A consumer display and dispensing rack having a front and a back, and a container rail inclined downwardly and forwardly from the back to the front for supporting a series of bottles thereon is disclosed. The rail provides a spaced apart pair of support flanges for supporting a series of bottles adjacent their tops. The rack has a stop on the front end to engage a bottom portion of a forwardmost bottle on the rail. The height of the stop is less than the distance between a top of the forwardmost bottle and a front edge inner surface of the rail. This allows the forwardmost bottle to be raised over the stop and removed from the display rack.
DISPLAY AND DISPENSING SYSTEM FOR BOTTLES

BACKGROUND OF THE INVENTION

[0001] A variety of systems displaying beverage containers in for facilitating their dispensing to consumers one at a time. Typically, such systems employ shelving, such as inclined shelving, which will allow the removal of containers from the front by consumers and which will allow following containers to be easily moved forward for subsequent removal by another or a succeeding customer.

[0002] At present, a number of beverage containers such as bottles have enlarged neck zones upon which the containers may be supported. Such zones may be formed on the container itself or may instead be formed integrally with the closure or cap for the container.

[0003] It is desirable to provide a system for displaying such containers and for facilitating the automatic movement of succeeding containers forwardly as one is removed, as by a consumer. Such a system is provided by my U.S. Pat. No. 5,947,303. This patent provides a system using a pivotally mounted control lever that prevents the unwanted forward movement of succeeding containers until such time as they are intended to be removed, i.e., by a consumer.

SUMMARY OF THE INVENTION

[0004] In accordance with the present invention, an improved display and dispensing system for bottles and method for displaying and dispensing bottles is provided which eliminates the need for a control lever.

[0005] A consumer display and dispensing rack having a front and a back, and a container rail inclined downwardly and forwardly from the back to the front for supporting a series of bottles thereon is provided. The rail has a front end and have been developed for retail establishments and a back end, and defines a spaced apart pair of Support flanges for supporting a series of bottles adjacent their tops. A stop beam is provided to engage a bottom of the first bottle to be removed. The stop beam holds all of the bottles in the container rail in place. The height of the stop beam is set to be effective to both hold the bottles in place to permit removal of the first bottle. The height of the stop beam is such that it allows the first bottle to be raised within the container rail such that the bottom of the first bottle can be raised over the stop beam with relative ease. A clearance of at least 0.5 inches is preferred.

[0006] In a preferred form, each bottle top comprises a cap threadingly secured to an associated bottle, and the cap defining a circular flange adapted to be supported on the rail support flanges. Preferably, a stop is provided at the front end of the rail and positioned to cooperate with the stop beam to hold a bottle at the front end of the rail and to position a bottle for manipulation and removal by a consumer.

[0007] The rack may comprise vertical frame members, transverse frame members and side frame members, and the container rails are mounted on the transverse frame members.

[0008] Desirably, the display rack comprises a plurality of side-by-side downwardly and forwardly inclined rails, each sized to guide and hold the bottles to be disposed.

[0009] A method of controlling comprising utilizing the consumer for bottles is also disclosed.

[0010] Further objects, features and advantages of the present invention will become apparent from the following description and drawings.

BRIEF DESCRIPTION OF THE DRAWING

[0011] FIG. 1 is a front elevational and dispensing system in accordance with the invention; the dispensing of bottles display and dispensing rack view of a display present

[0012] FIG. 1A is a perspective view of that portion of the rack of FIG. 1 noted as A.

[0013] FIG. 2 is a side elevational view of the display and dispensing system

[0014] FIG. 3 is a plan view of a rail of the display and dispensing system of FIG. 1;

[0015] FIG. 4 is a side elevational view of FIG. 3.

[0016] FIG. 5 is a cross-sectional view taken substantially along line 5-5 of FIG. 4;

[0017] FIG. 6 is a front elevational view taken substantially along line 6-6 of FIG. 4;

[0018] FIG. 7 is an enlarged view of a portion of FIG. 3;

[0019] FIG. 7A is a perspective view of another rail of the display that may be used in the dispensing system of FIG. 1.

[0020] FIG. 7B is a partial perspective view of the rail of FIG. 7A attached to the rack of FIG. 1.

[0021] FIG. 8 is a front view of a stop element of FIG. 6;

[0022] FIG. 9 is a side elevational view of FIG. 8 taken from the right of FIG. 8;

[0023] FIG. 10 is top plan view of FIG. 8;

[0024] FIG. 11 is a fragmentary side view of a rail and associated stop of FIG. 1 in a position of rest;

[0025] FIG. 12 is a view like FIG. 11, but with a container in the process of being removed from the rail;

[0026] FIG. 13 is a view like FIG. 11, just after a container has been removed from the rail; and

[0027] FIG. 14 is a view similar to FIG. 11.

DETAILED DESCRIPTION

[0028] Referring now to the drawings, a display and dispensing system of the present invention for displaying beverage containers and for facilitating their dispensing to consumers includes a display rack 10 comprising suitable vertical frame members 12, support feet 14 and transverse frame members 16 disposed at the front and rear. Suitable connecting formations (not shown) for removably securing the members 12 and 16 may be provided as well. Side frame members 18 are provided to connect the front and rear vertical frame members 12, thereby to integrate the structural members of the display rack 10 and to provide a stable, satisfactorily rigid assembly. Transverse stop beams 15 are provided at the front and are connected to the front vertical frame members 12. The stop beams 15 are adjustable along the vertical frame member 12.
The lower regions of the rack 10 may be used to display cartons C of beverage containers, such as six-packs of cans, twelve-packs of cans, multi-pack cartons of bottles, etc. 

As best seen in FIGS. 1 and 2, cartons C are supported on inclined shelves 20 which may comprise roller bearings upon which the cartons are seated. Because of their weight, the cartons C move forwardly on the roller bearings until the forward-most ones of the cartons C engage a shelf stop or lip 22. To remove a carton, a consumer need only slightly elevate the selected carton C above a lip 22 and pull the carton C forward. The next succeeding carton C will then roll forwardly on the roller bearings until it is stopped by a confronting lip 22. As shown in FIGS. 1 and 2, the number of rows of cartons C may be four, although other rack widths and carton arrays may be used as well.

The upper regions of the display rack 10 are adapted for displaying and dispensing beverage containers, such as bottles. The bottles B, in the exemplary embodiment, are shown as two-liter, carbonated beverage bottles comprising a conventional, plastic container and an associated plastic closure for seamlessly closing the container. These containers may be viewed as having enlarged neck zones, in this case being provided by the closure, and in particular by the enlarged flange formed on the closure.

As best seen in FIGS. 13-16, the closure 102 is shown as comprising a conventional internally threaded cap 104 and an outwardly projecting flange 106. Flange 106 may be circular. In one form, the container 100 may be of a conventionally used plastic material and the closure 102 may be formed of a conventionally used plastic material. A typical two-liter container is about 4-11/32 inches in diameter. The closure 102 is about 1.3/16 inches in diameter and about 13/16 inch in height. The flange 106 is about 1.7/16 inches in diameter and is about 1/16 inch thick. As is the conventional practice in manufacturing closures, the material of which the closure 102 is made is of sufficient strength and rigidity to easily support the weight of filled bottles B, as well as any shock loads and stresses placed on the closure 102 and the flange 106 without damaging the closures or associated containers, or their sealed relationships.

Referring again to FIGS. 1 and 2, it will be seen that the upper regions of the rack 10 mount a series of parallel guide and supporting channels or bottle rails 50 which incline forwardly and downwardly within the rack 10. In the embodiment of FIGS. 1 and 2, the rails 50 are twenty in number.

There are two banks of ten rails each, one above the other. In this embodiment, each bank is adapted to support two-liter containers, although it will be apparent that other banks and rails 50 adapted for other like containers, such as, for example, one-half liter and three liter containers may be used as well.

Referring to FIGS. 3-7, each rail 50 is adapted to be secured to the rack 10 by support formations such as front hooks 52 and rear hooks 54. Hooks 52 and 54 are positioned to engage front and rear transverse frame members 16 which capture and integrate the banks of rails 50 at their fronts and rears. The hooks 52, 54 serve to fix the respective elevations of the fronts and rears of the rails 50 for reasons which will become apparent.

Each rail 50 comprises a top 56, integrally formed sides 58 and inwardly projecting bottom flanges 60. Flanges 60 are spaced apart a distance slightly greater than the diameter of the neck 101 (FIG. 11) and less than the diameter of the flange 106. Thus, the bottle is retained on the inner surface of rail flanges 60 of the container 100 below the threads of the container and immediately adjacent the flange 106 of the closure 102. As such, bottles B may move easily from the rear of a rail 50 to the front of a rail 50 and along relative to the flanges 60. For two-liter bottles, the distance between the confronting edges of flanges 60 is about 1.14 inches, the width of rails 50 is about 2.0 inches and the flanges 60 project inwardly about 0.43 inch from their sides 58.

Referring to FIGS. 7A and 7B, there is a rail 50 having an alternative support member 62 for engaging appropriate front and rear transverse frame members. The support members 62 are brackets which have a width larger than the width of the rail 50 and are attached to the rail top surface 56. The brackets 60 are an alternative to the hooks 52 and 54. The transverse supports 16 are, of course, structured according to the support used-52, 540462.

The fronts of rails 50, as best seen in FIGS. 4, 6 and 7A have stops 70, 70A mounted thereon. As shown in FIGS. 8-10, stops 70, 70A may be welded to the sides 58 immediately adjacent to the fronts of the rails 50 and adjacent the associated flanges 60. Each stop 70, 70A comprises a mounting plate 72 by which the stop is welded to the rail 50 at the outside of a side 58. Extending inwardly therefrom on the inside of side 58 is an inwardly projecting plate 74 having a lower, generally vertical segment and an upper, somewhat rearwardly inclined segment. Stop 70A at the right side, as viewed in FIG. 6, is a mirror image of stop 70. As will appear, stops 70, 70A together cooperate with a rail 50 and a bottle B to control forward movement when a bottle B reaches the front of a rail 50.

Referring now to FIGS. 11-14, a row or series of bottles B is supported in a rail 50 by their closures 102. In particular, bottles B are supported and suspended on closure flanges 106 by rail flanges 60, with the container neck 101 being disposed between the confronting edges of rail flanges 60. The rail 50 may desirably be inclined forwardly and downwardly at 5.5 degrees from the horizontal.

Referring first to FIG. 11, a rail 50 and an associated series of bottles B, namely bottles B, B1 and B2, are shown as being at rest following the earlier removal of a bottle B. The front bottle B is seated with its closure flange 106 supported against the stop plates of stops 70, 70A, and the bottom of the bottle in contact with stop beam 15. Bottle B1 is prevented from moving forward along rail 50 by bottle B and, in turn, serves also to prevent other bottles in the row (such as bottle B2) from moving forward along the rail 50. Thus, the row or series of bottles B, B1, B2, etc. supported on the rail 50 may be considered to be at rest.

The stop height 111 of the stop beam 15 as measured from the bottle base 110 to the top 112 of the stop beam 15 is at least 0.25 inches and preferably at least 0.5 inches less than the bottle clearance 114 as measured from the top 107 of the bottle cap to the front edge inner surface 51 of the rail 50. This allows the consumer to have sufficient room to remove the forwardmost bottle B with relative ease.

As shown by FIG. 12, when a front bottle B is to be removed, it is raised by the consumer such that the bottle
cap flange 106 is raised above stops 70, 70A, and the bottle bottom 110 is raised above stop beam 15. This effectively releases the bottle B to be pulled forward out of the rail 50, as is illustrated by the transition from FIG. 12 to FIG. 14.

In the manner described, one bottle B may be removed at a time from a rail 50, and succeeding bottles are prevented from being released and dispensed from rail 50, except one at a time, by the stops 70, 70A and stop beam 15.

It will be apparent to those skilled in the art that modifications may be made in the illustrated embodiment without departing from the spirit and scope of the invention. Accordingly, it is not intended that the invention be limited except as may be necessary in view of the appended claims.

What is claimed is:

1. A consumer display and dispensing rack for bottles, said rack having a front and a back, and a container rail inclined downwardly and forwardly from said back to said front for supporting a series of bottles for movement from said back to said front thereon, said rail having a front end and a back end and defining a spaced apart pair of support flanges for supporting said series of bottles adjacent their tops comprising:

   a stop on said front end to engage a bottom portion of a forwardmost bottle,

   said height of said stop being less than the distance between a top of said forwardmost bottle and a front edge inner surface of said rail, whereby said forwardmost bottle can be raised over said stop and removed from said display rack.

2. A display and dispensing rack for bottles in accordance with claim 1, and wherein a cap is threadingly secured to an associated bottle, said cap defining a circular flange adapted to be supported on said rail support flanges.

3. A display and dispensing rack for bottles in accordance with claim 1, and wherein said rack includes a second stop at the front end of said rail, said stop being positioned to cooperate with said bottom stop to hold a bottle at the front end of said rail which position said bottle for manipulation and removal by a consumer.

4. A display and dispensing rack for bottles in accordance with claim 1, and wherein said rack comprises vertical frame members, transverse flame members and side flame members, and said container rails are mounted on said transverse frame members.

5. A display and dispensing rack for bottles in accordance with claim 1, and wherein said display rack comprises a plurality of side-by-side downwardly and forwardly inclined rails, said height of said stop being at least 0.25 in. less than the distance between the top of said forwardmost bottle and the front edge inner surface.

6. A display and dispensing rack for bottles in accordance with claim 1, and wherein said display rack comprises a plurality of side-by-side downwardly and forwardly inclined rails,

   said height of said stop being at least 0.50 in. less than the distance between the top of said forwardmost bottle and the front edge inner surface.

7. A method of controlling the dispensing of bottles comprising providing a consumer display and dispensing rack for said bottles, said rack having a front and a back, and a container rail inclined downwardly and forwardly from said back to said front, said rail having a front end and a back end and defining a spaced apart pair of support flanges for supporting a series of bottles adjacent their tops, providing a stop on said front end to engage a bottom portion of a forwardmost bottle, wherein said height of said stop is less than the distance between a top of said forwardmost bottle and an front edge inner surface of said rail, whereby said forward most bottle can be raised over said stop and removed from said display rack.

8. The method of claim 7, and wherein each said bottle top comprises a cap defining a circular flange adapted to be supported on said rail support flanges, and the further step of supporting a said series of said bottles by said circular flanges on said support flanges.

9. The method of claim 7, and wherein said control lever head end defines a lower surface which is positioned to engage said bottle tops, and the further step of engaging said lower surface to be pivoted upwardly by said bottle tops, thereby to move said tail end downwardly to engage and stop a next succeeding bottle top.

10. The method of claim 7, and wherein said rack includes stop means at the front end of said rail, said stop means being positioned to cooperate with said control lever to stop a bottle at the front end of said rail thereby to position a bottle for manipulation and removal by a consumer.

* * * * *