Sept. 8, 1959 J. E. HOWARD, JR 2,903,158

DISPENSING APPARATUS

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FIG.1.

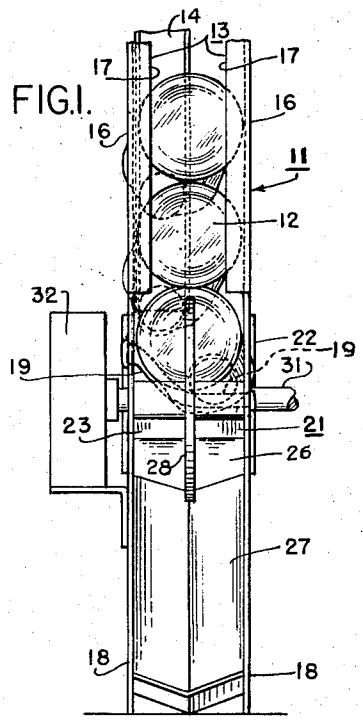


FIG.2.

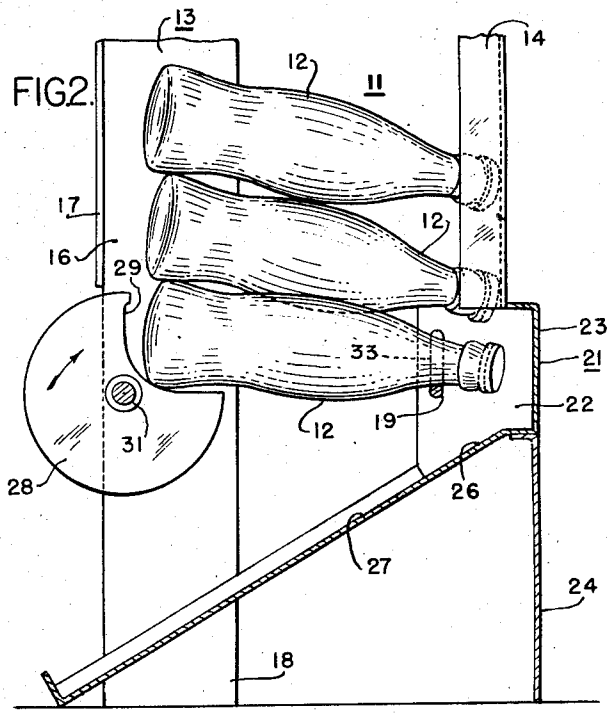


FIG.3.

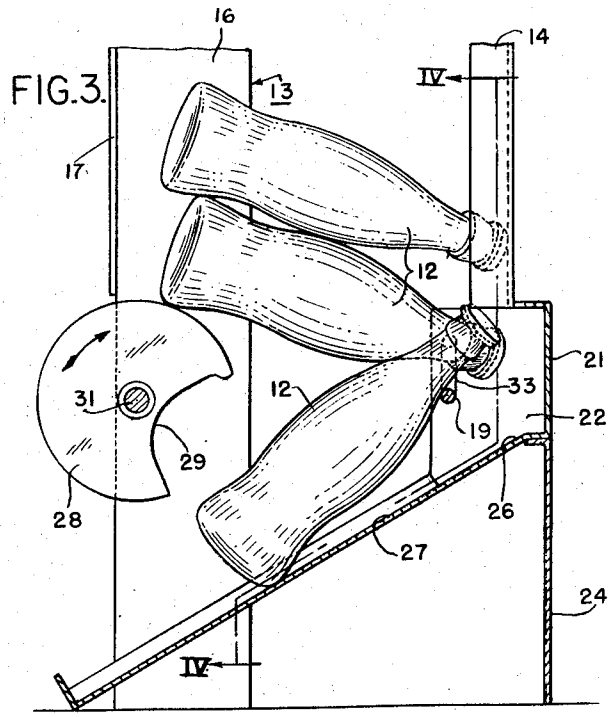
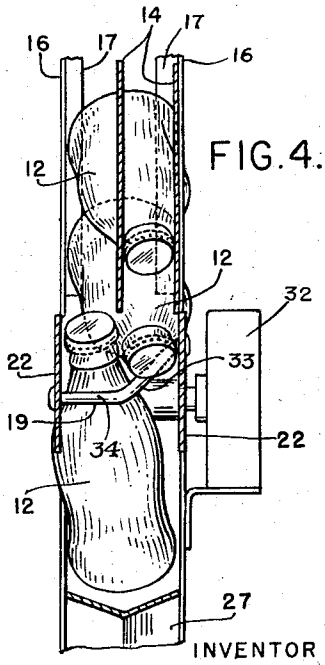


FIG.4.



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FIG.5.

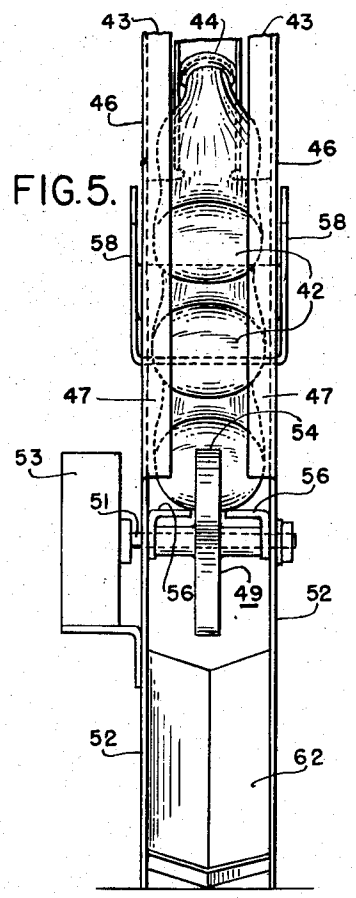


FIG.6.

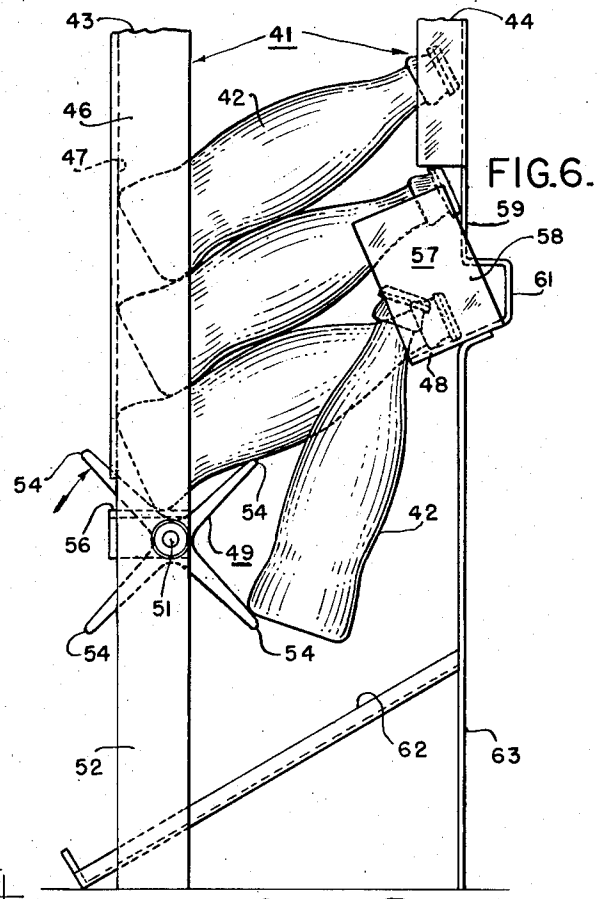


FIG.7.

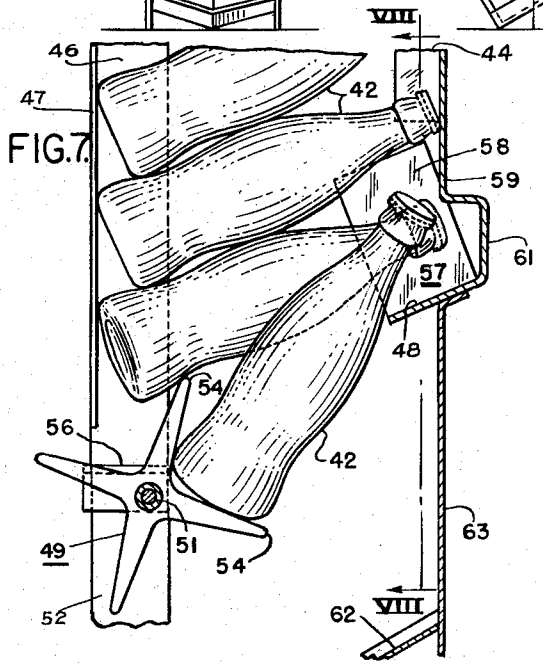
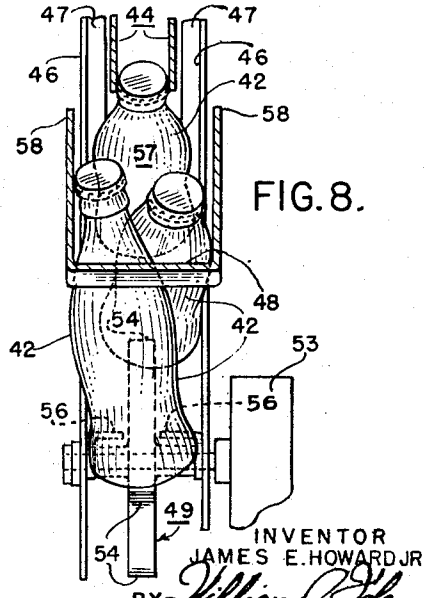


FIG.8.



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DISPENSING APPARATUS

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FIG. 10.

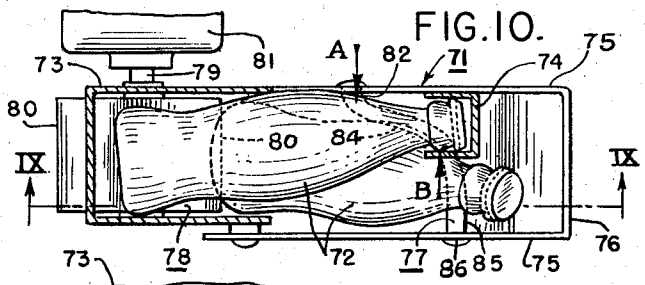


FIG. 9.

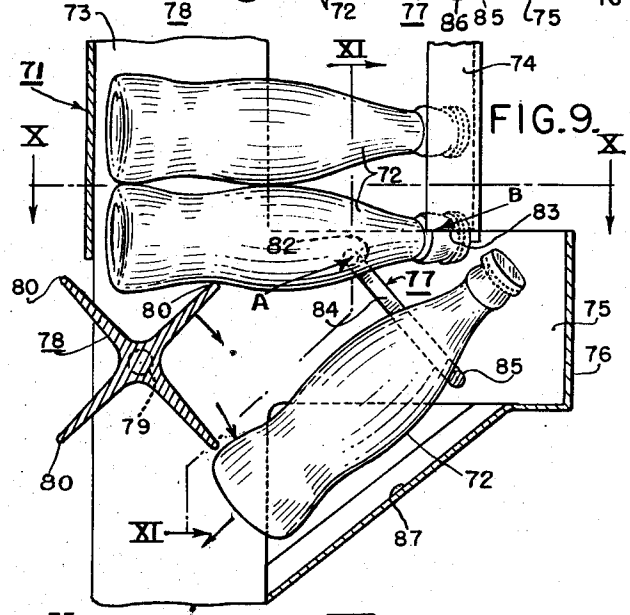


FIG. 11.

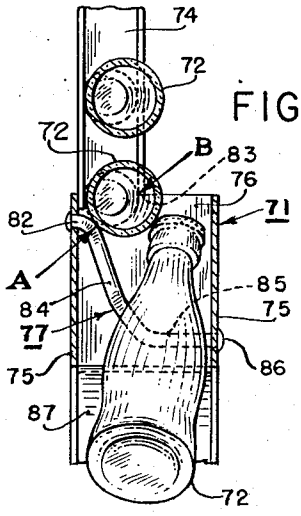


FIG. 12.

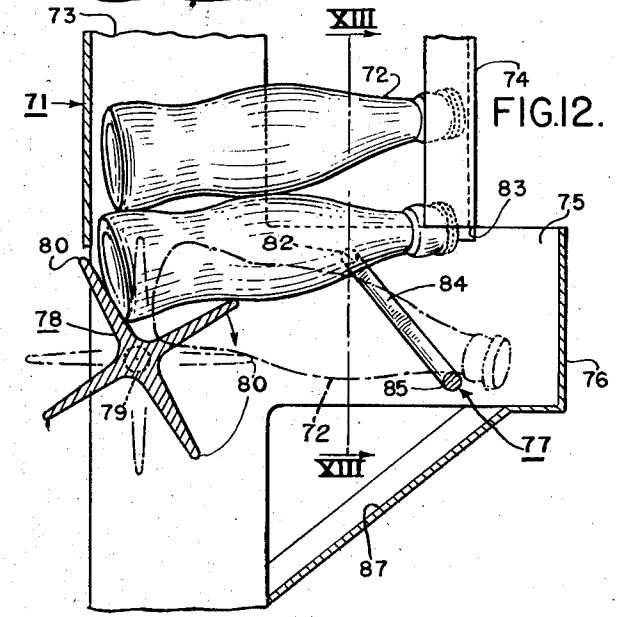
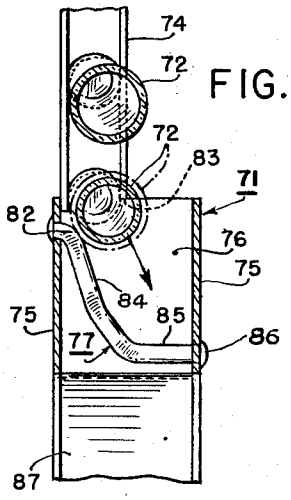


FIG. 13.



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United States Patent Office 2,903,158
Patented Sept. 8, 1959

2,903,158

DISPENSING APPARATUS

James E. Howard, Jr., Feeding Hills, Mass., assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania

Application March 2, 1956, Serial No. 569,071

5 Claims. (Cl. 221—261)

This invention relates to dispensing apparatus and more particularly to a device for dispensing bottled beverages or the like.

This invention is an improvement upon that class of vending machines wherein bottles of liquid beverage are stored in stacked relationship in a supply magazine and are released therefrom individually in response to actuation of a coin-controlled releasing mechanism.

It is the principal object of this invention to provide improved means for releasing the lowermost bottle from a magazine containing stacked bottles.

It is a further object of this invention to provide a bottle releasing mechanism which is reliable, inexpensive to construct and capable of gently handling the bottles with a minimum of bumping or jarring to prevent damage to the bottles and disturbance of their contents.

This invention is particularly applicable to vending machines wherein the bottles are stored in stacked relationship with their axes in a near horizontal position and in which the lowermost bottle only is supported by a releasing mechanism; the remaining bottles in the stack resting on and gaining support from the lowermost bottle. In the mechanism hereinafter described, the lowermost bottle is supported by stationary means at its neck end, while the bottom or butt end of this bottle rests on a movable releasing means. Dispensing is accomplished by movement of the releasable means which supports the butt end of the lowermost bottle. The neck end of the lowermost bottle tilts on and eventually slides off the stationary supporting means during the dispensing operation. In accordance with this invention novel means are provided for supporting the next lowermost bottle during the period in which the lowermost bottle is released and for preventing interference between the neck ends of the two lowermost bottles during this dispensing operation.

The principal feature of the invention resides in means for promoting lateral displacement of the neck end of the lowermost bottle with respect to the neck end of the next lowermost bottle to permit the neck end of the lowermost bottle to move on its stationary supporting means with a tilting action without interfering or colliding with the neck of the next lowermost bottle. This displacement of the lowermost bottle prompts a uniformly smooth dispensing action by the vending apparatus.

These and other objects and features of the invention are effected by this invention as will be apparent from the following detailed description taken in connection with the accompanying drawings which illustrate three forms of the invention and in which:

Fig. 1 is a front elevation view of a single stack dispensing magazine employing this invention and in which the upper portion of the magazine has been omitted to simplify the drawing;

Fig. 2 is a vertical sectional view taken approximately through the center of the magazine illustrated in Fig. 1;

Fig. 3 is a view similar to Fig. 2 but showing the bottles and the dispensing mechanism in a different position in the vending cycle from that shown in Figs. 1 and 2;

Fig. 4 is a vertical sectional view from the rear of the dispensing magazine and taken along the line IV—IV of Fig. 3;

Fig. 5 is a front elevation view of a bottle dispensing magazine employing a modification of this invention;

Fig. 6 is a side elevation view of the magazine illustrated in Fig. 5;

Fig. 7 is a vertical sectional view of the magazine of Fig. 6 illustrating the bottles and the dispensing mechanism in another position in the vending sequence;

Fig. 8 is a sectional view from the rear of the magazine and taken along the line VIII—VIII of Fig. 7;

Fig. 9 is a vertical sectional view taken as indicated by the line IX—IX of Fig. 10 and illustrating the lower portion of a bottle dispensing magazine employing a further modification of the invention;

Fig. 10 is a horizontal sectional view of the dispensing magazine illustrated in Fig. 9, the view being taken as indicated by the line X—X in Fig. 9;

Fig. 11 is a vertical sectional view of the magazine illustrated in Fig. 9, the view being taken as indicated by the line XI—XI in Fig. 9;

Fig. 12 is a view similar to Fig. 9 but showing the bottles and the dispensing mechanism in a different position in the vending cycle; and

Fig. 13 is a vertical sectional view of the magazine taken as indicated by the line XIII—XIII in Fig. 12.

Referring to the drawings and more particularly to Figs. 1 through 4 which illustrate the first embodiment of the invention, the numeral **11** indicates generally a magazine for storing a plurality of bottles **12** in stacked relationship. The bottles, with the exception of the lowermost bottle, are confined in the vertical stack with all of their axes aligned substantially in a single vertical plane by front and rear guide portions of the magazine **11** indicated by the numerals **13** and **14**, respectively. The front guide **13** comprises a pair of sheet metal wall members **16** each having a flanged forward portion **17** extending toward the opposite wall member and partially closing off the front of the space between the wall members **16** to prevent bottles from accidentally sliding forward and out of the magazine. The magazine front guide members **16** extend downwardly to form supporting legs **18** for the front edge of the magazine. The spacing of the front guide members **16** is such as to loosely confine the bottom or butt end of the bottles **12** therebetween. The rear guide **14** has a channeled or U-shaped cross section adapted to loosely receive the top or neck end of the bottles **12** and, as shown in Fig. 1, is preferably displaced to one side of the center of the space between the front guide members **16**.

The rear guide **14** terminates a short distance above a stationary support member **19** which is a novel and important element of this invention. The stationary support **19** is carried by a portion **21** of the magazine structure **11** having side walls **22** which are spaced a greater distance apart than the side walls of the rear guide **14**. (See Fig. 4.) This enlarged portion **21** of the magazine also has an end wall **23** spaced rearwardly of the rear wall of rear guide **14** as shown in Figs. 2 and 3. This portion **21** of the magazine is attached to and supports the rear guide **14** and is, in turn, supported by a rear leg member **24**. Also, as shown in Figs. 2 and 3, the portion **21** of the magazine **11** is provided with a sloping bottom wall **26** which is aligned with, and attached to, one end of a sloping chute **27** adapted to receive and guide released bottles toward the front of the magazine **11**.

The bottom or butt end of the lowermost bottle **12** is supported by releasable means consisting essentially of a cam shaped disc **28** having a cutout portion **29**. The disc **28** is secured to a rotatable shaft **31** journalled in

openings provided therefor in the front guide members **16**. Suitable means are provided for driving the shaft **31** to rotate the disc **28**, which means may comprise an electric motor **32** shown mounted on one of the guide members **16**. Coin-controlled means, though not shown, are normally provided for controlling energization of the electric motor **32** to cause the mechanism to undergo a dispensing operation.

At the start of a dispensing operation for a single stack magazine as illustrated, the disc **28** is in the position illustrated in Fig. 2 in which the butt end of the lowermost bottle **12** rests in the cutout portion **29** of the disc. This may also be considered a position of rest which the dispensing mechanism assumes between dispensing operations. The neck end of the lowermost bottle **12** rests on the stationary support member **19**. It will be noted that the stationary support **19** has an inclined portion **33** disposed directly beneath the rear magazine guide **14** and a horizontal portion **34** displaced from beneath the rear guide **14** and adjacent the opposite wall **22** of the enlarged magazine portion **21**. This inclined portion **33** of the stationary support **19** promotes lateral displacement of the neck end of the lowermost bottle **12** with respect to the next lowermost bottle, which is in the position shown in Fig. 2 with the neck end thereof confined in the rear guide member **14**. This displacement of the neck end of the lowermost bottle **12** results in an angular displacement of the axis of the lowermost bottle inasmuch as the butt end of the lowermost bottle is confined between the front guide members **16**. The front guide members **16** maintain the butt end of the lowermost bottle in substantial vertical alignment with the remaining bottles in the stack and center this end of the lowermost bottle over the disc **28** notwithstanding the displacement of the neck end of the bottle.

Figs. 3 and 4 illustrate the action of the dispensing mechanism in releasing a bottle from the magazine **11**. As viewed in Fig. 3 the disc **28** is rotated in a clockwise direction (indicated by the arrow), which lowers the cutout portion **29** of the disc which supports the butt end of the lowermost bottle, and eventually the disc is moved to the position shown in Fig. 3 in which the butt end of the lowermost bottle is released and falls by gravity onto the sloping chute **27**. The butt end of the bottle next above that being vended is supported by a solid portion of the disc **28** which is moved thereunder as the disc rotates.

As the butt end of the lowermost bottle is released, the neck thereof tilts on the stationary support **19**. Because the neck end of the lowermost bottle is displaced laterally from the neck of the next lowermost bottle, the lowermost bottle is free to tilt on and eventually slide off of the stationary support **19** without interference with the neck end of the next lowermost bottle.

As can be seen in Figs. 3 and 4 of the drawing, the only contact between the lowermost bottle and the next lowermost bottle, when the lowermost bottle is released, is in a region spaced from the neck ends of the bottles. This region of contact is also spaced forward of the stationary support **19** (to the left of support **19** as viewed in Fig. 3). Thus, as the lowermost bottle tilts on support **19** the neck end of the next lowermost bottle is gently lowered out of rear guide member **14** and the neck ends of these bottles move alongside one another without interfering with each other's movement. As the lowermost bottle descends by gravity down the chute **27** to a position where it is accessible to the customer, the neck of the next bottle descends the sloping portion **33** of the stationary support **19** and is laterally displaced as it comes to rest on the horizontal portion **34** of the stationary support **19**. Rotation of the disc **28** continues until it reaches the position shown in Fig. 2 in which the butt end of the bottle is lowered into the notch **29** and the mechanism is conditioned for the next dispensing operation.

Second embodiment

Figs. 5 through 8 of the drawings illustrate a modified vending magazine **41** utilizing the basic principles of this invention but having certain distinguishing features from the embodiment of the invention previously described.

The modified vending magazine **41** supports therein a plurality of bottles **42** in stacked relationship. Like the first embodiment of the invention, the bottles **42** are confined between front and rear guides, designated **43** and **44** respectively, of the vending magazine **41**. The front guide **43** consists of a pair of wall members **46** which loosely confine the lower or butt end of the bottles **42** and have opposed flanges **47** at the front thereof to prevent forward movement of the bottles **42**. The rear guide **44** of the magazine has a channel shaped cross section for loosely confining the neck ends of the bottles **42** and, in this embodiment of the invention, is centered with respect to the space between the front guide members **46** as shown in Fig. 8. The space between the front guide flanges **47** and the rear wall of the rear guide **44** is slightly less than the height of the bottles being dispensed to cause the bottles to rest in the magazine with their axes inclined to the horizontal. This inclined storage of the bottles **42** has the advantage of keeping the contents of the bottles out of contact with the bottle cap or crown used to close the top of the bottle. This permits the bottles to be left in the machine for extended periods of time without fear of contamination of the bottle contents through contact with the bottle crown.

As in the case of the first embodiment of the invention, the bottles **42** are stacked one on the other and rest upon the lowermost bottle, which is supported at its neck end by a stationary support **48** spaced beneath the rear guide portion **44** of the magazine. The bottom or butt end of the lowermost bottle **42** rests on a releasable supporting means consisting principally of a rotatable starwheel **49**. The starwheel **49** is secured to a shaft **51** which is journalled in lower leg portions **52** of the front guide members **47**. An electric motor **53** mounted on one of the guide members **46** is connected to shaft **51** and provides the power to rotate the stearwheel **49**.

During the dispensing operation, the starwheel **49** is rotated clockwise as indicated by the arrow and fingers **54** of the starwheel **49** lower and release the butt end of the lowermost bottle while the neck end of this bottle tilts on and eventually slides off of the stationary support **48**. Fig. 6 of the drawing illustrates the positions of the bottles **42** and the starwheel dispensing member **49** as a bottle is just being released from the stack. In this figure the lowermost bottle is just sliding off of one of the fingers **54** of the starwheel **49** while the butt end of the next lowermost bottle is supported by another finger **54** of the starwheel **49** and a pair of flange shaped shelf members **56** disposed on either side of the starwheel **49**. The shelf members **56** are attached to the guide members **46** and are disposed slightly above the axis of rotation of starwheel **49**.

In accordance with this invention the magazine **41** is constructed in such a manner as to promote lateral displacement of the neck of the lowermost bottle with respect to the neck of the next lowermost bottle to prevent interference between the necks of these bottles during vending of the lowermost bottle. For this purpose the rear or bottle neck guiding portion of the magazine **41** has an enlarged or widened portion **57** above the stationary support **48** and beneath the lower end of the rear guide channel **44**. This widened portion **57** is defined by a pair of side walls **58** which are spaced apart a distance greater than twice the width of the neck end of the bottles being dispensed. The enlarged portion **57** is defined at the rear by a rear wall **59** having a rearwardly protruding portion **61** adjacent the stationary support **48** to permit rearward movement of the bottles **42** as they are moved by the starwheel **49**.

The drawings illustrate the manner in which the enlarged portion 57 of the magazine 41 promotes lateral displacement of the neck end of the lowermost bottle with respect to the neck end of the next lowermost bottle. When the lowermost bottle has its neck end resting on the stationary support 48, the neck end of the next bottle above is positioned beneath the lower end of the channel shaped rear guide 44 and, therefore, is free to move to either side. Chance misalignment between the axes of the lowermost bottle and the next lowermost bottle tend to cause one of these bottles to move laterally in one direction, while the other moves in the opposite direction. The spaced walls 58 of the enlarged portion 57 of the magazine permit the next lowermost bottle to roll or slide on the lowermost bottle until the neck ends of the two bottles are out of vertical alignment an amount sufficient to permit the lowermost bottle to tilt on the stationary support 48 without the neck ends of the bottles colliding. The central location of the rear guide 44 permits the bottles emerging from the lower end of this member to move either to the right or to the left depending upon the position of the bottle next below. The neck ends of the bottles descending into the enlarged portion 57 of the magazine guide are thereby displaced alternately to the right and then to the left with the neck of the lowermost bottle always being displaced from the neck of the next lowermost bottle. As in the first embodiment of the invention, the region of contact between the lowermost bottle and the next lowermost bottle is spaced from the neck ends of the bottles and is forward of the stationary support 48. Thus, as the lowermost bottle tilts on support 48, the neck end of the next lowermost bottle is gently lowered onto support 48.

If, for any reason, it is desired that the neck of the lowermost bottle always be displaced to a particular side in magazine portion 57 as in the embodiment of the invention shown in Figs. 1 to 4, the rear guide 44 may, of course, be offset from the center of the magazine toward the side opposite that to which the lowermost bottle is to be moved.

The released bottle 42 falls onto a sloping chute 62 positioned at the bottom end of the magazine and is carried to a forward portion of the magazine where it is accessible to the customer. The rear or high end of the chute 62 is attached to and supported by a rear leg member 63 which also is attached to and supports the rear guide portions 44 and 57 of the magazine 41.

Third embodiment

Sheet three of the drawings, containing Figs. 9 through 13, illustrate a further embodiment of the invention which will also be described with reference to a single stack magazine identified generally by the reference numeral 71.

This embodiment, like the two embodiments previously described, employs a magazine, and a dispensing mechanism for the magazine which promotes lateral displacement of the neck end of the lowermost bottle to prevent interference between the bottle being dispensed and the bottle next above in the stack. This third embodiment, however, includes a further improvement over the first two embodiments in that provision is made for keeping the lowermost bottle completely out of contact with the next to the lowermost bottle as the former is released from the magazine. In other words, in the two previous embodiments, the neck ends of the lowermost and next to the lowermost bottles were in contact with one another as the lowermost bottle was released. In this third or improved embodiment of Figs. 9 to 13 the next to the lowermost bottle is actually supported independently of the lowermost bottle and completely out of contact therewith while the lowermost bottle is being released. The manner in which this improved action is accomplished will be apparent from the following description of this third embodiment.

The magazine 71 is adapted to contain bottles 72 in vertical stacked relationship with the bottles being confined between front and rear channel-shaped guides designated, respectively, 73 and 74. The rear guide 74, being shaped to receive the neck ends of the bottles, is smaller than the front guide 73 and is preferably offset from the centerline of the front guide 73 as shown in Figs. 10 and 11. The guides 73 and 74 permit the bottles to gravitate into the lower or dispensing region of the magazine, the confines of which are defined by two side walls 75 and an end wall 76. The side walls 75 are spaced apart a distance greater than twice the diameter of the cap ends of the bottles to permit lateral displacement of the neck end of the lowermost bottle. The rear guide 74 terminates at the upper edge of one of the side walls 75 and is secured thereto.

Disposed within the dispensing region of the magazine 71 are a stationary support 77 and a releasable supporting means, such as the rotatable starwheel 78, which support the bottles 72 within the magazine. The starwheel 78 is carried by a shaft 79 journalled in an extension of side walls of the front guide 73 and is driven by a power unit, such as a geared motor indicated at 81. The bottom or butt ends of the bottles 72 descending from the magazine front guide 73 are supported by the several fingers 80 of the starwheel 78.

The stationary support 77 extends between the dispensing region sidewalls 75 and consists of a rod-like member having one end 82 attached to the upper portion of the sidewall 75 which is adjacent the rear guide 74. As can be seen in Figs. 9 and 11 of the drawing, this end 82 of the stationary support is disposed slightly below the lower edge 83 of the rear guide 74 and forward (toward the front guide portion 73) of the guide 74 in a position beneath the shoulder portion of the bottles 72 within the guides 73 and 74. The stationary support 77 has a sloping portion 84 extending downwardly and rearwardly from its upper end 82 into a horizontal portion 85 adjacent its other end 86 which is joined to the other sidewall 75. As will be explained more fully hereinafter, the lower horizontal portion 85 of the stationary support 77 is adapted to support the neck end of a bottle 72 in a position disposed laterally from beneath the neck end of another bottle within the rear guide 74, and the sloping portion 84 of this support guides the neck end of the bottle over into this displaced position.

Figs. 9 through 11 show the positions of the elements of the dispensing mechanism and the bottles 72 within the magazine 71 as a bottle is being released. Referring to Fig. 9, the starwheel 78 has rotated to a position in which the butt end of the lowermost bottle 72 is sliding off one of its fingers 80. The neck end of this lowermost bottle is resting on the horizontal portion 85 of the stationary support 77 and tilts and slides thereon as the butt end of the bottle falls free. A chute 87 directs the released bottle forward and out of the magazine.

It will be noted that, as in the previously described embodiments, the neck end of the bottle being dispensed (the lowermost bottle 72 of Figs. 9 through 11) is laterally displaced from the neck end of the bottle next above in the magazine. This displacement prevents interference between the neck ends of these two bottles as the lowermost bottle tilts on and slides off the stationary support 77.

To insure freedom of movement of the bottle being released, the next bottle above is independently supported completely out of contact with the lowermost bottle as it is leaving the magazine. Referring to Figs. 9 and 11, note that, with the butt end of the next to the lowermost bottle supported as shown by one finger 80 of starwheel 78 while the butt end of the lowermost bottle is sliding off another finger of the starwheel, the

cap end of the next to the lowermost bottle is within the confines of the lower end of channeled rear guide 74, and an intermediate shoulder portion of the next to the lowermost bottle rests on the uppermost end portion 82 of the stationary support. The sloping portion 84 of the stationary support immediately adjacent the upper end 82 of the support tends to promote a lateral displacement of the neck end of a bottle descending thereover. Lateral motion of a bottle in the position of the next to the lowermost bottle in Figs. 9 to 11 is prevented, however, because the cap end of the bottle is restrained by the rear guide 74. The neck end of this next to the lowermost bottle is supported then by virtue of its being wedged between the upper end 82 of the stationary support which contacts a shoulder portion of the bottle at a point indicated by the arrow A, and the lower edge 83 of the rear guide 74 which contacts the bottle near its cap at the point indicated by the arrow B.

Consider now the releasing of this next bottle from its wedged position on the upper end of the stationary support 77. Rotation of the starwheel 78, in a clockwise direction from the position shown in Fig. 9 lowers the butt end of the bottle. Simultaneously, the point of contact between the starwheel finger 80 and this bottle shifts to a position nearer the middle of the bottle. This combined action of downward tilting of the butt end of the bottle and shifting of its point of support closer to its center of gravity causes the bottle to slide on the supporting finger 80 toward the front of the magazine (to the left as viewed in Fig. 9) until its butt end encounters the next finger 80 of the starwheel 78. This places the bottle in the position occupied by the lowermost bottle shown in full lines in Fig. 12.

It will be noted that each bottle 72 is tapered in the shoulder portion contacted by the upper end 82 of the stationary support, with the diameter of the bottle becoming progressively smaller toward its cap end. This is a characteristic feature of soft beverage bottles. The slight axial shift (toward the front of the magazine) of the bottle resting on the stationary support upper end 82 in moving from the position it occupies in Fig. 9 to the position shown in Fig. 12 presents to the stationary support, at contact point A, a reduced shoulder diameter such as to permit the neck end of this bottle to pass between the contact points A and B on, respectively, the stationary support 77 and the rear guide 74. This reduction in bottle diameter at contact point A is illustrated in Fig. 13 (a sectional view through contact point A) in which there is superimposed upon the section through the lower bottle a dot and dash outline corresponding to a similar section through the same bottle in the position shown in Figs. 9 through 11. The lowermost bottle in full lines in Fig. 12 is just being released from atop the upper end 82 of the stationary support and, with continued rotation of the starwheel 78, will descend the sloping portion 84 of the stationary support, eventually coming to rest with its neck end supported on the horizontal portion 85 of the stationary support and its butt end supported by a finger 80 of the starwheel 78 in the position indicated by the lowermost dot and dash line bottle in Fig. 12.

The sloping portion 84 of the stationary support 77 extends diagonally toward the rear of the magazine, thus providing contact with decreasing shoulder and neck diameters of the bottle descending the stationary support to prevent the bottle from wedging against the lower edge 83 of rear guide 74 once it has been released therefrom.

The lowermost bottle then has its neck end resting on the horizontal portion 85 of the stationary support 77 and displaced laterally from beneath the neck of the next bottle above. In this position, it may be released from the magazine by further rotation of the starwheel 78 as described above.

This invention has been described by reference only to the essentials of a dispensing magazine structure. It is to be understood, however, that the magazine would normally be disposed within a refrigerated and insulated cabinet designed to chill the drinks prior to their being dispensed. Suitable coin-control means would likewise be associated with the cabinet for controlling energization of the electric motors 32 and 53 to permit the vending mechanism of either embodiment to undergo a dispensing operation only after the customer has inserted into the cabinet the proper coin or coins.

The invention has also been described only with reference to single stack dispensing magazines. It is apparent, however, that the invention is equally applicable to magazines having a plurality of side-by-side bottle stacks. In such applications the releasable support means for the butt ends of the bottles for each bottle stack, that is, the vending disc 28 of the first embodiment and the starwheels 49 and 78 of the second and third embodiments, would be mounted on a single drive shaft and would employ a single driving means, such as a motor. By mounting the releasable support means on the common drive shaft in such a manner that the releasable means for each stack is angularly displaced from the releasable means of the other stacks, sequential vending from the stacks can be obtained. Since sequential vending from a plurality of stacks in a vending machine is well known and well understood by those skilled in this art, no detail description thereof is deemed necessary here. It is mentioned only to make it clear that this invention is applicable to such arrangement.

It is, of course, evident that suitable manually actuated drive means could be substituted for the electric motors 32, 53 or 81 if this type of operation is desired.

From the foregoing it will be apparent that this invention provides a novel and inexpensive mechanism for releasing bottles from a magazine in which they are stored in stacked relationship.

While several forms of the invention have been described, it is to be understood that changes and modifications other than those specifically referred to may be made therein without departing from the scope of the invention as defined by the appended claims.

What is claimed is:

1. In bottle dispensing apparatus, the combination of a magazine for holding a plurality of bottles in stacked relationship with the axes of all but the lowermost of said bottles arranged substantially in a single vertical plane, said magazine including guide portions for maintaining the butt ends of all of said bottles in substantially vertical alignment, releasable means for supporting the butt end of the lowermost bottle in said magazine, stationary means for supporting the neck end of the lowermost bottle in said magazine, said stationary means having an inclined portion adapted to angularly displace the axis of the lowermost bottle with respect to the axis of the next lowermost bottle whereby the neck of the lowermost bottle is laterally displaced from the neck of the next lowermost bottle.

2. In bottle dispensing apparatus, the combination of a magazine for holding a plurality of bottles in stacked relationship, said magazine including a pair of guide members for the butt ends of the bottles and adapted to maintain the butt end of the lowermost bottle in substantial vertical alignment with the butt end of the next lowermost bottle, said magazine including another pair of guide members for confining the neck ends of all but the lowermost bottle substantially in vertical alignment, stationary means for supporting the neck end of the lowermost bottle, said stationary supporting means having at least a portion thereof extending laterally from beneath the neck end of the next lowermost bottle for permitting lateral displacement of the neck end of the lowermost bottle with respect to the neck end of the next lowermost bottle, and a releasable support for the butt end of the lowermost bottle, said releasable support being vertically aligned with the butt ends of said low-

ermost and next lowermost bottles, the construction and arrangement being such that the neck end of the lowermost bottle is free to pivot on the stationary supporting means without interference with the neck of the next lowermost bottle.

3. In bottle dispensing apparatus, the combination of a magazine for holding a plurality of bottles in vertical stacked relationship, said magazine including portions on each side of the butt ends of said bottles for confining the butt ends of all of said bottles substantially in vertical alignment, said magazine including portions on each side of the neck ends of said bottles for confining the neck ends of all but the lowermost bottle substantially in vertical alignment, stationary means for supporting the neck end of the lowermost bottle, said stationary supporting means having at least a portion thereof extending laterally from beneath the neck end of the next lowermost bottle for permitting lateral displacement of the neck end of the lowermost bottle with respect to the neck end of the next lowermost bottle, and releasable means disposed beneath and aligned with the butt ends of the bottles in said magazine for supporting the butt end of the lowermost bottle, the construction and arrangement being such that the neck end of the lowermost bottle is free to pivot on the stationary supporting means without interference with the neck of the next lowermost bottle when the butt end of the lowermost bottle is released.

4. In bottle dispensing apparatus, the combination of a magazine for storing bottles in stacked relationship, said magazine including a pair of guide members for the butt ends of the bottles and adapted to maintain the butt end of the lowermost bottle in substantial vertical alignment with the butt end of the next lowermost bottle, said magazine including another pair of guide members for confining the neck ends of all but the lowermost bottle substantially in vertical alignment, means for releasably supporting the butt end of the lowermost bottle in the stack, stationary means for supporting the neck end of said lowermost bottle, said stationary supporting means having an inclined portion adapted to guide the neck end of the lowermost bottle laterally from beneath the neck end of the next lowermost bottle in the stack whereby the neck end of the lowermost bottle is free to slide off said stationary support without interference from the neck end of the next lowermost bottle when the butt end of the lowermost bottle is released, and means for impeding movement of a bottle along the inclined portion of said stationary supporting means to prevent the next lowermost bottle from descending said inclined portion as the lowermost bottle is being dispensed.

5. In bottle dispensing apparatus, the combination of a magazine for storing bottles in stacked relationship, said magazine including a pair of guide members for the butt ends of the bottles and adapted to maintain the butt end of the lowermost bottle in substantial vertical alignment with the butt end of the next lowermost bottle, said magazine including another pair of guide members for confining the neck ends of all but the lowermost bottle substantially in vertical alignment, means for reieasably supporting the butt end of the lowermost bottle in the stack, stationary means for supporting the neck end of said lowermost bottle, said stationary supporting means having an inclined portion adapted to guide the neck end of the lowermost bottle laterally from beneath the neck end of the next lowermost bottle in the stack whereby the neck end of the lowermost bottle is free to slide off said stationary supporting means without interference from the neck end of the next lowermost bottle when the butt end of the lowermost bottle is released, means for impeding movement of a bottle along the inclined portion of said stationary supporting means to prevent the next lowermost bottle from descending said inclined portion as the lowermost bottle is being dispensed, and means responsive to movement of the next lowermost bottle by said releasable supporting for causing said next bottle to be released by said impeding means and descend the inclined portion of said stationary supporting means after the lowermost bottle is released.

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