

June 16, 1936.

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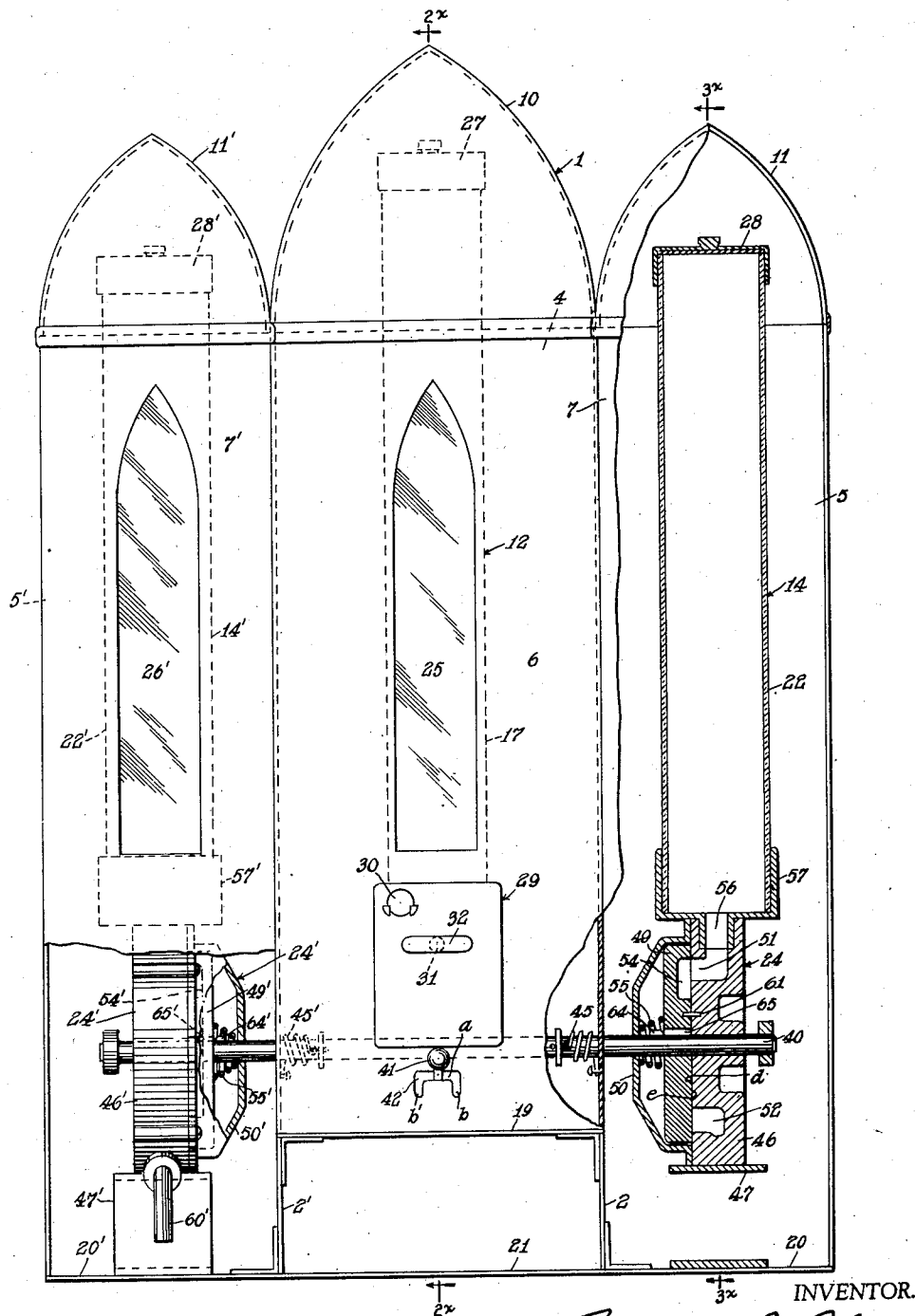
2,044,153

LIQUID DISPENSING MACHINE

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3 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

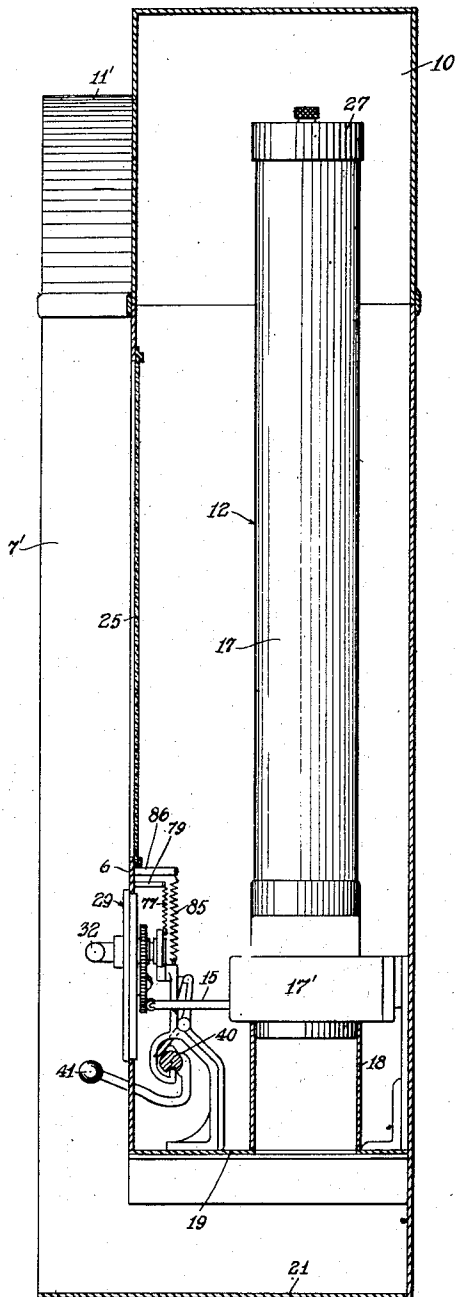
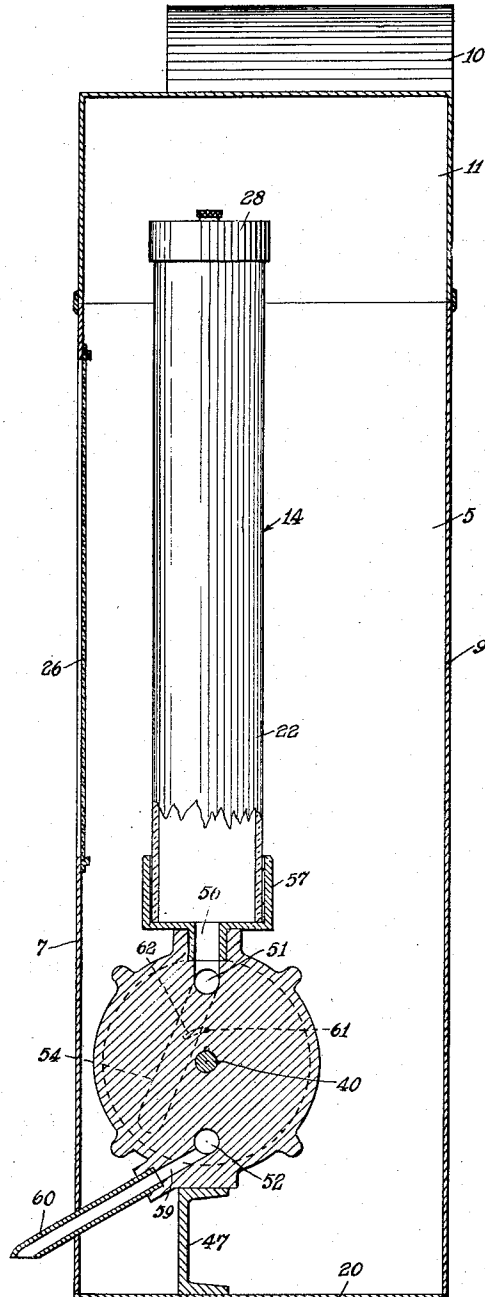


Fig. 3.



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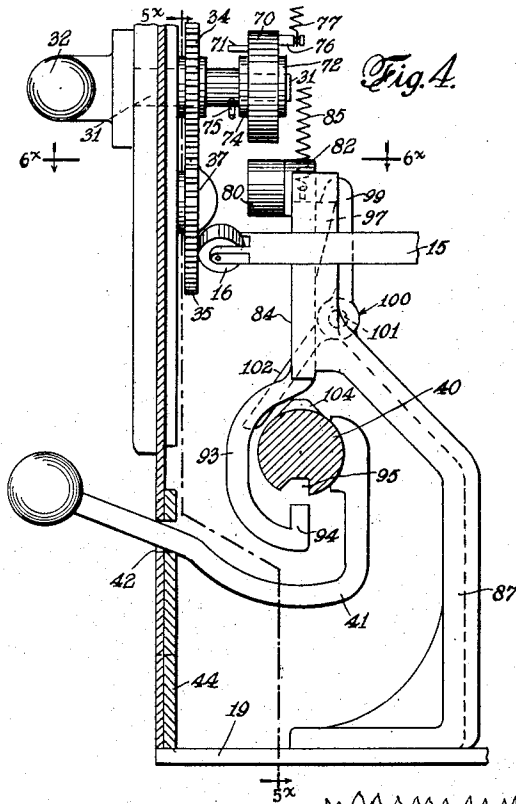
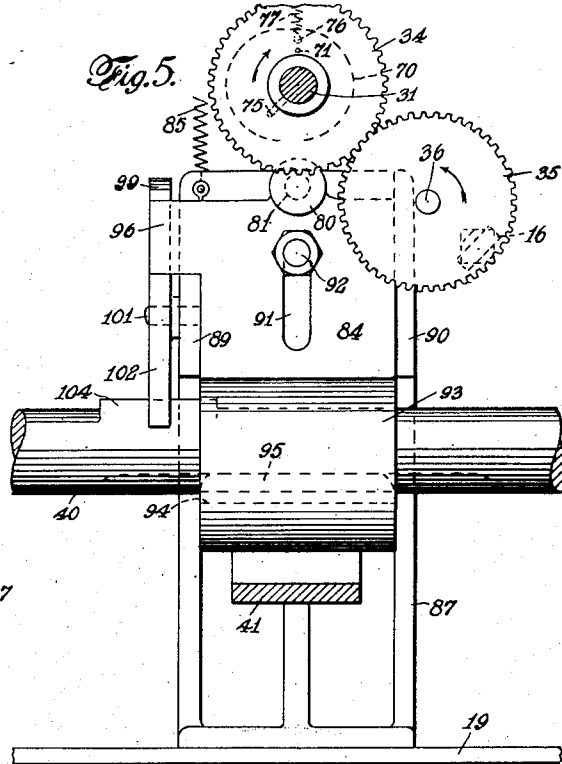
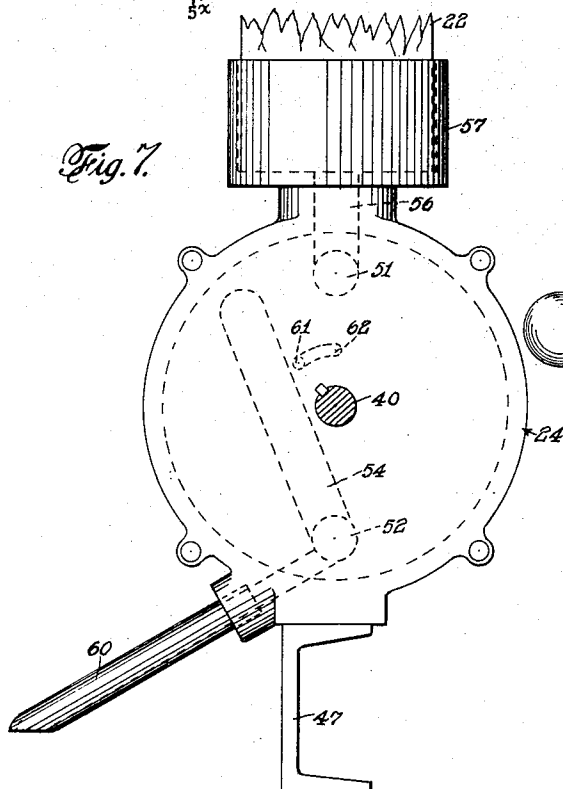
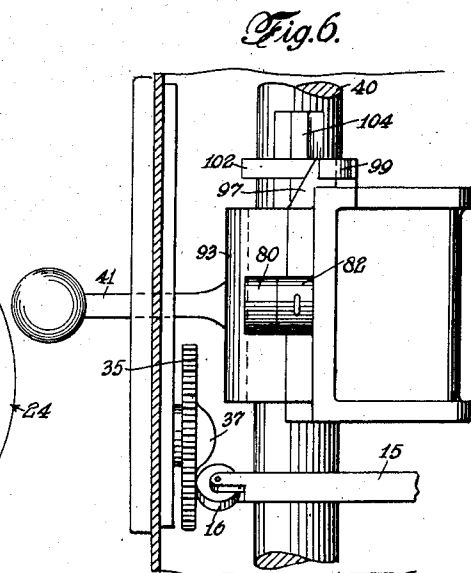
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LIQUID DISPENSING MACHINE

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LIQUID DISPENSING MACHINE

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5 Claims. (Cl. 221—116)

The present invention has for its object to provide a dispensing apparatus for delivering small quantities of antisepticizing liquid, such as mouth washes, and of such a character that it is especially adapted to be used in public or semi-public places.

Another object of the invention is to provide such a machine which is capable of dispensing two different substances, either of which may be selected by the operator.

To these and other ends my invention embodies further improvements and constructions of parts as will appear from the following specification and which are particularly pointed out in the appended claims. In the drawings:

Fig. 1 is a front view of a machine embodying the invention with portions of the housing broken away for the purpose of more clearly illustrating certain of the interior parts and with certain of these exposed parts shown in section;

Fig. 2 is a sectional view taken on the line 2×—2× of Fig. 1.

Fig. 3 is a sectional view taken on the line 3×—3× of Fig. 1;

Fig. 4 is an enlarged view of the operating mechanism;

Fig. 5 is a sectional view taken on the line 5×—5× of Fig. 4;

Fig. 6 is a sectional view taken on the line 6×—6× of Fig. 4; and

Fig. 7 is an enlarged side view of the valve mechanism.

In carrying out the invention I provide a housing 1 having partition walls 2 and 2', forming a central compartment 4 and two outer compartments 5 and 5'. As best shown in Figs. 2 and 3, the front wall 6 of the central compartment 4 is located between the respective front walls 7 and 7' of the outer compartments 5 and 5' and the rear wall 9 common to all compartments, so that the outer compartments 5 and 5' are caused to project frontwardly beyond the central compartment 4, the three compartments 4, 5 and 5' respectively comprising upper or cover sections 10, 11 and 11', separately removable from the lower fixed portion of the housing.

In the central compartment is located a cup-dispensing device 12 from which the operator is supplied with a suitable container for gathering dispensed liquid, while in the outer compartments are respectively located liquid-dispensing devices 14 and 14' from which two different mouth washes or other liquids may be supplied to the operator. Except for the operating plunger 15, which has a roller 16 rotatably mounted at its

outer end, the cup-dispensing device 12 is of the well-known construction comprising a removable glass tube 17 wherein paper cups are stacked and an annular base 17' on which said tube is mounted and containing an ejector which operates to discharge a cup through a bottom tube 18 upon each inward actuation of said plunger. Because of this standard construction, a detailed description of the interior parts of the cup discharging mechanism is not deemed necessary herein. It is suitably mounted in the central compartment 4 with the discharge tube 18 in registry with an opening in the bottom wall 19 of said compartment 4, the plate 19 being suitably located above the respective bottom walls 20 and 20' of the two side compartments to permit the cups to be discharged on a bottom ledge 21, from which they may be conveniently removed for use.

The rear wall 9 may extend downwardly to the ledge 21, which may be secured thereto and to the partition walls 2 and 2' in alignment with the bottom walls 20 and 20'.

The liquid dispensers comprise tubular glass vessels 22 and 22' and valves 24 and 24' for controlling the amount of liquid to be discharged, a common operating mechanism in part located in the central compartment being associated with each of said valves. The front walls 6, 7, and 7' are respectively provided with glass windows 25, 26, and 26' for examining the contents of the containers 16, 22, and 22', the latter being open at their upper ends so that they may be refilled by removal of the upper housing sections 10, 11, and 11'. As shown, the containers 16, 22, and 22' are respectively provided with removable caps or closing members 27, 28, and 28'.

Referring to Figs. 1 and 2, a coin-collecting control device 29 provided with a coin-receiving opening 30 is fixedly positioned into an opening formed in the front wall 6 of the central compartment. As best shown in Fig. 4, the device 29 comprises a shaft 31 having an operating handle 32 secured to its outer end. Except for certain parts which are carried by the inwardly projecting portion of the shaft 31, which parts will be hereinafter more particularly described, the device 29 may be of any desired or well known construction, the shaft 31 being normally locked against rotation, but capable of being rotated by the handle 32 upon insertion of the proper coin into the opening 30. Rotation of the shaft can only be accomplished in a clockwise direction, the coin being collected at the instant the shaft 31 has been turned three hundred and fifteen degrees or seven-eighths of a complete revolution

from normal position and the shaft 31 being capable of being automatically returned to normal position through the remaining one-eighth portion of said revolution. Coin control devices of this nature having become a standard construction, a detailed description of the device 29 is not deemed to be necessary, it being necessary only to indicate the mechanism I have added to cooperate therewith in effecting control of the dispensing apparatus contemplated.

At the inner end of the shaft 31 is a gear 34, meshing with a gear 35 having a one to one tooth-ratio therewith and rotatably mounted on a stud 36. The gear 35 is provided at its inner surface with a curved projection or cam 37 over which the roller 16 on the cup-dispensing lever 15 is adapted to ride during the manual actuation of the handle 32. That is, the roller 16 is positioned in the path of movement of the cam 37, but normally out of engagement therewith, as shown in Figs. 4, 5, and 6. Thus, because of the ratio of the gears 34 and 35, one full revolution of the handle 32 causes the plunger 15, through the medium of the cam 37 and the roller 16 cooperating therewith, to be moved inwardly to release a cup from the device 12, it being understood that the plunger 15 is restored to normal position by the usual restoring means (not shown) provided for this purpose in the base 17'. Preferably, the plunger 15 should not be actuated into cup-releasing position until the coin deposited in the opening 38 has been collected, which condition may be realized by so mounting the gear 35 on the stud 36 that it is required to rotate at least three hundred and fifteen degrees in order that the plunger may be actuated to its innermost position with its roller in engagement with the apex of the cam 37. It is understood that beyond this point the gear 35 is automatically advanced to its normal position, together with the other rotary parts described, by the usual restoring means (not shown) provided in the device 29, which restoring means become effective the instant the coin is collected. If the gear 35 is so mounted that the coin is collected prior to contact of the roller 16 with the cam 37, the restoring means is then utilized to cause the roller 16 to ride over the crest of the cam 37 to operate the plunger 15 into cup-releasing position. Since the shaft 31 and its handle 32 can only be rotated in one direction and are locked against rotation in the other direction when returning to normal position, it is impossible for the operator to again operate the device 12 without inserting another coin.

The operation of the liquid dispensing valves is accomplished by means of a horizontal shaft 40, in part located in the central compartment 4 and extending at its end portions through the walls 2 and 2' into the outer compartments 5 and 5', and through the valves 24 and 24' (see Fig. 1). This shaft is centrally provided with an operating arm 41 which, as shown in Fig. 4, extends downwardly and forwardly through a slot 42 formed in the front wall 6 and in a strengthening plate 44 held adjacent to the rear surface of the wall 6. The slot 42 comprises a horizontal portion *a* and downwardly extending end portions *b* and *b'*, the arm 41 being normally maintained in a central position in the portion *a* by means of torsional springs 45 and 45' disposed on the shaft 40 and each respectively secured at one end to the walls 2 and 2' and at their other ends to the shaft 40. From this arrangement it will be seen that movement of the arm 41 toward the right and its subsequent downward actuation in

the slot portion *b* causes a predetermined amount of liquid to be obtained from the device 14 and that movement of the arm 41 toward the left and its subsequent downward actuation in the slot portion *b'* causes a predetermined amount of liquid to be obtained from the device 14'.

Referring to Figs. 1 and 3, the valve 24 comprises a fixed member 46 suitably supported on a base 47 fixed to the bottom wall 20, a rotatable member 49 mounted on the shaft 40, and a cup-shaped guard 50 enclosing the rotatable member 49 and secured to the fixed member 46. The shaft 40 is free to move longitudinally through both members 46 and 49 and guard 50. The members 46 and 49 are respectively provided with adjacent flat vertical surfaces *d* and *e*, which are pressed together to form a liquid tight joint by a coil spring 55 disposed on the shaft 40 and held at one end to the member 49 and at the other to the guard 50 compression being exerted between said member 49 and guard 50. The valve member 46 has upper and lower openings 51 and 52 and in the member 49 is a pocket or slot 54 of predetermined dimensions. The upper opening 51 communicates with a vertical opening 56 engaged by the downward apertured extension of an annular supporting member 57 into which the lower end portion of the glass tube 22 is sealed, while the lower opening 52 communicates with a sloping passage 59 into which engages the upper end portion of a discharge conduit or spout 60, extending downwardly through the front wall 7. The pocket 54 normally communicates at its upper end portion with the inlet opening 51 and is therefore normally filled with liquid from the container 22. A pin 61 extending from the face of the member 46 operates in an arcuate slot 62 in the member 49 and determines the position of assembly of the members 46 and 49. The shaft 40 is provided with a key 64 positioned to enter a corresponding slot 65 in the member 49 upon actuation of the arm 41 toward the device 14 from its central position, so that the valve member 49 may be oscillated with the shaft 40 by downward movement of the arm 41 in the slot portion *b*. With the arm 41 in its lowermost position in the slot portion *b*, the inlet opening 51 is closed by the surface *e* and the slot 54 then communicates at its lower end portion with the outlet opening 52, as shown in Fig. 7. At other times the opening 52 is closed by the surface *e*. During the oscillatory movement of the valve member 49, the upper opening 51 is closed before any of the liquid in the slot 54 is discharged through the opening 52. It is thus apparent that downward actuation of the arm 41 in the slot portion *b* causes a definite amount of liquid to be discharged through the conduit 60. As will be hereinafter shown, however, the arm 41 is normally locked against rotation and cannot be operated in the above manner prior to actuation of the coin-control handle 32. The liquid discharged through the conduit 60 may thus be collected in the cup which is caused to be automatically discharged on the shelf 21 upon actuation of the handle 32. Upon receiving the dispensed liquid in said cup, the arm 41 may then be released by the operator, whereupon the valve member 49 and shaft 40 are reversely rotated by the springs 55, 45, 45', the member 49 being thus restored to normal position and the arm 41 being raised in the slot portion *b* to a position from which it is shifted endwise by the springs 45 and 45' to center the operating lever 41 in the slot *a*.

The device 14 is thus reconditioned for subsequent operation in the manner described. That is, with the member 49 in normal position the slot 54 is again entirely filled with liquid from the container 14 through the opening 51, it being apparent that each actuation of the arm 41 in the manner described causes the same amount of liquid to be discharged through the spout 60. It should be observed that by return movement of the shaft 40 to its central position the key 64 is retracted out of engagement with the slot 65.

From the foregoing description it is apparent that the device 14' may be similarly operated by movement of the arm 41 toward the left and its subsequent downward actuation in the slot portion b'. That is, the shaft 40 also extends through the valve 24' the parts of which are the same as those of the valve 24 and function in an identical manner, a second key 64' (Fig. 1) being positioned on the shaft 40 to enter a slot 65' in the rotatable member 49' of the valve 24'. It is of course understood that the valve 24' is not the exact duplicate of the valve 24, but that certain of its parts should be properly reversed in construction to permit its proper operation. Since the keys 64 and 64' are normally out of engagement with their respective slots 65 and 65', it is impossible to actuate the two devices 14 and 14' simultaneously. When operating the device 14', the arm 41 is of course returned to its central position by the springs 45, 45', and 55'.

As will now be described, operation of the devices 14 and 14' in the above manner is only permitted after insertion of the proper coin in the opening 30 and rotation of the handle 32.

Referring to Figs. 4 and 5, a cam 70 provided with a lateral pin 71 is loosely mounted between two collars 72 and 74 on the shaft 31, another pin 75 being provided on the shaft 31 to engage with the pin 71 and thereby rotate the cam 70 with the shaft 31 upon actuation of the handle 32 by the coin-depositor. A third pin 76 extends laterally from the opposite surface of the cam 70 and to the pin 76 is loosely attached the lower end of a spring 77 which determines the normal position of the cam 70, the spring 77 being secured at its upper end to a bracket 79 fixed to the front wall 6, as shown in Fig. 2. The cam 70 is adapted to cooperate with a roller 80 rotatably carried by a stud 81 extending from a boss 82 formed on a sliding plate 84, the roller 80 being normally held against the cam 70 by a spring 85 secured at one end to the boss 82 and at the other to a bracket 86 fixed to the front wall 6, as also shown in Fig. 2. The plate 84 slides vertically on a support 87 fixed to the bottom wall 19, side flanges 89 and 90 being provided on the member 87 for guiding the plate 84 in its movement. As a further guiding means, a bolt 92 may be secured to the member 87 and a slot 91 formed in the plate 84 so as to cause the bolt 92 to operate therein, the head of the bolt 92 maintaining the plate 84 in sliding engagement with the member 87. The plate 84 is formed with an arcuate extension 93 at its lower end, which extends forwardly around the shaft 40 and is provided with an upwardly projecting rectangular shaped latch 94 adapted to normally engage a longitudinal slot 95 formed in the lower side of the shaft 40. That is, the latch 94 engages the slot 95 when the cam 70 and roller 80 are in their normal position of engagement. The shaft 40 is thus normally locked against rotation, so that it is impossible to operate the

valve members 49 and 49'. The shaft 40 is nevertheless free to move longitudinally at any time, with the latch 94 riding in the slot 95.

For reasons which will be hereinafter more clearly understood, the pin 71 is normally located directly above the axis of the shaft 31 in a vertical plane therewith, while the normal position of the pin 75 is such that the shaft 31 is required to rotate one hundred and fifteen degrees in order that the pin 75 may engage the pin 71. Thus, during actuation of the handle 32 by the coin-depositor, the pin 75 is caused to strike the pin 71 and the cam 70 is rotated one-half of a revolution from its normal position against the tension of the spring 77, whereupon the cam 70 is automatically returned by the spring 77 to normal position in the same direction of rotation. During this full revolution of the cam 70, the roller 80 is moved downwardly to cause the plate 84 and its extension 93 to disengage the latch 94 from the slot 95. The plate 84 is formed with a lateral projection 96 having a rearward lug 97 which, upon downward movement thereof, is locked against return movement by engagement with the hook portion 99 of a latch 100 pivotally mounted on a pin 101 extending laterally from the support 87, the latch 100 being provided with a counter-weight arm 102 causing movement of the hook 99 toward the plate 84. The plate 84 is thus retained in its lowermost position, so that the operator is free to operate either of the devices 14 and 14' by actuation of the arm 41 in the manner previously described. The movable parts in Figs. 4, 5 and 6 are shown in the position which they assume at the instant the handle 32 has been rotated one full revolution.

Preferably, the unlocking of the shaft 40 by downward movement of the latch plate 84 should not occur until the coin deposited in the opening 30 has been collected, which condition may be realized by so relating the normal positions of the pins 71 and 75 and so constructing the cam 70 that the shaft 31 is required to rotate at least three hundred and fifteen degrees in order that the roller 80 may be actuated to its lowermost position by the action of the cam 70 thereon. In the embodiment illustrated, the cam 70 is shaped so that the roller 80 is moved downwardly during the movement of the cam 70 to normal position under the influence of the spring 77. Also, with the pins 71 and 75 normally positioned as heretofore described, the shaft 31 is required to rotate three hundred and fifteen degrees in order that the spring 77 may effect the continued movement of the cam, so that the roller 80 is downwardly actuated after the coin is collected. It is of course understood that the spring 77 should be of greater strength than the spring 85, in order that the cam 70 will under the influence of the spring 77 actuate the roller 80 downwardly against the tension of the spring 85.

The shaft 40 is provided with an upper projection 104 which, during its rotation by downward actuation of the arm 41 in either of the slot portions b and b', raises the arm 102 to cause the hook 99 to disengage the lug 97. Consequently, with the cam 70 already in normal position, when the operator releases his hold on the arm 41 and the shaft 40 is reversely rotated by the springs 45, 45' and 55 or by the springs 45, 45' and 55', the plate 84 and its extension 93 are returned by the spring 85 to normal position with the roller 80 in engagement with the cam 70 and the latch 94 again positioned in the slot 95, the latch 94 riding in the slot 95 during retraction of the shaft 75

40 to its central position. It is thus impossible for the coin-depositor to manipulate the arm 41 to subsequently operate either of the devices 14 and 14' without again operating the device 29 by insertion of another coin therein. The slot 95 should be so constructed that the latch 94 is caused to lock the shaft 40 before liquid enters either of the valve pockets 54 and 54' in their return movement to normal position. In this way the arm 41 cannot in any way be manipulated during operation of either of the devices 14 and 14' to obtain more than the amount of liquid allotted by their valve pockets. From the foregoing description it is apparent that the mechanism which I have provided to cooperate with the coin-control device 29 not only makes it impossible to operate either of the liquid dispensers 14 and 14' prior to actuation of the handle 32, but also effects automatic discharge of a cup from the device 12 as a result of said actuation. Premature discharge of a liquid from either of the liquid dispensers is thus made impossible, the coin-depositor being initially provided with a cup which, because of its ejection on the shelf 21, may be readily removed therefrom to receive liquid from either of the spouts 60 and 60'. In practice the operator would be instructed to turn the handle 32 one complete revolution after depositing a coin in the slot 30 to enable him to receive a cup on the shelf 21 and thereafter operate either of the liquid dispensers 14 and 14' in the manner described.

It now becomes apparent that there has been provided a liquid-dispensing machine satisfying the various objects of the invention. It is of course understood that the invention is not limited to the particular embodiment illustrated and described herein, and that this embodiment is subject to various modifications without departing from the spirit of the invention.

What is claimed is:

1. An apparatus of the character described comprising two liquid dispensers, each having a dispensing valve having a rotatable member, an operating shaft longitudinally movable in one direction toward one valve and in the other direction toward the other valve, means for selectively locking said shaft to either one of the rotatable members for rotation therewith, and an operating arm for actuating said shaft.

2. An apparatus of the character described comprising two liquid dispensers each having a dispensing valve having a rotatable member, an operating shaft longitudinally movable from a

central position in one direction toward one valve and in the other direction toward the other valve, means for selectively locking said shaft to either one of the rotatable members for rotation therewith, a fixed plate formed with a slot, an operating arm fixed to said shaft and extending through said slot, said slot having a horizontal portion providing longitudinal movement of said shaft from its central position in either direction and downwardly extending end portions respectively providing rotation of said shaft with the rotatable members, and resilient means for restoring said shaft and either of the rotatable members to normal position.

3. An apparatus of the character described comprising two liquid dispensers each having a dispensing valve having a rotatable member, a housing for said dispensers, an operating shaft longitudinally movable in said housing in one direction toward one valve and in the other direction toward the other valve, means for selectively locking said shaft to either one of the rotatable members for rotation therewith, an operating arm extending through said housing for actuating said shaft, and discharge conduits respectively extending from the two valves through said housing.

4. An apparatus of the character described comprising two liquid dispensers each having a dispensing valve having a rotatable member, an operating shaft longitudinally movable in one direction toward one valve and in the other direction toward the other valve, means for selectively locking said shaft to either one of the rotatable members for rotation therewith, an operating arm for actuating said shaft, mechanical means normally locking said shaft against rotation, and coin-collecting control means operating to render said mechanical means inoperative.

5. An apparatus of the character described comprising two liquid dispensers each having a dispensing valve having a rotatable member, an operating shaft longitudinally movable in one direction toward one valve and in the other direction toward the other valve, means for selectively locking said shaft to either one of said rotatable members for rotation therewith, an operating arm for actuating said shaft, mechanical means normally locking said shaft against rotation and including a rectangular latch to cooperate with a longitudinal slot formed in said shaft, and coin-collecting control means operating to render said mechanical means inoperative.

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