United States Patent

Murcia

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[54] **MODULAR SHELVING AND FURNITURE**

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[51] **Int. Cl.** **A47b 3/00**

[58] **Field of Search** 46/16, 17, 19, 21, 23, 27, 46/28, 30, 31, 25; 211/177, 182, 148; 108/111, 153

[56] **References Cited**

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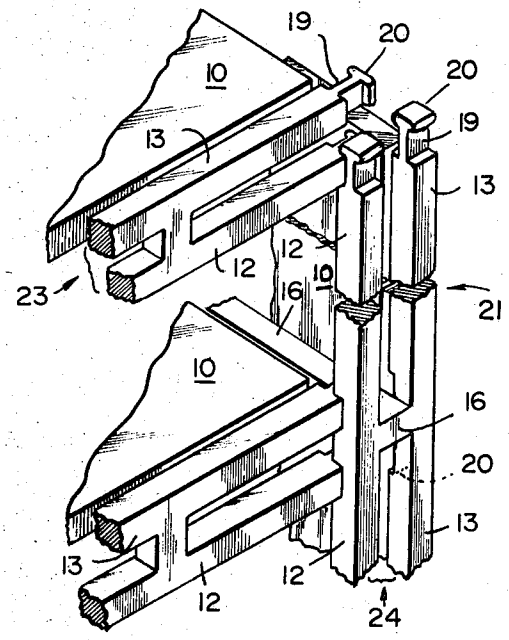
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[57] **ABSTRACT**

The invention is directed to a modular type of construction for expansible tables and shelving, the construction being formed solely from a plurality of identical units wherein each of said units may be easily, quickly and individually engaged and removed for attaining and altering the surface capacity of said tables and shelving.

5 Claims, 6 Drawing Figures



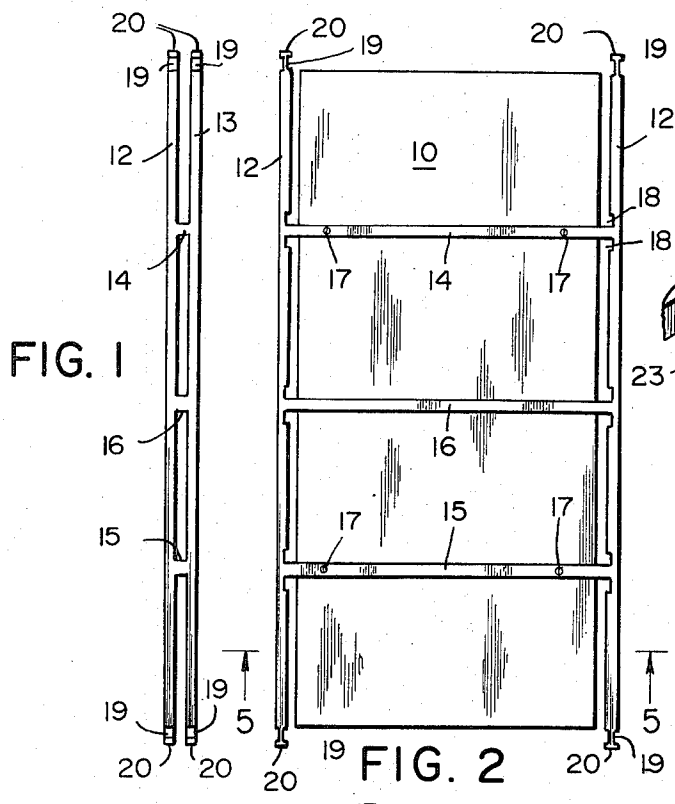


FIG. 1

FIG. 2

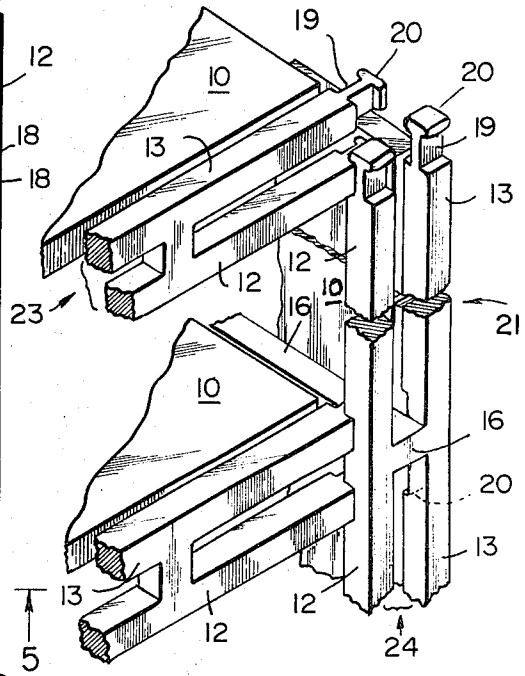


FIG. 3

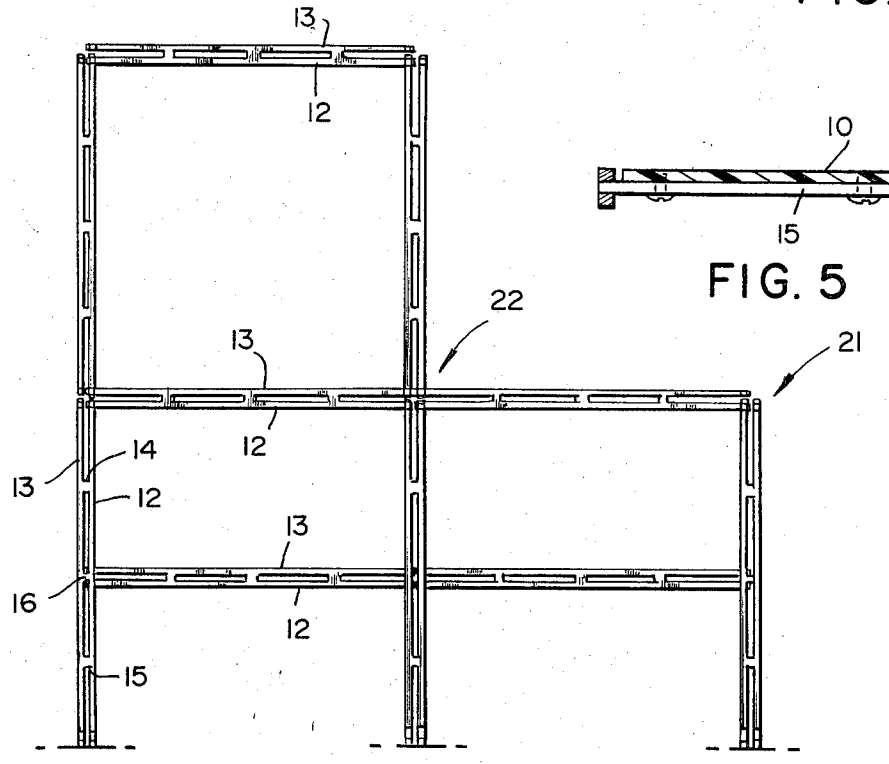


FIG. 4

FIG. 5

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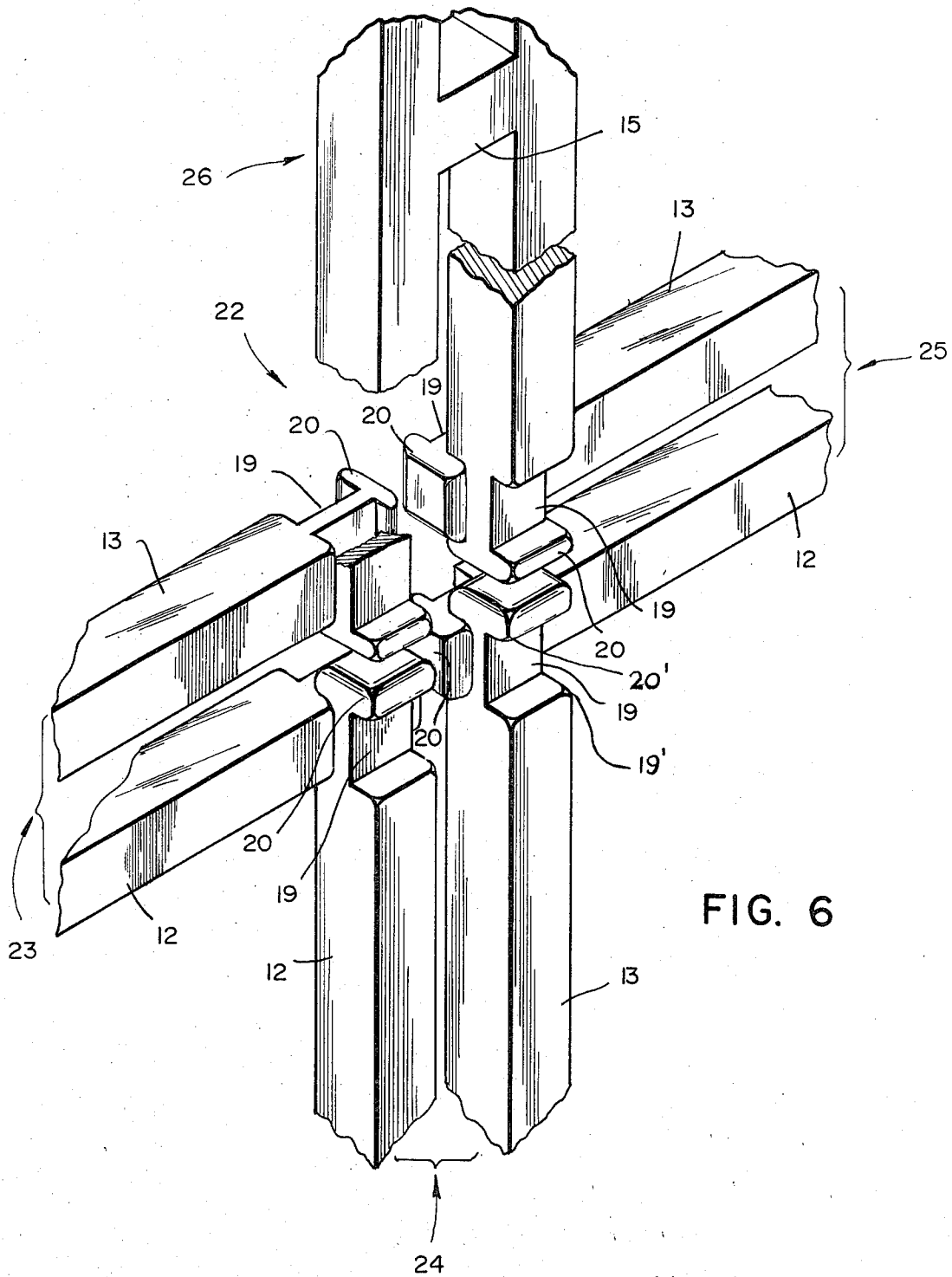


FIG. 6

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MODULAR SHELVING AND FURNITURE

Shelving, tables and other surface type articles of modular components assembleable by the retailer or user has been known. However, the related modules are of different construction and cannot be readily and flexibly interconnected to form a single or unitized assembly of any selective and alterable size and capacity.

A primary object of the invention is to provide modular articles in which all the units or components are identical in structure.

Another object of the invention is to provide said modular articles wherein the units or modules are flexibly interconnected to form a single or unitized assembly of selective extensibility and design.

Another object of the invention is to provide modular articles of the type stated which, when assembled will have the appearance and finish of high-quality products but will be relatively economical in cost.

Further objects of the invention are to provide articles of the type stated having single and identical modules which are capable of being easily and rapidly assembled and disassembled without skilled labor, tools and extraneous parts.

These objects and other incidental ends and advantages of the invention will hereinafter appear in the progress of the disclosure and as pointed out in the appended claims.

In the accompanying drawings (two sheets):

FIG. 1 is a side view in elevation of the module or unit forming the modular article of the invention;

FIG. 2 is a rear face view in elevation of said module or unit;

FIG. 3 is an enlarged fragmentary view in perspective showing one corner as at numeral 21 of a modular article formed of a top, an intermediate and side modules;

FIG. 4 is a front view in elevation showing a form of table and/or shelving formed of ten structurally identical modules;

FIG. 5 is a sectional view of FIG. 2 across the plane 5—5 thereof, and

FIG. 6 is a fragmentary and enlarged view in perspective showing engagement of the spaced double-rail components of four modules (absent the panel members of the modules) at the intersection indicated generally at numeral 22 in FIG. 4.

In accordance with the invention and the preferred form, the module from which the modular structure is formed is shown in FIGS. 1 and 2. Thus, the module comprises a suitably shaped panel such as rectangular panel 10 suitably mounted on a framework. The framework comprises longitudinal side members each in the form of a double-rail 12–13 joined in parallel and spaced relationship and connected by similar, spaced, intermediate and transverse single rails 14, 15 and 16. As shown, each of the rails 14, 15 and 16 at the ends thereof extend into, fit between and are connected as by brazing, spot-welding or other means of affixation to the spaced double-rails 12–13, thereby securing simultaneously the spaced relationship of each double rail and the connection of the longitudinal side members of the framework.

The upper coplanar faces of rails 14, 15 and 16 serve as the support for panel 10 and to which side panel 10 is suitably connected by any suitable means such as by rivets or screws 17 as seen in FIG. 2. The inner faces of each of the double-rails 12–13 of the framework are provided with aligned and transverse grooves 18, the bottom walls thereof being square in shape, said grooves being formed with and on each side of the ends of the rails 14, 15 and 16 for purposes of connecting intermediate modules as shelving (see FIG. 3) between end modules as will appear. Furthermore each of the longitudinal double-rails 12–13 adjacent to and below the ends thereof are formed with coplanar, aligned and transverse grooves on opposite faces, bottom walls of said grooves being substantially of same size and shape as bottom groove 18, to result in T-formations in section, the vertical and horizontal components being indicated respectively by shank 19 and overhanging cap 20.

As shown in FIG. 2, panel 10 of the module along the longitudinal edges is disposed inwardly of double-rails 12–13, while the transverse edges are parallel with the base of each of

the shanks 19. Panel 10 may be of any suitable material such as wood, metal, composition or mesh, and preferably is of a thickness adapted to lie flush with the rails 13 of the double-rails 12–13 of the module. Moreover, double-rails 12–13 and rails 14, 15 and 16 are all shown square in cross-section, of substantially same and suitable cross-sectional dimensions to sustain required load and pressure and may be formed of any material having suitable strength and resilient flexibility such as brass, copper, aluminum, plastic or other materials.

From the module above described for purposes of illustrating the invention, regular and combined end tables with shelving, expansible shelving per se useful for storing and exhibiting merchandise or as expansible book shelving, are assembleable from a plurality of the modules above described.

In FIG. 3 is shown the manner of an assembly of modules representing the corner 21 of the modular article shown in FIG. 4. The top horizontal module engages end or side modules by the 90° engagement of respective T-formations (shank 19 and cap 20) at the ends of rail components 12 of the double-rails 12–13, the rail components 12 of the top module being disposed inside of the rail components 12 of the side modules. Resilient and firm engagement of the T-formations 19 and 20 is made possible both by flexibility of rail portions 12 about transverse rails 14 or 15 and by slight yieldability of the T formations particularly at the cap areas. The intermediate shelf shown at corner 21 in FIG. 3 is afforded by a horizontal module installed prior to installation of the top module between two end modules. Said intermediate shelf or module engages at the end T-formations of the double-rails 12–13 the parallel and spaced grooves 18 of the rail component 12 of double-rails 12–13 of the end modules. Said spaced grooves 18 are adjacent to the ends of transverse rails 14, 15 or 16 of the end modules as described. As shown, engagement of the intermediate shelf is adjacent transverse rail 16, but engagement may also take place adjacent other transverse rails 14 and 15.

FIG. 6 shows how additional modules are assembled both vertically and horizontally to attain an article such as shown in FIG. 4 as at the intersection indicated by numeral 22. In FIG. 6, the double-rail 12–13 of the top module of FIG. 3 is indicated generally by numeral 23 and the double-rail 12–13 of the end module of FIG. 3 is indicated generally by numeral 24. The double-rail 12–13 of the additional or extended horizontal module is indicated generally by numeral 25 and the double-rail 12–13 of additional vertical module is indicated generally by numeral 26.

Thus, the single T-formation of rail component 12 of horizontal module extension 25 engages from the inside of single T-formation of rail component 13 of the end module 24 while the double T-formation of the vertical or end module extension 26 engages respectively from the outside of the single upper T-formation of the rail component 13 of top module 23 and the single and aligned T-formation of the rail component 13 of the horizontal module extension 25 aligned with the top module 23.

It is to be noted from FIG. 6 that the double-rails 12–13 of all horizontal modules, including the intermediate or shelving modules, are aligned and are disposed inside of the double-rails 12–13 of the vertical modules; while the double-rails 12–13 of the vertical or end modules are also aligned. Moreover, the depth of the grooves described for interconnection of the parts is variable dependent upon dimensions of the rails and the loads to be supported.

Further added extensions of vertical and horizontal modules follow the type and order of engagement above described. As shown particularly in FIG. 6, the outer transverse edges of the groove walls forming each of the shanks 19 are rounded as at 19' and 20' to facilitate entry of engageable T-formations and to prevent damage afforded by sharp edges.

It is understood that minor changes and variations in the dimensions, surface finishes, shapes and materials of the parts of the invention may be resorted to.

I claim:

1. A modular article consisting of a plurality of resiliently and demountably interconnected modules each of same size and structure, each module comprising a rectangular framework having spaced intermediate transverse single rail members and having longitudinal lateral members, each of said lateral members consisting of connected spaced and parallel rail members, the ends of said transverse single rail members being secured to each of said longitudinal lateral members, a panel member for said framework mounted on the transverse single rail members, jointing means formed adjacent the ends of each rail member of the connected spaced and parallel rail members, whereby each pair of spaced and opposite vertically disposed modules are adapted to be demountably interconnected with a horizontally disposed module therebetween at portions of respective jointing means and whereby vertically and horizontally disposed and aligned modules are adapted to be demountably interconnected at portions of respective jointing means, each rail of the connected spaced and parallel rail members having formed therewith a series of intermediate jointing means, the intermediate jointing means of any pair of vertically disposed, spaced and opposite modules being demountably engagable with the end jointing means of an intermediate and horizontally disposed module to serve as shelving and reinforcement for said vertical modules.

2. A modular article as set forth in claim 1 wherein the single transverse rail members and the connected spaced and parallel rail members have substantially same transverse cross-sectional dimensions intermediate the ends thereof and are rectangular in cross-section.

3. A modular article as set forth in claim 1 wherein the ends of said transverse single rail members penetrate the spacing between each pair of said spaced and parallel rail members, said parallel spaced members being connected thereat.

4. A modular article as set forth in claim 1 wherein the single transverse rail members and the connected spaced and parallel rail members have substantially same transverse cross-sectional dimensions intermediate the ends thereof and are rectangular in cross-section and wherein the ends of said single rail members penetrate the spacing between each pair of said spaced and parallel rail members, said parallel spaced members being connected thereat.

5. A modular article as set forth in claim 1 wherein said jointing means comprises aligned grooves on opposite faces of the parallel rail members.

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