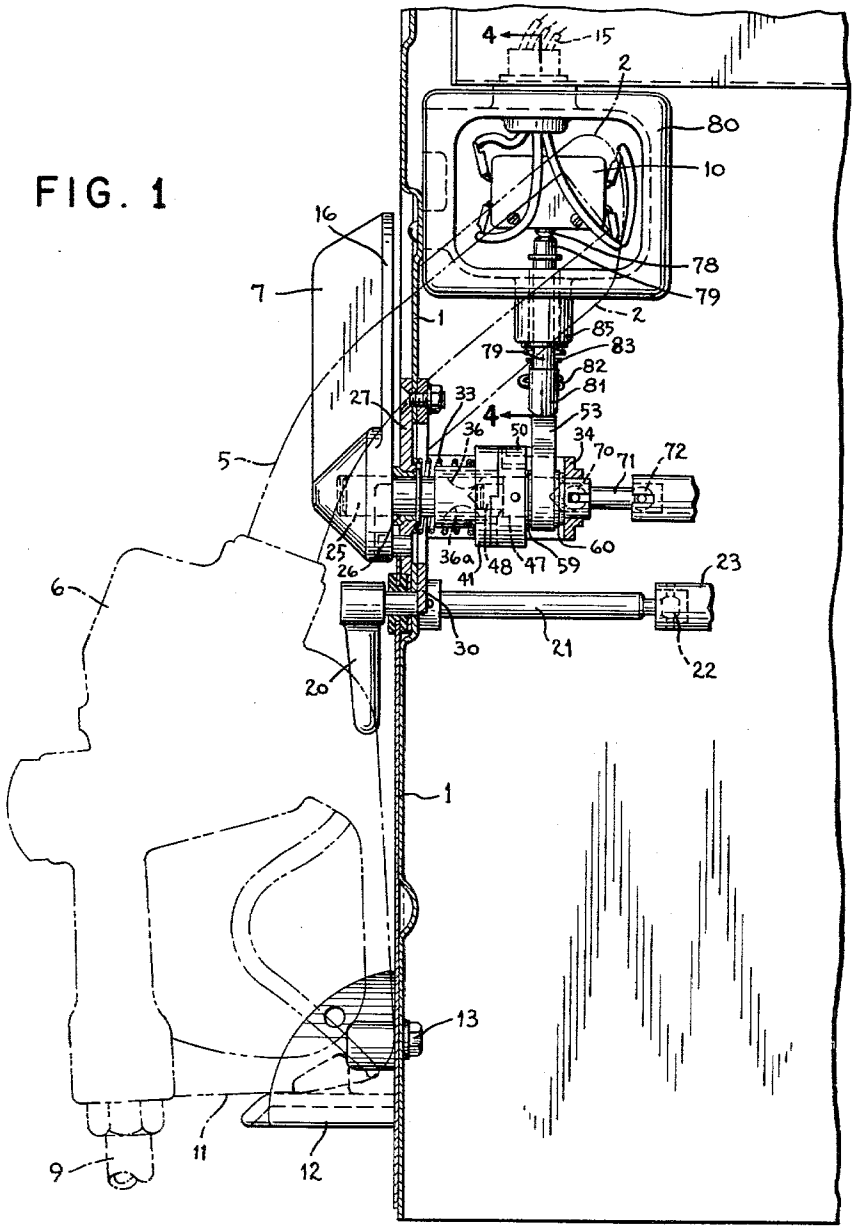
April 13, 1965 L. F. NELSON 3,178,057

PUMP OPERATING MECHANISM

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FIG. 1



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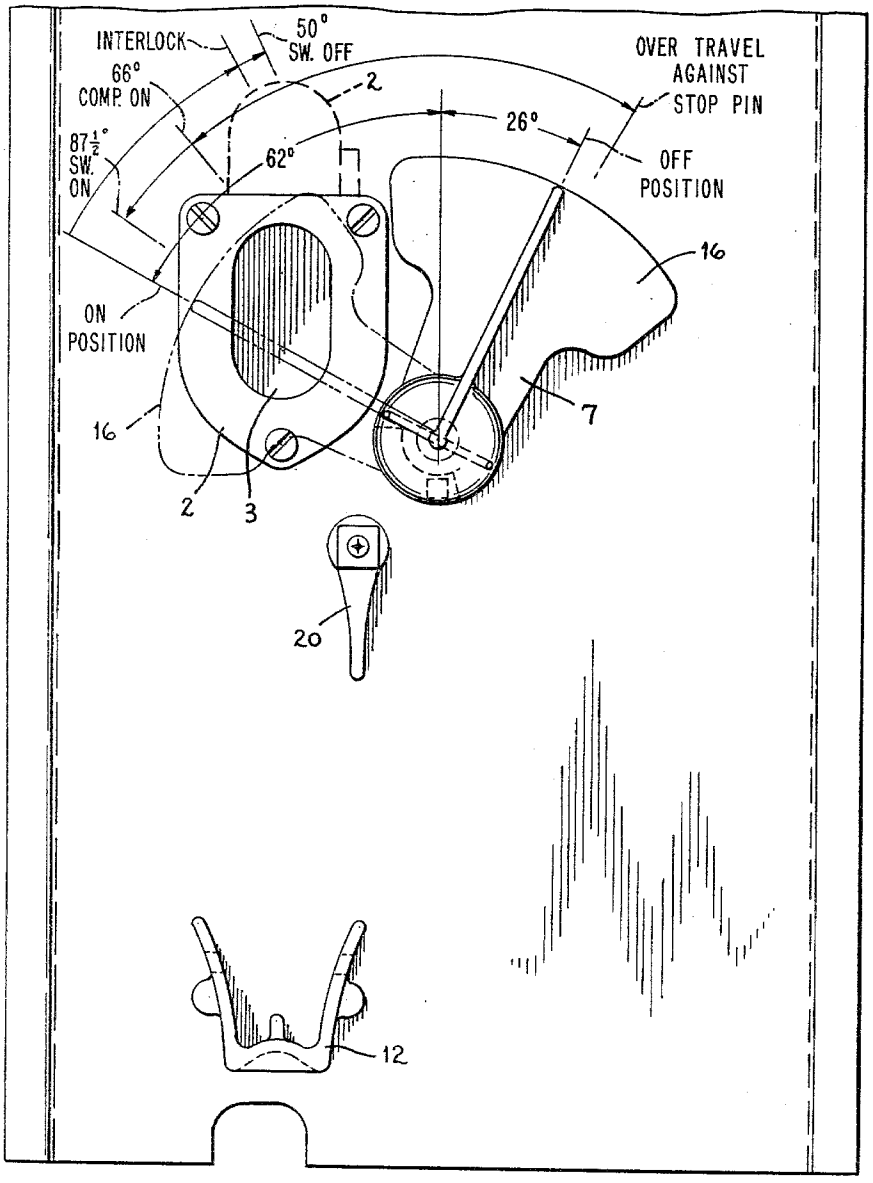


FIG. 2

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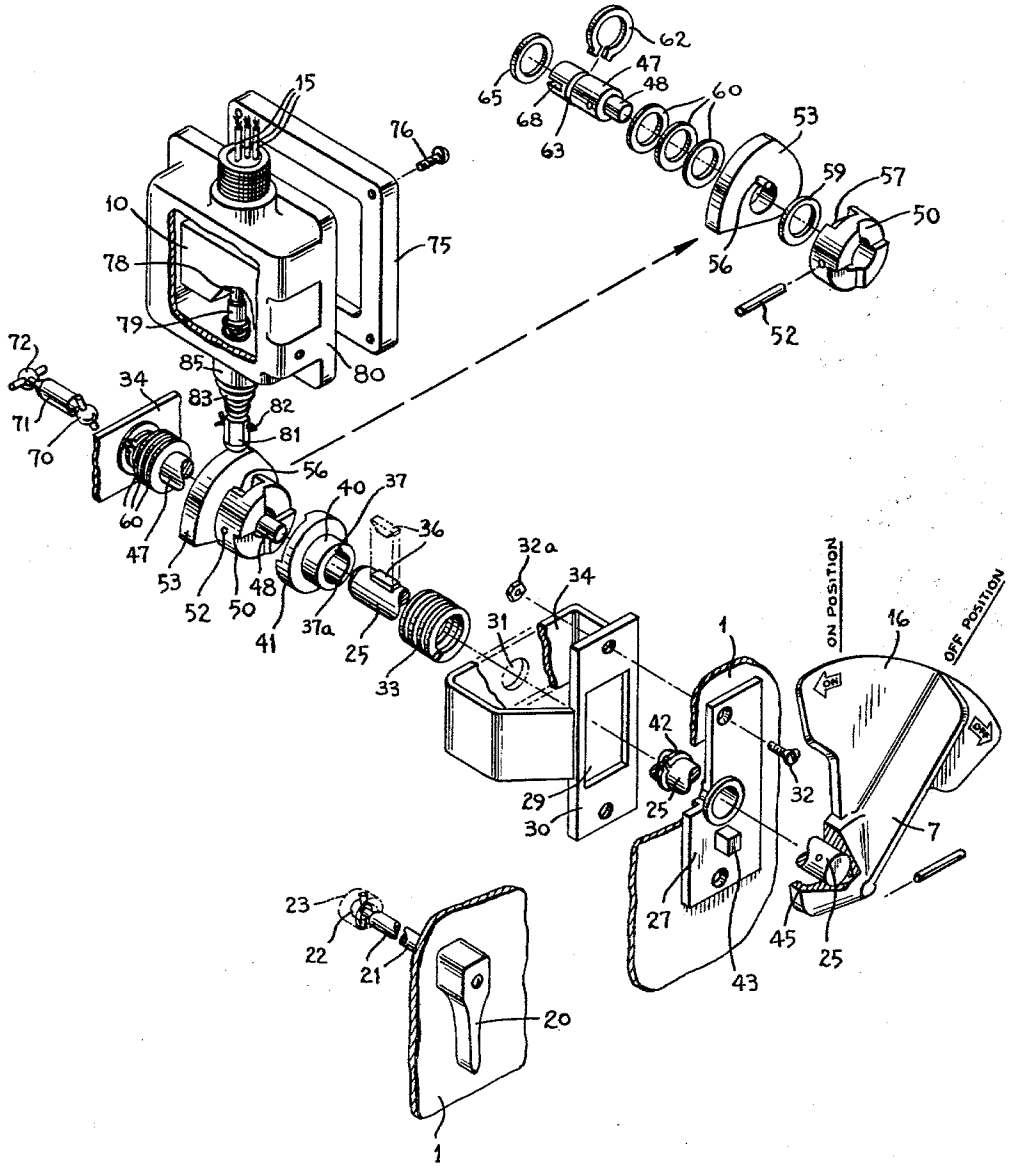


FIG. 3

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PUMP OPERATING MECHANISM

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FIG. 4

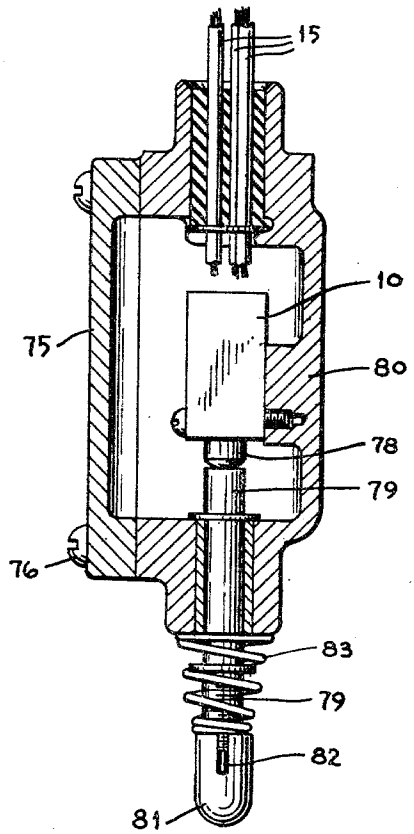
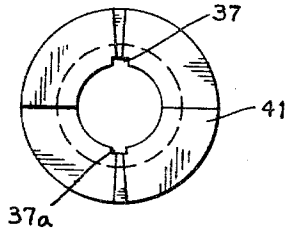


FIG. 5



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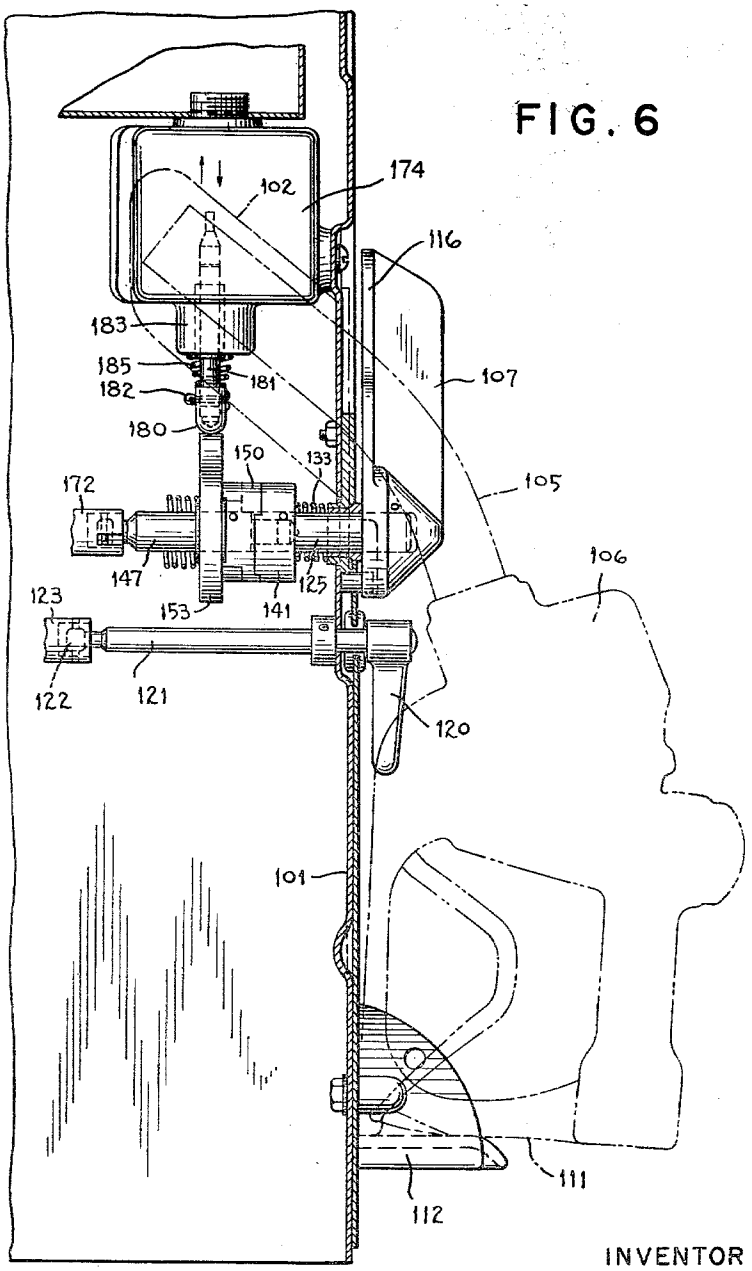
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FIG. 6



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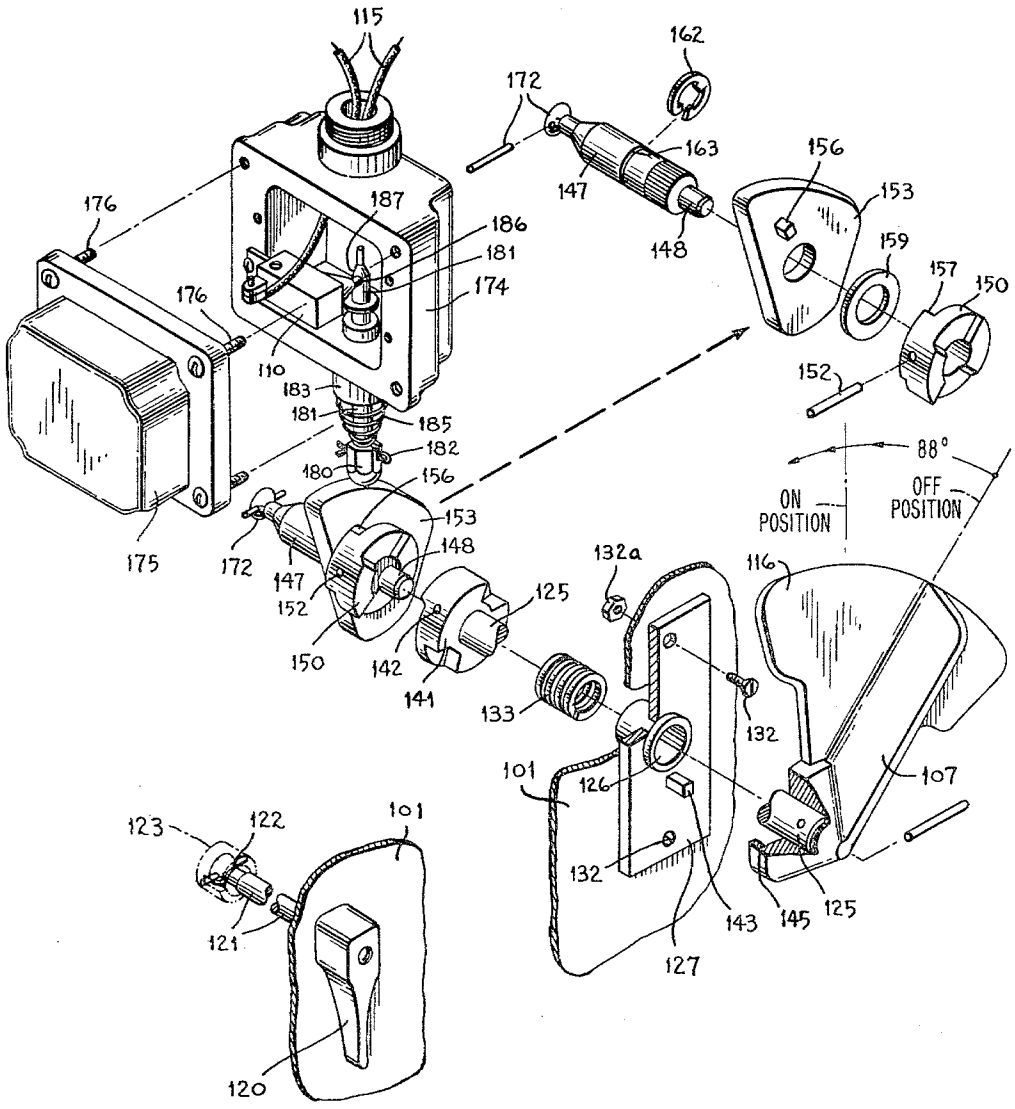
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FIG. 7



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United States Patent Office 3,178,057 Patented Apr. 13, 1965

3,178,057

PUMP OPERATING MECHANISM

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Filed Mar. 11, 1964, Ser. No. 350,982
15 Claims. (Cl. 222—35)

My invention relates to pump operating mechanism, which is particularly adaptable for turning on and off the pump motor of a gasoline pump dispensing apparatus or dispenser.

Heretofore, the turning on and off of the pump motor was effected by means of a rather complicated linkage, which has many parts and loose joints which made it difficult to properly adjust in manufacturing. The many parts of the currently used type of linkage are costly to manufacture, and such a linkage may lose its proper adjustment in the shipping of the gasoline pump, even though the linkage initially was properly adjusted when the gasoline pump was shipped from the manufacturing plant.

Adjustment and replacement of some parts of such currently used type of linkage is frequently required when the gasoline pump is installed and in use in a service station, etc. In some models of gasoline dispensing apparatus, the adjustment of the motor switch so as to open and close said switch in proper sequence with the interlock of the well-known and commonly used computer, is a very sensitive adjustment, and the cause of many service complaints. In addition, the overload spring of the commonly used linkage, which overload spring is required to prevent breakage of the computer elements if an operator endeavors to turn the switch to closed position without a resetting of the computer dial wheels to zero, has sometimes imposed too great a load on the computer mechanism, which results in a breakage of some of its parts.

One object of my invention is to provide a gasoline dispensing apparatus with a nozzle boot holder which is adapted to support all of the various types of gasoline dispensing nozzles at the distal end of the dispensing hose, and which apparatus is provided with a motor switch operating handle of such a design as will prevent the dispensing nozzle from being supported in the boot holder until the pump motor switch has been opened.

Another object of my invention is to provide an operating handle to effect the turning on and off of the pump motor in the normal manner, and which operating handle is of such shape that it will close off the opening of the nozzle boot holder when the pump motor switch is in closed position.

Another object of my invention is to provide a motor switch operating handle which is of a T or wing shape which will keep the opening in the nozzle boot holder covered continuously when the pump motor switch is in closed position, and which will maintain the opening in the nozzle boot covered until the motor switch operating handle has been turned back in a clockwise direction to effect the opening of the pump motor switch.

Another object of my invention is to provide an operating mechanism which will prevent the pump motor switch to again be turned to closed position after a dispensing operation until the pump computer has been reset to zero by a reset lever such as has been in common and well-known use for many years.

Another object of my invention is to provide the operating handle shaft at its inner end with a clutch face, adapted to be engaged with a mating clutch face operatively connected to the computer shaft.

Another object of my invention is to provide a pump operating mechanism consisting of a minimum number of

parts which are simple to manufacture, and with a resultant low manufacturing cost.

Another object of my invention is to provide a pump operating mechanism which has only one point of adjustment, to wit, the motor switch at a cam surface, which eliminates service problems in the field of adjusting a number of parts, etc. in the previously used linkage.

Another object of my invention is to provide pump operating mechanism which includes mating clutch elements which provide a more positive and "fool-proof" device which assures protection for the computer.

My invention may be more fully understood and further objects and advantages may become apparent when reference is made to the more detailed description of the invention with respect to the accompanying drawings.

In said drawings:

FIG. 1 is a fragmentary sectional view, partly in elevation, of the upper portion of a gasoline pump dispenser, and with the dispensing nozzle, at the end of the dispensing hose, positioned in the nozzle boot holder.

FIG. 2 is a side elevation of the upper portion of a gasoline pump which includes my operating mechanism, and with the various positions of the motor switch operating handle identified.

FIG. 3 is an exploded view of my improved operating mechanism, including the motor switch box assembly.

FIG. 4 is a vertical sectional view of the switch box assembly, partly in elevation, taken on the line 4—4 in FIG. 1.

FIG. 5 is a front face view of the clutch half at the inner end of the shaft connected to the motor switch operating handle.

FIG. 6 is a modified form of pump operating mechanism generally similar to that shown in FIG. 1, but with a clutch half rigidly connected by pin means to the inner end of the operating shaft of the motor switch operating handle.

FIG. 7 is an exploded view of the modified form of pump operating mechanism shown in FIG. 6.

Referring more particularly to FIGS. 1 and 2 of the drawing; a fragmentary portion of the upper part of the outer housing of a gasoline dispensing computer pump of the well-known type is indicated generally at 1. Such a type of gasoline dispensing computer pump is shown in U.S. Design Patent Nos. Des. 184,250 and Des. 197,248. The upper portion of the outer housing 1 is provided with a nozzle boot 2 which has an open outer end 3 of the upperwardly inclined nozzle boot 2. The nozzle portion 5 of the manually operative valve controlled dispensing nozzle 6 is inserted in the nozzle boot 2, when the motor switch operating handle 7 is in "OFF" position as shown in FIG. 2, and in which position the motor switch 10 is open.

The dispensing nozzle 6 is screw threadedly connected to the outer end of the gasoline dispensing hose 9, the inner end of said hose 9 being connected to the outlet of the gasoline pump meter, in the ordinary manner as is well-known in the art. The handle portion 11 of the dispensing nozzle 6 is adapted to be positioned on the dispensing nozzle support 12 rigidly connected to the outer housing 1, by any convenient means, such as a cap screw 13 which extends through an opening in the outer housing 1 into a screw threaded opening in the nozzle handle 12.

The motor switch 10 is connected by suitable wiring means, such as indicated at 15, to a source of supply of electrical current, and said motor switch 10 is also connected by suitable wiring to the electric motor of the pumping unit, in the customary manner well-known in the art.

Referring more particularly to FIG. 2, when the nozzle portion 5 of the dispensing nozzle 6 is manually withdrawn from the opening 3 in the nozzle boot 2, a motor

switch operating handle 7 may be moved counterclockwise from the "OFF" position to the "ON" position, which, as hereinafter more described in detail, will close the motor switch 10 and cause the electric motor connected to the pumping means to operate.

As noted on FIG. 2; the motor switch operating handle 7 with its shaft is rotated through an arc of approximately 88° in its incomplete movement from "OFF" position to "ON" position. When the motor switch operating handle 7 is moved counterclockwise from its "OFF" to its "ON" position, the T or wing shaped portion 16 of the handle 7 is positioned over the open outer end 3 of the nozzle boot 2, thereby preventing dispensing nozzle from being positioned in the nozzle boot 2 as long as the motor switch 10 is closed.

After a gasoline dispensing operation has been completed by the operator, the motor switch operating handle 7 is moved clockwise from "ON" position to "OFF" position, which will permit the nozzle portion 5 of the dispensing nozzle 6 to be again positioned in the nozzle boot 2.

As noted on FIG. 2, when the motor switch operating handle 7 has been moved through an arc of approximately 50° from the "ON" position, the motor switch 10 is opened. As also noted on FIG. 2 of the drawings, the interlock mechanism of the well-known and widely used computer mechanism becomes effective when the motor switch operating handle 7 is within a small number of degrees of its approach to said 50° position where the motor switch 10 is opened. Also as noted on FIG. 2 of the drawings, when the motor switch operating handle is moved counterclockwise of an arc of approximately 66°, the connection to the computer unit becomes effective, providing the computer dial wheels have been reset to zero by means of the reset handle 20 which is rigidly connected to the reset shaft 21 which is connected at its inner end to the universal link and pin assembly 22 of the computer reset shaft 23.

Bliss Patent No. 2,814,444, assigned to Veeder-Root, Incorporated, shows the computer interlock and the connection between the computer shaft and the reset shaft operated by means of a reset handle, such as the reset shaft 23–21 and reset handle 20 described above. Veeder-Root, Incorporated is the manufacturer of practically all of the standard computer units in gasoline computing pumps in use in the United States made by all U.S. gasoline computing pump manufacturers. Wright Patent No. 2,942,759, correspondingly, refers to Bliss Patent No. 2,814,444 as showing the connection between the computer shaft and the reset shaft operated by means of a reset handle.

Referring more particularly to FIGS. 1 and 3; the motor switch operating handle 7 is rigidly connected by any convenient means, such as pin means, to the shaft 25. The shaft 25 extends through the opening 26 in a bushing member in the plate member 27. and through a matching enlarged opening formed in the pump housing 1, and through an enlarged rectangular opening 29 in the bracket member 30. The plate members 27 and bracket member 30 are rigidly secured to the housing 1 by any convenient means, such as screw members 32 which extend through matching openings in said plate 27, housing 1, and bracket member 30, said screw member 32 being rigidly secured by nut 32*a*, only one of said screws 32 and nuts 32*a* being shown in the exploded view FIG. 3.

The spring 33 surrounds the shaft 25, with the outward end of the spring 33 bearing against a boss formed on the inner surface of the plate member 27, and the inward portion of said spring 33 surrounds the hub 40 of the clutch member 41 and bears against said clutch member 41, as shown in FIG. 1. The inward end of the shaft 25 is provided with standard automotive "non-rok" keys 36 and 36*a* which are slideable, respectively, in the grooves 37 and 37*a* in the hub portion 40 and the inclined cam faced clutch disc member 41. The clutch disc 41 is

shown in the exploded view FIG. 3 and the engaging face of the clutch half on the shaft 25 is shown in FIG. 5. The shaft 25 and its operating handle 7 are prevented from moving outwardly by a snap ring 42 in a groove formed in said shaft 25, said snap ring 42 and its groove being positioned on the shaft 25 so that the snap ring is positioned to slidingly engage the inward surface of the plate member 27.

If the computer mechanism has not been reset to zero by the reset handle 20, and the motor switch operating handle 7 is moved counterclockwise, the computer will not turn on because it has not been reset to zero. To prevent damage to the computer in such a situation, continued counterclockwise movement of the motor switch handle 7, is prevented by a stop pin 43 on the plate member 27 coming into engaging abutment with the wall of a recess 45 formed in the back portion of the motor switch operating handle 7, as shown in the exploded view FIG. 3.

The shaft 47 is provided at its outer end with a reduced portion 48 which is adapted to be slidingly engaged in a drilled opening at the inner end of the shaft 25, to maintain alignment of member 41 with the mating cam faced clutch member 50 rigidly mounted on the outer end of the shaft 47 by any convenient means, such as by a pin 52 extending through the clutch member 50 and shaft 47. The cam 53 which is floatingly mounted on the shaft 47 is provided with a drive lug, or pin, 56 which is adapted to come into engaging contact with the side wall of the recess 57 formed on the inward side of the clutch member 50, as best shown in FIG 1, and as shown and indicated in the exploded view FIG. 3. A washer 59 is interposed on the shaft 47 between the inner face of the clutch member 50 and the outer face of the cam member 53. A washer, or plurality of washers 60 are interposed on the shaft 47 between the inward face of the cam 53 and the outer face of the snap ring 62 positioned in a groove 63 formed at the inner portion of the shaft 47. A washer 65 is interposed on the shaft 47 between the inward face of the snap ring 62 and the outward face of the web portion 34 of the bracket member 30, which web 34 is provided with an opening 31 through which the slotted inner end 68 of the shaft 47 extends, as shown in FIG. 1. The slotted portion 68 of the shaft 47 is adapted to be operatively engaged with the universal link and pin assembly 70 at the outer end of the shaft 71, the inner end of which correspondingly is provided with a universal link and pin assembly 72 adapted to be engaged with a shaft of the computer to turn the computer to on position, in the manner as is well known in the art.

The motor switch 10, rigidly mounted in the motor switch housing 74, which has a closure plate 75 connected thereto by any well known means, such as a series of screws 76, one of which is shown in FIG. 3, includes a motor switch plunger 78 and a switch shaft 79, the upper end of which is in engagement with the lower end of the plunger 78. Said switch shaft 79 extends through an opening formed in the bottom wall of the housing 74 of the motor switch, and said switch shaft 79 is provided at its lower end with a follower member 81 which is rigidly secured to the end of the shaft 79 by any convenient means, such as by a cotter pin 82 extending through said follower 81 and shaft 79. A spring 83 is interposed around the shaft 79 between the upper end of the follower 81 and the lower side of a boss 85 formed at the bottom wall of the switch housing 74.

Referring to FIGS. 6 and 7, the modified form of my invention shown therein is generally similar to that shown in FIGS. 1 to 5, inclusive, the principal difference being that the clutch face disc at the inner portion of the shaft to which the motor switch operating handle is rigidly affixed is adapted to move as a unit outwardly when the clutch disc is moved out of engagement with the mating clutch disc on the outward end of the shaft adapted to be engaged with a shaft of a computer to turn the computer to "ON" position.

Referring more particularly to FIG. 6; a fragmentary portion of the upper part of the outer housing of a gasoline dispensing computer pump of the well known type is indicated generally at **101**. Such gasoline dispensing computer pump is of the same type as that heretofore noted in connection with FIGS. 1 to 5, inclusive. The upper portion of the housing **101** is provided with a nozzle boot **102** which has an open outer end for the insertion of the nozzle portion **105** of the manually operative valve controlled dispensing nozzle **106**. The nozzle portion **105** is inserted in the nozzle boot **102** when the motor switch operating handle **107** is in "OFF" position as heretofore described with reference to FIG. 2. The movement and operation of the motor switch operating handle **107** is the same as that heretofore described with reference to FIG. 2 of the motor switch operating handle **7** of the form of my invention shown in FIGS. 1 to 5, inclusive. The motor switch operating handle **107** functions in the same manner with reference to the motor switch **110**, as indicated in FIG. 7, in the same manner as the motor switch operating handle **7** in connection with the motor switch **10** of the form of my invention shown in FIGS. 1 to 5, inclusive.

The dispensing nozzle **106** is screw threadedly connected to the outer end of a gasoline dispensing hose, in the same manner as heretofore described with reference to the nozzle **6** and the dispensing hose **9**, with the inner end of said dispensing hose being connected to the outlet of the gasoline pump meter, in the same ordinary manner as is well known in the art. The handle portion **111** of the dispensing nozzle **106** is adapted to be positioned on the support **112** rigidly connected to the outer housing **101**.

The motor switch **110** is connected by suitable wiring means, such as indicated at **115** to a source of supply of electrical current, and said motor switch **110** is also connected by suitable wiring to the electric motor of the pumping unit, in the manner well known in the art.

The movement and functioning of the motor switch operating handle **107** and its wing shaped portion **116** is the same as that heretofore described of the motor switch operating handle **7** with reference to FIG. 2, of the form of my invention shown and described in FIGS. 1 to 5, inclusive.

The reset handle **120** is rigidly connected to the reset shaft **121** which is connected at its inner end to the universal link and pin assembly **122** of the computer reset shaft **123**, as heretofore described with reference to the reset handle **20**, etc., of the form of my invention shown in FIGS. 1 to 5, inclusive.

The motor switch operating handle **107** is rigidly connected by any convenient means, such as pin means, to the shaft **125**. The shaft **125** extends through the opening **126** in a bushing member in the plate member **127**, and through a matching opening formed in the pump frame **101**. The plate member **127** is rigidly secured to the housing **101** by any convenient means, such as screws **132** which extend through matching openings in said plate **127** and housing **101**, said screws **132** being rigidly secured by nuts **132***a*, as shown in the exploded view FIG. 7.

The spring **133** surrounds the shaft **125**, with the outward end of the spring **133** bearing against the inner surface of the plate member **127**, and the inward end of said spring **133** bearing against the outward surface of the inclined faced clutch disc member **141**. The clutch disc **141** is rigidly secured to the inner portion of the shaft **125** by a pin **142** extending through the clutch member **141** and shaft **125**.

If the computer mechanism has not been reset to zero by the reset handle **120**, and the motor switch operating handle **107** is moved counterclockwise, the computer will not turn on because it has not been reset to zero. To prevent damage to the computer in such a situation, continued counterclockwise movement of the motor switch handle **107** is prevented by a stop pin **143** coming into engaging abutment with a recess **145** formed in the back portion of the motor switch operating handle **107**, as shown in the exploded view FIG. 7. The same stop pin **143** provides a positive stop in the clockwise movement of the handle **107** to prevent damage to the computer in movement of the handle to "OFF" position.

The shaft **147** is provided at its outer end with a reduced portion **148** which is adapted to be slidingly engaged in a drilled opening at the inner end of the shaft **125**, to maintain alignment of the mating inclined cam faced clutch member **150** which is rigidly mounted on the outer end of the shaft **147**, by any convenient means, such as by a pin **152** extending through the clutch member **150** and shaft **147**. The cam **153** which is floatingly mounted on the shaft **147** is provided with a drive lug, or pin **156** which is adapted to become into engaging contact with the side wall of the recess **157** formed on the inward side of the clutch member **150**, and as best shown and indicated in the exploded view FIG. 7. A washer **159** is interposed on the shaft **147** between the inner face of the clutch member **150** and the outer face of the cam member **153**. A snap ring **162** positioned in a groove **163** formed at the inner portion of the shaft **147**, prevents inward movement of the cam **153** on the shaft **147**. The inner end of the shaft **147** is provided with a universal link and pin assembly **172** adapted to be engaged with a shaft of the computer to turn the computer to on position, in the manner as is well known in the art, and heretofore described with reference to the form of my invention shown in FIGS. 1 to 5, inclusive.

The motor switch **110**, is rigidly mounted in the motor switch housing **174** which has a closure plate **175** connected thereto by any well known means, such as a series of screws **176**, as indicated in FIG. 7.

The follower **180** is rigidly mounted at the lower end of the switch shaft **181** by any convienent means, such as by a cotter pin **182**. The switch shaft **181** extends through an opening in the boss **183** formed at the lower wall of the motor switch housing **174**. The follower **180** rides along the large diameter of the cam **153** as the cam **153** is moving counterclockwise, and then due to the effective forces of the spring **185**, the lower end of which engages the top surface of the follower **180** with the upper end of the spring **185** engages the lower face of the boss **183**, the follower **180** is driven downwardly when the cam **153** has been rotated to its smaller diameter portion. The downward movement of the follower **180** pulls the motor switch shaft **181** downwardly, allowing the switch plunger **186** to ride down inclined surface **187** of the switch shaft **181** to the "ON" position, thus closing the circuit to the pump motor.

Operation

Referring to the form of my pump operating mechanism invention shown in FIGS. 1 to 5, inclusive; the linkage consists of two shafts **25** and **47**, which are piloted together in axial alignment by means of a reduced portion **48** of the shaft **47** being slideably engaged in an opening in the inner end of the shaft **25**. The shaft **25** has at its inner portion a clutch disc **41** which is slideably connected to the inward end of the shaft **25** by means of "non-rok" keys **36** and **36***a* in slideable engagement with recesses **37** and **37***a* in the clutch disc members **41**; and the shaft **47** has a mating clutch disc member **50** rigidly connected at the outward end of said shaft **47**.

In normal operation, after the nozzle **6** has been manually removed by the operator from its position in the nozzle boot **2** of the outer housing of the gasoline dispensing apparatus; the operating handle **7** is turned counterclockwise, as in FIG. 2, which effects the turning of the shaft **25** counterclockwise to which the operating handle **7** is pinned.

The effective forces of the spring 33 moves the angled faces of the clutch disc members 41 and 50 into mating engagement with each other, clutch disc member 41 being moveable along the outer plane portions of the "nonrok" keys 36 and 36a on the shaft 25. The mating engagement of the clutch disc members 41 and 50 provides the torque to rotate the shaft 47, which through the universal linkage 70, 71, and 72 operatively engaged in the slotted end 68 of the shaft 47 effects the turning of the computer to "on" position. The recess 57 at the rearward side of the clutch member 50 provides lost motion for the purpose of delaying the effecting of the closing of the switch 10 until the computer is in the "on" position, and then the end of the recess 57 picks up the drive lug 56 of the cam 53, which is in floating engagement on the shaft 47, and drives the cam 53 in a counterclockwise direction.

The follower 81, which is attached to the switch shaft 79 by means of the cotter pin 82, rides along the large diameter of the cam 53 as it moves counterclockwise, and, due to the effective forces of the spring 83, the follower 81 and switch shaft 79 are moved downwardly when the cam has rotated to its smaller diameter. The downward movement of the follower 81 causes the switch shaft 79 to move downwardly, which allows the switch plunger 78 to move downwardly to its "on," or closed, position, thus activating the electric motor of the pump.

In turning the switch 10 to "off," or open position, the motor switch operating handle 7 is moved clockwise, and, hence, the shaft 25 and clutch disc member 41 are driven clockwise. In this clockwise movement, the square faces of the clutch member 50 provides a positive drive means without the necessity of any assistance from the spring 33. The recess 57 in the inward side of the clutch 50 then delays the movement of the cam 53 in a clockwise direction until the computer is driven by the shaft 47 to its locked out condition. The drive lug 56 of the cam 53 then engages the end of the recess 57 in the clutch disc 50 and drives the cam 53 clockwise. The follower 81 rides up the inclined small diameter of the cam 53, and when the follower 81 engages the large diameter of the cam 53, the follower 81 and the switch shaft 79 are moved upwardly, which effects upward movement of the switch plunger 78 to move the switch 10 to open, or off, position which causes the motor of the pump to be deactivated.

If the computer has not been reset to zero by the operation of the reset handle 20, etc., and the motor switch operating handle 7 is moved counterclockwise toward "ON" position, the computer will not be turned on. To prevent damage to the computer from the forcing of the motor switch operating handle 7 in a counterclockwise direction, the inclined faces of the clutch members 50 and 41 are caused to cam off each other, which forces the faces of the clutch members 50 and 41 apart, thus disengaging the shaft 25 from the shaft 47. Continued counterclockwise movement of the motor switch operating handle 7 is prevented by the stop pin 43, on the plate member 27, riding in the recess 45 at the back of the handle 7. This same stop pin 43 provides a positive stop in the movement of the motor switch operating handle 7 in a clockwise direction, thereby preventing damage to the computer in the movement of the handle 7 to the "OFF" position.

Referring to the modified form of my pump operating mechanism shown in FIGS. 6 and 7; the linkage includes two shafts 125 and 147, which are piloted together in axial alignment by means of a reduced portion 148 of the shaft 147 being slideably engaged in an opening formed in the inner end of the shaft 125. The shaft 125 has at its inner portion a clutch disc member 141 rigidly fixed thereto, and the shaft 147 has a mating clutch disc member 150 rigidly connected to the outward end of said shaft 147.

In normal operation, after the nozzle 106 has been manually removed by the operator from the nozzle boot 102, the operating handle 107 is turned counterclockwise, as in FIG. 2, which effects the counterclockwise turning of the shaft 125 to which the handle 107 and clutch disc member 141 are pinned. Such counterclockwise movement of the handle 107 moves its wing portion 116 to close off the open end of the nozzle boot 102.

The effective forces of the spring 133 moves the clutch disc members 141 and 150 into mating engagement with each other. Such mating engagement of the clutch members 141 and 150 provides the torque to rotate the shaft 147 counterclockwise, which, through the pin and universal linkage 172 engaged in the slotted end of a shaft of the computer, effects the turning of the computer to "on" position.

The recess 157 at the rearward side of the clutch disc member 150 provides lost motion for the purpose of delaying the effecting of the closing of the motor switch 110 until the computer is in the "on" position, and then the end of the recess 157 picks up the drive lug 156 of the cam 153, which is in floating engagement on the shaft 147, and drives the cam 153 in a counterclockwise direction. The follower 180, which is attached to the switch shaft 181, rides along the large diameter of the cam 153 as it moves counterclockwise, and, due to the effective forces of the spring 185, the follower 180 and switch shaft 181 are moved downwardly when the cam 153 has rotated to its smaller diameter. The downward movement of the follower 180 moves the switch shaft 181 downwardly, allowing the switch plunger 186 to ride down the inclined surface 187 on the switch shaft 181 to permit the switch plunger 186 to move to its "ON" position, to activate the pump electric motor.

The turning of the motor switch operating handle 107 clockwise from its "ON" position to its "OFF" position effects the same cyclic operation as that heretofore described with reference to the motor switch operating handle 7 of the form of my invention shown in FIGS. 1 to 5, inclusive, except that such clockwise movement of the motor switch operating handle 7 causes the clutch member 141, shaft 125, and handle 107 to be moved outwardly as a unit to effect disengagement of the clutch member 141 from its mating clutch member 150. The clockwise movement of the operating handle 107 moves the wing portion 116 thereof away from the outer opening of the nozzle boot 102, and permits the operator to insert the nozzle portion 105 of the dispensing nozzle 106 into the nozzle boot 102, with the handle portion 111 of the dispensing nozzle 106 positioned on the support 112.

I do not desire to limit myself to the specific details of the construction and arrangement as herein set forth, as it is obvious that various modifications may be made therein without departing from the essential features of my invention, as defined in the appended claims.

I claim:

1. In fluid dispensing apparatus which includes an outer housing, a nozzle boot, having an outer opening, in the upper portion of said housing, a meter, conduit means connected to the outlet of said meter, a hose connected to said conduit means, a manually operative valve controlled dispensing nozzle connected to the distal end of said hose, a computer mechanism operatively connected to the output shaft of said meter, means to reset visual indicating means of said computer mechanism to zero indication, and an electric motor driven pump means adapted to deliver fluid from a supply source to the inlet of said meter; the improvement in pump operating mechanism for effecting the turning "on" and "off" of said pump electric motor comprising:

(a) an electric switch operatively connected by wiring to a source of supply of electric current and to said electric motor driven pump means;

(b) a motor switch operating handle positioned exteriorly of said housing, said motor switch operating handle being rigidly connected to the outward end of a first shaft which extends inwardly from said motor switch operating handle into said housing;

(c) a first clutch disc member mounted axially slide-

able on the inward end of said first shaft, the means for permitting said first clutch disc member to be slideable on said first shaft also effects a rotation of said clutch disc member which is coincident with the rotation of said first shaft;

(*d*) a second shaft operatively connected at its inward end by connection means to a shaft of said computer mechanism to effect the turning on of said computer mechanism;

(*e*) a second clutch disc member mating with said first clutch disc member, rigidly mounted on the outward end of said second shaft;

(*f*) a cam floatingly mounted on said second shaft, said cam being provided with a drive lug by which said cam is rotated by rotation of said second clutch disc member on said second shaft, said cam having peripheral face portions of greater and lesser diameter;

(*g*) a follower means, with a switch shaft connected thereto, in engaging contact by spring means with said faces of said cam, the end of said switch shaft opposite the end thereof connected to said follower being in engagement with means to effect the opening and closing of said motor switch.

2. In liquid dispensing apparatus which includes an outer housing, a nozzle boot, having an outer opening, in the upper portion of said housing, a meter, conduit means connected to the outlet of said meter, a hose connected to said conduit means, a manually operative valve controlled dispensing nozzle connected to the distal end of said hose, a computer mechanism operatively connected to the output shaft of said meter, means to reset visual indicating means of said computer mechanism to zero indication, and an electric motor driven pump means adapted to deliver fluid from a supply source to the inlet of said meter; the improvement in pump operating mechanism for effecting the turning "on" and "off" of said pump electric motor comprising:

(*a*) an electric switch operatively connected by wiring to a source of supply of electric current and to said electric motor driven pump means;

(*b*) a motor switch operating handle positioned exteriorly of said housing, said motor switch operating handle being rigidly connected to the outward end of a first shaft which extends inwardly from said motor switch operating handle through an opening in a plate member affixed to said housing and an opening in said housing into said housing;

(*c*) a first clutch disc member mounted axially slideable on the inward end of said first shaft, the means for permitting said first clutch disc member to be slideable on said first shaft also effects a rotation of said clutch disc member which is coincident with the rotation of said first shaft;

(*d*) a spring surrounding said first shaft, one end of said spring being in engagement with the inner side of said plate member and the inner end of said spring being in engagement with the outer portion of said first clutch disc member;

(*e*) a second shaft operatively connected at its inward end by connection means to a shaft of said computer mechanism to effect the turning on of said computer mechanism;

(*f*) a second clutch disc member mating with said first clutch disc member, rigidly mounted on the outward end of said second shaft;

(*g*) a cam floatingly mounted on said second shaft, said cam being provided with a drive lug by which said cam is rotated by rotation of said second clutch disc member on said second shaft, said cam having peripheral face portions of greater and lesser diameter;

(*h*) a follower means, with a switch shaft connected thereto, in engaging contact by spring means with said faces of said cam, the end of said switch shaft opposite the end thereof connected to said follower being in engagement with means to effect the opening and closing of said motor switch.

3. In gasoline dispensing apparatus which includes an outer housing, a nozzle boot, having an outer opening, in the upper portion of said housing, a meter, conduit means connected to the outlet of said meter, a hose connected to said conduit means, a manually operative valve controlled dispensing nozzle connected to the distal end of said hose, a computer mechanism operatively connected to the output shaft of said meter, means to reset visual indicating means of said computer mechanism to zero indication, and an electric motor driven pump means adapted to deliver fluid from a supply source to the inlet of said meter; the improvement in pump operating mechanism for effecting the turning "on" and "off" of said pump electric motor comprising:

(*a*) an electric switch operatively connected by wiring to a source of supply of electric current and to said electric motor driven pump means;

(*b*) a plate member affixed to said housing;

(*c*) a motor switch operating handle positioned exteriorly of said housing, said motor switch operating handle being rigidly connected to the outward end of a first shaft which extends inwardly from said motor switch operating handle through matching openings in said plate member and housing into said housing;

(*d*) a first clutch disc member mounted axially slideable on the inward end of said first shaft, the means for permitting said first clutch disc member to be slideable on said first shaft also effects a rotation of said clutch disc member which is coincident with the rotation of said first shaft;

(*e*) a spring surrounding said first shaft, one end of said spring being in engagement with the inner side of said plate member and the inner end of said spring being in engagement with the outer portion of said first clutch disc member;

(*f*) a second shaft operatively connected at its inward end by connection means to a shaft of said computer mechanism to effect the turning on of said computer mechanism;

(*g*) a second clutch disc member mating with said first clutch disc member, rigidly mounted on the outward end of said second shaft;

(*h*) each of the mating faces of said first and second clutch disc members having both an angled clutch face portion and a square clutch face portion;

(*i*) a cam floatingly mounted on said second shaft, said cam being provided with a drive lug by which said cam is rotated by rotation of said second clutch disc member on said second shaft, said cam having peripheral face portions of greater and lesser diameter;

(*j*) a follower means, with a switch shaft connected thereto, in engaging contact by spring means with said faces of said cam, the end of said switch shaft opposite the end thereof connected to said follower being in engagement with means to effect the opening and closing of said motor switch.

4. A structure as in claim 2; wherein said second clutch disc member is provided at its inward side with a recess portion; and the outward side of said cam is provided with a drive lug adapted to engage the side wall of said recess; whereby lost motion is provided for the delay of the operation of said electric switch until said computer mechanism is in the "on" position, whereupon the end wall of said recess picks up said drive lug on said cam and drives said cam by the continued rotational movement of said second clutch disc member.

5. A structure as in claim 3; wherein said second clutch disc member is provided at its inward side with a recess portion; and the outward side of said cam is provided with a drive lug adapted to engage the side wall of said recess; whereby, lost motion is provided for the delay of

the operation of said electric switch until said computer mechanism is in the "on" position, whereupon the end wall of said recess picks up said drive lug on said cam and drives said cam by the continued rotational movement of said second clutch disc member.

6. A structure as in claim 2; wherein the back portion of said motor switch operating handle is provided with a recess, and the outer side of said plate member is provided with an outward projecting stop pin adapted to be engaged in said recess; whereby, continued counterclockwise movement of the motor switch operating handle is prevented by said stop pin coming into engaging abutment with the wall of said recess to prevent damage to the computer mechanism if the said visual indicating means of said computer mechanism has not been reset to zero.

7. A structure as in claim 3; wherein the back portion of said motor switch operating handle is provided with a recess, and the outer side of said plate member is provided with an outward projecting stop pin adapted to be engaged in said recess; whereby, continued counterclockwise movement of the motor switch operating handle is prevented by said stop pin coming into engaging abutment with the wall of said recess to prevent damage to the computer mechanism if the said visual indicating means of said computer mechanism has not been reset to zero.

8. A structure as in claim 2; wherein said first shaft and said second shaft are provided with means to pilot said shafts together to maintain said first shaft and said second shaft in axial alignment.

9. A structure as in claim 3; wherein said first shaft and said second shaft are provided with means to pilot said shafts together to maintain said first shaft and said second shaft in axial alignment.

10. A structure as in claim 2; wherein said second clutch disc member is provided at its inward side with a recess portion; and the outward side of said cam is provided with a drive lug adapted to engage the side wall of said recess; whereby, lost motion is provided for the delay of the operation of said electric switch until said computer mechanism is in the "on" position, whereupon the end wall of said recess picks up said drive lug on said cam and drives said cam by the continued rotational movement of said second clutch disc member; and wherein the back portion of said motor switch operating handle is provided with a recess, and the outer side of said plate member is provided with an outward projecting stop pin adapted to be engaged in said recess; whereby, continued counterclockwise movement of the motor switch operating handle is prevented by said stop pin coming into engaging abutment with the wall of said recess to prevent damage to the computer mechanism if the said visual indicating means of said computer mechanism has not been reset to zero.

11. A structure as in claim 3; wherein said second clutch disc member is provided at its inward side with a recess portion; and the outward side of said cam is provided with a drive lug adapted to engage the side wall of said recess; whereby, lost motion is provided for the delay of the operation of said electric switch until said computer mechanism is in the "on" position whereupon the end wall of said recess picks up said drive lug on said cam and drives said cam by the continued rotational movement of said second clutch disc member; and wherein the back portion of said motor switch operating handle is provided with a recess, and the outer side of said plate member is provided with an outward projecting stop pin adapted to be engaged in said recess; whereby, continued counterclockwise movement of the motor switch operating handle is prevented by said stop pin coming into engagement abutment with the wall of said recess to prevent damage to the computer mechanism if the said visual indicating means of said computer mechanism has not been reset to zero.

12. In gasoline dispensing apparatus which includes an outer housing, a nozzle boot, having an outer opening, in the upper portion of said housing, a meter, conduit means connected to the outlet of said meter, a hose connected to said conduit means, a manually operative valve controlled dispensing nozzle connected to the distal end of said house, a computer mechanism operatively connected to the output shaft of said meter, means to reset visual indicating means of said computer mechanism to zero indication, and an electric motor driven pump means adapted to deliver gasoline from a supply source to the inlet of said meter; the improvement in pump operating mechanism for effecting the turning "on" and "off" of said pump electric motor comprising:

(*a*) an electric switch operatively connected by wiring to a source of supply of electric current and to said electric motor driven pump means;

(*b*) a plate member affixed to said housing;

(*c*) a motor switch operating handle positioned exteriorly of said housing, said motor switch operating handle being rigidly connected to the outward end of a first shaft which extends inwardly from said motor switch operating handle through matching openings in said plate member and said housing into said housing;

(*d*) a first clutch disc member rigidly mounted on the inward end of said first shaft;

(*e*) a spring surrounding said first shaft, one end of said spring being in engagement with the inner side of said plate member and the inner end of said spring being in engagement with the outer portion of said first clutch disc member;

(*f*) a second shaft operatively connected at it inward end by connection means to a shaft of said computer mechanism to effect the turning on of said computer mechanism;

(*g*) a second clutch disc member mating with said first clutch disc member, rigidly mounted on the outward end of said second shaft;

(*h*) each of the mating faces of said first and second clutch disc members having both an angled clutch face portion and a square clutch face portion;

(*i*) a cam floatingly mounted on said second shaft, said cam being provided with a drive lug by which said cam is rotated by rotation of said second clutch disc member on said second shaft, said cam having peripheral face portions of greater and lesser diameter;

(*j*) a follower means, with a switch shaft connected thereto, in engaging contact by spring means with said faces of said cam, the end of said switch shaft opposite the end thereof connected to said follower being in engagement with means to effect the opening and closing of said motor switch;

(*k*) whereby, when said motor switch operating handle is rotated to effect closure of said electric switch, said motor switch operating handle, said first shaft and said first clutch disc member are moved inwardly as a unit to effect mating engagement of said first clutch disc member with said second clutch disc member; and when said motor switch operating handle is rotated in the opposite direction to effect the opening of said electric switch, said first clutch disc member, said first shaft, and said motor switch operating handle are moved outwardly as a unit to effect the disengagement of said first clutch disc member from said second clutch disc member.

13. A structure as in claim 12; wherein said second clutch disc member is provided at its inward side with a recess portion; and the outward side of said cam is provided with a drive lug adapted to engage the side wall of said recess; whereby, lots motion is provided for

the delay of the operation of said electric switch until said computer mechanism is in the "on" position, whereupon the end wall of said recess picks up said drive lug on said cam and drives said cam by the continued rotational movement of said second clutch disc member.

14. A structure as in claim 12; wherein the back portion of said motor switch operating handle is provided with a recess, and the outer side of said plate member is provided with an outward projecting stop pin adapted to be engaged in said recess; whereby continued counterclockwise movement of the motor switch operating handle is prevented by said stop pin coming into engaging

abutment with the wall of said recess to prevent damage to the computer mechanism if the said visual indicating means of said computer mechanism has not been reset to zero.

15. A structure as in claim 12; wherein said first shaft and said second shaft are provided with means to pilot said shafts together to maintain said first shaft and said second shaft in axial alignment.

No references cited.

LOUIS J. DEMBO, *Primary Examiner.*

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,178,057 April 13, 1965

Lowell F. Nelson

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 3, line 8, for "incomplete" read -- complete --; column 6, line 66, for "members" read -- member --; column 12, line 9, for "house" read -- hose --; line 75, for "lots" read -- lost --.

Signed and sealed this 14th day of September 1965.

SEAL)
test:

RNEST W. SWIDER
testing Officer

EDWARD J. BRENNER
Commissioner of Patents