

June 10, 1941.

S. VAN TUYL

2,245,371

VENDING MACHINE

Filed Jan. 5, 1939

2 Sheets-Sheet 1

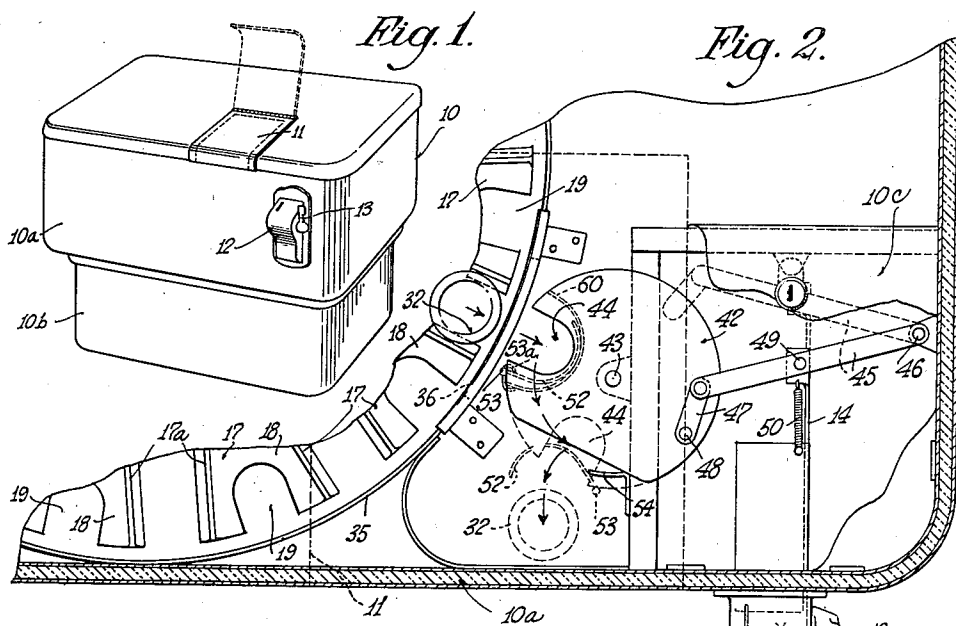
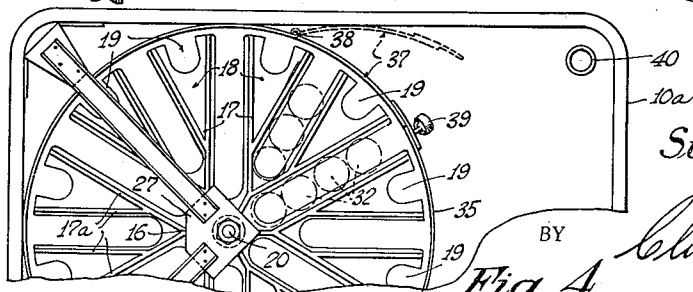
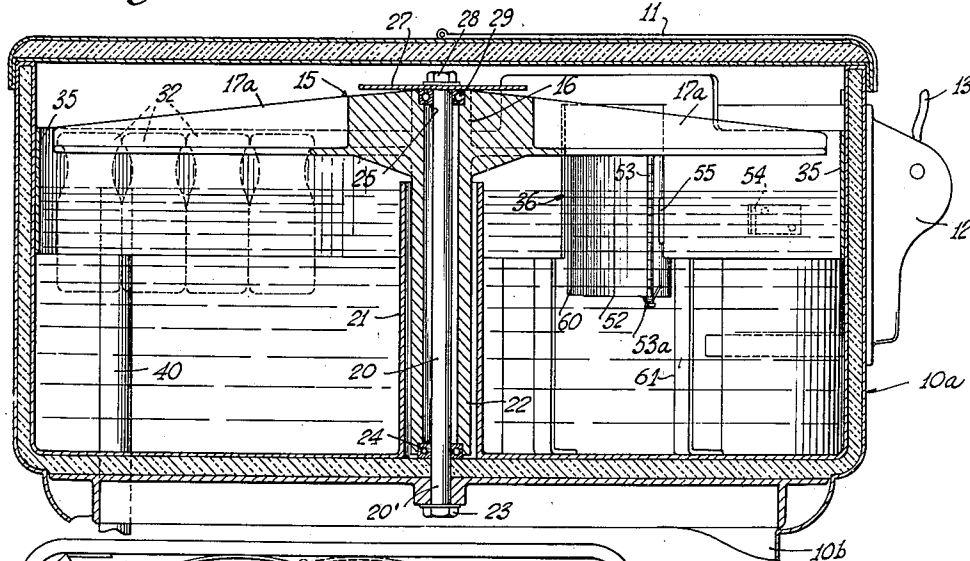


Fig. 3.



Sidney Van Tuyl
INVENTOR.

BY

Clarence E. Thready
HIS ATTORNEY.

Fig. 4.

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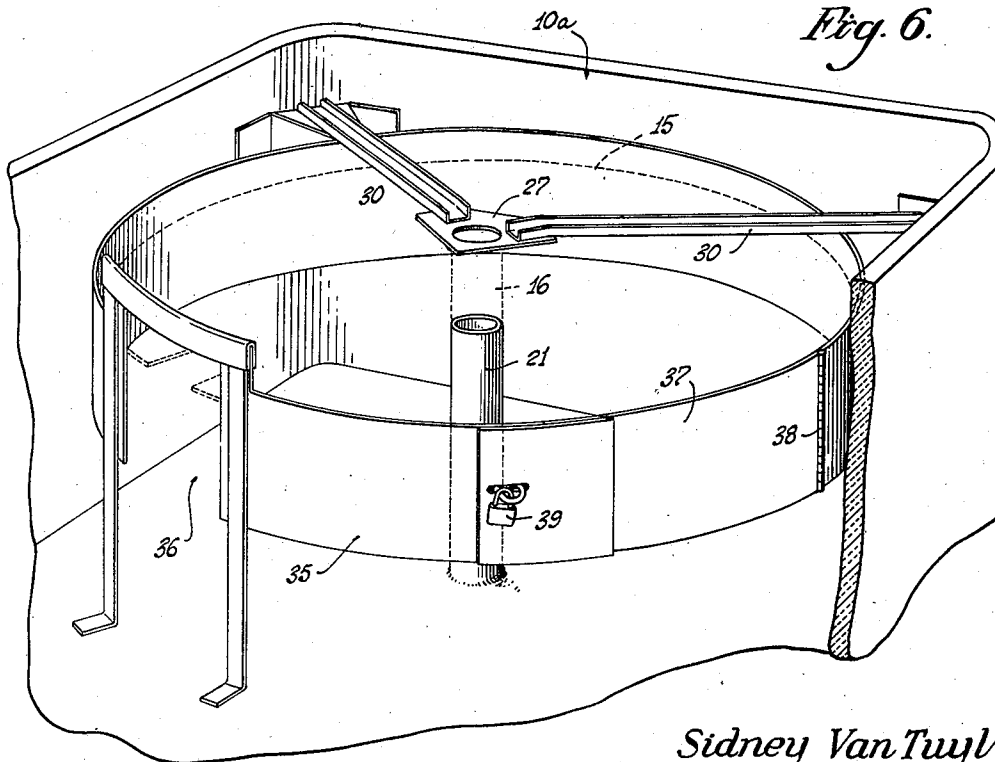
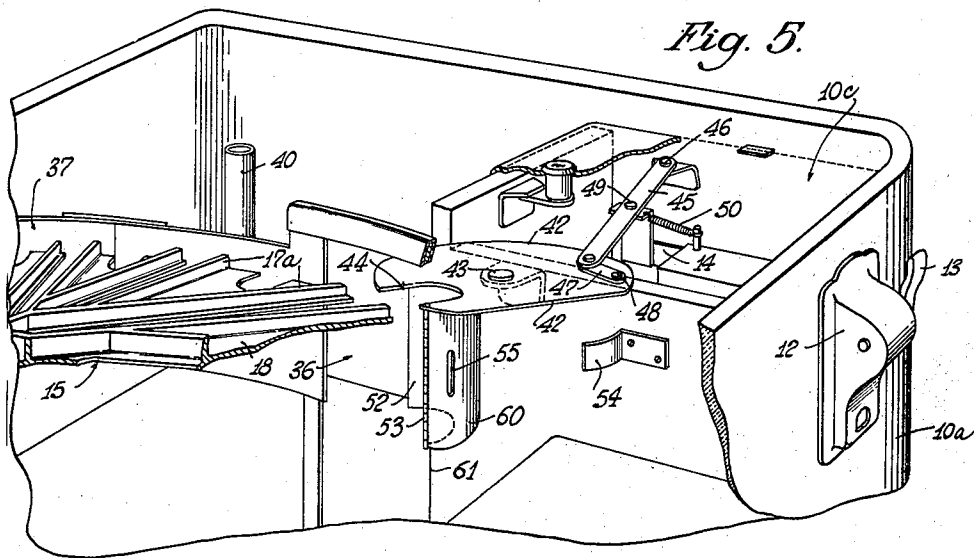
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2 Sheets-Sheet 2



Sidney Van Tuyl
INVENTOR

BY *Clarence E. Threedy*
HIS ATTORNEY.

UNITED STATES PATENT OFFICE

2,245,371

VENDING MACHINE

Sidney Van Tuyl, Berwyn, Ill., assignor to Claude
R. Kirk, River Forest, Ill.

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9 Claims. (Cl. 312—36)

This invention pertains to vending and dispensing apparatus and has as its principal object the provision of improved mechanism of this class in which objects having constricted portions analogous to the neck and mouth or rim portions of bottles, may be conveniently racked for cooperation with coin-controlled dispensing means arranged to permit manual removal of an article from the rack or carrier when a proper coin is deposited.

Another object is the provision of a simple yet highly efficient dispensing and vending mechanism particularly adapted for use with bottled goods and including a rotatable bottle carrier in which a plurality of bottles are disposed in radial slots or tracks around a center, there being a guard around the carrier preventing the removal of bottles therefrom at all points except a dispensing station and there being a coin-controlled dispensing device at the dispensing station into which a patron may slide a bottle from the carrier, the dispensing member thereafter being actuated by coin-controlled means to dispose the bottle in a position for removal from the machine.

Another object is the provision of dispensing mechanism including a rotatable article carrier arranged and constructed to carry bottles in radially extending tracks or yokes, the constricted or neck portions of the bottles fitting into the tracks or yokes, the bottles being moved radially into and out of the tracks or yokes, the carrier being mounted for rotative movement in a housing including a tank in which the lower portions of the bottles in the carrier are disposed for cooling engagement with ice, water, or other cooling means.

Other objects and novel aspects of the invention reside in certain details of construction, as well as the mode of operation, of the component parts of the illustrative embodiment described hereinafter in view of the annexed drawings, in which:

Fig. 1 is a perspective view of a preferred form of vending machine;

Fig. 2 is a fragmentary horizontal section to enlarged scale particularly showing the dispensing means;

Fig. 3 is a fragmentary vertical section through the machine;

Fig. 4 is a fragmentary top plan view of the magazine carrier or rack;

Fig. 5 is a fragmentary perspective of the carrier and dispensing mechanism; and

Fig. 6 is another fragmentary perspective of the magazine or rack mounting means and guard.

In a preferred embodiment, the improved vending machine includes a housing 10 (Fig. 1), the upper portion 10a of which constitutes a tank resting upon a lower pedestal portion 10b, the upper or tank portion being removable and provided with a normally closed spring door 11 through which the patron has access to the dispensing mechanism and through which the dispensed article is removed.

Conveniently located on a side of the upper portion 10a of the machine is a coin control device 12 including an operating handle 13 which may be depressed upon insertion of a proper coin in the coin receiving slot. Any type of coin control may be employed, and that which has been chosen for use with the present embodiment includes a drive member 14 (Fig. 2) which is reciprocated by operation of the handle 13.

Articles to be vended or dispensed are arranged in a rotatable magazine or carrier 15 (Figs. 3 and 4), which is of especial construction, and which includes a hub member 16 from which radiate a plurality of webbed portions 17 constituting radially extensive slots, grooves, or yokes into which the articles are moved for suspension between opposite parallel side portions of the grooves or yokes underlying the wider portions of the article, for example, the mouth or rim of a bottle, adjacent the constricted or neck portion thereof. Each of the radially extensive formations 17 may be said to constitute a track adapted to underlie the opposite sides of a rim or other sustaining part of an article, and each of these track or side portions 17 is provided with an upstanding collaterally extending flange formation 17a adapted to guide articles and also to limit the size of rim receivable therebetween.

The present embodiment of the carrier is preferably in the form of a casting which includes webbed portions 18 between and interconnecting the marginal portions of the several yokes or grooves, these webbed portions being cut away adjacent the peripheral extremities of the rack or casting to provide additional article receiving formations or yokes 19, thereby increasing the storage capacity of the carrier.

The magazine carrier 15 is mounted for rotation about a vertical axis in the tank 10a on a spindle 20 (Fig. 3) disposed within tubular extension 22 of the carrier 15, which in turn is disposed in a tubular well 21 centrally located in the tank and having its lower end portion 20' passed through a suitable boss in the bottom of the tank and engaged with a nut 23 with a thrust bearing 24 mounted at the shoulder provided by the low-

er end of tube 22, the upper end of the spindle being passed through a radial bearing 29 and a mounting plate 27 (Fig. 6 also) to which it is secured by a nut 28. The radial bearing 29 is mounted on the upper shouldered portion 25 of the hub 16 and supports the radial thrust weight of the carrier for free rotative motion.

The upper end or mounting plate 27 (Fig. 6) is aligned with the tubular well 21 by attachment to a pair of channel braces 30 extended from mounting plates in opposite corners of the tank.

As illustrated in Fig. 3, bottles 32 or analogous articles having constricted portions similar to the neck and mouth portions of the usual bottle, are slid serially into the several radial grooves in the magazine rack, the bottles or other articles being removable only by movement radially of the hub portion of the carrier and in no other manner. Means for preventing removal of articles from the carrier at any but a particular position, includes a cylindrical guard 35 (Fig. 6 particularly) mounted in a position to surround the carrier and interrupted to provide an opening 36 constituting a discharge station opposite which the several article grooves or tracks may be moved by rotation of the carrier to permit removal of articles. The guard includes a movable or gate section 37 hinged as at 38 to the remaining portions thereof and providing access to the several article receptacles for loading the same, suitable means such as the lock 39 being provided to prevent unauthorized access to the stock.

The arrangement of the carrier in the tank is such that ice or water may be retained in the tank beneath the articles in the carrier, the upper extremity of the spindle well 21 lying above the normal water level, which level is normally close enough to the carrier or magazine to assure that the lower portions of the articles will extend therein for maximum heat exchanging contact therewith, suitable overflow means 40 (Fig. 5 also) being provided to regulate the level.

Coin-controlled dispensing or article releasing means is situated in the upper tank section 10a in a compartment 10c opposite the opening 36 in the guard, this mechanism including a dispensing member in the form of a disc 42 pivotally mounted as at 43 for rotation about an axis parallel to that of the carrier, and having an article receiving formation or yoke 44 communicating into its periphery and of a size to receive an article from one of the tracks or yokes in the magazine carrier when the dispensing member 42 is turned into a position to align the receiving yoke 44 thereof with one of the tracks or grooves in the carrier, a bottle or other article being transferred manually by sliding from the magazine yoke into the dispensing yoke.

Means for moving the dispensing member 42 back and forth into and out of alignment with the magazine yokes, includes a lever 45 pivoted as at 46 to a suitable bracket in the compartment 10c and pivotally joined at its opposite end by a link 47 which is connected as at 48 eccentrically of the mounting 43 so that movement of the lever 45 back and forth will oscillate the disc 42 from the normal article receiving position shown in Fig. 2 into the dotted line position wherein the article in yoke 44 will be substantially in alignment beneath the article retrieving door 11 in the top of the machine.

The carrier 42 is disposed in its normal position through coaction with the coin control 12 and the pivotal connection 49 of the lever 45 with the reciprocable member 14 of the coin control, the

member 14 being disposed in normal position by spring means 50, which position corresponds to the normal article receiving position of the dispensing disc 42. When a proper coin is inserted in the control device, the lever 13 may be depressed to effect rearward movement of the member 14 and a consequent pivoting of the lever 45 into the dotted line position, which in turn rotates the disc 42 into dispensing position to turn the article receiving yoke 44 away from the magazine and guard so that the article may be removed.

In order to assure that the patron will receive the article for which he has paid, means are provided for ejecting the article from the dispensing disc as soon as the latter moves into dispensing position, this means including a curved ejecting apron 52 (Figs. 2, 3, 5) which is hingedly mounted as at 53 to the underside of the dispensing disc 42 and which is urged into a normal position behind an article in the receiving yoke 44 of the disc, as seen in Fig. 5, for example, by suitable spring means 53a coacting with the hinge means thereof. Means for effecting ejecting movement of the apron includes a stationary bracket mounted on a wall of the compartment 10c and having an offset 54 positioned to engage in a slot 55 in a guard 60 when the disc moves toward dispensing position to pivot the apron into the dotted line position seen in Fig. 2 for the purpose of ejecting an article from the yoke 44 in the carrier onto the bottle receiving shelf 61 (Figs. 3 and 5). By this arrangement the danger of the disc 42 being restored and latched in normal article receiving position upon release of the coin control handle 13, without the customer's first having removed the bottle, is avoided.

In operation, the tank portion 10a is filled with ice and preferably a quantity of water as a heat exchanging means, the walls of the tank portion 10a being suitably insulated, and the articles or bottles 32 are slid into the various yoke or article receiving formations 17 and 19 in the carrier 15, the guard gate 37 being opened for this purpose, and the dispensing disc 42 being normally disposed as seen in Fig. 2. A variety of articles or bottled goods such as carbonated beverages or the like may be disposed in the carrier, and the patron by raising the door 11 may rotate the carrier or magazine 15 until a desired article 32 is brought into position opposite the discharge station 36 and the article receiving yoke 44 of the disc 42, whereupon the patron will slide the bottle into the yoke 44 and then deposit a coin in the coin control device 12 and depress the lever 13, effecting movement of the disc operating lever 45 with a consequent rotation of the dispensing disc 42 into dotted line position, the ejecting apron 52 engaging the offset arm 54 and being pivoted thereby to slide the bottle out of the yoke where it will be accessible to the patron for removal through the opening of the door 11. When the handle 13 is released, the control means 12 will restore the disc 42 to normal position with the article receiving formation 44 thereof in alignment to receive another article from the carrier.

The advantages in simplification and efficiency of the foregoing mechanism are obvious, it being apparent that there are no complicated mechanisms to increase the cost of production or cause service troubles, and it being further apparent that the arrangement lends itself admirably to the accommodation and cooling of bottled goods of all kinds, the device, however, not being re-

stricted to articles of this class since any article suitably constricted to slide into the article receiving formations 17 or 19 of the magazine carrier may be dispensed with equal facility whether or not the cooling or refrigerating means is employed. Moreover, the arrangement permits selective operation of the magazine without the intervention of complicated mechanisms, and in addition, the device is adapted for coaction with any suitable type of coin control device. These and other advantages and objects of the invention may be accomplished by other forms of construction than that described in detail herein for purposes of illustration, and the invention as defined in the appended claims is intended to include all equivalent arrangements fairly coming within the scope of said claims.

Having thus described my invention, what I claim as new and desire to protect by Letters Patent is:

1. A vending machine comprising a housing, an article carrier arranged for rotative movement about a vertical axis in said housing, said carrier having a plurality of radially extensive slot formations therein opening into the periphery thereof and into which articles having constricted portions may be slid for support thereon, guard means extending around said carrier throughout a predetermined portion of its periphery to prevent removal of articles radially out of said slots, the remaining unguarded portion about said carrier constituting a dispensing station, and dispensing means including a dispensing member arranged for oscillation about a vertical axis opposite said dispensing station and having a slot formation opening radially therefrom for alignment with a slot formation in said carrier, means normally urging the slot formation in said dispensing member into radial alignment with a slot formation in said carrier to receive an article therefrom, said article being irremovable from said dispensing member when the same is in normal position, and coin-controlled means for moving said dispensing member out of normal position into dispensing position wherein an article may be removed therefrom, and ejecting means coacting with said dispensing member to automatically eject an article therefrom upon movement thereof toward dispensing position.

2. In a vending machine, in combination, article dispensing mechanism including a dispensing member arranged for oscillatory movement about a vertical axis, said member having an article receiving slot communicating into the periphery thereof, means urging said dispensing member into a normal position, an article magazine positioned opposite said dispensing member and arranged and constructed to carry articles which may be removed therefrom radially into said article receiving slot of the dispensing member when the latter is in said normal position, and coin-controlled means for moving said dispensing member out of normal position into a dispensing position wherein said slot is unobstructed so that an article may be removed therefrom.

3. In a vending machine, in combination, article dispensing mechanism including a dispensing member arranged for oscillatory movement about a vertical axis, said member having an article receiving slot communicating radially into an edge thereof, means urging said dispensing member into a normal position, an article maga-

zine positioned opposite said dispensing member and arranged and constructed to carry articles for removal therefrom by movement radially into said article receiving slot of the dispensing member when the latter is in said normal position, and coin-controlled means for moving said dispensing member out of normal position into a dispensing position wherein an article may be removed therefrom, and ejecting means coacting with said dispensing member and stationary operating means engaged thereby when said dispensing member is moved into dispensing position for movement into engagement with an article in said article receiving slot to eject the same therefrom prior to restoration of said dispensing member to said normal position.

4. In a vending machine, in combination, dispensing mechanism including a dispensing member arranged for oscillation about a vertical axis and having an article receiving slot opening radially into an edge thereof, means urging said dispensing member into a normal position, and article storage means including a carrier arranged for movement about a vertical axis adjacent said dispensing member and having article receiving formations thereabout arranged and constructed for movement of articles in a radial direction into and out of the same, said carrier being movable to align an article with said article receiving slot in the dispensing member for movement of said article into said receiving slot, the spacing of said dispensing member relative to said carrier being such that said article cannot be removed from the receiving slot so long as the dispensing member remains in said normal position, and coin-controlled mechanism coacting with said dispensing member to move the same out of normal position into a dispensing position wherein said article may be removed from the receiving slot, and guard means for said carrier and preventing removal of articles therefrom except into the receiving slot as aforesaid.

5. In a vending machine, in combination, dispensing mechanism including a dispensing member arranged for oscillation about a vertical axis and having an article receiving slot opening radially into a peripheral extremity thereof, means urging said dispensing member into a normal position, and article storage means including a carrier arranged for movement about a vertical axis adjacent said dispensing member and having article receiving formations thereabout arranged and constructed for movement of articles in a radial direction into and out of the same, said carrier being movable to align an article with said article receiving slot in the dispensing member for movement of said article into said receiving slot, the spacing of said dispensing member relative to said carrier being such that said article cannot be removed from the receiving slot so long as the dispensing member remains in said normal position, and coin-controlled mechanism coacting with said dispensing member to move the same out of normal position into a dispensing position wherein said article may be removed from the receiving slot, and means including stationary means adjacent said dispensing member, a movable article ejecting member carried by said dispensing member and caused to move by engagement with said stationary means when said dispensing member is moved a certain distance toward dispensing position to effect ejection of said article from said receiving slot, and means guarding said carrier

to prevent removal of articles therefrom except into the dispensing member as aforesaid.

6. In a vending machine, in combination, an article carrier in the form of a rack arranged for rotation about a vertical axis, said rack having article receiving grooves extending radially thereabout and opening into the periphery thereof, the rack being spaced vertically from adjoining parts of said machine to permit articles having constricted body portions to fit into said grooves in suspended condition so that articles may be inserted and removed therefrom by movement radially with respect to the carrier, means surrounding said carrier and providing a guard throughout a predetermined portion of its peripheral extent to prevent removal of articles from the carrier, said guard providing an opening opposite the remaining peripheral extent of the carrier, and dispensing means including a plate mounted for rotative movement about a vertical axis opposite the open portion of said guard, said plate being provided with a radially aligned article receiving notch for suspension of articles as aforesaid and which is adapted to be aligned radially with respect to the pivotal axis of said carrier when the plate is in a normal position such that an article may be transferred from the carrier into the aligned notch of the dispensing plate, the clearance between said dispensing plate and carrier being such that the transferred article cannot be removed from the notch so long as the dispensing plate is in said normal position, and coin-freed mechanism normally latching said dispensing plate in normal position, and mechanism coacting with said coin-freed mechanism for moving said dispensing plate out of normal position into a dispensing position in which said article may be removed from the receiving notch.

7. In a vending machine of the type including a rotatable magazine from which articles are adapted to be removed by movement radially out of the magazine, dispensing mechanism including an oscillable dispensing member arranged opposite said magazine and having an article receiving formation adapted to be moved by movement of the dispensing member into and out of substantially radial alignment with said magazine to receive articles from the magazine when said dispensing member is in a normal position, said articles being removable from said dispensing member when said article receiving formation is moved into a dispensing position, coin-controlled mechanism for oscillating said dispensing member in dispensing operation, and ejecting means including an ejecting member pivotally mounted on said dispensing member for movement from a normal ineffective position into engagement with an article in said receiving formation to eject said article from said formation, means yieldingly urging said ejecting member into normal ineffective position, and means engaged with said ejecting member to move the same in ejecting operation when said dispensing member is moved toward dispensing position.

8. In a vending machine for bottled goods, a tank, a bottle carrier mounted to rotate about a vertical axis in said tank and having a plurality of radially extending tracks, the opposite sides of each track being adapted to underlie the rim portion of the neck of a bottle, said tracks opening into the peripheral edge of the bottle carrier, means providing a shield fitting closely around the peripheral edge of the bottle carrier to prevent removal of bottles therefrom, said shield providing an opening constituting a dispensing station from which a bottle may be removed radially from any track aligned with said station, and dispensing means including a member mounted to oscillate about an axis parallel to the axis of rotation of the bottle carrier, said member having a radially disposed portion positioned close to said periphery of the bottle removed from any of said tracks as aforesaid member having a slot in said radially disposed portion into which the neck portion of a bottle removed from any of said tracks as aforesaid may be received and supported, said bottle carrier and oscillable member being spaced from the floor of the tank so that bottles are suspended thereby, mechanism for oscillating said dispensing member to move the slot therein into and out of a position of alignment with a track at said station, whereby a bottle carried by said oscillable member is removable therefrom when the slot in said dispensing member is moved a predetermined amount out of alignment by operation of the oscillating mechanism.

9. In a vending machine of the class described including a rotatable bottle carrying magazine having openings spaced thereabout in the direction of rotation thereof through which bottles may be removed from the magazine, the combination with said magazine of a dispensing device in the form of a member mounted to oscillate about an axis parallel to the axis of rotation of the magazine, said member being provided with a bottle receiving formation which may be aligned radially with the magazine to receive a bottle from the latter, means for preventing the removal of bottles from the magazine and dispensing device except by transfer into the bottle receiving formation of the oscillable member as aforesaid, said oscillable member being movable out of alignment with the magazine into a dispensing position where the bottle may be removed from said receiving formation therein, means for moving the oscillable member into aligned and dispensing positions as aforesaid, and ejecting means movable with said oscillable member and coacting with relatively stationary means adjacent said dispensing position to effect movement of the ejecting means to dislodge a bottle from the dispensing device as the same moves into said dispensing position, and means for receiving a bottle ejected as aforesaid.

SIDNEY VAN TUYL.