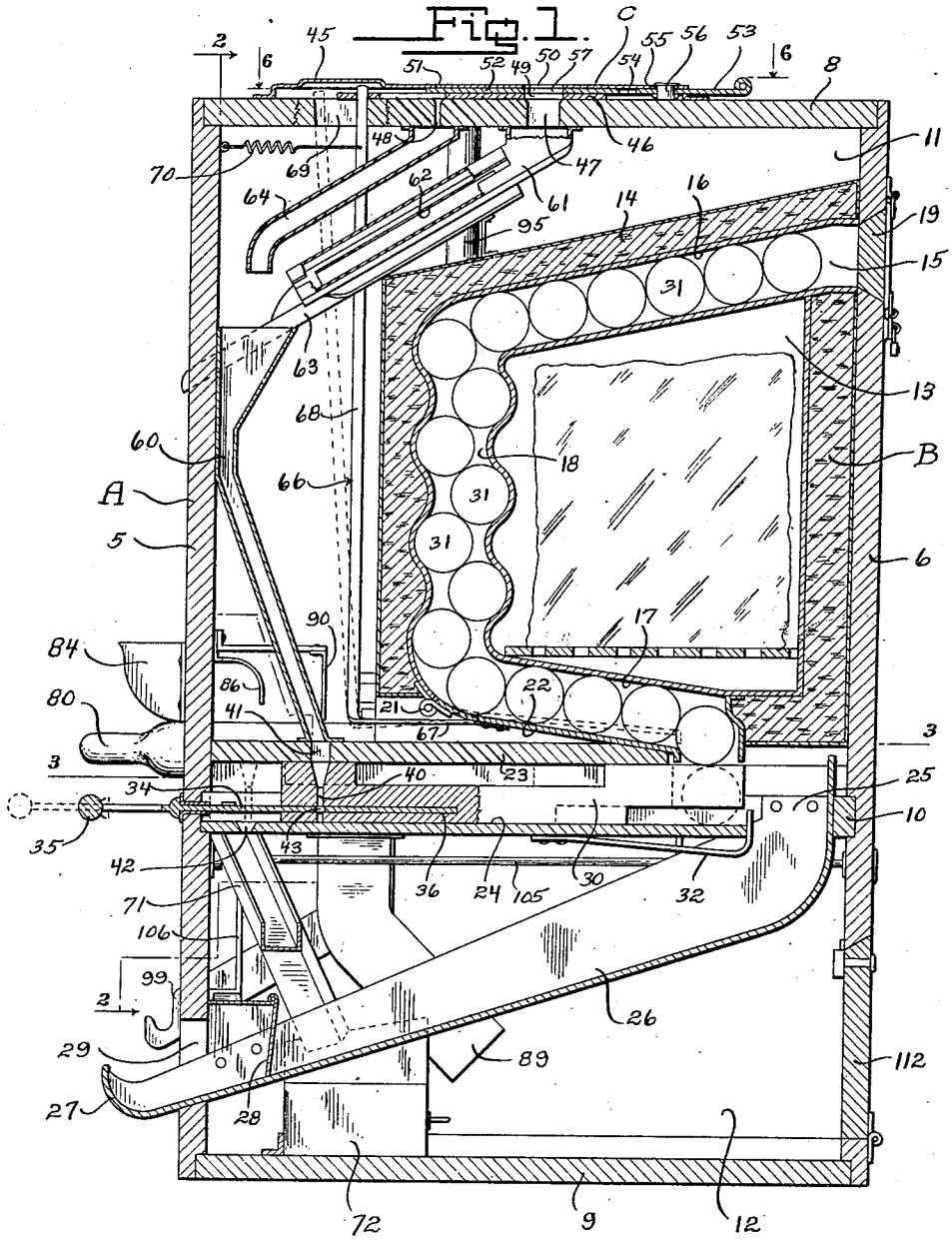
April 28, 1931. H. F. ROBBINS 1,803,146

BOTTLE VENDING MACHINE

Filed June 20, 1929 4 Sheets-Sheet 1

Fig. 1.



INVENTOR.
Henry F. Robbins.

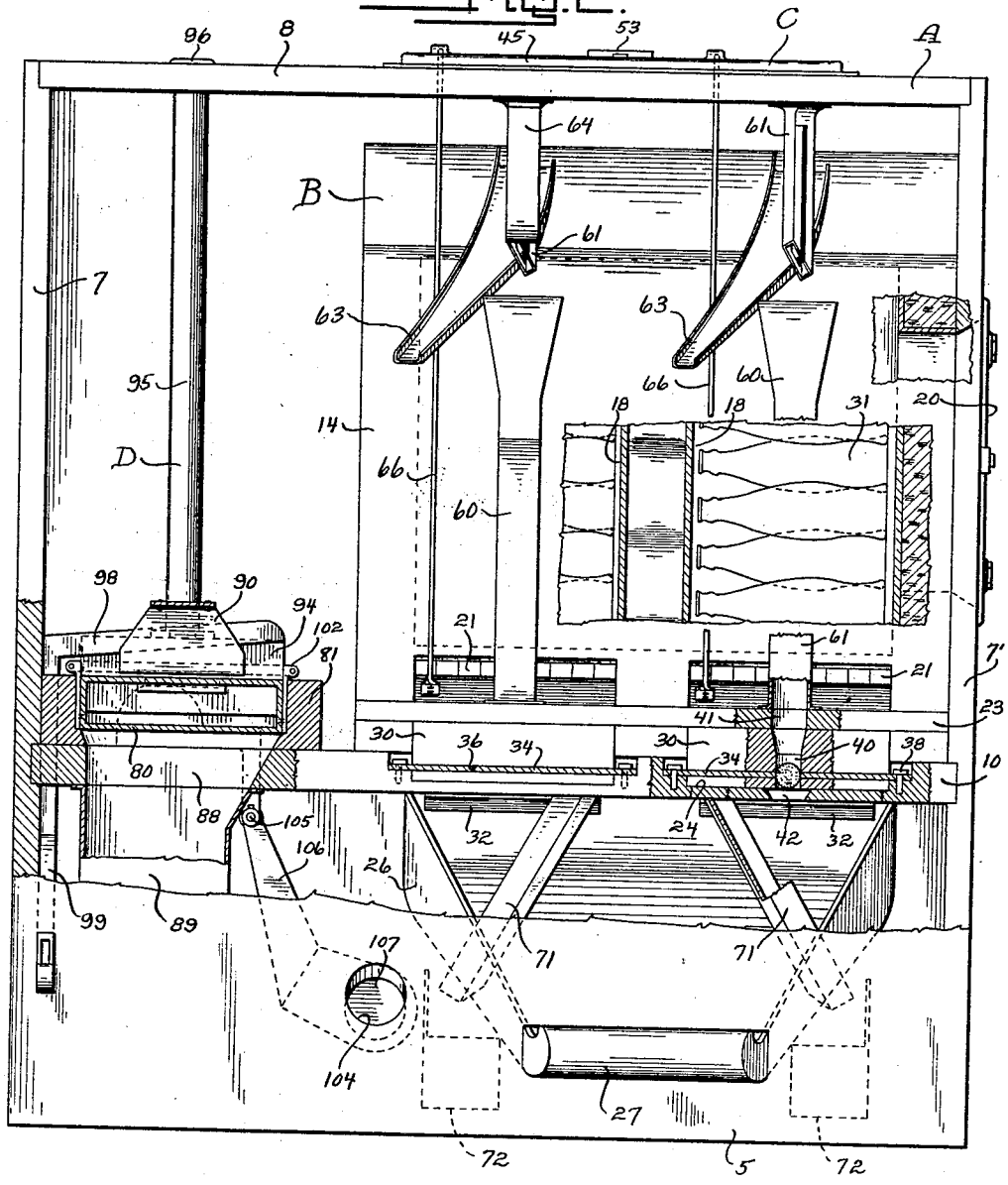
BY Lancaster and Allwine
ATTORNEYS.

April 28, 1931. H. F. ROBBINS 1,803,146

BOTTLE VENDING MACHINE

Filed June 20, 1929 4 Sheets-Sheet 2

Fig. 2.



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April 28, 1931. H. F. ROBBINS 1,803,146

BOTTLE VENDING MACHINE

Filed June 20, 1929 4 Sheets-Sheet 3

Fig. 3.

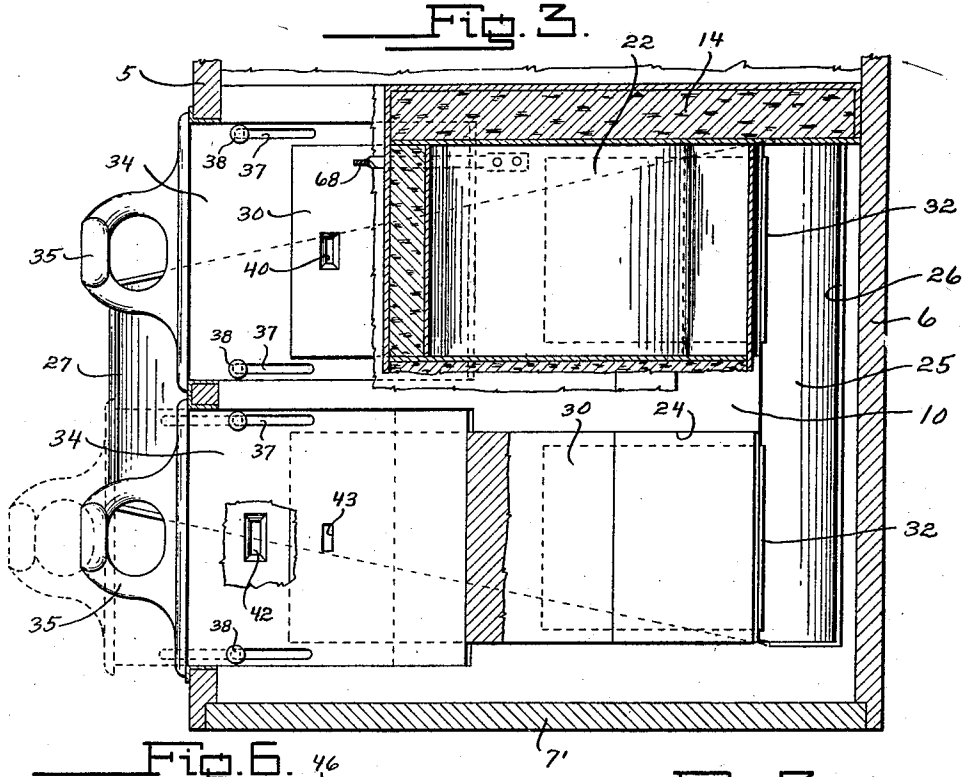


Fig. 6.

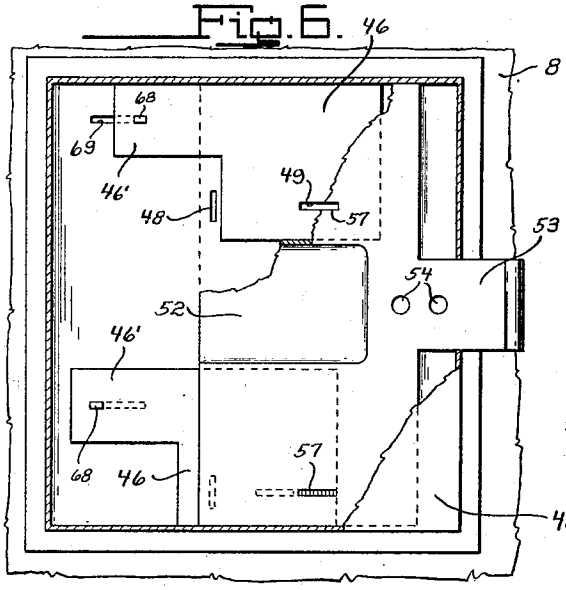
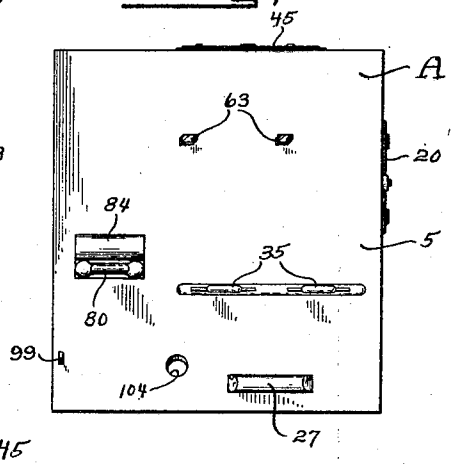


Fig. 7.



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April 28, 1931. H. F. ROBBINS 1,803,146

BOTTLE VENDING MACHINE

Filed June 20, 1929 4 Sheets-Sheet 4

Fig. 4.

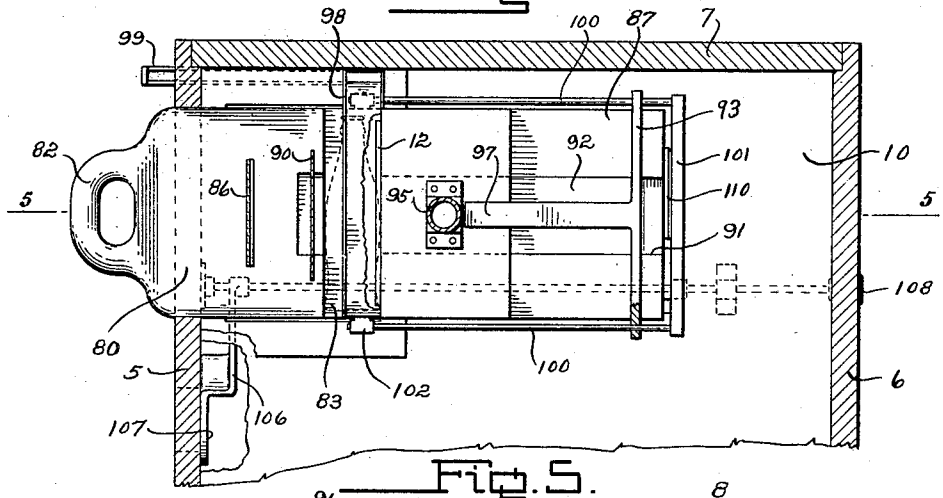
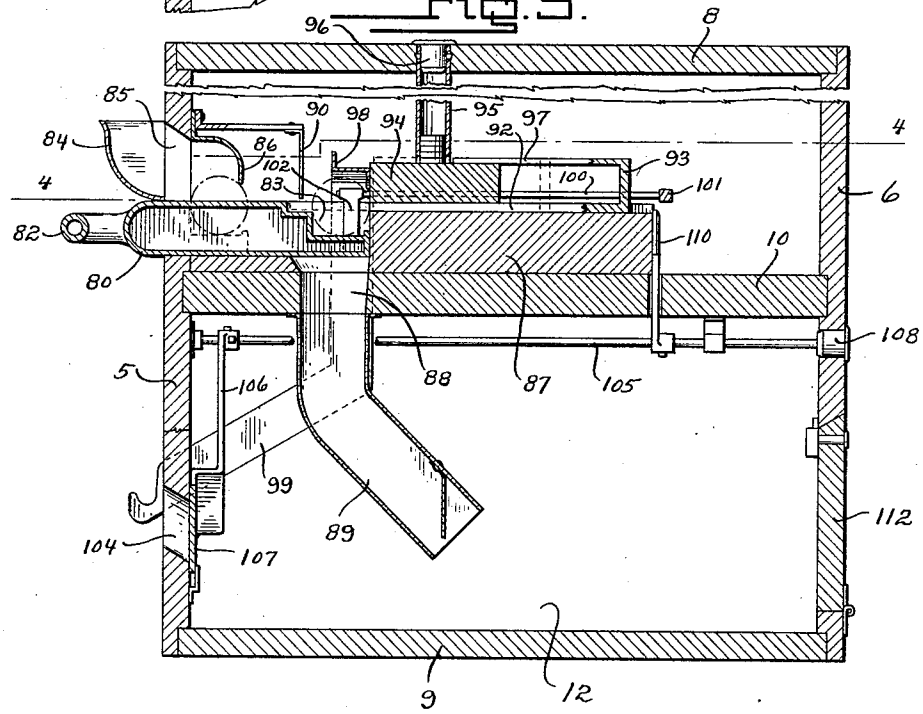


Fig. 5.



INVENTOR.
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Patented Apr. 28, 1931 1,803,146

UNITED STATES PATENT OFFICE

HENRY FRANK ROBBINS, OF COTTAGE GROVE, TENNESSEE

BOTTLE-VENDING MACHINE

Application filed June 20, 1929. Serial No. 372,466.

The present invention relates to vending machines and the primary object of the invention is to provide a coin controlled vending machine for dispensing cold bottled beverages.

A further object of the invention is to provide a bottle vending machine wherein the bottles may be dispensed quickly by an operator upon deposit of a proper coin guided to a position whereby the coin acts as a key to allow operation of the ejector means for the bottle.

A further object of the invention is to provide a bottle vending machine wherein the bottles will be dispensed in a cold and dry condition to the purchaser.

A further object resides in the novel arrangement whereby the coin slot of any particular bottle magazine is automatically locked against insertion of coins after the last bottle has been dispensed from the magazine, and also the simple arrangement whereby the machine may be quickly changed for operation by coins of one denomination to operation by coins of a different denomination.

A further object resides in the novel arrangement whereby the machine may be altered for refunding a portion of the purchase price of the bottle of beverage upon return of the empty bottle into the machine, or altered to receive the empty bottles without a refund to the purchaser.

A further object resides in the novel arrangement whereby coins of the wrong denomination and size are returned to the depositor.

A still further object resides in the novel arrangement whereby the coldest bottle in the bottle magazine will be dispensed upon operation of the ejector means.

Other objects and advantages of the invention will be apparent during the course of the following detailed description taken in connection with the accompanying drawings, forming a part of this specification and in which drawings:

Figure 1 is a vertical section thru the vending machine taken thru one of the bottle magazines and ejector means for dispensing the bottles.

Figure 2 is a section taken substantially on the line 2—2 of Figure 1 and showing parts of the apparatus in section for illustrating details of construction.

Figure 3 is a fragmentary horizontal section taken substantially on the line 3—3 of Figure 1.

Figure 4 is a fragmentary section on the line 4—4 of Figure 5 and showing the coin refund means.

Figure 5 is a fragmentary section on line 5—5 of Figure 4 thru the refunding means.

Figure 6 is a section on line 6—6 of Figure 1 showing the arrangement of the coin slots and the plate for opening and closing the slots.

Figure 7 is a view on a reduced scale looking at the front of the vending machine.

Referring to the drawings in detail, and wherein similar reference characters designate corresponding parts thruout the several views, the improved bottle vending machine includes a casing or cabinet A formed of any suitable material including front and rear walls 5 and 6 respectively, end walls 7 and 7′, and top and bottom walls 8 and 9 respectively. Mounted horizontally within the casing A is a partition 10 forming upper and lower compartments 11 and 12 respectively.

Mounted in the upper compartment 11 upon the partition 10 in abutting relation with the end wall 7′ and rear wall 6, is a refrigerator B provided with a refrigerant chamber 13 enclosed by an insulating casing 14. The refrigerator B is provided with bottle magazines 15 which extend along the upper side, downwardly along the front side and beneath the refrigerant chamber 13, and these magazines are in the form of raceways having inclined upper and lower passageways 16 and 17 respectively connected at their forward ends by a vertical passageway 18 which is of zigzag formation for preventing possible breaking of the bottles when filling the magazine. The passageways 16 and 17 diverge toward the rear of the cabinet and the rear end of the passageway 16 is closed by a door 19 provided in the rear cabinet wall

6. Provided in the end wall 7′ of the cabinet is a door 20 opening into the chamber 13 to permit of ice or any other suitable refrigerant being placed in the chamber 13. While the chamber 13 may be adapted for receiving ice, mechanical refrigeration may be employed for cooling the bottled beverages and in which case the chamber 13 may receive the cooling coils.

The bottom wall of each of the lower inclined passageways 17 is hinged at its forward end at 21 to provide trip plates 22 upon which the bottles in the passageway 17 rest and keep the trip plates depressed upon the strip 23. The forward end of each lower inclined passageway 17 opens downwardly into the rear end of a guideway 24 extended beneath the strips 23.

While in the example shown the refrigerator B is provided with two independent bottle magazines, the cabinet A may be increased in length for providing any desired number of bottle magazines for receiving different kinds of bottled beverages.

Provided in the partition 10 to extend along the rear end of the guideways 24 is an elongated discharge opening 25 beneath which is disposed the rear end portion of a discharge chute 26 which preferably converges toward the front of the cabinet and projects slightly thru the front cabinet wall 5 with its forward end upturned to provide a receiving trough 27 from which the dispensed bottles may be taken by the purchaser. A suitably hinged trap door 28 is extended across the discharge chute 26 just inwardly of the cabinet wall 5 for retarding movement of the bottles down the inclined chute 26 and also prevent entrance to the lower compartment 12 thru the opening 29. By observing Figure 2, it will be seen that the chute 26 serves to receive bottles from either of the bottle magazines 15.

Reciprocably mounted in each guideway 24 for each bottle magazine 15 is a push-out or ejector block 30 which when operated acts to eject one of the bottles 31 thru the opening 25 into the discharge chute 26. When the blocks 30 are moved forwardly in a manner to be subsequently explained, the lowermost bottle in its respective magazine will fall by gravity into the rear end of the guideway 24 so that upon inward or rearward movement of the block the bottle within the guideway will be moved rearwardly, depressing the spring 32 and be deposited in the discharge chute 26. When the block 30 is in its normal inward position the lowermost bottle in the passageway 17 rests upon the upper side of the block and is prevented against falling into the guideway 24.

The ejector means for each bottle magazine also includes in addition to the ejector block 30, a slide plate 34 having limited sliding movement in the forward portion of the guideways 24. These slide plates 34 act as operating means for the ejector means and are slidably extended thru the front cabinet wall 5 and provided with suitable hand grips 35 which may be grasped by an operator. The inner ends of the slide plates 34 have free sliding movement in substantially flat slideways 36 provided in the forward ends of the ejector blocks 30 between the upper and lower surfaces of the ejector blocks. Provided adjacent each edge of the slide plate 34 are elongated slots 37 thru which movement limiting pins 38 extend for limiting inward and outward sliding movement of the plates.

Provided adjacent the forward end of each ejector block 30 and extending vertically therethru is a coin receiving keyway 40 being slightly elongated transversely of the block. These keyways 40 as will be observed in Figure 1 extend from the upper to the lower surfaces of the blocks and are preferably slightly flared at their upper ends. When the blocks 30 are in their normal inward position the upper ends of the keyways 40 align with apertures 41 provided thru the plate 23. When the blocks 30 are slid to their forward position the slots at their lower ends align with coin escape openings 42 provided in the bottom strip of the guideways 24.

Each slide plate 34 is provided intermediate its ends with a slot 43 which aligns with the keyway 40 when the slide plate is in its innermost position with the inner end of the plate abutting with the inner end of the slideway 36. When the blocks 30 are in their inward position the lower ends of the keyways 40 are closed by a portion of the partition 10 forming the lower wall of the guideways 24, and thus the coin entering the keyway is held in a position projecting thru the slide plate 34.

Referring now to the coin control means C for allowing operation of the ejector blocks 30 upon insertion of a proper coin, the same includes a substantially flat cap or cover plate 45 mounted upon the upper surface of the top cabinet wall 8. Reciprocally mounted in the cap plate 45, one for each ejector block 30, are coin slot control plates 46 of substantially L-shape in plan providing extension portions 46′. Provided to extend thru the top cabinet wall 8 beneath the cover plate 45 are coin passageways 47 and 48, a pair of the control passageways 47 and 48 being provided for each of the control plates 46. The coin passageway 47 is intended to receive nickels, while the passageway 48 is relatively smaller and is intended to receive dimes. The coin slot-control plates 46 are intended to control opening and closing of the passageways 47 and 48 and each plate 46 is provided with a nickel coin slot 49 which aligns with the passageway 47 when the plates are in their normal position. The control plates are of such

size that when they are in their normal rearward position the dime slots 48 are exposed forwardly of the front edge of the main body portion of the plate as clearly shown in Figures 1 and 6. The coin slot control plates 46 are of course independently movable and by observing Figure 6 it will be seen that when the plates are in their normal rearward position that both passageways 47 and 48 are open and when the plates are in a forward position both of the passageways 47 and 48 will be closed.

Provided in the cap plate 45 are coin slots 50 and 51 which align vertically with the respective passageways 47 and 48. These coin slots 50 and 51 are controlled for selective use by means of an adjustable slide plate 52 having free sliding movement between the control plates 46 and top wall of the cover plate 45. This slide plate 52 is provided for changing the dispensing machine over from a condition operable by a coin of one denomination to a condition operable by a coin of different denomination. The plate 52 is provided with an operating extension 53 projecting exteriorly thru the rear portion of the cover plate 45, and this extension is provided with a pair of circular adjustment openings 54 for selectively aligning with an aperture 55 provided in the rear portion of the cover plate. The aperture 55 is intended to receive a removable plug lock 56 which serves when inserted thru one of the apertures 54 to retain the plate 52 in its adjusted position for selectively closing the coin slots 50 or 51. The slide plate 52 is provided with slots 57 for aligning with the nickel coin slots 50 when the slide plate 8 moves inwardly, and in which position the inner edge of the slide plate covers the dime coin slots 51. When the slide plate is retracted the slots 57 are moved out of alignment with the nickel coin slots 50 so that the plate closes the nickel slot, while the inner edge of the slide plate moves to a position for opening the dime slot 51. Thus it will be seen that upon adjustment of the slide plate 52 that the machine may be changed for operation by either a nickel or a dime.

The coin guide means for directing the coins from the passageways 47 and 48 to their respective ejector blocks includes coin guides 60 one of which is provided for each ejector block, and these coin guides have their lower ends aligning with and opening into the coin passageways 41. Mounted beneath each coin passageway 47 is an inclined coin detector chute 61 having its forward lower end extended to a position above the upper flaring ends of the coin guides 60. These coin detector chutes 61 are open as at 62 providing narrow flanges at each side of the opening on which a coin of proper size rests and is guided thru the chute to the coin guide 60. Should a coin smaller than the proper size be inserted in the coin slot 50 the same will pass thru the opening 52 and fall into the inclined trough 63 having its lower end extended thru the front cabinet wall 5. The coin slot 50 is of a size to permit insertion of a nickel thru the passageway 47, and should a smaller coin such as a penny or dime be inserted in the slot 50 the same will fall thru the opening 62 and be returned to the depositor by the trough 63. Arranged beneath each coin passageway 48 is an inclined coin chute 64 for directing coins inserted thru the coin slot 51 into the upper open end of the coin guide 60. Thus it will be seen that both the coin detector 51 and the coin chute 64 lead to their respective coin guides 60.

Means is provided for automatically closing the coin slots 50 and 51 when their respective bottle magazines have been emptied of the last bottle, and this means embodies an L-shaped throw lever 66 the lower horizontal arm portion 67 of which is rigidly attached to the trip plate 22 so that the upper end of the longer vertical portion 68 is swung forwardly and rearwardly thru up and down movement of the trip plate about its hinge point 21. The upper end of the lever arm portion 68 extends thru a slot 69 in the top cabinet wall 8 and projects thru an opening provided in the extension portion 46′ of the coin slot control plate 46. A spring 70 attached to the upper end of the lever arm 68 acts to normally bring the lever portion forwardly and raise its trip plate as shown by dotted lines in Figure 1. The weight of the bottles resting upon the trip plate normally hold the trip plate down so that the upper end of the lever arm portion 68 is swung rearwardly and retains the control plate 46 in a position uncovering both of the coin passageways 47 and 48 so long as there are bottles in the lower inclined bottle passageway 17. When the last bottle has moved off the trip plate the spring 70 swings the throw lever and so shifts the coin slot control plate as to close both the passageways 47 and 48 and thereby preventing insertion of coins thru the coin slots 50 and 51. In Figure 6, the lower coin slot control plate 46 is shown in a position closing both of the coin passageways 47 and 48.

The coins after passing from the coin receiving keyways 40 thru their respective coin escape openings 42, drop into coin chutes 71 and are directed over the bottle discharge chute 26 into suitable coin boxes 72.

In operation for dispensing a bottle from a selected one of the bottle magazines 15, and should the purchase price of the bottle be five cents, a nickel is inserted into the coin slot 50 and is directed by the chute 61 and coin guide 60 into the coin receiving keyway 40 whereby the coin acts as a key for connecting the ejector block for movement

with the slide plate 34. With the ejector block 30 thus connected for movement with the guide plate 34 the operator grasps the hand grip 35 and exerts a pull thereon drawing the ejector block forwardly in its guideway until the forward end of the block abuts with the inner surface of the front cabinet wall 5 and at which time the coin receiving keyway 40 will align vertically above the coin escape opening 42. This forward or outward movement of the ejector block uncovers the open lower end of the bottle passageway 17 and allows one of the bottles to drop into the guideway 24 at the inner or rear end of the ejector block. The coin in the keyway 40 drops by gravity thru the opening 42 into the chute 71 and is directed into the coin box 72. The operator then pushes inwardly on the slide plate which causes the ejector block to be moved inwardly and ejects the bottle in the guideway 24 into the discharge opening 25 where it travels down the inclined discharge chute 26 to the receiving trough 27. When there is no coin in the keyway 40 the slide plate 34 may be slid by grasping the grip 35 without having any effect or imparting any movement to the ejector block.

When the purchase price of the bottle of beverage is ten cents, the lock 56 is removed allowing the adjustable slide plate 52 to be adjusted for opening the dime slot 51 and closing the nickel slot 50. The coins then inserted in the slot 51 are guided by the chute 64 and coin guide 60 into the keyway 40 thereby connecting the ejector block so that the same will be moved upon operation of the slide plate.

When the purchase price of the bottle of beverage is ten cents and a refund of five cents is made for the return of the empty bottle into the machine, a coin refund means D as shown particularly in Figures 2, 4 and 5 provides for a cash refund upon return of the empty bottle into the cabinet A.

The refund means D is mounted in one end of the cabinet A above the plateform 10 and embodies a sliding bottle receiver 80 slidable in a guide block 81. The receiver 80 slidably projects thru the front cabinet wall 5 and is provided with a suitable hand grip 82 which may be gripped for sliding movement of the receiver. The inner end of the bottle receiver is provided with a transversely extending bottle receiving channel 83 into which the empty bottles are guides when the receiver is withdrawn. When the bottle receiver is retracted bottles placed in the trough 84 are guided thru the opening 85 into the channel 83 and held therein by a yieldable guard 86 until the bottle receiver is moved inwardly into engagement with the mounting block 87. Opening upwardly into the guide block 81 at its inner end is a discharge opening 88 into which the empty bottles fall and are directed thru the chute 89 into the lower compartment 12. As the bottle receiver 80 is retracted the bottle in the channel 83 is forced over the shallow flange 12 by a spring plate 90.

Mounted for sliding movement in a guideway 91 provided in the upper side of the block 87 is a plunger strip 92 carrying at its rear end a cross arm 93 having its ends projecting slightly beyond the side edges of the block 87. Mounted above the plunger 92 at the forward end of the mounting block 87 is a smaller block 94 supporting the lower end of a vertical coin tube 95 preferably extended upwardly thru the top cabinet wall 8 and closed at its upper end by any suitable form of lock or the like 96. The lower end of the coin tube 95 is slotted to slidably receive therethru a coin ejecting finger 97 slidable thru the lower end of the coin tube on the upper surface of the block 94. The ejector finger 97 is connected at its rear end to the cross arm 93 for reciprocatory movement with the plunger 92. Extended across the forward end of the block 94 is a trough 98 communicating at its lower end with a coin return chute 99 which projects forwardly thru the front cabinet wall 5.

Connected with the side edges of the bottle receiver 80 to extend one at each side of the block 94 are rods 100 which slidably extend thru the ends of the cross arm 93 and are connected rearwardly of the arm by a cross piece 101 which engages the cross arm 93 when the bottle receiver 80 is withdrawn. The forward end of the rod 100 may be connected to the bottle receiver 80 by suitable brackets 102. The cross piece 101 when the bottle receiver is fully inserted projects slightly beyond the rear or inner end of the mounting block 97.

In operation of the refund means the operator first grasps the hand grip 82 and withdraws the bottle receiver 80 after which the empty bottle is placed in the trough 84 and guided by gravity to the channel 83. The operator then pushes the bottle receiver inwardly and since the plunger 92 is disposed in the path of movement of the bottle the bottle engages the forward end of the plunger and slides the same rearwardly in the guide-way 91 into a position as shown in Figures 3 and 4. In this position the coins in the coin tube 95 drop by gravity upon the upper surface of the block 94 with the lowermost coin in the path of travel of the ejector finger 97. The operator then withdraws or pulls out on the bottle receiver 80 allowing the spring 90 to roll the bottle over the shallow flange 12 into the opening 88 where it passes thru the chute 89 into the compartment 12. Continued forward movement of the bottle receiver causes the cross piece 101 to engage the cross arm 93 and slides the ejector finger 97 forwardly so that one of the coins is moved by the finger into the trough

98 where it passes by gravity into the coin return chute 99. When there is no bottle in the channel 83 the bottle receiver 80 may be slid inwardly and outwardly without ejecting a coin from the tube 95 thru reason of the lost motion between the rod 100 and cross arm 93. The normal position of the plunger 92 and ejector finger 97 is as shown by dotted lines in Figure 5.

Provided in the lower portion of the front cabinet wall 5 and opening into the lower compartment 12 is a bottle receiving opening 104, into which empty bottles may be placed by the purchaser when there is no refund for the empty bottle. The opening 104 is provided with a closure means which also acts to lock the coin refund means against operation when no refund is made for the empty bottles. This means includes a rotatable shaft 105 suitably journaled beneath the partition 10 and having affixed to its forward end an arm 106 provided at its free end with a closure plate 107 for closing and opening the opening 104 upon rotation of the shaft 105. The rear end of the shaft 105 may be provided with a suitable lock 108 for retaining the shaft in either of its adjusted positions. Affixed to the rear portion of the shaft 105 is a swinging lock plate 110 having movement thru the partition 10 at the rear end of the mounting block 87. Rotation of the shaft 105 swings the lock plate 110 upwardly at the front side of the cross strip 101 so that the plate prevents withdrawal of the bottle receiver 80. When the closure plate 107 is in a closing position over the opening 104 the lock plate 110 is out of engagement with the cross strip 101 and allows operation of the bottle receiver 80 so that a person cannot remove bottles from the compartment 12 thru the opening 104 and again receive a refund therefor by placing the bottle in the bottle receiver 80. The lower compartment 12 may be provided at the rear cabinet wall 6 with a suitable door 112 for gaining access to the lower compartment.

As before stated, the vending machine may be provided with any desired number of the bottle magazines 15 for dispensing beverages of different kinds, and if the number of bottle magazines be a multiple of two, it is preferred that the magazines be mounted up in pairs having a single discharge chute for two adjacent magazines.

From the foregoing it will be apparent that a novel and improved construction for vending machines for dispensing cold bottled beverages has been disclosed which will be efficient in operation and will dispense a cold dry bottle of the beverage. It will further be apparent that a novel arrangement has been shown wherein the coin acts as a key to permit operation of the machine and one wherein coins of wrong denominations, and coins accidentally inserted in the wrong coin slot will be returned to the depositor. It will further be apparent that a novel construction for bottle vending machines has been disclosed wherein deposit of coins is prevented after the bottle magazine is emptied, and one wherein a charge refund will be made upon return of the empty bottle into the machine. It will further be apparent that with the novel arrangement that the coldest bottles in the bottle reservoirs are dispensed upon operation of the ejector means.

Changes in detail may be made to the form of invention herein shown and described, without departing from the spirit of the invention or the scope of the following claims.

I claim:

1. In a bottle vending machine the combination of a cabinet, a gravity feed bottle receiving passageway having an open lower end, a guideway extending beneath the open lower end for singly receiving the bottles, an ejector block reciprocally mounted in the guideway and having its inner end normally closing the lower open end of the passageway when the block is in its inward position, a manually operable slide plate relatively movable in the ejector block, and coin control means including a coin guide for directing a coin into a releasable position keying the ejector block for movement by the slide plate.

2. In a bottle vending machine the combination of a cabinet, a gravity feed bottle receiving passageway having an open lower end, a guideway extending beneath the open lower end and having an open inner end, an ejector block reciprocally movable in the passageway and having its inner end closing the lower open end of the passageway when the block is in its normal inward position and permitting the lowermost bottle to drop into the guideway when in its outward position, a spring keeper plate partially closing the open inner end of the guideway, a slide plate relatively movable in the ejector block, and coin control means including a coin guide for directing a coin into a keying position between the ejector block and slide plate for outward movement of the ejector block by the slide plate.

3. In a bottle vending machine, a cabinet, a gravity feed bottle receiving passageway having an open lower end, a guideway extending beneath the open lower end of the passageway and having an open inner end providing a discharge opening, an ejector block reciprocally mounted in the guideway with its inner end normally closing the open lower end of the passageway, a slide plate projecting from the cabinet and relatively movable in the ejector block, coin control means including a coin guide for directing a coin to a keying position connecting the ejector block for outward movement by the slide plate and permitting the lowermost bottle in the passageway to drop to a position at rest

in said guideway, a discharge chute communicating with the discharge opening at the inner end of said guideway, and into which the bottle in the guideway is ejected by the inner end of the ejector block upon inward movement of the ejector block, and means permitting escape of the coin at the outward limit of movement of the ejector block.

4. In a bottle vending machine the combination of a cabinet, a gravity feed bottle passageway having an open lower end, a guidway beneath the lower open end of the passageway and having a discharge opening arranged at the inner end of the guideway, a discharge chute communicating with the discharge opening, an ejector block reciprocally mounted in the guideway for permitting the lowermost bottle in the passageway to drop to a position at rest in the guideway upon an outward movement of the block and ejection of the bottle thru the discharge opening upon inward movement of the block, said block being provided with a vertical coin receiving keyway, and having a slideway intersecting the keyway, a slide plate reciprocally movable in said slideway, said slide plate having a coin slot for aligning with the keyway when the slide plate is in engagement at its inner end with the inner end of the slideway, coin control means including a coin guide for directing the coin to the keyway when the ejector block is in its inward position, and means permitting escape of the coin upon outward limit of movement of the ejector block by the slide plate.

5. In a bottle vending machine including a gravity feed bottle receiving passageway having an open lower end, a guideway extended horizontally beneath the open lower end of the passageway, an ejector block reciprocally mounted in the guideway and having its inner end normally closing the open lower end of the passageway when the block is in its inward position, said block when moved outwardly to permit the lowermost bottle from the passageway to drop to a position at rest in the guideway at the inner end of the ejector block, a coin receiving keyway formed vertically thru the ejector block, a slideway provided in the block between the upper and lower ends of the keyway and opening at the outer end of the block, a slide plate having reciprocatory movement in said slideway and having a coin slot aligning with said keyway when the inner end of the slide plate abuts with the inner end of the slideway, means for directing a coin into the keyway whereby the ejector block is keyed by the coin for outward movement by the slide plate, and a coin escape opening provided in the bottom of said guideway permitting escape of the coin from said keyway at the outward limit of movement of the ejector block.

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