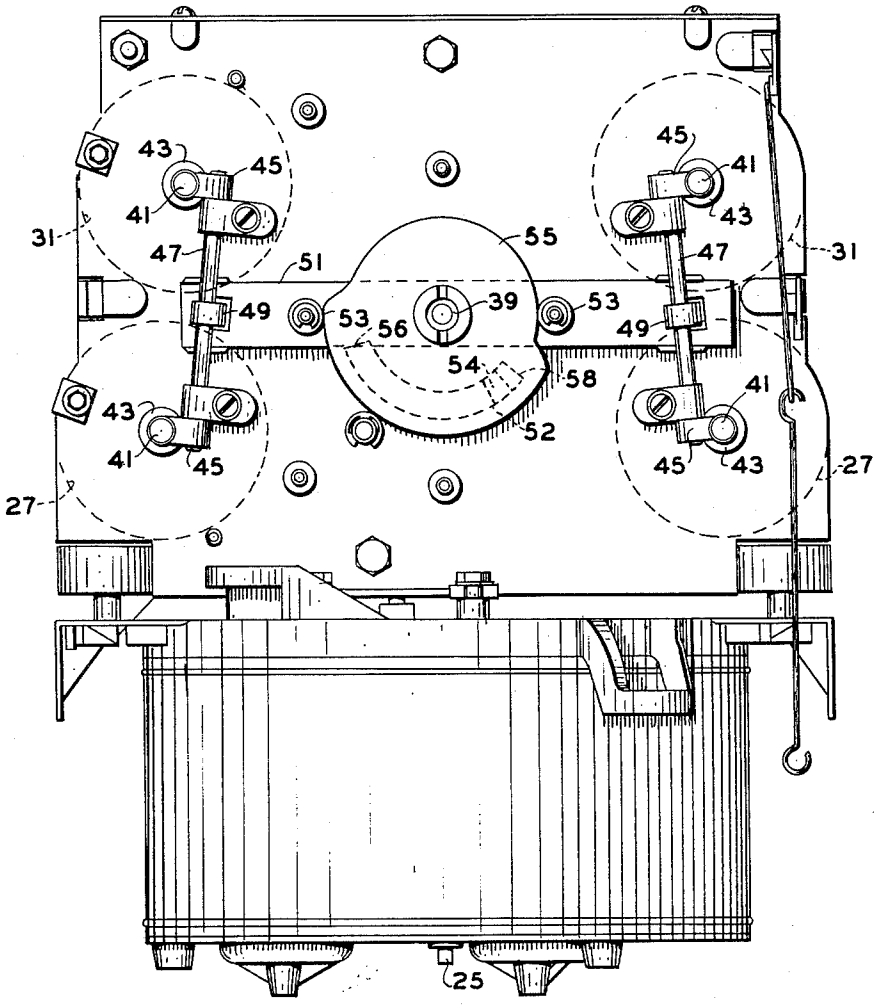
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SINGLE LEVER DISPENSER CONTROL APPARATUS

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Fig. 4



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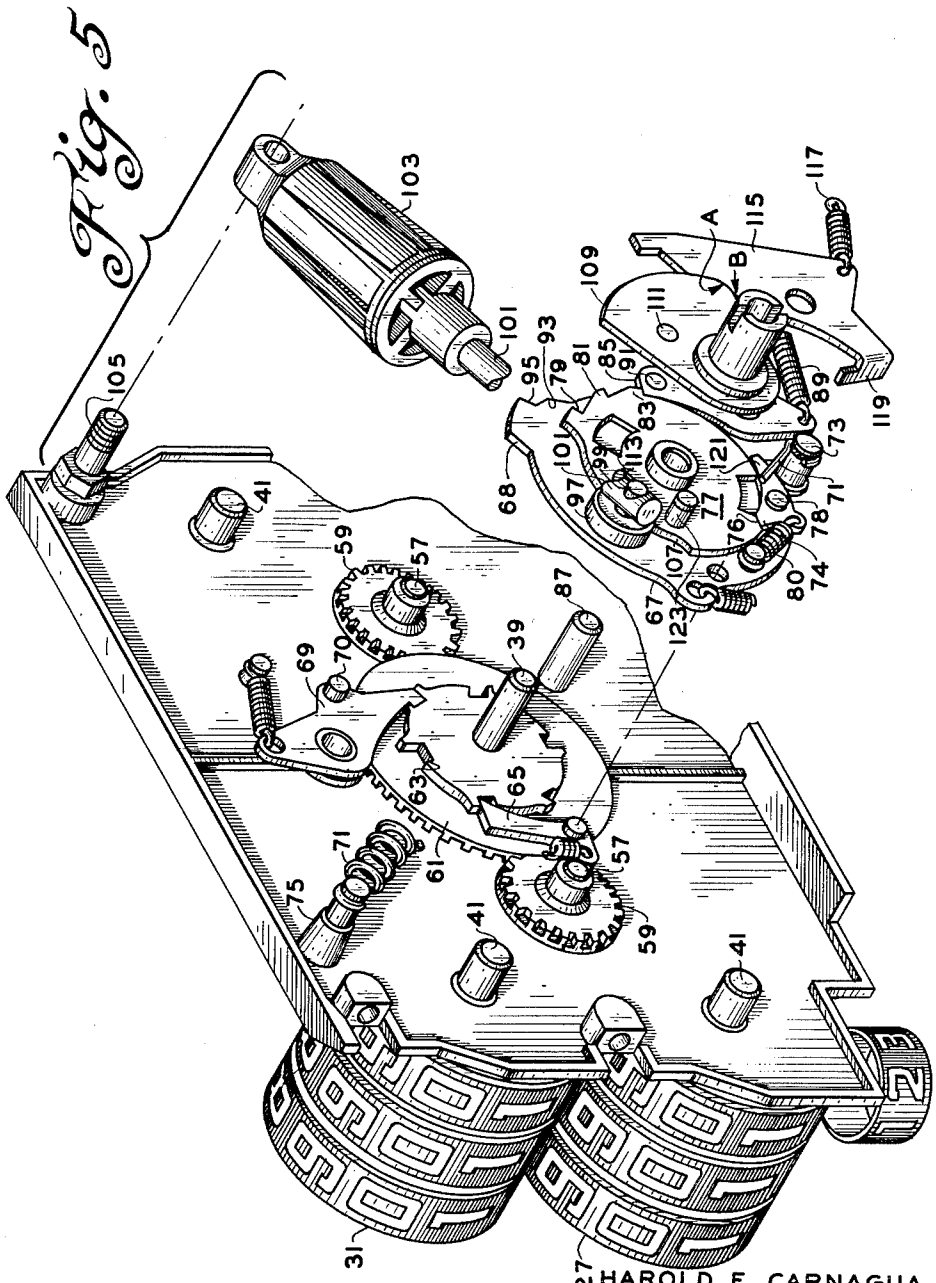
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SINGLE LEVER DISPENSER CONTROL APPARATUS

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Fig. 5



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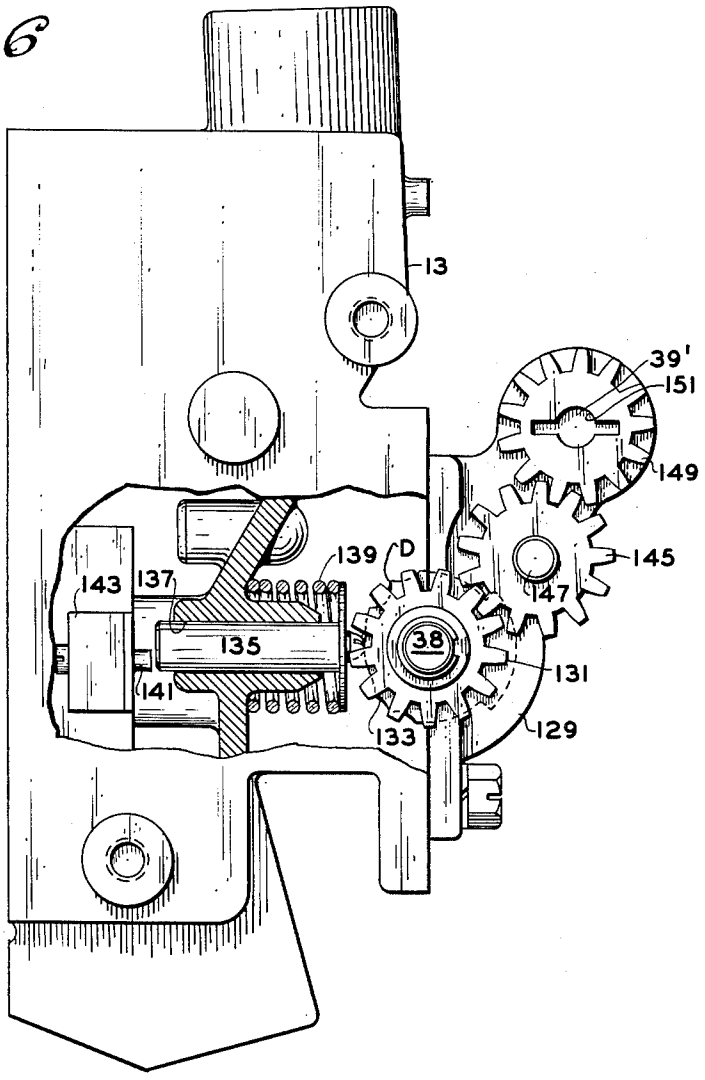
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SINGLE LEVER DISPENSER CONTROL APPARATUS

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Fig. 6



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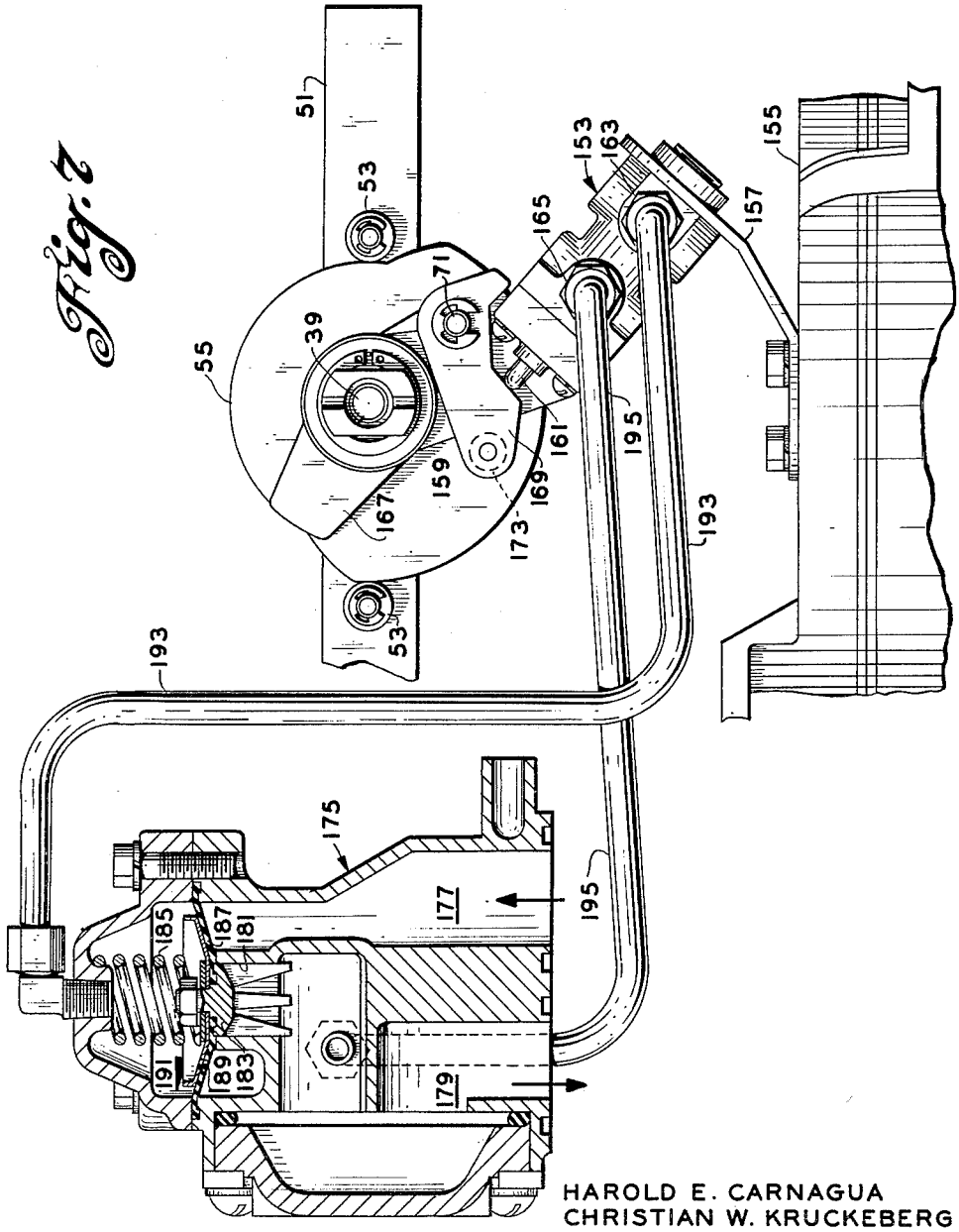
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SINGLE LEVER DISPENSER CONTROL APPARATUS

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Fig. 2



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United States Patent Office 3,045,868 Patented July 24, 1962

3,045,868

SINGLE LEVER DISPENSER CONTROL APPARATUS

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Filed Sept. 9, 1959, Ser. No. 838,895
14 Claims. (Cl. 222—33)

This invention relates to a single lever control mechanism for a filling station type of motor fuel dispenser. More specifically it relates to a mechanism for insuring that the dispenser registers are zeroized before the dispenser can be operated to dispense fuel and for insuring that the dispnser is rendered inoperative to dispense fuel before the nozzle can be returned to its support.

It is an object of the invention to provide a simple and relatively inexpensive mechanism.

Another object of the invention is to provide a mechanism which requires only a single manual operation of the control lever to start the process of conditioning the dispenser to make a delivery, the remainder of the process being carried out automatically.

Yet another object of the invention is to provide a structure which is positive in operation, rugged and yet relatively simple.

These and other objects will become apparent from a study of this specification and the drawings which are attached hereto, made a part hereof and in which:

FIGURE 1 is a front elevation of a motor pump type of fuel dispenser chassis employing the control mechanism.

FIGURE 2 is a partial end elevation showing the nozzle boot, nozzle support and control lever.

FIGURE 3 is an end elevation of a computing register fitted with the control mechanism.

FIGURE 4 is an elevation of the opposite end of the register.

FIGURE 5 is an exploded view of the control mechanism.

FIGURE 6 is an elevation of the switch box with parts in section to show the switch and cam operating mechanism.

FIGURE 7 is an end elevation of the register similar to FIGURE 4 but showing a pilot valve and operating mechanism therefor.

Referring first to FIGURE 1 showing the dispenser chassis, numeral 1 represents the frame of the dispenser within which are mounted a pump and air separator unit 3, a motor 5 for driving the pump by means of belt 7, a meter 9, a register 11, here shown to be of the computing type and a switch mechanism housing 13. The pump withdraws liquid from the supply tank (not shown) through the suction stub 15 and discharges it through the air separator to the meter, through conduit 17. From the meter, measured liquid flows through discharge conduit 19, the hose 21 and to the manually operable, valved nozzle 23.

The meter drives the register 11 through shaft 25 which is connected through clutches and gearing (not shown) to drive the gallons indicators or dials 27. Shaft 25 also drives a variator 29, the output of which is also connected through clutches (not shown) to drive the total cost indicators or dials 31.

The specific computing register shown is fully disclosed in Patent Number 2,814,444 issued to Bliss on November 26, 1957.

The nozzle is removably mounted on a fixed support 33 and, when so mounted, enters a boot 35. As shown in FIGURE 2, the single control lever or handle 37 is mounted on a shaft 38 so as to rotate from a substantially vertical, depending position to a substantally horizontal position shown in dashed lines in which it obstructs entry of the nozzle into the boot. Also when the nozzle is in the boot, it prevents the full operation of the handle. In the first position of the handle, the dispenser is in the normal or idle condition and in the second position of the handle (shown in dashed lines) the dispenser in operative to dispenser fuel whenever the nozzle valve is opened.

Referring now to FIGURES 3 and 4, the numeral dials of the various registers are rotatable on shafts 41 which are axially shiftable by means of racks 43 (FIGURE 4) which are actuated by gear sectiors 45 mounted on pivot shafts 47. Actuating levers 49 are mounted on the shafts and are in turn moved by a reciprocating slide 51 which carries rollers 53 which follow the cam 55. The latter is fixed to shaft 39 which, in effect, extends all the way through and beyond the computer and it may be axially connected to one or more additional shafts as explained below.

The rear face of cam 55, as shown in FIG. 4 is provided with a groove 52 which slidably receives a stop 54 which is fixed on the computer frame. The wall 56 of the groove coacts with stop 54 to limit the rotation of the cam and shaft 39 to 103 degrees from its initial position while the other end wall 58 coacts with the stop to limit overtravel of the parts in the return direction past the initial position shown in FIG. 4.

In the position shown in FIGURE 4, the shaft 39 is in a position in which the clutches of the individual numeral dials are set so that the dials will be rotated by the resetting gear trains. Parts of these trains are shown in FIGURES 3 and 5, in which 57 are the resetting shafts which are driven by gears 59 which mesh with a central resetting gear 61. The latter is fixed to a ratchet 63 which is driven by a pawl 65 carried by a resetting disc or member 67. The parts 61 and 63 are freely rotatable on shaft 39 but are prevented from rotation by pawl 69.

Disc 67 is urged in the clockwise direction by a relatively strong resetting spring 71 which is hooked to stud 73 on the disc and to stud 75 on the frame. Rotation of the disc 67 by spring 71 is prevented by a trip dog 74 pivotally mounted at 78 on disc 67 and urged by spring 80 into engagement with a notch 76 of the control element 77 which is also rotatable on shaft 39. Pawl 69 is lifted from ratchet 63 by a cam 68 on disc 67 which acts on pin 70 in the initial position of the parts.

The control element has three teeth or interlock stops 79, 81 and 83 which are positioned for engagement by a pawl or latch 85 which is pivotally mounted on a stud 87 of the computer frame and which is urged by spring 89 into engagement with the control element and its teeth. The pawl or latch carries a pin 91 which extends into the path of cam 93 and a stop 95 on the resetting member.

A bumper 97, in the form of a roller having a metal rim and hub connected by an annular intermediate member of rubber or other yieldable material, as mounted on a stud 99 fixed in the resetting disc 67. This stud also passes transversely through the free end of a plunger 101 of a dashpot 103 which is pivotally mounted on a frame stud 105.

The bumper 97 lies in the path of a stop 107 which projects substantially radially from control element 77.

Fixed to shaft 39 is a cam 109 which has a pin 111 extending toward element 77 to enter a lost motion slot 113 formed therein. The peripheral portion of the cam is engaged by a cam follower lever 115 which is pivoted on stud 87 and is urged toward the cam by spring 117.

Lever 115 has a trip member or projection 119 which overlies the tail 121 of trip dog 74 but is normally held out of engaging position therewith by the spring 117.

A stud 123 is fixed on the control element and extends toward and beyond the edge of cam 109. A relatively strong spring 125 (FIG. 3) is mounted at one end on the

stud 123 and extends across the near face of cam 109 to an anchor 27 on the computer frame.

Shaft 39 is connected by an extension shaft 39', which projects beyond cam 55 as shown in FIG. 1, for operation by handle 37 and its shaft 38 through the mechanism shown in FIGURE 6. The FIGURES 2, 4 and 6 are all viewed from the same direction and the shaft 38 extends through a bearing (not shown) formed by the switch box 13 and a bracket 129 which is removably mounted thereon.

Shaft 38 drives a gear 131 and a switch cam 133. The cam acts on one end of a headed plunger 135 which is guided in a bearing 137 of the box and which is urged toward the cam by a spring 139. The other end of the plunger acts on the actuator 141 of a normally open switch 143 which is connected to control the motor 5. Gear 131 meshes with an idler 145, supported by a stud 147 also mounted on the bracket 129, and the idler drives a gear 149 also rotatably supported on the bracket. This gear is provided with a spline receiving recess 151 to receive the splined end of the shaft 39' which connects with shaft 39 of the computer at the cam 55 (FIG. 4).

It will thus be seen that as the handle 37 (FIG. 2) is rotated counterclockwise, the gears 131 and 149 and hence cam 133, shafts 39', 39 and cam 55 will rotate counterclockwise, whereas the cam 109 as shown in FIGURES 3 and 5 will be rotated clockwise because it is viewed from the opposite side of the computer in these figures. Such rotation of cam 133 will cause its rise portion D to actuate the switch plunger 135 for closing the switch. The ratio of the drive from shaft 38 to shaft 39' is preferably 1 to 1.

The switch is preferably of a snap action type, the actuating means for which must be moved in one direction through a predetermined distance before the switch snaps closed and through another such distance in the opposite direction before the switch snaps open. In other words, the switch operating mechanism includes a lost motion means.

OPERATION

The operation of the structure thus far described is as follows, reference being had to the chart of cycle events below.

In the condition of the machine as shown in FIGURES 1 to 6, which is the idle condition of the dispenser, the nozzle is on the support; the motor switch 143 is open; the cam 55, bar 51 and shafts 41 are positioned so that the individual dials are declutched from the meter and variator drives and are clutched to the resetting gear train; springs 71 and 125 are stressed or "loaded" and are held against operation by latch or pawl 85 which acts on tooth 83 of control element 77 to prevent its rotation. The latter has its notch 76 engaged by trip dog 74 of the resetting disc 67 which is therefore held against clockwise rotation by spring 71 (FIG. 3).

The dispenser operation is described in detail below and the various events of the cycle are shown in the chart in column 5.

To start the dispenser, the nozzle should be removed from support 33 and thereafter handle or lever 37 is rotated counterclockwise (FIG. 2) to a position which is determined by the contact between pin 111 and the right side of the lost motion slots 113 (FIGS. 3 and 5). This rotation of shaft 38 and therefore of shafts 39, 39' is about 10½ degrees and is not enough to cause cam 133 to close switch 143. It should be noted that the handle cannot be manually rotated past this position since element 77 is locked by pawl 85 and the handle can be rotated only through the distance permitted by the lost motion mechanism.

However, within this amount of rotation of shaft 39, point A of cam 109 follows along the profile B of follower lever 115 to point C thereof and this rotates lever 115 far enough in a clockwise direction to cause projection 119 to act on the tail 121 so as to displace trip dog 74 from notch 76 of the control element 77. Spring 71 immediately rotates the resetting member 67 clockwise under the control of dash pot 103 and such rotation is imparted by pawl 65, ratchet 63, gears 61, 59, shafts 57 and the rest of the resetting train to the indicators 27, 31 which are thereby restored to zero.

The rotation of the disc 67 also moves the tail 121 of the trip dog entirely out of range of the projection 119 so that its spring 80 will again urge it toward control element 77. It also moves cam 68 from pin 70 of pawl 69 to enable the pawl to engage the next tooth of ratchet 63.

The resetting action is terminated by contact of the stop 95 on the resetting disc with the pin 91 on the latch or pawl 85. Shortly prior to such contact, cam 93 of the member 67, acting on pin 91, starts to cam pawl 85 away from tooth 83 of the control element. The element 77 is fully released from the latch or pawl just prior to the stopping of member 67.

As soon as the control element is released, it is rotated clockwise by spring 125 to a position which is determined by contact between the stop 107 on this element with the bumper roller 97 mounted on reset disc 67. The control element moves the cam 109 with it by means of the lost motion connection 111, 113, the lost motion in which is taken up when element 77 moves 10.5 degrees. Thus the shafts 39, 39' and 38 are rotated by spring 125 without further attention of the operator.

In the particular mechanism disclosed, the shaft 39, which has already been rotated clockwise 10½ degrees as described above, will be rotated an additional 90½ degrees in a clockwise direction by spring 125 before stop 107 strikes bumper 97.

When the shaft 39 reaches the 23.5 degree position, beyond its initial position, cam 55 acts on right hand roller 53 (FIG. 4) to shift bar 51 rightward and begins to declutch the indicator dials from the resetting gear train and to clutch them to the variator and meter output trains. This action is completed when the 38.5 degree position is reached. When the 66 degree position is reached, the latching edge of notch 76 of the control element has just cleared the end of the trip dog 74. When the 85 degree position is reached the cam 133 has depressed plungers 135 and 141 far enough to close the motor switch 143. The remaining travel to the 101 degree position, which is the running position of the parts and is limited by contact of stop 107 with bumper 97, is idle motion. Should the shaft 39 travel beyond the 101 degree position due to inertia it will be positively stopped, at 103 degrees, by the stop 54 and end 56 of groove 52 in the clutch control cam 55 and will rebound to the 101 degree position.

It should be understood that while the events are rather precisely stated, they are subject to variation due to manufacturing tolerances and that they are used only to show the sequence and approximate occurrence of the various events. Further, the various events of shaft 39, which occur after the initial rotation of the handle, are effected by a rapid and continuous rotation of the control element 77 under the action tf spring 125, so that the only event which need be controlled by the operator is the first event which is the 10.5 degree motion of handle 37, the rest of the operation is preferably automatic.

When the delivery of fuel is completed, the operator will return handle 37 manually to its initial position performing the events listed below and shown on the chart on pages 9 and 10.

The return of the handle from the 101 degree to the 66 degree position engages the control element notch 76 with the trip dog 74 which is urged into position for such engagement by its spring 80. As shaft 39, element 77 and member 67, which is now latched to the element and is moved therewith to start to load spring 71, are moved to the 54 degree position, tooth 79 of the element is engaged by pawl 85 which has been freed from cam 93 of the disc by the rotation thereof just described. Further rotation of shaft 39 to the 42 degree position by shaft

38, which carries cam 133, moves the cam to a position in which plungers 135, 141 are relieved sufficiently to permit the switch 143 to open. There is lost motion in the switch mechanism which accounts for the fact that the switch requires 43 degrees of shaft rotation between its closing and opening positions. It is to be noted that the switch opens only after the first interlock tooth 79 is engaged by pawl 85 so that the motor cannot be restarted without returning the parts to the initial position and resetting the register.

Subsequent rotation of shaft 39 to the 30 degree position aligns the interlock tooth 81 for engagement by pawl 85. When the 21 degree position is reached, cam 55 and left roller 53 (FIG. 4) start bar 51 leftward to begin to restore the clutches to their initial conditions, which operation is completed at about the 6 degree position.

When the shaft 39 reaches the 10.5 degree position, point A of cam 109 clears the high point C of follower 115 and projection 119 thereafter moves rapidly out of the path of the tail of the trip dog 74. At about the 3 degree position the projection is clear and the tail passes it so that it will be in position for subsequent release by the projection.

When the zero degree position is reached, tooth 83 is engaged by pawl 85, cam 68 lifts pawl 69 from ratchet 63 and the parts are in their initial position. However, an overtravel of this position by 7 degrees is permissible before stops 54 and 58 of cam 55 (FIG. 4) engage and this insures that the interlock tooth and pawl 85 do engage. Any overtravel is immediately removed by spring 71 when the lever is released so that the parts come to rest in the zero position.

The manual return of the shaft 39 from the 101 degree position to some overtravel position (−7 degrees max.) is preferably accomplished in a single continuous movement.

The various events are summarized in the following chart to aid in understanding the cycle.

Chart of Dispenser Cycle Events

(Positions charted refer to shafts 38, 39, 39′ and handle 37)

OPERATION FROM INITIAL TO RUNNINIG CONDITION

Degrees Rotation	Event Performed	Notes
Shafts 38, 39′ and 39:		
0	Initial position	Determined by tooth 83 and pawl 85.
10.5	Dog 74 tripped—Reset occurs.	
23.5	Clutch operation starts	Declutch reset gear train.
38.5	Clutch operation complete.	Registers clutched to meter and variator drives.
66	Notch 76 overtravels dog 74.	Insures spring loading on return.
79	Pilot valve starts to open	
85	Motor switch closes	Motor starts.
95.5	Pilot valve full open	
101	Stop 107 strikes Bumper 97.	
103	Extreme travel of shafts	Stops 54, 56 engage.
101	Running position	Rebound from 54, 56 by stop 107 on bumper 97.

OPERATION FROM RUNNING TO INITIAL CONDITION

101	Running position	
95.5	Pilot valve starts to close	
79	Pilot valve closed	
66	Notch 76 picks up dog 74	
54	Tooth 79 and pawl 85 engage.	Return to 0 req'd to restart.
42	Motor Switch opens	
30	Tooth 81 and Pawl 85 engage.	
21	Reclutch operation starts	Registers declutch from meter and variator drives.
10.5 to 3	Cam follower 115 moves to clear tail of dog 74.	Permits positioning of dog for subsequent operation.
6	Reclutch operation complete.	Registers clutched to reset train.
0	Initial position	Tooth 83 and Pawl 85 engaged.
−7	Overtravel	To insure engagement of 83 and 85. Limited by stops 58, 54.
0	Initial position	Returned by spring 71.

MODIFICATION

The chart refers to a pilot valve which is also operated by shaft 39. This valve is not used in the motor pump dispenser of FIGURE 1 and has therefore been disregarded in the above description of structure and operation.

However, in systems which employ a remotely located motor pump, such as a submerged pump, which is disposed in the storage tank, the dispenser is of the "remote control" type. It has no motor such as 5 of FIGURE 1 and no pump and air separator unit 3. However, since a number of such dispensers are usually connected to the discharge of a single remote pump, it would be possible, with the pump running, to withdraw fuel from any of the dispensers without operating the lever 37 thereof, merely by opening the nozzle valve. Such operation would permit the sale of fuel from a dispenser without resetting the registers to zero and must therefore be prevented. Accordingly, it is necessary to provide a valve for each dispenser which is closed when the dispenser is idle and which can be opened only after the registers have been reset.

It will be seen from FIGURE 7 that a pilot valve 153 is provided which is mounted on a frame member 155 by means of a bracket 157 and is also supported on shaft 39 by a second bracket 159. This valve is of a normally closed type and is opened by depression of the plunger 161, and when open permits fuel to flow from the inlet 163 to the outlet 165.

A cam 167 is fixed to shaft 39 and is rotatable therewith to and from engagement with a follower lever 169 which is pivoted at 171 on bracket 159 and carries a roller 173 which lies in the path of the cam 167. These parts are relatively so positioned that, as shown on the chart above, the cam 167 starts to displace lever 169 when the shaft 39 has been rotated counterclockwise (FIG. 7) 79 degrees, to start the valve 153 open. The valve is fully open by the time the shaft has rotated 95.5 degrees. Further movement of cam 167 produces no effect and is merely lost motion.

Likewise, on the reverse (clockwise) movement of the shaft 39 (FIG. 7), the valve 153 starts to close when the shaft reaches the 95.5 degree position (away from its initial position) and is closed when the shaft reaches its 79 degree position.

The valve 175 which is controlled by the pilot valve is also shown in FIGURE 7 has an inlet passage 177 and an outlet passage 179 which are connected in the main fuel flow line. Passage 177 is usually connected to the outlet of meter 9 while 179 is connected to supply the hose. The other ends of these passages communicate through a valve port 181 which is controlled by a valve 183 which is normally held closed by a spring 185. The valve is mounted on a diaphragm 187 which has a restricted orifice 189 to allow fuel to flow at a reduced rate from the inlet passage 177 to the chamber 191, on the other side of the diaphragm.

The inlet 163 of the pilot valve is connected by tube 193 with the chamber 191 while the outlet 165 of the pilot valve is connected with the outlet passage by tube 195.

When the pilot valve is closed the pressure in chamber 191 is equal to the pressure in the inlet passage 177 due to the equalizing flow permitted by orifice 189 but when the pilot valve and the nozzle valve are both open, fuel drains from chamber 191 at a greater rate than it can be replaced through the orifice. The pressure in the chamber 191 therefore drops below the pressure in passage 177, a differential pressure is exerted on the diaphragm in a direction to open the valve 183 and when this differential overcomes the spring 185, the valve 183 opens to the degree necessary to reestablish equilibrium of the forces acting on the valve and its diaphragm.

Since the pressure in chamber 191 is a function of the

nozzle valve opening, the valve **183** "follows" the nozzle valve setting so as to modulate the flow through the dispenser.

ALTERNATIVE OPERATION

It is obvious that the above described operation of the control mechanism, with or without the pilot valve, requires the operator to perform only two operations to condition the dispenser for operation. He removes the nozzle from the nozzle support and moves counterclockwise lever **37** through the 10.5 degree lost motion stroke permitted by pin **111** and slot **113** (FIGS. 3 and 5).

The mechanism then functions automatically to perform the various functions necessary to reset and properly connect the registers to the meter and variator drive trains and to provide a supply of fuel under pressure at the nozzle.

In some instances such automatic operation may be undesirable and in such cases, the spring **125** may be removed. This alters the operation of the mechanism in minor respects but the mechanism continues to perform all of the necessary functions with the required precision.

To condition the dispenser for delivery, the operator must perform three operations. He must remove the nozzle from the support, move lever **37** to the 10.5 degree position, all as described above, but in addition he must move it further in the same direction after resetting is completed in order to perform manually the various functions which were previously performed by spring **125**.

Since spring **125** is no longer urging the control element to rotate clockwise (FIGS. 3 and 5) this element will be dragged along with cam **109** by the pin and slot connection **111**, **113**. It may therefore lag 10.5 degrees behind the position it occupies when spring **125** is used, and stop **107** may not contact the bumper **97**. Consequently the shaft **39** will travel 103 degrees from the initial position rather than **101**, where it is checked by the stops **54**, **56** associated with the clutch cam.

This slight additional overtravel produces no improper operation of the mechanism since the switch cam **133** and pilot valve cam **167** have dwell portions of adequate length to permit such lost motion.

The fact that the member **77** lags behind its further travel is of no consequence since it is the movement of the shaft **39** and its associated shafts which perform the various functions.

NOZZLE SUPPORT BLOCKING

As will be seen from FIGURE 2, the handle **37** in its initial (full line) position depends substantially vertically from the shaft **38** and along the left side of the nozzle support and boot. It cannot be rotated counterclockwise the 10.5 degrees necessary to reset the register with a nozzle mounted on the support **33** because it will strike the nozzle. In passing to the running position shown in dashed lines FIG. 2, after the nozzle has been removed, which is 101 degrees counterclockwise from the initial position, the handle sweeps further across the boot and nozzle support. Thus it cannot be operated to perform any of the functions necessary to start the dispenser while the nozzle is on the support and conversely, if it occupies any rotative position in which any of the functions have been performed, while the nozzle is off the support, the nozzle cannot be restored to the support. This induces the operator to return the handle to the initial position after every dispensing operation and insures that the dispenser is not left in the operative condition with the motor switch closed.

It is obvious that various changes may be made in the form, structure and arrangement of parts of the specific embodiments of the invention disclosed herein for purposes of illustration, without departing from the spirit of the invention. Accordingly, applicant does not desire to be limited to such specific embodiments but desires protection falling fairly within the scope of the appended claims.

We claim:

1. A control mechanism for a liquid dispenser having a resettable register and dispensing control means, said control means having idle and dispensing positions, a resetting member movable between predetermined initial and reset positions, a spring connected to move said member to its reset position, a control element and a handle, both movable between initial and dispensing positions, means, including a lost motion device, connecting said handle with said control element, releasable means connecting said element with said resetting member to enable said handle to restore said element and member to their initial positions to load said spring upon return of the handle from its dispensing position to its initial position, a latch for holdng said element and thereby, said member, in their initial positions against the action of said spring, means operable by said handle, upon movement thereof from its initial position to a position, intermediate its initial and dispensing positions, determined by said lost motion device and said latched element, to release said releasable means, to free said member from said control element for resetting movement by said spring, means operable by said member, substantially at said reset position so as to free said element and handle for movement to their dispensing positions, for disabling said latch, power means, and means connected for operation by said power means, upon disabling of said latch, for moving said element, control means and handle to their respective dispensing positions.

2. The structure defined by claim 1 wherein said power means comprises a spring.

3. The structure defined by claim 1 wherein said power means comprises a spring connected at one end to said control element for urging it toward its dispensing position.

4. The structure defined by claim 1 wherein said register comprises a frame, said releasable means comprises a trip dog mounted on said resetting member and said releasing means comprises a lever pivotally mounted on said frame and provided with a trip member which is disposed for movement, by said lever, to engage and trip said dog, when the reset member occupies its initial position, and a cam connected with said handle and disposed to move said lever to trip said dog, upon lost motion movement of said handle to its intermediate position from its initial position.

5. The structure defined by claim 4 which includes means for retracting said lever and trip member from the dog engaging position prior to the return of said resetting member to its initial position.

6. The structure defined by claim 1 wherein said dispensing control means includes a switch and switch operating means operable by said power means for closing said switch.

7. The structure defined by claim 1 wherein said dispensing control means includes a valve and means operable by said power means for opening said valve.

8. The structure defined by claim 1 which includes a nozzle boot defining an entrance and adapted to receive a portion of a nozzle, a support for holding the nozzle in the boot, said handle being disposed so as to sweep a portion of said entrance as it moves between its initial and dispensing positions and so as to lie over a portion of the entrance when it occupies its dispensing position, so as to prevent the mounting of a nozzle on said support and in said boot.

9. The structure defined by claim 8 wherein said handle, in its initial position lies closely adjacent one side of the entrance to said boot so that rotation of the handle to release said releasable means will be prevented by a nozzle mounted in said boot and on said support.

10. The structure defined by claim 6 wherein said switch operating means includes lost motion means and wherein said control element passes from said initial position successively through first and second positions

to said dispensing position, said switch operating means being constructed so as to close said switch upon passage of said element through said second position toward dispensing position, said lost motion means causing said switch operating means to open said switch after passage of said element through said first position toward initial position, interlock means on said element positioned for engagement by said latch when said element passes said first position in moving toward said initial position so as to prevent return of said element directly from said first to said second position, said lost motion means and interlock thus serving to prevent reclosing said switch without resetting said register so as to disable said latch.

11. The structure defined by claim 1 which includes a first stop on said control element and a yieldable stop means disposed in the path of said first stop, said stops being positioned for engagement when said element is moved to its dispensing position by said power means.

12. The structure defined by claim 11 wherein said yieldable stop is mounted on said resetting member.

13. The structure defined by said 1 which includes a register frame, a first shaft rotatably mounted therein, said resetting member and control element being rotatable on said first shaft, and said element being connected to said shaft through said lost motion device; a dispenser

chassis, a switch box mounted thereon, said dispenser control means including a switch mounted in the box, a second shaft rotatably mounted on said box, a switch cam and said handle being mounted on and fixed to said second shaft, means, including lost motion means, connecting said switch for operation by said cam, and means connecting said shafts for simultaneous rotation.

14. The structure defined by claim 7 which includes a dispenser chassis, a shaft mounted thereon for simultaneous rotation with said handle, a cam on said shaft, said valve comprising a body defining an inlet, an outlet and a valve port therebetween, a normally closed valve for said port, valve operating means, means for mounting said body on said chassis and shaft, so as to position said valve operating means for actuation by said cam, said cam being positioned on said shaft so as to open said valve when said shaft is actuated by said power means.

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