United States Patent [19]

Kapnek

[11] **3,752,088**

[45] **Aug. 14, 1973**

[54] **SHELF ASSEMBLY**

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Related U.S. Application Data

[60] Division of Ser. No. 815,567, April 14, 1969, Pat. No. 3,642,238, which is a continuation-in-part of Ser. No. 720,617, April 11, 1968, Pat. No. 3,527,175.

[52] **U.S. Cl.** **108/152,** 248/225

[51] **Int. Cl.** **A47b 5/00**

[58] **Field of Search** 108/42, 108, 152; 211/90; 248/216, 225, 235, 239, 220.5, 250

[56] **References Cited**

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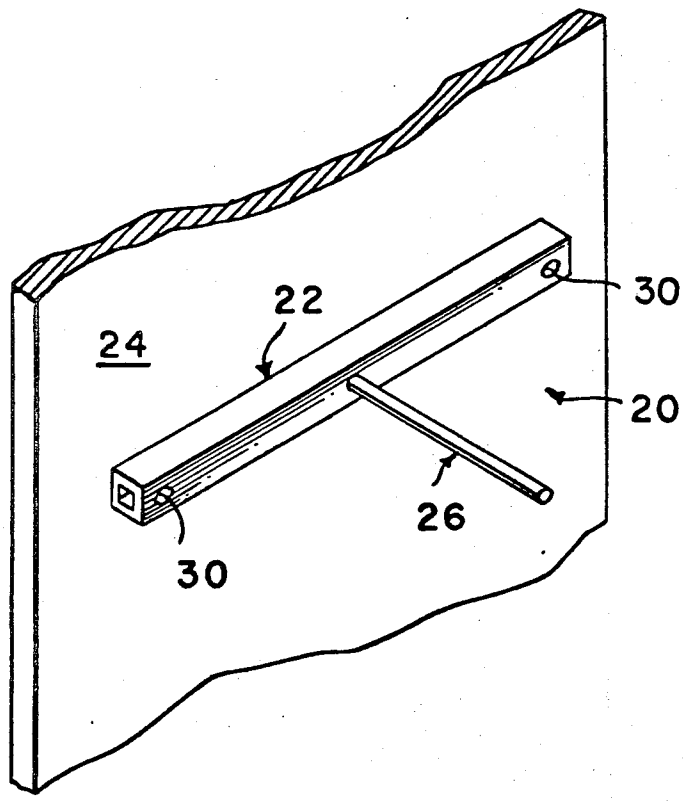
Primary Examiner—James C. Mitchell

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[57] **ABSTRACT**

A shelf assembly comprising a vertical wall and a supporting bar secured to the wall. A rod is secured in the supporting bar, and the rod serves to support a shelf on the wall. The rod is received in a channel in the shelf.

2 Claims, 4 Drawing Figures



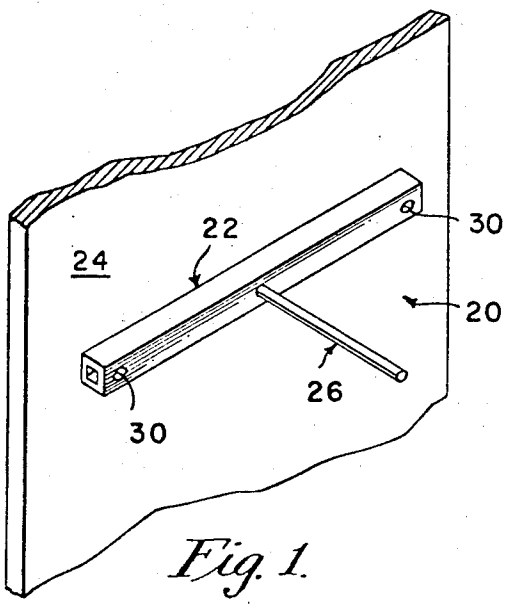
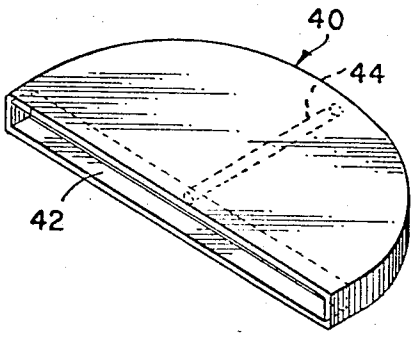


Fig. 1.

Fig. 2.



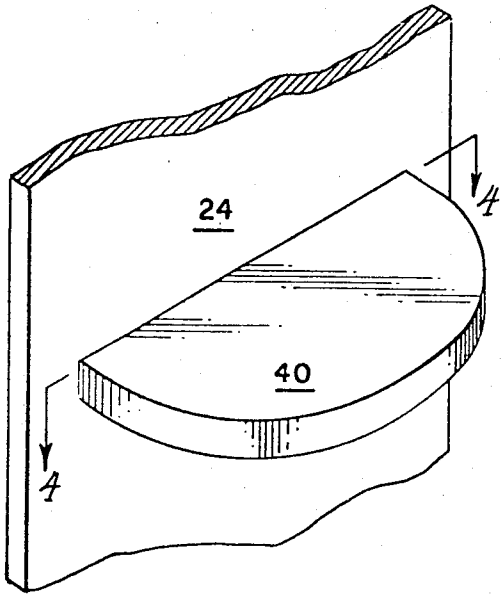


Fig. 3.

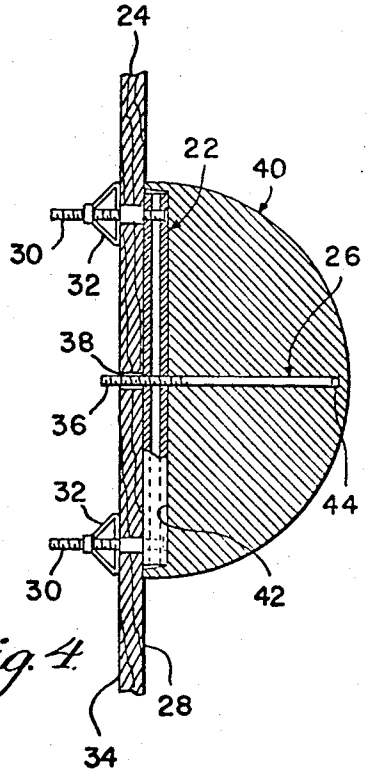


Fig. 4.

SHELF ASSEMBLY

This application is a division of my co-pending application Ser. No. 815,567, filed Apr. 14, 1969, entitled "Lighting Assembly," and now U.S. Pat. No. 3,642,238, which application Ser. No. 815,567 is a Continuation-In-Part of application Ser. No. 720,617, filed Apr. 11, 1968, entitled "Shelf" and now U.S. Pat. No. 3,527,175.

This invention relates to a shelf assembly, and more particularly, to a shelf assembly that is adapted to be mounted on walls.

It is now a current practice to erect shelves directly on the walls of a building, such as a home. Various types of brackets have been developed for maintaining the shelves in place. One problem which is existent in substantially all of the shelves currently in use is that the brackets are visible. In most cases, these brackets will detract from the appearance of the shelf assembly.

Attempts have been made at concealing the supporting means for the shelves. Thus, screws have been inserted directly into the walls with an extended shank of the screws being received in rear recesses of shelving. However, these structures, although overcoming the problem of unsightliness, still suffer from the disadvantage that they are not load-bearing. Thus, they are adapted only to receive very light loads, such as soap or towels. In many instances, decorative brackets have to be used to aid in supporting the shelves.

A solution to the problem of concealing the supporting hardware for a shelf, while at the same time maintaining full load-bearing characteristics for the shelf, was made by the shelf disclosed and claimed in my prior U.S. Pat. No. 3,333,555. In the shelf covered by this patent, elongated rods were secured in the studs behind a wall and shelving was placed over the exended forward portions of the rods. The forward portions were received in channels formed in the shelving. In this way, the supporting hardware for the shelving was completely hidden in use. Furthermore, the securement of the rods in the studs gave extremely great load-bearing qualities to the finished shelving.

The shelf assembly covered by my prior patent has been found to be completely satisfactory for its intended use. However, one of the problems of the shelf assembly of my patent is that it can be used only where studs are available for supporting the rods which in turn support the shelves. It has been found that quite often the shelving is to be placed on walls wherein studs are not readily accessible or wherein the studs are positioned in such a manner that it is not possible to take advantage of a pair of studs for supporting the shelving. In these cases, the shelf assembly of my prior aforementioned patent cannot be used.

The shelf assembly disclosed in my aforementioned application Ser. No. 720,617 now U.S. Pat. No. 3,527,175, is usable on any wall wherein the use of studs is not possible or is inconvenient. The shelf assembly of my co-pending application enjoys all of the advantages of the patented assembly without requiring the use of the studs for supporting the shelf. In my co-pending application there is disclosed a shelf assembly wherein the load-bearing qualities are effectuated through the use of elongated rods and load-distributing means on the back of the wall. Thus, such load-distributing means as screw anchors or toggle bolts could be used. Load-distributing means are also placed on the front surface of the wall, and the rods pass through the front load-distributing means.

In the invention of this application, the shelf assembly of my co-pending application is improved in that all but one of the load-bearing rods can be eliminated in order to support the shelf. Thus, using the structure of this invention, a shelf can be supported utilizing a single rod. This can be particularly advantageous where relatively narrow shelves are used, and it would not be possible to utilize a pair of supporting rods. Furthermore, utilizing the structure of this invention, a novel support is provided for the shelves, which support is adapted for using a plurality of rods.

It is therefore an object of this invention to provide a novel shelf assembly.

It is another object of this invention to provide a support structure for supporting shelving, which support structure is completely hidden by the shelving during use.

These and other objects of this invention are accomplished by providing a shelf assembly comprising a wall, a bar secured to said wall, a rod secured in said bar, said rod adapted to support loads thereon, and a shelf supported by said rod.

Other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

FIG. 1 is a perspective view of the support assembly of this invention;

FIG. 2 is a perspective view of a shelf usable on the support assembly of this invention, and taken from the rear of the shelf;

FIG. 3 is a perspective view of the shelf of this invention as it appears when mounted on the support assembly of this invention; and

FIG. 4 is a sectional view taken along the line 4—4 of FIG. 3;

Referring now in greater detail to the various figures of the drawings wherein similar reference characters refer to similar parts, a support assembly for the shelf assembly embodying the present invention is generally shown at **20** in FIG. **1**. Device **20** basically comprises a bar **22** secured on a wall **24** and a rod secured in bar **22**.

As best seen in FIG. **4**, bar **22** is mounted on the front face **28** of wall **24**. The bar **22** is hollow, and in the embodiment shown, is square. The bar **22** is held in place by screws **30** which are received in counter sunk holes in the bar (FIG. **4**). The screws **30** are received in load-distributing means **32** mounted against the rear face **34** of wall **24**. In the embodiment shown, the load-distributing means **32** are screw anchors. Any of the screw anchors generally known to the art can be used, such as those shown in U.S. Pat. Nos. 1,881,973, 2,559,281 or 2,610,013. Bar **22** can be made of any load-bearing materials. Metal, such as steel, is preferred. However, other load-bearing materials, such as wood or plastic, can be used.

Rod **26** is a solid steel cylinder and has one end **36** externally threaded. Rod **26** is threadedly secured in bar **22** and passes through a hole **38** in wall **24**.

A shelf usable with support assembly **20** is generally shown at **40** in FIG. **2**. Shelf **40** is provided with a slot **42** that extends across substantially its entire width at the rear thereof. However, as is apparent from FIG. **2**,

slot 42 terminates short of the lateral sides of shelf 40. Shelf 40 is also provided with a longitudinally extending channel 44 therein. As seen in FIG. 4, channel 44 is slightly greater in diameter than the diameter of rod 26. In use, shelf 40 is mounted on support assembly 20 by inserting rod 26 in channel 44 and sliding the shelf onto the rod until the rear edge of the shelf abuts front face 28 of wall 24 (FIG. 4). At this time, bar 22 will be received in slot 42.

The shelf can be secured in place by any of a number of means. In a preferred embodiment, the height of slot 42 will be substantially equal to the height of bar 22. Accordingly, the shelf will be held on the bar 22 by a forced or pressed fit. In this embodiment, shelf 40 will be made of a resilient material, such as wood, pressed wood or plastic. The shelf can be held in place by having the diameter of channel 44 substantially equal to the diameter of rod 26, and by providing a knurled surface on the exterior of rod 26. Thus, the knurling on the rod will grip the shelf when the shelf is placed over the rod, thereby holding the shelf in place. Other means, such as adhesive or set screws, can be used for holding the shelf in place.

As seen in FIG. 3, when the shelf 40 is placed on the support assembly 20, there are no visible means of support for the shelf. Thus, all of the supporting structure is completely hidden by the shelf. It has been found in actual practice that the assembly shown in FIGS. 1 to 4 will support substantial weights for indefinite periods of time. Thus, the structure has been found to support weights of up to 100 pounds. For larger shelves, bar 22 can be made longer, additional screw anchors 32 can be used, and additional rods 26 can be used.

The load-bearing qualities of the assembly are accomplished because of the fact that the load is distributed on the rear face 34 of wall 24 by the load-distributing means 32, and the load is distributed on the front face 28 of wall 24 by bar 22, which distributes the load across its entire width. Using the combination of the load-distributing means on both faces of the wall prevents the crushing of the wall, in the case of gypsum board, or the tearing or shredding of the wall, in the case of plywood or panelling. In place of using the screw anchors 32 as the load-distributing means, other load-distributing means known to the art can be used, such as toggle bolts. Where the rear face of the wall 24 is accessible, as would be the case when the wall 24 is a free-standing display panel, other load-distributing means such as washers or wing nuts can be used. Furthermore, when the wall 24 is a display panel, the load-distributing means can comprise a bar 22 on each face of the wall. The bars 22 can be aligned, and can be secured in place by conventional nuts and bolts. In this case, the rods 26 can pass completely through the aligned bars 22, and have projections extending an equal distance from both faces of wall 24. Thereafter a shelf 40 can be secured on both faces of the wall 24 by sliding it over the projections of the rods 26.

Although the screw anchors 32 and the bars 22 distribute the load across the wall 24, the actual load of the shelf 40 and the items put thereon is borne by rod 26. Accordingly, the rod is formed from a load-bearing material such as steel. The securement of the rod 26 in bar 22 anchors the rod against any downward movement by the weight of the object placed on shelf 40. The threads 36 on rod 26 can be self-tapping in order to secure the rod rigidly within bar 22. Although the bar 22 has been shown as being hollow, it is to be understood that it can also be solid, and be made of materials other than metal, such as wood or plastic. Since the rod 22 will be covered in use, it can be provided with a plurality of pre-drilled holes, and the rod or rods 26 can be placed in whichever holes are usable or necessary. When the weight of the shelf is being borne by the single rod 26, all pivotal movement of the shelf around the rod is prevented by bar 22. Thus, if an object were placed on the shelf 40 at a position remote from rod 26, or if the objects placed on the shelf are heavier on one side of rod 26 than the other, the shelf will still not rotate, in view of the engagement of bar 22 in slot 42.

In this invention, instead of using load-distributing means on the rear surface of the wall, the supporting bar 22 can be secured to the wall by inserting wood screws through the wall and into the studs behind the wall. If desired, the bar 22 can be provided with a series of predrilled holes for reception of the rods. Thus, the user of the support assembly can vary the positioning of the rods to suit the specific use for which the rods will be adapted. The number of rods used in any of the disclosed embodiments can be infinitely varied by increasing or decreasing the length of bar 22. The invention is adapted for providing a shelf going across the entire width of a wall. Thus, the greater the width of the shelf, the greater the number of rods that will be used.

Without further elaboration, the foregoing will so fully illustrate my invention that others may, by applying current or future knowledge, readily adapt the same for use under various conditions of service.

What is claimed as the invention is:

1. A shelf assembly comprising a wall, an elongated rigid bar mounted on the front face of said wall by at least two spaced means passing through said wall, said bar being adapted to distribute a load across the front face of said wall, load-distributing means on the rear face of said wall secured to said means passing through said wall, a rod rigidly secured in said bar and projecting horizontally outwardly therefrom, said rod being adapted to support loads thereon, and a planar shelf, said shelf including a channel therein, said rod being frictionally received in said channel, said shelf further including a slot therein, with said bar being received in said slot, said slot having a height which is slightly greater than the height of said bar, whereby the engagement of said bar within said slot prevents the rotational movement of said shelf, and whereby said rod rigidly supports said shelf in a cantilever position relative to said wall.

2. The shelf assembly of claim 1 wherein said rod is threadedly secured in said bar.

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