May 8, 1945. J. E. BALES 2,375,726

WOODEN SHELVING

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FIG. 1.

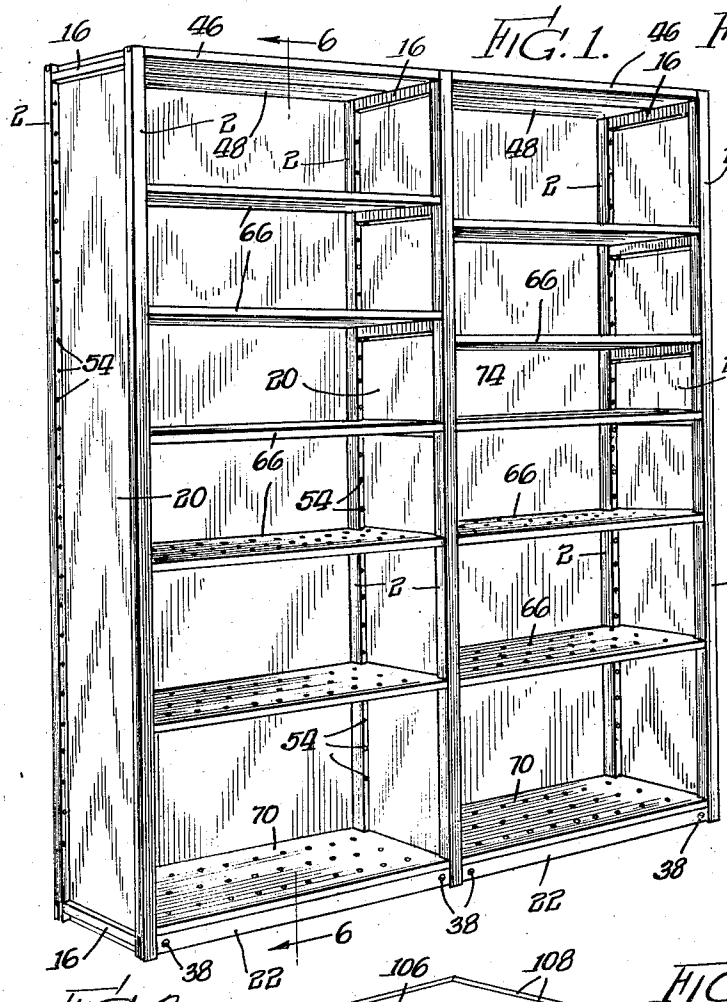


FIG. 2.

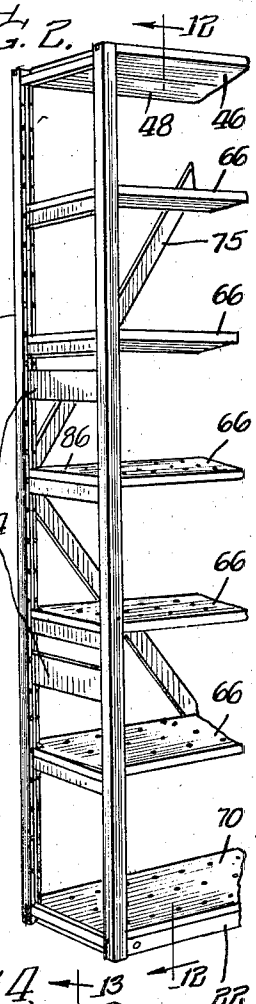


FIG. 3.

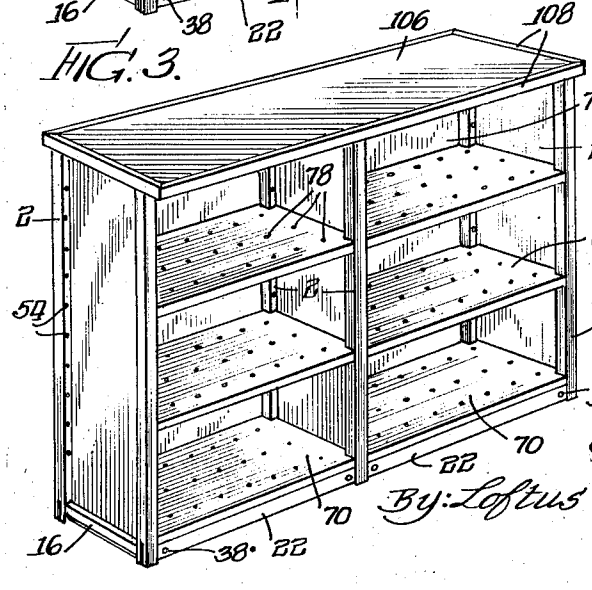
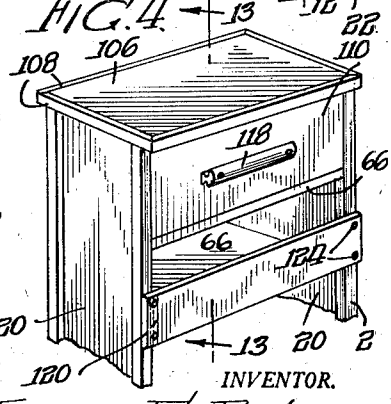


FIG. 4.



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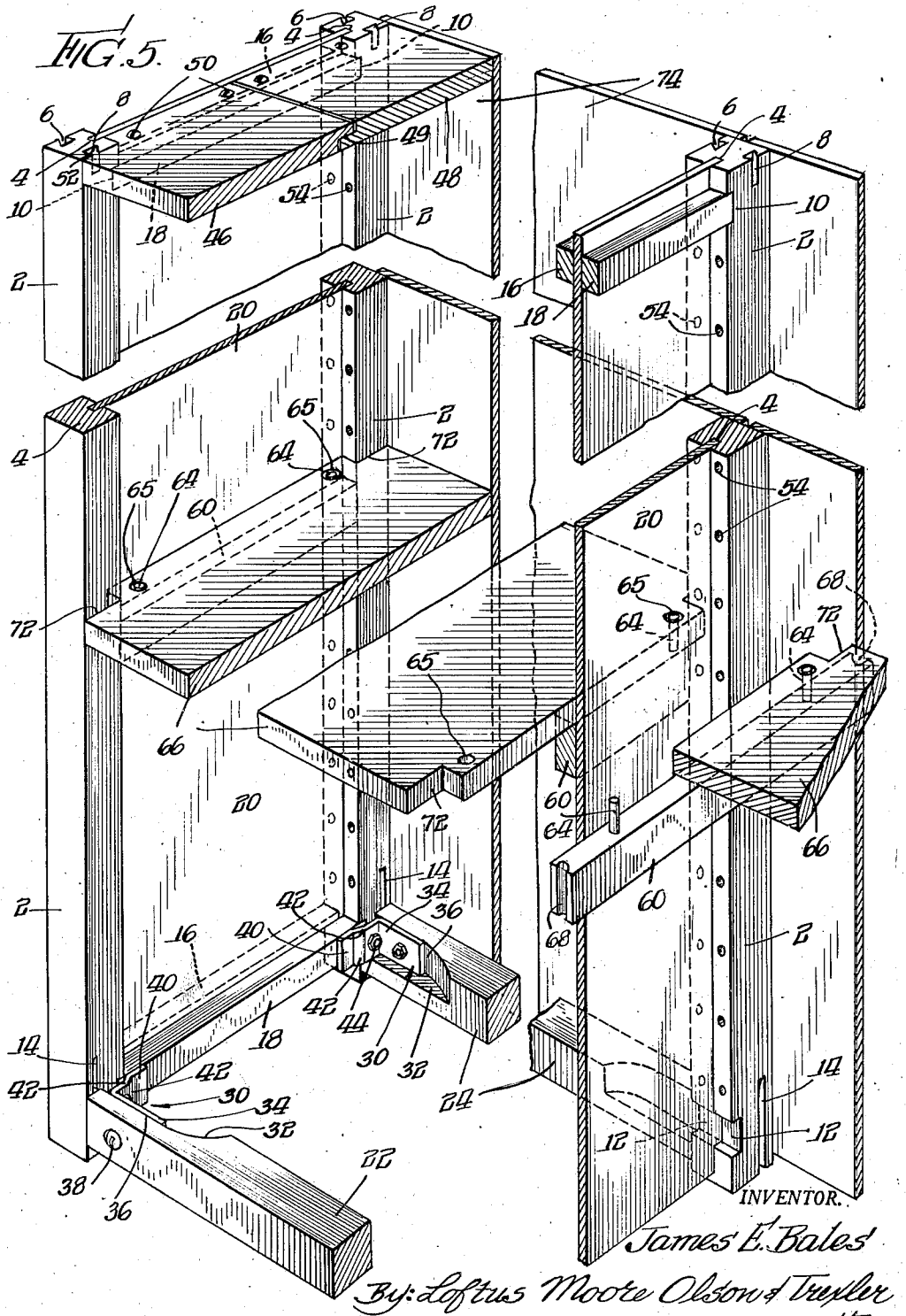
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WOODEN SHELVING

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FIG. 5.

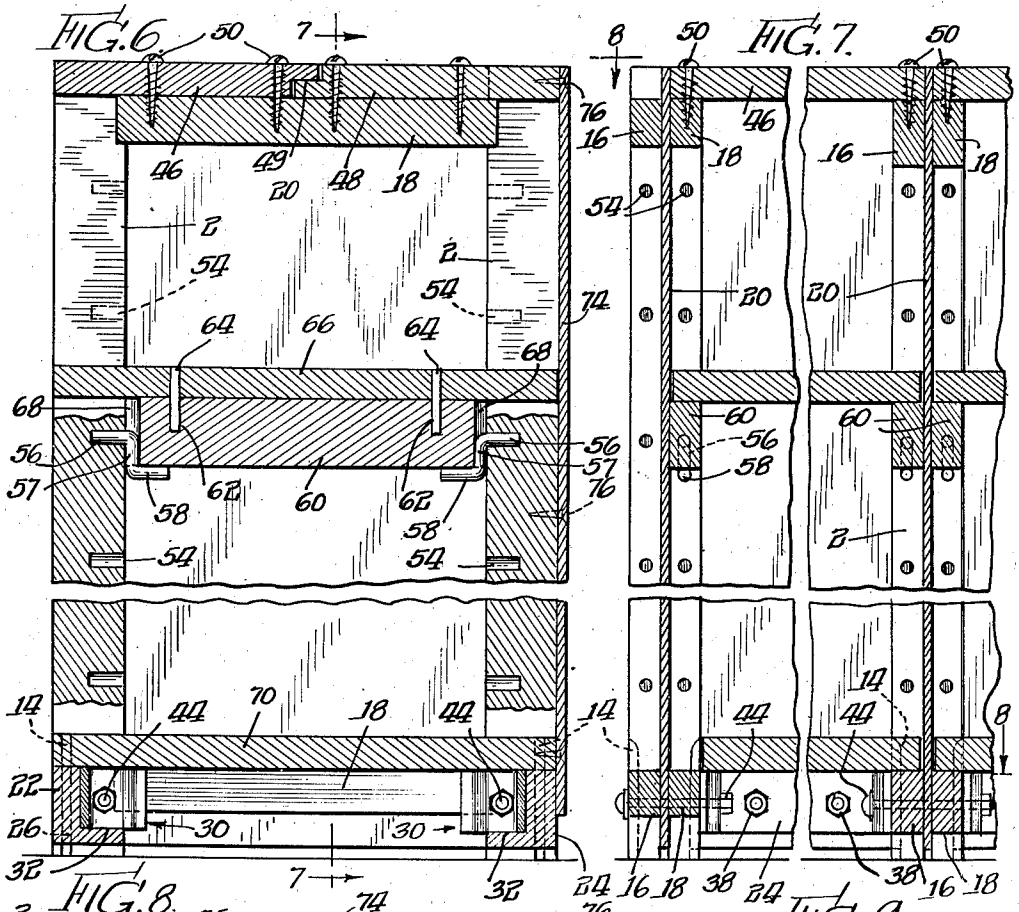


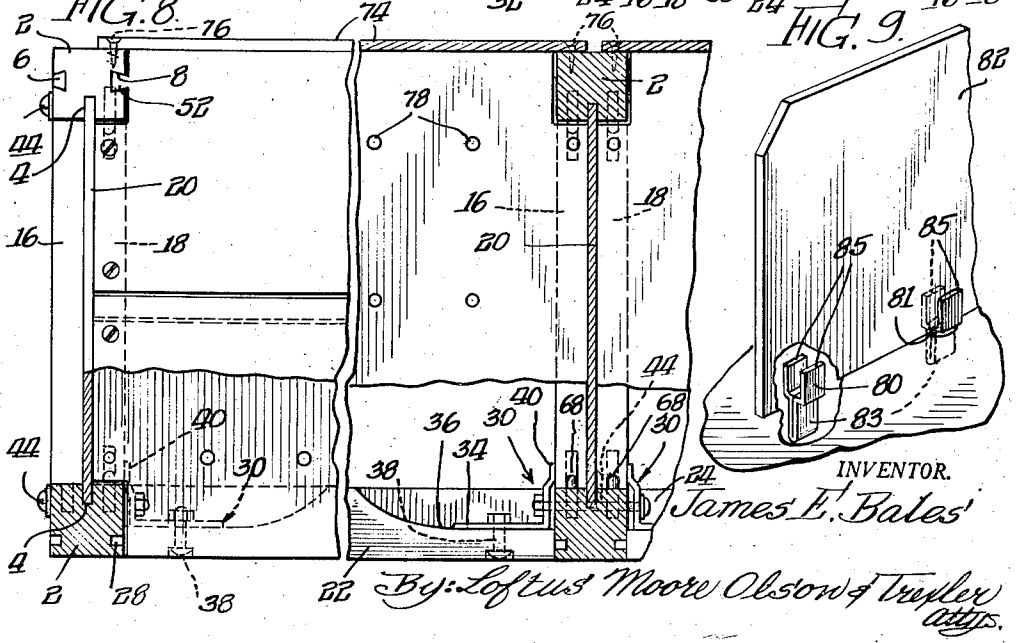
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WOODEN SHELVING

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WOODEN SHELVING

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FIG. 10.

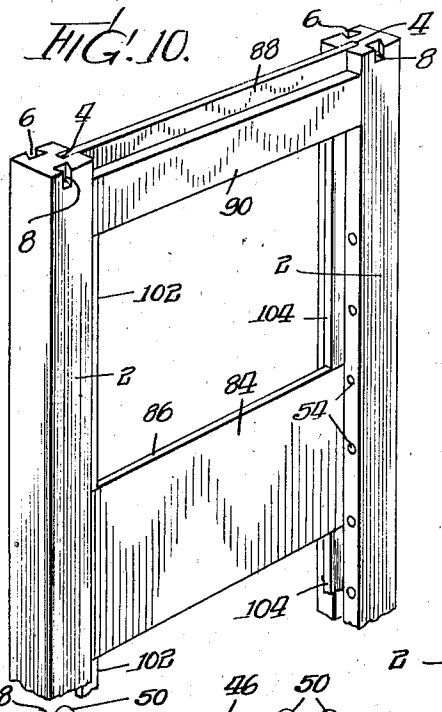
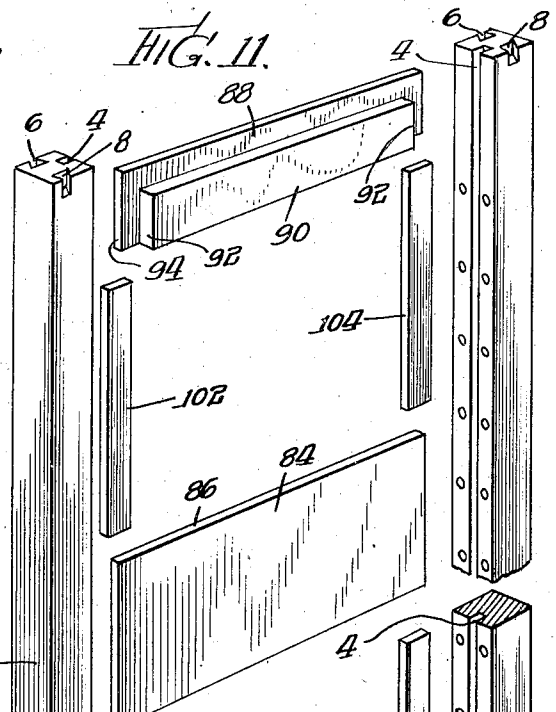
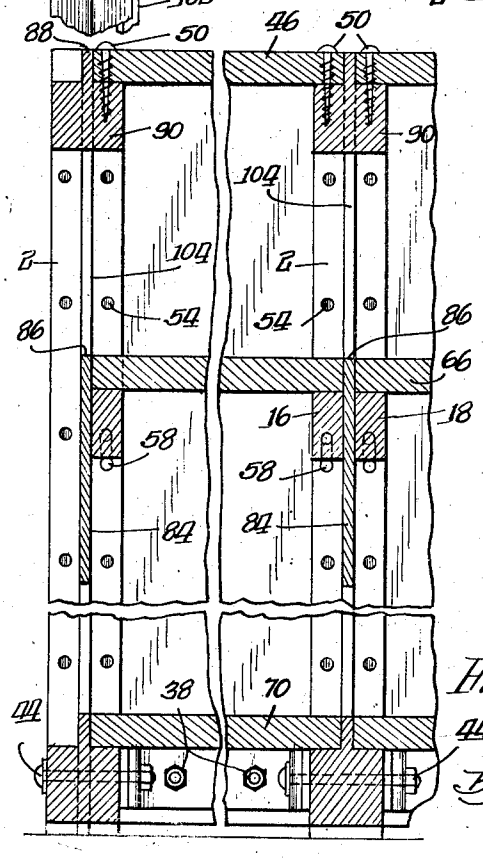


FIG. 11.





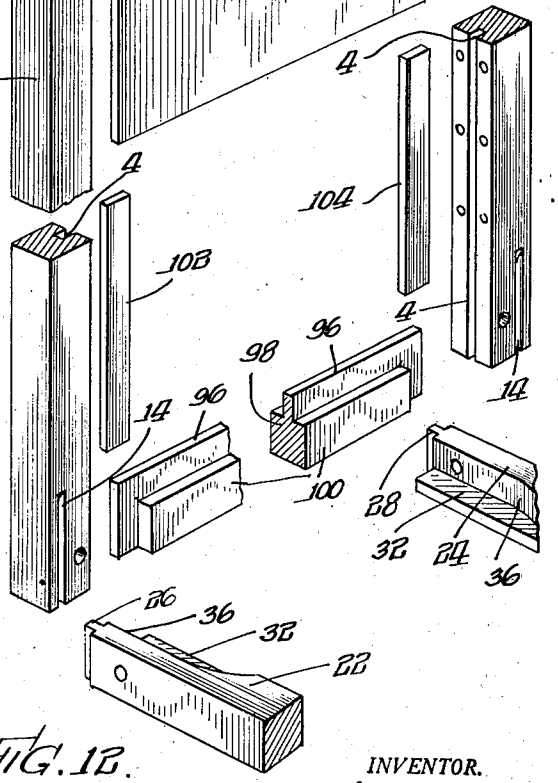


FIG. 12.

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WOODEN SHELVING

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FIG. 13.

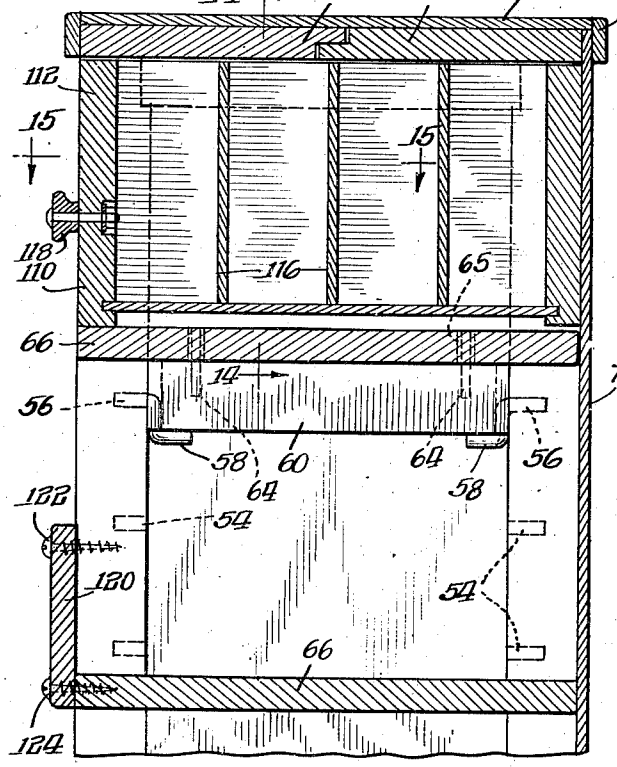


FIG. 14.

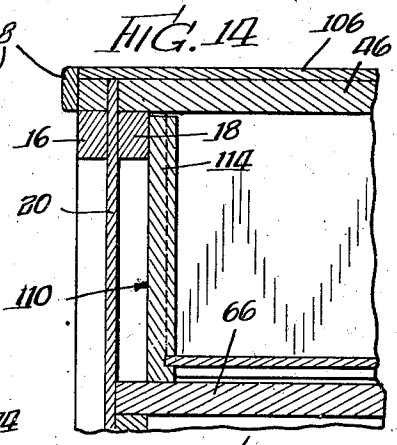


FIG. 15.

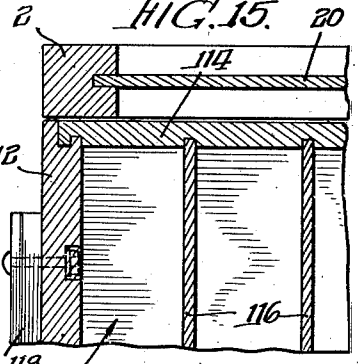


FIG. 16.

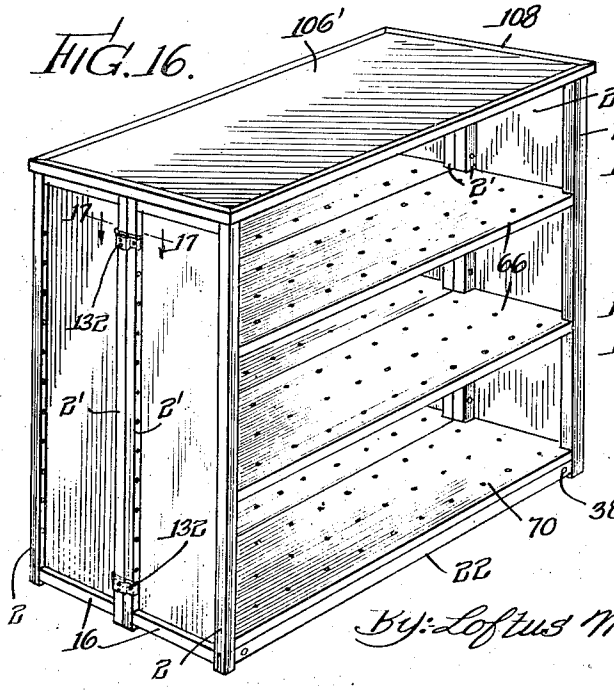
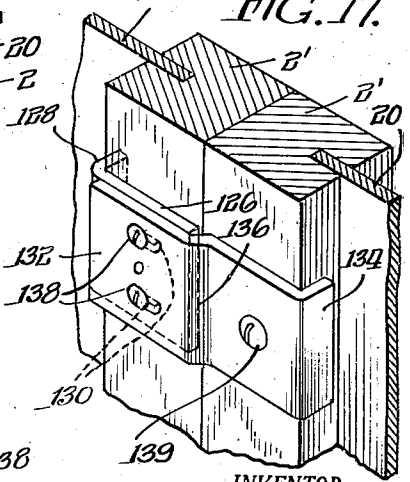


FIG. 17.



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Patented May 8, 1945 2,375,726

UNITED STATES PATENT OFFICE

2,375,726

WOODEN SHELVING

James E. Bales, Aurora, Ill., assignor to Lyon Metal Products, Incorporated, Aurora, Ill., a corporation of Illinois

Application November 21, 1942, Serial No. 466,403

9 Claims. (Cl. 211—148)

This invention relates to cabinets and shelving and especially shelving made of wood.

Among the objects of the present invention are to provide a simple, economical, assembled construction embodying adjustable shelves, which is composed of one or more assembled units which are capable of flexibility as to assembly and arrangement, and yet are quite rigid and devoid of any substantial lateral sway; to provide a unit of the foregoing construction comprising upright corner posts constructed and arranged detachable to receive bottom, top, rear members and shelving in a manner to provide quick assembly and detachment, which are economical to manufacture and which provide rigidity, ruggedness and simplicity, and also compactness for knockdown purposes, packing and shipping; to provide a wooden construction of the foregoing type wherein the top portions of the shelving are detachably keyed to the corner upright members; to provide an improved construction for adjustably supporting the individual shelves, and particularly, which construction includes an end bearing member extending from front to back of the shelving and supported by adjustable lugs; to provide an improved bottom construction of the shelving, providing a supporting framework to support the corner posts and partitions in rigidly supported upright relation, and which likewise provides rigidity, easy assembly and quick detachability for knockdown purposes; to provide a commercial stockroom type of shelving made of wood and capable of being assembled at the place of installation and wherein the parts may be interfitted and arranged so that flexibility in storage space and variation in shelving compartments are provided, and whereby ruggedness, strength, quickness in assembly, and a maximum efficiency in construction and maintenance are secured; to provide an improved divider construction including means for adjustably positioning the divider in spaced relation on the shelving portions of the cabinets or similar members; to provide these and other objects of invention as will be apparent from a perusal of the specification when taken in connection with the accompanying drawings, wherein:

Figure 1 is a front perspective view of an open face type of wood shelving showing solid back and end panels.

Figure 2 is a fragmentary perspective view of the left hand portion of the wooden shelving wherein the side panels are shown as being of open construction, the rear panel being omitted, there being substituted wooden bracing bars.

Figure 3 is a modified type of construction, lower in height, wherein the uppermost shelf provides a table top or counter.

Figure 4 is still another type of wooden shelving wherein a drawer is incorporated.

Figure 5 is a fragmentary perspective view of the shelf arrangement with various portions broken away to disclose the construction.

Figure 6 is a vertical sectional view taken on the line 6—6 of Figure 1 and having the central portion of the view broken away.

Figure 7 is a vertical cross sectional view taken on the line 7—7 of Figure 6 showing only the left hand end of the construction.

Figure 8 is a plan view partially in section, being taken on the line 8—8 of Figure 7, showing a shelf construction at various levels.

Figure 9 is a fragmentary perspective view of a shelf divider and means for supporting it in certain of the shelf adjusting holes.

Figure 10 is a fragmentary perspective view of one of the end uprights having the openwork panels.

Figure 11 is a perspective view of the associated parts of Figure 10 which when assembled make up one of the open panel uprights, and also in addition thereto are shown end portions of the bottom frame members which cooperate with the uprights.

Figure 12 is a vertical cross sectional view of the left hand end of the structure shown in Figure 2, and being taken on the line 12—12 thereof.

Figure 13 is a vertical sectional view taken on the line 13—13 of Figure 4 showing the drawer and bin arrangement.

Figure 14 is a fragmentary cross sectional view taken on the line 14—14 of Figure 13.

Figure 15 is a fragmentary plan sectional view taken on the line 15—15 of Figure 13.

Figure 16 is a modified type of arrangement wherein two shelf units of either the low or high type of construction may be connected back to back to form a double shelving unit and being open at both front and back.

Figure 17 is a detailed perspective view of a tie clip which attaches the two shelf units together as shown in Figure 16. It is understood that in this modification the two shelf units may be placed back to back with or without the rear panels.

Referring now to the invention as disclosed particularly in Figure 1, and in detail in Figures 5, 6, 7 and 8, which figures show only one of the

many different adaptations of the flexibility in construction of the present invention, it will be seen that the invention primarily includes a plurality of posts or uprights, whether they be four in number or more than four in number. In the disclosure of Figure 1 there are six of these posts, there being four corner posts and two intermediate posts. These posts 2 are identical in construction and are formed substantially square in cross section except along their inner sides where they are provided with longitudinal grooves or slots 4 for the purpose of receiving therein panels, preferably of plywood construction. In addition, at the top each corner post is provided with notches 6 and 8 which are opposed one to the other and which notches are for the purpose of interconnecting with top members hereinafter set forth. In addition, the confronting inner sides of each post, at their tops and bottoms, are provided with rabbets or cutouts 10 and 12. In addition, the lower ends of each pair of upright posts are provided with a vertically extending groove or slot 14 which extends upwardly beyond the rabbeting portions 12. These grooves 14 occur on opposite sides of the bottom portion of each post 2. Upper and lower pairs of side rails or bars 16 and 18 have their ends disposed in the rabbets 10 and 12 of the posts 2, both at the top and bottom of these posts, on either side of the grooves 4. The slots 14 provide bearings at the posts laterally of the center line of each post whereby definitely to set the posts. That is, the slot 14 is placed in such a location that the tongue 26 on the rail 22 definitely places that rail in alignment with the surface of the upright so that the front face of the rail, for instance such as 22, is flush with the front face of the post 2, for instance, and furthermore the flange 32 is formed at the proper angle to keep the post definitely from canting. Hence when this post is drawn up, it definitely brings the rail and post into position exactly at right angles without any field cutting or fitting.

The foregoing members, when assembled in conjunction with the panel 20 provide a rigid, rugged frame therefor comprising the two vertical uprights 2, the two upper side cross rails or bars 16 and 18 at the top, each with its ends assembled in the rabbets 10 of the uprights 2, the lower side cross rails or bars 16 and 18 at the lower ends of the bar likewise assembled in the rabbets 12, and the panel 20 having its vertical edges raised within the vertical slots 4 on the inner confronting faces of the corner posts 2. In this manner there is provided a rectangular rugged frame bordering the vertical and horizontal peripheral edges of the panel, the upper side cross rails or transverse bars 16 and 18 in addition forming rigid seats for shelving hereinafter described. In addition, the bottom transverse bars 16 and 18 provide means to which corner metal bracing brackets are attached, the other portions of said brackets being attached to additional transverse bars running at right angles thereto.

This unit above described is assembled in accordance with the best mill practice, in closed upright assembly, for instance these parts may be glued together in such closed upright assembly.

After the first end panel, which is shown at the left in Figure 5, is assembled in the foregoing manner, the next similar panel is, in the same manner, assembled. This next panel may be the intermediate or central upright panel of Figure 1 or it may be an outside panel like that shown in Figure 16 r Figure 4. If, for instance, there are three of these assembled panels, as shown in Figure 1, they are set up in the manner hereinbefore described, whereas if there are two assembled panels then only the two are set up. After these two similar panels with their corner posts and transverse posts are so set up, the bottom, front and rear cross bars or frame members 22 and 24 are placed in position. The opposite ends of these members 22 or 24 are provided with vertically disposed tongues 26 and 28 which enter the vertical slots 14 of the corner posts 2 whereby to provide a rigid assembly. This tongue and groove exactly positions the frame members 22 and 24 with respect to the uprights 2 so that the front surface of the frame members 22 and 24 and the front face of the uprights 2 are flush. Means is provided for clamping the front rear rails to the post and to the side rails, and for maintaining a square set between the side rails and front and back rails and the vertical posts. These means comprise the corner brackets 30, the bolts 38 and 44, slots 8 and tongues 14, and the manner of positioning these various elements with respect to one another, including the manner in which the tongue 40 engages the side rails 18 and wherein the intermediate portion of the tongue between the leaf 34 and the tongue 40 does not clampingly engage the corner posts. When thus positioned, the rigid corner brackets are attached. These corner brackets 30 are substantially L-shaped. In order to permit the frame members 22 and 24 to be attached to the corner posts 2, their opposite ends are countersunk as at 32 so that one leg 34 lies vertically resting within the countersunk portion and directly against the inner wall 36 of this countersunk portion. The portion 34 of the corner bracket 30 shown in Figures 5 and 8 is positioned along the center line of the front and back rails. This is accomplished by the cut-out 32, thereby getting the pull directly on the center line of this bottom rail 24 and also on the approximate center line of the post, due to the fact that the tongue 29' enters the slot 14 to the rear of this center line. Bolts 38 passing through the legs 34 and through a registering opening in the frame members 22 and 24 whereby vertically to bolt these brackets 30 to the bars 22 and 24. It will be noticed that the lower horizontal edge of this leg 34 rests upon a horizontal shoulder formed by the countersink positioned at 32 whereby not only to position the bracket with respect to the transverse bar and the post 2, but whereby to eliminate a lateral twisting of the assembled pieces and whereby any tendency of the countersink to weaken the end of the bar is reduced to a minimum. The other leg 40 of the bracket preferably extends at right angles to the leg 34. It is provided, as shown in Figure 8, with a laterally offset end 42 so that the major portion of this leg outstands from the inner face of the bars 16 and 18. By thus offsetting the leg 40 of the bracket, the bolt 44 which passes through the opposite brackets, as shown in Figure 8, will tend to draw the ends of the frame members 22 and 24 snugly against the vertical posts 2 in a resilient clamping manner so that a snug right angle fit will be effected. It will thus be seen that the brackets 30 may connect the corner posts 2 to the lower frame members 22 and 24. It will be seen that by having the heel 40 on the lower clamp (see Figure 8) engaging only the inner face 18 of the bottom side of the rail as at 40 and not engaging the vertical wall of the front or back post, where the bolt passes through the post and clampingly engages the intermediate portion of this clip, the bolt pulls the front rail at right angles against the vertical

inner walls of the post, as distinguished from a construction wherein if the heel 40 were not present, the front rail would be pulled diagonally backwardly with relation to the front post, which would not produce a square fit and a proper assembly of the structure. The clamp hole which engages the bolt 44 of the clamp does so at the portion of the clamp which does not engage the vertical wall of the post, and hence this construction automatically squares up without any kind of fitting or manipulation of the upright members, whereby they can be set up in a series of spaces and whereby alignment of all posts is maintained without mechanical field work or fitting.

A top is provided for the shelving construction. In the form shown in Figures 1 and 5 the top preferably comprises the two pieces 46 and 48 which are provided with overlapping flanges 49 to provide a staggered or overlapping joint. These top pieces 46 and 48 extend from the extreme left hand corner posts shown in Figure 5 to the central posts 2 shown at the extreme right of Figure 5. The edges of the top members 46 and 48 rest upon the bars 16 and 18 in which position they are fixed by screws 50 (see Figure 6). These screws prevent the top pieces from being lifted off. In addition, the top pieces 46 and 48 are provided with means for keying into the corner posts 2. To this end, the corners of the top pieces 46 and 48 are provided with the outstanding tongues 52 which engage within the correspondingly shaped grooves 6 and 8 of the corner posts 2. This construction provides for rigidity and ruggedly holds the four corner posts and the two top members in rigid reinforcing relation while at the same time permitting of their quick assembly or detachment. By forming the top of the members 46 and 48 identically, border constructions may be provided with the dovetailed projections 52 and with identical overlapping flanges 49. It will be noted that the screws 50 which connect the side of the shelf or the top with the upper portion of the rail 18 not only help to reinforce the dovetail section of the top portions to the post so that the dovetail is prevented from splitting, but in addition these screws 50 lend rigidity at the corners and produce a definite spacing between the uprights and assist in maintaining that spaced relation. It will also be noticed that by forming the top in two pieces with an overlapping junction I provide means so that if there be small variations in dimensions of the distances between the dovetails, either one of the two top pieces comprising the single top can be used in place of the other. In other words, they are interchangeable and this provides a simple means for eliminating the difficulty in spacing the dovetails to match exactly with the dovetail slots in the uprights, due to the expansion or contraction caused by humidity in the various members of the wooden structure. Therefore, by having the overlapping sliding fit in the two cover portions a little variation in spacing, due to expansion or contraction, is immaterial.

The posts 2 are provided with vertically spaced holes 54 to accommodate somewhat Z-shaped brackets 56, the inwardly projecting free ends 58 of which are adapted to support bearer members 60. The bearer members 60 are provided with holes 62 to receive pins 64, these pins being inserted through holes in the shelves 66 so as to line up the shelves 66 with the bearer members 60 and therefore position the edges of the shelf in flush relationship with the front surface of the structure. Grooves 68 are provided upon both front and rear edges of the bearer members 60 to provide a space wherein the Z brackets 56 are located. By adjustably positioning the Z brackets 56 in the holes 54 the positioning of the shelf memebrs 66 is accomplished and they may be positioned in any desired level to accommodate whatever space is needed for articles to be placed therein. There may be any number of shelves spaced along the entire vertical height of the uprights, as shown in Figure 1 wherein the shelves shown in the left hand portion of the figure are positioned with different distances than those shown in the right hand compartment of the cabinet. The bearers for the shelf 66 are not assembled as part of the shelves but are shipped separately. At the point of assembly these bearers are placed in position so that the grooves 68 in the ends of these bearers 60 register with the vertical portions 57 of the Z-shaped brackets with the underside of the bearers 60 resting upon the horizontal inwardly projecting portions 58 of these Z-shaped brackets whereby these bearers are positioned against lateral and also vertical movement. After the bearers are thus adjustably placed in position, depending upon which holes 54 the Z-shaped brackets are inserted into, then the shelves 66 themselves are positioned with the holes 65 in the shelves registering with the other portions of the pin 64 carried by the bearer 60.

Disposed upon the supporting bars 16 and 18 is a bottom or lowermost shelf 70 which forms a bottom for the shelf cabinet. This bottom or lowermost shelf member is constructed exactly as the other shelf members hereinbefore mentioned such as the intermediate shelves 66. The opposite ends of the intermediate shelf 66 and the lowermost shelf 70 are formed with a cut away portion 72 which is so formed as to provide a space or clearance for the vertical uprights 2. By interlocking the shelves 66 with the supporting bearing member by means of pins 64 an assembly arrangement is effected whereby the shifting of the shelves from one level to another may be easily accomplished.

To provide a closure for the entire back of the shelf case a one piece plywood panel 74 is attached to the upright members 2, the upper top member 48 and the lower frame member 24 by means of wood screws 76, as shown in Figure 6. Particular attention is directed to the arrangement of the lower frame members 22 and 24 and the end bars 16 and 18 wherein they are shown spaced slightly above the lowermost portion of the uprights 2 so that there will be a slight space below the undersurface of the frame members 22 and 24 and the floor. This is arranged in this manner so that the entire weight of the shelf cabinet is supported by the upright members 2 and not by the frame members 22 and 24 or the end bars 16 and 18 which may have a tendency to bend or warp under excessive weight upon the shelves. The distance on this somewhat Z-shaped bracket from the center of one horizontal leg to the other horizontal leg is a predetermined distance that can be varied by supplying different ones of these with longer or shorter distances between the legs. Referring to Figures 5 and 6, it will be noted that the vertical portion 57 of the bracket, in cooperation with the groove 68 of the bearer member 60, keeps the bracket member from pulling away from the vertical upright 2. At the same time this groove 68 keeps the fastener or bracket so that the bearer bar cannot be pulled laterally and the pin 64 in the bearer bars passing through the holes in the shelf 66 holds the upright members so that the shelf constructions be-

come rigid interconnecting means between the upright corner posts intermediate the top and the bottom. In addition, the dovetails at the top and bottom definitely space the top and bottom rails and the top, and furthermore the pin 64 and the screws 50 reinforce the dovetail.

Referring to Figures 1, 8 and 9, there are shown evenly spaced holes 78 in the shelves 66 and 70, which holes provide a means for locating metal clips 80 which are seated in the holes 78. These clips 80 support and hold in position dividers 82 which may be positioned at any place along the surface of the shelf to provide compartments. The clips 80 have extending ends 83 which are inserted into holes 78, and also resiliently formed spaced apart upstanding ears 85 into which the division plates 82 are resiliently gripped.

In lieu of the full panel type of construction shown in Figures 1 and 5 the open or discontinuous type of panel shown in Figures 2 and 11 may be used. In this latter construction the posts 2 follow the exact construction of the posts shown in Figure 5. The difference, however, lies in the utilization of short panels 84 in lieu of the panels 20, which panels 84 may be of any desired type and may be spaced apart as desired, for instance as shown in Figure 2. In this open type of construction, the rear panel may be eliminated. Substituted in its place is a pair of wooden bracing bars 75. These are angularly disposed, being attached to the rear of the shelving at the corner post 2, and extend diagonally across the rear of the shelving and are fastened by a pair of ordinary wood screws to the adjacent uprights. In utilizing the open short panel construction a different type of top and bottom rail is utilized. For instance, the rail 88 is provided with, on each side, integral bearing bars 90 and these bearing bars are formed integral with the rail 88 except that they terminate short of the ends, as at 92, so that the ends 94 of the rail can enter the vertical slots 4 in the corner posts. So also the bottom rails 96 have integral projections 98 and 100 outstanding from each side, which bearing bars terminate short of each end of the rail 96, so as to permit the ends thereof to enter the vertical slots 4. In this type of arrangement vertical spacing bars 102 and 104 are utilized, which bars enter the vertical slots 4 and abut the top and bottom surfaces of the panels 84 and the upper and lower rails 88 and 96 whereby to space the panels the desired distances from the top and bottom rail. Any change in the spacing of the panels 84 is necessarily accompanied by a change in the length of these spacing rails 102 and 104. Except for these changes the construction of the open panels is similar to that of the closed panels shown in Figures 1 and 5. It is understood, of course, that the projections 90 and 100 from the rails 88 and 96 support the top and also a portion of the shelves, just as in the construction in Figure 5.

A modification of the construction shown in Figure 1 is shown in Figure 3. In this construction the shelving is used as a low type of counter and the arrangement of the parts is identical with that shown in Figure 1 except that the vertical posts and panels are relatively short, or waist high, and except that, as shown in Figure 13 in detail, the usual top members 46 and 48 have fitting thereover a finished extra top 106, preferably of presswood, linoleum, or other material which may be cemented and nailed to the upper part of the multipart top members 46 and 4. In addition there is a binding strip 108 for the counter top formed about the periphery of the counter top 106 and depending therefrom to provide a complete finish.

In the construction shown in Figure 4 the invention is disclosed as forming a cabinet having a drawer 110. This is shown particularly in Figures 13, 14 and 15. The construction of Figure 4 may take various forms. It is preferably counter high, as shown in Figure 3, the difference mainly being that in lieu of superimposed shelves the pull-out drawer 110 is provided, the front panel 112 of which is adapted to close at front upon the upper shelf member 66. In fact, there may be three drawers vertically superimposed, each resting upon its own shelf, as shown in Figure 13. This would provide an excellent file cabinet type of construction. In this construction the side panel 114 of the drawer 110 (see Figure 14) will contact at its upper portion one of the bearing rails 18 of the panel 20 and the bottom portion of this side wall of the drawer will slide upon the shelf 66. The drawer may be provided with partitions 116 which vertically slide in slots in the side walls 114 of the drawer, and the front is provided with any type of handle 118. So also, in this type of construction, the bottom shelf may be utilized as a bin by providing the front of the shelf 66 with a vertical bin board 120 which is adapted to screw into the corner posts 2 as at 122 and 124. It will be noted that the lower portions of the structure are broken away in Figures 4 and 13, such lower portions being similar, for example, to the structures shown in Figures 1 and 3.

Figure 16 shows a double arrangement of shelving wherein two shelf cabinets are arranged back to back with two of the corner posts 2' clamped together by means of the clamp shown in Figure 17 which is composed of a first clamping member 126 having a right angle flange 128 and elongated slots 130. A cooperating clamp 132 has a right angle flange 134 and an offset wing 136 which likewise has bolt holes adapted to register with the slotted holes of the first mentioned clamp 136. Wood screws 138 are adapted to pass through the openings of the two clamps. In addition, the clamp member 132 has a hole through which a wood screw 139 passes to thread into the upright 2' just as do the screws 138 which thread into the upright 2'. Otherwise the posts 2' are identical in construction with the posts 2. By means of these upper and lower clamps two identical shelving cabinets may be placed back to back with their abutting corner posts clamped together. In this type of construction a complete top 106' is provided, being of the same type of construction as shown in connection with Figure 3 and Figure 4. If desired, two cabinets having back panels may be connected in the same manner.

Obviously the invention is not limited to the specific forms disclosed herein but is capable of other modifications and changes without departing from the spirit and scope of the claims appended hereto.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent is:

1. In shelving the combination of four upright posts, each post having adjacent sides normal to each other, said posts being spaced apart in rectangular formation, vertical confronting walls of said posts being slotted, upper and lower side rails interconnecting the tops and bottoms of

pairs of said slotted posts whereby to form rectangular upright rigid frames, front and back bottom rails disposed at the bottoms of said pairs of slotted posts, said bottom rails projecting transversely from said upright rigid frame, said front and back bottom rails at their ends having portions engaging in additional slots in the bottom portions of said slotted posts, and clamps having flanges of substantially L-shape, one for each end of said front and back bottom rails, each clamp having one leg fastened to one end of a front or back rail and the other leg spaced from but fastened to a slotted post and overlying and pressing against an end of one of the lower side rails.

2. In a wooden shelving construction the combination of at least six vertical wooden posts each having adjacent faces normal to each other, said posts being disposed in spaced rectangular formation in pairs, and the bottom of each post having one of said faces provided with a slot disposed laterally of the vertical center of said post, confronting upper and lower portions of the other face of each pair of posts being interconnected by rigid side rails, front and rear bottom rails, each of said rails having a portion engaging in the slot in the bottom portion of said post of each pair of posts, fastening means for the bottom rails, each fastening means having flanges disposed at right angles, one of the flanges of said fastening means being secured to a side wall of one of the bottom rails and the other flange being secured to the adjacent side wall of one of the posts, a second bracket having angularly disposed flanges, one of said flanges of the second bracket being connected to the side wall of the next adjacent bottom rail, and the other flange abutting the adjacent opposite wall of said post, and the extreme ends of said flanges overlyingly contacting the side wall portion of the bottom rail of one of said panel members, and a single bolt passing through said post and engaging the last mentioned flanges of each of said bracket members, fastening means for drawing said flanges toward said post whereby to assemble said bottom rails to said post.

3. In shelving, the combination of a plurality of spaced apart uprights, means to hold said uprights in rectangular spaced apart position, shelves for said uprights, said uprights having vertically spaced horizontally disposed openings in confronting faces, pairs of bracket members each having spaced parallel legs disposed in spaced apart planes interconnected by an integral portion at right angles to said legs, one of said legs entering one of said horizontal holes with the intermediate portion extending parallel to the inner confronting wall of said post and the outer leg of said bracket extending outwardly horizontally, each shelf having a pair of bearing members on its underside and said bearing members being of sufficient width to lie between pairs of upstanding posts and rest upon said outwardly extending legs of the pair of bracket members.

4. In shelving, the combination of a plurality of spaced apart uprights, means to hold said uprights in rectangular spaced apart position, shelving for said uprights, adjustable brackets supported by and mounted in said uprights, bearing members for the shelving, said brackets and bearing members having means whereby said shelving is supported solely on said bearing members along two opposed parallel edges to maintain said shelving in a horizontal plane, means for locking said bearing members from lateral movement with respect to said brackets, and means on said bearing members for supporting said shelves thereon and for maintaining said shelves from lateral movement.

5. In a shelving construction, the combination of four uprights disposed in rectangular, spaced apart formation, the inner confronting walls of said posts being parallel, certain of said posts having horizontal slots therein and horizontal bottom side rails located between said slotted posts with their ends lying in said slots, the adjacent angularly disposed faces of the bottom portions of said post having vertical slots therein disposed outwardly of the vertical center lines of said posts, and horizontal basal frame members interconnecting pairs of front and rear posts, said frame members at their outer ends being countersunk to provide a vertical wall substantially disposed at the horizontal center lines of said frame members and providing an adjoining normally disposed countersunk wall, and substantially L-shaped metal bracket members having a first leg disposed in a vertical plane and lying against said first mentioned countersunk wall with the plane of the first leg lying substantially on the center line of said front and rear posts and on the center vertical line of said upright posts, there being means for fastening said leg of said bracket to said countersunk wall of said front and rear posts, the second leg of said bracket having its outer end bent forwardly out of the plane of the intermediate portion of said second leg, whereby to contact only the outer end of the adjacent horizontal basal side rail, but wholly spaced from the adjacent wall of said post, and means passing through said intermediate portion of said second leg and engaging said post for clamping the outer portion of said second leg against said side rail and for clamping said front and back frame members, said side rail and said posts in rigid substantially exact rectangular position.

6. A shelf construction comprising spaced pairs of uprights, said pairs of uprights having spaced registering horizontal holes disposed therein, a pair of brackets for each pair of uprights, each bracket having oppositely extending, horizontally disposed free legs and an intermediate integral shank extending normally of the legs, one of said legs of each bracket horizontally extending into registering holes of a pair of uprights with the side wall of the intermediate portion of the bracket contactingly confronting the vertical wall of the post into which said one leg projects, and a support or bearer extending horizontally between each pair of vertical posts with the vertical ends of said bearer having means vertically to receive the said vertical intermediate shank of each bracket whereby to prevent lateral play of said bearer, the free horizontal leg of said bracket underlyingly supporting the underside of said bearer at each end thereof, and shelf members supported by said bearers.

7. A shelf construction comprising spaced pairs of uprights, said pairs having spaced registering horizontal holes disposed therein, a pair of brackets for each pair of uprights, each bracket having oppositely extending, horizontally disposed free legs and an intermediate integral shank extending normally of the legs, one of said legs of each bracket horizontally extending into registering holes of a pair of uprights with the side wall of the intermediate portion of the bracket contactingly confronting the vertical wall of the

post into which said one leg projects, and a support or bearer extending horizontally between each pair of vertical posts with the vertical ends of said bearer grooved vertically to receive the said vertical intermediate shank of each bracket whereby to prevent lateral play of said bearer, the free horizontal leg of said bracket underlyingly supporting the underside of said bearer at each end thereof, and shelf members supported by said bearers, the upper surface of said bearers having upstanding pins projecting upwardly therefrom and entering perforations in the shelves adjacent the ends of the bearers.

8. In combination with four vertical posts disposed in rectangular spaced relation, means to hold said posts in such relation, each post having vertically spaced registering holes on confronting parallel walls thereof, a pair of bearer bars of a length fitting between two posts with the vertical end walls of each bearer adjacent the vertical wall of a post and the end of each bearer being formed with a bracket receiving groove, a shelf having its corners cut away at a right angle, so that the cut surfaces engage normally disposed vertical walls of the post, and with the marginal portions of each shelf overlying a bearer, there being vertical apertures in each end of the shelf and between parallel faces of certain of said vertical posts, brackets, each having a pair of spaced horizontal legs and an integral intermediate shank disposed normally to the legs and lying in the groove of the bearer, one of the horizontal legs projecting into the registering hole in each pair of posts and the other horizontal leg projecting outwardly away from said post and supportingly underlying the adjacent end of the bearer horizontally to support the bearer, each bar having upstanding pins carried at its top surface adjacent the end thereof and lying within the vertical holes of the shelving.

9. An elongated post of square cross section having one of the four faces provided with a centrally disposed, relatively narrow, longitudinal groove, said grooved face near each end of the post being intersected by relatively wider, transversely extending grooves, one end of the post on a face lying at right angles to said grooved face being formed with an elongated slot disposed laterally of the center of the width of said face and with a bolt hole therethrough and lying on the opposite side of said center, and the opposite end of said post, at opposed faces lying at right angles to said grooved face being formed with dovetailed key receiving notches, and the grooved face of said post being provided throughout its length on each side of said groove with uniformly spaced holes.

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