July 21, 1942. H. S. CHILDERS 2,290,275

BOTTLE VENDING MACHINE

Filed Sept. 22, 1939 3 Sheets-Sheet 1

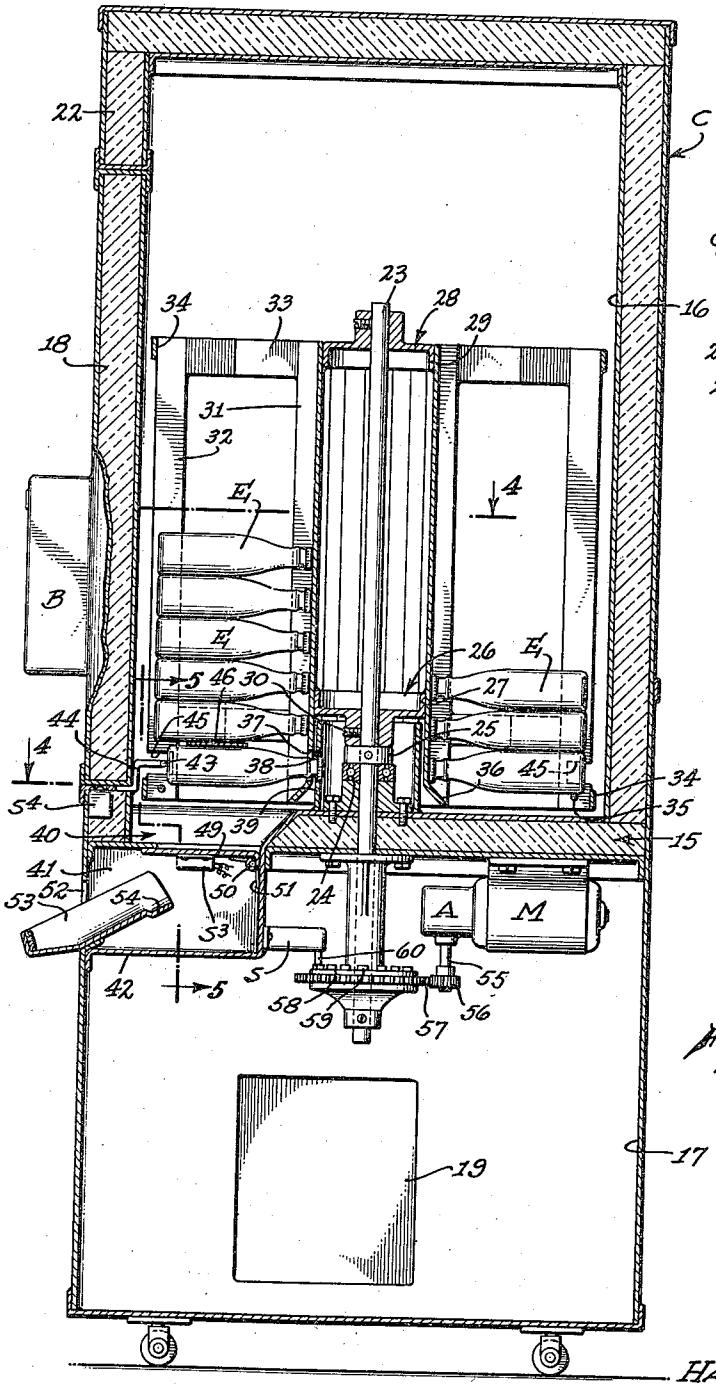


Fig. 1.

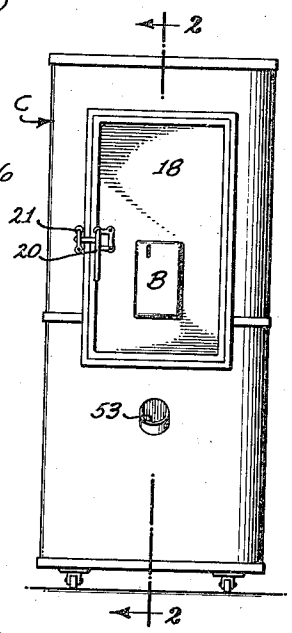


Fig. 2.

Inventor

HARRY S. CHILDERS,

By Edwin D. Jones

Attorney

July 21, 1942. H. S. CHILDERS 2,290,275

BOTTLE VENDING MACHINE

Filed Sept. 22, 1939 3 Sheets-Sheet 2

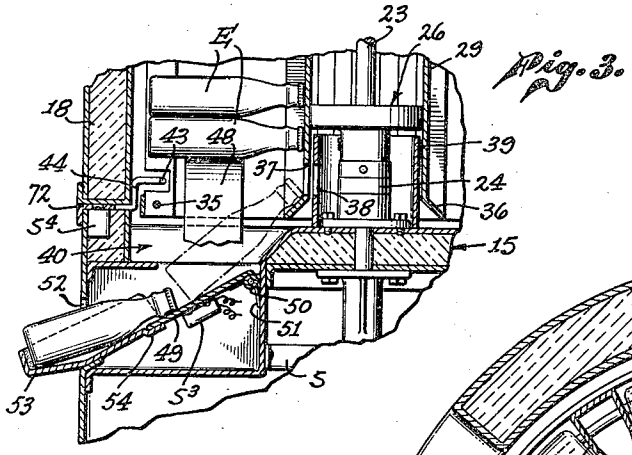


Fig. 3.

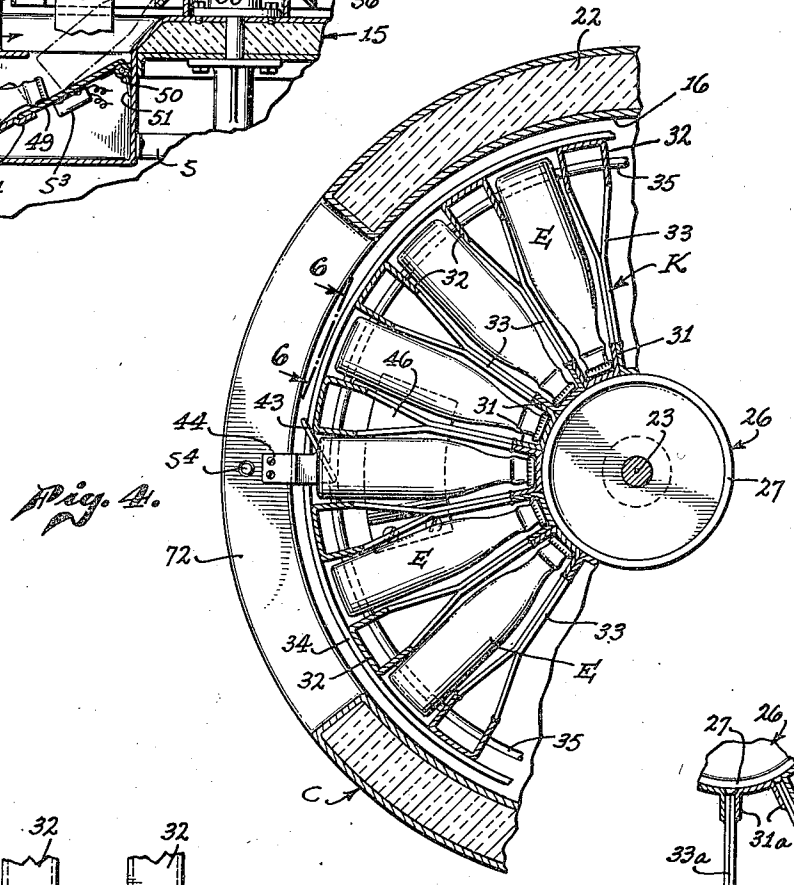


Fig. 4.

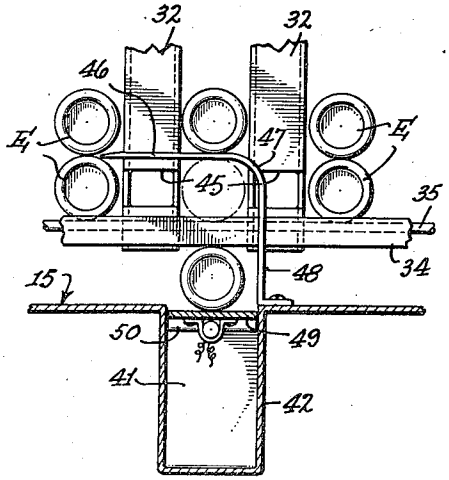


Fig. 5.

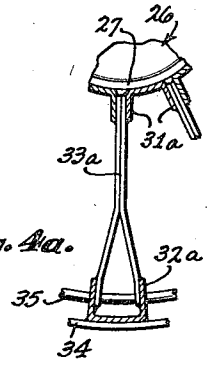


Fig. 4a.

Inventor

HARRY S. CHILDERS,

By Edwin D. Jones.

Attorney

July 21, 1942. H. S. CHILDERS 2,290,275

BOTTLE VENDING MACHINE

Filed Sept. 22, 1939 3 Sheets-Sheet 3

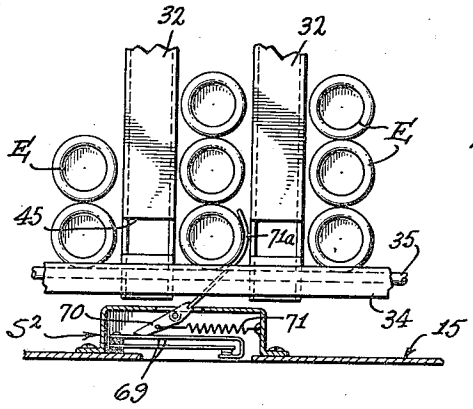


Fig. 6.

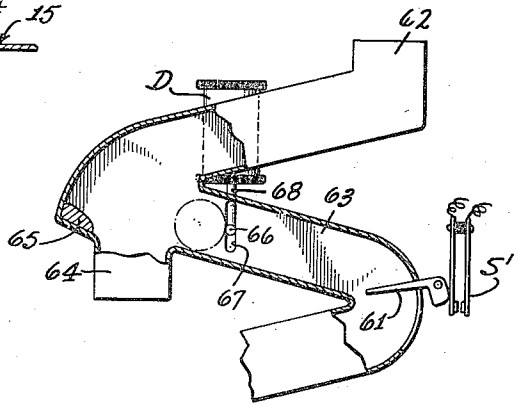
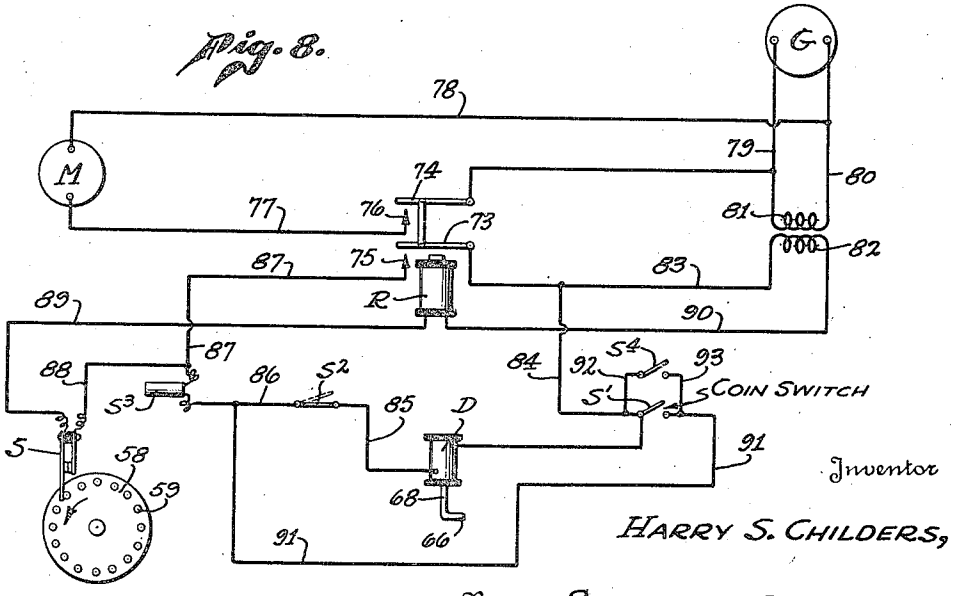


Fig. 7.

Fig. 8.



Inventor

HARRY S. CHILDERS,

By Edwin D. Jones.

Attorney

Patented July 21, 1942

2,290,275

UNITED STATES PATENT OFFICE

2,290,275

BOTTLE VENDING MACHINE

Harry S. Childers, Fresno, Calif.

Application September 22, 1939, Serial No. 296,089

18 Claims. (Cl. 312—46)

My invention relates to machines for vending articles of various characters, and it has particular reference, although not necessarily, to coin-operated machines for vending bottles containing beverages.

It is a purpose of my invention to provide a machine for vending bottled beverages which is characterized by its large bottle holding and dispensing capacity attained by virtue of a bottle carrier constructed to support bottles in a plurality of vertically disposed stacks, and where the bottles of each stack are arranged horizontally one upon the other.

It is also a purpose of my invention to provide in a bottle vending machine a mechanism which is operable to dispense a single bottle from the bottom of each stack through endwise movement of the bottle in the carrier, and where such bottle dispensing operation occurs successively through the several stacks until all bottles have been dispensed from the carrier.

A further purpose of my invention is the provision of a bottle vending machine wherein when all bottles have been dispensed therefrom, a means becomes operable to prevent further operation of the machine and the return of any coin to the depositor inserted into the machine while empty.

Another purpose of my invention is the provision of a bottle vending machine which embodies means for effecting cessation in movement of the carrier following each bottle dispensing operation, and wherein such means is controllable independently of the bottle dispensed.

Another purpose of my invention is the provision in a vending machine of a rotatable bottle carrier which includes a plurality of vertically disposed bottle receiving racks, the structure of which is such as to allow free circulation of cool air therethrough and about the bottles to increase the cooling efficiency of any refrigerating medium employed.

Another purpose of my invention is the provision in a bottle vending machine of a cabinet for housing the bottle carrier and wherein such cabinet is provided with a doorway normally closed by a door and providing access to the carrier for refilling the racks with bottles, and a control switch which is accessible for manual operation only when the door is open to cause rotation of the carrier in the successive presentation of the racks to the doorway so that they may be readily refilled with bottles.

I will describe only one form of bottle vending machine embodying my invention, and will then point out the novel features thereof in claims.

In the accompanying drawings:

Fig. 1 is a view showing in front elevation one form of vending machine embodying my invention.

Fig. 2 is an enlarged vertical sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is a fragmentary vertical sectional view taken in the same vertical plane as Fig. 2 and when combined with Fig. 2 illustrates the manner in which a bottle is discharged from the carrier.

Fig. 4 is a horizontal sectional view taken on the line 4—4 of Fig. 2.

Fig. 4a is a fragmentary horizontal sectional view showing a modified construction of carrier.

Fig. 5 is a vertical sectional view taken on the line 5—5 of Fig. 2.

Fig. 6 is a vertical sectional view taken on the line 6—6 of Fig. 4.

Fig. 7 is a view showing in side elevation and partly in section the coin chutes and correlated elements of the coin controlled mechanism.

Fig. 8 is a diagrammatic view of the electrical devices and circuits embodied in the vending machine shown in the preceding views.

Referring specifically to the drawings in which similar reference characters refer to similar parts in each of the several views, my invention in its present embodiment comprises a cylindrical cabinet C divided vertically by a transverse partition 15 into an upper chamber 16 and a lower compartment 17. Access is had to the chamber and compartment, respectively, through doors 18 and 19, the door 18 being hinged on one vertical edge and provided with a latch 20 on the other vertical edge which, when engaged with the keeper 21 on the cabinet, may be secured in closed position by the application of a suitable lock thereto. The partition, door 18 and walls defining the chamber 16 are all provided with suitable heat insulating material 22.

A shaft 23 extends upwardly and centrally through the partition 15, and as shown in Fig. 2, suitable bearings 24 are provided for mounting the shaft for rotation in the partition. To support the shaft against downward movement a collar 25 is pinned to the shaft. Supported on this collar is the hub of a disk 26 having a flange 27, while at the upper end of the shaft is a similar disk 28 provided with a peripheral flange 29. By means of set screws 30 the hubs of the disks 26 and 28 are secured to the shaft 23 so that the disks are rotatable with the shaft.

The disks 26 and 28 constitute parts of a rotatable article carrier K, and, although, in the present instance, the carrier is designed for carrying beverage containing bottles, it is to be understood that it could be designed to accommodate articles of other shapes and sizes than bottles. The carrier is made up of an inner annular series of channel bars 31, and an outer annular series of channel bars 32 concentric of the inner series and with their channel sides confronting those of the inner series. As the present carrier is designed to carry sixteen stacks of bottles, there are sixteen bars in each of the two series.

As shown in Fig. 4, the inner sides of the inner bars 31 are spot welded to the disk flanges 27 and 29, and the outer bars 32 are rigidly connected at top and bottom to the inner bars by brace plates 33 arranged in pairs. As an alternative construction (Fig. 4a), the inner ends of the plates 33a of each pair (top and bottom) may extend between adjacent bars 31a and be spot welded thereto. The other ends of the plates 33a are spaced apart and spot welded respectively to the inner sides of the flanges of the outer bars 32a. In either construction the outer sides of the outer bars are connected top and bottom by metal bands 34 spot welded thereto.

Each inner bar 31 and the two corresponding outer bars 32 constitute a rack in which bottles E may be inserted and stacked horizontally one upon the other. In stacking the bottles they may be inserted between the outer bars with their neck ends foremost, so that the neck of each bottle is received between the flanges of the respective inner bar 31, while the butt end is received between the flanges of adjacent outer bars 32. By designing a carrier which permits of the stacking of bottles in this manner, a maximum number of bottles may be accommodated and carried in stacked relation for a carrier of a given diameter and height.

As best shown in Fig. 2, the lowermost bottles of all of the stacks are supported in the racks against downward discharge by the provision of a ring 35 preferably in the form of a heavy wire, and lips 36 on the lower ends of the inner bars 31. The ring extends through all of the flanges of the outer bars 32 at a point adjacent the lower ends of such bars. Thus they serve as a support for the butt ends of the bottles in all of the stacks. The lips 36, although inclined, serve to support the neck end of the bottles. Thus with the lowermost bottle of each stack supported in this manner it will be clear that all bottles thereabove are supported against downward discharge from the carrier.

Just above the lips 36, the bars 31 are provided with openings 37 through which the neck end of the lowermost bottles may be extended into a master opening 38 provided in a stationary cylinder 39 fixed to the upper side of the partition 15 within the area defined by the inner bars 31. The extension of the neck of any lowermost bottle into the master opening 38 is only possible when the bar opening 37 for that lowermost bottle is in registration with the master opening, for the cylinder 39 otherwise serves to block the openings 37 of the other bars.

In order to extend the neck of a bottle into the master opening 38 it is necessary to move the bottle endwise inwardly. Such bottle movement results in its butt end being displaced from the supporting ring 35 so that the bottle is now free to gravitate from the carrier through a delivery opening 40 in the partition 15 and into a compartment 41 formed by a box 42. Upon rotation of the carrier K, such endwise movement of the bottle is effected through the medium of a cam 43 fixed on a bracket 44 secured within the cabinet. This cam is positioned and shaped to be engaged by the butt end of the bottle as it is moved by the carrier toward the delivery opening 40, so that by the time the bottle is opposite the master opening 38 its neck has moved into the master opening while its butt end has passed off of the ring 35 to allow the bottle to fall from the carrier. Slots 45 are provided in the lower ends of the outer bars 32 to allow the cam 43 to engage the butt end of the bottles and still clear the bars.

In order to prevent other than the lowermost bottle of any one stack from being discharged with each operation of the machine, and also to lower onto the ring 35 and lip 36 without damage to the remaining bottles of that stack, a stationary support is provided. This support is in the form of a plate having an elevated horizontal portion 46, which overlies the delivery opening 40, a downwardly curved portion 47 and a vertical portion 48 secured at its base on the partition 15.

By reference to Fig. 5, it will be seen that the lowermost bottle of a stack approaching the delivery opening 40 will pass beneath the plate portion 46, while the next bottle above passes on top of such plate portion to be supported thereby and thus support all of the other bottles of that stack. With continued rotation of the carrier the aforesaid bottle passes off of the plate portion 46 onto the curved portion 47 and then downwardly beside the vertical portion 48 onto the supporting ring 35 and the corresponding lip 36. Thus it will be clear that following discharge of the lowermost bottle from a stack the next bottle above replaces it in position within the carrier to be subsequently discharged when that stack of bottles is again presented to the delivery opening.

The top of the box 42 and the bottom of the delivery opening 40 are normally closed by a trap door 49 hinged as at 50 to swing downwardly and urged to closed position by a spring 51. The wall of the cabinet opposite the end of the box 42 is formed with an opening 52 through which extends a chute 53. This chute is of such length that its upper end extends into the box 42 where it is provided with a lip 54. The door 49 is of such length that when in open position it abuts the lip 54 and thus forms an upward continuation of the chute 53. Manifestly, when a bottle is discharged from the carrier through the delivery opening 40, it opens the door 49 and slides thereover into the chute where it is accessible for removal by the purchaser. For future reference, it is now pointed out that in the final position of the bottle a portion thereof still remains on the door to maintain the latter in open position until the bottle is removed from the chute.

The carrier K is rotatable by an electric motor M secured to the under side of the partition 15. The shaft of this motor is connected to a reduction gearing A having a shaft 55 provided with a pinion 56. The pinion meshes with a ring gear 57 fixed to a disk 58 secured to the lower end of the shaft 23. On the upper side of the disk are an annular series of cams 59 equidistantly spaced and sixteen in number to correspond to the number of racks of the carrier K. Under rotation of the disk 58 the cams 59 are caused to successively open a normally closed

switch S having an arm 60 engageable by the cams to open the switch. The operation of this switch is such that it opens to disrupt current supply to the motor to stop rotation of the carrier immediately following movement of one rack to the delivery opening.

In a coin box B secured on the outside of the door 18 is a coin-operated switch S' having a lever 61, extending into the branch 63 of a coin chute 62, the former leading to a coin tray (not shown) within the box. The chute 62 is provided with a second branch chute 64 extending below an anvil 65. This branch chute 64 constitutes a return chute for returning coins to the depositor. Within the branch chute 63 is a pin 66 movable vertically in a slot 67 and carried by the core 68 of a solenoid D.

When the solenoid D is energized the pin 66 is lifted so that upon depositing a coin in the upper end of the chute 62 it falls downwardly striking the anvil 65, causing it to bounce across the return chute 64 and beneath the pin 66. From here the coin continues through the branch chute 63 and into the coin tray. During passage of the coin through the chute 63 it engages the lever 61 to momentarily close the switch S'. When the solenoid is deenergized, the pin 66 is lowered to obstruct the passage of the coin through the branch chute 63 and causing it to fall into the return chute 64.

Secured on the partition 15 at that side of the delivery opening 40 from which the bottle stacks approach the opening is a switch S^2 provided for the purpose of preventing operation of the motor M should a coin be deposited into the box B when the machine is empty of bottles. The switch S^2 comprises a pair of spring contact blades 69 which tend to close but are held open by a lever 70 under the action of a spring 71. The lever has a curved extension 71*a* which is deposited in the path of movement of the lowermost bottles of all of the stacks so as to be successively engaged by the bottles and thus constantly held in a position in which the lever maintains the switch in open position against the action of the spring 71. When the carrier is empty of bottles the spring 71 actuates the lever to open the switch, as will be understood.

For preventing damage to the vending machine should a second operation thereof be permitted while a bottle remains in the chute 53, a switch S^3 of the mercury tube type is mounted on the under side of the trap door 49 so as to close or open according as the door is closed or opened. This switch S^3 is adapted for connection in a circuit which controls operation of the motor M. Hence, it will be clear that as the door 49 is retained in open position by a bottle in the chute 53, the switch remains open to prevent operation of the motor until the bottle in the chute is removed.

To facilitate replenishing or refilling of the carrier with bottles, and without necessitating turning of the carrier by depositing coins in the box B, a manually operable button type of switch S^4 is mounted preferably on the bottom wall 72 of the doorway of the cabinet C. This switch S^4 is normally open, but when closed causes operation of the motor M to rotate the carrier K a distance corresponding to that between two bottle stacks. Thus by repeated closure of this switch the carrier may be successively rotated to render all racks accessible through the doorway.

As shown diagrammatically in Fig. 8, any suitable source of current, such as a generator G, may be provided for energizing the motor M, the solenoid D, and a relay R. The relay is provided with a pair of contact arms 73 and 74 engageable with contact points 75 and 76, respectively, only when the relay is energized.

The circuit for the motor M includes wires 77 and 78 connected across wires 79 and 80 extending from the terminals of the generator G. In the motor circuit is the contact arm 74, while in the generator circuit is the primary winding 81 of a step down transformer T. The circuit for the solenoid D includes the secondary winding 82 of the transformer T, switches S^2, S^3, and S, and the winding of relay R. The windings of the solenoid and relays are such that when both are interposed in the solenoid circuit the relay is ineffective to actuate its contact arms and only the solenoid is energized. The primary circuit for the relay R includes the switch S' or S^4, depending upon which is closed, and the switches S^2, S^3, and S. For maintaining the relay energized once it has been energized by completion of its primary circuit I provide a holding circuit which includes the relay contact arm 73 and the switch S.

The operation of the vending machine is as follows:

Normally the solenoid D is energized through its circuit which may be traced as follows: From one side of transformer secondary 82 through wires 83 and 84, winding of solenoid D, wire 85, normally closed switch S^2, wire 86, normally closed switch S^3, wire 87 and 88, normally closed switch S, wire 89, winding of relay R, and wire 90 back to the other side of secondary 82. With the solenoid so energized the pin 66 is elevated so that upon deposit into the chute 62 of a suitable coin the switch S' will be momentarily closed. Closure of switch S' causes the solenoid to be shunted from the primary circuit for the relay R, current now flowing through wire 91 to wire 86. As a consequence, relay R is now energized so that its contact arms 73 and 74 are now moved to engage contact points 75 and 76 to close the motor circuit and the relay holding circuit. The relay holding circuit is as follows:

From wire 83, through contact arm 73, contact point 75, wire 87, switch S^3, wire 88, switch S, wire 89, winding of relay R, through wire 90 to the other side of the secondary 82.

Closure of the motor circuit causes motor M to rotate the carrier K in a counter-clockwise direction as when viewed in Fig. 4, and until a new stack of bottles is brought into registration with the delivery opening 40 and the bar opening 37 into registration with the master opening 38. The instant this carrier position is reached the switch S momentarily opens to disrupt the relay holding circuit. This allows movement of the contact arm 74 to disrupt the motor circuit and thus bring the carrier to a stop. Under such movement of the carrier the lowermost bottle of the newly presented stack moves beneath the horizontal plate portion 46 and at the same time is engaged by the cam 43 to cause its butt end to move off of the ring 35 and its neck end into the master opening 38. Thus the bottle is free to fall onto the door 49 to open the latter and descend into the chute 53.

Opening of door 49 opens switch S^3 so that although switch S is now closed, the relay holding circuit cannot be restored until switch S^3 is closed by closing of the door through removal of the dispensed bottle from the chute. Should a second coin be deposited into the box B before removing the bottle, resultant closure of switch

S' is ineffective to establish the relay circuit, and, hence, a second operation of the machine cannot occur.

As the switch S^2 is in the circuit for the solenoid D it will be clear that when the switch opens because all bottles have been dispensed from the carrier, the solenoid becomes deenergized to lower the pin **66** into obstructing position to a coin entering the branch slot **63**. Thus should a coin be deposited into the box B while the machine is empty of bottles, the coin will be returned to the depositor.

Button switch S^4 is connected to wires **84** and **91** through wires **92** and **93**, thus bridging the coin switch S'. Manifestly, by closing the switch S^4 the primary relay circuit can be established independently of the coin switch to cause rotation of the carrier. Thus by successive closing of the switch S^4 all racks can be presented in the doorway to allow refilling thereof with bottles.

Although I have herein shown only one form of bottle vending machine embodying my invention, it is to be understood that various changes and modifications may be made herein without departing from the spirit of my invention and the spirit and scope of the appended claims.

I claim:

1. A vending machine, comprising; an enclosed chamber having a delivery opening in the bottom thereof; a bottle carrier having a plurality of vertically disposed racks in each of which bottles are adapted to be stacked horizontally one upon the other; means for mounting said carrier for movement in said chamber to bring the lower ends of the racks successively into registration with the delivery opening; bottle supporting means in the lower end of each rack so constructed and arranged that by lengthwise movement of the lowermost bottle it can be discharged into the delivery opening when the respective rack is in registration with the opening; means for moving said carrier to bring the racks successively into registration with the delivery opening; and means responsive to movement of said carrier for causing lengthwise movement and discharge into the delivery opening of the lowermost bottle of any one stack as the respective rack is brought into registration with the delivery opening.

2. A vending machine, comprising; an enclosed chamber having a delivery opening in the bottom thereof; a carrier having a plurality of vertically disposed racks radiating from a common center and in each of which bottles are adapted to be stacked horizontally one above the other; means for mounting said carrier for rotary movement in said chamber to bring the lower ends of the racks successively into registration with the delivery opening; bottle supporting means in the lower ends of each rack so constructed and arranged that by lengthwise movement of the lowermost bottle inwardly of the carrier the bottle can be discharged into the delivery opening when the respective rack is in registration with said opening; and means for producing lengthwise movement of the lowermost bottle in any one stack as the respective rack is brought into registration with the delivery opening whereby the lowermost bottle is discharged into the delivery opening.

3. A bottle vending machine, comprising; an enclosed chamber having a delivery opening in the bottom thereof; a bottle carrier having a plurality of vertically disposed racks radiating from a common center and in each of which bottles with their neck ends disposed inwardly are adapted to be stacked horizontally one above the other; means for mounting said carrier for rotary movement in said chamber to bring the lower ends of the racks successively into registration with the delivery opening; bottle supporting means in the lower end of each rack so constructed and arranged that by movement of the lowermost bottle inwardly of the carrier it can be discharged into the delivery opening when the respective rack is in registration with said opening; and means responsive to rotary movement of said carrier for causing discharge into the delivery opening of the lowermost bottle in any one stack as the respective rack is brought into registration with the delivery opening.

4. A vending machine, comprising; an enclosed chamber having a delivery opening in the bottom thereof; an article carrier having a plurality of vertically disposed racks in each of which articles are adapted to be stacked horizontally one upon the other; means for mounting said carrier for movement in said chamber to bring the lower ends of the racks successively into registration with the delivery opening; article supporting means in the lower end of each rack so constructed and arranged that by horizontal movement of the lowermost article it can be discharged into the delivery opening when the respective rack is in registration with the opening; means for moving said carrier to bring the racks successively into registration with the delivery opening; means responsive to movement of said carrier for causing discharge into the delivery opening of the lowermost article of any one stack as the respective rack is brought into registration with the delivery opening; and means for supporting the articles of any one stack against discharge into the delivery opening with the lowermost article and for lowering said articles onto said supporting means under continued movement of the carrier.

5. A vending machine, comprising; an enclosed chamber having a delivery opening in the bottom thereof; an article carrier having a plurality of vertically disposed racks radiating from a common center and in each of which articles are adapted to be stacked horizontally one above the other; means for mounting said carrier for rotary movement in said chamber to bring the lower ends of the racks successively into registration with the delivery opening; article supporting means in the lower ends of each rack so constructed and arranged that by horizontal movement of the lowermost article it can be discharged into the delivery opening when the respective rack is in registration with said opening; means responsive to rotary movement of said carrier for causing discharge into the delivery opening of the lowermost article in any one stack as the respective rack is brought into registration with the delivery opening; and stationary means for supporting the articles of any one stack against discharge into the delivery opening with the lowermost article and for lowering said articles onto said supporting means under continued rotation of the carrier.

6. A bottle vending machine, comprising; an enclosed chamber having a delivery opening in the bottom thereof; a bottle carrier having a plurality of vertically disposed racks radiating from a common center and in each of which bottles with their neck ends disposed inwardly are adapted to be stacked horizontally one above the other; means for mounting said carrier for

rotary movement in said chamber to bring the lower ends of the racks successively into registration with the delivery opening; bottle supporting means in the lower end of each rack so constructed and arranged that by movement of the lowermost bottle inwardly of the carrier it can be discharged into the delivery opening when the respective rack is in registration with said opening; means responsive to rotary movement of said carrier for causing discharge into the delivery opening of the lowermost bottle in any one stack as the respective rack is brought into registration with the delivery opening; and means for supporting the bottles of any one stack against discharge into the delivery opening with the lowermost bottle and for lowering said bottles onto said supporting means under continued rotation of the carrier.

7. In a bottle vending machine; a bottle carrier having elements constructed and arranged to form an annular series of vertically disposed racks in each of which a plurality of bottles may be stacked horizontally one above the other; means at the lower ends of the racks arranged to support the lowermost bottle in each rack so that by endwise movement thereof to disengage a part of said means the bottle will fall from the bottom of the rack; a bottle outlet; means for supporting said carrier for rotative movement about a vertical axis and above the bottle outlet to bring the lower end of each rack successively into registration with said outlet; means acting to confine the lowermost bottles of all racks against endwise movement to disengage said means part except that bottle in that rack registering with the bottle outlet; and means operable under rotation of said carrier for imparting endwise movement to the lowermost bottle of that rack registering with the bottle outlet to discharge said bottle into said outlet.

8. In a bottle vending machine; a bottle carrier having elements constructed and arranged to form an annular series of vertically disposed racks in each of which a plurality of bottles may be stacked horizontally one above the other; means at the lower ends of the racks arranged to support the lowermost bottle in each rack so that by endwise movement thereof to disengage a part of said means the bottle will fall from the bottom of the rack; a bottle outlet; means for supporting said carrier for rotative movement about a vertical axis and above the bottle outlet to bring the lower end of each rack successively into registration with said outlet; a stationary cylinder arranged within the carrier so as to form an abutment for the inner ends of the lowermost bottles of all of the stacks except that stack in registration with the bottle outlet where said cylinder is provided with an opening to allow endwise movement of the lowermost bottle; and means operable under rotation of said carrier for imparting endwise movement to the lowermost bottle of that stack registering with the bottle outlet to discharge said bottle into said outlet.

9. In a bottle vending machine; a rotatable bottle carrier having an inner annular series of vertically disposed channel bars facing outwardly to receive the neck end of bottles, an outer annular series of vertically extending channel bars arranged in spaced relation to the bars of the inner series and adapted to receive between adjacent bars the butt end of the bottles, and coacting means on the lower ends of the channel bars of both series for supporting bottles therein.

10. In a bottle vending machine; a rotatable bottle carrier having an inner annular series of vertically disposed channel bars facing outwardly to receive one end of bottles and having openings therein adjacent the lower ends thereof, and an outer annular series of vertically extending channel bars arranged in staggered relation to the bars of the inner series and adapted to receive between adjacent bars the other end of the bottles; lips at the lower ends of the bars of the inner series extending upwardly to said openings; and a ring spanning the lower ends of the bars of the outer series, said lips and ring coacting to support bottles horizontally within the racks.

11. In a bottle vending machine; a rotary bottle carrier having elements constructed and arranged to form an annular series of vertically disposed racks in each of which bottles may be stacked horizontally one above the other, certain of said elements having openings therein to permit horizontal inward movement of the lowermost bottle of each stack; a bottle outlet beneath the carrier; means in the carrier for supporting the lowermost bottle of each stack so that it is capable of horizontal inward movement into said opening to so disengage said means as to permit discharge of the bottle into the bottle outlet; means for supporting the carrier for movement about a vertical axis and above the bottle outlet to bring the lower ends of the racks successively into registration with said outlet; means within the carrier spanning all of said element openings against bottle movements inwardly except the opening of the element of that rack in registration with the bottle outlet; and means operable under rotation of said carrier for imparting endwise movement to the lowermost bottle of that stack registering with the bottle outlet, whereby the bottle is so moved into said element opening as to disengage said supporting means and discharge into the bottle outlet.

12. In a bottle vending machine; an enclosed chamber having a delivery opening in the bottom thereof; a stationary cylinder in the chamber having an opening therein opposite but above the delivery opening; a bottle carrier having an annular series of vertically disposed racks in which bottles are adapted to be stacked horizontally one upon the other, with openings in the lower ends thereof in which the inner ends of the lowermost bottles of the stacks may be received to allow inward movement of said bottles; means at the bottom of the racks for so supporting the lowermost bottles therein as to permit inward movement thereof into the rack openings; means for mounting said carrier within said chamber and about said cylinder for rotary movement to bring the racks thereof successively into registration with the delivery opening so that the inner end of the lowermost bottle of each rack successively registers with said cylinder opening; and means operable by rotation of the carrier as each rack moves into registration with the delivery opening for moving the inner end of the lowermost bottle inwardly into said cylinder opening, whereby said bottle disengages a part of said supporting means and thus falls into the delivery opening.

13. In a bottle vending machine; an enclosed chamber having a delivery opening in the bottom thereof; a stationary cylinder in the chamber having an opening therein opposite but above

the delivery opening; a bottle carrier having an annular series of vertically disposed racks in which bottles are adapted to be stacked horizontally one upon the other, with openings in the lower ends thereof in which the inner ends of the lowermost bottles of the stacks may be received to allow inward movement of said bottles; means at the bottom of the racks for so supporting the lowermost bottles therein as to permit inward movement thereof into the rack openings; means for mounting said carrier within said chamber and about said cylinder for rotary movement to bring the racks thereof successively into registration with the delivery opening so that the inner end of the lowermost bottle of each rack successively registers with said cylinder opening; and a cam disposed in the path of movement of the lowermost bottles in the carrier so as to be operable under movement of the latter for moving the inner end of the lowermost bottle of that rack moving into registration with the delivery opening, inwardly into said cylinder opening, whereby said bottle disengages a part of said supporting means and falls into the delivery opening.

14. In a bottle vending machine; a rotatable carrier having racks for holding bottles in vertical stacks with the bottles of each stack arranged horizontally one upon the other; an enclosure for said carrier having an opening in the bottom thereof; means for rotating said carrier to bring the lowermost bottle of each stack successively into registration with said opening; mechanism for discharging the lowermost bottle from each stack into said opening as the stacks successively register with said opening; and means for maintaining elevated in each rack those bottles above the bottle being discharged until after such rack has passed out of registration with said opening.

15. A vending machine, comprising; an enclosed chamber having a delivery opening in the bottom thereof; a bottle carrier having a plurality of vertically disposed racks in each of which bottles are adapted to be stacked horizontally one upon the other; means for mounting said carrier for movement in said chamber to bring the lower ends of the racks successively into registration with the delivery opening; means in the lower ends of each rack for supporting a bottle at its neck and butt ends and so that by lengthwise movement thereof in the direction of its neck end the butt end will be displaced from said supporting means to cause its discharge into the delivery opening with its butt end lowermost; means for restraining the bottles from lengthwise movement except the lowermost bottle of that rack in registration with said opening; means for moving said carrier to bring the racks successively into registration with said opening; and means for moving the lowermost bottle of any one stack lengthwise as the respective rack is brought into registration with said opening, whereby the lowermost bottle is discharged into said opening with its butt end lowermost.

16. A vending machine, comprising; an enclosed chamber; a bottle carrier having a plurality of vertically disposed racks in each of which bottles are adapted to be stacked horizontally one upon the other; means for mounting said carrier for movement in said chamber to bring the lower ends of the racks successively into registration with said opening; a compartment below said carrier and said opening and communicating with said opening; an inclined chute extending from said compartment; a depressible door urged to and normally closing said opening; means in the lower end of each rack for supporting a bottle only at its neck end and butt end so that under lengthwise movement of the bottle in the direction of its neck end the butt end is first displaced from said supporting means to cause the bottle to be discharged in an inclined position and with its butt end first onto said door to open the latter and allow the bottle to gravitate into said chute; means for moving said carrier to bring the racks successively into registration with said opening; and means for moving the lowermost bottle lengthwise in the direction of its neck to effect its discharge as aforedescribed.

17. In a bottle vending machine; a rotary bottle carrier having an inner series of members for receiving the neck ends of the bottles, said members having bottle neck receiving openings therein adjacent the lower ends thereof, and an outer series of members adapted to receive the butt ends of the bottles, said outer series of members having slots in the lower ends thereof; projections at the lower ends of the members of the inner series extending upwardly to said openings; an element secured to the lower ends of the members of the outer series, said projections and element coacting to support bottles horizontally within the carrier; and a fixed cam positioned to extend successively into said slots under rotative movement of the carrier to engage the butt ends of the lowermost bottles for displacing the latter from said element.

18. In a bottle vending machine; a rotary bottle carrier having an inner series of members for receiving the neck ends of the bottles, said members having bottle neck receiving openings therein adjacent the lower ends thereof, and an outer series of members adapted to receive the butt ends of the bottles, said outer series of members having slots in the lower ends thereof; projections at the lower ends of the members of the inner series extending upwardly to said openings; an element secured to the lower ends of the members of the outer series, said projections and element coacting to support bottles horizontally within the carrier; a fixed cam positioned to extend successively into said slots under rotative movement of the carrier to engage the butt ends of the lowermost bottles for displacing the latter from said element; and stationary means within the inner series of members for spanning said openings against bottle movements inwardly, said means having an opening therein for receiving the neck of a bottle and which registers successively with the openings of said members under rotative movement of the carrier.

HARRY S. CHILDERS.