Sept. 20, 1971 W. N. BEESLEY, JR 3,606,022

STORAGE AND DISPENSING RACK

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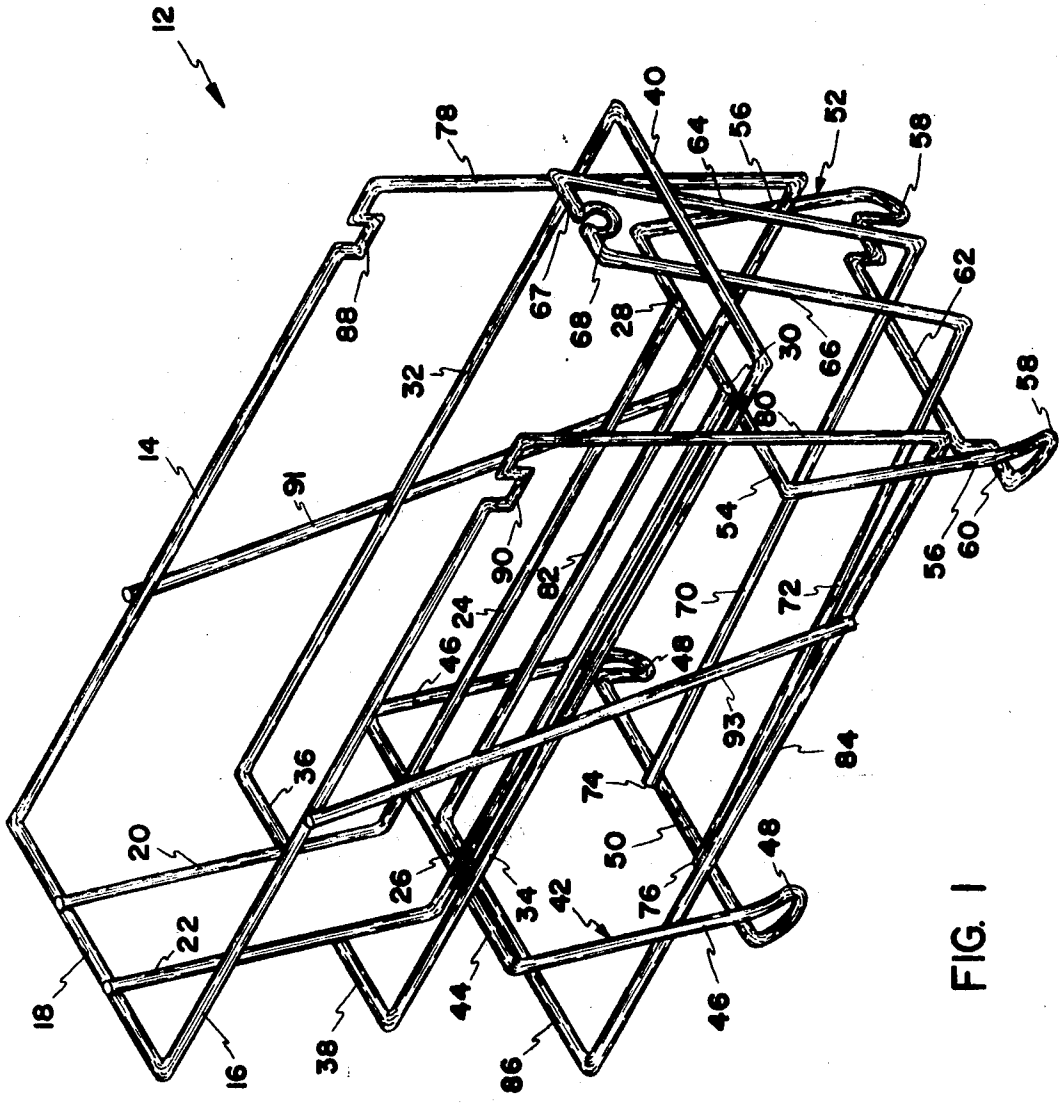


FIG. 1

INVENTOR.
WILLIAM N. BEESLEY JR
BY
ATTORNEY

Sept. 20, 1971 W. N. BEESLEY, JR 3,606,022

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FIG. 3

FIG. 4

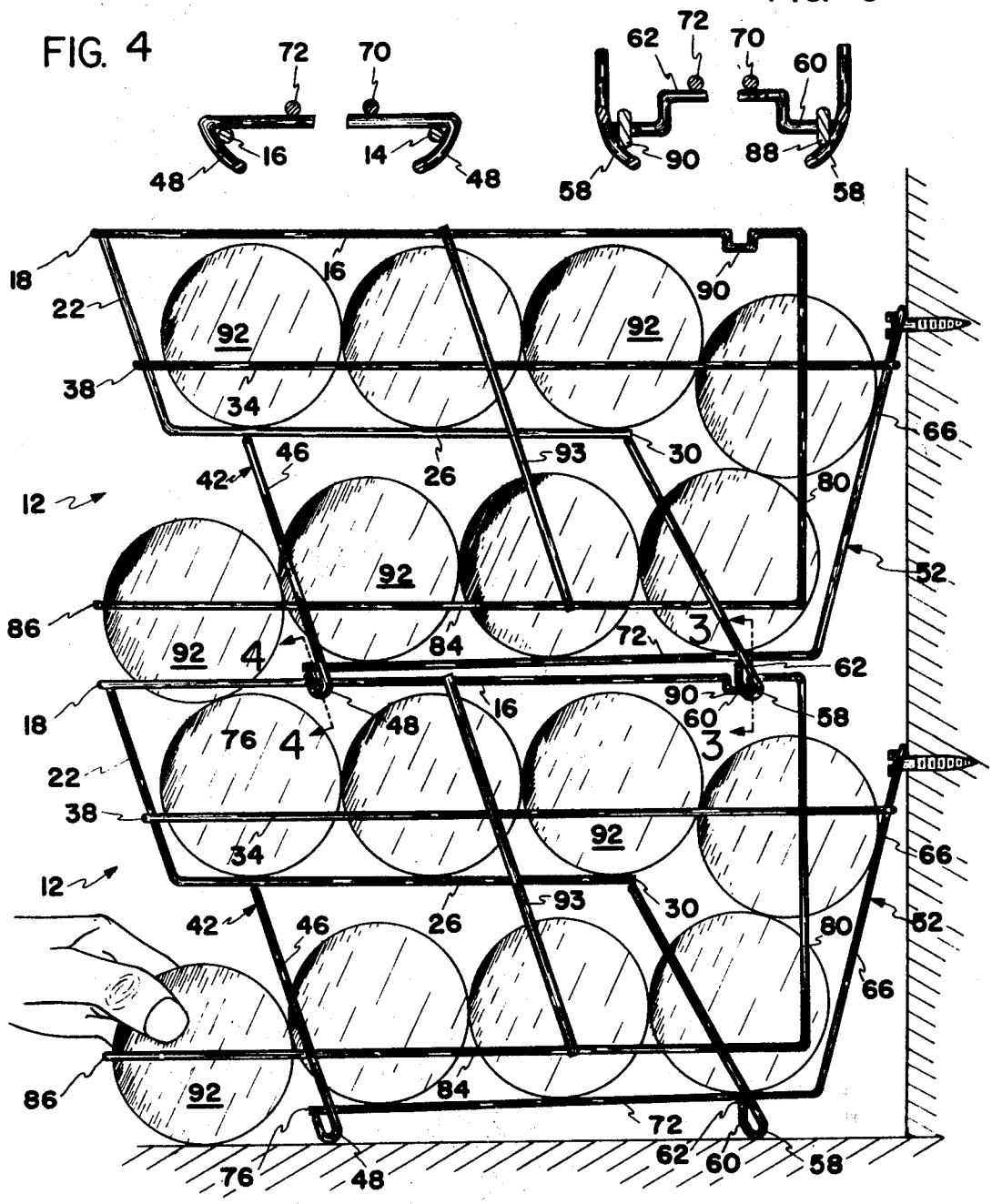


FIG. 2

INVENTOR.
WILLIAM N. BEESLEY JR.
BY Lynn J. Foster
ATTORNEY

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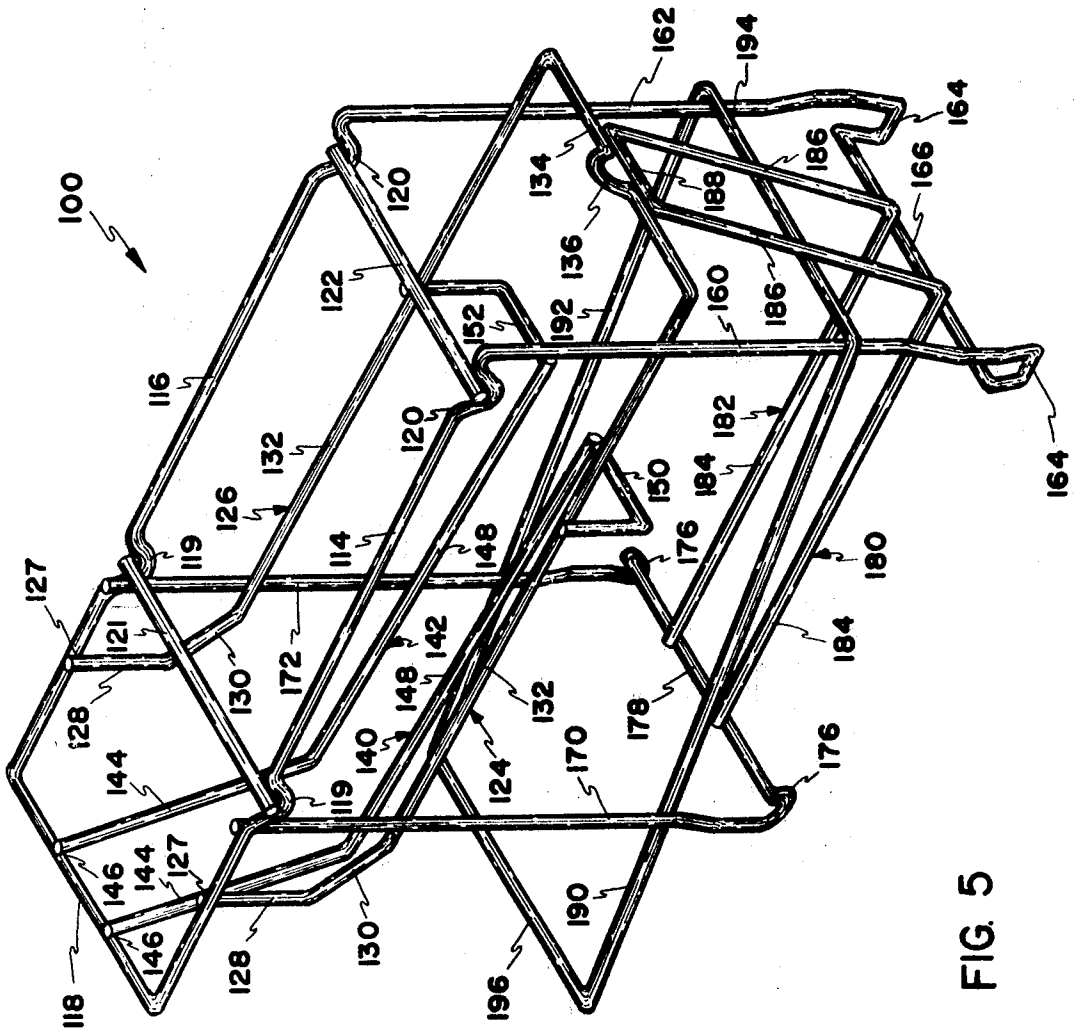


FIG. 5

INVENTOR.
WILLIAM N. BEESLEY JR.
BY
ATTORNEY

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STORAGE AND DISPENSING RACK

William N. Beesley, 2755 Apple Blossom, Salt Lake City, Utah 84117

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Int. Cl. A47f 7/00
U.S. Cl. 211—49 9 Claims

ABSTRACT OF THE DISCLOSURE

A two-tier storage and dispensing rack of wire construction including upper and lower ramps connected by a chute. Downwardly depending feet are inwardly contoured to function as coupling members so that two-tier racks may be releasably stacked one on top of another to form a continuous multi-tier dispensing unit for receiving and dispensing cylindrical containers, such as standard-size food cans.

BACKGROUND

The present invention

The present invention relates to dispensing racks and more particularly to two tier storage and dispensing racks which can be selectively coupled together to form a multi-tier rack for storage of cylindrical containers.

The prior art

Racks for dispensing canned goods and the like are well known in the art. Examples of known prior art racks can be found in U.S. Pats. 2,915,162 and 2,969,152. Conventionally, such prior art racks include a fixed size or fixed number of tiers and are intricately configurated and are so constructed that the cost thereof is disadvantageously high, and, accordingly, the use thereof is limited.

BRIEF SUMMARY AND OBJECTS OF THE INVENTION

According to the present invention, a two tier dispensing rack which successively delivers cylindrical items such as canned goods by gravity to a single discharge site is provided. The rack is of structurally-sound wire or other rod shaped construction having unique features and providing substantial economies. Any suitable number of racks can be releasably stacked one above another to form a multi-tier rack.

It is a primary object of the present invention to provide an improved dispensing rack for canned goods and the like.

It is another primary object of the present invention to provide a novel dispensing rack which may be used individually or in combination with a plurality of essentially identical racks.

These and other objects and features of the present invention will become more fully apparent from the following description and appended claims taken in conjunction with the acompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of one presently preferred two tier rack according to the present invention;

FIG. 2 is a side elevation illustrating two racks of the type shown in FIG. 1, the racks being coupled together in vertically stacked relation and filled with cylindrical cans;

FIGS. 3 and 4 are transverse cross sectional views taken along lines 3—3 and 4—4 of FIG. 2, respectively; and

FIG. 5 is a perspective view of a second presently preferred two tier rack according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIGS. 1–4

Reference is now made to the figures and particularly to FIGS. 1–4 wherein one presently preferred rack embodiment, generally designated **12**, is illustrated. The rack **12** has parallel upper rods **14** and **16**, the adjacent ends of which are connected by an integral transverse member **18**. The transverse member **18** is situated at the filling end of rack **12**. Parallel guide rails **20** and **22** are generally L-shaped in configuration and are welded or otherwise rigidly connected at one end to the transverse member **18**. The guide rails **20** and **22** each have a short leg which is slightly inclined from the vertical and merge into ramp rails **24** and **26**, respectively. The parallel ramp rails **24** and **26** may be slightly tapered in respect to the horizontal to provide for gravity feed of canned goods or the like through the rack **12**. Ramp rails **24** and **26** terminate at ends **28** and **30**.

Intermediate side bars **32** and **34** are spaced downwardly from but generally parallel to the upper rods **14** and **16**. The side bars extend in a horizontal direction above the rails **24** and **26** to retain can goods. The side bars **32** and **34** terminate in ends **36** and **38**, which are essentially normal thereto and are welded or otherwise suitably secured to guide rails **20** and **22**, respectively, intermediate the length thereof. The other ends of bar **32** and bar **34** are connected by a cross bar **40**, the bar **40** being horizontally spaced from the ends **28** and **30** of ramp rails **24** and **26** a distance slightly greater than the diameter of cans to be dispensed from the rack **12**.

Ramp rails **24** and **26** are connected, near one end, to a forward, vertically-oriented bracket **42** having a horizontal cross bar **44** and vertical legs **46**. Each leg **46** merges into a forward foot **48**. The feet **48** are connected together by cross-connecting member **50**. Each foot **48** has a general loop-configuration and, as illustrated in FIG. 1, is toed in or curved inwardly to accommodate stacking of racks in press-fit relation, and to provide ground or floor engaging support for the bottom rack.

The terminal ends **28** and **30** of ramp rails **24** and **26** are connected to rear vertically-oriented bracket **52**. Rear bracket **52** comprises a horizontal cross support **54** and generally vertical legs **56** which are integral with the support **54** and which rise to a height slightly less than the height of bracket **42** to thereby define a slope for the rails **24** and **26**. Each leg **56** merges into a foot **58**. As can be appreciated by reference to FIG. **1**, each foot **58** has a generally looped-configuration and is turned inwardly in an amount similar to the toe-in of feet **58** for establishing the mentioned press-fit stacked relation between racks and for providing ground or floor engaging support for the bottom rack. The feet **58** are connected together by a stepped cross-connecting member **60**, cross-connecting member **60** having a stepped unwardly elevated central portion **62**. Guide bars **64** and **66**, disposed generally vertically at the rear of the rack **12**, are connected to project above the cross bar **40** so as to form a generally vertical chute between the bracket **52** and guide bars **64** and **66** through which canned goods of predetermined size can easily pass by force of gravity. The top ends of bars **64** and **66** are connected by an integral transverse member **67**, transverse member **66** having an eyelet **68** adapted to receive a screw, bolt or the like for attaching the rack **12** to a vertical wall surface, for example.

The relatively short guide bars **64** and **66** are each part of L-shape wires and, therefore, respectively merge with lower generally horizontal ramp rails **70** and **72**. The lower ramp rails **70** and **72** are connected upon the elevated central portion **62** of the cross-connecting member

60 and also upon the cross-connecting member 50. Thus, the slope of the ramp rails 70 and 72 in respect to the horizontal is determined by the amount of elevation of the cross-connector 62 above that of cross-connector 50. The lower ramp rails 70 and 72 terminate at ends 74 and 76 respectively adjacent the cross-connector 50 to form the discharge end of the rack 12.

The upper horizontal guards 14 and 16 respectively merge with essentially vertical posts 78 and 80 which in turn merge with lower side horizontal guards 82 and 84. The posts 78 and 80 are respectively welded or otherwise secured to side bars 32 and 34. The side guards 82 and 84 are generally parallel to side bars 32 and 34, respectively, and each is welded or otherwise secured to cross connectors 62 and 50. The guards 82 and 84 are connected by a transverse stop brace 86. It is to be noted that the transverse stop bar 86 is laterally spaced from the ends 74 and 76 of lower ramp rails 70 and 72 a distance slightly greater than the diameter of cans to be dispensed from the rack 12. Thus, cans arriving at the discharge end of the rack 12 will either fall from the rails 74 and 76 of a given rack to the floor, ground or other supporting surface or be displaced by gravity into another, lower rack at the filling end thereof as will be subsequently more fully described.

Upper guards 14 and 16 are respectively provided with notches 88 and 90. The notches 88 and 90 accommodate attachment of a second, essentially identical rack 12 in vertically-stacked, press-fit relation, as best shown in FIGS. 2 and 3. Also, the upper rod 14, side bar 32 and side guard 82 are reinforced by a diagonal brace 91, which is welded or otherwise secured to the three mentioned members. Similarly, rod 16, bar 34 and guard 84 are reinforced by diagonal brace 93, which is welded or otherwise secured to the last three mentioned members.

Referring more particularly to FIGS. 2–4, two essentially identical racks 12 are shown coupled one to another in a preferred manner. More specifically, upper rods 14 and 16 are manually squeezed together so as to be slightly displaced out of linear alignment with side bars 32 and 34 and guards 82 and 84. The displacement is sufficient to allow the inwardly turned feet 48 and 58 to be press-fit over the exterior surface of the rods 14 and 16, with the feet 58 being disposed at notches 88 and 90. When the squeezing force on the upper guards 14 and 16 is thereafter released, the upper guards 14 and 16 will, because of memory of the material, exert a horizontally-outward force on the respective feet 48 and 58 tightly so as to avoid inadvertent separation of one rack from the other.

As will be observed, the feet 58 are situated adjacent the notches 88 and 90 so that the cross-connecting member 60 rests at the lower portion of the notches 88 and 90. Thus, the elevation of the central portion 62 of the top rack 12 relative to cross bar 50 of the same rack defines the slope of lower ramp rails 70 and 72 of the top rack.

The connection of the feet 48 and 58 to the rods 14 and 16 are best shown in FIGS. 3 and 4. The press-fit coupling between the feet 48 and 58 and the upper rods 14 and 16 will prevent consequential inadvertent relative movement of the superimposed racks 12. Also, by reference to FIG. 2, it is observed that the stop member 86 at the discharge end of the upper rack is generally in vertical alignment with the transverse member 18 of the lower rack. Thus, as the cans 92 emerge from the discharge end of the upper rack, the stop member 86 will cause cans 92 to fall directly into the filling end of the lower rack 12. The cans thereafter traverse along the rails 24 and 26 to the chute defined between terminal ends 28 and 30 of the ramp rails 24 and 26 and the guide bars 64 and 66. The cans fall through this chute and thence along the lower ramp rails 70 and 72 to the discharge end and stop member 86.

When desired, one or more cans may be sequentially and individually removed by hand from the discharge end of the lower or lowest rack 12 by inserting the hand above the stop 86 and lifting the can 92 out through the discharge end counter to gravity. It is clear, that removal of one of the cans 92 will cause the remainder of the cans to advance under force of gravity one position in the rack thereby situating another can in available position at the discharge end of the lower rack 12. It should also be observed that any desired number of racks 12 may be superimposed one upon the other to form a single dispensing combination of racks of any desired size. Stability is offered to the combination by screw securing the racks 12 to a vertical wall member or support (as shown in FIG. 2) at the location of the eyelet 68 as illustrated in FIG. 2.

FIG. 5

Reference is now made to FIG. 5 which illustrates a second presently preferred rack, generally designated 100 and manufactured of heavy gauge wire stock or other economical rod or rod-like elongated structure. The rack 100 comprises parallel upper rods 114 and 116 adjacent ends of which are connected by an integral transverse member 118. The linearity of the rods 114 and 116 are interrupted by companion U-shaped loops 119 and 120, into which cross braces 121 and 122 are situated and secured as by welding, for example. The transverse member 118 is situated at the filling end of the rack 100. Parallel L-shaped rails 124 and 126 are welded or otherwise rigidly connected at the end of the short leg thereof to the rods 114 and 116 at locations 127. The short leg 128 of the guide rails 124 and 126 merges with a diagonal portion 130 thereof which, in turn, merges with a long linear leg 132. Thus, the guide rails 124 and 126 serve to confine canned goods placed in the rack 100 against substantial lateral displacement. The right ends of the long legs 132 of rails 124 and 126 are integrally joined by a cross member 134, which presents a centrally disposed, upwardly-directed eyelet 136.

The rack 100 further comprises L-shaped ramp rails 140 and 142, the short leg 144 of each being angled a few degrees from the vertical and secured at the upper end thereof as by welding to the cross brace 118 at location 146. The long leg 148 of each rail 140 and 142 is preferably tapered left to right a few degrees in respect to the horizontal so that canned goods may readily roll along the rails 140 and 142, being confined to a path essentially parallel to the rails 140 and 142 by the guards 124 and 126. The right end of the rails 140 and 142 are respectively supported in the illustrated positions by angle supports 150 and 152, the respective ends of which are welded or otherwise secured to the mentioned end of one of the rails 140 and 142 and at the other end thereof to the adjacent guide 124 or 126.

The previously mentioned rods 114 and 116, respectively, integrally merge into the vertical posts 160 and 162. At the lower end, each vertical post 160 and 162 terminates in a U-shaped foot 164, each foot being curved slightly inwardly or toed in to provide the previously mentioned press-fit relation when a series of two or more racks 100 are vertically stacked one upon another.

The adjacent feet 164 are joined one to another by a cross brace integral with the feet and designated 166 in FIG. 5.

In like manner, the rack 100 comprises spaced vertical posts 170 and 172 which respectively join the rods 114 and 116, at the top end thereof by welding or the like immediately to the left of the U 119. The vertical posts 170 and 172, respectively, join guards 124 and 126 by welding and terminate at the lower end thereof in a ground or floor engaging foot 176, which is toed inwardly to accommodate press-fit stacking of two or more racks 100, one above another. The spaced feet 176 are joined by an integral cross brace 178, which is disposed at an elevation lower than the cross brace 166. Spaced lower rails 180 and 182 define a sloped ramp running between

cross braces **166** and **178** for gravity displacement of canned goods through the rack to a discharge station. The ramp rods **184** are generally parallel one to another and merge into upwardly directed legs **186**. The spaced and parallel legs **186** are joined one to another by an integral cross brace **188**, which is welded to the cross piece **134** and closes the lower end of the eyelet **136**. Parallel side guards **190** are sloped in the same direction but at a steeper angle with respect to the horizontal than the rails **184** and serve to confine the displacement of cans falling from rails **140** and **142** through an open chute between the right ends of the ramp rail members **140** and **142** and the vertical post **160** to a path parallel to the rails **184**. The spaced lower side guards **190** and **192** integrally merge with right and left cross bars **194** and **196**. The cross bar **194** is secured as by welding to the vertical posts **160** and **162** and also to the upwardly directed legs **186** of the rails **180** and **182**. The cross piece **196** serves as a stop at a discharge station for engaging and holding a can upon the ground or floor within the rack adjacent the stop cross brace **96**.

The use of the rack **100** is essentially identical to the use of the earlier described rack **12** and the racks **100** can be vertically stacked in substantially the same manner as that described in connection with racks **12**, screws or the like being fitted through each eyelet **136** and secured in a vertical support, such as a wall.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore to be embraced therein.

What is claimed and desired to be secured by United States Letters Patent is:

1. A storage and dispensing rack for cylindrical containers comprising an integral unit having an upper rail and parallel side rails each vertically spaced below the upper rail next; an upper ramp vertically below and generally sloping downward from a filling end of the rack; a lower ramp generally sloping toward a discharge end of the rack which is configured to permit manual removal of containers therefrom, the lower ramp being vertically spaced from the upper ramp and oppositely sloped so as to form a two tier unit; a chute interposed between the upper and lower ramps; and contoured, inwardly directed coupling feet connected to the lower ramp, the coupling feet adapted to selectively releasably couple to the upper rail of a second dispensing rack.

2. A storage and dispensing rack as defined in claim **1** wherein the rack is made of heavy gauge wire construction.

3. A storage and dispensing rack as defined in claim **1** further comprising a U-shaped retainer projecting beyond the discharge end of the lower ramp a distance greater than the diameter of the containers dispensed by the rack.

4. A storage and dispensing rack as defined in claim **1** wherein the slope of the lower rack is determined by a raised cross member connecting contoured coupling feet on opposed sides of the lower ramp.

5. A storage and dispensing rack as defined in claim **4** wherein said upper rail has a notch adjacent one end to receive the raised cross member when another rack is mounted upon the upper rail.

6. A storage and dispensing rack as defined in claim **1** further comprising a mounting bracket for wall-mounting the dispensing rack.

7. A gravity-feed rack for containing goods in cylindrical containers, the rack comprising an open frame including at least several longitudinal and transverse rod-shaped members united one to another, the rack comprising upper longitudinally-directed rail means along which the containers sequentially move by force of gravity, side guard means located transversely outward from and above each side of the upper rail means and extending generally longitudinally parallel to the upper rail means, an ingress opening adjacent one end of the upper rail means flanked by generally vertically-directed means which define the ingress path of containers through the ingress opening to the upper rail means which interconnect with and extend above the upper rail means adjacent one end of the frame and generally horizontally-directed top bar means disposed above and interconnected to the side guard means, lower longitudinally-directed rail means along which the containers sequentially move by force of gravity, lower side guard means located transversely outward from and above each side of the lower rail means and generally longitudinally parallel to the lower rail means, a vertically oriented chute interposed between the upper and lower rail means through which the containers sequentially fall by force of gravity, the chute being flanked by generally vertically-directed means which interconnect with other parts of the frame and define the fall-path of containers through the chute, an egress opening at one end of the lower rail means, the egress opening being defined in part by a stop bar which holds the leading container until removed, and framework means interconnected to at least some of the previously-mentioned means to provide vertical and horizontal stability.

8. A rack as defined in claim **7** further comprising means through which a fastener can be placed to secure the rack to a vertical support.

9. A rack as defined in claim **7** wherein the framework means comprise means disposed at the lowest part of the rack for alternatively (a) engaging the floor or ground and (b) accomplishing a press-fit relation with the top bar means of a substantially identical rack whereby racks may be conveniently and stably stacked vertically one upon another.

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NILE C. BYERS, JR., Primary Examiner

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211—181