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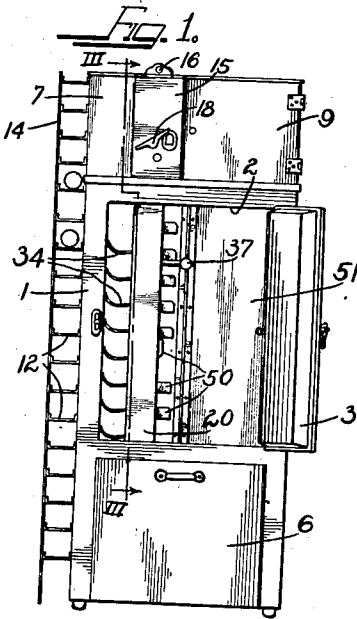
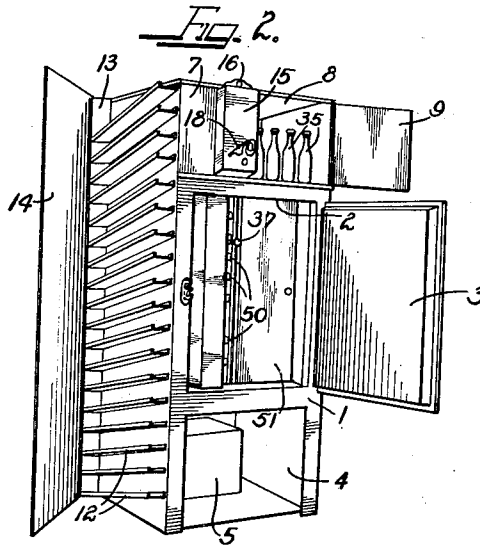
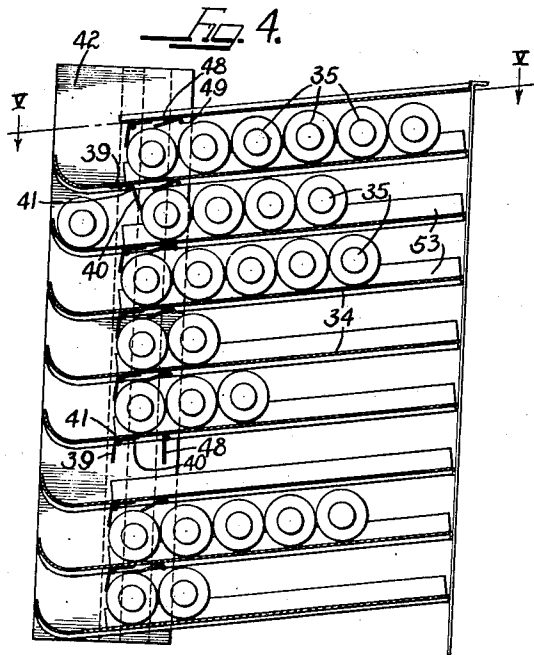
M. L. SMITH

2,316,897

VENDING MACHINE

Filed Sept. 9, 1939

4 Sheets-Sheet 1



MILTON LEE SMITH

44 *Charles G. Mills* ALLS.

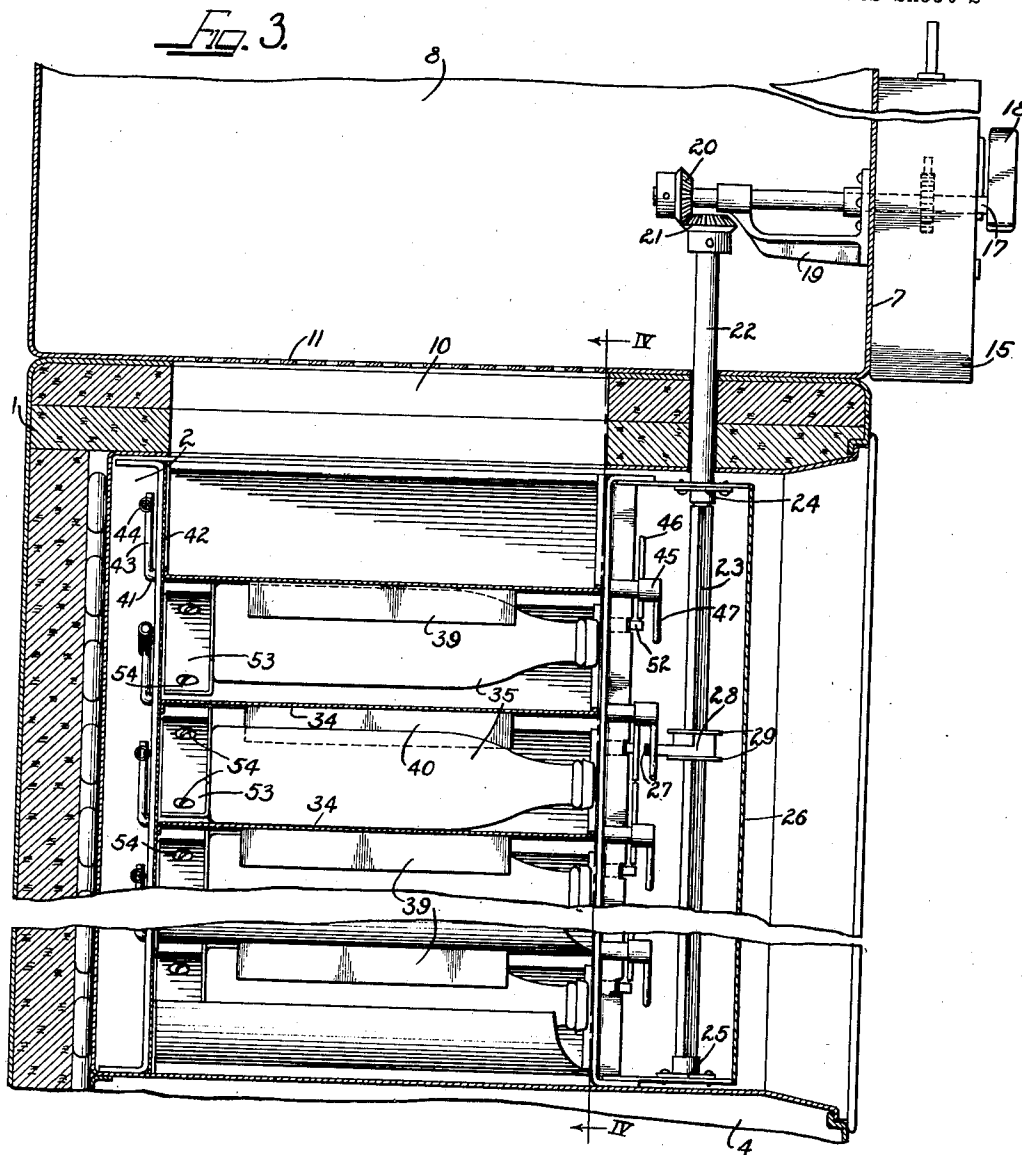
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M. L. SMITH
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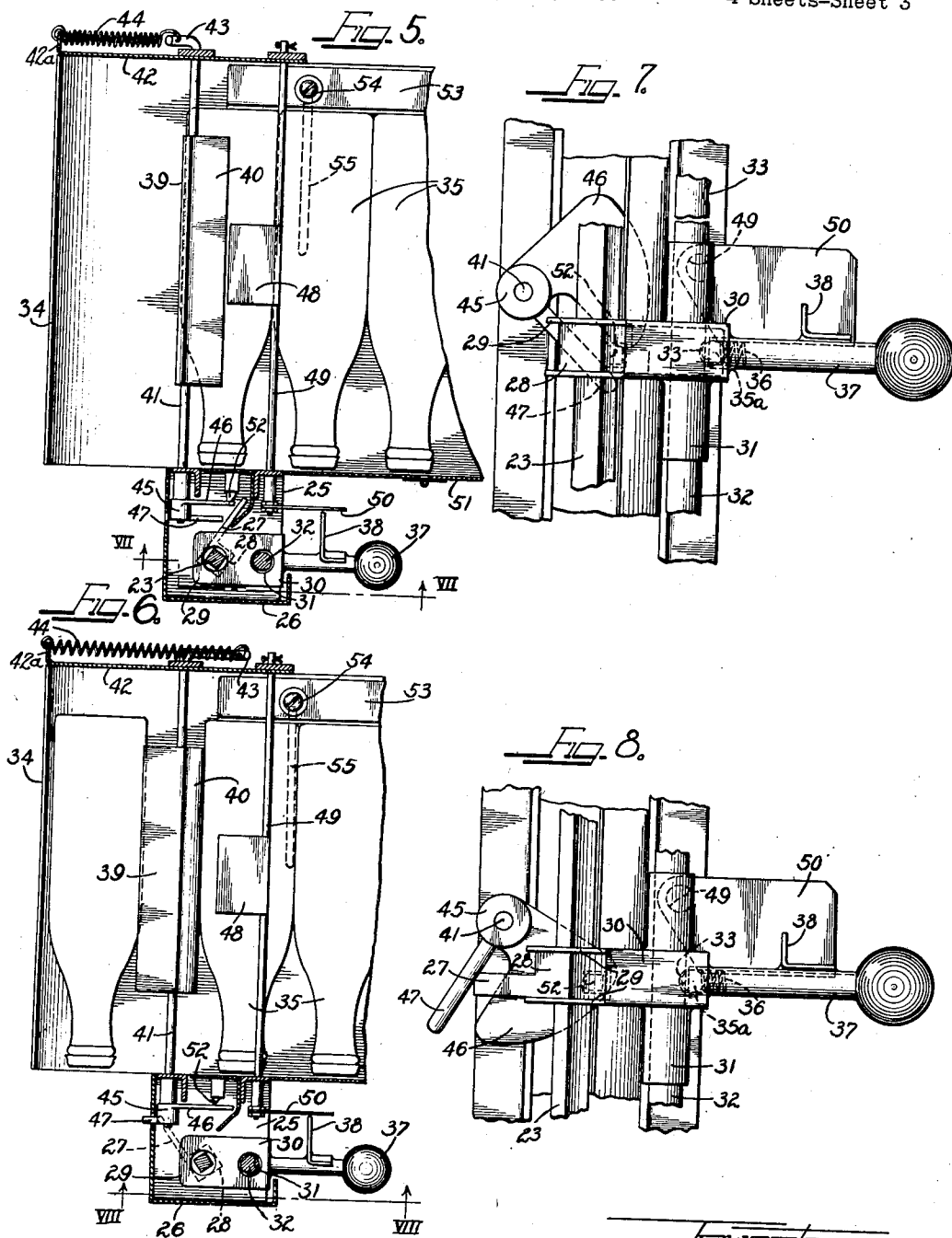
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4 Sheets-Sheet 3



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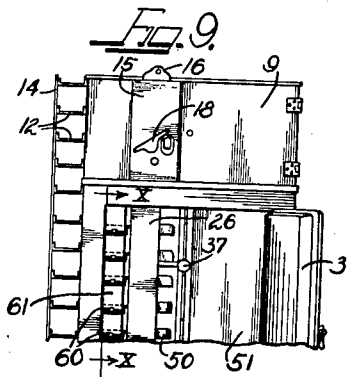
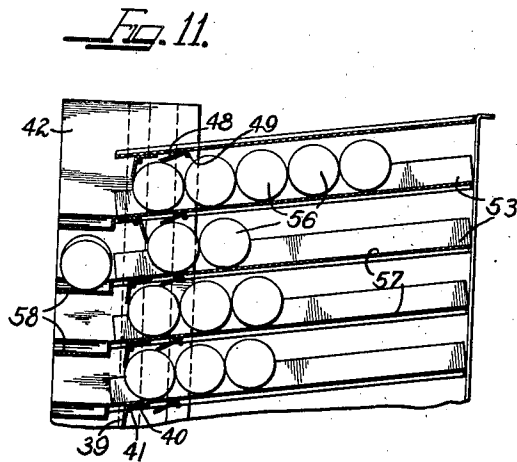
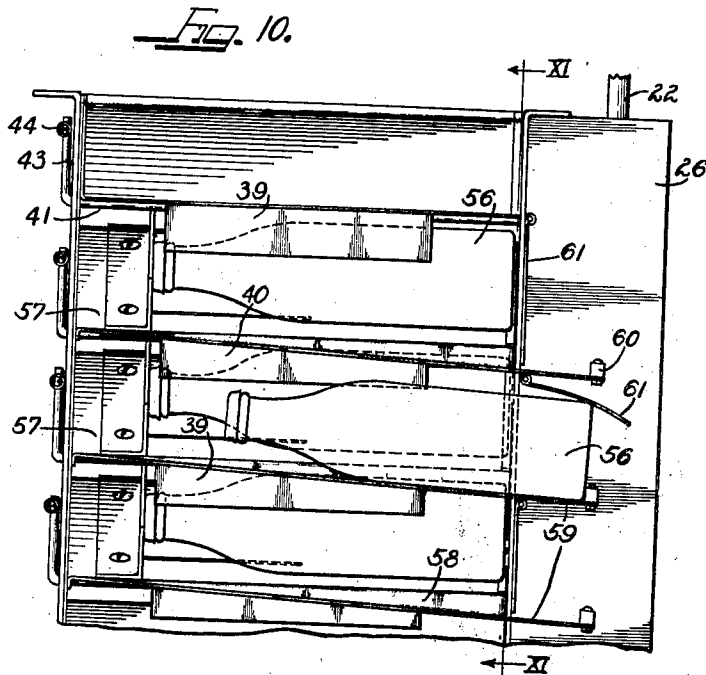
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2,316,897

VENDING MACHINE

Filed Sept. 9, 1939

4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

2,316,897

VENDING MACHINE

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Application September 9, 1939, Serial No. 294,103

6 Claims. (Cl. 312—48)

This invention relates to a coin controlled vending machine and more particularly to a coin control, self-helping, bottled beverage dispensing machine of a refrigerated type and including a bottle or container receiving rack for receiving empties. The improved vending machine is of a refrigerating type for dispensing cold bottled beverages, cartons of ice cream or other commodities which may be put up in cylindrical containers for selective dispensing from the vending machine which is operable by a customer and which may be installed in convenient locations for the convenience of the general public without requiring the services of an attendant.

It is an object of this invention to provide an improved and compact form of a refrigerated vending machine, of the self-service type for the selective discharge of a cold bottled beverage or the like and requiring the depositing of a coin before each operation of the machine.

It is also an object of this invention to provide a refrigerated unit, of the self-service type, which is selectively operable after the depositing of a coin to cause automatic dispensing of a selected bottled beverage or the like into a convenient position for removal from the machine through the opened door of the vending machine.

It is a further object of this invention to provide a coin controlled refrigerated type of bottled beverage dispensing machine including a dispensing unit mounted within a refrigerated chamber of the machine and accessible through a door of the machine, which is required to be opened and closed by the person operating the machine after the depositing of a coin controlling the dispensing means.

It is furthermore an object of this invention to provide a self-service type of refrigerated vending machine including a coin control mechanism, a refrigerated compartment for bottles or packaged beverages or commodities, with said machine also including a refrigerated storage compartment to facilitate pre-cooling of bottled beverages, packaged commodities and the like before being placed in the dispensing unit of the machine.

It is an important object of this invention to provide a refrigerated type of vending machine, including a pre-cooling compartment of the bottled or packaged commodities to be dispensed, a coin controlled and selectively operable dispensing unit in the main cooling compartment of the machine and accessible by persons operating the machine through the main door of the machine, the exterior of which is provided with a

readily accessible rack for receiving empty bottles, containers or the like after the contents thereof have been consumed by the users of the vending machine.

Another important object of the invention is the provision of either a stationary or portable type of electric or gas operated refrigerating machine of the self-service coin controlled type including a pre-cooling compartment and a refrigerated dispensing compartment accessible by means of a door, and containing a dispensing rack for including a plurality of different kinds of bottled beverages or cylindrically packaged commodities, whereby a self-service customer may move a selector into a predetermined position before actuating the coin control mechanism to insure the dispensing of the selected kind of bottled beverage or the like.

Other and further important objects of this invention will be apparent from the disclosures in the specification and the accompanying drawings.

The invention in preferred forms, is illustrated in the drawings and hereinafter more fully described.

In the drawings:

Figure 1 is a front elevation of an improved vending machine embodying the principles of this invention shown with the refrigerator compartment door open;

Figure 2 is an isometric view of the vending machine with the various doors thereof in open position and with the closure panel of the refrigerating unit compartment removed;

Figure 3 is an enlarged fragmentary vertical detailed section taken on line III—III of Figure 1 and showing the filled bottles in position with one in the second tier released for removal;

Figure 4 is a reduced vertical sectional view taken on line IV—IV of Figure 3 with parts omitted;

Figure 5 is an enlarged fragmentary detailed sectional view taken on line V—V of Figure 4 and showing the control lever in full lines before the discharge of a bottle from a selected tier;

Figure 6 is a similar sectional view after the operation of the coin control mechanism for rotating the discharge shaft to swing the control lever to cause discharge of a bottle from a selected tier into a position for removal;

Figure 7 is an enlarged fragmentary vertical detailed view taken on line VII—VII of Figure 5;

Figure 8 is a similar fragmentary vertical detailed view taken on line VIII—VIII of Figure 6;

Figure 9 is a fragmentary front elevation of the upper portion of a vending machine, with the refrigerator compartment door open and showing a fragmentary portion of a modified form of a dispensing unit;

Figure 10 is an enlarged fragmentary vertical detailed view taken on line X—X of Figure 9 showing a discharged bottle in the second tier in a released position in a modified form of gravity feed discharge trough or tray ready to be removed by the operator of the machine; and

Figure 11 is a reduced vertical detailed sectional view taken on line XI—XI of Figure 10 with the dispensed bottle shown in a projected position for removal.

Shown in the drawings:

The improved vending machine is of the electric or gas type of a refrigerating machine, which may be either stationary or of a portable type and which may be placed in a suitable selected location to provide a self-service, coin controlled, dispensing or vending machine for selectively obtaining refrigerated bottled beverages or other commodities such as ice cream which may be packaged in cylindrical cartons and placed in the supply tiers or racks ready to be dispensed.

The improved vending machine comprises a main box or casing 1 having a main refrigerating or cooling chamber or compartment 2 accessible from the front of the box by means of a main refrigerator door 3. The lower portion of the refrigerator box 1 is provided with a compartment or lower chamber 4 for containing a standard or selected refrigerating unit 5 for cooling the interior of the machine. The lower refrigerating unit compartment 4 is adapted to be closed by means of a removable panel or lower front door 6. Mounted or formed on the top of the box 1 is an upper casing or housing 7 providing a refrigerated storage chamber 8 for the reception of a reserve supply of bottled beverages or the like for the pre-cooling of the same before being placed in the vending or dispensing chamber 2 of the machine. The upper storage compartment 8 is provided with a door 9. As illustrated in Figure 3, the upper storage compartment 8 is adapted to be cooled or refrigerated by cold air from the main compartment 2 through an opening 10.

A grid or grate section 11 covers the upper end of the communicating opening 10 between the compartments 2 and 8 and serves as a supporting floor for the reserve stock in the chamber 8.

As clearly illustrated in Figures 1 and 2 one side of the vending machine has mounted thereon an empty bottle or carton receiving rack comprising a series of superimposed parallel inclined receiving troughs or channel shelves 12 the rear lower ends of which are closed by means of a vertical back wall 13 which serves as a stop for the empty bottles in the shelves or troughs. The front ends of the shelves or troughs 12 open to the front of the machine so that the bottles or cartons after they are emptied may be conveniently deposited on any of the empty receiving shelves. A side door 14 is hingedly engaged on the back strip 13 to normally close the side of the rack unit as shown in Figure 1 and permitting access to the various shelves or racks when the door 14 is opened to facilitate removal of the empty bottles or cartons from the rack unit.

Mounted in the main refrigerated chamber 2 of the vending machine is a self-service type of coin controlled dispensing unit, accessible by opening the main door 3 of the vending machine permitting the operator of the machine to make

a selection of a particular kind of bottled beverage, cylindrically canned beer, or cylindrically cartoned ice cream or the like which may be carried by the dispensing unit.

The vending or dispensing unit forming part of the machine mounted within the refrigerated chamber 2 is governed or controlled by means of a coin control unit consisting of a coin box 15 mounted on the front wall of the top box or casing 7. The coin box unit may be of a standard selected type and is provided at the top with a coin receiving opening 16 for receiving a coin of a predetermined denomination, such as a nickel or a dime depending upon the cost of the bottled beverage. Projecting through the front wall of the coin box housing 15 is the front end of a control shaft 17 to which an operating lever or finger piece 18 is attached. The coin control shaft 17 projects rearwardly into the upper refrigerator storage chamber 8 as illustrated in Figure 3 and is suitably journaled in a bearing bracket 19. Secured on the inner end of the coin control shaft 17 is a bevelled gear 20 which meshes with a bevelled gear 21 secured on the upper end of a main vertical control shaft 22 which projects downwardly through a suitable opening in the top wall of the box 1 to extend from the chamber 8 into the main refrigerator chamber 2. The lower section of the main control shaft 22 consists of a rectangularly cross-sectioned lower portion 23. The main shaft 22—23 is journaled in suitable bearing support 24 and 25 (Figure 3) connected by means of a closure hood or cover 26 behind which the control square shaft section 23 is disposed.

There is slidably mounted on the square shaft 23 a discharge control lever 27 having a mounting end 28 provided with a rectangular opening to fit over the shaft 23. The supporting collar 28 of the control lever 27 is engaged between a pair of parallel plates or arms 29 which form an integral part of a crossarm 30 which is integrally formed at right angles intermediate the ends of a slidable sleeve 31 which is slidable on a guide shaft or rod 32 mounted between the brackets 24 and 25 and parallel to the shaft section 23. At selected intervals along one side of the shaft 32, said shaft is provided with rounded sockets or notches 33 (Figure 8). The notches or sockets 33 in the shaft 32 are arranged in predetermined spaced relationship with respect to one another to indicate the location of a plurality of stations corresponding with a plurality of superimposed or adjacently positioned inclined chutes or trays 34 within which a plurality of articles to be dispensed such as bottled beverages 35 are carried ready to be selectively discharged into an end area of a selected chute or tray from which the selected bottle may be conveniently removed by the operator of the machine.

Referring back to the slidable sleeve 31 and the crossarm 30 thereof, said sleeve 31 is adapted to be moved into a selected position and retained there by means of a ball 35a and a coil spring 36 which is mounted within the crossarm 30 as illustrated in dotted lines in Figures 7 and 8. The operation of the sleeve 31 is accomplished by means of a ball handle 37 which carries a pointer 38.

The movable selector unit comprising the members 27 to 38, inclusive, is adapted to be selectively operated by an individual so that the control handle 37 may be moved into a position adjacent the particular tier carrying a particular kind or flavor of a bottled beverage or the like,

After the selector mechanism has been moved into a predetermined position a coin is deposited in the coin receiving opening 16 of the coin unit 15 after which the coin control actuating lever 18 is operated to cause rotation of the squared shaft 23 and a consequent swinging movement of the control lever 27 to effect release of a bottle of the beverage allowing the bottle to move into an accessible position for removal from the vending machine.

The refrigerator compartment 2 which is accessible by means of the door 3, has installed therein a bottled beverage supply or carrying unit with which the selector unit cooperates. The beverage carrying magazine or supply unit comprises a series of superimposed parallel and inclined chutes or trays 34 in which the filled beverage bottles 35 are loaded or stacked as illustrated in Figure 4. Each of the chutes or trays 34 carries a different kind or flavor of bottled beverage. As shown in Figure 4 each of the storage trays 34 has mounted on the underside of the top wall thereof an obtuse angle-shaped stop member comprising the flanges 39 and 40 which are integrally connected. The obtuse angled stop member 39-40 is secured to a shaft 41 which is located near the lower front end of a chute or tray with the end portions of the shaft projecting through supporting walls or members forming part of the supply unit housing. The rear end of the shaft 41 projects through a back wall or plate 42 and has the end thereof bent over at substantially right angles to provide a lever arm 43 to the end of which one end of a coil spring 44 is secured. The other end of the coil spring 44 is connected to a lug or finger piece 42a forming part of the back wall plate 42 as clearly illustrated in Figures 5 and 6. The front end of each of the shafts 41 projects through a front angle iron support and has secured thereon a shaft actuating or rocking unit comprising a sleeve 45 having integrally formed at right angles to the rear end thereof a fan-shaped plate or wing 46. Rigidly secured or formed on the front end of the sleeve 45 is a handle or arm 47. When the selector mechanism is moved into a predetermined selected position as shown in Figure 7, the control or actuating lever 27 is positioned as shown in Figure 5, in registry with the handle 47, so that when the coin control operating lever 18 is actuated to partially rotate the square shaft 23 the lever will start to swing the arm 47 from the position illustrated in Figure 7 to the position illustrated in Figure 8 to cause rotation of the selected shaft 41 and the stop members 39 and 40 thereon to move the stop flange 39 outwardly and upwardly permitting the lowermost bottle in a selected chute or tray 34 to roll downwardly into an accessible release position as shown in Figure 6 and at the same time causing the stop arm 40 to swing downwardly in the path of the advancing remaining bottles in the selected chute or tray to stop the further advance thereof as illustrated in the second tier from the top of the rack in Figure 4. The released bottle when moving into the lower opened end of a selected tray or chute as shown in Figure 6 is now ready for removal by the operator of the machine by taking hold of the neck of the bottle and pulling the bottle out of the dispensing rack.

At the time the control lever 27 is actuated to cause dispensing of a bottle, the bottle being dispensed rides or rolls beneath an apron or flap 48 which is secured to a rocking shaft 49 one of

which is rotatably mounted in each of the bottle holding chutes or trays 34. There is secured on the front end of each of the rocker shafts 49 a designation flag 50 which projects outwardly from behind the hood or cover 26 into a position to be readily seen from the front of the vending machine when the door 3 is opened. Each of the flags 50 is labeled to indicate the particular kind of bottled beverage in a selected chute or tray of the machine. This arrangement provides a convenient way for the operator of the machine to readily select the kind of bottled beverage he desires by simply moving the selector unit upwardly on the shaft 32 to properly position the control lever 37 into engagement with a selected arm 47 of a particular chute or tray assisted by means of the pointer 38 which may be moved in front of a desired flag 50, before the coin controlled mechanism is actuated to cause dispensing of a selected bottle into a position to be readily removed by an operator of the machine.

Referring to Figure 4 of the drawings it will be noted that the respective indicating aprons 48 in the various chutes 34 slide over the bottles in said chutes thereby serving to hold the respective indicating flags 50 of the various chutes in their horizontally projected positions as shown in Figure 1. When the last bottle in a chute passes into a dispensing position and the chute is empty, the indicating apron 48 drops automatically by the weight of gravity from a raised position into a substantially vertical position as shown in the third chute from the bottom of the rack in Figure 4, thereby causing rotation of the respective shaft 49 to swing the flag 50 on the end thereof from a horizontal indicating position up into a vertical position as shown in Figure 1 to indicate that the particular chute is empty. When the respective chutes or trays 40 are empty, a properly authorized attendant at intervals of inspection may unlock and open a front door 51 of the supply rack unit and may refill the chutes or trays by taking precooled bottles from the reserve or storage compartment 8 at the top of the vending machine. By using the pre-cooling chamber 8 self-servicing customers using the vending machine will always be assured of getting a properly cooled bottle of a selected beverage delivered to them by the machine.

To lock the release mechanisms of each of the bottle carrying chutes or trays to prevent accidental or unauthorized discharge of the bottled goods from the various chutes into dispensing positions, each of the bottle carrying chutes is provided with a latch mechanism consisting of a spring controlled bevelled latch 52 which normally projects outwardly to engage beneath a lower edge of a respective discharge control plate or wing 46 to prevent rotation of the respective shafts 41 until the latch bolt 52 is released by having the end of the control lever 27 swing against the bevelled surface of the latch bolt to retract the same. By the time the end of the control lever 27 passes by the retracted latch bolt 52 the respective plate or wing 46 is advanced into a position in which the spring control latch bolt contacts against the rear side thereof as shown in Figures 6 and 8.

After the selector lever 27 has been moved into a selected position and the coin controlled actuating lever 18 is operated to cause dispensing of a bottle of beverage from a selected chute or tray into dispensing position, the coin control lever 13 upon release is adapted to automatically re-

turn to its normal position by a spring mechanism or the like forming part of the coin control unit 15 thereby causing the control lever 27 to swing from the position illustrated in Figure 6, back into its normal position as shown in Figure 5, allowing the tensioned spring 44 to rock the arm 43 back into normal position thereby causing a reverse rotation of the respective shafts 41 to rotate the respective arms 47 and the plates 46 back into their normal positions allowing the latch bolt 52 to again engage beneath the lower edge of the plate 46 and at the same time swinging the stop flange 40 from its lowered position back into its normal raised position by slightly rolling the bottles in their respective chutes or trays backwardly until the normal stop plate 39 swings downwardly into a stop position.

For the purpose of permitting beverage bottles of different heights or lengths to be carried in the respective dispensing chutes or trays 34 each of said chutes or trays is provided with a slidable angle bar 53 equipped with screw bolts 54 which are slidable in slots 55 provided in the bottom of each of the chutes or trays 34. It will thus be noted that the various chutes or trays may receive bottles of different heights or lengths as well as cylindrical cans of different heights for beer or the like or if desired paper ice cream cartons of different heights if desired.

Referring now to Figures 9, 10 and 11 a modified form of vending machine is disclosed similar in construction to that hereinbefore described and illustrated in Figures 1 to 8, inclusive. In the modified form of the vending machine parts similar to those hereinbefore described will be designated by corresponding reference numerals.

The difference in the modified form of the vending machine lies primarily in the construction of the bottle supply rack in which the beverage containing bottles 56 are placed with the bottom ends near the front of the vending machine. The bottles 56 are loaded or placed in groups consisting of different flavors or kinds of beverages in a plurality of superimposed inclined parallel chutes or trays 57 and have the movements thereof controlled by the coin controlled stop members 39 and 40. The bottles in the various chutes or trays also control the operations of the empty signal control flaps or aprons 48. The lower or discharge end of each of the chutes or trays 57 terminates in a dispensing slide or trough 58 which inclines downwardly and outwardly from the rear of the supply unit towards the front thereof. The bottom of each of the dispensing racks or troughs 58 project forwardly a short distance beyond the front of the supply rack to form an extension 59 carrying a stop knob or button 60 in the middle of the outer end thereof to limit the outward sliding movement of a bottle 56 being discharged from the machine. Pivottally supported to normally close the front or discharge end of each of the discharge racks or troughs 58 is a flexible closure flap or apron 61 which is adapted to be swung upwardly as indicated in the full lines in the second tier of the rack as shown in Figure 10 when a bottle 56 is being discharged and held in position by means of the stop member 60 until the person operating the machine takes hold of the bottom end of the bottle and pulls the same out of the dispensing slide or trough 58. After removal of a bottle from the vending machine the flexible flap or apron 61 is permitted to drop back into normal position by gravity.

The operation of the machine is very simple.

Bottled beverages of a selected assortment are adapted to be placed by an attendant in the supply rack chutes or trays 34 when the door 51 is unlocked by an attendant to permit proper loading of the machine. If desired, the bottled beverages may be pre-cooled in the top chamber 8 before being placed in the dispensing rack within the chamber 2.

The vending machine is of the self-servicing type and any person desiring to purchase a bottle of the beverage has only to open the door 3 of the refrigerator unit, slidably move the selector handle 37 until the pointer 38 thereon is properly positioned in front of a selected designating flag 50, to indicate the operator's choice of beverage desired. A coin of the proper denomination is then placed in the coin opening 16 and the operator has only to operate the coin control handle 18 to cause rotation of the squared shaft 23 and the operating lever 27 thereon to cause said lever to actuate the shaft 41 of a selected chute or tray thereby causing the stop flange 39 to swing into a release position permitting the lowermost bottle in the chute or tray to pass the stop mechanism and roll into a dispensing position at the lower end of the respective chute or tray. The person operating the machine has now only to engage the neck of the dispensed bottle to pull the bottle out of the dispensing rack and then close the refrigerator door 3.

When a bottle is being dispensed from a particular selected chute or tray the remaining bottles in said tray are prevented from sliding beyond the raised stop flange 39 by the secondary stop flange 40 which acts to prevent more than one bottle being dispensed at a time.

When the last bottle in a selected chute or tray is dispensed the empty signal control flap or apron 48 drops downwardly into a substantially vertical position thereby rotating the signal shaft 49 to swing the designating flag 50 on the end thereof upwardly into a vertical position to indicate that the particular chute or tray is empty, thereby notifying a prospective user of the machine not to select an empty tray.

Various details of construction may be varied through a wide range without departing from the principles of this invention and it is, therefore, not the purpose to limit the patent granted hereon otherwise than necessitated by the scope of the appended claims.

I claim as my invention:

1. A self-service type of vending machine comprising a refrigerator box, a dispenser unit mounted in the box, a plurality of trays forming a part of the dispenser unit for carrying filled containers to feed by gravity through the trays toward a dispensing position, adjustable means in the trays for varying the size of the container space depending upon the length of the containers to be dispensed, a stop mechanism in each of the trays for controlling the discharge of the filled containers one at a time into a dispensing position, a latch means co-acting with each of the stop mechanisms for normally holding the same locked against operation, a selector mechanism manually shiftable into a position to register with a selected tray, and a control mechanism on the refrigerator box and connected with the selector mechanism to actuate the same to move the selector mechanism into position to retract the latch means and then actuate the stop mechanism of a selected tray to move the stop mechanism into a position to release a single filled container from the tray permitting the released

container to roll into dispensing position to be removed from the refrigerator box by the operator of the machine, said stop means when actuated to release a container also serving to hold the remaining contains in a tray against discharge.

2. In a self-service type of coin-controlled and refrigerated vending machine, a dispensing unit comprising a plurality of superimposed inclined gravity feed trays for carrying filled containers, means for adjusting the width of the trays for receiving containers of different sizes, spring controlled stop means for the respective trays for controlling the discharge of the containers one at a time, a control member connected with each of the stop means, a latch mechanism coacting with the control member to normally hold the stop means against operation, a control arm connected with each of the stop means, and a coin-controlled lever mechanism operable to first release the latch mechanism and then operate the control arm to actuate the stop means to release a filled container from a selected tray, said spring controlled stop means acting after the discharge of a container to return the control lever, the stop means and the control member back into normal positions with the latch mechanism again holding the stop means locked against unauthorized operation.

3. In a coin-controlled refrigerated vending machine, a dispensing unit comprising a gravity feed tray for carrying filled containers, a stop shaft in the tray, a stop member on the stop shaft for holding the containers in position against discharge, a control spring connected with the stop shaft, a control plate on the projecting end of the stop shaft, a latch mechanism coacting with the control plate for normally holding the stop means against unauthorized operation, a control arm connected with the projecting end of the stop shaft, and an actuating lever mechanism operable to first release the latch mechanism and then actuate the control arm to actuate the stop mechanism against the action of the control spring to release a container from the tray and hold the remaining containers against discharge, said control spring acting after the discharge of a container to return the stop mechanism and the control arm back into normal positions and at the same time returning the actuating lever back into normal position and moving the control plate into place to be engaged by the latch mechanism ready for another operation of the dispensing unit.

4. A gravity feed vending machine for vending merchandise in containers that are of a generally circular cross section, said machine com-

prising a box having a plurality of shelves therein inclined sidewise of the box and upon which the containers roll sidewise of the box, means for confining the containers against movement in at least one direction depthwise of the box as the containers roll sidewise of the box, a plurality of vertically aligned outlet openings in the front of the box for the discharge of containers from the respective shelves, and an inclined trough extending from each shelf to an outlet opening and onto which the containers roll and along which they then slide to the outside of the box, each trough extending lengthwise in a direction depthwise of the box and at right angles to the direction of roll of the containers on the shelves, and means for controlling movement of containers from the respective shelves to the discharge openings.

5. A gravity feed vending machine for vending merchandise in containers that are of a generally circular cross section, said machine comprising a box having a plurality of shelves therein inclined sidewise of the box and upon which the containers roll sidewise of the box, a plurality of vertically aligned outlet openings in the front of the box for the discharge of containers from the respective shelves, an inclined trough extending from each shelf to an outlet opening and onto which the containers roll and along which they then slide to the outside of the box, each trough extending lengthwise in a direction depthwise of the box and at right angles to the direction of roll of the containers on the shelves, and stop means between each shelf and the associated trough for controlling the movement of a container from the shelf to the trough.

6. A gravity feed vending machine for vending merchandise in containers that are of a generally circular cross section, said machine comprising a box having a plurality of shelves therein inclined sidewise of the box and upon which the containers roll sidewise of the box, a plurality of vertically aligned outlet openings in the front of the box for the discharge of containers from the respective shelves, an inclined trough extending from each shelf to an outlet opening and onto which the containers roll and along which they then slide to the outside of the box, each trough extending lengthwise in a direction depthwise of the box and at right angles to the direction of roll of the containers on the shelves, stop means between each shelf and the associated trough for controlling the movement of a container from the shelf to the trough, and means for selectively operating the stop means of the respective shelves one at a time.

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