United States Patent [19]

Gotham et al.

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[45] **July 15, 1975**

[54] **DISPLAY AND DELIVERY STAND**

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[73] Assignee: **Unex Conveying Systems, Inc.**, Toms River, N.J.

[22] Filed: **Jan. 4, 1973**

[21] Appl. No.: **320,948**

Related U.S. Application Data

[62] Division of Ser. No. 126,006, March 19, 1971, Pat. No. 3,726,376.

[52] **U.S. Cl.** **211/150**; 211/133; 211/176; 248/245

[51] **Int. Cl.** **A47f 5/12**

[58] **Field of Search** ..... 211/150, 128, 133, 134, 211/71, 153, 49 D; 248/245, 246, 244; 108/109, 144

[56] **References Cited**

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Primary Examiner—Ramon S. Britts

[57] **ABSTRACT**

A display stand with clamps attached to vertical members thereof to adjustably hold shelves in a slightly inclined position and on which roller runways may be laid, and with trays at the forward ends to display goods to be dispensed in a convenient position.

1 Claim, 5 Drawing Figures

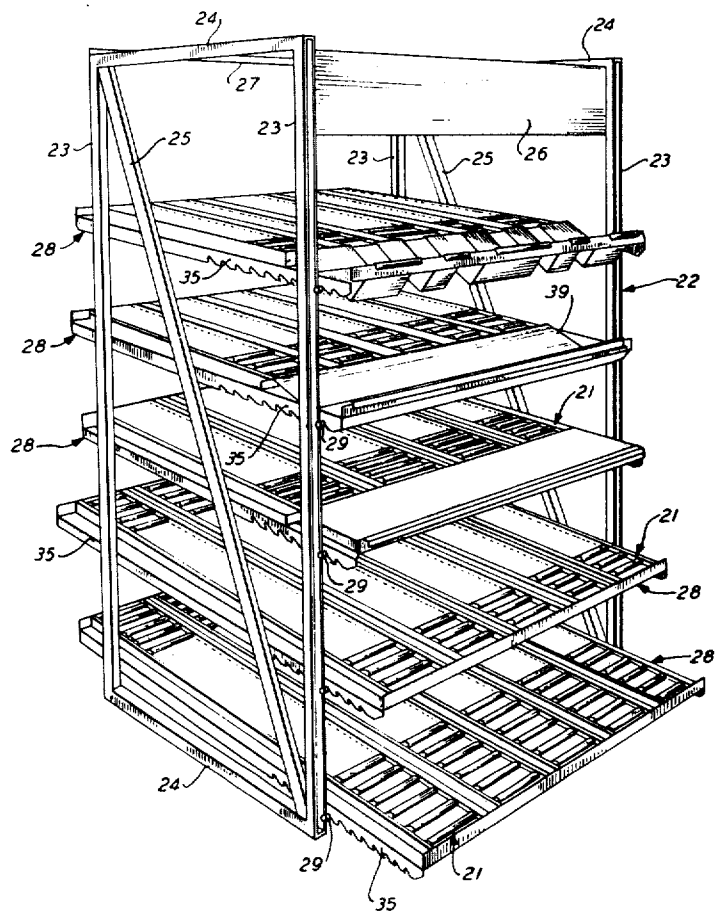
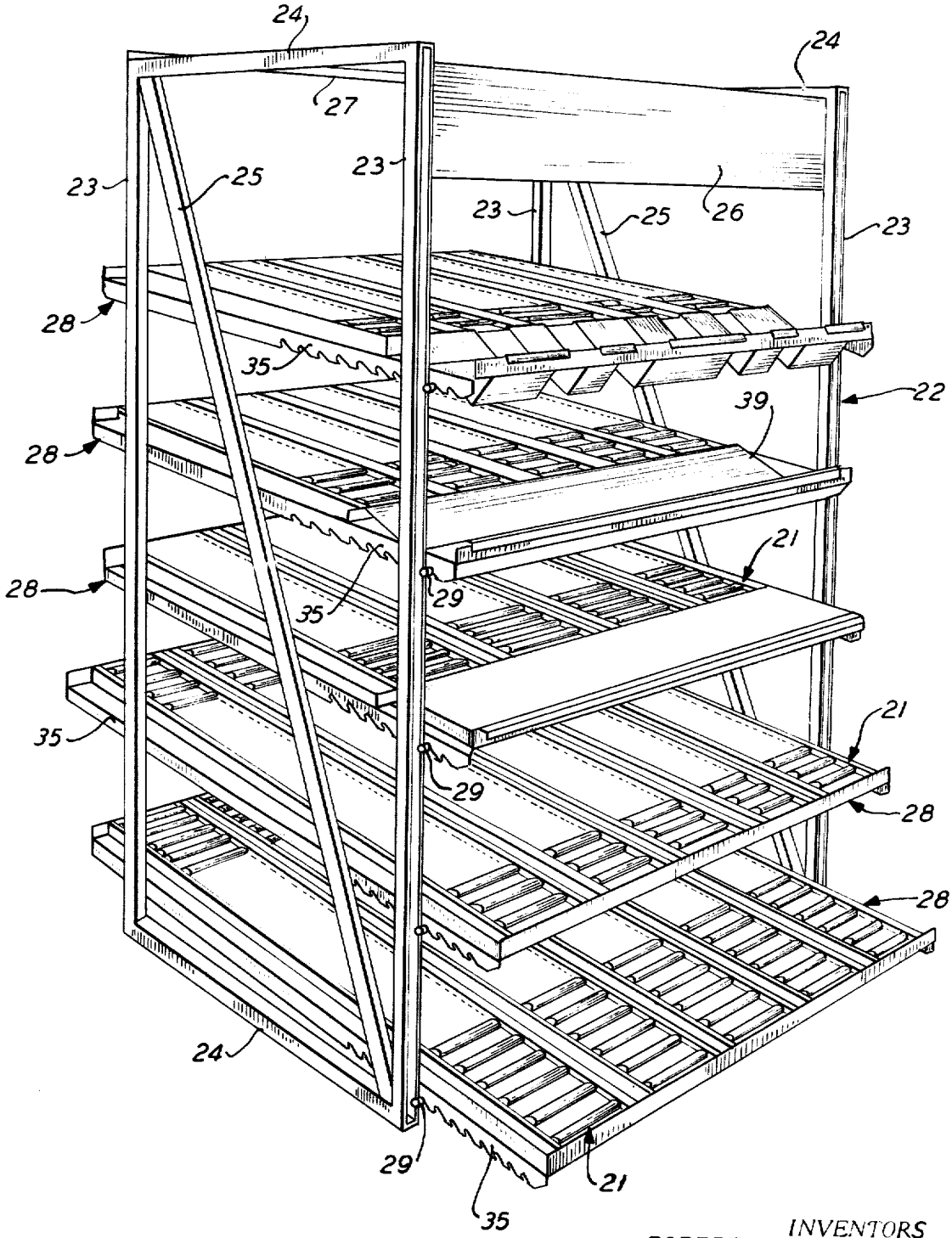


FIG. 1



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FIG. 2

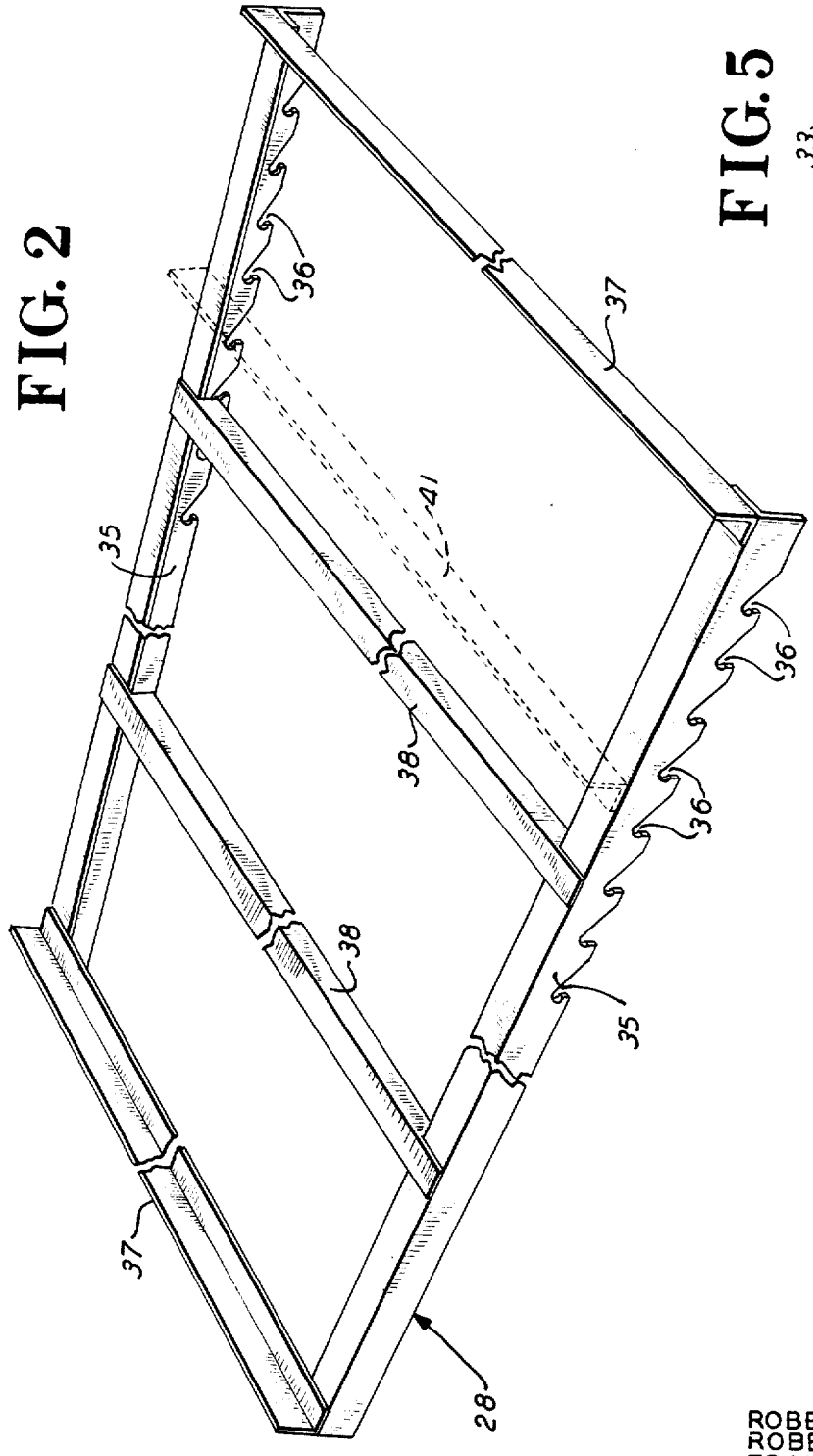
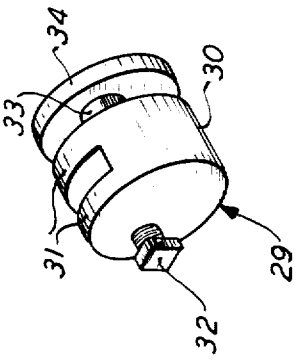


FIG. 5



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FIG. 3

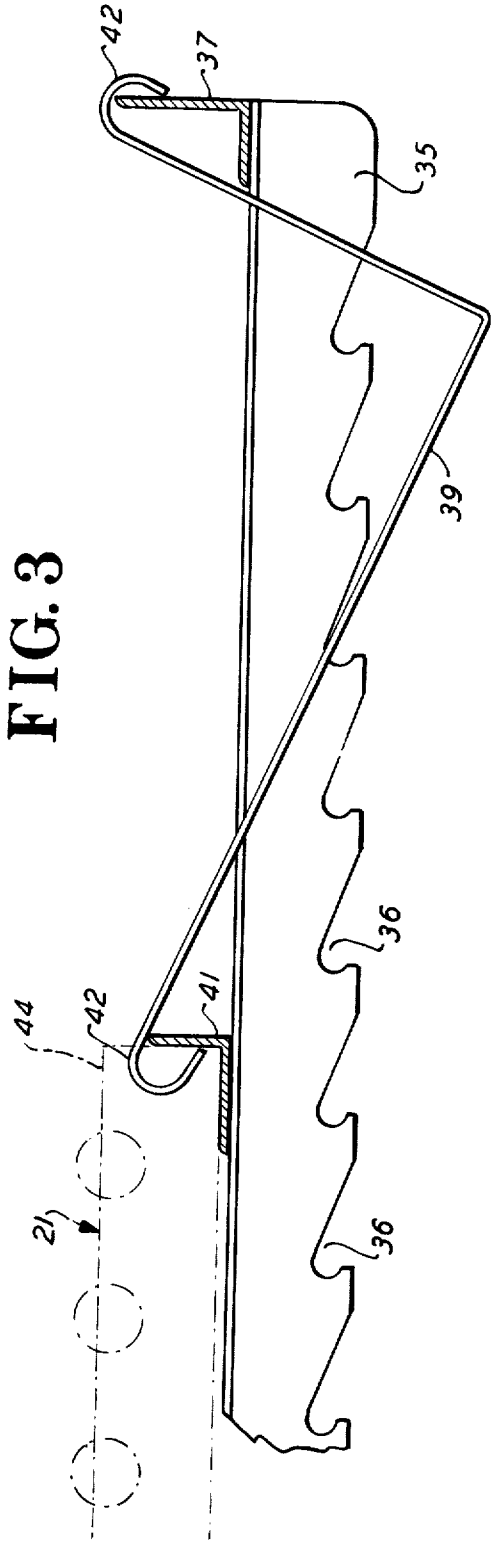
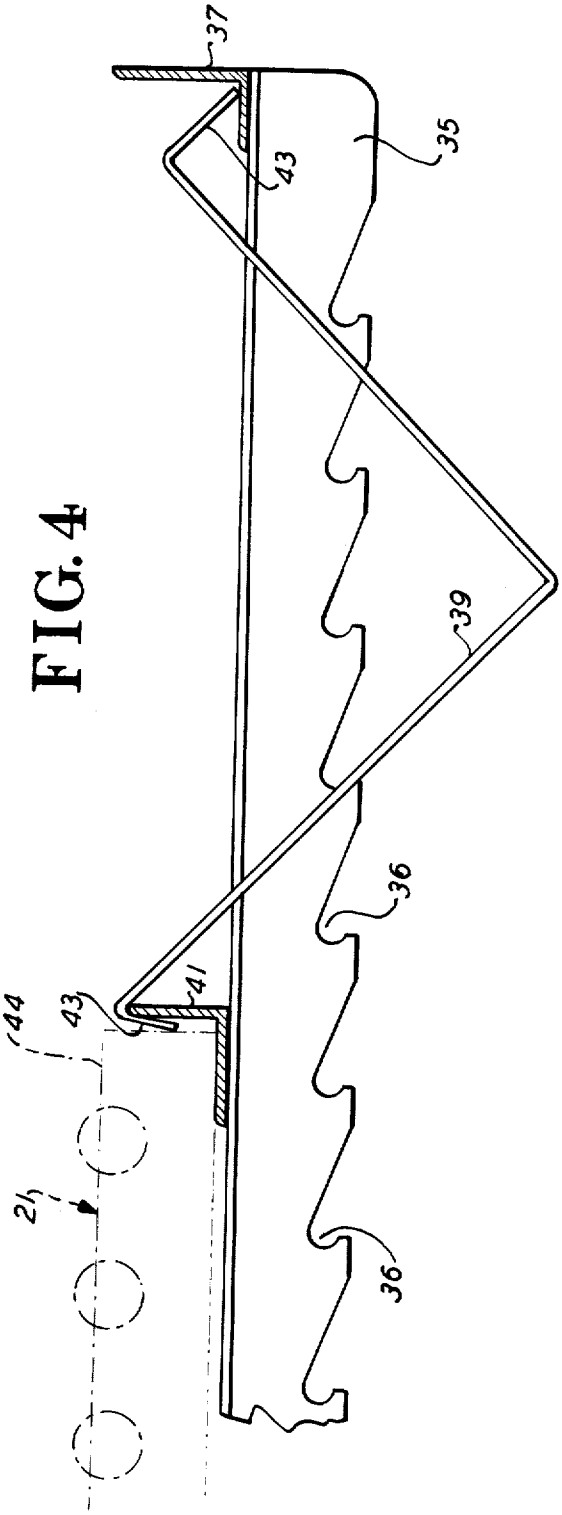


FIG. 4



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DISPLAY AND DELIVERY STAND

This application is a division of our former application filed Mar. 19, 1971, Ser. No. 126,006 for which U.S. Pat. No. 3,726,376 has been granted under classification "CONVEYOR ASSEMBLY."

SETTING AND OBJECTS OF THE INVENTION

This invention relates to stock carriers and delivery devices, more especially to that class wherein a plurality of adjustable roller slides are supported in a framework and adapted to receive various packages at the rear and, after allowing them to slide forwardly, hold the same exposed to a small frontage whereby a stock of each kind will be exposed in a proper feeding position for instant delivery. More particularly, this invention relates to the design and construction of shelves supporting the roller slides and the means for adjustably supporting the shelves in a structural framework.

It is an object of this invention to provide an improved display stand in which the structural framework is simple, with a minimum of bolts, nuts and fittings, so that the framework can be speedily and inexpensively erected or dismantled. It is another object of this invention to provide shelves and fittings therefor which can be quickly installed in the framework and adjusted vertically as well as horizontally in the smallest practical increments of measurement.

It is still another object of this invention to make provision within the shelf structure for the installation of delivery trays at the discharge end of the shelves without the use of any bolts, nuts or fittings whatsoever.

BACKGROUND OF THE INVENTION WITH REFERENCE TO PRIOR ART

Display and delivery stands of the type described herein have been widely used by mail order houses, wholesalers, manufacturers and distributors of many kinds of merchandise in their storage and order selecting operations wherein it is necessary for order pickers to walk past containers filled with merchandise, extracting desired quantities from selected containers as called for on the orders. Such stands, which are commonly called Live Storage Racks and will be so designated hereafter in this description, usually involve a pleurality of adjustable shelves supported in a structural framework, the shelves usually supporting roller runways on which containers may flow freely from the back, or charge end, to the front, or discharge end, of the rack.

Shelves are made in various widths and lengths, limited generally by the capacity of the column members of the supporting framework and the allowable deflection of the shelf structural members. Shelves are usually arranged in slightly inclined parallel planes, one above the other, each supporting a plurality of roller runways. For containers of varying heights, the spacing between any two shelves may vary since spacing is predicated on the height of the highest package on the lower of the two shelves. It is not always feasable to predetermine this spacing, and even when it can be predetermined, it is subject to change due to normal changes in merchandise stocked. Therefore, the ease with which changes in elevation may be accomplished is of considerable importance to the user.

Furthermore, while shelf profile may be precalculated, changes in the horizontal relationship of the shelves often are found desirable or necessary to provide satisfactory exposure of the open face of the container to facilitate order picking process. When shelves are bolted to uprights, such adjustments are time consuming and expensive.

The feeding position of containers can also be improved by the use of chutes or trays located at the discharge end of roller tracks usually disposed at substantial angles from the track, 15°, 30°, and 45° angles being common. These shelves are usually bolted to the uprights of the frames. Hence, when it becomes necessary to readjust the elevation of shelves, it is also necessary to readjust the trays.

The foregoing shows some of the reasons for the development of our invention.

While the present invention will be described in connection with a single unit or bay, it will be understood that there may be as many bays as desired, side by side, the uprights between two adjacent bays serving to support shelves in both bays.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view from the front toward the left showing a single bay of a display stand with its parts and embodying our invention.

FIG. 2 is a perspective view from the top toward the left of one of the shelves of our stand.

FIG. 3 is a fragmentary side elevational view, to a larger scale, of the front portion of one of the upper shelves on which are carried roller conveyor assemblies, fragmentary portions of which are shown, and one form of tiltable tray, the rear end of which hooks over a transverse angle iron member, such as is shown dot-dash in FIG. 2, and the front end of which rests on the front angle iron member of the shelf.

FIG. 4 is a view corresponding with FIG. 3, but showing a modified form of tray and positioning thereof.

FIG. 5 is a perspective view, to a larger scale, of one of the clamps carried by the upright members of the stand.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

As shown in FIGS. 1 to 5 inclusive, the frame 22 of our display and delivery stand may be formed of generally vertical or upright angular members 23, which may be angle or channel shaped, preferrably the latter, braced front to rear by horizontal members 24 and diagonal members 25. There are also suitable transverse bracing members, such as the plate 26 and transverse angular members, one of which is shown at 27; these members may be bolted to frames to provide a rigid structure. A series of vertically spaced shelves 28 are carried on clamps 29, secured to the vertical members 23 in selected positions and desirably mounted on outstanding flanges of said members. A minimum of four clamps is required to support each shelf, one clamp being attached to each upright.

Each clamp 29 shown in detail in FIG. 5, desirably comprises a generally cylindrical body 30 carrying a pair of axially-spaced flanges 31. The flanges are adapted to straddle an outstanding flange of a vertical member 23 and be clamped thereto by tightening a screw 32 threaded into the end flange 31. A stem 33 carrying an annular flange 34 extends from the end of the body 30 remote from the screw 32. The lower edge of each depending side flange 35 preferably toward the front of each shelf 28, as shown in detail in FIGS. 3 and

4, is serrated or provided with a series of downwardly-opening notches 36 which fit over the clamp stems 33 which restrict horizontal movement while allowing up or down angular movement of the shelves. The rearward portions of flanges 35 may ride between the flanges 34 and the bodies 30 of the clamps 29, resting on stem 33, whereby the shelves are adjusted and then held in desired inclined positions. In addition to the side members, from which the flanges 35 depend, each shelf 28 desirably comprises front and rear angular frame members 37, intermediate bracing elements 38 and, if used with forwardly-sloping trays 39, there is also a transverse angle member 41, shown dot-dash in FIG. 2 and in full lines in FIGS. 3 and 4.

The trays 39 may have floors inclined at convenient angles, which may be dependent upon the height at which the tray is positioned, for effectively displaying goods to persons who walk along in front of the structure 22. The trays, or some of them, may have their front and rear edges curved, as in FIG. 3 at 42, or some or all may have depending straight flanges 43 at their front and rear edges, as in FIG. 4. Also, the curved or straight front and rear edge portions may hook over upstanding flange portions, as indicated in FIG. 3, or their lower edges, or one lower edge of each, preferably the front, may rest on horizontal flange portions as shown in FIG. 4, as may be considered the more desirable for support purposes. FIGS. 3 and 4 also illustrate how the rear end portions of the tilt trays 39 may be captured and positioned by rails 44 of conveyor assemblies 21.

Each shelf 28 serves to support a pleurality of roller conveyor assemblies 21, shown fragmentarily in dot-dash lines in FIGS. 3 and 4.

Erection of the display stand is extremely simple and is accomplished by:

1. Connecting frames by bolting transverse brace members 26 and 27.

2. Mounting clamps 29 at specified elevations on upright members.

3. Resting rear end of shelf on two front clamps and sliding rearward into position in accordance with desired setback from shelf beneath.

4. Sliding roller tracks into positions desired.

5. Dropping trays into place.

Vertical readjustment of shelves is accomplished by loosening set screw of shelf clamps and re-tightening in new position, meanwhile holding shelf at desired elevation. This readjustment can usually be accomplished by a single mechanic holding the shelf and clamp with one hand, loosening the clamp set-screw with a wrench in the other hand, raising or lowering the shelf to the new position, and re-tightening the set-screw.

Horizontal readjustment of shelves may be accomplished by pushing shelves rearwardly notch by notch, meanwhile observing the position relative to shelf beneath, until desired set-back is accomplished. If shelf must be moved forward, front end may be lifted and pulled forward further than required, then pushed rearward until desired set-back is accomplished. When trays are used, they are automatically adjusted with the adjustment of the shelves since trays, once installed, constitute integral parts of the shelves.

Trays may be of the individual type, one for each section of roller track as shown on top deck in FIG. 1 wherein trays are held in alinement with track by side rails of track sections as shown in FIG. 3, or of the continuous type, one for each deck as shown on second deck from top in FIG. 1, wherein trays extend substantially the entire width of the shelf, being restrained from lateral movement by the side rails 35 of the shelf as shown in FIG. 4. Trays are made of thin gage metal and may be designed to dispose containers at any desired angle for optimum exposure of contents. Generally, trays on lower decks are disposed at a small angle to the shelf, normally about 15° or less, while trays on upper decks are normally disposed at greater angle to the shelf, in some cases as much as 60° on top decks. Further, trays may be changed by lifting out one design and dropping a tray of another design in its place.

From the foregoing it can be readily seen that the present invention provides a novel, versatile and mechanically simple live storage rack which is inexpensive to produce and to erect, adjust and re-adjust as required.

While particular preferred forms of the invention have been disclosed in detail in the foregoing specification and drawings, it will be understood that various modifications as to details of construction and design may be restored to without departing from the spirit of the invention or the scope of the following claims.

We claim:

1. A display and delivery stand assembly comprising a structure formed of at least four braced normally vertical imperforate angular steel members, a series of clamps infinitely vertically adjustably secured to each of the generally vertical members, a series of shelves each supported on at least four of said clamps at desired elevations, one above another, inclined slightly upwardly from front to back, the fronts of said shelves defining discharge ends said shelves including side members each with a depending flange, a portion of said flanges being formed with a series of downwardly-opening notches fitting over opposing clamps allowing for pivoting of said shelves on said clamps and holding said shelves in selected positions and readily removable drop-in trays of selected angular configuration at the discharge ends of the shelves with means securing at least one of their ends in place to prevent front-to-back movement.

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