

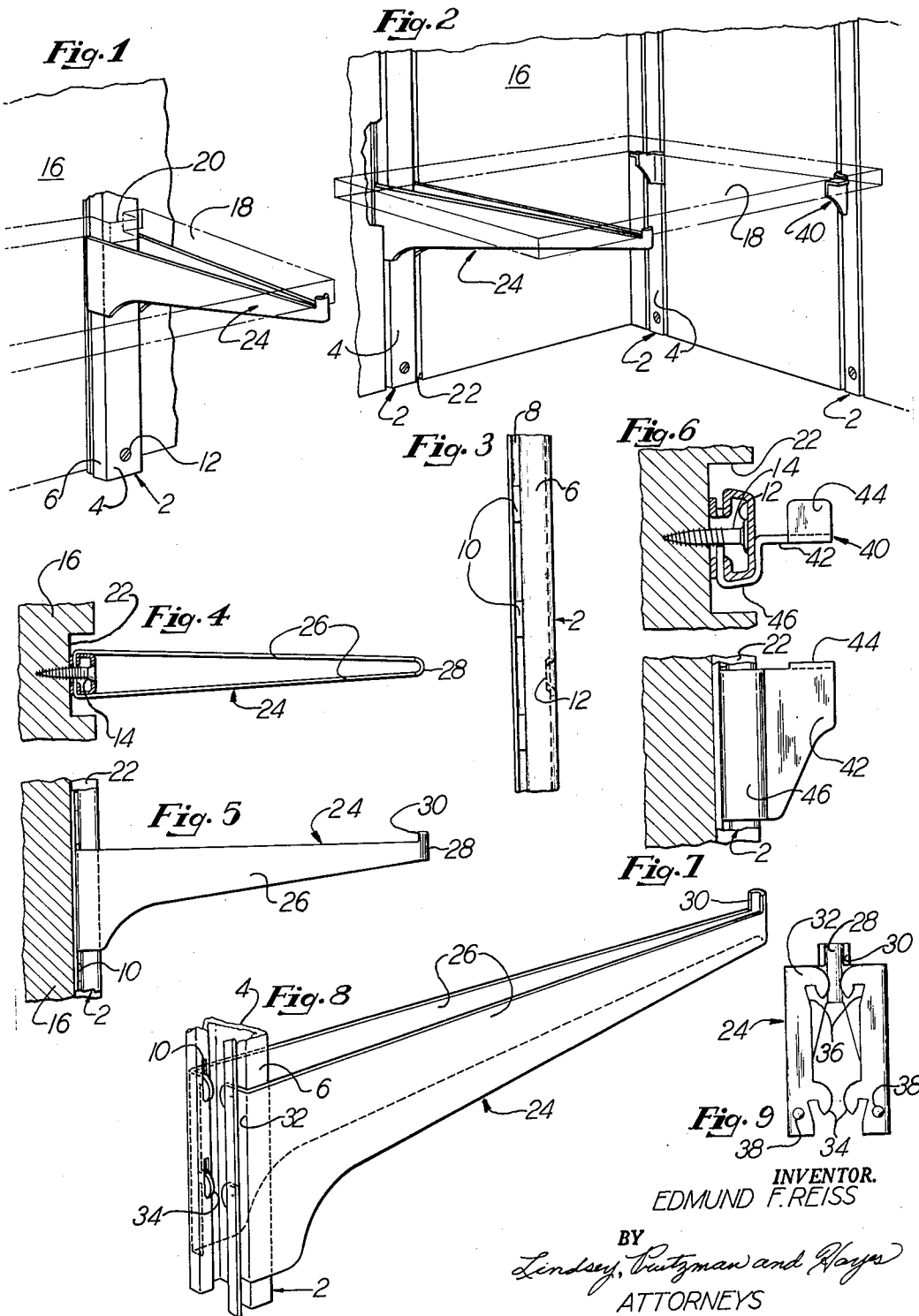
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SHELF SUSPENSION SYSTEM

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SHELF SUSPENSION SYSTEM

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The present invention relates to adjustable supports for shelving and the like, and more particularly to shelf-supporting assemblies using vertical standards with shelf-supporting elements thereon.

It is an aim of the present invention to provide a highly attractive and rugged support assembly for shelving and the like utilizing vertical standards and shelf-supporting elements which may be readily assembled to each other and adjusted for variations in height without tools and auxiliary locking screws or levers.

Another aim is to provide such a readily adjustable shelf-supporting assembly using upright standards having a highly pleasing appearance with substantially unbroken outer faces and wherein the standards may be set into recesses in the planar surfaces upon which they are mounted.

It is also an aim to provide such a shelf-supporting system wherein the elements may be readily and economically fabricated to provide a rugged and durable assembly wherein the quickly adjustable interengagement between the elements is substantially concealed from view.

Other objects will be in part obvious and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereafter set forth and the scope of the application which will be indicated in the appended claims.

In the drawings:

FIG. 1 is a fragmentary front perspective view of an embodiment of the shelf-supporting assembly of the present invention as erected upon a wall and showing a supported shelf in phantom;

FIG. 2 is a similar fragmentary perspective view of a shelf-supporting assembly embodying the invention as mounted upon a wall by an alternative method of mounting and wherein a shelf is illustrated in phantom;

FIG. 3 is a fragmentary side elevational view of an upright member;

FIG. 4 is a top view of a shelf bracket as operatively assembled to an upright and wall with the wall and upright in section;

FIG. 5 is a side elevational view of the assembly in FIG. 4 with the wall broken away to expose the elements within the recess;

FIG. 6 is a top view similar to FIG. 3 to an enlarged scale of an alternative embodiment of a shelf-supporting element;

FIG. 7 is a side elevational view of the assembly in FIG. 6 with the wall broken away;

FIG. 8 is an enlarged rear perspective view of an assembled upright and bracket of FIG. 1; and

FIG. 9 is a rear elevational view of the bracket of FIG. 8 to a reduced scale.

Referring in detail to the drawings, the present invention utilizes upright standards 2 which have a front wall 4 and sidewalls 6 having inwardly extending U-shaped channels 8 at their rearward ends. As shown in FIG. 3, the base portion of the U-shaped channels 8 is provided with regularly spaced vertically elongated mounted apertures or slots 10 conveniently at distances of about one inch apart depending upon the range of adjustability desired. As can be seen from the drawing, the front

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wall 4 of the standards is unbroken with the exception of several longitudinally spaced countersunk holes 12 in which screws or other fasteners 14 are seated to mount the standards to a wall or like planar surface 16.

As shown in FIG. 1, in one method of mounting the standards are secured to the surface of the wall 16 and the shelves 18 (shown in phantom) provided with notches or grooves 20 to fit snugly about the standards 2. When this installation will permit, the method of mounting illustrated in FIG. 2 is preferably utilized for greatest aesthetic appeal and optimum utilization of the shelf area. In this method, the standards 2 are fastened in rabbetted recesses 22 in the wall 16 so that the front face thereof is substantially flush with the planar wall surface.

When the standards are placed along the rear edge of the shelves, there is utilized an elongated bracket 24 for supporting the entire width of the shelves, as best illustrated in FIGS. 4, 5, 8 and 9. The bracket 24 is an integrally formed sheet metal structure of generally U-shaped cross-section having a pair of elongated arms 26 extending generally perpendicular to the front wall 4 from a connecting or base portion 28 which is provided with an upstanding lip 30 for holding the shelf 18 on the bracket against inadvertent forward displacement. The bottom edge of the arms is inclined downwardly toward the free ends of the arms so as to increase their width for greater strength and for providing optimum interengagement with the standard as will be evident hereinafter. The top edges extend perpendicularly to the standard 2 and the bottom surface of the shelf 18 rests on both arms throughout its width so as to derive optimum support therefrom.

As best illustrated in FIGS. 8 and 9, the free ends of the arms 26 are provided with inwardly facing flanges 32 each having a pair of inwardly projecting cam hooks 34 formed therein at a distance apart registering with the spacing of the mounting apertures 10 in the base of the U-shaped channel 8 of the standard 2. The slots 36 defining the hooks 34 preferably slope inwardly and upwardly of the flanges 32 so that when weight is applied along the length of the bracket 24, the arms 26 will be drawn in more tightly against the side walls 6 of the standard 2. The flanges 32 are also provided with outwardly projecting dimples 38 adjacent their lower ends as best seen in FIG. 9, and these dimples 38 reduce any tendency toward loose fitting of the flanges 32 within the U-shaped channels 8 while also providing abutments against the rearward leg of the U-shaped channel and thence to the wall 16 during loading of the bracket 24.

In assembling the bracket 24 to the standard 2, the free ends of the arms 26 are sprung or spread apart so as to fit over the side walls 6 of the standard and then snapped into the U-shaped channels 8 with the hooks 34 seated in mounting apertures 10. In the method of mounting shown in FIGS. 2-6 of the drawing, the rabbetted recesses 22 in the wall 16 for receiving the channels are of sufficient width to permit movement of the spread-apart arms 26.

When the standards 2 are to be placed at the ends of the shelves as in the right hand portion of FIG. 2, particularly in a book case or cabinet, the shelf rests generally designated by the numeral 40 are preferably utilized in combination with a pair of standards at each end of the shelves. As best seen in FIGS. 6 and 7, the shelf rest 40 is comprised of an arm 42 having a laterally extending flange 44 along its upper edge upon which the shelf 18 rests, and a generally U-shaped mounting section 46 adapted to closely embrace the standard 2 with the leg attached to the arm 42 seated flush against the front wall 4, its base portion flush against the side wall 6 and its other or free leg extending inwardly of the U-

shaped channel 8. On the free leg are provided a pair of spaced cam hooks (not shown) of similar configuration and employing slots similar to the hooks 34 and slots 36 of the shelf bracket 24.

The elongated brackets 24 may be readily adjusted vertically along the standards 2 by lifting the brackets sufficiently for the hooks 34 to disengage the slots 36 from the walls of the base portion and then spreading the arms 26 apart sufficiently to remove the hooks 34 from the mounting apertures 10. If desired, the bracket can be fully removed by further spreading the arms so that the hooks 34 will clear the side walls 6 of the standard. Due to the nature of the sheet metal bracket 24 and its roll-forming about a radius at the base portion 28, the arms are resiliently spreadable so that no permanent deformation occurs even after substantial periods of usage.

To adjust the shelf rest 40, it is merely necessary to lift it sufficiently to disengage the slots 50 from the wall of the standard and then move the shelf rest 40 laterally outwardly from the side of the standard.

In utilizing the assembly for relatively long lengths of shelving, standards are preferably spaced at predetermined points along the wall 16 and the elongated brackets 24 are employed therewith. For a normal installation having a shelf length of about 2-5 feet destined to carry a normal load, only a pair of standards are generally necessary which are spaced slightly inwardly of the ends of the shelf. If so desired, shelf rests 40 and additional pairs of standards 2 may be employed at the ends of the shelf in conjunction with standards and elongated brackets 24 spaced along the rear edge of the shelves intermediate their length. For relatively short lengths of shelving, the shelf rests 40 are primarily utilized in pairs at each end of the shelves, particularly in book cases or cabinets.

In the shelf-supporting assembly of the present invention, it can be seen that the front face of the upright member or standard is substantially unbroken and that the connection or engagement therebetween and the shelf-supporting elements is disposed rearwardly of the front face so as to be concealed and present a highly pleasing appearance. Further, standards may be mounted in rabbetted recesses in the wall for a highly pleasing flush appearing unit affording optimum utilization of the shelf space. The simple and rapidly effected interengagement of the shelf-supporting elements with the standards requires no auxiliary locking screws or levers and provides facile vertical adjustment without tools while also providing a rugged, firm support for the shelves.

As will be apparent to persons skilled in the art, various modifications and adaptations of the structure above described will become readily apparent without departure from the spirit and scope of the invention, the scope of which is defined in the appended claims.

I claim:

1. A shelf-supporting assembly including a vertical standard having a continuous front wall and sidewalls with inwardly facing narrow slots forming U-shaped channels adjacent their rearward ends, said U-shaped channels having a plurality of aligned vertically elongated apertures spaced along the base portion thereof; and a

one piece shelf-supporting bracket of generally U-shaped cross section having a pair of elongated arms extending generally perpendicularly to said front wall and along the sidewalls of the standard, said arms being resiliently spreadable and having inwardly facing flanges at their free ends extending into the U-shaped channels of said standard, said flanges having hook-shaped projections thereon engaged in said elongated apertures in the U-shaped channels.

2. In combination, a wall having a vertical recess, a shelf-supporting assembly including a vertical standard positioned in said recess so that its front wall is substantially flush with the surface of the wall and having a lateral clearance relative to the sides of said recess, the front wall of said standard being continuous and the side walls thereof having inwardly facing narrow vertical slots forming U-shaped channels, said U-shaped channels each having a plurality of aligned apertures spaced along the base portion thereof, and a shelf-supporting bracket disengageably mounted on said standard, said bracket being of generally U-shaped cross section and having a pair of elongated arms extending generally perpendicularly to said front wall and along the side walls of said standard, said arms being resiliently spreadable and having inwardly facing flanges at their free ends extending into said channels, said flanges having tapered hook-shaped projections thereon engaged in said apertures securing said inwardly facing flanges in said channels.

3. A shelf-supporting assembly including a vertical standard having a continuous front wall and side walls having inwardly facing narrow slots forming U-shaped channels extending from one end of the standard to the other, said U-shaped channels comprising a pair of leg portions joined by a base portion at their innermost ends and providing along the base portions thereof a plurality of vertically aligned elongated apertures; and a one-piece shelf-supporting bracket of generally U-shaped cross section having a pair of elongated arms extending generally perpendicularly to the front wall and along the side walls of said standard, said elongated arms being resiliently spreadable and having inwardly facing flanges at their free ends extending into the U-shaped channels of said standard, said flanges having tapered hook-shaped projections thereon engaged in said elongated apertures in said U-shaped channels, whereby the flanges of the bracket are drawn in more tightly against the legs of said U-shaped channels upon loading of an associated shelf.

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