Oct. 13, 1964 J. BERMAN ET AL 3,152,697

MODULAR DISPENSING DISPLAY RACK

Filed Dec. 9, 1963 2 Sheets-Sheet 1

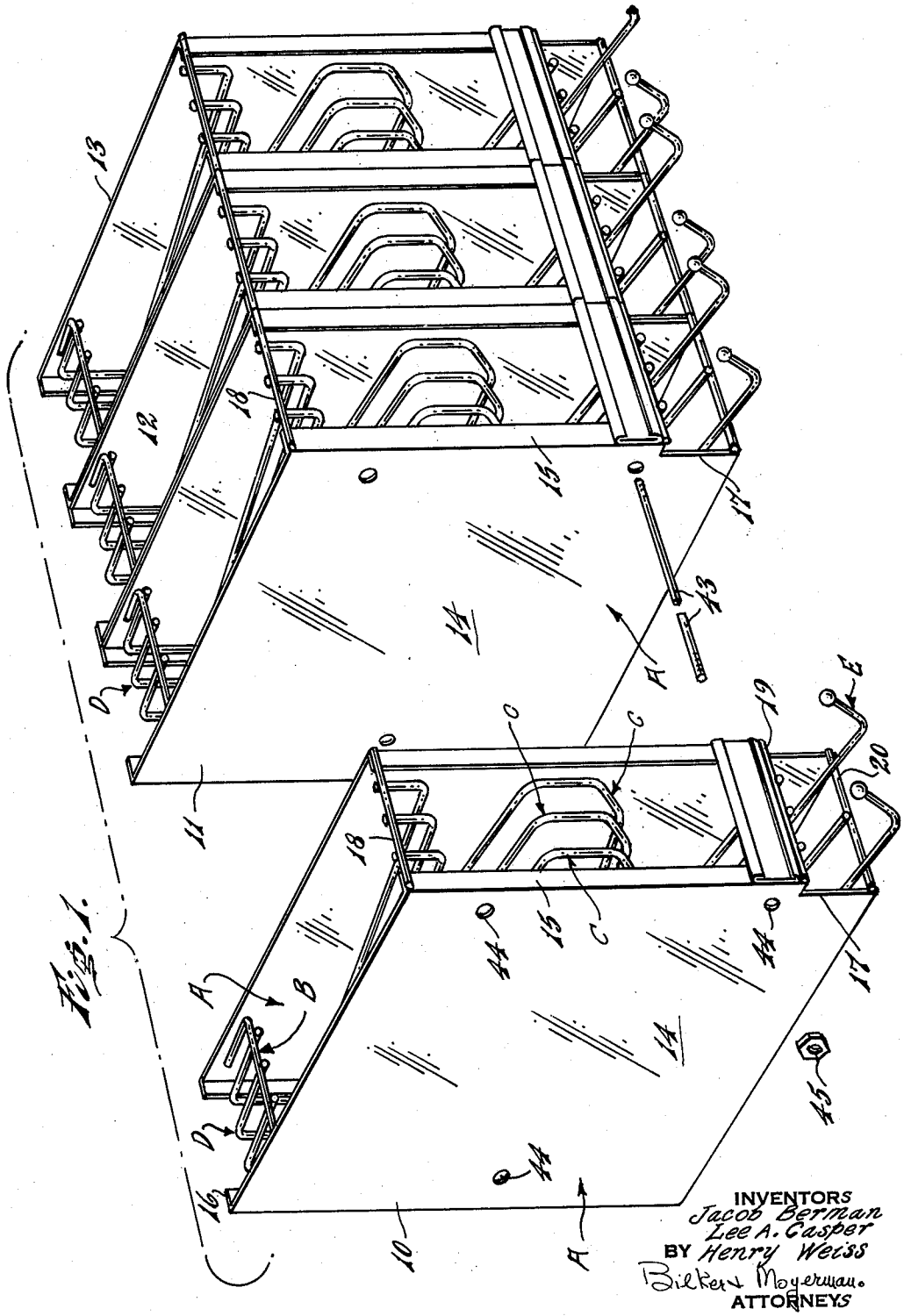


Fig. 1.

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Fig. 2.

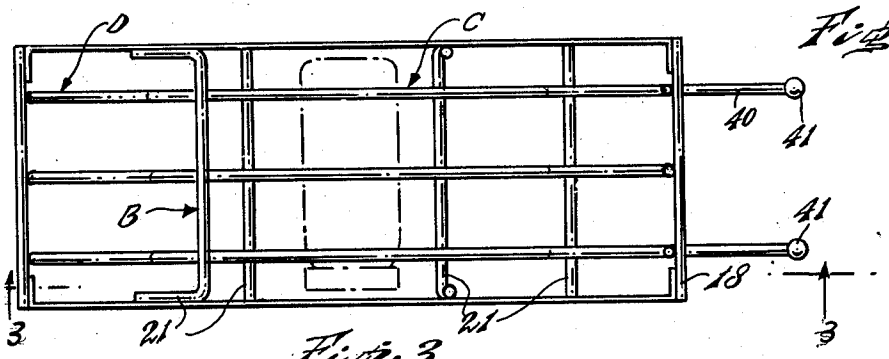
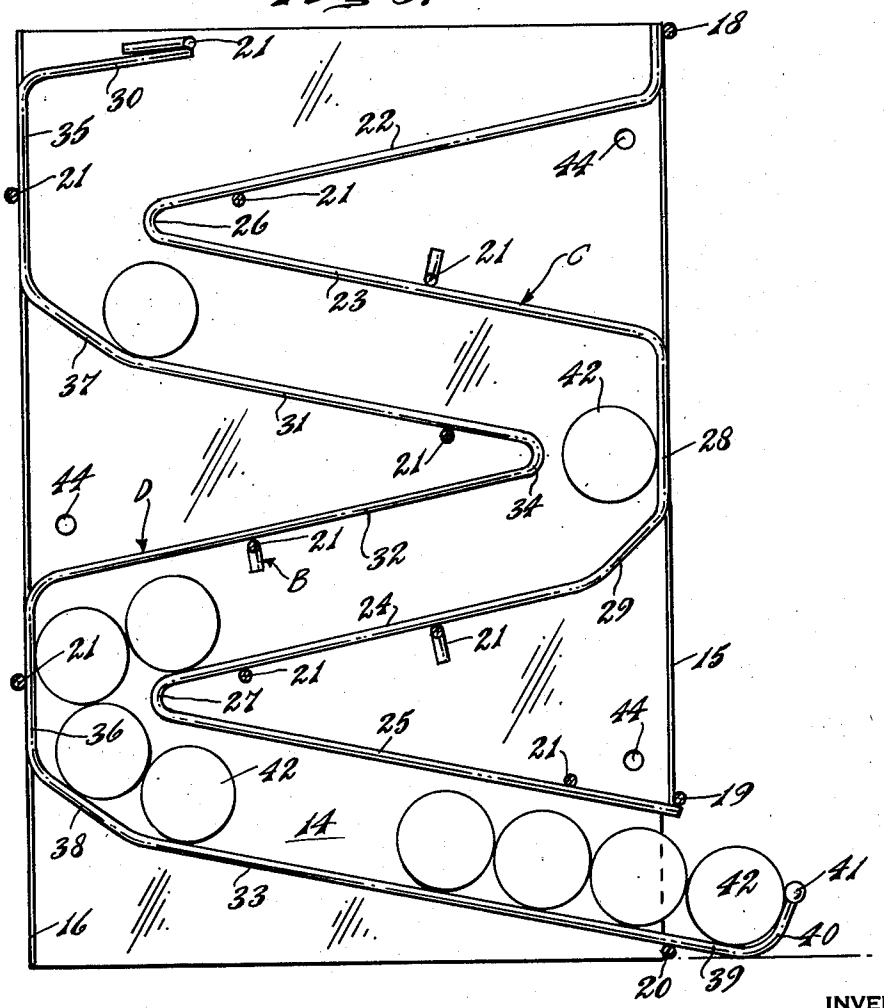


Fig. 3.



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MODULAR DISPENSING DISPLAY RACK

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This invention pertains to display racks for uniform cylindrical objects. More particularly, it pertains to modular parallelepipedal devices used for displaying, storing and dispensing a plurality of cylindrical objects.

Self-service stores such as, for instance, food supermarkets carry many items which are packaged in cylindrical containers of substantially uniform size. Storing these items in a manner which is economical volumetrically, often is done by sacrificing the display characteristics of the grouping and, further, by making it difficult for a prospective purchaser to remove but a single item from the display. The problem is particularly aggravated in the case of extremely small cylindrical containers such as are used for spices and condiments.

Attempts have been made in the past to utilize rack structures made with product storage runways, often in the form of internal ramps. Problems have been experienced in these constructions because containers have "hung up" within the structure thus preventing continuous dispensing action. Factors contributing to the clogging tendencies of these devices include the dimensional relationships between the ramps and the containers resting thereon. Also the fact that allegedly uniform containers are not truly uniform, varying among themselves with respect to dimensions and angular relationships, is an important factor. The ideal structure should be able to compensate for these differences among allegedly uniform containers and should also make positive provision for preventing hang-up.

Accordingly, it is an object of this invention to provide a dispensing display rack which permits storage of substantially uniform cylindrical objects with high volumetric efficiency so that shelf space is fully utilized and exploited.

A further object of the invention is to provide a display rack wherein objects resting on the internal runways or tracks thereof are subjected to continual positive forces in a downward direction which forces continually urge said objects toward the discharge area of the rack.

An addtiional object of the invention is to provide a modular dispensing rack having internal tracks wherein a vibration occurring on one track segment is transmitted throughout all track seqments thereof to implement gravitational forces which tend to make the stored objects move downward toward the discharge area.

Still another object of the invention is to provide a rack having internal trackways wherein wedging action of a cylindrical object mounted on a track is prevented, by continual self-centering, even though the object may not be a true cylinder and may vary in dimensions and internal angles from other substantially identical cylindrical objects.

It is also an object of the invention to provide a dispensing display rack wherein the contents are visible so that a person responsible for keeping the rack stocked can, by inspection, determine when refilling is required and so that a customer can, absent all other indica, determine the contents of the rack.

The invention has as an additional object, the provision of dispensing display racks in modular form so that an assembly of such racks can be made at the will of the user containing a number of modules conforming to the number of different items being stored and dispensed.

An equally important object of the invention is to provide a modular dispensing rack wherein the particular cylindrical object next in turn is displayed in an appealing manner, cantilevered forward of the body of the rack so as to serve as a stimulus for customer impulse buying.

An equally important object of the invention is to provide, in connection with modular display racks, indicia holding means for displaying the price and contents of a particular module, which means are a cooperative part of the structure and simultaneously perform several useful functions.

Among the objects of the invention is the provision of a rack which automatically makes for continuous stock turnover or rotation so that the first item inventoried is the first one dispensed.

It is also an object of the invention to provide a modular dispensing rack which is safe to use both from the viewpoint of stability and from the viewpoint of presenting to the customer no surfaces or edges which can cause injury or contusion.

Other objects of the invention are to provide an improved rack of the character described that is easily and economically produced, which is sturdy in construction, of indefinite life, highly efficient in operation, and pleasing in appearance.

These and other objects of the invention will be apparent to those skilled in the art from the following detailed description of an embodiment thereof, when read in conjunction with the accompanying drawings, in which.

FIGURE 1 represents a partially exploded perspective view of an assembly of modular dispensing display racks embodying the invention.

FIGURE 2 represents a plan view of a typical module of the invention including a typical cylindrical container.

FIGURE 3 represents a longitudinal section taken on line 3—3 through the typical modular unit of FIGURE 2.

Referring now in greater detail to the drawings, in which similar reference characters denote similar parts, there is shown, in FIGURE 1, a plurality of identical modular dispensing racks each designated, generally, **10**, **11**, **12** and **13**. Each module is identical and, consequently, each includes a pair of parallel sidewalls A, a plurality of transverse rigid spacers B affixed between the sidewalls, a plurality of parallel rearwardly extending front tracks C, a plurality of parallel frontwardly extending rear tracks D which may also include a cantilevered delivery portion E.

Sidewalls A which are paired mirror images include generally rectangular portions **14** having an integral, inward facing 90° front flange **15** and an integral inward facing 90° rear flange **16**. These flanges contribute to the overall rigidity of the structure and provide smooth outer corners which are safe to touch. Flat portions **14** are provided with a shallow rectangular cut-out portion **17** proximate their lower front corners. This cut-out portion extends in height slightly greater than the diameter of the cylindrical objects which will be dispensed. Sidewalls A are made of solid vibratable material such as sheet metal, and despite the overall rigidity of the modular structure will flex in response to an internal blow.

Sidewalls A are kept in parallel spaced-apart relationship by transverse spacers B. While all of these spacers perform their stated function, certain of them perform additional functions as well. Thus spacer **18** proximate the upper front corner of walls A serves as a cut-preventing guard. Spacer **19** and spacer **20** which delineate the cut-out portion of sidewalls A also perform a similar safety function. Other spacers, **21**, are mounted at locations which will maximize the rigidity of the structure and, at the same time provide support for tracks C and D. Each module is provided with a plurality of parallel

rearwardly extending, vertically-spaced tracks which are mounted on and supported by spacers 18, 19, 20, and 21. Each of these tracks, as best shown in FIGURE 3, is a continuous generally serpentine-shaped rigid wire having a series of ramps 22, 23, 24, and 25 which are inclined downwardly in alternate and opposite directions. The junction of adjacent ramps when in the rear of the rack such as junction 26 (between ramps 22 and 23) and junction 27 (between ramps 24 and 25) are in the form of arcuate apices but, when the junctions are in the front of the rack they include a vertical portion 28 proximate the front of the rack and an adjoining sloped portion 29 intermediate vertical portion 28 and adjacent downward ramp 24. It should be noted that sloped portion 29 has a grade steeper than that adjoining ramp 24. As shown, front tracks C originate proximate spacers 18 and terminate proximate spacers 19. The modules of the invention also include a plurality of parallel frontwardly extending rear tracks D. These tracks are also mounted on spacers 21 and are in co-planar alignment with the front tracks C. Each rear track D is a continuous generally serpentine-shaped rigid wire having a series of ramps 30, 31, 32, and 33 inclined downwardly in alternate and opposite directions. The junction of adjacent ramps, when in the front of the rack takes the form of an arcuate apex such as 34 but, when in the rear of the rack includes both a vertical portion such as 35 (adjacent ramp 30) and 36 (adjacent ramp 32). Between the vertical portion and the next adjacent downward ramp is a steeply sloped portion such as 37 (between vertical portion 35 and ramp 31) and 38 (between portion 36 and ramp 33). Sloped portions 37 and 38, like portion 29 are provided with a grade steeper than their companion, adjacent, downward ramps (i.e. 31 and 33). In the particular embodiment shown, ramp 30, which is optional, serves merely as a guide for cylindrical containers. The slope of ramp portions 29, 37 and 38 causes the normal force of jars or containers resting thereupon to be resolved into vectors of force in a direction along the companion adjacent downward ramp. Thus the weight of jars at these ramp portions continuously urges abutting jars along the less steeply sloped ramps.

While the ramp may terminate at spacer 20 and be provided thereabout with stops or detents it is preferred to continue track D in order to provide a cantilevered delivery portion E. This delivery portion which extends beyond the general parallelepipedal confines of the module includes track portion 39 which is bent upward as at 40 to form a stop portion or detent. Stop portion 40 may also be provided with expanded terminals 41 which, as shown, may conveniently take the shape of spheres or balls. Terminals 41 are also protective in nature presenting only smooth surfaces to a person utilizing the rack.

It is apparent that in the structure shown we have defined between tracks C and D a channel for uniform cylindrical objects. The distance between opposing sides of the channel slightly exceeds the diameter of the cylindrical objects utilized thereby. Further, it presents no location wherein horizontal forces on the cylindrical objects exceed the vertical forces thereupon.

While the invention resides in the unique combination of elements shown and in their synergistic effect upon each other and while further, its conception and reduction to practice was essentially empirical an attempt will be made to discuss the unique attributes of this invention and to show why objects do not "hang up" within the embodiments shown.

Allegedly uniform cylindrical objects such as 42 are not truly uniform nor truly cylindrical. Glass companies such as those supplying spice jars work to relatively large tolerances. These tolerances affect not only the diameter and the length of the cylindrical objects but also whether the ends of the cylinders are truly normal to the longitudinal axis thereof. In prior art constructions a non-normal end would rub against a wire guide. As the high spot on the end came around there would be a wedging force exerted for which no compensation had been made during the rolling motion of the cylinder. In this embodiment, due to the solid sidewalls, the high spot is always in contact and thus there is a continuous self-centering action which occurs transverse the channel as a given cylinder moves down.

Further, at no point within the channel is one cylinder capable of resting upon another cylinder in such a way as to exert a horizontal wedging action.

Also, straight track length is so related to curved track length that, when the channel is loaded and the cylindrical objects are at rest, no jar will be in a position such that its center of gravity will be behind the transverse moment of force (in the direction of the desired motion) of the preceding abutting jar. Consequently no jamming will occur in the position of rest.

Finally, the impact of material striking a ramp such as 22 upon loading of the module or impact caused by movement of cylinders 42 along the various ramps and against the various vertical portions of the channel are transmitted, via spacers 21, to vibratable sides A. These, in turn, transmit the vibrations to remote portions of the track and produce a continual shaking of the contents which contributes to the non-jamming feature.

Returning now to a consideration of the embodiment shown, provision is made for assembling a plurality of modules 10, 11, 12 and 13 into an integrated unit to suit the needs of a particular unit. This is done simply and quickly by passing a plurality of through-bolts 43 through aligned pre-drilled holes 44 and securing them with nuts 45. Bolts 43 may vary in length depending on the number of modules intended to be included in a given assembly. It is also obvious that holes 44 are drilled so that bolts 43 will not pass through the channels.

The modules may also be provided with a plurality of indicia holders 46 transversely mounted between and affixed to walls A. These provide the modules with additional rigidity and also enable one to display information on price and contents in association with these modules. It should also be noted that because of the open front structure the contents of each module can be observed at all times.

Although a single embodiment of the invention has been disclosed and described in detail, it is obvious that many changes may be made in size, shape, detail and arrangement of the various elements of the invention, all without departing from the spirit and scope thereof as defined in the appended claims.

Having described our invention, we claim:

1. A modular parallelepipedal storage and dispensing rack for substantially uniform cylindrical objects comprising a pair of parallel, generally rectangular, vertical side walls of solid, vibratable material, said walls being spaced apart a distance slightly greater than the length of said cylindrical objects; transverse spacers affixed between said side walls to keep them in said spaced-apart relationship; a plurality of parallel, rearwardly extending front tracks, vertically spaced between said side walls and mounted on said spacers, each front track being a continuous generally serpentine-shaped rigid wire having a series of ramps inclined downwardly in alternate and opposite directions; a plurality of parallel frontwardly extending rear tracks, vertically spaced between said side walls and mounted on said spacers in coplanar alignment with said front tracks, each rear track being a continuous generally serpentine-shaped rigid wire having a series of ramps inclined downwardly in alternate and opposite directions; said tracks being spaced apart to define therebetween a channel for uniform cylindrical objects, the distance between opposing sides thereof slightly exceeding the diameter of the objects therein, and presenting no location wherein horizontal forces on said cylinders exceed vertical forces; said sides vibrating when cylinders are dropped into said channel and transmitting said vibrations to portions of said tracks remote from the origin of said vibrations.

2. A modular parallelepipedal storage and dispensing rack for substantially uniform cylindrical objects comprising a pair of parallel, generally rectangular, vertical side walls of solid, vibratable material, said walls being spaced apart a distance slightly greater than the length of said cylindrical objects; transverse rigid wire spacers affixed between said side walls to keep them in said spaced-apart relationship; a plurality of parallel, rearwardly extending front tracks, vertically spaced between said side walls and mounted on said spacers, each front track being a continuous generally serpentine-shaped rigid wire having a series of ramps inclined downwardly in alternate and opposite directions, the junction of adjacent ramps, when in the rear of said rack being an arcuate apex but, when in the front of said rack, including both a vertical portion proximate the front of said rack, and an adjoining sloped portion between said vertical portion and said adjacent downward ramp, said sloped portion having a grade steeper than that of said adjoining ramp; a plurality of parallel frontwardly extending rear tracks, vertically spaced between said side walls and mounted on said spacers in co-planar alignment with said front track, each rear track being a continuous generally serpentine shaped rigid wire having a series of ramps inclined downwardly in alternate and opposite directions, the junction of adjacent ramps, when in the front of said rack being an arcuate apex but, when in the rear of said rack, including both a vertical portion proximate the rear of said rack, and an adjoining sloped portion between said vertical portion and said adjacent downward ramp, said sloped portion having a grade steeper than said downward ramp; said tracks being spaced apart to define therebetween a channel for uniform cylindrical objects, the distance between opposing sides thereof slightly exceeding the diameter of the objects therein, and presenting no location wherein horizontal forces on said cylinders exceed vertical forces; said sides vibrating when cylinders are dropped into said channel and transmitting said vibrations to portions of said tracks remote from the origin of said vibrations.

3. A modular parallelepipedal storage and dispensing rack for substantially uniform cylindrical objects comprising a pair of parallel, generally rectangular, vertical side walls of solid vibratable material, said walls being spaced apart a distance slightly greater than the length of said cylindrical objects; each having a shallow rectangular cut-out portion proximate its lower front corner which cut-out portion extends in height for a distance slightly greater than the diameter of the cylindrical objects; transverse rigid wire spacers affixed between said side walls to keep them in said spaced-apart relationship; a plurality of parallel, rearwardly extending front tracks, vertically spaced between said side walls and mounted on said spacers, each front track being a continuous generally serpentine shaped rigid wire having a series of ramps inclined downwardly in alternate and opposite directions, the junction of adjacent ramps, when in the rear of said rack being an arcuate apex but, when in the front of said rack, including both a vertical portion proximate the front of said rack, and an adjoining sloped portion between said vertical portion and said adjacent downward ramp, said sloped portion having a grade steeper than that of said adjoining ramp, said front track terminating proximate the top of said cut-out wall portion; a plurality of parallel frontwardly extending rear tracks, vertically spaced between said side walls and mounted on said spacers in coplanar alignment with said front tracks, each rear track being a continuous generally serpentine shaped rigid wire having a series of ramps inclined downwardly in alternate and opposite directions, the junction of adjacent ramps, when in the front of said rack being an arcuate apex but, when in the rear of said rack, including both a vertical portion proximate the rear of said rack, and an adjoining sloped portion between said vertical portion and said adjacent downward ramp, said sloped portion having a grade steeper than said downward ramp, said rear track further including a cantilevered delivery portion extending beyond the front of said rack and stop means for retaining cylindrical objects upon said track; said tracks being spaced apart to define therebetween a channel for uniform cylindrical objects, the distance between opposing sides thereof slightly exceeding the diameter of the objects therein, and presenting no location wherein horizontal forces on said cylinders exceed vertical forces; said sides vibrating when cylinders are dropped into said channel and transmitting said vibrations to portions of said tracks remote from the origin of said vibrations.

4. A modular parallelepipedal storage and dispensing rack for substantially uniform cylindrical objects comprising a pair of parallel, generally rectangular, vertical side walls of solid vibratable material, said walls spaced apart a distance slightly greater than the length of said cylindrical objects; each having a shallow rectangular cut-out portion proximate its lower front corner which cut-out portion extends in height for a distance slightly greater than the diameter of the cylindrical objects; each of said walls further including an integral, inward facing, 90° rear flange and an integral inward facing 90° front flange except in the area of said cut-out portion; transverse rigid wire spacers affixed between said side walls to keep them in said spaced-apart relationship; a plurality of parallel, rearwardly extending front tracks, vertically spaced between said side walls and mounted on said spacers, each front track being a continuous generally serpentine shaped rigid wire having a series of ramps inclined downwardly in alternate and opposite directions, the junction of adjacent ramps, when in the rear of said rack being an arcuate apex but, when in the front of said rack, including both a vertical portion proximate the front of said rack, and an adjoining sloped portion between said vertical portion and said adjacent downward ramp, said sloped portion having a grade steeper than that of said adjoining ramp, said front track terminating proximate the top of said cut-out wall portion; a plurality of parallel frontwardly extending rear tracks, vertically spaced between said side walls and mounted on said spacers in coplanar alignment with said front tracks, each rear track being a continuous generally serpentine shaped rigid wire having a series of ramps inclined downwardly in alternate and opposite directions, the junction of adjacent ramps, when in the front of said rack being an arcuate apex but, when in the rear of said rack, including both a vertical portion proximate the rear of said rack, and an adjoining sloped portion between said vertical portion and said adjacent downward ramp, said sloped portion having a grade steeper than said downward ramp, said rear track further including a cantilevered delivery portion extending beyond the front of said rack and stop means for retaining cylindrical objects upon said track; said tracks being spaced apart to define therebetween a channel for uniform cylindrical objects, the distance between opposing sides thereof slightly exceeding the diameter of the objects therein, and presenting no location wherein horizontal forces on said cylinders exceed vertical forces; said sides vibrating when cylinders are dropped into said channel and transmitting said vibrations to portions of said tracks remote from the origin of said vibrations.

5. An assembly of modular parallelepipedal storage and dispensing racks for substantially uniform cylindrical objects comprising a plurality of modules each including a pair of parallel, generally rectangular, vertical side walls of solid vibratable material, said walls being spaced apart a distance slightly greater than the length of said cylindrical objects; transverse spacers affixed between said side walls to keep them in said spaced-apart relationship; a plurality of parallel, rearwardly extending front tracks, vertically spaced between said side walls and mounted on said spacers, each front track being a continuous generally serpentine shaped rigid wire having a series of ramps inclined downwardly in alternate and opposite directions; a plurality of parallel frontwardly extending rear tracks,

vertically spaced between said side walls and mounted on said spacers in co-planar alignment with said front tracks, each rear track being a continuous generally serpentine shaped rigid wire having a series of ramps inclined downwardly in alternate and opposite directions; and means for securing side walls of adjacent modules in planar juxtaposition; said tracks being spaced apart to define therebetween a channel for uniform cylindrical objects, the distance between opposing sides thereof slightly exceeding the diameter of the objects therein, and presenting no location wherein horizontal forces on said cylinders exceed vertical forces; said sides vibrating when cylinders are dropped into said channel and transmitting said vibrations to portions of said tracks remote from the origin of said vibrations.

6. An assembly of modular parallelepipedal storage and dispensing racks for substantially uniform cylindrical objects comprising a plurality of modules each including a pair of parallel, generally rectangular, vertical side walls of solid, vibratable material, said walls being spaced apart a distance slightly greater than the length of said cylindrical objects; transverse rigid wire spacers affixed between said side walls to keep them in said spaced-apart realtionship; a plurality of parallel, rearwardly extending front tracks, vertically spaced between said side walls and mounted on said spacers, each front track being a continuous generally serpentine shaped rigid wire having a series of ramps inclined downwardly in alternate and opposite directions, the junction of adjacent ramps, when in the rear of said rack being an arcuate apex but, when in the front of said rack, including both a vertical portion proximate the front of said rack, and an adjoining sloped portion between said vertical portion and said adjacent downward ramp, said sloped portion having a grade steeper than that of said adjoining ramp; a plurality of parallel frontwardly extending rear tracks, vertically spaced between said side walls and mounted on said spacers in co-planar alignment with said front tracks, each rear track being a continuous generally serpentine shaped rigid wire having a series of ramps inclined downwardly in alternate and opposite directions, the junction of adjacent ramps, when in the front of said rack being an arcuate apex but, when in the rear of said rack, including both a vertical portion proximate the rear of said rack, and an adjoining sloped portion between said vertical portion and said adjacent downward ramp, said sloped portion having a grade steeper than said downward ramp; and means for securing said walls of adjacent modules in planar juxtaposition; said tracks being spaced apart to define therebetween a channel for uniform cylindrical objects, the distance between opposing sides thereof slightly exceeding the diameter of the objects therein, and presenting no location wherein horizontal forces on said cylinders exceed vertical forces; said sides vibrating when cylinders are dropped into said channel and transmitting said vibrations to portions of said tracks remote from the origin of said vibrations.

7. An assembly or modular parallelepipedal storage and dispensing racks for substantially uniform cylindrical objects comprising a plurality of modules each including a pair of parallel, generally rectangular, vertical side walls of solid, vibratable material, said walls being spaced apart a distance slightly greater than the length of said cylindrical objects; each having a shallow rectangular cut-out portion proximate its lower front corner which cut-out portion extends in height for a distance slightly greater than the diameter of the cylindrical objects; transverse rigid wire spacers affixed between said side walls to keep them in said spaced-apart relationship; a plurality of parallel, rearwardly extending front tracks, vertically spaced between said side walls and mounted on said spacers, each front track being a continuous generally serpentine shaped rigid wire having a series of ramps inclined downwardly in alternate and opposite directions, the junction of adjacent ramps, when in the rear of said rack being an arcuate apex but, when in the front of said rack, including both a vertical portion proximate the front of said rack, and an adjoining sloped portion between said vertical portion and said adjacent downward ramp, said sloped portion having a grade steeper than that of said adjoining ramp, said front track terminating proximate the top of said cut-out wall portion; a plurality of parallel frontwardly extending rear tracks, vertically spaced between said side walls and mounted on said spacers in co-planar alignment with said front tracks, each rear track being a continuous generally serpentine shaped rigid wire having a series of ramps inclined downwardly in alternate and opposite directions, the junction of adjacent ramps, when in the front of said rack being an arcuate apex but, when in the rear of said rack, including both a vertical portion proximate the rear of said rack, and an adjoining sloped portion between said vertical portion and said adjacent downward ramp, said sloped portion having a grade steeper than said downward ramp, said rear track further including a cantilevered delivery portion extending beyond the front of said rack and stop means for retaining cylindrical objects upon said track; and means for securing side walls of adjacent modules in planar juxtaposition; said tracks being spaced apart to define therebetween a channel for uniform cylindrical objects, the distance between opposing sides thereof slightly exceeding the diameter of the objects therein, and presenting no location wherein horizontal forces on said cylinders exceed vertical forces; said sides vibrating when cylinders are dropped into said channel and transmitting said vibrations to portions of said tracks remote from the origin of said vibrations.

8. An assembly or modular parallelepipedal storage and dispensing racks for substantially uniform cylindrical objects comprising a plurality of modules each including a pair of parallel, generally rectangular, vertical side walls of solid, vibratable material, said walls being spaced apart a distance slightly greater than the length of said cylindrical objects; each having a shallow rectangular cut-out portion proximate its lower front corner which cut-out portion extends in height for a distance slightly greater than the diameter of the cylindrical objects; each of said walls further including an integral, inward facing, 90° rear flange and an integral inward facing 90° front flange except in the area of said cut-out portion; transverse rigid wire spacers affixed between said side walls to keep them in said spaced-apart relationship; a plurality of parallel, rearwardly extending front tracks, vertically spaced between said side walls and mounted on said spacers, each front track being a continuous generally serpentine shaped rigid wire having a series of ramps inclined downwardly in alternate and opposite directions, the junction of adjacent ramps, when in the rear of said rack being an arcuate apex but, when in the front of said rack, including both a vertical portion proximate the front of said rack, and an adjoining sloped portion between said vertical portion and said adjacent downward ramp, said sloped portion having a grade steeper than that of said adjoining ramp, said front track terminating proximate the top of said cut-out wall portion; a plurality of parallel frontwardly extending rear tracks, vertically spaced between said side walls and mounted on said spacers in co-planar alignment with said front tracks, each rear track being a continuous generally serpentine shaped rigid wire having a series of ramps inclined downwardly in alternate and opposite directions, the junction of adjacent ramps, when in the front of said rack being an arcuate apex but, when in the rear of said rack, including both a vertical portion proximate the rear of said rack, and an adjoining sloped portion between said vertical portion and said adjacent downward ramp, said sloped portion having a grade steeper than said downward ramp, said rear track further including a cantilevered delivery portion extending beyond the front of said rack and stop means for retaining cylindrical objects

upon said track; and means for securing side walls of adjacent modules in planar juxtaposition; said tracks being spaced apart to define therebetween a channel for uniform cylindrical objects, the distance between opposing sides thereof slightly exceeding the diameter of the objects therein, and presenting no location wherein horizontal forces on said cylinders exceed vertical forces; said sides vibrating when cylinders are dropped into said channel and transmitting said vibrations to portions of said tracks remote from the origin of said vibrations.

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