

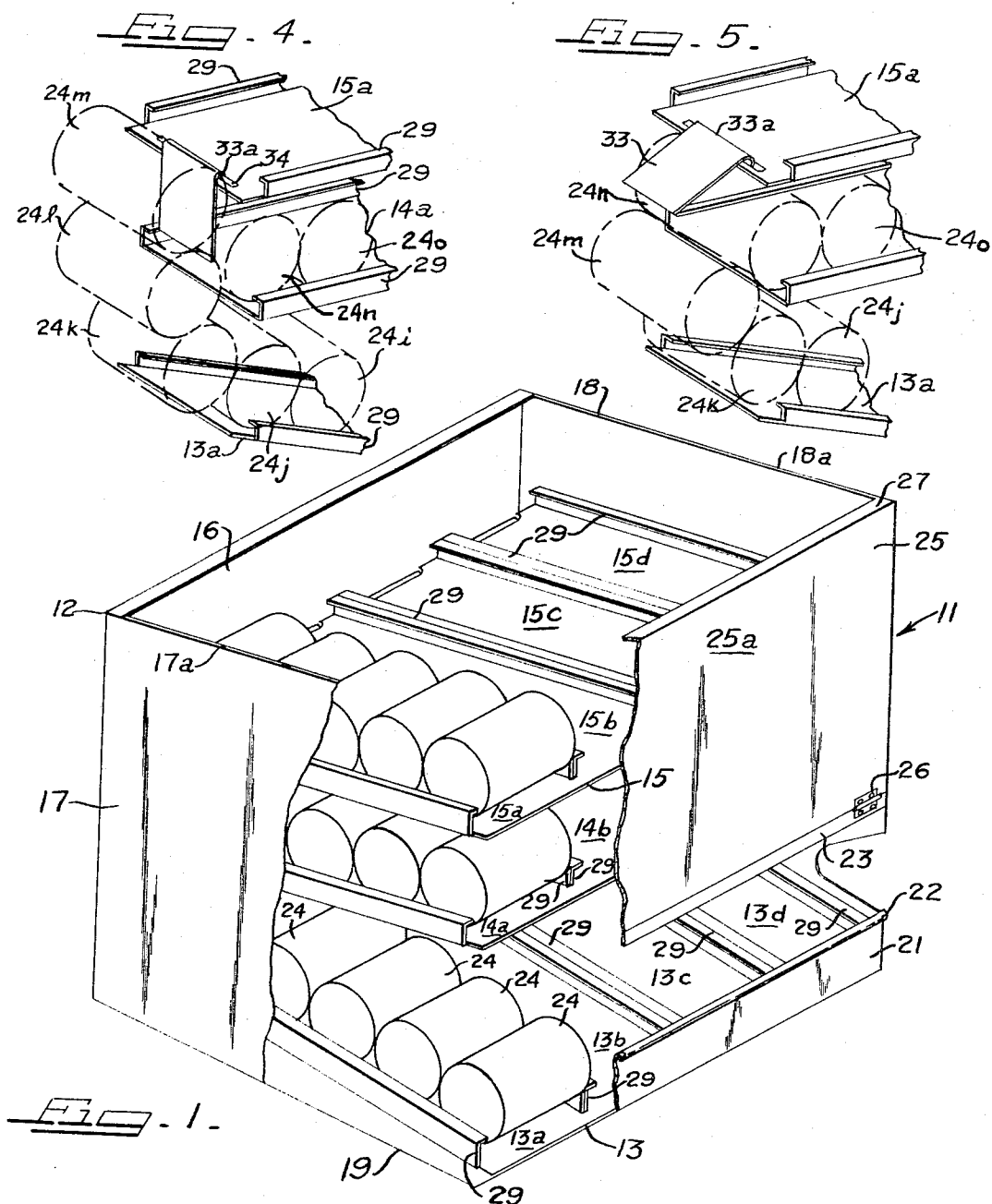
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G. TAKAHASHI
DISPENSING RACK

3,318,455

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3 Sheets-Sheet 1



INVENTOR
GEORGE TAKAHASHI
BY
Greist, Lockwood, Greenawalt & Dewey
Attys.

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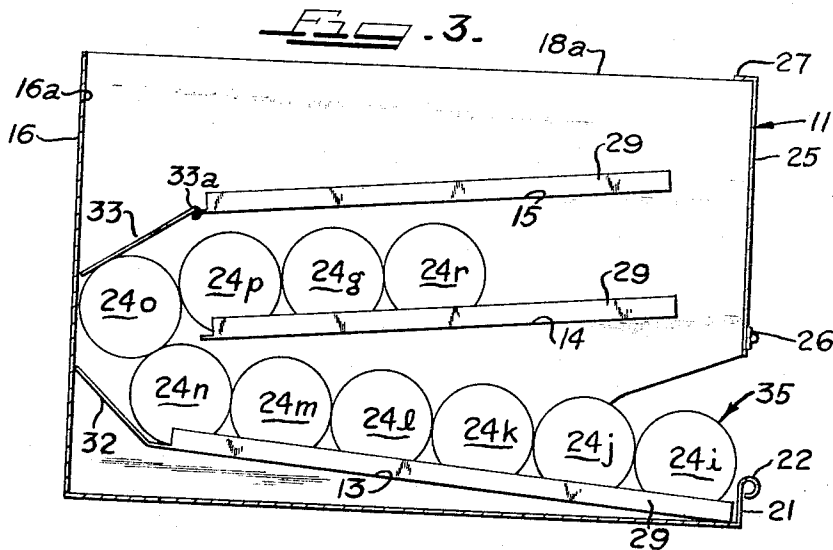
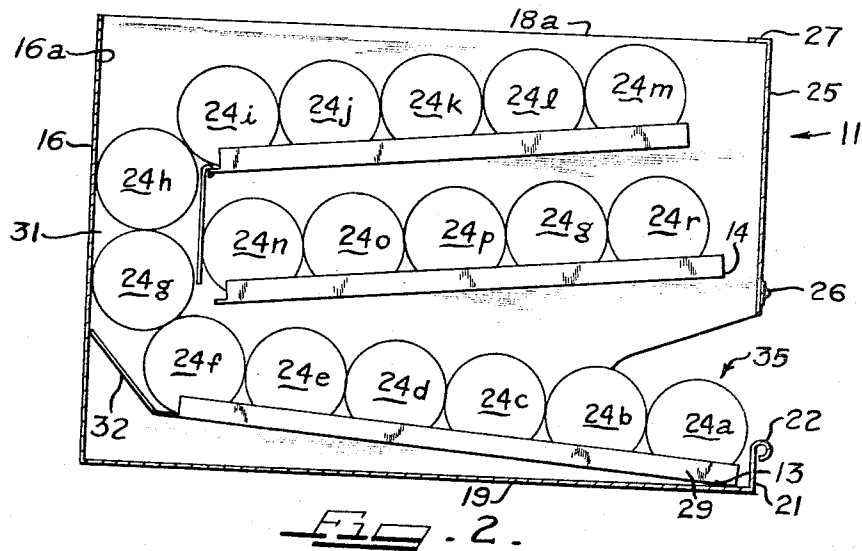
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Attys.

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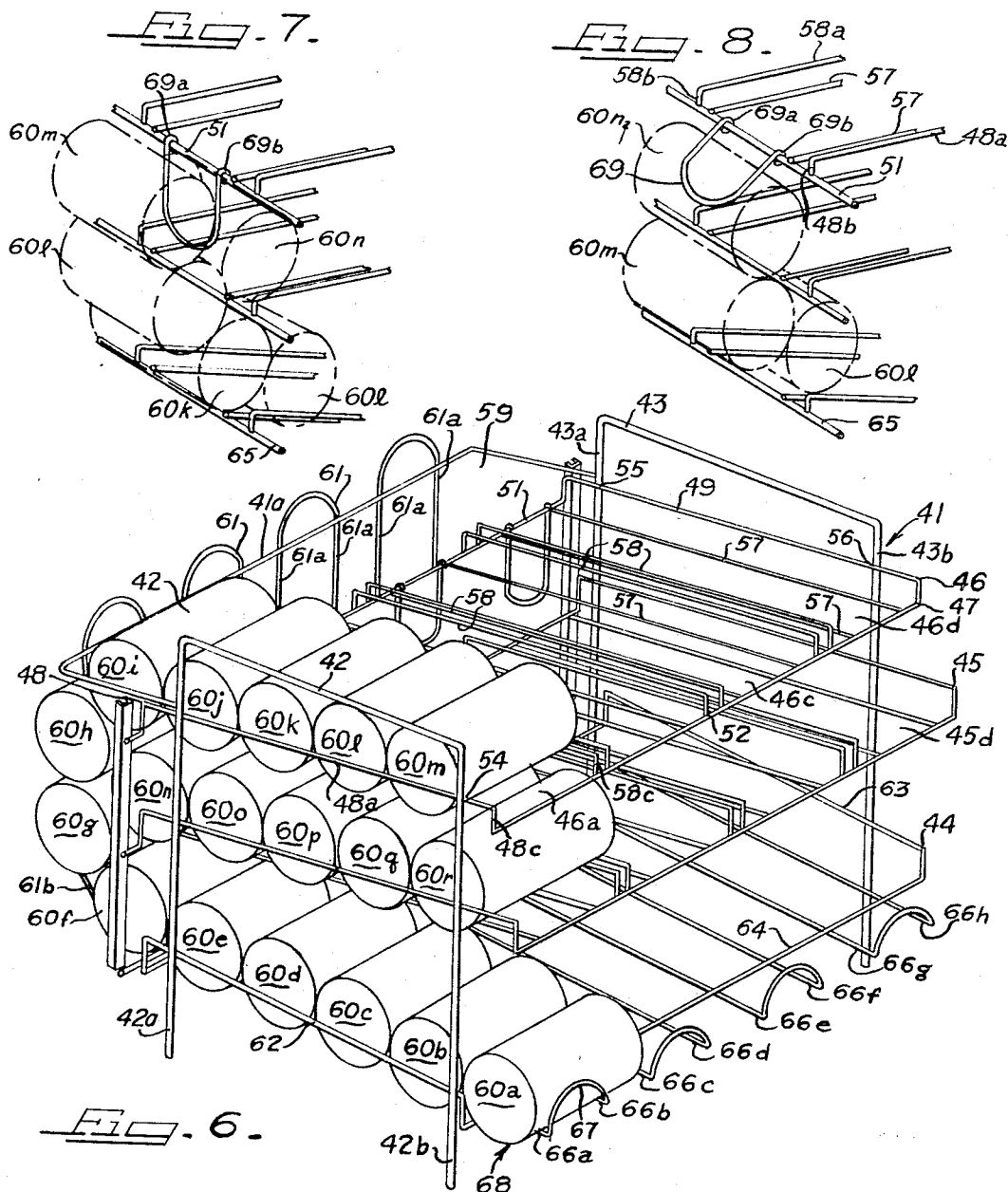
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INVENTOR
 GEORGE TAKAHASHI
 BY
Greist, Lockwood, Greenawald & Dewey
Attys.

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DISPENSING RACK

George Takahashi, Chicago, Ill., assignor to Century Display Mfg. Corp., Franklin Park, Ill., a corporation of Illinois

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ABSTRACT OF THE DISCLOSURE

A combination display-dispensing rack which includes a frame to which a top shelf, at least one intermediate shelf and a bottom shelf are mounted in general vertical alignment with each other. The top and intermediate shelves are rearwardly and downwardly inclined so that articles to be dispensed are discharged therefrom into a vertical chute which in turn feeds the articles onto the bottom shelf which is downwardly and forwardly inclined. The rearmost portion of each of the intermediate shelves is equipped with a top-hinged pivotly mounted bracket which prevents articles on the intermediate shelf from being transmitted into the vertical chute when the vertical chute is already occupied with other articles to be dispensed. In operation, the top and intermediate shelves can each be loaded with articles which are fed on a first in-first out basis to the dispensing location, viz. the lowermost portion of the bottom shelf.

The present invention relates to dispensing racks and, more particularly, concerns an improved combination display-dispensing rack having a plurality of vertically aligned storage shelves which feed items to be dispensed into a single location on the rack from where the items can be removed on a first in-first out basis.

It is an object of the present invention to provide a new and improved dispensing rack of substantially increased storage capacity wherein items to be dispensed are automatically fed to a common dispensing location from where said items can be removed on a first in-first out basis.

Another object of the present invention is to provide a new and improved combination display-dispensing rack particularly suitable for dispensing cylindrical containers, said rack including a plurality of vertically aligned storage shelves equipped with a novel anti-jamming device which enables the cylindrical containers to be gravity fed to a common dispensing location from where they can be removed on a first in-first out basis.

Another object of the present invention is to provide a new and improved dispensing rack equipped with a plurality of front-loaded vertically aligned storage shelves.

Another object of the present invention is to provide a new and improved front loaded combination display dispensing rack of substantially increased storage capacity which can be placed on a shelf or counter for dispensing of can items such as soup, fruit juice, and the like on a first in-first out basis.

Other and further objects of the present invention will be apparent from the following detailed description of the drawings wherein:

FIGURE 1 is a perspective view of a dispenser embodying principles of the present invention with a segment of the outer wall thereof broken away illustrating a portion of the interior construction of the dispenser;

FIGURE 2 is a side view of the dispenser shown in FIGURE 1 with the side panel removed illustrating the shelves thereof fully loaded with cylindrical containers;

FIGURE 3 is a view similar to FIGURE 2 wherein some of the cylindrical containers have been removed from the dispenser;

FIGURE 4 is an enlarged fragmentary perspective view of the back portion of the shelves of the dispensing rack

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shown in FIGURE 1 illustrating one phase of the operation of the novel jam prevention device of the present invention;

FIGURE 5 is a view similar to FIGURE 4 illustrating another phase of the operation of the jam prevention device of the present invention;

FIGURE 6 is a perspective view of another embodiment of the present invention;

FIGURE 7 is an enlarged fragmentary perspective view of the dispensing rack shown in FIGURE 6 illustrating one phase of the operation of the novel jam prevention device of the present invention; and

FIGURE 8 is a view similar to FIGURE 7 illustrating another phase of the operation of the jam prevention device of the present invention.

In the embodiment of the invention illustrated in FIGURES 1-5, reference numeral 11 generally designates a dispenser having a base or frame 12 to which a bottom shelf 13, an intermediate shelf 14 and a top shelf 15 are mounted in general vertical alignment with each other. Dispensing units of this particular type can be advantageously used as combination display-dispensers for dispensing cylindrical containers such as, for example, cans of soup, fruit juice, and the like, on a first in-first out basis.

As is shown, frame 12 includes a back panel member 16, a pair of oppositely disposed vertical side walls 17, 18 and an integral bottom wall or floor 19 which extends upwardly along the front of the dispenser 11 forming a partial lower front panel section 21. The upper edge of panel section 21 can be advantageously rolled or rounded as shown at 22 to prevent accidental injury to anyone seeking to remove a can or other item from the dispenser. Each of the side walls 17 and 18 are connected by an integral front rib member 23 which is positioned in spaced-away relationship from the top edge 22 of the partial front panel section 21. The distance between rib 23 and edge 22 will vary in accordance with the size of the containers to be dispensed, however, it should be sufficiently sized so as to permit an individual to reach in and easily remove a cylindrical container from the forward end of bottom shelf 13.

A front panel door 25 is hingedly secured to the rib 23 as shown at 26 enabling door 25 to pivot thereabout so as to enable front loading of the storage shelves 14 and 15. Front door panel 25 is locked in its closed position by means of a folded top edge 27 which snugly embraces the top edges 17a and 18a of side walls 17 and 18, respectively. By reason of this advantageous front loading feature, it is possible to place a dispensing rack of this type into an existing shelf space without having to remove the dispenser for loading of the storage shelves. If desired, front panel face 25a can be provided with suitable product identification and advertising indicia. Removal of containers located adjacent the side walls 17 and 18 is facilitated by the provision of a groove or cutout 28 at the lower forward end of the side panels 17 and 18 adjacent the frontal opening between top edge 22 and rib 23.

As is best shown in FIGURE 1, each of the shelves 13, 14 and 15 are divided into a series of channels a, b, c and d. For example, bottom shelf 13 is provided with a plurality of angle bars 29 suitably fixed to the top surface of the shelf 13 by soldering or other appropriate bonding techniques. Angle bars 29 are in spaced apart relationship defining channels 13a, 13b, 13c and 13d, each of which is sized to accommodate the containers 24 when placed therein in side by side relationship to each other. Shelves 14 and 15 are similarly divided into channels 14a-d and 15a-d, respectively. In this connection and in accordance with an important aspect of this invention, it should be noted that the respective channels 13a, 14a, and 15a are in substantial vertical alignment with each other.

The actual number of channels provided on a given shelf will, of course, be determined by the size of the shelf and the size of the containers to be dispensed. The multiple channel feature of this dispenser permits display and dispensing of all varieties of a product of a particular manufacturer. For example, if desired, a single dispenser could be used for all kinds of soup of a single manufacturer.

As is best shown in FIGURES 2 and 3, storage shelves 14 and 15 are downwardly inclined toward the rear or back panel 16. Conversely, bottom shelf 13 is downwardly inclined from the back panel 16 toward the front partial panel member 21. Accordingly, cylindrical containers 24 placed on shelves 14 and 15 will be urged by gravity to travel therefrom into a vertical chute 31 defined by the inside face 16a of back panel member 16 and the back edge of the respective shelves 13, 14 and 15. Vertical chute 31 is sized to be slightly greater in width than the outer diameter of the cylindrical containers 24. In the illustrated embodiment, an inclined guide member 32 is provided at the bottom of chute 31 for directing cylindrical containers from the chute 31 onto shelf 13.

In accordance with an important aspect of the present invention, the dispenser 11 is equipped with a novel jam prevention device enabling cylindrical containers from storage shelves 14 and 15 to be fed into vertical chute 31 in an orderly fashion. In the embodiment illustrated in FIGURES 1-5, this jam prevention device includes a stop means or bracket member 33 having a looped top segment 33a loosely fitted within a slot 34 formed at the rearward end of top shelf 15. Bracket 33 is thus able to pivot about the axis defined by looped segment 33a and when backed-up by a cylindrical container in vertical chute 31 will act to retain cylindrical containers on shelf 14 until the portion of the vertical chute adjacent shelf 14 is cleared.

For example, as is shown in FIGURE 2, when one series of vertically aligned channels, for example, channels 13a, 14a and 15a is fully loaded with containers 24a-r, bracket 33 will be backed up by containers 24g and 24h in chute 31. As soon as the first container 24a is removed, each of the containers 24b-m will move toward the dispensing position 35 previously occupied by container 24a. Containers 24h and 24i will then back up bracket 33, enabling the bracket to retain containers 24m-r on shelf 14. Removal of additional containers from the dispensing position 35 will result in successive backing up of bracket 33 by containers 24i-24m.

As soon as the last container 24m on the top shelf 15 (FIGURE 2) has progressed to the location in vertical chute 31 occupied by container 24f in FIGURE 2, there will no longer be any containers which will be interposed between bracket 33 and panel 16. Bracket 33 will then be free to pivot about axis 33a (as shown in FIGURE 5) enabling the containers on shelf 14 to pass into vertical chute 31 and from there onto shelf 13.

Thus, in accordance with the present invention, it will be noted that jamming of the cylindrical containers in the vertical chute is virtually eliminated enabling containers to be fed into a single vertical chute from a plurality of storage shelves for ultimate dispensing from a single location on a first in-first out basis. In this regard, it should of course be noted that the number of shelves placed in vertical alignment with the bottom shelf 13 is limited only by the intended height of the dispenser, enabling a relatively narrow dispenser to have substantially increased storage capacity.

FIGURES 6-8 illustrate another embodiment of a dispensing device embodying principles of the present invention. As is shown, the reference numeral 41 generally designates a dispensing rack structure which includes a pair of opposed U-shaped support members 42, 43 having leg portions 42a, b and 43a, b, respectively, to which bottom shelf 44, intermediate shelf 45 and top shelf 46 are fixed. These shelves can be secured to the U-shaped bracket 42 by soldering, spot welding or any other suitable bonding technique. A horizontal U-shaped bracket

41a is mounted to the respective rearward legs 42a and 43a of opposed U-shaped support members 42 and 43. As is shown, the bight portion of horizontal U-shaped bracket 41a extends across the width of dispensing rack 41.

Each of the shelves is of an open type wire or rod-like construction enabling the dispensing rack to be of unusually light weight. For example, top shelf 46 includes a generally rectangular frame 47 defined by side portions 48, 49 and integral front and back rod-like members 51 and 52. A plurality of rods 57 extend between elongated front and back members 51 and 52 in spaced apart relationship with each other for receivingly supporting the cylindrical containers to be dispensed. The cylindrical containers are maintained in alignment on the shelf 46 by the provision of a plurality of channels 46a, 46b, 46c and 46d. Channel 46a is defined by side member 48 and a raised guide member 58. Side member 48 includes an elongated portion 48a having downwardly turned ends 48b and 48c which are integrally formed with front and back members 51 and 52, respectively. Similarly, guide member 58 includes an elongated section 58a and down turned end portions 58b and 58c. The spacing between the members 48 and 58 is such as to accommodate the end portions of the respective cylindrical container to be dispensed when said containers are in side by side relationship to each other. As is clearly shown, shelf 45 is of the same general construction as shelf 46, having a plurality of channels 45a, 45b, 45c and 45d which are in vertical alignment with channels 46a, 46b, 46c and 46d, respectively.

Each of the shelves 45 and 46 are inclined downwardly toward a vertical chute 59 defined by the back edge of each of the shelves and a plurality of rod-like members 61. In the illustrated embodiment, rod-like members 61 include a vertically extending portion 61a each of which extend into an inclined or angular disposed portion 61b which directs the cylindrical containers from the vertical chute onto the bottom shelf 44. Shelf 44 is also of a generally rectangular configuration defined by side rods 62, 63 and front and back elongated members 64, 65. A plurality of longitudinal rods 66a-h arranged in parallel alignment with side members 62 and 63 are fixed to the horizontal front and back members 64, 65 in spaced apart relationship to each other to support the cylindrical containers received from vertical chute 59. As is shown, elongated rods 66a and 66b are joined at their forward end portions in a generally vertically extending lip 67. In this connection, it should be noted that bottom shelf 44 is downwardly inclined from vertical chute 59 so as to enable cylindrical containers to roll to the forward end of the shelf into the dispensing position generally designated by the reference numeral 68.

In accordance with the present invention, each of the channels on the intermediate shelf 45 are equipped with a jam prevention device which serves to retain the cylindrical containers on the intermediate shelf until the last cylindrical container on the shelf thereabove (60m in FIGURE 6) progresses to the position occupied by cylindrical container 60f (FIGURE 6). The jam prevention device (best illustrated in FIGURES 7 and 8) comprises a U-shaped bracket 69 which includes a pair of looped ends 69a and 69b which are loosely received around the rod 51 so as to enable U-shaped bracket 69 to freely pivot thereabout. As is apparent, the operation of this U-shaped bracket is substantially the same as that of the bracket 33 previously described in the embodiment illustrated in FIGURES 1-5. When a cylindrical container is positioned in the portion of the vertical chute adjacent to the intermediate shelf 45, that container will act to back up the bracket 69 and prevent it from pivoting around rod 51. Accordingly, any containers on the intermediate shelf will be retained there until that portion of the vertical chute 59 immediately adjacent thereto is cleared. Similarly, when there are no containers in the vertical chute

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59 immediately adjacent the intermediate shelf 45, the cylindrical containers on that shelf (i.e., container 60n-r in FIGURE 6) are then free to roll into the vertical chute and be dispensed in orderly sequence.

This unique arrangement is, of course, not limited to rack structures of the specific type illustrated in FIGURE 6 (i.e. those only having one intermediate shelf 45). Accordingly, if greater storage capacity were desired, additional shelves, comparable to intermediate shelf 45 could be provided. By equipping each of these added shelves with the jam preventing device which forms a part of the present invention (i.e. U-shaped bracket 69) orderly dispensing of the containers without jamming thereof in the vertical chute will be obtained regardless of the number of shelves in vertical alignment with each other.

It will be apparent to those skilled in this art that various modifications may be made from the specific embodiments of the invention described herein. Accordingly, the present invention is to be limited only by the scope of the appended claims.

I claim:

1. A rack adapted for dispensing cylindrical containers, comprising,
 a frame which includes a vertically extending back wall,
 a pair of integral oppositely disposed parallel oriented side walls extending from said back wall, and
 an upper front partial panel member in oppositely disposed parallel orientation with said back wall,
 a top shelf,
 at least one intermediate shelf,
 a bottom shelf,
 said shelves being mounted to said frame in general vertical alignment with each other,
 each of said shelves being provided with parallel oriented track members in spaced apart relationship to each other defining a plurality of container-receiving channels on said shelves for accommodating said containers in side wall to side wall relationship with each other when the end walls of said containers are in engagement with said track members,
 said upper front partial panel terminating above said bottom shelf for permitting access to said bottom shelf for enabling removal of cylindrical containers contained thereon,
 said front panel being hingedly mounted to said frame permitting access to said top and intermediate shelves,
 said top and intermediate shelves being inclined rearwardly,
 a vertical chute defined by the back wall of said frame and the back end of said shelves,
 said vertical chute being slightly wider than the outer diameter of the cylindrical containers adapted to be dispensed from said rack,
 said bottom shelf being inclined forwardly from said vertical chute and being provided with an inclined guide member positioned in said chute for directing cans from said chute onto said bottom shelf,
 a vertically extending lower front partial panel member extending across the front of said bottom shelf adjacent the bottom of said frame for preventing containers on said bottom shelf from inadvertently rolling off,
 a top-hinged pivotally mounted bracket provided at the back end of the channel on said intermediate shelf for preventing cylindrical containers contained in said channel on said intermediate shelf from being transmitted into said vertical chute when the portion of said vertical chute immediately adjacent said channel of said intermediate shelf is occupied with other cylindrical containers to be dispensed,
 whereby cylindrical containers can be dispensed from said rack on a first in-first out basis without jamming in said vertical chute.

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2. A rack adapted for dispensing of cylindrical containers, comprising

a frame consisting of a pair of oppositely disposed U-shaped support members,
 a top shelf,
 at least one intermediate shelf,
 a bottom shelf,
 said shelves being fixed to the leg portions of said U-shaped support members,
 each of said shelves consisting of a plurality of longitudinally extending rods for supporting thereon cylindrical containers to be dispensed,
 each of said shelves being further equipped with elevated channel-defining rods in spaced-apart relationship to each other,
 said channels being sized to correspond to the length of cylindrical containers to be dispensed from said rack enabling cylindrical containers to be carried thereon in side wall to side wall relationship to each other,
 a horizontal U-shaped bracket mounted to the respective rearward legs of said U-shaped support members with the bight portion thereof extending across the width of said rack,
 a plurality of vertically extending rods secured to the bight portion of said U-shaped member,
 said vertically extending rods being spaced apart in such manner so as to define a vertically extending chute with the rearwardmost portion of said shelves, said vertical chute being slightly greater in width than the outer diameter of said cylindrical containers, said top and intermediate shelves being downwardly inclined toward said vertical chute,
 each of the channels on said intermediate shelf being equipped with a top-hinged pivotally mounted bracket member positioned at the rearward end of said shelves adjacent said vertically extending chute, said U-shaped member being sufficiently sized so as to prevent containers carried in the channel of said intermediate shelf from traveling into said vertical chute when the portion of said chute immediately adjacent said channel on said intermediate shelf is occupied with another cylindrical container,
 said bottom shelf being downwardly inclined from said vertically extending chute and being provided with a guide member for directing cylindrical containers from said chute onto said bottom shelf,
 said bottom shelf being further equipped with a vertically extending stop member adjacent the forward portion thereof for preventing any cylindrical containers carried thereon from inadvertently rolling off said shelf,
 whereby cylindrical containers will be dispensed from said rack on a first in-first out basis without jamming thereof in said vertically extending chute.

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CHANCELLOR E. HARRIS, *Primary Examiner*.

CLAUDE A. LE ROY, *Examiner*.

W. D. LOULAN, *Assistant Examiner*.