

[54] **FREE-STANDING PANEL SYSTEM**
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[52] **U.S. Cl.**52/36, 52/278, 52/281, 52/286, 52/586, 248/243
 [51] **Int. Cl.**E04b 2/78
 [58] **Field of Search**.....52/36, 278, 122, 272, 275, 52/281, 284, 285, 286, 475, 582, 585, 586, 729, 731; 108/90, 96, 101, 102, 106; 248/222, 211, 241-243; 160/135, 351

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[57] **ABSTRACT**

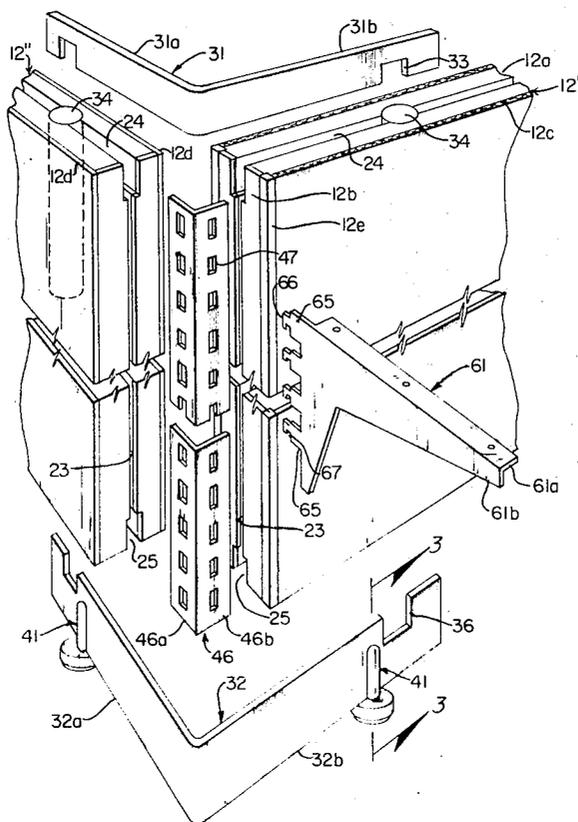
A panel system is disclosed for partitioning a room area and releasably supporting selected articles of furniture in which the panels are provided with cooperating grooves and male locking elements in their outer edges and slotted top and bottom junction plates are releasably inserted into locking engagement with the top and bottom grooves, respectively, to position connected panels in closely spaced, edge-to-edge relation to one another. A spline is releasably inserted in adjacent vertical grooves of the connected panels and the spline has vertically spaced slots disposed in the space between the connected panels into which male connector projections on a support bracket may be releasably inserted to support shelves, cabinets, desk tops and like articles of furniture at a desired elevation. An end post assembly also has slotted top and bottom plates lockingly engaging the panels to provide additional support for their free ends.

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12 Claims, 10 Drawing Figures



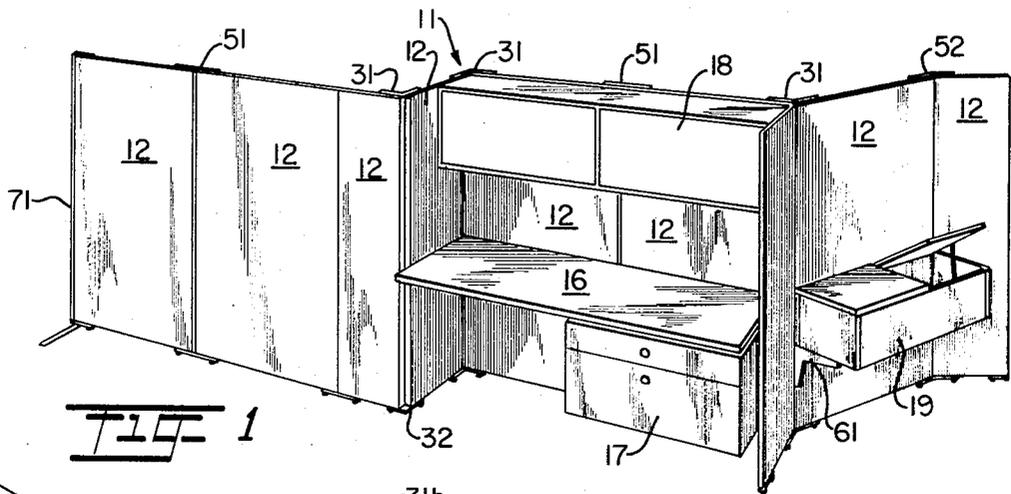


FIG. 1

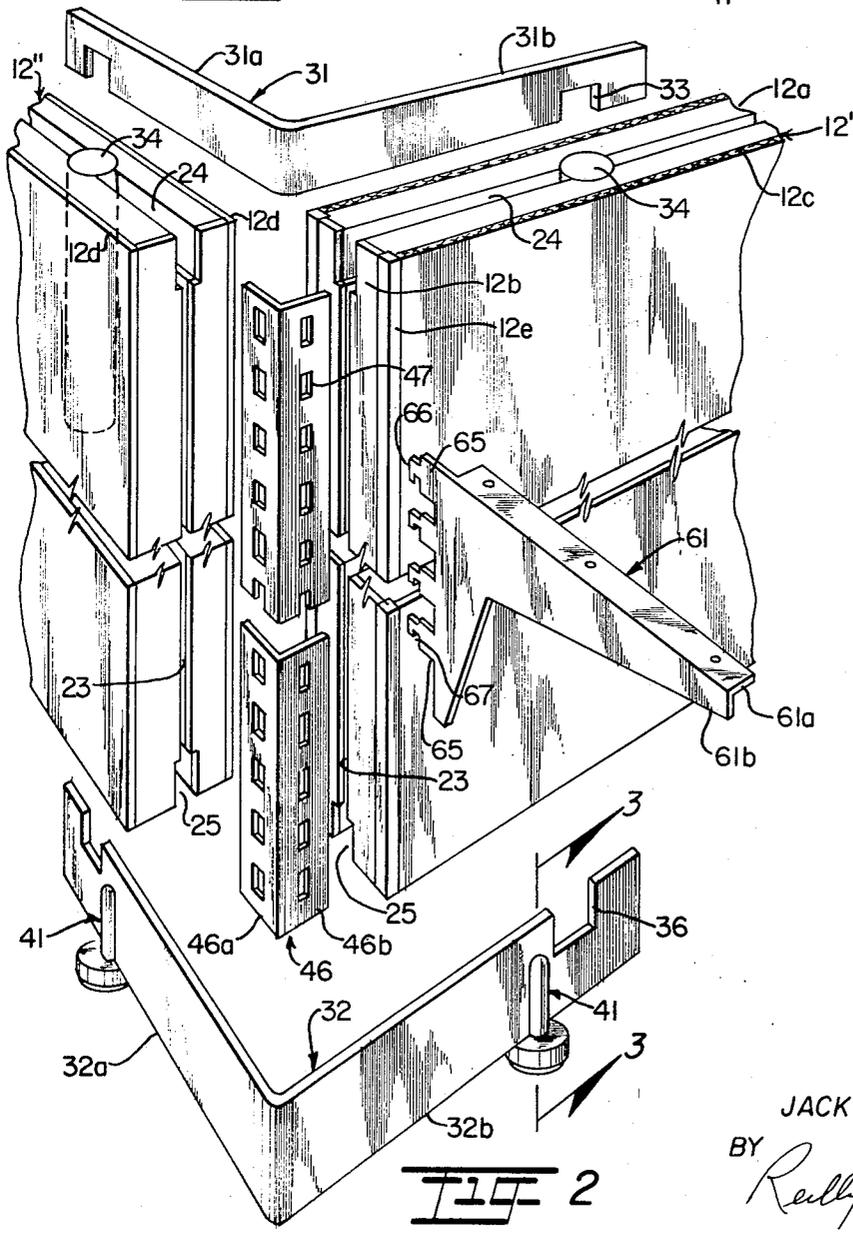


FIG. 2

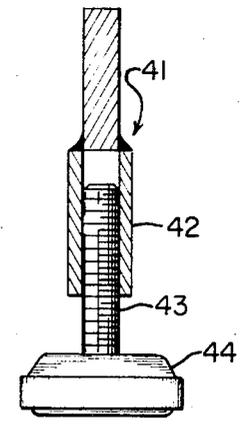
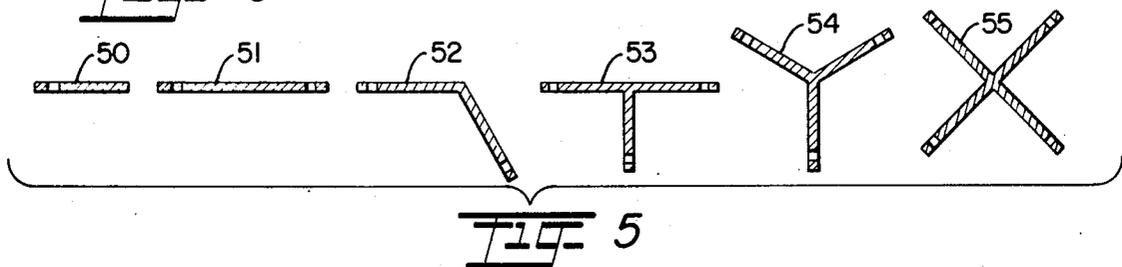
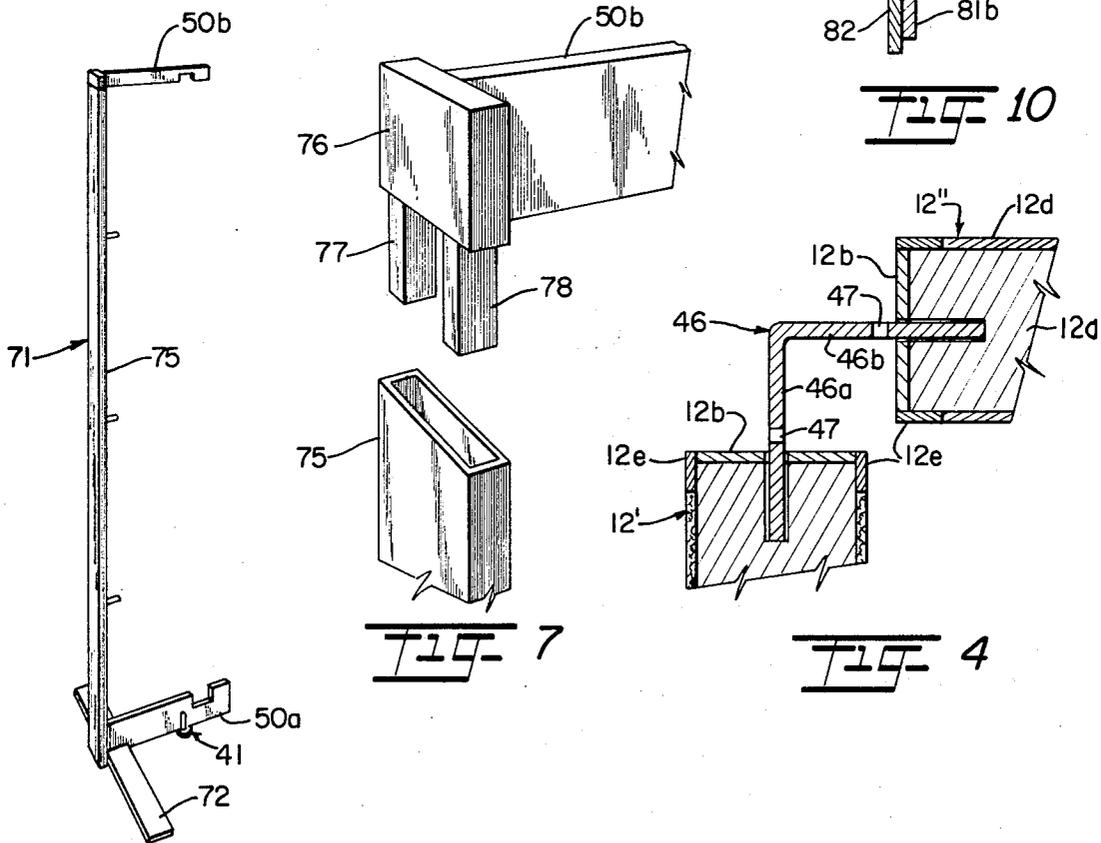
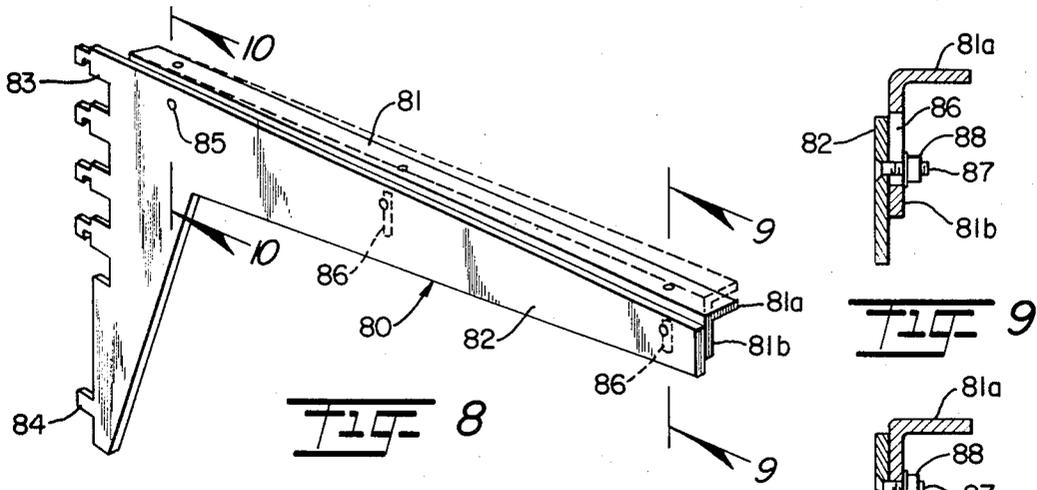


FIG. 3

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FREE-STANDING PANEL SYSTEM

This invention relates to novel constructional apparatus suitable for partitioning room areas and supporting selected articles of furniture.

The present practice of partitioning rooms into separate areas is to use relatively permanent walls which are secured in place to the floors, walls and ceilings in such a way that any variation in room size and arrangement requires a major repair. This practice does not lend itself to a great deal of versatility and it usually requires considerable time together with skilled and trained personnel to make the needed changes and variations in the partitioning and rearranging of an office area. Another disadvantage of the present practices is there is little utilization of the partitioning walls to support the furniture in the room.

Accordingly, it is an object of this invention to provide a novel panel apparatus whereby interchangeable panels of selected sizes, construction and materials are supported in a desired structural configuration to meet the immediate room partitioning needs.

Yet another object of this invention is to provide a novel and improved panel assembly including interchangeable panels, panel connectors, and end posts capable of partitioning room areas and supporting selected articles of furniture such as desk tops, table tops, shelves, cabinets and the like in a convenient and efficient manner.

A further object of this invention is to provide a panel assembly which is vertically adjustable to make it level on existing support surfaces.

Still a further object of this invention is to provide a novel panel system whereby several standard panel sizes, shapes, colors, construction and materials may be readily interchanged and releasably but positively locked together in free-standing relation to accommodate changing room requirements without attachment to the floor, walls or ceiling of the room.

Yet a further object of this invention is to provide a novel panel system in which the elements are readily assembled and disassembled and has a substantial degree of rigidity and durability once assembled.

In accordance with the present invention there are provided flat panels of selected sizes, shapes and construction having grooves in their outer peripheral edges with adjacent edges of the panels being connected together by top and bottom junction plates. Each plate is elongated with slots at opposite ends which are releasably engageable with locking pins in the top and bottom grooves of the panels. A spline with angularly disposed legs releasably inserts into adjacent vertical grooves to cooperate with the junction plates in maintaining a predetermined alignment between the panels and has a column of vertically spaced slots which receive male connector projections on support brackets to support shelves, table tops, desk tops, drawers and like articles of furniture. An upright end post assembly provides added support for the free ends of connected panels. Level adjusters on the bottom junction plates and on the support bracket provide for a fully level assembly.

Other objects, advantages and capabilities of the present invention will become more apparent as the description proceeds taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a perspective view of a free-standing room partitioning system embodying features of the present invention;

FIG. 2 is an exploded perspective view of a right angle corner assembly;

FIG. 3 is a sectional view taken along lines 3—3 of FIG. 2;

FIG. 4 is a sectional view through the corner junction with the spline in place in the vertical grooves;

FIG. 5 is a cross-sectional view of several shapes of junction plates;

FIG. 6 is a perspective view of an end support post for a panel assembly;

FIG. 7 is an enlarged fragmentary perspective view showing the coupling between the top plate and the upright standard of FIG. 6;

FIG. 8 is a fragmentary side elevation view of an alternative form of support bracket;

FIG. 9 is a sectional view taken along lines 9—9 of FIG. 8; and

FIG. 10 is a sectional view taken along lines 10—10 of FIG. 8.

Referring now to the drawings, in FIG. 1 there is shown a self-supporting room partitioning assembly generally designated by numeral 11 which comprises individual panels 12 disposed upright and connected in a closely spaced, edge-to-edge relationship in a manner to be described so as to make up a desired wall configuration without requiring support from adjacent permanent walls or ceilings. This panel assembly supports a desk top 16, drawers 17 below the desk top, a cabinet 18 above the desk top, together with a filing bin 19 on a panel adjacent the desk top. It is understood that the assembled unit shown in FIG. 1 is an example of only one possible configuration and that the present invention affords a wide variety of partitioning configurations, a number of sizes and many furniture variations to meet the particular needs of a room area. The panels 12 are furnished in several standard sizes and may be of numerous materials such as natural woods and plastic laminates to give esthetic variety, and the office furniture may include desks, filing bins, drawers, shelves, valances, sliding doors and the like.

With reference now to FIGS. 2 and 4, a corner assembly of panels 12' and 12'' is shown in more detail. Panels 12' and 12'' each have generally flat outer edges and each panel has grooves 23 in the vertical edges, a groove 24 in the top edge, and a groove 25 in the bottom edge. Each of these grooves is centered in the panel and the top and bottom grooves are preferably slightly wider and deeper than the vertical grooves. Each of panels 12' and 12'' shown in FIG. 2 comprises an inner core 12a made preferably of flakeboard, an end facing plate 12b and an outer finished sheet or layer which may be carpeting represented at 12c on panel 12' or a plastic or wood layer 12d as represented on panel 12'' to provide the desired effect on the outer surface of the panel. A corner trim member 12e is provided at each corner along the vertical edge for the carpet layer 12c, while the wood or plastic laminate layers 12d either may extend the full length of the panel and overlap the facing plate 12b or may be provided with a corner trim 12e as shown in FIGS. 2 and 4.

A top junction plate 31 and a bottom junction plate 32 releasably insert into the top and bottom edge

grooves 24 and 25, respectively. The top junction plate 31 has a pair of elongated flat arms 31a and 31b disposed at right angles to one another which extend a substantial distance inwardly of the vertical edge of the panel to give substantial support for the assembly. Each top junction plate arm has a slot 33 opening in its bottom edge and adjacent its free end which slides over a vertically disposed male locking element 34 in the form of a cylindrical dowel pin centered in the groove in the top of the panel. This locking element 34 is wider than the top groove 24 to extend into its sides and penetrates to a substantial depth into the panel and is firmly held in the panel and this slot and pin locking arrangement facilitates the positioning of the top junction plate in the proper place on the panel and also serves to positively lock the panels together in a closely spaced edge-to-edge relation to one another. Similarly, the bottom junction plate 32 has elongated flat arms 32a and 32b, each having a locking slot 36 opening through the top edge adjacent its free end which fits into a locking dowel pin (not shown) centered in the bottom groove. Further, each bottom junction plate arm has an adjustable leveler 41 comprising an internally threaded sleeve 42 secured to the sides of the plate arm 32 as, for example, by welding along the upper edges, a threaded stem 43 threaded into the sleeve with a flat foot 44 forming a surface-engaging base. The stem 43 threads up and down in internal threads in the sleeve to adjust the effective length of the leveler. The foot 44 may be made of rubber, nylon or the like. This leveling adjustment structure serves to level the corners of an assembly and compensate for any irregularities in the surface on which the panels are supported.

A spline 46 having a right-angle cross section with flat legs 46a and 46b disposed at right angles to one another is releasably inserted into the adjacent vertical grooves 23 in the panels. Spline 46 extends substantially the lengthwise extent of the vertical edges of the panels and terminates at the inner extremity of the top and bottom grooves 24 and 25. The vertical grooves and spline connector legs are sized so that the spline connector will readily slip into the groove and the depth of the vertical groove is selected in relation to the length of the spline legs so as to dispose the vertical edges of the panels in a closely spaced edge-to-edge relation, as best seen in FIG. 4. A plurality of vertical spaced slots 47 are provided in each of the legs of the spline between the corner formed by the legs and the terminal edges of the legs and these slots are in communication with the space between the connected panels so they will slidably receive the male connector ends of support brackets described hereinafter.

The top and bottom junction plates for a selected panel assembly joint have the same angular shape and a system of assembled panels will include junction plates having several cross-sectional shapes, as is illustrated in FIG. 1. Typical cross-sectional shapes for the junction plates, in addition to the right-angle shape shown in FIG. 4, are illustrated in more detail in FIG. 5 and may include a straight shape 50 for connection with the end of a panel, a straight shape 51 for connection between panels, an acute inner angle shape 52, together with multiple leg configurations including a T-shape 53, Y-shape 54, X-shape 55. Typical angles for the acute angle shapes would be, for example, with an inside

angle of 105°, 120°, 135° or 165°. The spline shapes will have angles corresponding to those of the junction plates for the same junction and for each angular shape the spline slots 47 are disposed centrally in each leg for the right-angle shape.

For the support of articles of furniture from the up-standing panels 12 there is provided one or more support brackets 61 shown in FIG. 2. The support bracket has a right angle cross section with a top horizontal support leg 61a and a vertical leg 61b. The vertical leg 61b is generally L-shaped and supports inwardly extending, vertically spaced, slotted male connector projections 65 sized and spaced to insert into the slots 47. Connector projections 65 are flat-sided and have a reduced end portion 66 provided with an undercut slot 67 so that the reduced end portions will insert through the slot 47 and hook against the sides of the spline legs to provide a cantilever-type support surface area along the top leg 61a. It is apparent that support brackets 61 may be positioned at various elevations adjacent the connected panels between the vertical edges of the panels to provide one or more laterally spaced, removable supports along the wall assembly for supporting a desired article of furniture.

For the support of a free end of the connected panels there is provided an end post assembly 71 including a base formed of a laterally extending flat base plate 72 together with a bottom end junction plate 50a disposed at right angles to the base plate to form a T-shaped base configuration. A vertical standard 75 extends upwardly from the center of the base plate to cover the free vertical edge of the connected panels, as best seen in FIG. 1. The bottom end plate 50a has a leveler device 41 for leveling adjustment at the end of the standing panel. A straight slotted end plate connector 50b is mounted on a tubular cap 76 having a pair of dependent prongs 77 and 78. These prongs are sized and spaced to releasably insert into an upper open end of standard 75 so that the top end plate connector may be releasably inserted into place once the bottom junction plate 50a is in position.

An alternative form of support bracket shown in FIGS. 8, 9 and 10 provides for the level adjustment of the supported article of furniture. This adjustable support bracket 80 has an independent, movable support member 81 of right-angle cross section with a top leg 81a and a vertical leg 81b. This movable support member is vertically adjustably mounted on an L-shaped stationary flange 82 which carries the vertically spaced slotted male connector projections 83 along its inner edge to insert into the spline slots 47 and further has a straight connector projection 84 at its lower end for added support. The adjustment for the support member 81 is provided by means of a pivot member 85 between leg 81b and support 82 at the inner end of the support member together with a pair of spaced elongated slots 86 in the vertical leg 81b, one at a position intermediate its ends and the other adjacent its outer end together with a threaded bolt 87 welded to the flange and extending through the slot 86 so as to permit the support member to pivot up and down relative to the stationary support 82 and be held at a selected angle by a nut 88 threaded on the bolt.

Although the present invention has been described with a certain degree of particularity, it is understood that the present disclosure has been made by way of ex-

ample and that changes in details of structure may be made without departing from the spirit thereof.

What is claimed is:

1. In a panel system for partitioning a room area, a free-standing panel assembly including a pair of panels each having a narrow groove in at least one of its top and bottom outer peripheral edges aligned with the groove in the other panel, a thin junction plate having a thickness substantially corresponding to the width of each said groove releasably positioned edgewise into the aligned grooves of said panels to position said panels in closely spaced edge-to-edge relation to one another, said junction plate and each panel having cooperating male and female portions therebetween for releasable, positive locking engagement therewith, each said male portion being in the form of a vertically disposed pinlike member in said groove, said pinlike member being sized to extend at least across the width of said groove, each junction plate having a pair of said female portions therein, each said female portion being in the form of an open slot extending into an edge of the junction plate and sized to receive the pinlike member whereby said panels are positively but releasably locked against movement with respect to one another.

2. In a panel system as set forth in claim 1 further including a spline releasably inserted in adjacent grooves in the vertical side edges adjacent one another in each pair of panels.

3. In a panel system as set forth in claim 2 wherein said spline has vertically spaced slots and further including a support bracket having vertically spaced, slotted projections adapted to be releasably inserted into selected of said slots to form a cantilever-type support directed outwardly from said connected panels at a selected elevation on said panels.

4. In a panel system as set forth in claim 3 wherein said support bracket includes a horizontally extending movable support member vertically, adjustably mounted on a flange and means to lock the support member in a fixed position on said flange.

5. In a panel system as set forth in claim 2 wherein said spline has flat-sided legs disposed at a selected angle to one another extending substantially the lengthwise extent of the vertical edges.

6. In a panel system as set forth in claim 1 further including an end post assembly having a base and top and bottom junction plate portions releasably inserted into top and bottom grooves at the free end of one of said panels.

7. In a panel system as set forth in claim 1 wherein said junction plate has flat, elongated arms disposed at a selected angle relative to one another and extending a substantial distance inwardly from the vertical edges of the panels.

8. In a panel system as set forth in claim 1 wherein said junction plate is a top junction plate and each said groove is a top groove, further including a bottom junction plate adapted to fit edgewise into a pair of bottom aligned grooves, said bottom junction plate having level adjustment means for leveling said panels.

9. In a panel system as set forth in claim 1 wherein said panels are formed of an inner core, outer side layers of a selected material secured to the core and an end facing layer of a selected material secured to the core.

10. In a panel system for partitioning a room area, a free-standing panel assembly including a pair of flat panels (12) each having thin vertical side grooves (23), thin top grooves (24) opening upwardly and thin bottom grooves (25) opening downwardly in their outer peripheral edges and a male locking element (34) arranged vertically in each of said top and bottom grooves so as to extend at least across the width of said grooves, a thin top junction plate (31) substantially corresponding in thickness with the width of the top groove and having elongated flat arms (31a, 31b) releasably inserted edgewise into said top grooves and a bottom junction plate (32) having elongated flat arms (32a, 32b) releasably inserted edgewise into said bottom grooves to position said panels in closely spaced edge-to-edge relation to one another, the top and bottom junction plates having bottom and top open slots (33, 36) respectively adjacent each outer end, the male locking element of each panel comprising a vertical pin (34) for releasable positive locking engagement with the said slots (33, 36), and a vertically disposed spline (46) having flat legs (46a, 46b) disposed at a selected angle relative to one another releasably inserted edgewise into adjacent of said vertical side grooves, said spline having vertically spaced slots (47).

11. In a panel system as set forth in claim 10 further including a support bracket (61) adapted to carry a selected article of room furniture adjacent said connected panels and having vertically spaced slotted connector projections (65) extending into selected of said spaced slots to form a cantilever-type support.

12. In a panel system for partitioning a room area, a free-standing panel assembly including a pair of flat panels (12) each having vertical side grooves (23), top grooves (24) and bottom grooves (25) in their outer peripheral edges and a male locking element (34) in each of said top and bottom grooves adjacent to the vertical side edges thereof, a top junction plate (31) having elongated flat arms (31a, 31b) releasably inserted into said locking top grooves and a bottom junction plate (32) having elongated flat arms (32a, 32b) releasably inserted into said bottom grooves to position said panels in closely spaced edge-to-edge relation to one another, each plate having a top and bottom slot (33, 36) adjacent each outer end and each panel having a vertical pin (34) for releasable positive locking engagement therebetween, and a vertically disposed spline (46) having flat legs (46a, 46b) disposed at a selected angle relative to one another releasably inserted into adjacent of said vertical side grooves, said spline having vertically spaced slots (47), a support bracket (61) adapted to carry a selected article of room furniture adjacent said connected panels and having vertically spaced slotted connector projections (65) extending into selected of said slots to form a cantilever-type support, at least one end post assembly (71) having a base plate (70), a bottom junction plate (50a) directed transversely from the base plate and releasably inserted into the bottom groove of one of the panels with male and female portions (33, 34, 36) therebetween in a positive locking engagement, a standard (75) directed upwardly from the base plate and along an adjacent vertical edge of said one panel oppositely of said spline connector between said pair of panels, and a top junction plate (50b) directed parallel to said bottom plate connector and releasably inserted into the top groove of said one panel.