

Nov. 11, 1952

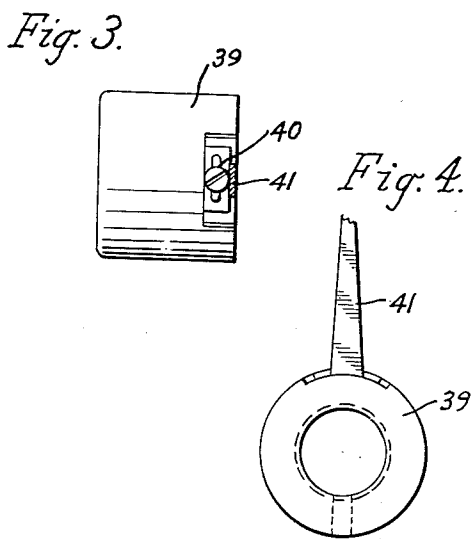
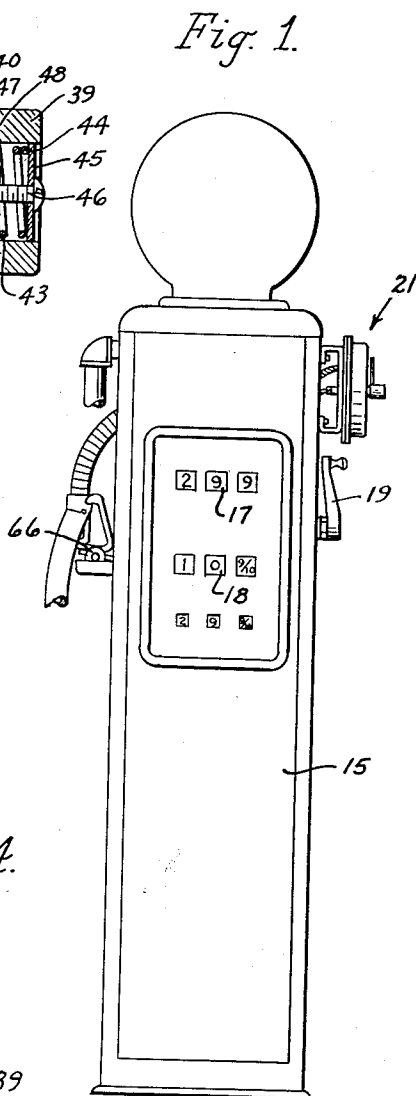
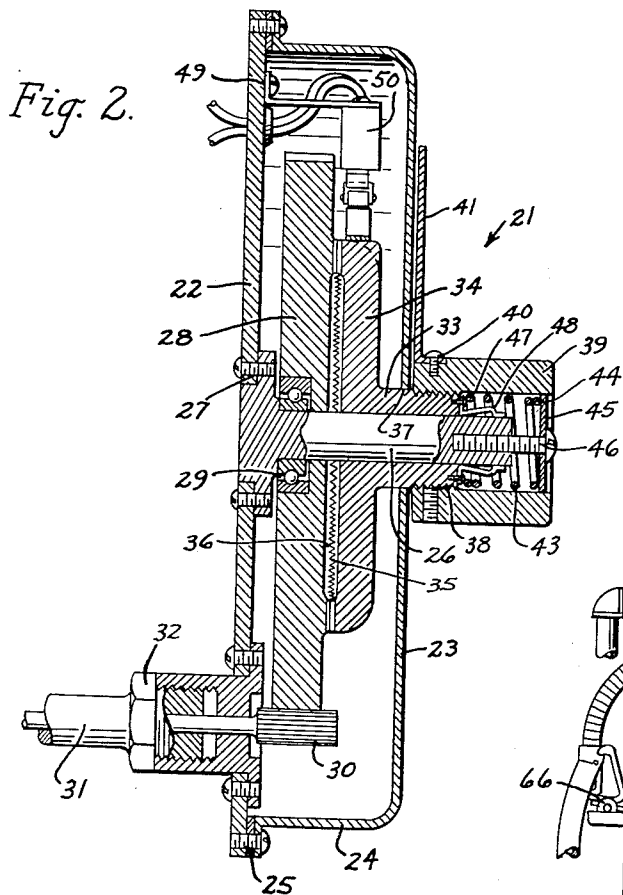
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2,617,558

DELIVERY CONTROL FOR LIQUID DISPENSERS

Filed June 7, 1950

3 Sheets-Sheet 1



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Fig. 5.

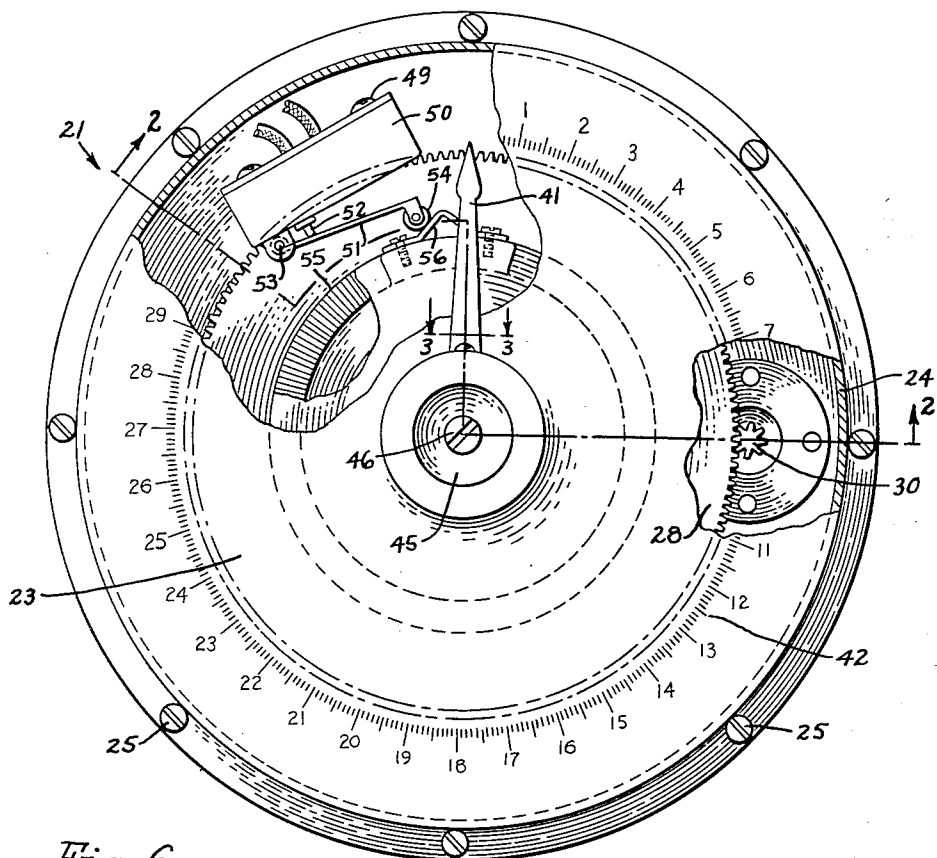


Fig. 6.

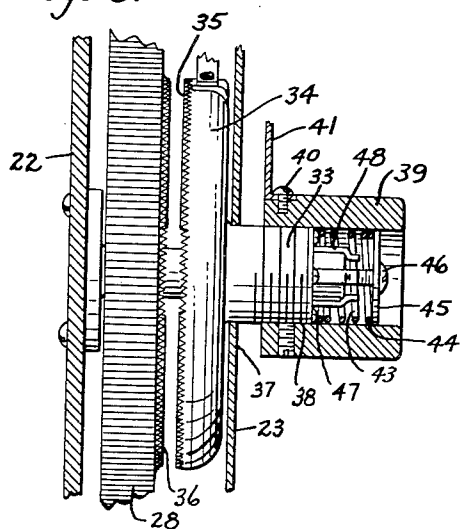
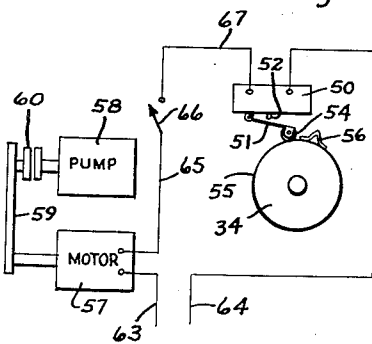


Fig. 7.



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Fig. 9.

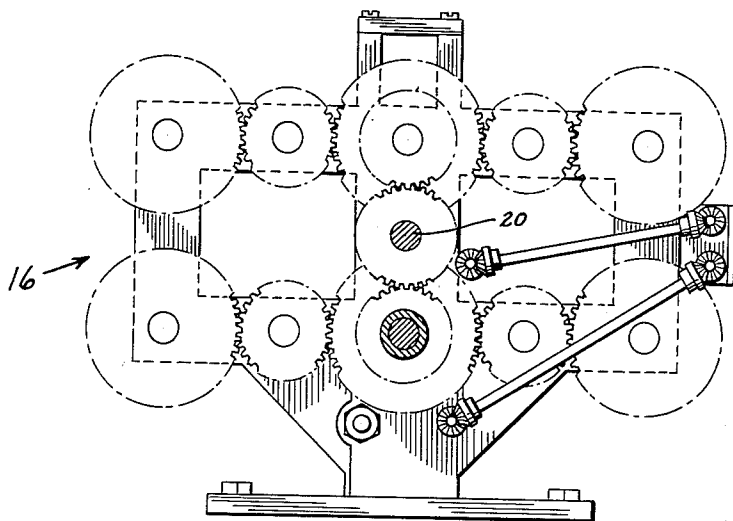
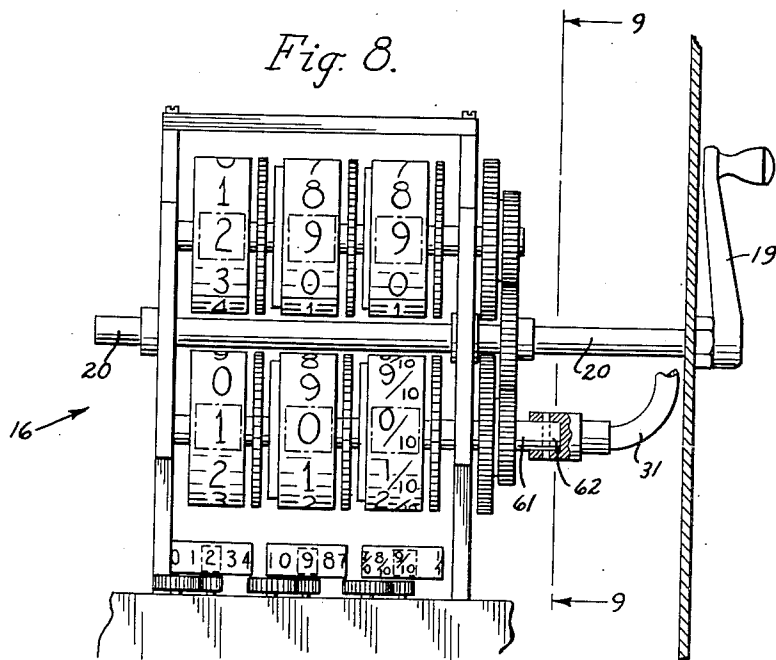


Fig. 8.



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UNITED STATES PATENT OFFICE

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DELIVERY CONTROL FOR LIQUID DISPENSERS

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3 Claims. (Cl. 222-17)

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This invention presents a dispenser for liquids including a motor actuated pump for forcing flow of liquid from a container, and a novel and improved construction and arrangement, or mechanism, adapted to be adjustably set to cause the pump to be operative to dispense any quantity of the liquid which may have been predeterminedly selected.

As herein illustrated and described, the invention is especially useful for the purpose of dispensing desired quantities of gasoline from customary tanks at filling stations into gasoline tanks of automotive vehicles.

In the accompanying drawings forming a part of this specification.

Fig. 1 is an elevational view of a dispenser for liquids in which the features and characteristics of the invention are incorporated;

Fig. 2 is an enlarged sectional view of a control unit of the dispenser, disclosed at the upper, right portion of Fig. 1, taken on line 2-2 in Fig. 5;

Fig. 3 is a detail sectional view of parts of said control unit as when removed from the remainder thereof, taken on line 3-3 in Fig. 5;

Fig. 4 is an end elevational view, partially broken away, of the closure of Fig. 3 as it would appear from the right;

Fig. 5 is a front elevational view, partially in section and partially broken away, of the control unit as it would appear from the right in Fig. 2;

Fig. 6 is a fragmentary sectional view corresponding generally with the disclosure of Fig. 2 but showing parts in different positions;

Fig. 7 is a diagrammatic view disclosing an electrical system and a part of a mechanical system of the dispenser;

Fig. 8 is an elevational view, partially in section and partially broken away, of indicating mechanism of an ordinary filling station gasoline dispenser and a flexible shaft adapted to be actuated in response to actuation of said indicating mechanism; and

Fig. 9 is a sectional view, taken on line 9-9 in Fig. 8.

With respect to the drawings and the numerals of reference thereon, 15 denotes a stand as ordinarily found at filling stations and employed during the operation of dispensing gasoline, as ordered from time to time by customers, into the tanks of automotive vehicles. Customarily, such a stand houses indicating mechanism, denoted 16, visible through openings, such as 17 and 18, at the front of the stand. As disclosed in Fig. 1, the quantity of gasoline dispensed is visible at the openings 18, and the cost of the dispensed quantity is visible at the openings 17. A pump, usually situated within the stand, is driven by means which also drives the indicating mecha-

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nism in such manner that the quantity of gasoline dispensed is as denoted at the openings 18. Stated otherwise, there is a unitary drive for the dispensing pump and the indicating mechanism, and the quantity of gasoline dispensed at any time after said pump is set in operation is as indicated at the openings 18. An actuator lever 19, releasably clutched to a main shaft 20 of the indicating mechanism 16, is for returning said mechanism to position where zero is visible at each of the openings 17 and 18 after each dispensing operation.

The invention herein utilizes features and characteristics of liquid dispensing apparatus known to the art, as hereinbefore briefly described, and additionally incorporates a new and improved construction and arrangement, including a control unit represented generally at 21, adapted to be adjustably set to cause a dispensing pump of the apparatus to be shut down when any desired quantity of gasoline or liquid, indicated at the openings 18, has been dispensed.

A housing of the control unit 21 is constituted as a circular base 22, suitably and conveniently supported upon the stand 15 at an accessible location exteriorly thereof, and a cup shape cover including a circular base wall 23 in spaced, parallel relation to the circular base 22 and an annular skirt 24 removably secured, as at 25, to said circular base 22.

A supporting shaft 26, within the housing of said control unit 21 and perpendicular to its circular base 22, is rigidly supported, as at 27, upon a central portion of said circular base, and a gear 28, rotatably mounted, as at 29, upon the shaft 26 in parallel, adjacent relation to the circular base 22 and fixed against movement longitudinally of said shaft, is in mesh with a pinion 30 fixed upon a flexible shaft 31 suitably and conveniently rotatably mounted, as at 32, in a side marginal portion of said circular base 22.

An annular clutch element of the control unit consists of a hub 33, rotatably mounted upon the supporting shaft 26, and an annular body 34, integral or rigid with said hub, having a first annular clutching member 35 for detachable engagement with a second annular clutching member 36 upon the adjacent surface of the gear 28. The annular body 34 is situated within the housing of the control unit adjacent the gear 28, and the hub 33 passes freely through a central opening 37 in the circular base wall 23 of the cup shape cover thus to be disposed partially within and partially without said housing. The annular clutch element is mounted upon the supporting shaft 26 to be movable longitudinally thereof, as well as to be rotatable thereon.

An outer end portion of the hub 33, disposed exteriorly of the housing of the control unit, at the side of the circular base wall 23 opposite the

circular base 22, fixedly supports, as at 38, an annular element 39 disposed in concentric relation to the shaft 26 and supporting, as at 40, a pointer 41 extending radially outwardly from said annular element and rotatable relative to circumferentially disposed calibrations 42 upon the front, exterior surface of the circular base wall 23 of the cup shape cover.

The outer end portion of the hub 33 is fitted into the inner end portion of the annular element 39, and a compression coil spring 43, within said annular element and in surrounding relation to the outer end portion of the shaft 26, has one of its ends 44 engaged against a collar 45 made rigid with said shaft by a screw bolt 46 and its other end 47 seated against the outer end of the hub 33, thus normally to resiliently retain the first and second clutching members 35 and 36 in engaged relation, as in Fig. 2 of the drawings. Flexible grasping clips 48, secured against the outer end of the hub 33 in adjacent relation to the supporting shaft 26, are adapted to be engaged against the outer end of said supporting shaft thus to retain said clutching members 35 and 36 in spaced relation, as in Fig. 6, against force of the compression coil spring 43 tending to cause the clutching members to be engaged. Stated otherwise, the annular clutching element, consisting of the hub 33 and the annular body 34, and the annular element 39 are a unitary structure adapted to be pulled outwardly, from the position as in Fig. 2, against force of the compression coil spring 43, to cause the flexible grasping clips 48 to become engaged against the outer end of the shaft 26 thus to retain the clutching members 35 and 36 in separated relation against force of said compression coil spring tending to cause said clutching members to be engaged, and pushed inwardly, from the position as in Fig. 6, to release said flexible grasping clips from the outer end of said shaft 26 thus to permit the compression coil spring to cause the clutching members to be engaged.

As will be apparent from Fig. 3 of the drawings, the pointer 41 is secured to the annular element 39 for adjustment circumferentially thereof, as well as circumferentially of the calibrations 42.

The circular base 22 rigidly supports, as at 49, a switch 50 situated within the housing of the control unit 21 and including an actuator arm 51 adapted to be swung toward said switch 50 to depress a push button 52 thereof thus to cause the switch to be opened. More explicitly stated, the actuator arm 51 is pivotally supported, as at 53, upon a frame of said switch 50, and the outer end of said actuator arm supports a roller 54. The roller 54 when rested upon a circumferential surface 55 of the annular body 34 of the clutch element situates the actuator arm 51 to permit the switch 50 to be closed, and an actuator piece 56, of V-shape as shown, upon said circumferential surface 55 is adapted to engage said roller and force it outwardly thus to cause said actuator arm to depress the button 52 to extent causing said switch 50 to be opened. Upon release of the roller 54 from the actuator piece 56, the actuator arm 51 is permitted to move by gravity to release the push button 52 thus to permit the switch 50 to become closed.

An electric motor of the liquid dispenser is indicated at 57, a liquid dispensing pump to be driven by said electric motor is represented at 58, and a driving connection between said motor and pump includes a clutch 60.

The main shaft 20 of the indicating mecha-

nism 16 will be driven by means which also drives the dispensing pump 58, and an auxiliary shaft 61 of said indicating mechanism is drivingly connected, as at 62, to an end of the flexible shaft 31 spaced from the pinion 30.

Incoming wires from a suitable source (not shown) of electrical energy are denoted 63 and 64. The incoming wire 63 extends to the motor 57, a lead wire 65 extends from said motor to a movable contact element of a switch 66, shown in Fig. 1 supported at accessible location upon the stand 15, a lead wire 67 extends from a fixed contact element of said switch 66 to a first contact element of the switch 50, and the incoming wire 64 is connected to a second contact element of said switch 50.

For the purpose of describing the manner in which the liquid dispensing apparatus is operable, it will be assumed that the parts of said apparatus are situated as when an attendant has finished dispensing an ordered quantity of gasoline and has supported the usual hose-and-nozzle-attached hand piece of the apparatus upon the stand 15 so that said hand piece retains the switch 66 in open position. At this time the indicating mechanism 16 will denote, at the openings 18 and 17, both the quantity of gasoline purchased and its price. Also at the finish of each dispensing operation, the roller 54 will be situated upon the actuator piece 56 to retain the switch 50 in open position. The clutch 60 normally will be disengaged and, desirably, made to engage, in a manner forming no part of the present invention, when said hose-and-nozzle-attached hand piece is inserted in the filler opening of an automotive vehicle gasoline tank. The attendant will rotate the actuator lever 19 to return the indicating mechanism 16 to zero position, and rotate the unitary structure consisting of the clutch element and the annular element with pointer, in clockwise direction in Fig. 5 and while said unitary structure is pulled outwardly to situate said clutch element in spaced relation to the gear 23, until the pointer denotes, by reference to calibrations 42, the quantity of gasoline to be dispensed. When said pointer is in the intended position, the unitary structure will be pushed inwardly to cause or permit the compression coil spring 43 to act to engage the first and second annular clutching members 35 and 36 with each other. When the operations as described have been completed, the attendant will lift the hose-and-nozzle-attached hand piece, thus to permit the switch 66 to become closed, and insert said hand piece in an automotive vehicle tank filler opening, thus to cause the clutch 60 to be effective. Upon lifting of said hand piece with consequent closing of said switch 66, the motor 57 will be energized, a circuit for said motor being traced from the incoming wire 63 to the motor, thence by the lead wire 65 to the switch 66, thence by the lead wire 67 through the switch 50, now closed by reason of the fact that the roller 54 is removed from the actuator piece 56, to the incoming wire 64. The motor will commence operation, but the dispensing pump 58, the indicating mechanism 16 and the flexible shaft 31, driven through the instrumentality of said indicating mechanism, will be at rest by reason of the fact that the clutch 60 is disengaged. When said hand piece is inserted in a filler opening, to effect closing of the clutch 60, the pump 58 will be set in operation to commence dispensing gasoline, as will also the indicating mechanism, to denote the quantity of gasoline dispensed, and

the flexible shaft 31, to cause the gear 28 and the unitary structure including the clutch element, the annular element 39 and the pointer 41 to be rotated in direction to move the actuator piece 56 toward the roller 54 and said pointer toward its zero position. The construction and arrangement will be such that when said actuator piece rides under said roller to cause the switch 50 to be opened, said pointer will be at zero position and the quantity of gasoline dispensed will be as denoted by the reading at the openings 18. Stated differently, the reading at the openings 18 will be the same as the reading denoted by the position of the pointer 41 with reference to the calibrations 42 immediately before the dispensing pump was set in operation. Opening of said switch 50 will cause the motor circuit to be broken, and the motor and pump to come to rest. With removal of the hand piece from the tank filler opening, the clutch 60 will become disengaged, and upon replacement of said hand piece upon the stand 15 at position to cause the switch 66 to be open, the parts of the apparatus will be situated at their normal positions, ready to be again manipulated and operated in the manner as set forth.

What is claimed is:

1. A measuring and shut off device for a dispenser for liquids comprising a base, a shaft fixedly mounted on said base, a gear rotatably mounted on said shaft, means for rotating said gear in direct relation to flow of liquid through said dispenser, a first clutching member integral with said gear and constituted as an annular ring of raised notches concentric with said shaft, a clutch body freely rotatable and slidable on said shaft, a second clutching member integral with said clutch body and constituted as an annular ring of raised notches adapted to mesh with said first clutching member, an annular element rigid with said clutch body, a pointer on said annular element, a cover member on said base having a portion thereof situated between said pointer and said base, calibrations on said cover, resilient means urging said clutch body toward said gear, a switch on said base capable of starting and stopping flow of liquid through said dispenser, an actuator piece mounted on said clutch body to cause said switch to operate to stop flow of liquid through said dispenser when said pointer is alined with one of the calibrations and to permit said switch to operate to allow flow of liquid through said dispenser when said pointer is alined with any other of the calibrations.

2. A measuring and shut off device for a dispenser for liquids comprising a base, a shaft fixedly mounted on said base, a main gear rotatably mounted on said shaft, means for rotating said gear in direct relation to the flow of liquid through said dispenser, a first clutching member integral with said main gear and constituted as an annular ring of raised notches concentric with said shaft, an annular clutch body freely rotatable and slidable on said shaft adjacent said main gear and having a hub extending outwardly therefrom at a side thereof opposite said main gear, a second clutching member integral with said clutch body and constituted as an annular ring of raised notches adapted to mesh with said first clutching member, an annular element rigid with said hub, a pointer on said annular element, a cover member on said base having a portion thereof situated between said pointer and said base, a ring of calibrations on said cover

adapted to be alined with one end of said pointer, a compression spring urging said clutch body toward said main gear, a switch mounted on said base capable of starting and stopping flow of liquid through said dispenser, an actuator arm for controlling said switch, and an actuator piece mounted on said clutch body to cause said actuator arm to operate said switch to stop flow of liquid through said dispenser when said pointer is alined with one of said calibrations and to allow flow of liquid through the dispenser when said pointer is alined with another of the calibrations.

3. A measuring and shut off device for a dispenser for liquids comprising a circular base, a shaft fixedly mounted on said base, a retaining disc spaced from and supported by said shaft, a main gear rotatably mounted on said shaft, means for rotating said gear in direct relation to the flow of liquid through said dispenser, a first clutching member integral with said main gear constituted as an annular ring of raised notches concentric with said shaft, an annular clutch body freely rotatable and slidable on said shaft adjacent said main gear and having a hub extending outwardly therefrom at a side opposite said main gear, a second clutching member integral with said clutch body and constituted as an annular ring of raised notches adapted to mesh with said first clutching member, an annular element rigid with said hub, a pointer on said annular element, a cover member on said base having a portion thereof situated between said pointer and said base, a ring of calibrations on said cover adapted to be alined with an end of said pointer, a flexible grasping clip mounted on an outer end of said hub to be in sliding contact with a cylindrical outer end portion of said shaft when said clutching members are intermeshed and to partly extend beyond said cylindrical outer end portion to come in contact with a flat end surface of said shaft when said clutching members are in clearing relation to each other, a compression spring having one end thereof in contact with said outer end of said hub and another end thereof in contact with said retaining disc to urge said clutch body toward said main gear, said grasping clips being so designed as to resist the action of said spring when said clip is in contact with said flat end surface of the shaft, a switch mounted on said base capable of starting and stopping flow of liquid through said dispenser, an actuator arm for controlling said switch having one end thereof pivoted to said switch and an opposite end for contacting said clutch body when liquid is flowing through said dispenser, and an actuator piece mounted on said clutch body to cause said actuator arm to be raised from said clutch body to operate said switch to stop flow of liquid through said dispenser when said pointer is alined with one of said calibrations.

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