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Urti

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[54] **MODULAR DISPLAY STRUCTURE**

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[52] **U.S. Cl.** **108/106;** 52/281; 52/586; 108/111; 108/148; 108/153; 108/159; 211/148; 211/182; 248/245; 403/241

[51] **Int. Cl.²** **A47B 57/26**

[58] **Field of Search** 108/59, 106, 107, 111, 108/144, 148, 153, 157, 159; 211/134, 148, 182, 176, 177; 248/245, 221, 228; 52/239, 645, 690, 695, 281, 586; 403/171, 176, 236, 241, 110

[56] **References Cited**

UNITED STATES PATENTS

493,216	3/1893	Louden	248/228
692,858	2/1902	Kade	248/245
1,125,009	1/1915	Curtis	248/228 X
1,668,909	5/1928	Janes	108/159
3,186,561	6/1965	Strässle	211/182
3,285,428	11/1966	Scheck	211/182
3,458,052	7/1969	Kann	248/245
3,747,885	7/1973	Ciancimino	211/182 X
3,756,168	9/1973	Bushyhead	108/106 X

FOREIGN PATENTS OR APPLICATIONS

845,572	6/1970	Canada	108/159
713,445	9/1966	Italy	312/263

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Assistant Examiner—William E. Lyddane
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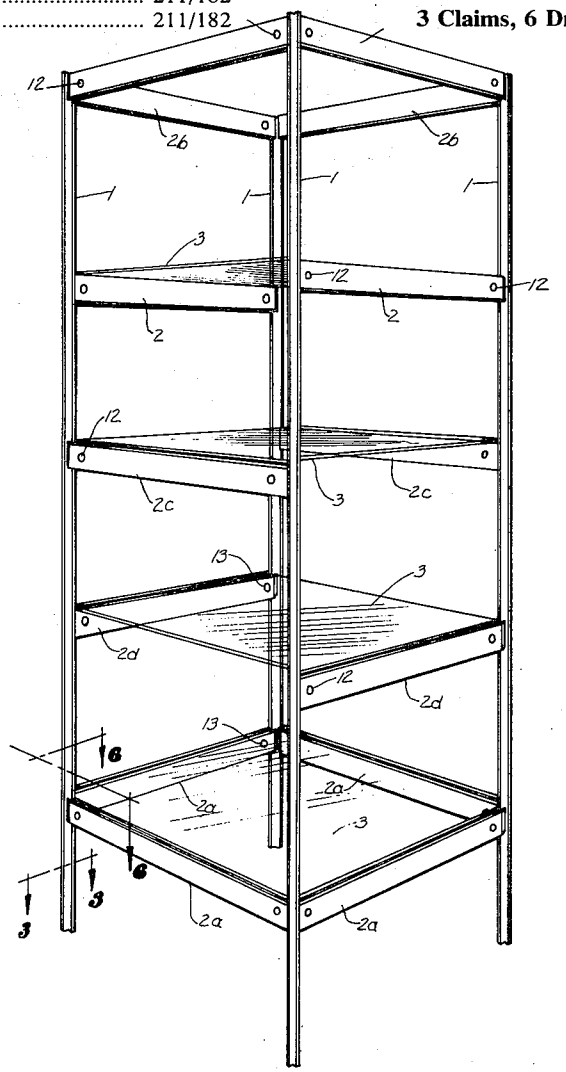
[57] **ABSTRACT**

A modular display structure composed essentially of vertically disposed corner posts, horizontally disposed brace members, and shelving adapted to be supported by the cross braces, the corner posts each having a plurality of angularly related flanges terminating outwardly in beaded edges adapted to be engaged by the braces, the braces each being composed of an opposing pair of bracing members adapted to be clamped together in face-to-face relation and having aligned channels engaging the beaded edges of the corner posts flanges, the braces being selectively positioned at many desired levels.

3 Claims, 6 Drawing Figures



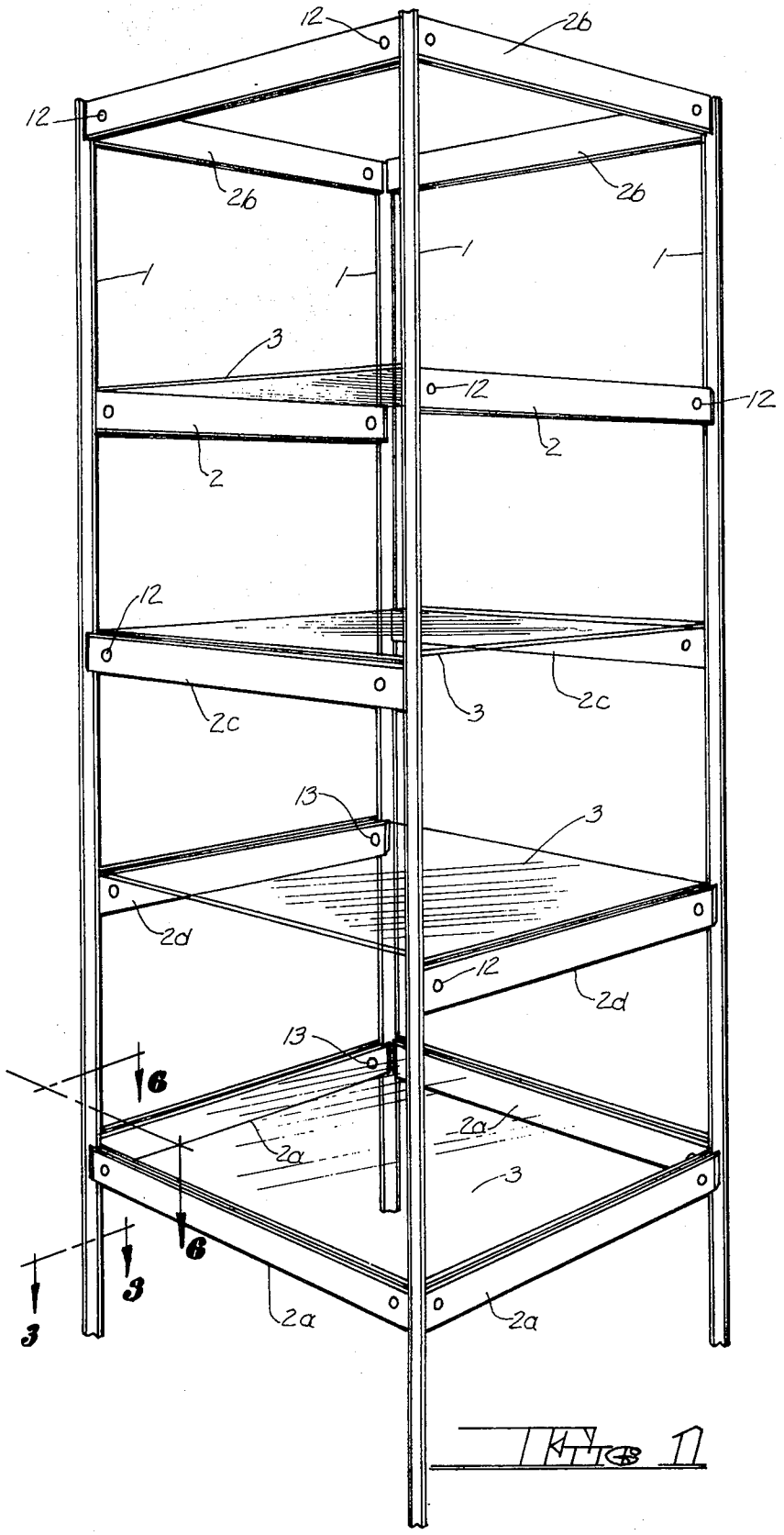

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FIG. 1

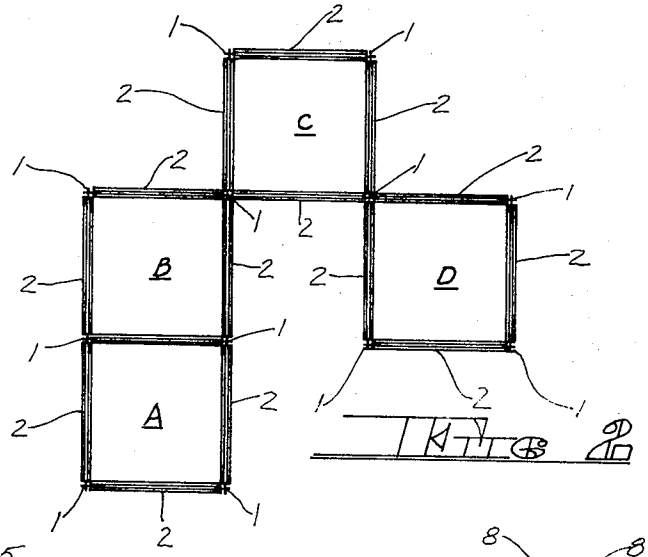

FIG 2

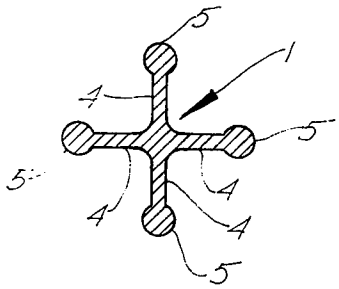

FIG 3

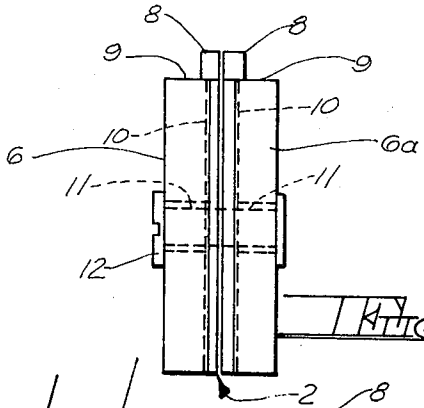

FIG 5

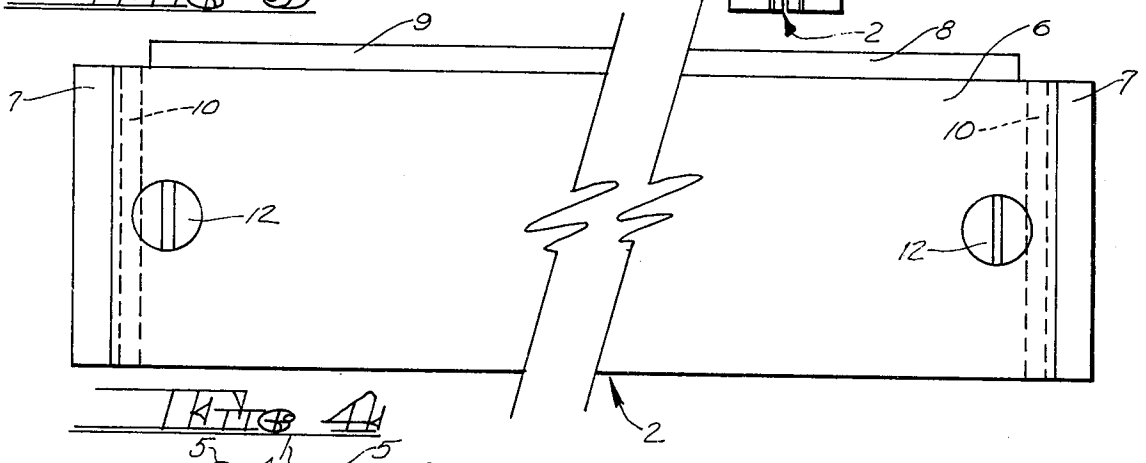

FIG 4

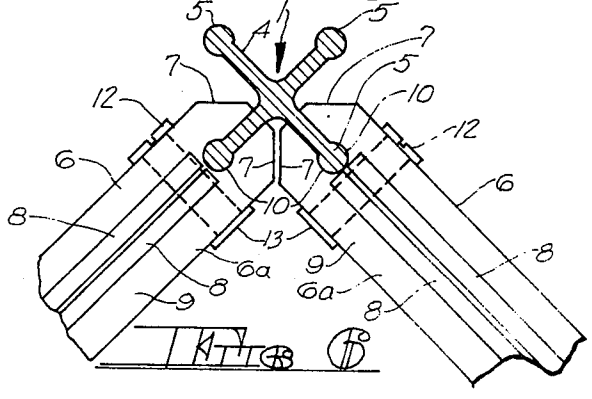

FIG 6

MODULAR DISPLAY STRUCTURE

BACKGROUND OF THE INVENTION

The present invention relates to modular display structures, and more specifically to display shelving particularly suited for the display of merchandise of the type associated with gift shops. In recent years there has been a trend in merchandising gift items to depart from conventional counter-type displays and arrange the merchandise in more attractive and artistic settings where the customer may readily inspect the merchandise without the assistance of sales personnel. To this end, free standing modular shelving has become quite popular in that merchandise may be readily displayed at various levels, with the modular units arranged to take maximum advantage of available space, the units often being utilized as see-through dividers for separating given areas of a store or otherwise creating traffic patterns which permit a number of customers to inspect the displayed merchandise without crowding.

While diverse modular display units have hitherto been proposed, they have suffered either from the complexity and number of the parts involved, or from the lack of flexibility in creating desired shelving arrangements. For example, one of the simplest forms of modular shelving in current use comprises tubular corner posts interconnected by horizontal brace members having clamping means at their opposite ends which engage about the corner posts, the brace members serving as supports for the shelves. However, since the brace members clamp about the corner posts, two angularly related brace members cannot engage a corner post at the same horizontal level. Consequently, a rectangular shelf, for example, can only be supported along its opposite side edges, which may be inadequate support for the shelf, particularly if glass shelving is employed. Similarly, if two modular units are to be joined together they cannot have a common corner post with brace members continuing from one unit to the next at the same horizontal level since only one brace can be attached to a given post at the same level.

While there are modular units available in which a plurality of braces may engage a given post at the same level, such arrangements usually require a variety of parts and fittings, inclusive of drilled and tapped holes, dovetailed slots, and other arrangements for interconnecting the parts. Such multiplicity of fittings, as well as complex extrusions, add materially to the initial cost of the units as well as the time required to assemble them. Consequently, the user is either faced with the choice of using either simple and inexpensive units which have limited versatility, or going to more versatile but more costly units.

In contrast to the foregoing, the present invention contemplates the provision of display units which are of simple and inexpensive construction and yet provide maximum adjustment and versatility in arrangement.

RESUME OF THE INVENTION

In accordance with the present invention, a display unit is provided consisting essentially of vertical corner posts, horizontal braces, and planar shelf members. While as will be pointed out hereinafter, various modifications and adaptations are possible, the essence of the invention lies in the provision of corner posts having a plurality of angularly related, beaded flanges to which the horizontal braces are adapted to be clamped.

With this arrangement, a plurality of the braces can engage a corner post at the same horizontal level.

In a preferred embodiment of the invention, the corner posts are cross-shaped, having four arms or flanges arranged at right angles to each other, each such flange terminating outwardly in a beaded edge or enlargement. The material from which the corner posts are formed does not constitute a limitation on the invention, although extruded aluminum is preferred in that it couples strength with light weight and is susceptible to numerous decorative effects.

Each of the horizontal braces is composed of a pair of opposing members, preferably of identical configuration, which are adapted to be clamped together in face-to-face relation, the brace members having mitered ends and mating bead engaging channels adjacent their opposite ends. The brace members may be conveniently clamped together by means of machine bolts adapted to extend through mating bolt holes in the braces adjacent the bead receiving channels, one of the brace members preferably mounting counter-sunk captive nuts. By this expedient, the braces may be readily clamped to the flanges of the corner post. Preferably, the upper surface of each brace member will be provided with a shoulder-defining lip extending substantially the full length of the brace members, such shoulders serving as a seat for the marginal edges of the shelves. The material from which the brace members are formed does not constitute a limitation on the invention, and the braces may be wood, metal, or plastic, as desired and depending upon the decorative effects to be achieved. While in the interest of simplicity and economy it is preferred that the opposing brace members be of identical configuration, they need not be identical, the essential consideration being the provision of braces which can be readily and securely clamped to the corner posts at any desired location without interference between two or more braces engaging a common corner post at the same level.

The shelves which are adapted to be seated on and supported by the braces are formed from planar sheet material, preferably clear glass or plastic, although other materials may be employed, again depending upon the decorative effect to be achieved. It will also be understood that in place of planar shelves, the braces may be utilized as supports for bins, drawer units, and the like of the size to fit within the confines of the corner posts defining the basic display structure.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of an exemplary modular display structure in accordance with the invention.

FIG. 2 is a schematic plan view illustrating the manner in which a plurality of the units may be interconnected utilizing common corner posts.

FIG. 3 is an enlarged sectional view taken along the line 3—3 of FIG. 1 illustrating the preferred cross-sectional configuration of the corner posts.

FIG. 4 is a side elevational view of a horizontal brace.

FIG. 5 is an end elevational view of the horizontal brace taken from the right side of FIG. 4.

FIG. 6 is an enlarged fragmentary sectional view taken along the line 6—6 of FIG. 1 illustrating the juncture of two horizontal braces at a common corner post.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring first to FIG. 1 of the drawings, the basic modular display unit comprises a series of identical corner posts 1 interconnected by horizontal braces 2 extending between and clamped to an adjoining pair of the corner posts. In the embodiment illustrated, which is exemplary of how the horizontal braces may be used, the bottommost set of braces, indicated at 2*a*, extend along all four sides of the structure, as do the topmost set of braces, indicated at 2*b*. The intermediate sets of braces extend along only opposing sides of the structure, preferably in alternate arrangement, as will be seen by comparing the positions of braces 2*c* and 2*d*. It is to be understood at the outset that the arrangement of the braces may be varied as desired consistent with the provision of sufficient brace members extending between each adjoining pair of corner posts to provide rigidity to the structure. Normally, the braces will be arranged in horizontally aligned sets of two, three or four braces to provide supports for the shelves 3 which in the embodiment illustrated comprise sheets of clear glass or plastic.

The basic modular unit as just described may be utilized as a free-standing display unit or, if desired, multiple units may be constructed utilizing common corner posts. Thus, as schematically illustrated in FIG. 2, a series of the units may be effectively joined together in various arrangements. In the exemplary arrangement illustrated, the units A and B have two common corner posts, whereas the unit C has a corner post in common with each of the units B and D. In the arrangement illustrated, the four units have a total of twelve corner posts, whereas if the units were independent of each other, a total of 16 corner posts would be required.

As will be seen in FIG. 3, each of the corner posts is cruciform in cross-section, with the cross-defining flanges 4 terminating outwardly in enlarged beads 5 which in themselves are preferably circular in cross-section. It should be pointed out, however that other configurations may be utilized; for example, the cross-sectional configuration of the beads could be triangular or polygonal or of other configuration which can be effectively engaged by mating channels in the horizontal bracing members to effectively prevent longitudinal displacement of the braces relative to the corner posts. Consequently, as employed herein, the term "bead" is used to denote an enlargement effective for such purpose irrespective of its configuration. However, for purposes of manufacture as well as appearance, beads which are essentially circular in cross-section are preferred. Similar considerations apply to the over-all cross-sectional configuration of the corner posts. While a cruciform shape is preferred due to its versatility, with adjoining flanges projecting outwardly at right angles to each other, it should be evident that the number and angular relationship of the flanges may be varied, depending upon the desired geometry of the basic unit as well as the ability of the units to be interconnected by common corner posts. For example, units have hexagonal shelves may be constructed in accordance with the invention utilizing corner posts having three flanges arranged at angles of 120° relative to each other, or triangular shelving may be employed in units having corner posts composed of six flanges separated from each other by angles of 60°. In any case, it should also be evident that the number of flanges in a given corner post may be reduced to the minimum number required for a given shelf configuration, i.e., two, but where this is done, versatility is lost in that a corner post can no longer be common to a plurality of units.

Referring next to FIGS. 4 and 5, each of the horizontal braces 2 is composed of an opposing pair of elongated generally rectangular brace members 6 and 6*a* which are preferably identical, each member having mitered end edges 7 and an upwardly projecting longitudinal lip 8 defining a shelf-supporting shoulder 9. Vertically disposed mating channels 10 are formed in the inner surface of the brace members adjacent their opposite ends, the channels being configured to conform to the shape of the beads 5. Each brace member has a mating perforation 11 spaced inwardly a short distance from each of the channels 10, the perforations in the brace member 6 being adapted to receive a machine screw 12 adapted to engage a captive nut 13 countersunk in perforation 11 in opposing brace member 6*a*, as will be evident from FIG. 5.

The manner in which the horizontal braces 2 are secured to the corner post 1 is illustrated in FIG. 6 wherein it will be seen that the opposing brace members 6 and 6*a* lie on opposite sides of one of the corner post flanges 4, with the channels 10 engaging the opposite sides of the interposed bead 5. By either loosening or removing the bolts 12, the brace members 6 and 6a may be separated sufficiently to permit them to pass around the bead, whereupon tightening of the bolts will bring the opposing brace members into clamping engagement both with the bead and with the opposite sides of the flanges themselves throughout a substantial portion of the flange width. There is thus a relatively large clamping area which effectively locks the braces in place, with the beads serving the dual function of effectively increasing the clamping area and also acting as a positive lock effective to prevent the brace and corner post from being pulled apart.

FIG. 6 also illustrates the manner in which a plurality of horizontal braces may be attached to a corner post at the same level without interference. To this end, it will be noted that the mitered end edges 7 of the braces effectively provide clearance for such attachment; and it will be evident that additional brace members may be attached to the remaining flanges of the corner post so that there may be as many braces attached in a common plane as there are flanges on the corner posts. As should now be evident, when the braces are clamped in place, their innermost shoulders 9 define seats for supporting the marginal edges of the shelves 3, the lips 8 on the innermost brace members 6a effectively preventing lateral displacement of the shelves. In this connection, where a shelf is supported only by an opposing pair of braces, such as the pairs of braces 2*c* or 2*d*, as illustrated in FIG. 1, displacement of the shelves in a direction lengthwise of the lips 8 is prevented by the adjoining flanges of the corner posts which act as stops to maintain the shelves in position. Of course, where braces extend along all four sides of a given shelf, the shelf is held against displacement on all sides by the lips 8.

In addition to its simplicity and ease of erection, the display structures of the present invention provide additional advantages. Since the horizontal braces may engage the corner posts at any desired points throughout their lengths, the units are effectively self-leveling

and will compensate for any irregularities in the floor or other supporting surface on which they are erected. If, for example, the floor is tilted slightly from the horizontal, the unit may nonetheless be plumb, with the shelves in true horizontal planes simply by leveling the horizontal braces so that they effectively engage the corner posts on the "low" side at a greater distance from the floor than on the "high" side. Similarly, the horizontal braces themselves are effectively self-leveling in that the bead engaging channels extend at right angles to the shelf-supporting upper edges or shoulders of the brace members; and consequently when the opposite ends of a given brace are properly fixed to a pair of corner posts, the brace automatically will be aligned at right angles with respect to each post and, as additional braces are added, all parts will be essentially in plumb.

Sets of the horizontal braces also may be used as skids to support the display structure. By placing horizontal braces at the bottommost ends of the corner posts, the braces effectively provide a supporting base, and by elevating the corner posts by a small distance relative to the bottom surface of the braces, the corner posts will be free from contact with the floor and the entire structure will be supported by the braces. Of course, if the corner posts are to rest on the floor, suitably configured caps or tips may be provided for the ends of the corner posts. Similarly, decorative caps may be provided for the upper ends of the corner posts.

Modifications may be made in the invention without departing from its spirit and purpose. Numerous such modifications have already been set forth and others will undoubtedly occur to the worker in the art upon reading this specification. For example, while a preference has been expressed for horizontal brace members in which the opposing brace members are of identical configuration, it will be evident that the brace members in each pair could be of dissimilar configuration with the outer member decorated, fluted, or embossed with a design, whereas the inner brace member may be plain, the essential consideration being the ability of the braces to be securely clamped to the flanges of the corner posts. While a preference has been expressed for the flanges of the corner posts to terminate outwardly in beaded enlargements, such enlargements may be spaced inwardly from the outermost edges of the flanges, the essential consideration being the provision of a protuberance which may be effectively engaged by the channels in the horizontal braces for locking engagement therewith.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A modular display structure comprising a plurality of shelves each adapted to be supported by sets of horizontal braces positioned at any desired horizontal level relative to a plurality of vertical corner posts defining the corners of the display structure, said corner posts each comprising an elongated member having a plurality of outwardly directed, angularly related equal width flanges extending throughout the full length thereof at equally spaced apart angles, a beaded enlargement extending along the outer edge of each said flange through its full length, the width of the flanges being greater than the width of the beaded enlargements, said horizontal braces each comprising an opposing pair of mating brace members having inner surfaces lying in face-to-face relation, mating vertically disposed channels spaced inwardly from the opposite end edges of the inner surfaces of said brace members positioned to engage about opposite sides of the beaded enlargement of a flange engaged therebetween, the portions of the inner surfaces of the brace members lying outwardly beyond said channels being of a width substantially equal to the width of said flange and adapted to enter into face-to-face engagement with the opposite sides of said flange when the channels engage the beaded enlargement, and threaded clamping means interconnecting said opposing brace members immediately inwardly of said mating channels, said threaded clamping means, when loosened, permitting said opposing brace members to be spaced apart by a distance such that a corner post flange may be freely engaged between the ends of opposing brace members and acting, when tightened, to draw the ends of the opposing brace members into clamping engagement with the opposite sides of the flange and with the mating channels in engagement with the beaded enlargement, said brace members having their outer end edges mitered at mating angles, whereby a plurality of horizontal braces may be secured to adjoining flanges of a corner post at the same horizontal level.

2. The modular display structure claimed in claim **1** wherein said corner post has four flanges arranged at right angles to each other, wherein said beaded enlargements are circular in cross-section, and wherein the mating channels in said brace members are semicircular in cross-section.

3. The modular display structure claimed in claim **2** wherein said brace members are of identical configuration, each including a shelf-retaining shoulder extending along the inner side of its uppermost edge.

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