

May 9, 1939.

H. WYDLER

2,157,745

LIQUID DISPENSING APPARATUS

Filed Sept. 8, 1936

5 Sheets-Sheet 1

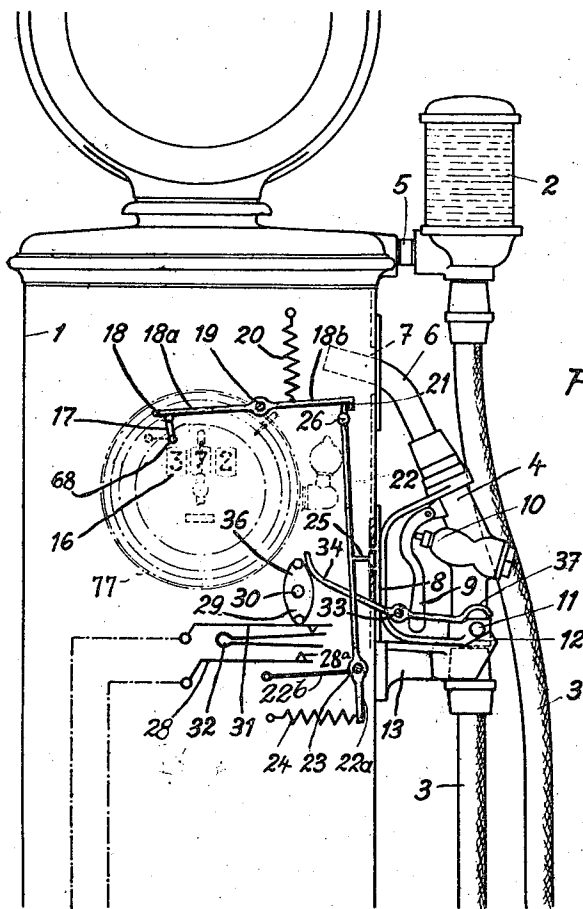


Fig. 1.

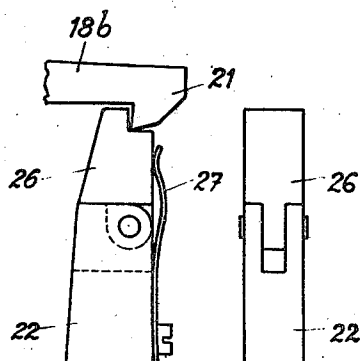


Fig. 2.

Fig. 3.

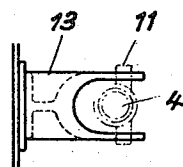


Fig. 4.

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Fig. 12.

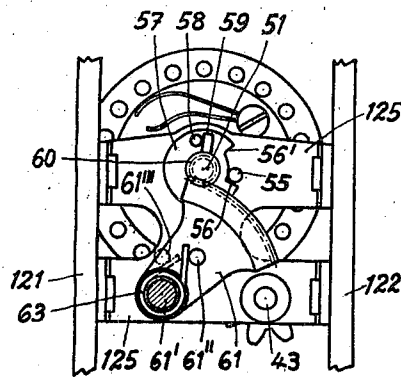


Fig. 5.

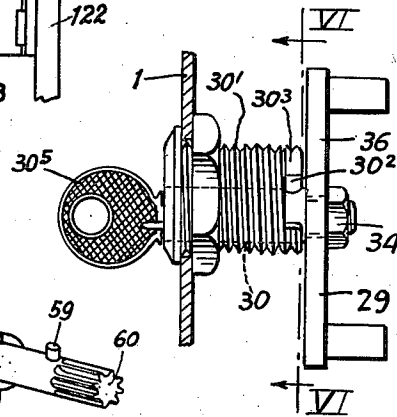


Fig. 14.

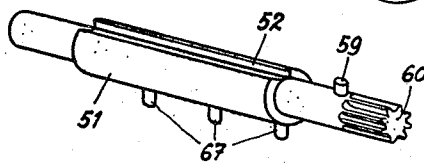


Fig. 6.

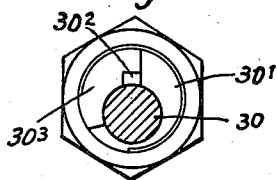
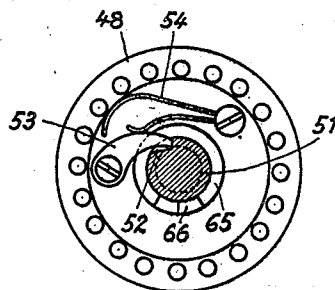


Fig. 13.



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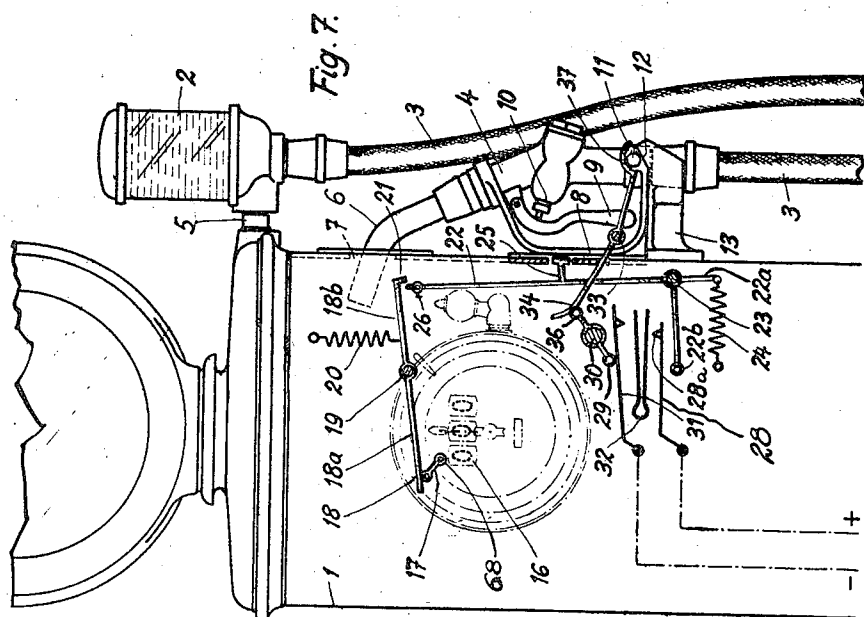
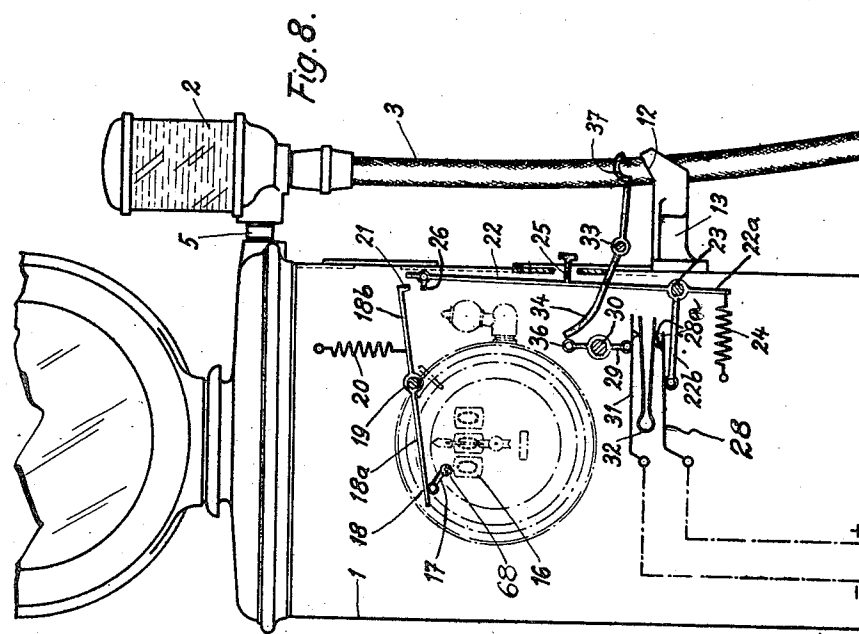
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LIQUID DISPENSING APPARATUS

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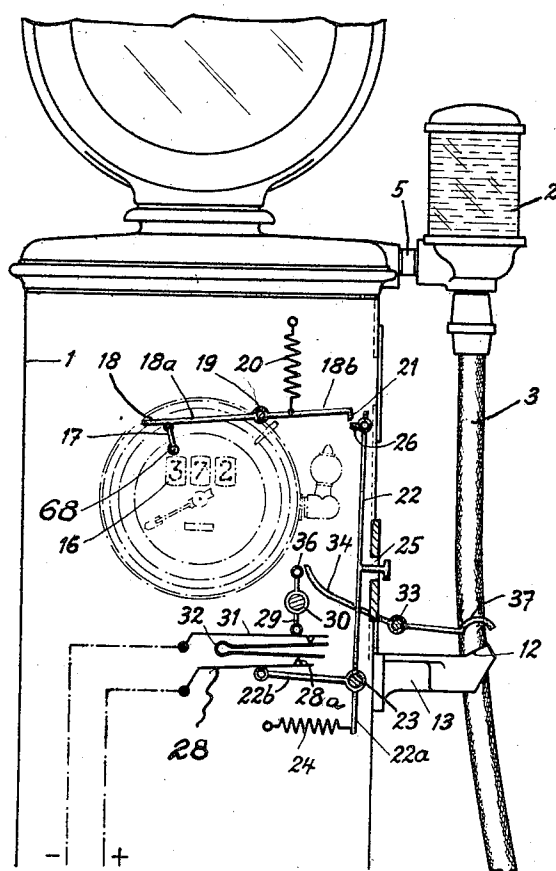
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Fig. 9.



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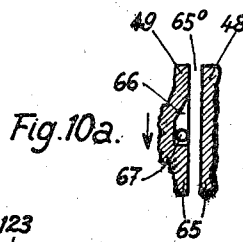
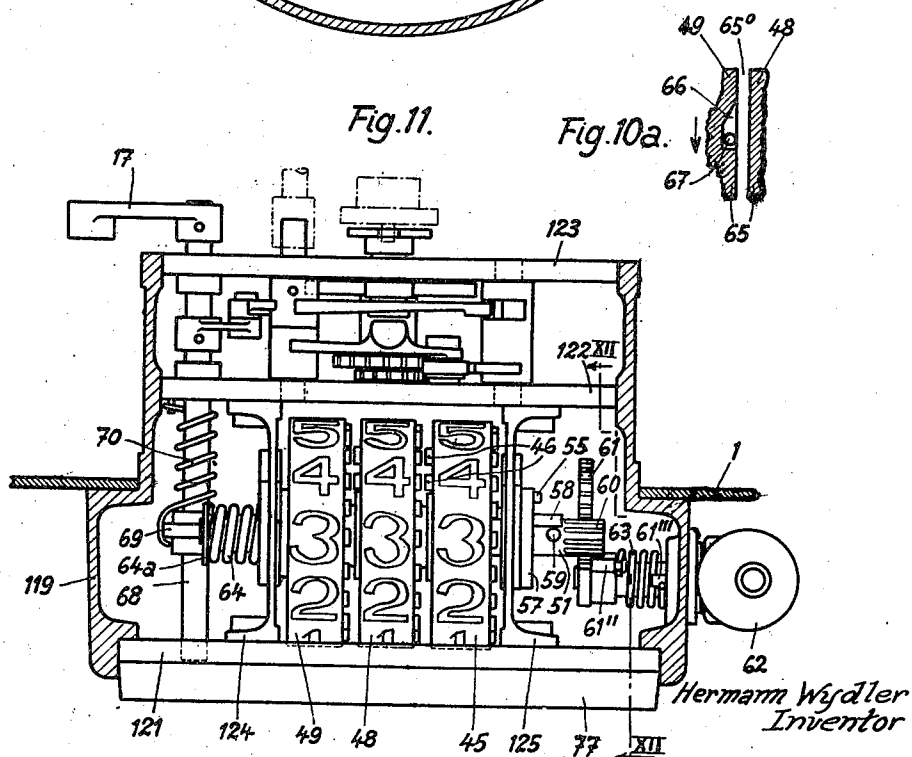
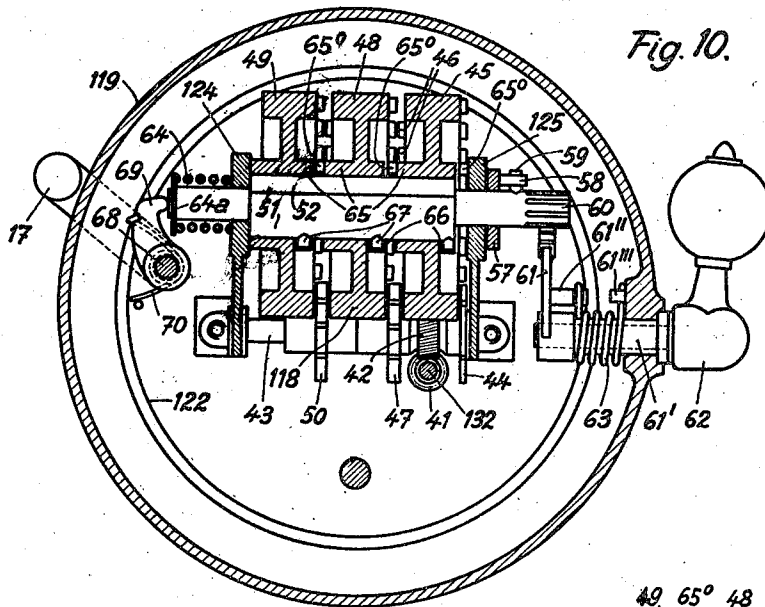
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LIQUID DISPENSING APPARATUS

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UNITED STATES PATENT OFFICE

2,157,745

LIQUID DISPENSING APPARATUS

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the firm Sauser A.-G., Soleure, Switzerland, a
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Application September 8, 1936, Serial No. 99,894
In Switzerland September 13, 1935

3 Claims. (Cl. 221-101)

The present invention relates to improvements in a liquid dispensing device operated by an electric motor and having a delivery valve at the end of a constantly filled hose which is adapted to be locked in the suspended position by a key controlled lock and provided with switch contacts for controlling the motor.

An object of the invention is to simplify the withdrawal of liquid so that consumers themselves may obtain fluid without the aid of a salesman. Having unlocked the hose one contact of the switch will be closed and the dispensing valve can be taken off whereby the other contact will be closed and the motor started. Then by opening the dispensing valve attached to the delivery hose any quantity of liquid can be withdrawn which will be registered by a counter. The arrangement is such that the counter must always be in the zero position before any liquid can be withdrawn.

The invention consists therefore in utilizing the lock so as to maintain the dispensing valve secure in a suspended position and also for maintaining the switch in its open position and in means which keeps the switch open unless the counter is in the zero position.

An embodiment of the invention is illustrated in the accompanying drawings in which the parts of the meter for returning the counter to zero are also shown.

Fig. 1 is a side elevation of a known form of a locking device for the dispensing valve and illustrating diagrammatically the switch operating members in a position after 372 measuring units have been withdrawn and the valve suspended.

Figs. 2 and 3 are detail views of the lever ends. Fig. 4 is a top view of the forked bracket for supporting the dispensing valve.

Fig. 5 is an elevational view of the lock.

Fig. 6 is a section view taken on the line VI—VI of Fig. 5.

Fig. 7 is a view similar to Fig. 1 showing the counter in the zero position and the dispensing valve locked on the support.

Fig. 8 illustrates the position of the parts prior to withdrawal of liquid with the valve removed and the counter in the zero position.

Fig. 9 illustrates the position of the parts during the dispensing of liquid with the counter indicating the fluid dispensed.

Fig. 10 is a sectional view of the counter with the numerical drums thereof in the zero position.

Fig. 10a illustrates in section a detail of the numerical drums.

Fig. 11 is a plan view of the parts shown in Fig. 10.

Fig. 12 is an end view taken on the line XII—XII of Fig. 11.

Fig. 13 is an end elevation of a numeral drum; and

Fig. 14 is a perspective view of the shaft for supporting the numerical drums.

Referring to the drawings the liquid dispensing device comprises a standard housing 1 having at its top a fluid flow indicator 2 attached to the housing by a fitting 5. The flow indicator is provided with a hose 3 and a liquid dispensing valve 4 having a nozzle 6. The valve 4 is provided with two lateral pins 11 for supporting the same on the upturned arms 12 of a forked bracket 13 in which position it leans with a guard 8 against the side wall of the standard. An aperture 7 is provided in the wall of the standard through which the nozzle 6 is adapted to extend into the inside of the housing 1. The housing shelters the meter and a switch. The casing 119 of the counter 16 is fitted into the front wall of the square sided housing 1 so that the numeral drums thereof may be observed from the outside of the housing. The casing 119 is divided into two compartments by means of the partition walls 121, 122 and 123 as shown in Fig. 11.

In a manner already known the valve 4 is locked in its suspended position on the bracket 13 by means of a pivoted lever 34 having forked arms 37. The lever 34 is mounted to turn on a pivot 33 so that when the lever 34 is raised the arms 37 engage over the pins 11. The lever 34 is blocked in its uplifted position where it locks the valve 4 by an arm 36 of the lock. The arm 36 is secured to the lock bolt 30 as shown in Fig. 5. This lock also controls the switch of the electric motor.

In the locked position the arm 36 keeps the valve 4 clamped down to the bracket 13 and leaves a contact blade 31 of the switch in its open position as shown in Fig. 7. In the unlocked position the lock arm 36 is disengaged from the lever 34 but presses the contact of the blade 31 into contact with one leg of a V-shaped flat spring 32. The two positions of the lock bolt are limited by a pin 30² rigidly secured to the bolt 30 and moved in a limited recess 30³ of the lock body 30¹. By inserting a key 30⁵ the lock bolt is free to be turned in the lock body 30¹ so that the apparatus may be unlocked.

The operation of the switch is also partly dependent upon the zero position of the numerical drums and the position of an arm 17 actuated by

the counter which in part influences the operating mechanism of the switch. The switch in addition to the blade 31 which carries one contact and the flat spring 32 cooperating therewith, also includes a second contact 28a carried by a contact arm 28. The operating mechanism comprises a lever 18 pivoted at 19 on a bracket inside the housing 1 and controlled by a tension spring 20 attached to an arm 18b of the lever 18.

The other arm 18a of the lever 18 is in contact with the arm 17 actuated by the counter. The arm 18b is terminated in a hook 21 which cooperates with a leg 22 of a three-armed lever pivoted at 23 and controlled by a tension spring 24 attached to a leg 22a of the three-armed lever. The third arm 22b is adapted to bear against a contact arm 28 for moving the contact 28a into engagement with the spring 32. The leg 22 is provided with a projection 25 which extends through an opening in the wall of the housing 1 and bears against the guard 8 of the valve 4 when this valve is in its suspended position. When the valve is taken off the bracket 13 the projection 25 will pass through the opening and cause the contact 28a to engage the spring 32 under the action of spring 24.

The leg 22 is also provided with a latch 26, which permits the upper end of the three-armed lever to move behind the hook 21 even when the arm 18b has been moved into its lower position by a swinging movement of the arm 17 into a substantially vertical position. In the locked position of the three armed lever 22 the contact 28a will be kept open. The upright position of the arm 17 is therefore the locking position of the three-armed lever, while in the inclined position of arm 17 which corresponds to the zero position of the counter the three-armed lever 22 is free to cause the contact 28a to engage the spring 32 when the guard 8 of the valve 4 is removed from engagement with the projection 25.

The counter for controlling the position of the arm 17 is shown in Figs. 10 to 14 and the operation of the switch is partly controlled by the position of the numeral drums thereof. The numeral drums are driven by a helical gear wheel 41 secured to the driving shaft 132 and meshing with a helical gear wheel 42. A pinion 44 is provided on a shaft 43 for driving the number drum 45, and the pinion 44 has only four teeth so that a gap is left between the teeth providing a free passage for receiving the transfer pins of the drum 45. During each counting operation the pinion 44 makes a quarter turn and the teeth thereof will engage the transfer teeth of the drum 45 when moving in a forward direction. The pinion 44 is rigidly fixed to the shaft 43 and is rather narrow and has only four teeth. The pinions 47 and 50 however are twice as thick and these latter pinions are loose on the shaft 43 and the teeth thereof remain in constant mesh with the respective transfer teeth 46.

When the drum 45 completes its tenth revolution, two of the pins 46 carried thereby engage the pinion 47 and rotate it one tenth of a revolution, and the numeral drum 48 will be rotated one tenth of a complete revolution. During each revolution of the numeral drum 45 the two pins 46 engage the pinion 47 to thus turn the drum 48 in a known manner. The same operation takes place in connection with the numeral drum 49 by means of the pinion 50 and the pins carried by the numeral drum 48. Thus the delivered quantity of liquid will be indicated in tens and hundreds of the units.

The numeral drums 45, 48 and 49 are arranged to be rotated on a shaft 51 provided with a groove 52, as shown in Figs. 13 and 14, in which a pawl 53 is adapted to be moved by a spring 54. Such a spring controlled pawl is provided for each numeral drum.

The means for returning the numeral wheels to zero includes a handle 62 for operating a shaft 61' having a gear segment 61 secured thereto which meshes with gear teeth provided at the end 60 of the shaft 51. A disc 57 is loosely mounted on the shaft 51 as shown in Figs. 10, 11 and 12. In these figures the apparatus is shown at rest. All rotary movement of the disc 57 on the shaft 51 is limited by means of a pin 55 secured to a bracket 125. The pin 55 extends into a gap formed in the disc so as to engage the edges of the disc which form the gap. The disc carries a pin 58 which may be engaged by a pin 59 fixed to the shaft 51. A torsional spring 63 is arranged to embrace the shaft 61' with one end engaging a pin 61'' of the gear segment and the other end of the spring bears on a pin 61''' fixed in the casing 119. The spring 63 tends to rotate the gear segment in a clockwise direction. When the segment 61 is moved in such a direction the shaft 51 will rotate in a counterclockwise direction, whereby the groove 52 will engage all of the pawls 53 and thus move the numeral drums to an aligned zero position.

In returning the numeral drums to zero the gear segment 61 is first turned in a counterclockwise direction by means of the handle 62 so as to bring the groove 52 out of reach of all of the pawls 53 and then when the handle 62 is free the spring 63 will return the gear segment into its position of rest which movement turns all of the drums to the zero position. This position of rest is limited by the pin 55 which stops the disc 57 by engaging the edge 56 of the gap as shown in Fig. 12. The other edge 56' of the gap limits the counter-clockwise movement of the handle 62 because by this movement the shaft 51 will turn in a clockwise direction and the pin 59 will pass the shorter pin 55 and after nearly a revolution catch the pin 58 and bring the edge 56' of the gap into contact with the pin 55. The gap serves thus to compensate for the thickness of pin 59.

According to Figs. 10 and 11 a spring 64 is provided to bear on a disc 64a attached to the end of the shaft 51 and thus tends to displace this shaft in an axial direction to the left of Fig. 10 but such movement of the shaft 51 is counteracted by an arm 69 fixed to a cross shaft 68 which is provided with the arm 17. The arm 69 is maintained against the end of the shaft 51 by means of a spring 70.

The arm 17 is arranged to be inclined to a vertical position when the numeral drums are in the zero position and in an upright position when the counter has moved to indicate the quantity of liquid dispensed. In this latter position the arm 17 swings the lever 18 in a clockwise direction so that the leg 22 is engaged by the hook 21.

It is to be noted from reference to Fig. 10 that the numeral drums 45, 48, 49 are held between brackets 124, 125 on the shaft 51 and separated from each other by the pinions 47 and 50. Each of the drums is provided in the right hand edge of its hub 65 with a recess 66 having one sharp edge and one slanting edge as shown in Fig. 10a. Each recess is adapted to receive one of the pins 67 of the shaft 51 and the sharp edge is located in a radially aligned relation with

the zero numeral of the respective drum. Annular spaces 65° are provided between the hubs of the drums 48 and 49 and between the hubs of drums 45 and 48 and between the hub of the drum 45 and the bracket 125 so as to establish passageways for the pins 67 during the counting operation of the drums.

In the Figs. 1 and 11 the border ring of the dial of the counter is indicated at 77.

10 The switch in combination with the valve 4 and the arm 17 of the counter as shown in Figs. 1, 7, 8 and 9 is operated as follows: The arrangement is such that delivery of liquid is only possible, when the contacts of the switch 15 are closed as shown in Figs. 8 and 9. In the position of rest according to Fig. 7 both contacts are open and the arm 17 is turned into an inclined position to the left.

Fig. 1 shows an intermediate position wherein 20 372 units have been dispensed and the counter has not yet been returned to the zero position and the lock not yet been locked. Then by moving the counter to zero by operation of the handle 62 the arm 17 will assume a position 25 inclined to the left and the arm 18a now released will permit the disengagement of the leg 22 from the hook 21.

If liquid is to be dispensed the lock 30 must be unlocked and the arms 29 and 36 turned from the position shown in Fig. 7 to the position shown in Fig. 1 which will move the contact of the blade 31 into engagement with the spring 32 and cause the lever 34 to turn on the pivot 33 and thus release the forked arms 37 from the 35 pins 11. By removing the valve 4 the bearing point of the projection 25 is removed and the leg 22 under the effect of the spring 24 will close contact 28a by means of the arm 22b. The elements of the apparatus will thus assume the relationship shown in Fig. 8. The delivery of 40 liquid can now begin when valve 4 is opened and the delivered quantity will be registered by the counter.

When one of the numeral drums is rotated the shaft 51 will be moved to the right of Fig. 10 by the pins 67 whereby the arms 69 and 17 will assume a substantially vertical position as shown in Fig. 9.

Having finished the delivery of liquid and suspended against the valve 4 the contact 28a of the switch will be opened and the motor stopped by the guard 8 moving the projection inwardly. In spite of the lowered position of the arm 18b the leg 22 can move behind the hook 21 because 50 of the yieldability of the latch 26. When the lock is now locked contact 31 will be opened. When the handle 62 is operated to return the numeral drums to zero the arm 17 will swing

to an inclined position to the left, which will release the arm 18a and restore the position of rest as shown in Fig. 7.

What I claim is:

1. In a liquid dispensing device adapted to be 5 driven by an electric motor, a housing, a plurality of numeral drums visible through the housing and adapted to be rotated when liquid is dispensed, an arm moved to one position when one of the drums is rotated and to a second 10 position when the numeral drums are in zero positions, a switch adapted for opening and closing a circuit to the motor, a lever and yieldable means associated therewith for urging said switch to a closed position, and detent means associated 15 with said lever for releasing the same to the action of said yieldable means when said arm is moved to the second position.

2. In a liquid dispensing device adapted to be driven by an electric motor, a housing, a plurality of numeral drums visible through the housing and adapted to be rotated when liquid is dispensed, an arm moved to one position when one of the drums is rotated and to a second 20 position when the numeral drums are in zero positions, a switch adapted for opening and closing a circuit to the motor, a lever and yieldable means associated therewith for urging said switch to a closed position, detent means associated with said lever for releasing the same to 30 the action of said yieldable means when said arm is moved to the second position, and means projecting through the housing for returning the lever to a position so as to be engaged by said detent means.

3. In a liquid dispensing device adapted to be driven by an electric motor, a housing, a plurality of numeral drums visible through the housing and adapted to be rotated when liquid is dispensed, an arm moved to one position when one of the drums is rotated and to a second position when the numeral drums are in zero positions, a switch adapted for opening and closing a circuit to the motor comprising a V-shaped spring having a contact arranged to be moved 45 into engagement with each leg of the spring to close the switch, manually operable means for moving one contact into engagement with the spring, a pivoted mounted lever associated with the other contact, yieldable means tending to pivot the lever for moving the last mentioned contact into engagement with the spring, and 50 detent means operable to restrain pivoting of the lever when said arm is in the first mentioned position and release said lever when the arm is moved to the second position whereby said 55 switch is closed.

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