June 13, 1950 J. B. MOORE 2,511,287

LIQUID DISPENSING PUMP

Filed April 24, 1944

Fig. 1.

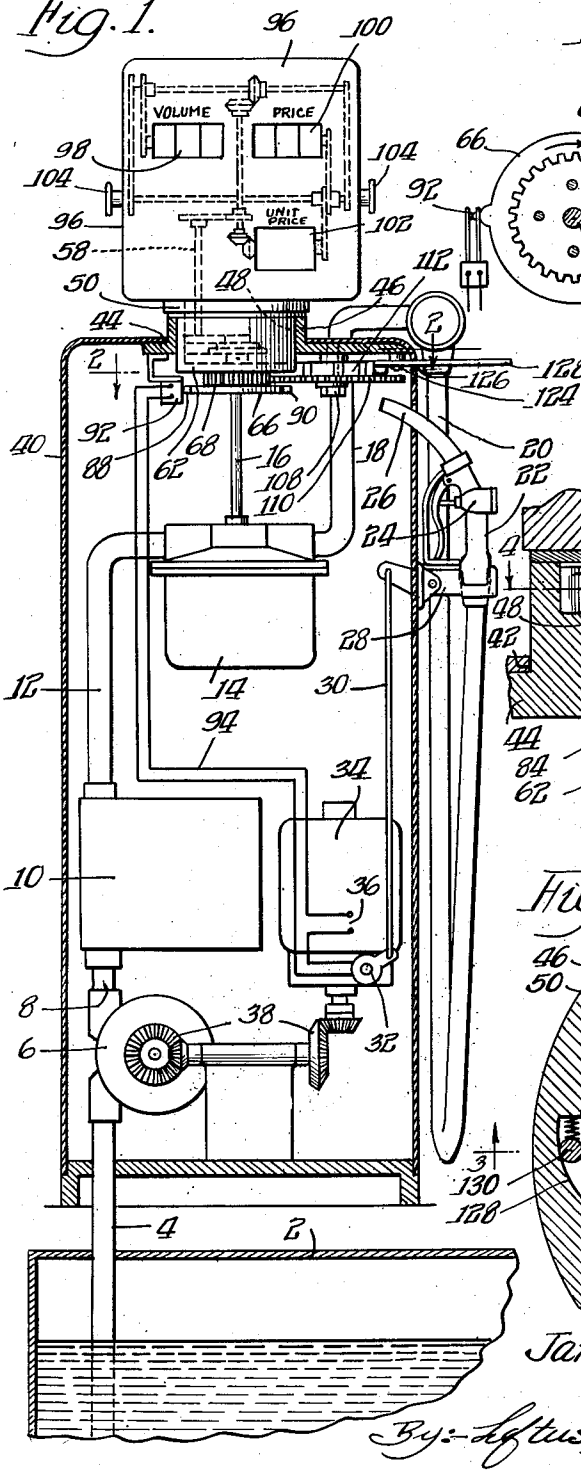


Fig. 2.

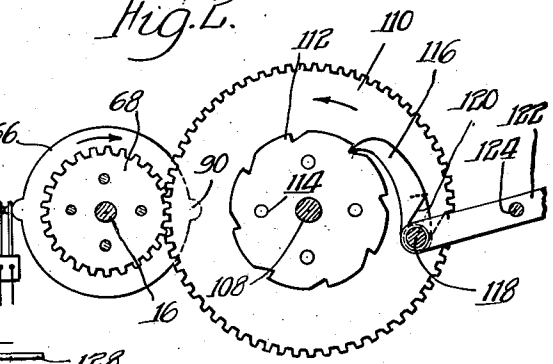


Fig. 3.

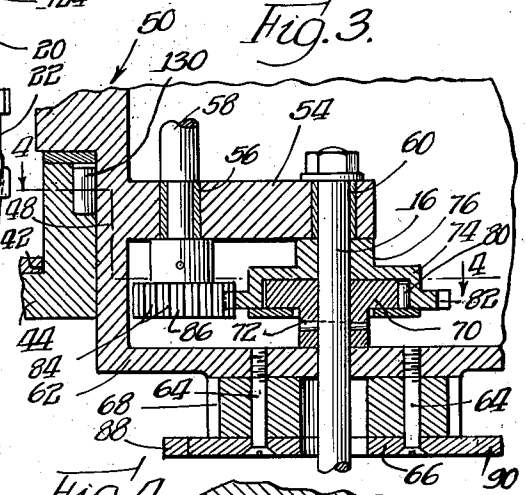
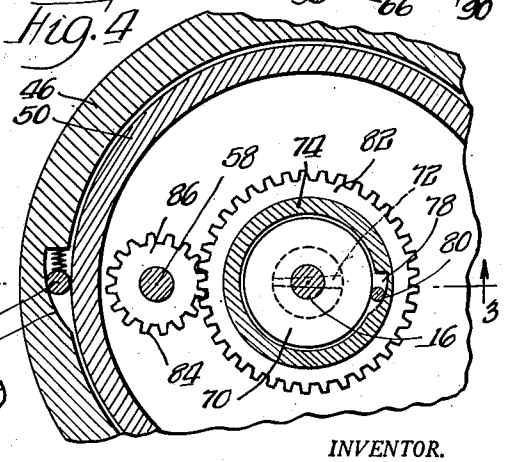


Fig. 4



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LIQUID DISPENSING PUMP

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Application April 24, 1944, Serial No. 532,382

8 Claims. (Cl. 222—23)

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This invention relates to liquid fuel service station pumps.

The principal object of the present invention is to provide a service station pump for dispensing liquid fuel having a registering mechanism which is mounted in a turret turntable with respect to the stationary standard which encloses the remaining portions of the pump. Preferably the turret encloses a register of the computer type, which comprises a dial showing a volume indication, a cost indication, and a unit price per gallon indication. These three comprise a single dial and the object of the present invention is to provide a rotatable turret with a single dial which can be turned to various positions of adjustment about a vertical axis so that either the station operator or the car owner may view the dial during dispensing, or before or after, from a plurality of predetermined points around the service station pump.

Among the objects of the present invention, therefore, is to provide a service station pump of the foregoing type wherein means is provided for turning the turret carrying the dial into various positions of adjustment around the service station pump so that the dial may be viewed from different positions, and in conjunction therewith the object of the invention is to provide means whereby during the turning the registering mechanism will not be affected so that it will not give a false registration or indication.

Yet another object of the invention resides in providing a means for turning the turret in cooperation with the pump operating means whereby the liquid dispensing is cut out when the turret is being turned and then automatically restored for operation after the turret has been brought to one of a number of predetermined positions of adjustment about its stationary base.

Another object of the present invention is to provide a rotatable turret for a computer pump carrying a computing dial and computing mechanism driven by a liquid displacement meter, wherein means is provided for turning the turret to position the registering dial as desired, and wherein mechanism is included which will prevent a registration of the indicating means when the turret is turned.

Yet another object of the invention resides in providing a mechanism which will permit the turret to turn in one direction only and without causing a movement of the registering mechanism carried by the turret.

Another object of the invention is to prevent reversing the drive of the meter due to the turning of the registering mechanism to one position or another.

Other objects of the invention will be apparent from a perusal of the following specification when

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taken in connection with the accompanying drawing, wherein:

Figure 1 is a view showing the application of the invention to a service station gasoline pump and showing the register head in elevation and the lower housing in cross section, the mechanism being shown in elevation within the housing;

Figure 2 is a detail plan sectional view taken on the line 2—2 of Figure 1;

Figure 3 is a detail cross sectional view taken on the line 3—3 of Figure 4; and

Figure 4 is a fragmentary plan sectional view taken on the line 4—4 of Figure 3.

Referring now to the drawing in detail, the invention is shown preferably in association with the conventional type of computer pump mechanism which comprises the usual underground tank 2 in which the bottom of the dispensing line 4 projects, same being provided with the usual foot valve, not shown. This line 4 connects with an electrically driven pump 6 which is adapted to pull the liquid fuel from the tank and force it through a dispensing line 8 to an air separator 10 where the air is removed therefrom, the liquid thence passing through a continuation of the dispensing line 12 to the liquid displacement meter 14, the meter shaft of which is shown as at 16. From the outlet 18 of the meter 14 the dispensing line connects with a flexible hose 20 provided with the usual nozzle 22 having the manually operable valve 24 and the nozzle 26. The valve is adapted to rest normally upon the usual hose hook or nozzle support 28. This nozzle support, as is well known in the art, is provided with a swingable arm or may itself comprise a pivotal arm adapted to connect with a rod 30 connecting with the switch mechanism 32 of the motor 34, having a connection 36 with the line. The motor 34 through gearing 38 drives pump 6. The nozzle support 28 may be of a number of different constructions which are well known in the art. Practically all of those constructions include a manually shiftable member for throwing the pump to the "on" position and the nozzle support generally rests upon this member so that when the nozzle is on its support with the nozzle projecting through an opening in the housing, it is impossible to throw the switch arm to the motor operating position, and vice versa.

The top of the stationary housing 40 is provided with an opening 42 around the under inner periphery of which is bolted a ring 44, having an upstanding annular sleeve 46 forming a bearing support for the downwardly extending sleeve 48 of the turret or head 50. The sleeve 48 provides a support for an integral lateral projection 54 forming a bearing support 56 for a shaft 58 and forming a bearing support 60 for the upper

portion of the meter shaft 16. The lower portion of the sleeve 48 of the turret is provided with a horizontally disposed bottom wall 62 threadedly receiving bolts 64 holding thereto a cam 66 and a ring gear 68 in such a manner that the turret, the ring gear, and the cam all turn together, as hereinafter described. The shaft 16 passes centrally through the ring gear 68 and cam 66. Within the bottom 62 of the turret about the shaft 16 there is provided an inner member 70 of a roller clutch. This member is pinned to shaft 16 as at 72. Surrounding this roller clutch member 70 is a cooperative outer clutch member 74 having a collar 76 running freely on the shaft 16. The outer collar is provided with the cam-shaped roller recess 78 receiving the roller 80 therein in the manner well known in the art. The outer surface of this collar 74 is provided with gear teeth 82 which engage the teeth 84 of a gear 86 pinned to the shaft 58.

The cam 66 has two diametrically disposed projections 88 and 90 adapted to cooperate with an electric switch 92 which is in series with the motor switch 32 by means of appropriate wiring 94, the arrangement being such that when the switch projections 88 and 90 contact the switch 92 the second switch will be closed, and since this switch is in series with the motor switch, the motor switch will be closed only when these two projections 88 and 90 are in a predetermined position.

The turret portion 50 has upstanding therefrom the turret casing 96. This turret casing 96 may be of any desired construction, and if desired it may be square or rectangular and is preferably provided on one face only with a series of indicator windows 98, 100 and 102 through which are shown the volume indicator dials, the price indicator dials, and the unit price per unit of liquid, respectively. The dials of the mechanism for operating the indicators are those well known in the art, and they are driven by rotation of the shaft 58, as is well known. In addition, the casing includes a turnable or actuatable reset mechanism 104 for resetting the indicators 98 and 100. These knobs are duplicated on either side of the turret.

The ring 44 is provided with a vertical stud 108 forming a bearing for the large pinion 110 which meshes with the gear 68 on the shaft 16. Also supported on the shaft 108 is a ratchet wheel 112 fixed to the gear by bolts of pins 114 which cooperate with a pawl 116 pivoted at 118 and having a torsion spring 120 to force the end of the pawl into engagement with the ratchet. An operating lever 122 is pivoted as at 124 to a stationary portion of the casing and extends outwardly through an opening 126 in the casing to form a handle 128. In the operation of this device, by swinging the handle 128 about its pivot 124 the pawl 116 will advance around the ratchet in a counterclockwise direction to engage the teeth on the ratchet causing the movement of the ratchet and the pinion 110 in a counterclockwise direction to rotate the gear 68 in a clockwise direction. Rotation of the gear 68 in clockwise direction will therefore rotate the cam 66 in a clockwise direction, and consequently rotate the turret in a clockwise direction to position its face either in a position shown in the drawing facing the reader, or at a position turned 180° therefrom, in accordance with the turned positions of the projections 88 and 90. For instance, when the register is facing

the reader, as shown in Figure 1, the projection 88 will be contacting the switch arm 92 to close this switch so that when the switch arm 28 of the nozzle support is moved upwardly the pump motor switch which is in series therewith will likewise be closed, which will start the pump so that subsequently when the nozzle valve 24 is operated to open the nozzle valve, liquid will be pumped through the dispensing line.

In addition, by suitable manipulation of the lever 122 the turret will be rotated 180° in a clockwise direction to a position such that the projection 90 contacts the switch arm 92 to close the switch. At all other times the switch 92 will be spring pressed to open position so that the pump motor circuit will be broken. Hence the pump can be operated only when the turret head is in two positions. By providing the cam 66 with additional projections midway between the projections 88 and 90 the turret can be turned to quarter positions and the pump be operative in those positions.

Means is provided so that the turret can be turned only in one direction, in the instance shown, in the clockwise direction. This comprises providing the ring 46 with a cam recess of the construction shown at 128 adapted to receive the spring pressed roller 130, whereby since the ring 46 is stationary, any attempt to move the lower portion of the turret 50 in a counterclockwise direction is prevented by the roller clutch 128 and 130. Upon shifting of the turret head through the manually operated lever 122 in the single direction only, the turret will rotate in a clockwise direction and cause the planet gear 86 to travel bodily in a clockwise direction around the shaft 16 as an axis rotating the larger gear 82 around with it. In this clockwise rotation of gear 82, the roller clutch 80 will allow the gear 82 to rotate in a clockwise direction and not cause the meter shaft 16 to turn. Consequently the shaft 58 will also be held from turning, due to the fact that the gear 86 and the gear 82 turn as a unit, there being no relative movement between the two and therefore no indication will be set up in the dials and the register mechanism.

Obviously the invention is not limited to the specific details of construction disclosed herein but is capable of other modifications and changes without departing from the spirit and scope of the appended claims.

The invention is hereby claimed as follows:

1. In a device of the class described, the combination of a dispensing line adapted to be connected to a source of liquid fuel to be dispensed, said line having a dispensing valve for controlling the flow of liquid through said line, a stationary support, a liquid displacement meter on said support and disposed in said line and having means operated by the flow of liquid therethrough when the valve is open, a meter shaft driven by the operating means of said meter, a head turnable with respect to said support, registering mechanism driven by the meter shaft and mounted on the turntable head and one way driving means disposed between said meter shaft and said registering mechanism for preventing the operation of the registering mechanism by the turning of the head.

2. In combination with a stationary housing, a dispensing line having a dispensing valve, a meter in said dispensing line within said housing, said meter having a shaft, a head turnably mounted on said housing, said head having an indicating

dial, registering mechanism within said head and viewable through said dial, and a driving connection from the meter shaft to the registering mechanism including an overrunning clutch, and means for turning said head angularly to position the dial and head at a predetermined point with relation to the stationary housing, said one-way clutch including mechanism constructed and arranged to disconnect the drive between the meter shaft and the registering mechanism when said head is turned whereby to prevent false registration of said registering mechanism as an incident to turning the head.

3. In combination with a stationary housing, a dispensing line having a dispensing valve, a pump in said dispensing line and a motor for driving said pump, a meter in said dispensing line within said housing, said meter having a shaft, a turret rotatably mounted on said housing, said turret having an indicating dial, a registering mechanism within said turret and viewable with said dial, and a driving connection from the meter shaft to the registering mechanism, means for holding the turret from turning in one direction while allowing said turret to turn in the other direction only whereby angularly to position the dial and turret at a predetermined point with relation to the stationary housing, means for disconnecting the drive between the meter shaft and the registering mechanism when said turret is turned in said allowed direction whereby to prevent false registration of said registering mechanism as an incident to rotating the turret, a switch for operating said motor, and means operated by the rotation of the turret for controlling the operation of the motor circuit.

4. In combination with a stationary housing, a dispensing line having a dispensing valve, a pump in said line and a motor for driving said pump, a meter in said dispensing line, said meter having a shaft, a turret rotatably mounted on said housing, said turret having an indicating dial, a registering mechanism within said turret and viewable with said dial, and a driving connection from the meter shaft to the registering mechanism, means to permit turning of said turret in one direction only whereby angularly to position the dial and turret at a predetermined point with relation to the stationary housing, means for so turning said turret, and means for disconnecting the drive between the meter shaft and the registering mechanism when said turret is turned in said predetermined direction whereby to prevent false registration of said registering mechanism as an incident to rotating the turret.

5. In combination with a stationary housing, a dispensing line having a valve pump in said line and a motor for driving said pump, a meter in said dispensing line, said meter having a shaft, a turret rotatably mounted on said housing, said turret having an indicating dial, a registering mechanism within said turret and viewable with said dial, and a driving connection from the meter shaft to the registering mechanism, means for compelling turning of said turret in one direction only to angularly position the dial and turret at a predetermined point with relation to the stationary housing, means including a lever and ratchet for so turning said turret, and means for disconnecting the drive between the meter shaft and the registering mechanism when said turret is turned in said predetermined direction whereby to prevent false registration of said registering mechanism as an incident to rotating the turret.

6. In a computing pump, in combination with a stationary casing, a flow line passing through said stationary casing and having a valve, a meter mounted in said casing and disposed in said flow line, said meter having a shaft, a head turnably mounted concentrically about said meter shaft, means precluding turning of said head in one direction while permitting it to turn in the opposite direction, registering mechanism on said head, a gear on said meter shaft, said registering mechanism including a shaft and a gear thereon meshing with and turnable with said head about said gear on the meter shaft, and means operable when said head is turned in said opposite direction for disconnecting the operating connection between said meter shaft and said shaft of said registering mechanism, said means being operative to drive said registering mechanism from said meter shaft when said head is stationary.

7. In a computing pump, in combination with a stationary casing, a flow line passing through said stationary casing and having a dispensing valve, a pump in said flow line, a motor for driving said pump and having a control circuit, a meter in said flow line, said meter having a shaft, a turret rotatably mounted on said stationary casing, a locking clutch for preventing rotation of said turret in one direction while permitting it to rotate in the opposite direction, registering mechanism in said turret, operating means interconnecting the meter shaft and said registering mechanism, and means operable when said turret is turned in said opposite direction for disconnecting the operating connection between said meter shaft and said registering shaft, said means being operative to drive said registering mechanism from said meter shaft when said turret is stationary, and means controlled by the movement of said turret in said opposite direction for controlling the operation of the motor pump circuit.

8. In a computing pump, in combination with a stationary casing, a flow line passing through said stationary casing and having a dispensing valve, a meter mounted in said casing and in said flow line, said meter having a shaft, a turret rotatably mounted on and relatively to said stationary casing, means for preventing rotation of said turret in one direction while permitting it to rotate in the opposite direction, registering mechanism in said turret, and operating means interconnecting the meter shaft and said registering mechanism, said operating means including an overrunning clutch operable when said turret is turned in said opposite direction for disconnecting the operating connection between said meter shaft and said registering mechanism, said overrunning clutch being operative to drive said registering mechanism from said meter shaft during the operation of said meter.

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The following references are of record in the file of this patent:

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Certificate of Correction

Patent No. 2,511,287 June 13, 1950

JAMES BALLARD MOORE

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows:

Column 1, line 6, and column 4, line 66, respectively, for the word "turntable" read *turnable*; column 5, line 57, for "valve pump" read *valve, a pump*;

and that the said Letters Patent should be read as corrected above, so that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 21st day of November, A. D. 1950.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.