Nov. 24, 1964 LE ROY C. VAN BRUNT 3,158,289

APPARATUS FOR DISPENSING ARTICLES ALTERNATELY FROM TWO ADJACENT COLUMNS

Filed Jan. 14, 1958 3 Sheets-Sheet 1

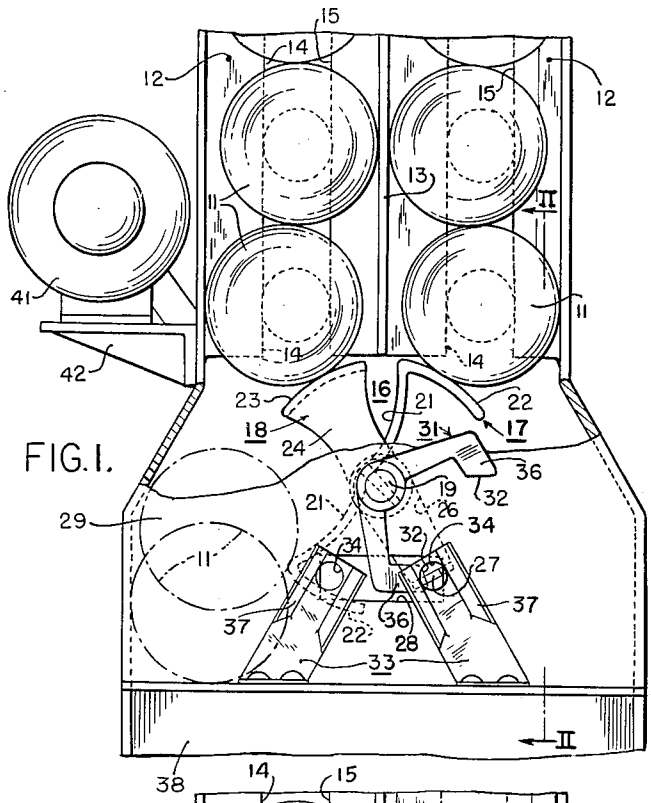


FIG. 1.

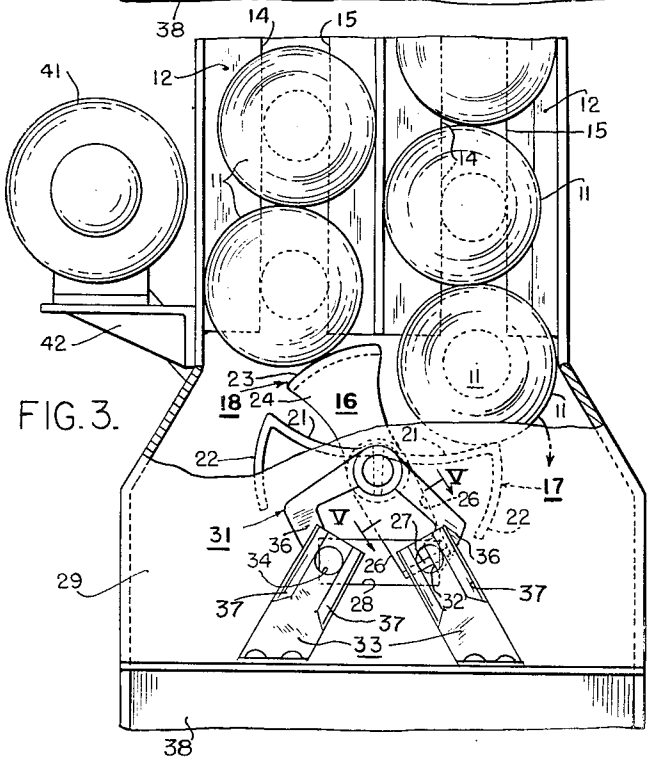


FIG. 3.

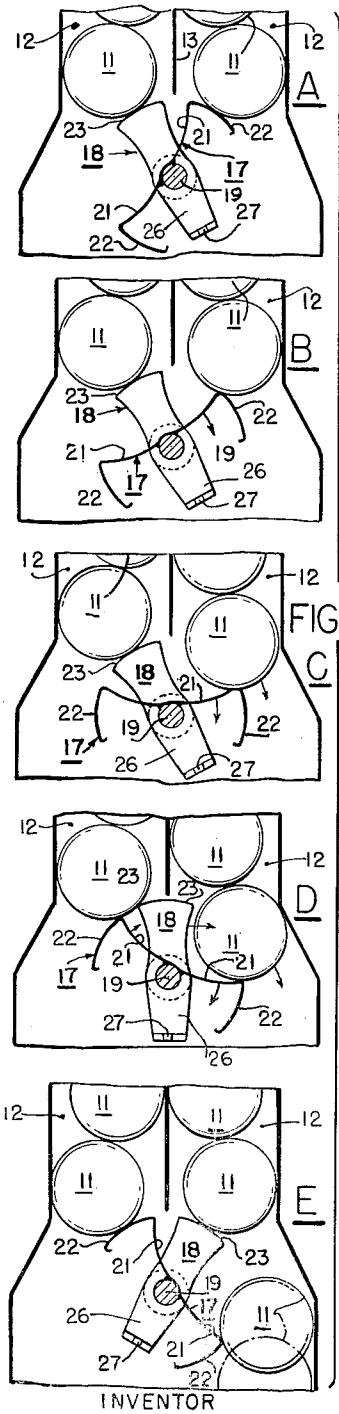


FIG. 9.

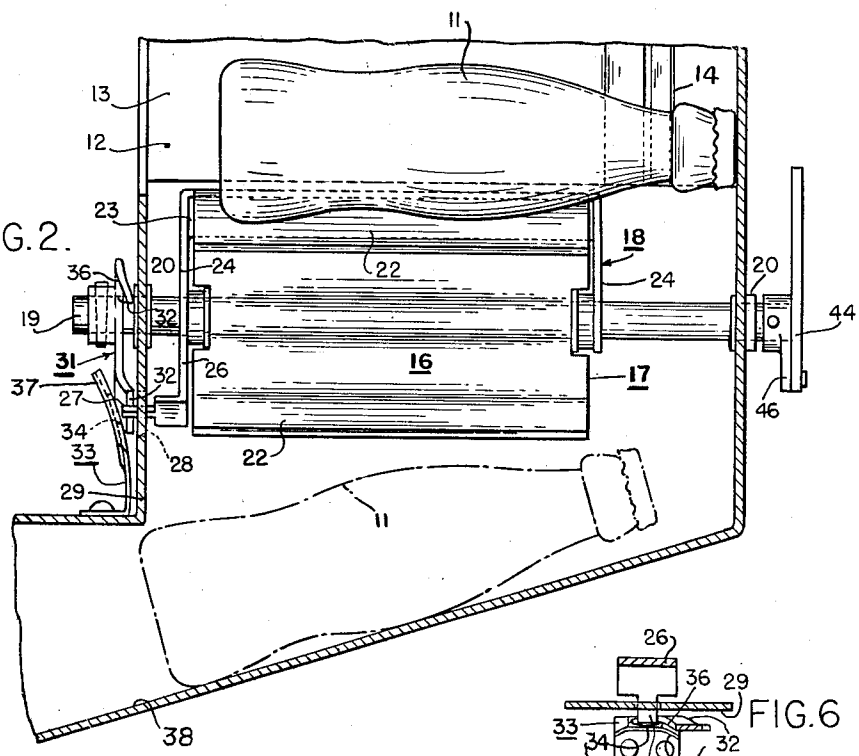
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APPARATUS FOR DISPENSING ARTICLES ALTERNATELY FROM TWO ADJACENT COLUMNS

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FIG.2.



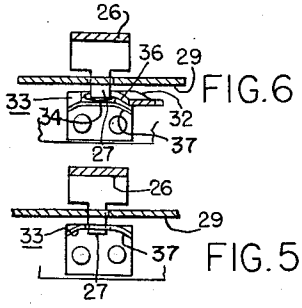


FIG.6

FIG.5.

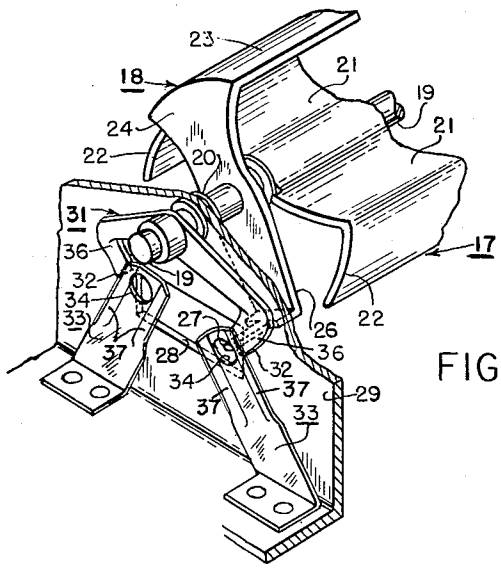


FIG.7.

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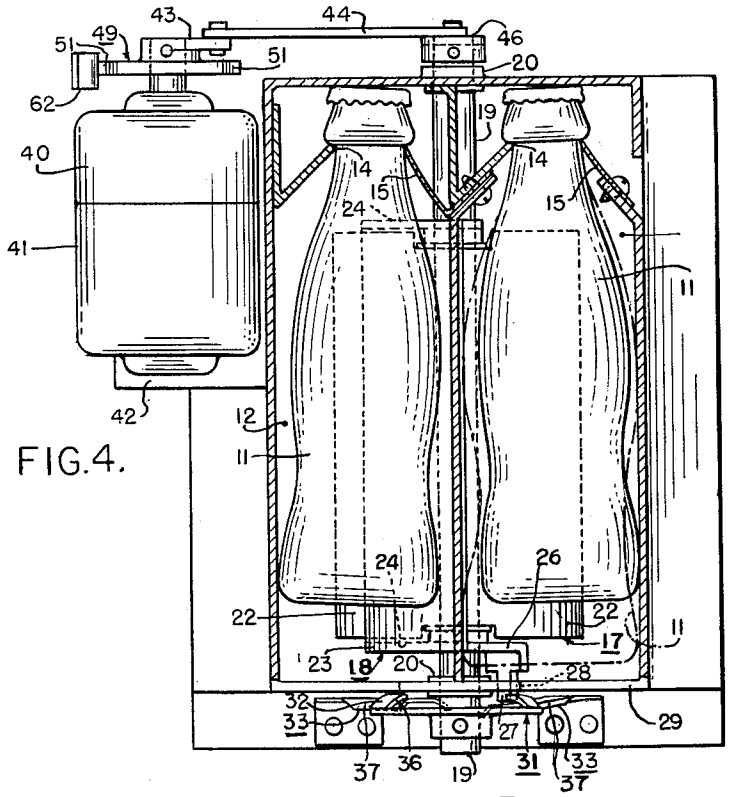


FIG.4.

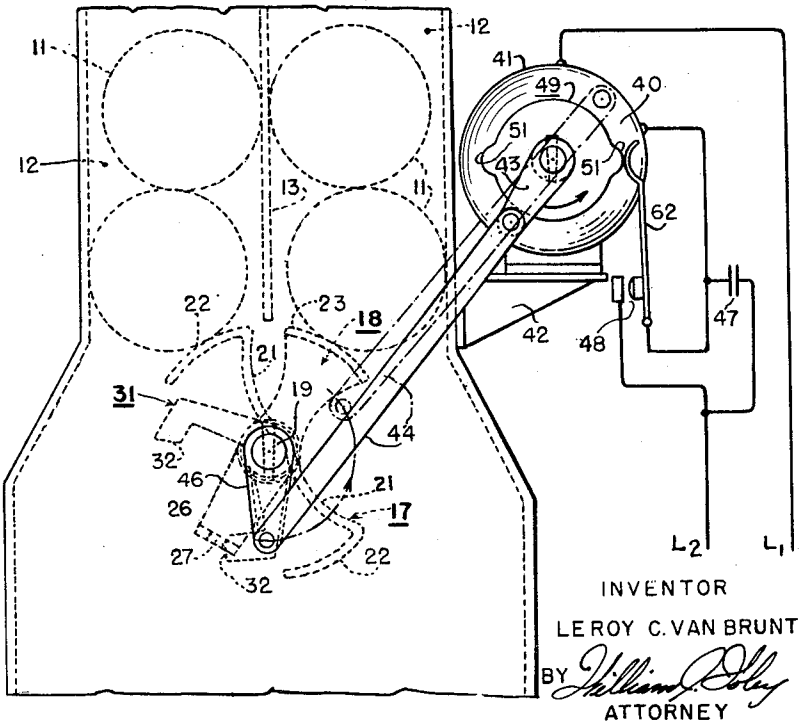


FIG.8.

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United States Patent Office 3,158,289 Patented Nov. 24, 1964

3,158,289

APPARATUS FOR DISPENSING ARTICLES ALTERNATELY FROM TWO ADJACENT COLUMNS

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Filed Jan. 14, 1958, Ser. No. 708,778
11 Claims. (Cl. 221—116)

This invention relates to dispensing apparatus and more particularly to an improved mechanism for dispensing cylindrical articles or other elongated articles of generally circular cross section from storage compartments or magazines. This invention is an improvement upon the dispensing apparatus described and claimed in Patent 3,107,030, granted October 15, 1963, and assigned to the same assignee as this application.

The invention is particularly applicable to releasing mechanisms for use in soft drink bottle vending machines that are adapted to deliver a single bottle upon insertion of a coin or check into the machine. Bottle vending machines generally contain a refrigerated store of bottles that are disposed in stacked rows, or columns, within a compartmented magazine. This invention provides an improved mechanism for individually releasing, or dispensing, stored bottles from the lower end of the columns, or rows, of bottles.

While the invention will be described with reference to a bottle vending machine, it is to be understood that the principles and features of the invention are equally applicable to machines for dispensing other articles, particularly elongated articles of generally circular cross section, such as cans.

Briefly, the preferred embodiment of the invention herein disclosed comprises a mechanism, or system, of oscillatable members disposed at the lower ends of two side-by-side article columns or article containing compartments, which mechanism, when activated either manually or by means of an electric motor or the like, alternately delivers a single article from each of the columns or compartments.

It is an object of this invention to effect dispensing of the articles in such a manner as to minimize dropping, bumping, or jarring of the articles so as to reduce the likelihood of the articles being damaged or broken.

It is another object of this invention to provide a delivery or dispensing mechanism that is capable of handling articles of varying sizes, i.e., varying lengths and diameters, without adjustments being made to the mechanism or to the compartment structure associated with the mechanism.

Other objects, features and advantages of the invention will appear from the following detailed description of the invention, of which the accompanying drawings form a part and wherein:

FIG. 1 is a fragmentary front elevational view of a two-compartment dispenser embodying this invention, and from which portions of the dispenser have been broken away to clarify the illustration;

FIG. 2 is a fragmentary vertical elevational view of the dispenser, taken as indicated by line II—II in FIG. 1;

FIG. 3 is a view similar to FIG. 1 but showing the article-releasing mechanism in a different position in its operating sequence;

FIG. 4 is a horizontal sectional view of the dispenser, taken from above with the elements of the article-releasing mechanism in the same positions shown in FIGS. 1 and 2;

FIGS. 5 and 6 are enlarged fragmentary views of a latch mechanism employed in the dispenser, which views are taken generally as indicated by the line V—V in FIG. 3;

FIG. 7 is a fragmentary perspective view of the bottle-releasing mechanism;

FIG. 8 is a fragmentary rear elevational view of the dispenser incorporating a schematic illustration of an electrical control circuit for the apparatus; and

FIG. 9 is a series of schematic illustrations showing a bottle being dispensed.

Referring particularly to FIG. 1, the invention is shown applied to dispensing apparatus employing a magazine for storing two columns of vertically stacked bottles 11 in a pair of side-by-side compartments 12 that are separated by a partition 13. Each compartment 12 is open at the front to receive the bottles 11 with their neck, or cap, ends projecting rearwardly into retaining channels 14 at the rear of each compartment 12 (see FIG. 4).

The dimensions of the compartments 12 are chosen to accommodate, in breadth and length, the largest size bottle intended to be dispensed by the apparatus. Most soft beverage bottles in commercial use today have identical cap-end configurations and the channels 14 are capable of positioning or holding all bottles with their cap ends closely adjacent the rear wall of each compartment 12, regardless of the diameter and/or length of the bottles. In FIG. 4, conventional size bottles 11 are illustrated in full lines, whereas an oversize bottle is indicated in the right-hand compartment by means of dot and dash lines.

Each channel 14 has one wall 15 thereof made of resilient material that is capable of flexing to permit the cap ends of the bottles to be shoved into the channel by the serviceman filling the compartment 12. The channels 14 loosely grip the neck ends of the bottles 11 and permit the bottles to descend vertically under their own weight as the lowermost bottles are dispensed, or released, from the lower ends of the compartments 12. The retaining channels 14 form the subject matter of my copending application Serial No. 737,265, filed May 23, 1958, and entitled "Dispensing Apparatus," now Patent No. 2,943,900, wherein a full and detailed description thereof can be found.

Referring again to FIG. 1, the lower end of each compartment 12 is open to permit egress of bottles from the compartments. Disposed directly beneath the compartments is a releasing mechanism, identified generally by the reference number 16, that is capable of releasing bottles individually and alternately from each of the two compartments 12. The principal components of the releasing mechanism 16 are a first oscillatable member 17, which will be referred to as the "releasing member," and a second oscillatable member 18, which will be referred to as a "holding" or "stop member." The releasing member 17 is secured to a horizontal driving shaft 19 that extends from front to rear beneath and centrally of the horizontal extent of the lower ends of the two compartments 12. As shown in FIGS. 1 and 2, the shaft 19 is preferably disposed parallel to and directly beneath the lower edge of the partition 13 that separates the bottle storage compartments 12. The shaft 19 is supported for rotation about its axis on front and rear bearing supports 20 which are carried, in any suitable fashion, by the magazine structure.

The bottle-releasing member 17 is adapted to undergo oscillating movement to alternately release articles from the storage compartments 12 and consequently has a projecting portion, or member, thereof disposed beneath the open end of each of the compartments. Each projecting portion of the releasing member 17 is shaped to form two pairs of bottle engaging surfaces 21 and 22 on opposite sides of the shaft 19. The surfaces 21 and 22 extend from front to rear of the dispensing apparatus a distance sufficient to comfortably engage the major body areas of the bottles 11. The inner surfaces 21 extend generally

radially outward from the shaft **19** and have a somewhat concave configuration. The outer surfaces **22** are joined to the inner surfaces **21** and are preferably arcuate in configuration and shaped like circumferential segments of a cylinder having an axis that is common to the axis of the shaft **19**. The bottle-releasing member **17** is movable from the position shown in FIG. 1, in which its right-hand bottle engaging surface **22** is in contact with the lowermost bottle in the right-hand compartment **12** to prevent the delivery of bottles from the right-hand compartment, in a clockwise direction to an opposite extreme position, in which the left-hand bottle engaging surface **22** is in a similar position engaging the lowermost bottle in the left-hand compartment to prevent the delivery of bottles from the left-hand compartment. Because of the relative positions of the bottle engaging surfaces **22**, one surface **22** is in a position to prevent delivery of bottles from one of the compartments **12** while the other surface **22** is in a lower position in which it permits the delivery of a bottle from the compartment beneath which it is located. (See FIG. 1 wherein the delivery movements of one bottle **11** are illustrated in dot and dash lines.)

Since, in most vending machine applications, the releasing mechanism is required to dispense but one bottle, or other article, at any one time, the mechanism **16** here disclosed requires another member that cooperates with the releasing member **17** to hold back, or stop, delivery of all of the bottles that are in the compartment above the lowermost bottle being dispensed. This holding function is performed by the holding member **18** which has a bottle engaging surface **23** thereon which serves both of the compartments **12**. The surface **23** is similar to the outer bottle engaging surfaces **22** on the bottle releasing member **17** in that it too is preferably shaped as a circumferential segment of a cylinder having an axis that is common to the axis of the shaft **19**.

The holding member **18** is provided with radially extending arms **24** at the front and rear thereof that are journalled on the shaft **19** in such a manner that the member **18** receives support from, but is movable circumferentially on, the shaft **19** (see FIG. 2). The holding member **18** need not necessarily move about the same axis as releasing member **17** and may, therefore, be supported by a separate pivotal support whose axis is either the same as or spaced from the axis of shaft **19**. An improved vending action is obtained, however, when the holding member **18** moves about the axis of shaft **19**, as will hereinafter be explained. Moreover, mounting the holding member **18** on the same shaft that drives the releasing member **17** simplifies the mechanism and reduces its manufacturing cost.

The bottle-holding member **18** is movable from the position shown in FIGS. 1 and 2, wherein it is beneath the open lower end of the left-hand bottle storage compartment **12**, to a similar position approximately 80 degrees clockwise therefrom in which it is beneath the lower end of the right-hand storage compartment **12**. Movements of the bottle-holding member **18** are effected through an actuating arm **26** formed integrally with the forward arm **24** of the holding member. The actuating arm **26** projects downwardly and has a finger **27** thereon projecting forwardly through a slot **28** in a wall **29** enclosing the front of the bottle-releasing mechanism **16**. The ends of the slot **28** act as stops for the finger **27** and determine the range of movement of the bottle holding member **18**.

The holding member **18** is driven in a sequence of movements that are related to movements of the releasing member **17**. While a separate drive system can be employed to move holding member **18** relative the releasing member **17**, the holding member is preferably driven from the releasing member drive, as shown in the drawings, by means of a lost motion drive connection between the driving shaft and the arm **26** attached to the holding

member **18**. This lost motion drive connection is adapted to cause movement of the holding member **18** from a position beneath one bottle storage compartment **12** during the latter portion of the movement of the bottle-releasing member **17** that permits a bottle to be dispensed from that other compartment **12**. In other words, the holding member **18** is moved into position beneath the compartment from which a bottle is being released to hold and support the column of bottles (with the exception of the lowermost bottle) and prevent the delivery of more than one bottle from a compartment at any one time. The drive connection employs a yoke **31** secured to the forward end of shaft **19** and having a pair of spaced opposed fingers **32** positioned to engage the forwardly projecting finger **27** on the holding member actuating arm **26** (see FIGS. 1 to 4).

It can be readily understood that, as shaft **19** is oscillated to move the bottle-releasing member **17** from one of its extreme positions to the other, the fingers **32** of the yoke **31** will alternately engage finger **27** and move the bottle-holding member **18** from one of its extreme positions to the other. Since the yoke fingers **32** are spaced from one another, the bottle-releasing member **17** can be moved through a predetermined arc without causing movement of the bottle-holding member **18**, but during the latter portion of the movement of the member **17**, one of the yoke fingers **32** will engage finger **27** and move the member **18** in the same direction as the member **17** is being moved.

It will be noted that the bottle-engaging surfaces **22** on the releasing member **17** and the bottle-engaging surface **23** on the holding member **18** all have substantially the same radius of curvature and are adapted to move, or swing, about the same axis, i.e., the axis of shaft **19**. Stated differently, these surfaces are formed as if they were circumferential segments of a common cylinder. This feature of the invention provides certain advantages that were not present in prior art releasing mechanisms. For example, when either the releasing member or the holding member **18** is moved, there is no tendency to shift the bottles **11** upwardly within the compartments **12**; in other words, there is no lifting of the bottle stacks such as would impose additional loads on the releasing mechanism during a dispensing operation. Also, since the surface **23** is located substantially the same radial distance from the axis of shaft **19** as are the surfaces **22**, there is a gentle shifting of the weight of the column of bottles from the holding member **18** to the releasing member **17** as the holding member is moved from beneath one stack of bottles to a position beneath the other stack of bottles. It is permissible for the surfaec **23** to be located a slightly greater distance from the shaft **19** than the surfaces **22** without seriously impairing the bottle-handling characteristics of the releasing mechanism **16**, inasmuch as a slight dropping of the bottles from the surface **23** to the surface **22** can be tolerated. With this improved mechanism, all lowering of the stack of bottles takes place while the lowermost bottle is supported by the downwardly moving surfaces **21** and **22**. This assures gentle handling of the bottles and their contents, and avoids free, or unrestrained, dropping of the bottles during the releasing operation.

Because the bottle-releasing member **18** is driven through a lost motion connection, and, therefore, could be manually moved during certain periods in the dispensing sequence by a person seeking to surreptitiously remove a bottle from the dispensing apparatus, the dispensing mechanism incorporates means for latching the holding member **18** in either of its extreme positions. This latching means comprises a pair of resilient catch leaves **33** mounted, in cantilever fashion, at the front of the releasing mechanism. Each leaf **33** has an opening member actuating arm **26** projects when the holding **34** therein through which the finger **27** on the holding

member 18 is in one or the other of its extreme positions. The catch leaf 33 which is holding finger 27 in its opening 34 is released to permit movement of the holding member 18 when that leaf 33 is engaged by the driving yoke 31. Each finger 32 of the yoke 31 has a cam-like surface 36 on the forward face thereof that cooperates with bent edge portions 37 on the catch leaves 33 to lift the leaves 33 forward (toward the observer when the mechanism is viewed as in FIGS. 1 and 3) and release the finger 27. A releasing sequence for the right-hand catch leaf 33 is progressively illustrated in FIGS. 5 and 6. It will be noted that the finger 27 is held by one of the catch leaves 33 until the drive yoke 31 is moved into position to effect movement of the holding member 18 through the finger 27, and that the finger 27 is than freed to permit it to be moved to its other extreme position at the opposite end of slot 28.

It should be apparent that other forms of releasable latch mechanisms could be employed for holding the holding member 18 in its two extreme positions, and the particular latch means shown and described should be considered as illustrative. Moreover, the holding member 18 can, if desired, be driven through a positive drive system, as opposed to a lost motion system, in which case the latching means could be eliminated entirely.

Operation

To release one bottle from one of the storage compartments 12 requires that the shaft 19 be turned through an angle of approximately 140 degrees. For example, with the elements of the releasing mechanism in the position shown in FIG. 1, clockwise rotation of the shaft 19 through approximately 140 degrees will effect release of the lowermost bottle in the right-hand storage compartment 12. This releasing action is illustrated schematically in FIG. 9. Illustration 9A corresponds to the "rest" or "start" position for the releasing mechanism 16, in which the releasing member 17 and the holding member 18 are in the same positions in which they are shown in FIGS. 1 and 2. Initial movement of the releasing member 17 effects a lowering of all of the bottles 11 in the right-hand storage compartment 12 (Illustration 9B). During this initial movement, the holding member 18 remains stationary and supports, or holds back, the bottles in the left-hand compartment 12. Continued clockwise rotation of the releasing member 17 (Illustration 9C) brings the right-hand yoke finger 32 into contact with the right-hand catch leaf 33 (FIG. 7) permitting finger 27 to be moved by the yoke finger 32 (see FIG. 3). The holding member 18 is then moved clockwise with the releasing member 17 (Illustration 9D) to enter the space between the lowermost and next lowermost bottles 11 in the right-hand storage compartment 12 to support and hold back all of the bottles in the right-hand compartment with the exception of the lowermost bottle. The left-hand bottle supporting surface 22 of the releasing member 17 is moved upwardly to substantially the same elevation as the holding member surface 23 to provide support for the bottles 11 in the left-hand compartment 12 as the holding member 18 is moved from beneath the left-hand compartment. A bottle is released from the right-hand compartment and falls on the chute 38, as shown in FIG. 2, when the releasing member 17 and holding member 18 assume the positions shown in Illustration 9E.

When the holding member 18 is moved from a position beneath the left-hand compartment 12 to a position beneath the right-hand compartment 12, the finger 27 is moved behind the opening 34 in the left-hand catch leaf 33. With the holding member in this position, movement of the yoke finger 32 away from the finger 27 will permit the left-hand catch leaf 33 to move over the finger 27 and prevent the actuating arm 26 from being moved until it is released by the left-hand yoke finger 32 as the releasing mechanism is moved counterclockwise during the next releasing operation.

Oscillation of the shaft 19 can be effected by a manually actuated mechanism or, as shown in the drawings, by an electrically energized drive system. Referring particularly to FIGS. 4 and 8, the drive system there illustrated comprises an electric motor 41 and a speed reducer, or gear box 40, both of which are mounted on a bracket 42 carried by the side wall of one of the storage compartments 12. The motor 41, through the speed reducer 40, drives a crank arm 43 which is connected to a connecting link 44 pivotally attached to another crank arm 46 secured to the rear end of the releasing mechanism shaft 19. The crank arm 46 is slightly longer than the crank arm 43 and the relative lengths of these arms are so proportioned that, as the motor crank arm 43 is swung through an arc of 180 degrees, the crank arm 46 is driven through an arc of approximately 140 degrees. Moreover, the arrangement of the crank arms 43 and 46 and their connecting link 44 is such that the crank arm 46 is not driven over-center, so that the crank arm 46 is oscillated through this 140 degrees arc as the crank arm 43 is rotated through a complete circle in one direction. Thus, 180 degrees of movement of the crank arm 43 actuates the vending mechanism to cause the release of one bottle from one of the bottle storage compartments 12, and a subsequent half revolution of the crank arm 43 effects the release of a single bottle from the other storage compartment 12.

A simplified electrical control circuit for the motor 41 is shown in FIG. 8, which circuit is adapted to energize the motor 41 and to thereafter deenergize the motor 41 when the crank arm 43 has been swung through an arc of 180 degrees. The conductors identified as L–1 and L–2 in FIG. 8 represent an electrical supply line. Conductor L–1 is connected directly to one side of the motor 41. Conductor L–2 is connected to the other side of motor 41 but has a pair of switches 47 and 48 therein which are in parallel with one another. Switch 47 is adapted, when closed to establish a circuit through the motor 41 and effect initial energization of the motor 41. The switch 47 can be manually closed or, if this invention is employed in a coin controlled vending machine, the switch 47 can be a part of the coin control mechanism. In the latter case, the switch 47 is closed in response to the insertion of a proper coin into the machine. Switch 47 need be closed only temporarily since, shortly after the motor 41 commences to run, switch 48 is closed to establish a holding circuit to the motor 41 that is broken only when the motor 41 has operated sufficiently to drive the vending mechanism through a bottle releasing operation. The switch 48 is actuated by means of a cam 49 mounted on the shaft of the speed reducer 40 for rotation with the crank arm 43. The cam 49 has two diametrically disposed lobes on the periphery thereof which engage an actuating arm 52 forming a part of the switch 48. As can be seen in FIG. 8, the arrangement is such that each cam lobe 51 is adapted to move actuating arm 62 to a position to open switch 48 when that lobe 51 is driven into contact with arm 62. Shortly after the motor 41 is energized by switch 47, switch 48 closes and maintains an electrical circuit to the motor 41 until such time as the other cam lobe 51 engages the switch actuating arm 62 and opens switch 48. The motor 41 thereafter remains deenergized until such time as switch 47 is again closed to initiate operation of the motor 41 to drive the releasing mechanism 16 through another bottle-releasing operation.

From the foregoing it will be apparent this invention provides an improved mechanism for dispensing bottles or other articles from a storage magazine. While the invention has been described with reference to a magazine having but two storage compartments, it can be appreciated that the invention can be employed in dispensing apparatus wherein additional pairs of compartments are

arranged alongside of, or near, the two-compartment magazine described above. In such an application, a separate vending mechanism 16 would be provided for each pair of compartments, although all of the releasing mechanisms could, if desired, be driven from a single drive motor and the movements of the releasing mechanisms correlated to sequentially release bottles from the several storage compartments. It should also be apparent that the capacity of the storage compartments 12 can be increased by using any of the arrangements known in the prior art, such as by adding feeder compartments or racks to the exposed sides of the compartment walls, the contents of which feeder compartments or racks could be directed into the region of the dispensing mechanism 16, by means of which the dispensing of articles from all of the feeder compartments would be controlled.

It should also be pointed out that a bottle vending machine incorporating the releasing mechanism of this invention would normally be provided with an insulated enclosing cabinet having a refrigerating unit associated therewith. Such cabinet structures are well known in the art and have been omitted from this specification in the interest of simplifying the description.

Thus, while the invention has been described in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications without departing from the spirit thereof.

What is claimed is:

1. In a machine for dispensing elongated articles of generally circular cross section, a magazine for storing at least two separate columns of stacked articles, said magazine being open at its lower end to permit articles to be delivered therefrom, a releasing member disposed adjacent the lower end of said magazine and having a pair of article engaging surfaces disposed respectively beneath said article columns, said releasing member being supported for swinging movement about a horizontal axis for alternately raising and lowering said article engaging surfaces to deliver individual articles alternately from said columns, a holding member disposed adjacent the lower end of said magazine, said holding member having an article engaging surface and being supported for swinging movement about a horizontal axis whereby said surface can be positioned beneath either of said columns, said holding member being movable with respect to said releasing member, means for oscillating said releasing member, and means for driving said holding member in predetermined relation to movements of said releasing member, said last named drive means delaying removal of the said surface of said holding member from beneath one of said article columns until said releasing member is moved to a position in which the article engaging surface thereof which is beneath said one article column is raised to substantially the same elevation as said holding member surface whereby the weight of the articles in said one column is transferred gently to said releasing member from said holding member.

2. In a machine for dispensing elongated articles of generally circular cross section, a pair of side-by-side compartments for holding a plurality of articles to be dispensed, a first oscillatable member disposed adjacent the lower ends of the compartments and having a pair of article engaging surfaces disposed respectively beneath said compartments, said first oscillatable member being supported for swinging movement about a horizontal axis for delivering individual articles alternately from said compartments, a second oscillatable member disposed adjacent the lower ends of said compartments, said second oscillatable member having an article engaging surface and being supported for swinging movement about a horizontal axis whereby said surface can be positioned beneath either of said compartments, said second oscillatable member being movable with respect to said first oscillatable member, means for oscillating said first oscillatable member, and means for driving said second oscillatable member in predetermined relation to movements of said first oscillatable member, said last named drive means effecting movement of the said surface of said second oscillatable member from a position beneath one of said compartments to a position beneath the other of said compartments during the latter portion only of the movement of said first oscillatable member to the position in which it delivers an article from said other compartment.

3. In a machine for dispensing elongated articles of generally circular cross section, a pair of side-by-side compartments for holding a plurality of articles to be dispensed, a first oscillatable member disposed adjacent the lower ends of the compartments and having a pair of article engaging surfaces disposed respectively beneath said compartments, said first oscillatable member being supported for swinging movement about a horizontal axis for delivering individual articles alternately from said compartments, a second oscillatable member disposed adjacent the lower ends of said compartments, said second oscillatable member having an article engaging surface and being supported for swinging movement about the same axis as said first member, said second oscillatable member being movable with respect to said first oscillatable member the construction and arrangement being such that the said surface of said second member can be positioned beneath either of said compartments, means for oscillating said first oscillatable member, and means for driving said second oscillatable member in predetermined relation to movements of said first oscillatable member, said last named drive means effecting movement of the said surface of said second oscillatable member from a position beneath one of said compartments to a position beneath the other of said compartments during the latter portion only of the movement of said first oscillatable member to the position in which it delivers an article from said other compartment, whereby said second member prevents the delivery of the next article from said other compartment.

4. In a machine for dispensing elongated articles of generally circular cross section, a magazine for storing at least two separate columns of stacked articles, said magazine being open at its lower end to permit articles to be delivered therefrom, a releasing member disposed adjacent the lower end of said magazine and having projecting portions thereof disposed respectively beneath said article columns, said releasing member being supported for swinging movement about a horizontal axis for alternately raising and lowering the said projecting portions thereof to deliver individual articles alternately from said columns, a holding member disposed adjacent the lower end of said magazine, means supporting said holding member for swinging movement about the same axis as said releasing member and permitting said holding member to be positioned beneath either of said article columns, said holding member being movable with respect to said releasing member, means for oscillating said releasing member, and means for driving said holding member in predetermined relation to movements of said releasing member, said last named drive means delaying removal of said holding member from beneath one of said article columns until said releasing member is moved to a position in which the projecting portion thereof which is beneath said one article column is raised to substantially the same elevation as said holding member, whereby the weight of the articles in said one column is transferred gently to said releasing member from said holding member.

5. In a machine for dispensing elongated articles of generally circular cross section, a magazine for storing at least two separate columns of stacked articles, said magazine being open at its lower end to permit articles to be delivered therefrom, and mechanism positioned at the lower end of said magazine for releasing individual articles alternately from said columns, said mechanism including means defining three article engaging surfaces, said article engaging surfaces being formed as if they were circumferential segments of a common cylinder the axis

of which is horizontal and located beneath and midway of the horizontal extent of said two article columns, two of said article engaging surfaces being disposed respectively beneath said columns, means for simultaneously oscillating said two article engaging surfaces about the said cylinder axis between two extreme positions in which each of said two article engaging surfaces is alternately raised to prevent the delivery of an article from the article column above that surface and lowered to permit the delivery of an article from the article column above that surface, the construction and arrangement being such that articles are released alternately from said columns, the third of said article engaging surfaces being positioned above and between said other two surfaces and being supported for swinging movement about said cylinder axis from a position beneath one of said columns to a position beneath the other of said columns, said third surface being movable with respect to said first and second surfaces, and drive means interconnecting said third surface with said first two surfaces for alternately moving said third surface from its position beneath one of said columns to its position beneath the other of said columns in predetermined relation to movements of said first two surfaces, said drive means delaying removal of said third surface from beneath one article column until the one of said first two surfaces which is beneath said one column is raised to substantially the same elevation as said third surface, whereby the weight of the articles in said one column is transferred gently to said one surface from said third surface.

6. In a machine for dispensing elongated articles of generally circular cross section, a pair of side-by-side compartments for holding a plurality of articles to be dispensed, and mechanism positioned at the lower end of said compartments for releasing individual articles alternately from said compartments, said mechanism including means defining three articles engaging surfaces, said article engaging surfaces being formed as if they were circumferential segments of a common cylinder the axis of which is horizontal and located beneath and midway of the horizontal extent of said compartments, two of said article engaging surfaces being disposed respectively beneath said compartments, means for simultaneously oscillating said two article engaging surfaces about the said cylinder axis between two extreme positions in which each of said two article engaging surfaces respectively prevents or permits the delivery of an article from the compartment above that surface, the construction and arrangement being such that articles are released alternately from said compartments, the third of said article engaging surfaces being positioned above and between said other two surfaces and being supported for swinging movement about said cylinder axis from a position beneath one of said compartments to a position beneath the other of said compartments, said third surface being movable with respect to said other two surfaces, and drive means interconnecting said third surface with said first two surfaces for alternately moving said third surface from its position beneath one of said compartments to its position beneath the other of said compartments during the latter portion only of the movement of said first two surfaces to the extreme position thereof that permits delivery of an article from said other compartment, whereby said third surface prevents delivery of more than one article at a time from either of said compartments.

7. In a machine for dispensing elongated articles of generally circular cross section, a magazine for storing at least two separate columns of stacked articles, said magazine being open at its lower end to permit articles to be delivered therefrom, and mechanism positioned at the lower end of said magazine for releasing individual articles alternately from said columns, said mechanism including means defining three article engaging surfaces, said article engaging surfaces being formed as if they were circumferential segments of a common cylinder the axis of which is horizontal and located beneath and midway of the horizontal extent of said two article columns, two of said article engaging surfaces being disposed respectively beneath said columns, means for simultaneously oscillating said two article engaging surfaces about the said cylinder axis between two extreme positions in which each of said two article engaging surfaces is alternately raised to prevent the delivery of an article from the compartment above that surface and lowered to permit the delivery of an article from the article column above that surface, the construction and arrangement being such that articles are released alternately from said columns, the third of said article engaging surfaces being positioned above and between said other two surfaces and being supported for swinging movement about said cylinder axis from a position beneath one of said columns to a position beneath the other of said columns, said third surface being movable with respect to said other two surfaces, and drive means interconnecting said third surface with said first two surfaces for alternately moving said third surface from its position beneath one of said columns to its position beneath the other of said columns in predetermined relation to movements of said first two surfaces, said drive means delaying removal of said third surface from beneath one article column until the one of said first two surfaces which is beneath said one column is raised to substantially the same elevation as said third surface, whereby the weight of the articles in said one column is transferred gently to said one surface from said third surface.

8. In a machine for dispensing elongated articles of generally circular cross section, a magazine for storing at least two separate columns of stacked articles, said magazine being open at its lower end to permit articles to be delivered therefrom, and mechanism positioned at the lower end of said magazine for releasing individual articles alternately from said columns, said mechanism including means defining three article engaging surfaces, two of said article engaging surfaces being disposed respectively beneath said columns, means for simultaneously oscillating said two article engaging surfaces about a horizontal axis disposed beneath and midway of the horizontal extent of said columns, said two article engaging surfaces being movable between two extreme positions in which each of said two article engaging surfaces respectively prevents or permits the delivery of a single article from the column above that surface, the construction and arrangement being such that articles are released alternately from said compartments, the third of said article engaging surfaces being positioned above and between said other two surfaces and being supported for swinging movement about said horizontal axis, said third article engaging surface being movable with respect to said other two surfaces and movable from a position beneath one of said columns to a position beneath the other of said columns, means interconnecting said third surface with said first two surfaces for alternately moving said third surface from its position beneath one of said columns to its position beneath the other of said columns in predetermined relation to movements of said first two surfaces, said interconnecting means effecting complete removal of said third surface from beneath a column only when the one other surface beneath that column is raised to the position in which it prevents delivery from that column, and means for releasably locking said third article engaging surface in either of its said positions.

9. In a machine for dispensing elongated articles of generally circular cross section, a pair of side-by-side compartments for holding a plurality of articles to be dispensed, and mechanism positioned at the lower end of said compartments for releasing individual articles alternately from said compartments, said mechanism including means defining three article engaging surfaces, two of said article engaging surfaces being disposed respectively beneath said compartments, means for simultaneously oscillating said two article engaging surfaces about

a horizontal axis disposed beneath and midway of the horizontal extent of said compartments, said two article engaging surfaces being movable between two extreme positions in which each of said two articles engaging surfaces respectively prevents or permits the delivery of a single article from the compartment above that surface, the construction and arrangement being such that articles are released alternately from said compartments, the third of said article engaging surfaces being positioned above and between said other two surfaces and being supported for swinging movement about said horizontal axis, said third article engaging surface being movable with respect to said other two surfaces and movable from a position beneath one of said compartments to a position beneath the other of said compartments, means interconnecting said third surface with said first two surfaces for alternately moving said third surface from its position beneath one of said compartments to its position beneath the other of said compartments during the latter portion only of the movement of said first two surfaces to the extreme position thereof that permits delivery of an article from said other compartment, and means for releasably locking said third article engaging surface in either of its said positions.

10. A vending machine for articles having body portions of circular cross-section comprising means for supporting a plurality of articles in two adjacent stacks, a vertical separator between said stacks, a first support member pivoted for movement about an axis located in

the vertical plane of said separator and having a pair of lobes movable into and out of supporting relation to articles in said stacks, a second support member pivoted for movement independently of said first support member about an axis beneath said separator and having a pair of lobes movable into and out of supporting relation to articles in said stacks, and means for effecting independent rocking motion of said first and second members in timed relation to each other to move a lobe of said second member into support relation beneath an article prior to its release by a lobe of the first member while moving the other lobe of said second member to a position to release an article previously supported thereby and to move a lobe of the first member into support relation beneath an article while the said article is supported by an article therebeneath supported by a lobe of said second member and simultaneously to move the other lobe of said first member to position to release the article previously supported thereby.

11. A machine as defined in claim 10 in which said first and second members are mounted for pivoted movement about the same axis.

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