

Feb. 16, 1971

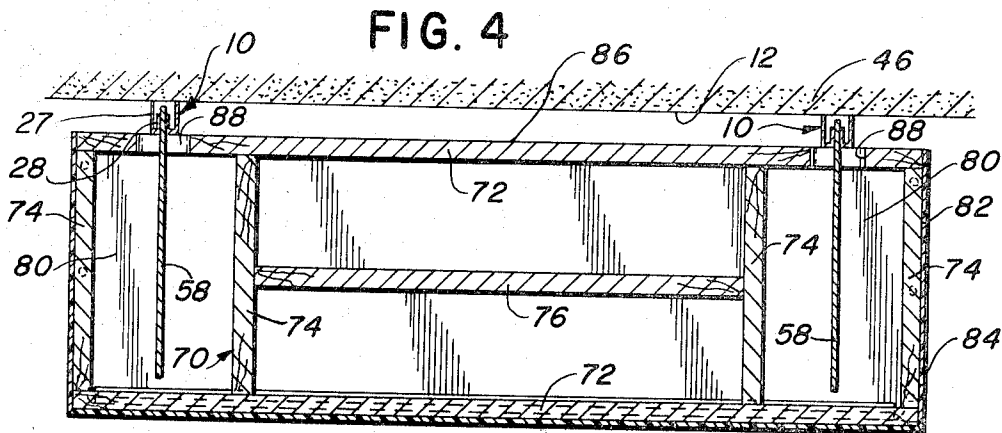
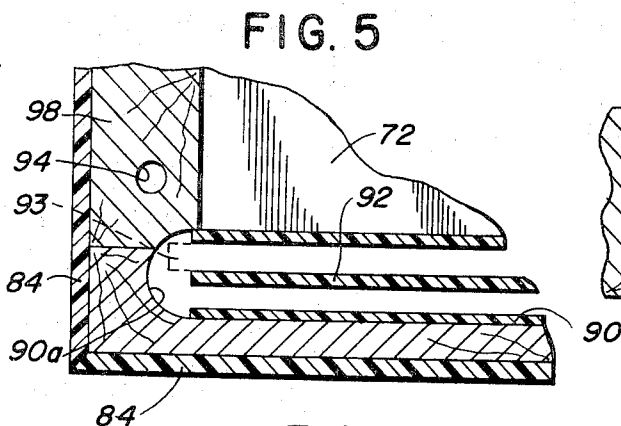
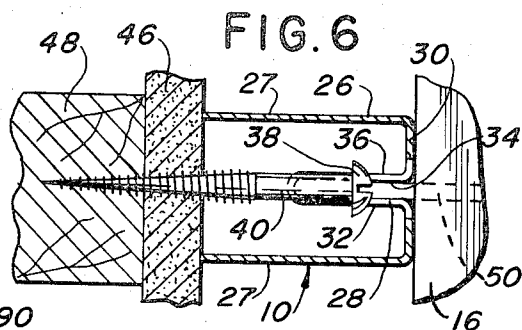
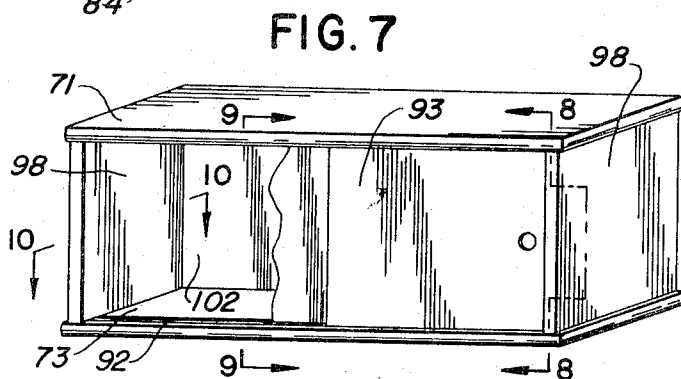
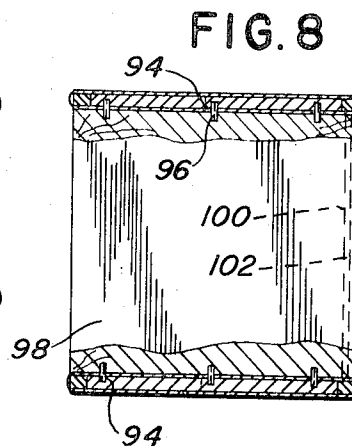
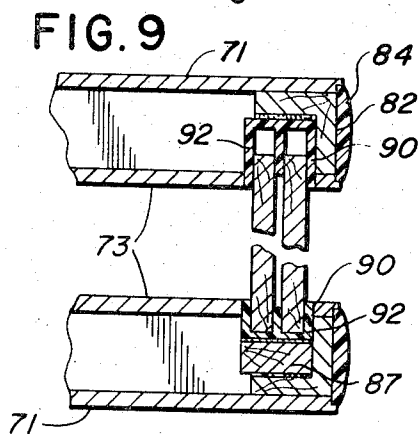
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3,563,626

MODULAR ADJUSTABLE WALL SHELVING

Filed July 16, 1968

4 Sheets-Sheet 2



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MODULAR ADJUSTABLE WALL SHELVING

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FIG. 10

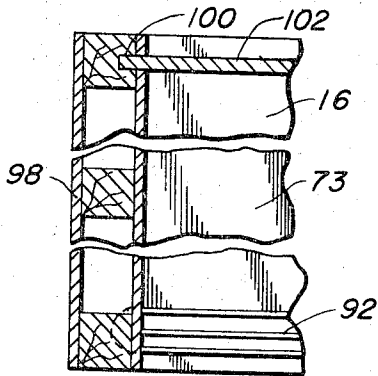


FIG. 11

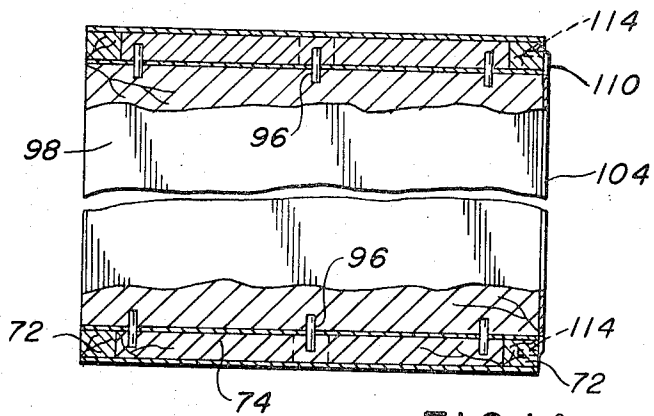


FIG. 12

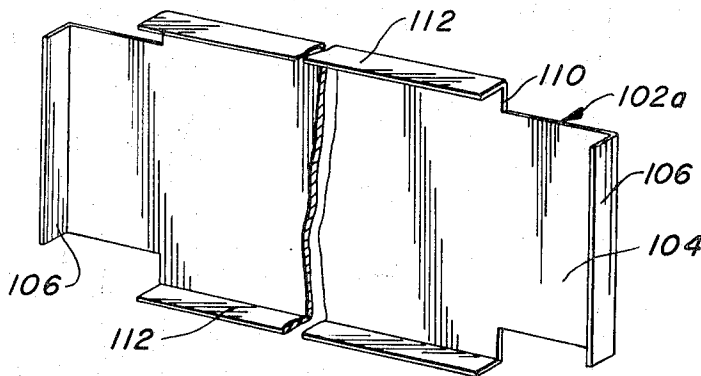


FIG. 14

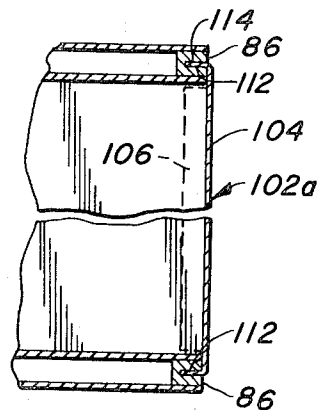


FIG. 13

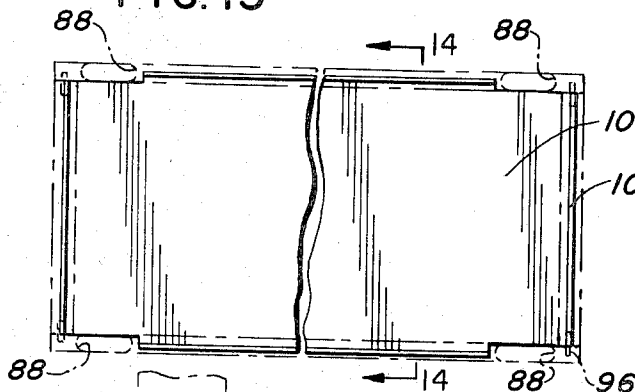


FIG. 15

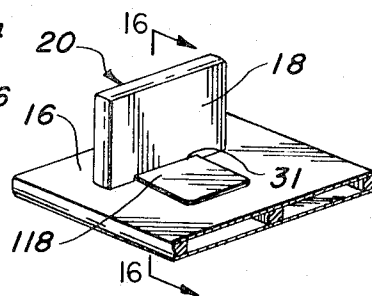
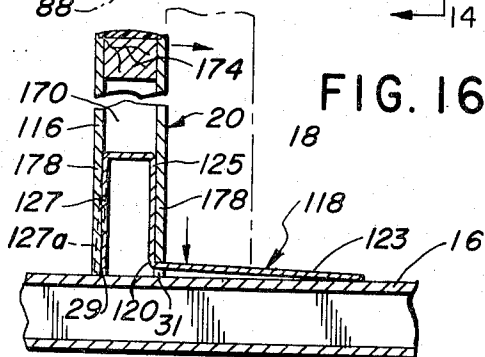


FIG. 16



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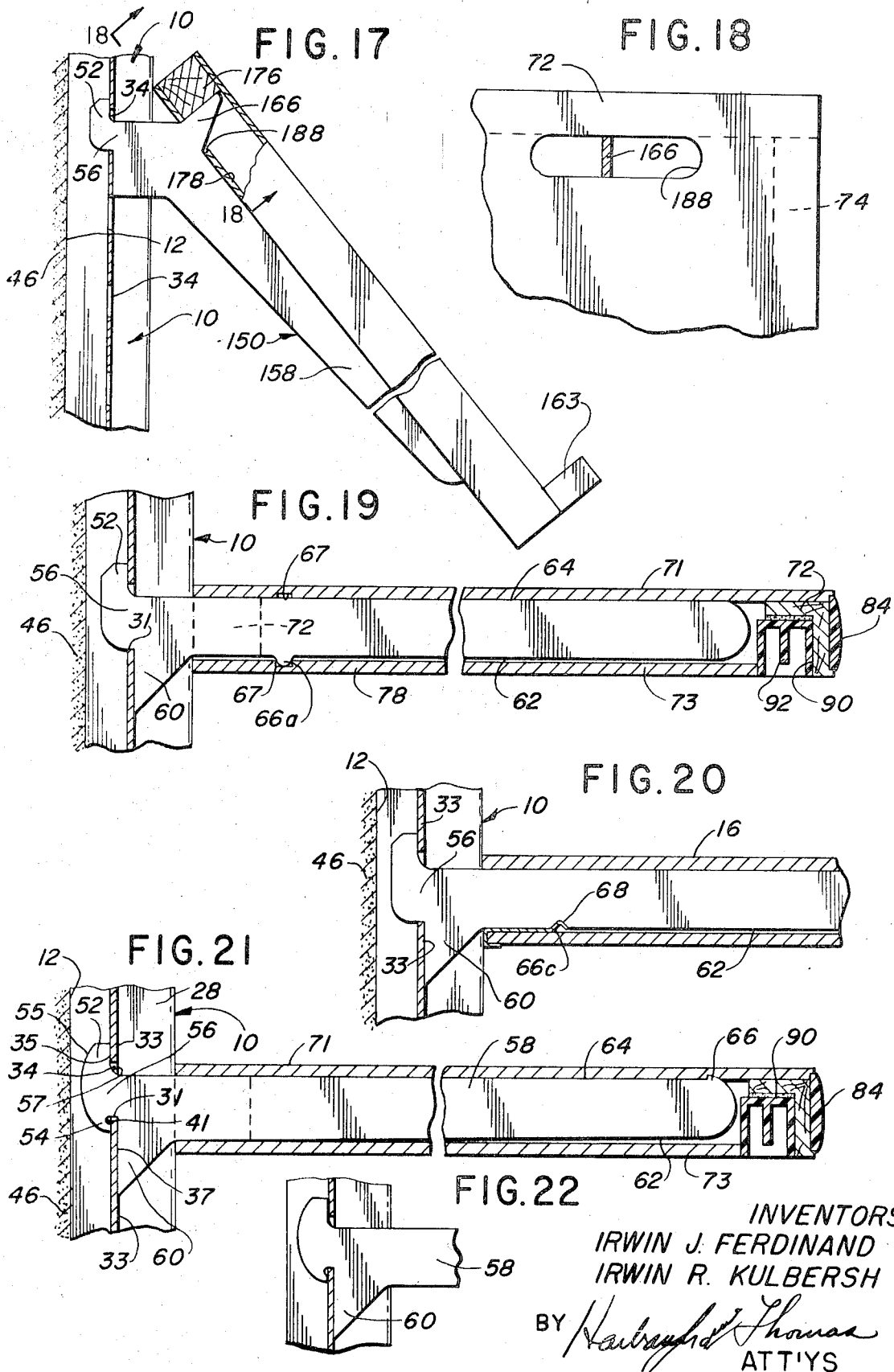
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MODULAR ADJUSTABLE WALL SHELVING

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4 Sheets-Sheet 4



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3,563,626

MODULAR ADJUSTABLE WALL SHELVING
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Int. Cl. A47b 47/00

U.S. Cl. 312—242

11 Claims

ABSTRACT OF THE DISCLOSURE

Modular knockdown shelving having vertical supports for vertically adjustable brackets that are received and concealed within the body portion of fabricated wooden shelves. The shelves are readily slidable over the brackets for holding them in adjusted position against removal and the brackets releasably hold the shelves in working position against inadvertent dislodgement. The shelves are uniform and are constructed for open shelving, closed shelving or cabinets with or without sliding doors. They can serve also as desks both flat and inclined.

CROSS REFERENCES

Ferdinand et al., 2,837,219, 211—147; Handler et al., 3,139,258, 211—136; Ferdinand et al., 3,265,455, 312—295.

BACKGROUND

Modular knockdown shelving for home and office is conventionally assembled with the aid of bolts and securing devices without predetermined levelling control and with a rigid tightness requiring a tool to loosen and tighten out-of-the-way securements which are somewhat inaccessible for levelling and height adjustment. Inexperienced persons tend to avoid becoming involved with shelving which requires skilled persons to assemble and adjust and whose price includes installation having the cost of labor either hidden in the sale price or as an added cost. Moreover, tool assembled shelving requires substantial time to erect, change or readjust different shelf arrangements and levels. More often than not, their owners endure an old or undesired arrangement rather than go to the trouble and expense of changing it.

It has also been noted that conventional decorative shelving of wood designed to show strength and substantial body form requires exposed accessory equipment which detracts from the appearance of modular wood shelving as obviously being knockdown, and in depicting conventional book shelves and wall cabinets with ends disposed in vertical alignment, generally leaving gaps for small articles to disappear between the shelf ends. The supporting parts generally interfere with the cleaning of the floor area below them and also obstruct usable areas of the shelving.

In the present invention, the shelving is modular and does not appear to be readily adjustable. The shelves are open throughout their lengths, and at their ends, and overlap decoratively at vertically spaced ends to break the stodginess of horizontal as well as vertical shelf continuity lines. The shelves are readily changeable without tools to enhance modular or decorative design and can easily be changed at the whim of the viewer. Shelves can be relocated without necessarily moving articles therefrom and withstand jarring in all directions when in place without displacing loose articles thereon. Any pair of shelves can be made into a cabinet or a cabinet into a nook or back into shelves.

The present invention provides for the ready attachment of shelf support brackets in a laterally, as well as vertically, guided relationship for rigid securement of support ends when inserted into a vertical support with

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the shelf ends in an inclined position and moved to a horizontal position. This movement may not be reversed when a shelf is in place on the shelf brackets and resting against the vertical supports. The shelves telescope over the brackets and are semi-locked in position releasable only by the upward and outward movement of the front edge of the shelf with respect to the bracket.

The invention contemplates shelving for supporting books and other articles in an upright position by integral hollow, light wooden or plastic covered elements having comparatively thin externally finished wall members laminated with and strongly reinforced by integrated strong internal frames which accommodate the shelf brackets in concealed, readily attachable and detachable relationship for assembly for adjustment and weight bearing purposes.

More particularly, hollow shelves and book ends are internally constructed and adapted upon their bottom faces to serve also as top and bottom sides for a cabinet assembly with end walls and slidable closures supported between them to provide cabinets of different heights and different sizes that also are readily attachable and detachable.

The invention is also characterized by vertical supports secured to the wall study as spaced a distance equal to the multiple of a module of the distance of one or two times the conventional building wall stud spacing to receive shelves that are longer than a multiple of the module so that vertically spaced shelves and cabinets terminally overlap each other at a common support and ends of some shelves serve to support books in other shelves. Moreover, the supports do not interfere with floor space nor need they extend below the expected location of the lowest shelf member.

Other and further objects and advantages of the invention include the economic benefits of mass production of high quality, a uniform product of pleasing modular appearance, and elements that are light and easy to handle and readily adjustable, along with others that will become apparent from the description and related drawings.

In the drawings:

FIG. 1 is a front elevational view of shelving assembly of illustrating a preferred embodiment of the invention installed and in use;

FIGS. 2 and 2a are broken away views of the cabinet portion shown in FIG. 1 illustrating its structural assembly with FIG. 2a taken on line 2a—2a of FIG. 2;

FIG. 3 is an enlarged vertical section taken on the line 3—3 of FIG. 1 showing a preferred embodiment of the invention;

FIG. 4 is a sectional view taken on the medial plane of a shelf showing its hard wood reinforcing frame;

FIG. 5 is a perspective view of the cabinet portion shown in FIG. 1 with one of the sliding doors cut away to show the interior and the lower guide tracks for the doors;

FIG. 6 is an enlarged section taken on line 6—6 of FIG. 1 showing the cross-sectional shape and mounting of the vertical supports;

FIG. 7 is a perspective view of a cabinet illustrating an embodiment of the invention ready for mounting on shelf brackets;

FIGS. 8, 9 and 10 are sections taken on lines 8—8, 9—9 and 10—10, respectively, of FIG. 7;

FIG. 11 is a view similar to FIG. 8 showing another embodiment of the back closure of the cabinet shown in FIG. 7;

FIG. 12 is a perspective view of the stamped sheet metal back shown in FIG. 11;

FIG. 13 is a front elevational view of the sheet metal front shown in FIG. 12;

FIG. 14 is a section taken on line 14—14 of FIG. 13;

FIG. 15 is a perspective view of a book end construction embodiment of the invention;

FIG. 16 is a section taken on line 16—16 of FIG. 15;

FIG. 17 is an end elevational view partly in section showing a reading desk shelf embodiment of the invention;

FIG. 18 is a section taken on line 18—18 of FIG. 17;

FIGS. 19, 20, 21 and 22 are views similar to FIG. 3 and show other forms of frictionally interengaging the shelves to the brackets, the one shown in FIG. 19 including a detent on the lower edge of the bracket engaging a recess on the shelf; the one shown in FIG. 20 illustrating a recess on the bracket instead of a detent; the one shown in FIG. 21 being characterized by both a frictional engagement with the shelf adjacent the upright support, and a taper with an embedding tooth detent adjacent to the front edge; and the ones shown in FIGS. 21 and 22 having an ear preventing the raising of the front end of the bracket and shelf.

Referring now to the drawings and FIG. 1 in further detail, the shelf assembly, shown by way of illustrating the invention, comprises upright supports 10 secured to a building wall 12 with or without the uprights extending to the level of the floor 14 or to the top of a base board which may be present. Shelves 16 are supported on the uprights as later described and may be used as single shelves to support articles such as books 18 with book ends 20, or provide either the upper or lower wall of a cabinet 22, or comprise a downwardly inclined shelf forming a reading desk as shown at 24.

As more particularly shown in FIGS. 3 and 6, the uprights 10 are like those shown in Handler 3,139,258 and comprise roll-formed, elongated, channel-like support elements 26 of heavy strip metal stock generally U-shaped in cross-sectional configuration. They have two parallel outside walls 27 interconnected along adjacent front edges by a central portion 30 having an inverted channel portion 32 providing narrowly spaced inside walls 28 and having a plurality of longitudinally extending slots 34 in the bottom 33 thereof that are spaced equal distance, all slots having a predetermined length. The inside walls 28 are partially cut away as at 36 at several vertically spaced points as located between slots 34 to provide recesses receiving the round heads 38 of wood screws 40 to a countersunk depth indicated by the shoulder 42. Below the level of the shoulder 42 the recess is reduced in dimension as at 44 to receive the shank of the screw 40 in guided and supported relation. The screw is long enough to extend through the wall covering 46 and deeply engage a wall stud 48 to support the uprights 10 in lateral weight bearing relationship and also vertical weight bearing relationship if the uprights do not extend to the floor base 14 or base board.

Brackets 50 adjustably engage in the slots 34 in weight bearing relationship as supported against side sway by the side walls 27 and 28. For this purpose, and referring to the preferred embodiment shown in FIG. 3, the brackets 50 are heavy sheet metal stampings, formed in the elongated shape shown in which the supported end 56 that engages the upright comprises upwardly extending ears 52 above a neck portion 56. Within the inverted channel 32 the bracket is elongated downwardly to provide a bracing ear 60 which engages the bottom 33 under compressive forces cooperating with upper ear 52 to hold the outer end 58 of the bracket in weight supporting relationship. The rear 52 is received through the slot 34 when the bracket is in an inclined position whereupon the bracket end 58 is lowered until the depending bracing ear 60 engages the bottom 33. The characteristics of the supporting end 58 alluded to in the description of the figures will be described later in connection with the shelf.

In the embodiment shown in FIG. 21 a downwardly extending ear 54 is provided to prevent upward movement of the bracket end 58 once the bracket is in place. The ears 52 and 54 in FIG. 21 are constructed to be received through the slots and lowered until the neck 56 engages

the upright 10 at the lower end of a selected slot 34 as at 31 in weight bearing relationship. In this position the upper ear 52 engages the bottom element 33 of the inverted channel portion 32 at 35 above the slot 34 under shear tension opposing downward movement of the projecting end 58 of the bracket, and the lower ear 54 engages the bottom 33 below the slot 34 at 37 under shear tension opposing upward movement of the projecting end 58.

It will be observed that the neck on its tension side 56 is rounded upwardly at 57 for strength to the line of engagement 35 while the neck on the compression side is square to the bottom 33 at the engagement 31 and rounds inwardly and reversely as at 41 to provide square contact over the fullest area under shear forces without sharp line contacts that would tend to induce shear or ripping.

Considering the insertion of the ears and orientation of the bracket, the overall distance from the rounded edge at 57 to the remotest point of the lower ear therefrom is substantially equal to or less than the height of the slot and the upper inner corner of the ear 52 is rounded or beveled as at 55 to just clear the surface of the wall 46. As between the two embodiments, the neck 56 of the FIG. 3 embodiment can be vertically wider for greater strength while that of FIG. 21 prevents upward movement of the end 58 of the bracket. When mounting the bracket of FIG. 21 on the upright, the bracket is held downwardly inclined to the upright with the upper ear 52 inserted through the slot 34 and raised until the rounded portion 57 of the neck engages the upper end of the slot 34. Thereupon the lower ear 54 is moved through the slot by lowering the outer end 58 of the bracket 50 to its horizontal position with the bracing ear 60 engaging the bottom 33 of the inverted channel whereupon the entire bracket is moved downwardly until the engagement at 31 is established. Thereafter the two ears cooperate one to engage the wall and the other the bottom 33 to prevent upward movement of the end 58.

In FIGS. 3, 17, 19 and 20 brackets are shown wherein the lower ear 54 is not employed since there is no need to restrain the projecting end 58 against upward movement when removing a shelf therefrom for reasons later explained that are related to the shape and action of the outer ends 58 of the bracket.

From the description thus far, assembly is easily made by fastening the uprights to the wall as described; mounting the brackets described in conjunction with FIGS. 3 and 21 at the same level and then push the shelf onto the brackets towards the upright with the brackets received through the openings 88 until the rear edge engages the uprights.

The shelves 16 are constructed to serve for various purposes but all have one face side, normally the upper face side 71 bordered with end and front edges finished to depict a shelf board. The other face side 73, referred to as the lower one, is provided with structure and adaptations by which the shelf can serve multiple purposes.

Referring to FIGS. 3, 4 and 5 the fabrication of the laminated shelf is shown in which an interior frame 70 of two side and four cross members, 72 and 74 respectively, and a central longitudinal member 76 are sandwiched between two veneer boards 78 to form an unfinished reinforced shelf blank. The reinforcing elements, by way of example, may be made of oak and the veneer of mahogany, walnut or other wood veneer. All contact areas of the assembled parts are bonded under pressure as by adhesive to provide an integrated unit.

In will be observed that the cross members 74 are grouped in pairs at opposite ends with spaces forming recesses 80 between them having a mean distance between them preferably twice the module between wall studs, namely, approximately 32 inches where the on-center spacing of studs is 16 inches. The adjacent cross member 74 of the two pairs are interconnected by the longitudinal member 76.

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The ends and the front side edge are then preferably grooved to form a rabbet as at 82 which receives mitered finish strips 84 overlapping the reinforcement joints for strength which strips can be wood or plastic, plain or embossed. Thereafter the shelf can be sanded and receive an applied finish and polish ready for use.

The back edge 86 of the shelf as seen in FIGS. 4 and 13 is routed out to provide limited openings 88 through the rear one of the side members 72 for the reception of the supporting ends 58 of the brackets 50 in the recesses 80. The openings are spaced essentially on the module of stud spacing, but are elongated enough to take care of usual variations that may occur between the remote wall studs of any group of three as based upon a possible variation from 32 inches.

Referring again to FIGS. 3 and 19 to 22, it will be appreciated that the vertical width of the openings 88 is a predetermined constant and by way of illustration represents the spaced distance between the veneer board 78. In view of this dimension, the supporting end 58 of the bracket in FIG. 3 is wide enough at 61 to provide a sliding interference fit with the shelf of approximately .025" and from then tapers towards its outer end as indicated along the bottom edge 62. With this fit the veneer boards yield to place a clamping action upon the bracket over a distance approximately equal to the width of the rear one of the frame members 72. The shelf accordingly is well secured against inadvertent loosening or removal.

In FIG. 21 the outer end 58 tapers upwardly along the bottom edge 62 and adjacent to the end of the upper edge 64 the bracket is provided with a saw tooth detent 66 pointed inwardly and of a height substantially equal to the greatest dimension of the taper. When the shelf is in place and is loaded the saw tooth 66 will bite into the lower face of the upper veneer member 78 and prevent removal until the front edge is raised to disengage the saw tooth, as assisted by the lower ear 54 holding the bracket down for this purpose. Lifting the front edge of the shelf releases the detent for shelf removal. Thus, by lifting and sliding the shelf it can be removed with no tools, the brackets can be relocated; and, the shelf slid back into place at its new location easily and readily even frequently to change the decor periodically. When the shelf is in place, the back edge of the upper veneer board engaging the upright opposes upward movement of the front edge of the shelf and bracket.

In FIG. 19 the side edges of the extension 58 are parallel and of less width to move easily into the recess until a detent 66a on the bottom edge engages in a longitudinal groove 67, cut in the inside face of the veneer board 78.

In FIG. 20, the lower edge 62 is notched as at 68 to receive the detent 66c carried by a spring clip 69, slipped in place and clipped over the back edge of the lower veneer board. In this construction the spring is located prior to insertion of the bracket and is released with the outward movement of the shelf.

For purposes of using the shelves described for members of various assemblies such as cabinet 22, reference is made to FIGS. 2, 7, 8, 9, 10 and 11 showing structural characteristics associated with the "lower" face side 73 of the shelf which is hidden either above or below eye level when used solely as a shelf.

For instance, in FIG. 2 the lower side 73 of the shelf is disposed upwardly to serve as the bottom of the cabinet shown in FIGS. 1 and 7 and the upper wall is another shelf 16 disposed in its regular orientation.

The lower face side 73 of the shelf 16 is longitudinally grooved adjacent to and along the front edge as at 90 (FIG. 9) to provide a recess receiving a dual slide door track element 92 as more particularly described in Ferdinand 3,265,455 and the end edges are bored as at 94 (FIGS. 2 and 5) in identical places to receive metal coil dowels or pegs 96 (FIGS. 2 and 2a). End wall member

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98 are correspondingly bored on their upper and lower edges to receive the other ends of pegs 96. The end walls 98 are also grooved as at 100 (FIG. 10) vertically along their rear edges to receive a thin plywood panel or plastic back 102 that slides into place in the opposing grooves 100 to rest upon the lower shelf 16. Thereupon the end walls are mounted in place on the inverted lower wall 73 as supported and secured by the coiled pegs; the back panel is slid into place; and a shelf 16 likewise constructed on its lower face is lowered into engagement on the end walls 98 and back panel as secured by similar pegs 96.

This assembly is ready for mounting on the uprights and with four brackets suitably located at the spaced slots which are modular with the height of the end walls 98 the cabinet is slid into place as an enclosed compound shelving unit or cabinet 22. The sliding doors 93 (FIG. 7) which may be opaque or transparent are then installed (FIG. 9) by inserting the upper edge in the upper track and then lowering the lower edge of the door into the correspondingly lower track. Lifter strips 87 (FIG. 9) may be employed when desired.

Another embodiment of the cabinet construction is shown in FIGS. 11, 12, 13 and 14 wherein the back panel 102a is a modified one as built of sheet metal with a somewhat rectangularly shaped body 104 having forward extending parallel vertical flanges 106 at the ends and planar central extensions 110 terminating in parallel horizontal flanges 112. The ends of the horizontal flanges terminate a distance spaced from the vertical flanges. The rear edges 86 and 108 of the shelves 16 and of the end walls 98, respectively, in this embodiment are saw-grooved as at 114 (FIG. 14) to receive the flanges 112 and 106 in the final assembly of the cabinet 22 in which the shelves and end walls are assembled with the pegs 96 with relative vertical movement of the parts. Thereupon the assembly can be rolled 90° onto its front face and the back panel 102a pressed into place. As thus assembled the flanges 106 and 112 on the back panel square the cabinet in all directions and when the cabinet is slid onto the brackets as already described, the uprights 10 and the brackets 50 hold the back panel 102a in place while the engagement between the brackets and shelves hold the cabinet 22 in place against the back panel and uprights in squared relationship. In this construction, it will be noted that the ends of the central extensions 100 are spaced a sufficient distance from the vertical flanges to clear the openings 88 and accommodate the entrance of the brackets to their cabinet supporting position.

It will be noted that the grooves 90 preferably do not go through the ends of the shelves. This provides end stops 90a for the doors 93 at both ends and at the top and bottom when the end walls are omitted or are half-width walls and the doors are used. The brackets as described maintain the spacing between the shelves desired for operation of the doors.

Reference is now made to FIGS. 15 and 16 in which a book end 20 construction is shown in which a blank 118 of moderately heavy finished sheet metal, generally rectangular in form is bent at an obtuse angle at 120 to provide a base portion 123 upon which books 18 may rest, and an upstanding portion 125 whose terminal portion 127 is reversely bent upon and spaced from the portion 125 with a slight divergence indicated by the broken lines 127a. The terminal end edge 129 lies in the plane of the upper face of the shelf 16.

The upright member 116 of the book end 20 is constructed like the shelves at their ends in that they have horizontally spaced vertical frame members 170 and a top cross frame member 174 supporting laminating veneer boards 178. The frame members are externally rabbeted as at 182 to receive mitered finishing strips 184. The inner veneer board is notched as at 31 to receive and accommodate the base portion 123 and when the reversely bent terminal end 127 is received between the

veneer boards 178 the terminal end is deflected to the position shown in solid lines (FIG. 16) to provide a frictional fit with the terminal edge 129 resting on the shelf. In this relationship the base portion 123 is inclined upwardly from the shelf surface to the bend 120 whereby the veneer boards will be moved inwardly against the book 18 when the weight of a book adjacent thereto deflects the base portion downwardly. With books present the two book ends 20 exert a clamping action upon the books between them which is not accomplished by conventional book ends having a right angle between their base and upright. This clamping is accomplished notwithstanding that the upright portions of the book ends are perpendicular and can engage back to back when so arranged at times when no books are present to be supported. The external appearance of the book end uprights can be identical and can receive a carving or a plaque on either or both sides.

In FIGS. 17 and 18, a modification is shown in which the bracket 150 is constructed with the shelf supporting portions 158 disposed at an angle downwardly inclined from the upright and its upper edge near the upright 10 is provided with an upstanding detent 166 which engages the back frame member 176 through routed openings 188 in the bottom veneer board 178. The lower edge of the shelf is provided with a rail strip 163 for retaining books or magazines thereon whereby the shelf serves as a reading or drawing desk.

Having thus described a preferred embodiment of the invention, and modifications thereof for specified purposes, it will be seen how the objects of the invention are accomplished and how various and further modifications can be made without departing from the inventive concept, the scope of which is set forth in the appended claims:

What is claimed is:

1. Knockdown shelving comprising:

a hollow internally structurally reinforced laminated shelf including a reinforcing frame core of a plurality of transversely spaced longitudinal members and cross members and top and bottom shelf elements laminated thereto with the cross members spaced to define recesses between them and between the shelf elements with longitudinally extending and spaced openings at the rear edge of the shelf between pairs of cross members,

bracket support means having elongated ends receivable at a plurality of locations in the recesses with a slidably engaged interference fit and extending a major portion of the width of the shelf to engage the top shelf element in shelf supporting relationship, spaced upright support means having vertically spaced slots and engaged by the other ends of said bracket means, and

readily releasable and adjustable means interlocking said other ends of the bracket means and said upright means including ears upon the bracket means received in selected slots to engage the upright under tension and bracing elements below said ears engaging said upright means under compression to support the shelf.

2. The combination called for in claim 1 in which said reinforcing frame core includes edge members bordering the shelf elements,

two of said cross members being spaced from said edge members at the end edges in defining said recesses wider than they are high, and

a longitudinal frame member inter-engaging said two of said cross members.

3. The combination called for in claim 2 in which said border frame members are externally grooved on the front edge and end edges,

corner mitered finishing strips in said groove overlapping the joints between the border frame members in reinforcing relationship, and

adhesive means bonding all contact areas involving said members, finishing strip and shelf elements.

4. The combination called for in claim 1 in which the bottom face of the shelf has a groove along the front edge extending into the front one of said longitudinal frame members, and sliding door guide means mounting in said groove.

5. The combination called for in claim 1 comprising two shelves each having holes in the bottom face of the shelves for peg means along the end edge,

vertical end members having corresponding holes for receiving said peg means along their top and bottom edges, and

peg means interconnecting said shelf holes and end member holes when one of said shelves is inverted.

6. The combination called for in claim 1 in which said elongated ends of the brackets taper towards their ends from portions disposed within said recesses, said brackets having a height width appreciably greater than the distance between said shelf elements to provide said interference fit.

7. The combination called for in claim 1 including an element having the interference fit which includes a detent member in one of said elements and a recess in one of the other elements released by straight edgewise withdrawal of the shelf from the brackets.

8. The combination called for in claim 1 in which said upright includes an inverted channel portion providing narrowly spaced inside walls with said slots disposed in the bottom thereof,

said ears and bracing elements being received and concealed between said side walls in a squared relationship braced by the side walls against twisting, and said recesses receiving and concealing said elongated ends with the rear edge of the shelf engaging said upright to obstruct upward ear releasing movement of the bracket while the shelf is in place.

9. The combination called for in claim 1 in which vertically spaced shelves as defined therein having bores in their bottom sides along their end edges in cross members that face each other when the lower one of the shelves is inverted,

peg means received in said facing bores, and end wall members received on said peg means in engagement with the shelves to close the end spaces between the shelves,

said end wall members having parallel grooves, and panel means supported by said shelves received in said grooves for closing the back space between the shelves and squaring the end walls and shelves with respect to one another.

10. The combination called for in claim 1 in which a pair of shelves as defined therein each having on their bottom side securing means along their end edges and a groove along their rear edges, said shelves being supported by said bracket support means in vertically spaced relation with the lower shelf inverted for the securing means and grooves on the spaced shelves to oppose one another,

end wall members engaged by said opposing securing means to close the end spaces between the shelves, said wall members having opposing grooves in their rear edges, and

panel means having flanges received in said opposing grooves for closing the back space between the shelves and squaring the end walls and shelves with respect to one another,

said panel means and end wall members being held in place by said spaced shelves as secured by said brackets on said uprights.

11. The combination called for in claim 1 in which vertically spaced shelves defined therein are supported by said brackets in parallel relationship,

said shelves having opposing grooves along their front edges terminating short of their end edges,

9			10		
double track sliding door elements received in said	3,143,980	8/1964	Sperring	-----	108—108
opposing grooves, and	3,190,243	6/1965	Pira	-----	108—152
sliding doors received in slidably supported relation	3,295,474	1/1967	Ornstein	-----	108—152
in said double track elements for movement in the	3,305,286	2/1967	Fenwick	-----	312—263
sliding door elements between the ends of said	5 3,379,483	4/1968	Oldford	-----	312—263
grooves.					

References Cited

JAMES T. McCALL, Primary Examiner

UNITED STATES PATENTS

U.S. Cl. X.R.

2,258,057	10/1941	Johnson	-----	108—152X	
3,081,718	3/1963	Shoffner	-----	108—108	10 312—295, 263; 108—108, 152