Sept. 12, 1967 D. G. PALMER 3,340,829

SUSPENDED SHELVING

Filed May 31, 1966 2 Sheets-Sheet 1

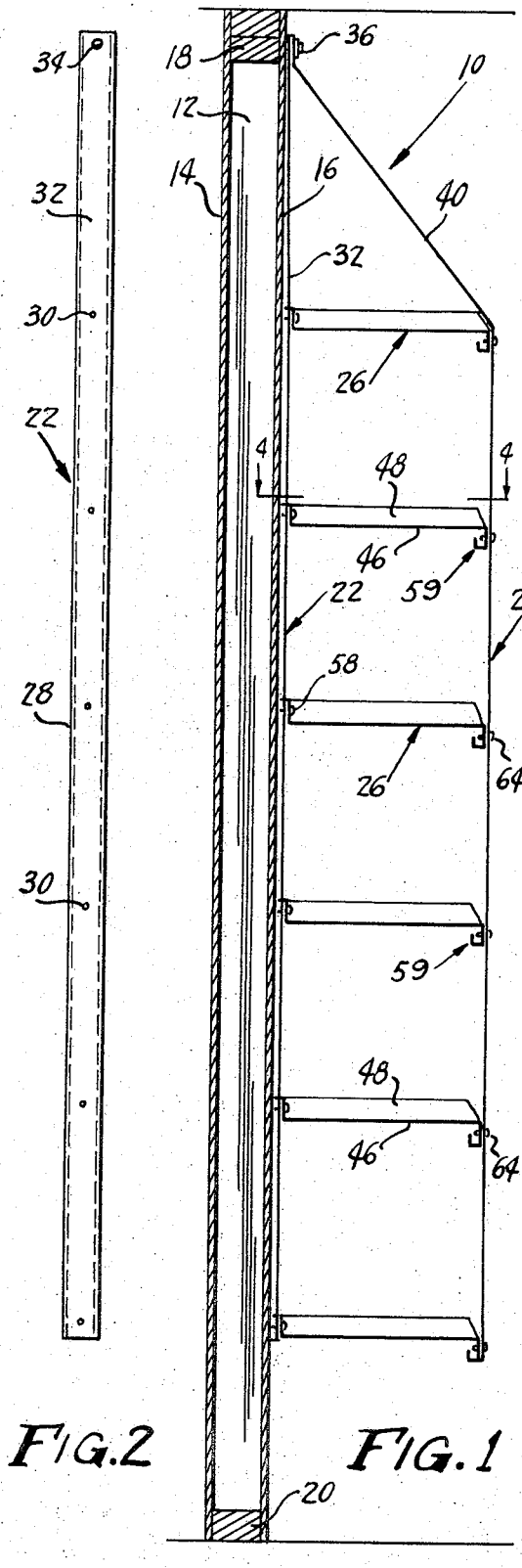


FIG. 2

FIG. 1

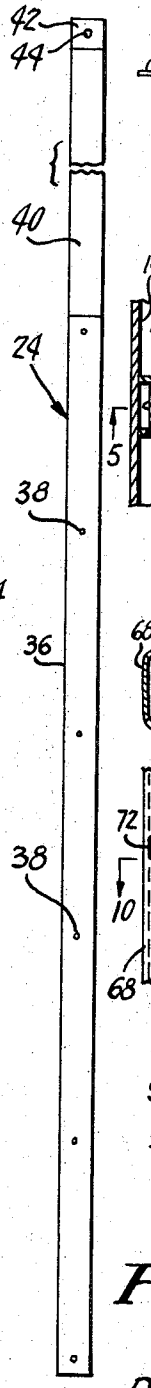


FIG. 3

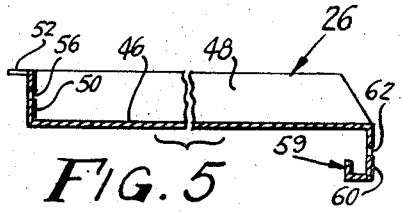


FIG. 5

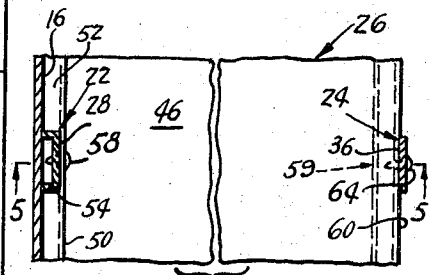


FIG. 4

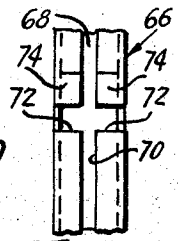


FIG. 11

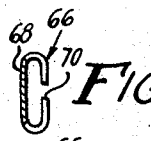


FIG. 10

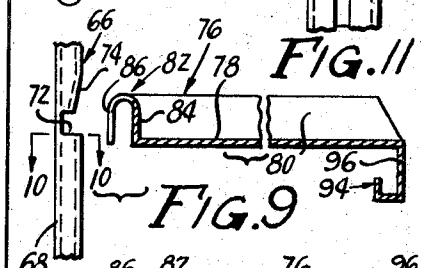


FIG. 9

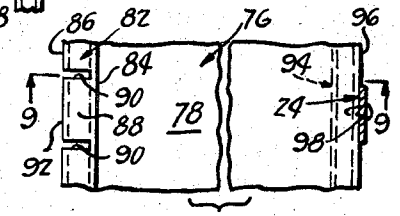


FIG. 8

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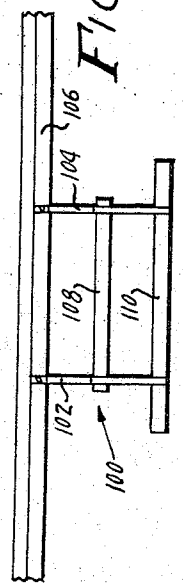
BY Kimmel, Crowell & Weaver
ATTORNEYS.

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FIG. 6



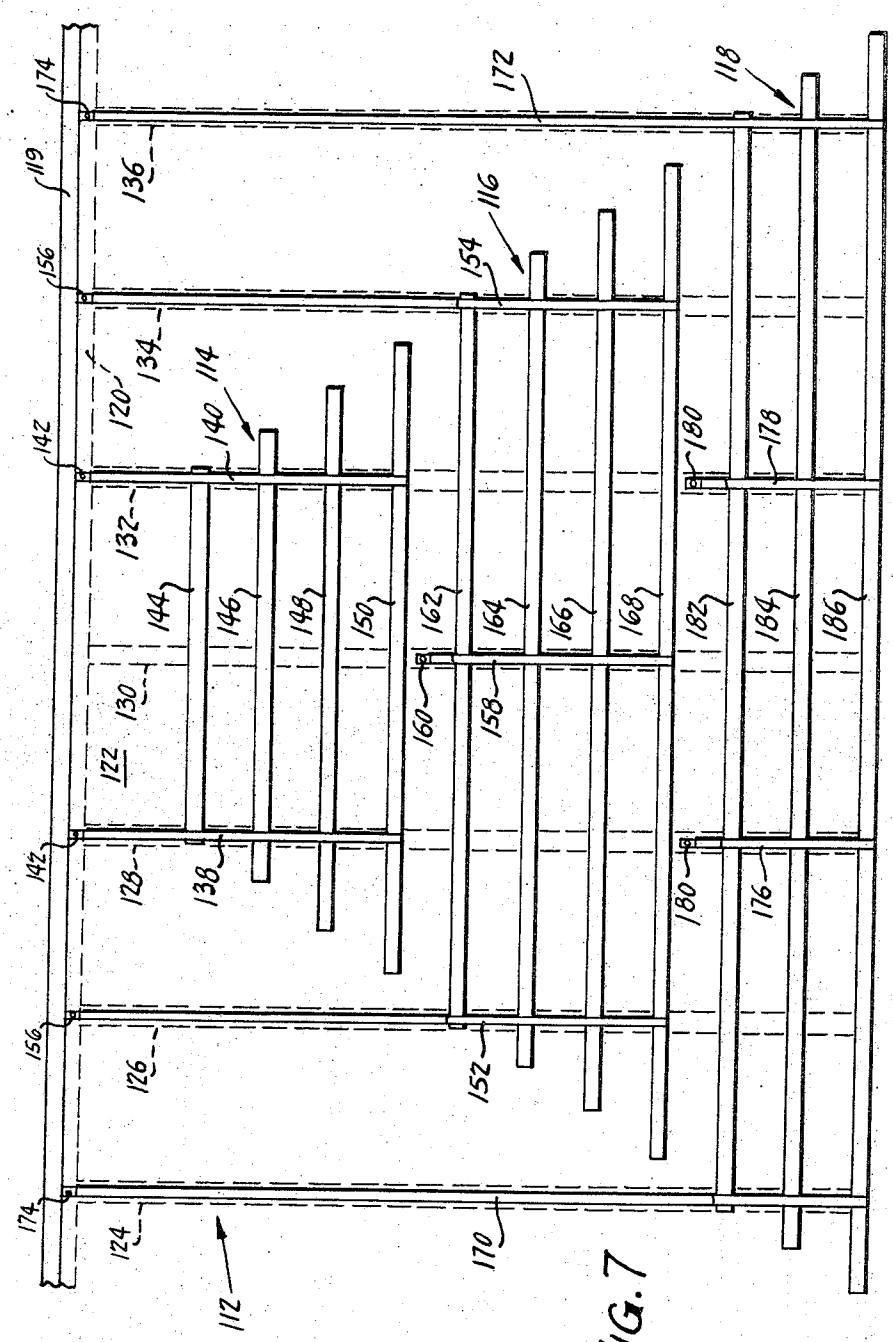


FIG. 7

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SUSPENDED SHELVING

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3 Claims. (Cl. 108—149)

ABSTRACT OF THE DISCLOSURE

Shelving apparatus including a plurality of elongated vertically extending front and rear shelf hangers disposed substantially parallel to one another, respectively, each pair of front and rear hangers being supported from a single common connecting means from an adjacent support wall with the back hangers juxtaposed relative thereto, shelving extending between the front and rear hangers, and means on the hangers and the shelving cooperating to releasably secure the shelving on the hangers.

This invention relates to shelving of the type adapted to carry books and the like, and more particularly to a shelving unit for securement to a wall in a suspended manner.

It is well known in the prior art to provide shelving units secured to a wall by a plurality of substantially vertical strips and having a plurality of horizontal shelves. One characteristic of prior art shelf assemblies is that a multiplicity of screws or other fasteners are utilized to affix the structure to a room wall. Quite apparently this results in a plurality of holes in the wall which must be plastered over and repainted when the shelving unit is removed. It has been found that a rather large shelving unit may be suspended from a limited number of bolts secured to top plates or studs extending between the walls of the room.

It is accordingly an object of the instant invention to provide a shelving unit suspended from a minimum number of bolts extending into a stud behind the wall of the room in which the shelving unit is to be located.

Another object of the instant invention is to provide a suspended shelving unit having at least a pair of vertical back hangers and at least a pair of aligned front hangers connected to the back hanger by a plurality of horizontal shelves and by a diagonal strut suspending the front hanger and consequently the front ends of the shelves.

Another object of the instant invention is to provide a suspended shelving unit in which each of the shelves lies in abutting relation with the wall of the room.

A further object of the instant invention is to provide a shelving unit arranged to form a convenient connecting means between the back hangers and each of the shelves characterized by a tongue formed on the shelf and a load supporting slot formed in the back hangers.

A still further object of the instant invention is to provide a shelving unit which is inexpensive to manufacture, easy to assemble and which is attractive and long lasting.

Other objects and advantages of the instant invention reside in the combinations of elements, arrangements of parts and features of construction, all as will be more fully pointed out hereinafter and disclosed in the accompanying drawings wherein there is shown a preferred embodiment of this inventive concept.

In the drawings:

FIGURE 1 is a side elevational view of the shelving unit of the instant invention illustrated as secured to a support, such as a top plate between the walls of a room;

FIGURE 2 is a front elevational view of the back hanger which abuts the wall;

FIGURE 3 is a front elevational view of the front hanger of the shelving unit of FIGURE 1;

FIGURE 4 is a partial cross-sectional view of the shelving unit of FIGURE 1 taken substantially along line 4—4 thereof illustrating, in plan view, one of the horizontal shelves;

FIGURE 5 is a cross-sectional view of the shelf of FIGURE 4 taken substantially along line 5—5 thereof as viewed in the direction indicated by the arrows;

FIGURE 6 is a front elevational view of a shelving unit which may be constructed with the components of the instant invention;

FIGURE 7 is a front elevational view of another suspended shelving unit which may be constructed with the components of the instant invention;

FIGURE 8 is a top plan view, similar to FIGURE 4, illustrating another embodiment of a shelf of the instant invention;

FIGURE 9 is a cross-sectional view of the shelf of FIGURE 8 taken substantially along line 9—9 thereof as viewed in the direction indicated by the arrows, also illustrating the female connection formed by the back hanger for receiving the shelf;

FIGURE 10 is a cross-sectional view of the back hanger of FIGURE 9 taken substantially along line 10—10 thereof as viewed in the direction indicated by the arrows; and

FIGURE 11 is a front elevational view of the back hanger of FIGURES 9 and 10 illustrating the female connection to which the shelf is attached.

Referring now to the drawings in detail, wherein like reference characters designate like elements throughout the several views thereof, the shelving unit of the instant invention is illustrated at **10** secured to a top plate **18** supported by a vertical stud **12** between a pair of walls **14, 16** of any suitable type such as wallboard, plasterboard or the like. At the upper and lower extremities of stud **12** are the conventional plates **18, 20** completing the wall construction. Shelving unit **10** is comprised of a pair of vertical back hangers shown generally at **22**, a pair of front hangers designated generally at **24** and a plurality of horizontal shelves denominated generally at **26** interconnecting back and front hangers **22, 24**.

Each of back hangers **22** includes a straight metal structuure **28** of substantially U-shaped cross-section as shown in FIGURE 4 having a plurality of vertically spaced apertures **30** constituting a female connecting means. Each of back hangers **22** also includes a wedge-shaped integral extension **32** forming an opening **34** at the uppermost end thereof for receiving a bolt **36** as shown best in FIGURES 1 and 2.

Each of front hangers **24** includes a straight flat metal strip **36** forming a plurality of vertically spaced apertures **38** and a diagonal extension or strut **40** having a terminal end **42** parallel to strip **36** providing an opening **44** receiving bolt **36** as shown best in FIGURES 1 and 3. It will be seen that bolt **36** carries a substantial portion of the weight of front hangers **24** while diagonal strut **40** acts to space front hangers **24** an appropriate distance from back hangers **22**.

Each of shelves **26** includes a planar horizontal load supporting wall **46** laterally bounded by a pair of upstanding end walls **48**. The rear of shelf **26** forms a generally upstanding wall **50** forming a horizontal lip **52**. Lip **52** forms a pair of substantially square indentations **54** receiving back hangers **22** therein with upstanding wall **50** forming openings **56** receiving screws **58** which act as male connecting means securing shelf **26** to back hangers **22**. It will be seen that shelf **26** resides flush against wall **16** because of the cooperation between back hanger **22**, indentation **54** and lip **52** as shown best in FIGURE 4.

The forward edge of bottom wall **46** carries a depending J-shaped member shown generally at **59** comprised of a vertical depending plate **60** forming apertures **62** re-

ceiving screws 64 thereby securing front hangers 24 to shelves 26 as shown best in FIGURE 4. It will accordingly be seen that shelving unit 10 is suspended from bolts 36 without additional interconnections between shelving unit 10 and wall 16 of the room in which the shelving unit is disposed. It will accordingly be seen that shelving unit 10 may be installed with a minimal amount of damage to wall 16.

Referring now to FIGURES 8 to 11 inclusive, another form of back hanger is shown generally at 66 comprised of a straight elongate member 68 of substantially C-shaped cross-sectional configuration as shown in FIGURE 10 forming a longitudinal slot 70 as shown in FIGURES 10 and 11. The upper end of back hanger 66 forms a wedge-shaped extension similar to extension 32 for securement to bolt 36. Member 68 forms a plurality of transverse slots 72 and an inwardly extending angle wall 74 immediately above each of slots 72 forming a female connecting means for securing a shelf shown generally at 76 thereto.

Shelf 76 includes a load supporting bottom wall 78 bounded by a pair of upstanding end walls 80 and a generally U-shaped rear wall shown generally at 82. Rear wall 82 includes a generally upstanding face 84 constituting the rear of shelf 76, a parallel face 86 and an arcuate top 88 bounding faces 84, 86. Face 86 and top 88 form a pair of spaced slots 90 adjacent each of back hangers 66 segregating a tongue 92 from face 86 for insertion into slot 72 with the upwardly facing portion of slot 72 cooperating with the bottom of top 88 to support shelf 76 in much the same manner that screw 58 secures shelf 26 and back hanger 22 together.

The foremost edge of shelf 76 carries a generally J-shaped member shown generally at 94 having a depending plate 96 forming spaced apertures for receiving screws 98 thereby securing front hangers 24 to shelf 76. It will be readily apparent that front hangers 24 may be constructed of a generally C-shaped cross-sectional member in lieu of the flat strip illustrated in FIGURES 3, 4 and 8. It should also be noted that top 88 of rear wall 82 acts to close the space between bottom wall 78 of shelf 76 and room wall 18 in much the same manner as lip 52 of shelf 26.

It should be understood that shelves 26, 76 of shelving unit 10 may be of equal length to provide the conventional rectangular shelf assembly. As shown in FIGURE 6, a shelving unit designated at 100 is illustrated as having a pair of shelves of increasing length to provide a more artistic arrangement. Shelving unit 100 is illustrated as having a pair of front and rear hangers 102, 104 spaced apart a distance equal to the stud spacing behind the wall and secured to a plate 106 in much the same manner that hangers 22, 24 are suspended by bolt 36. Shelving unit 100 includes a pair of shelves 108, 110 of increasing length to form a triangular shaped shelf assembly in front elevation.

Referring now to FIGURE 7, a much larger shelf assembly is shown generally at 112 comprised of an uppermost shelf assembly segment shown generally at 114, and intermediate shelf assembly segment designated generally at 118 and a lowermost shelf assembly segment denominated generally at 114. Shelf unit 112 is located in a room illustrated as having a molding 119 and is anchored to a plate 120 at the upper edge of a wall 122 in which the unit is located. A plurality of studs 124, 126, 128, 130, 132, 134, 136 are equidistantly spaced behind wall 122 and support plate 120 in a conventional manner. Uppermost shelf assembly segment 114 includes a pair of front and rear hanger assemblies 138, 140 secured to plate 120 by suitable bolts 142. A plurality of shelves 144, 146, 148, 150 of increasing length are secured between front and rear hangers 138, 140 as in the manners previously discussed. It should be pointed out that the front hanger of assemblies 138, 140 includes the diagonal brace as shown in FIGURE 1.

Intermediate shelf assembly segment 116 includes a pair of front and rear hangers 152, 154 secured to top plate 120 by a pair of bolts 156 extending through wall 122. A centrally positioned front and rear hanger 158 is secured by a bolt 160 to stud 130. It should be understood that front and rear hangers 158 are substantially the same as the upper portion of hangers 22, 24 as illustrated in FIGURES 1 to 3 inclusive. A number of shelves 162, 164, 166, 168 of increasing length are interconnected between front and rear hangers 152, 154, 158 in the manners previously shown.

Lowermost shelf assembly segment 118 is a further application of the principles previously described and is illustrated as including a pair of front and rear hangers 170, 172 at the ends of the segment secured to plate 120 by bolts 174, although it should be understood that bolts 174 may be secured to studs 124, 136 at points horizontally aligned with bolts 180. A pair of intermediate hangers 176, 178 are secured to studs 128, 132 by bolts 180 with a plurality of shelves 182, 184, 186 interconnecting front and rear hangers 170, 172, 176, 178 thereby completing the assembly of shelf unit 112. It will be readily apparent that judicious placement of the various components of the shelf unit of the instant invention will allow the construction of artistic shelf units of various configurations.

Front and rear hangers 138, 140 are preferably spaced apart a distance equal to the spacing between studs 128, 132, for two reasons. First, the securement of hangers 138, 140 to top plate 120 at points immediately above studs 128, 132 acts to transmit the reaction forces of the weight of shelf assembly 114 immediately to studs 128, 132 without stressing top plate 120 as would occur if hangers 138, 140 were connected to plate 120 between the studs. Second, by spacing hangers 138, 140 apart in this manner, shelf assembly 114 may be secured directly to studs 128, 132 below top plate 120 thereby providing greater flexibility in the use of shelf assembly 112.

It is now seen that there is herein provided an improved suspended shelving which accomplishes all of the objects and advantages of the instant invention and others, including many advantages of great practical utility and commercial importance.

Since many embodiments may be made of the instant inventive concept, and since many modifications may be made in the embodiments hereinbefore shown and described, it is to be understood that the foregoing is to be interpreted merely as illustrative and not in a limiting sense.

I claim:

1. A shelving unit for suspending attachment to a wall comprising:

at least a pair of horizontally spaced vertical back hangers for juxtaposition to a wall and having a plurality of vertically spaced female connecting means;

a vertical upwardly projecting extension integral with the upper end of each of the back hangers for attachment to the wall;

at least a pair of front hangers, substantially the same length as the back hangers, spaced from and aligned with the back hangers;

a diagonal strut, integral with the upper end of each of the front hangers and juxtaposed to the extension, for securement to the wall with the back hanger;

means for securing the strut and the extension of each pair of aligned front and back hangers together for securement to the wall, the securing means constituting the sole connection between the shelving unit and the wall;

a plurality of vertically spaced horizontal shelves including male connecting means registering with the female connecting means securing the shelves to the back hangers; and wherein

the back hangers include a straight member having

transverse slots each communicating with a tongue receiving recess;

the shelves include

a load supporting bottom wall;

an upstanding rear face abutting the back hangers;

a top face, extending from the top of the rear face toward the back hangers, having a pair of spaced slots receiving the sides of the back hanger; and

a tongue, constituting the male connecting means, extending downwardly from the top face between the slots into register with the tongue receiving recess; and

means securing each shelf to the front hanger.

2. The shelving unit of claim 1 wherein the back hangers are substantially C-shaped in cross section, the interior thereof forming the tongue receiving recess, the opening of the C facing the front hanger, the portion of the back hanger immediately above the transverse slot being angled inwardly for readily receiving the tongue.

3. The shelving unit of claim 1 wherein the top face of the shelf and the rearmost portion of the back hangers lie in a common plane for positioning the shelving unit flush against the wall.

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