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 [21] Appl. No. **798,048**
 [22] Filed **Feb. 10, 1969**
 [45] Patented **Sept. 14, 1971**

FOREIGN PATENTS

309,370 1/1918 Germany..... 108/107
 711,769 7/1954 Great Britain..... 248/188

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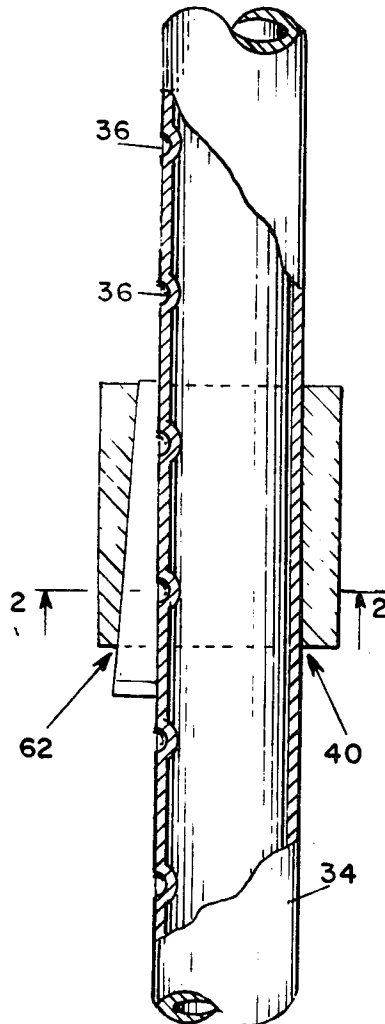
[54] **SHELVING**
 12 Claims, 7 Drawing Figs.

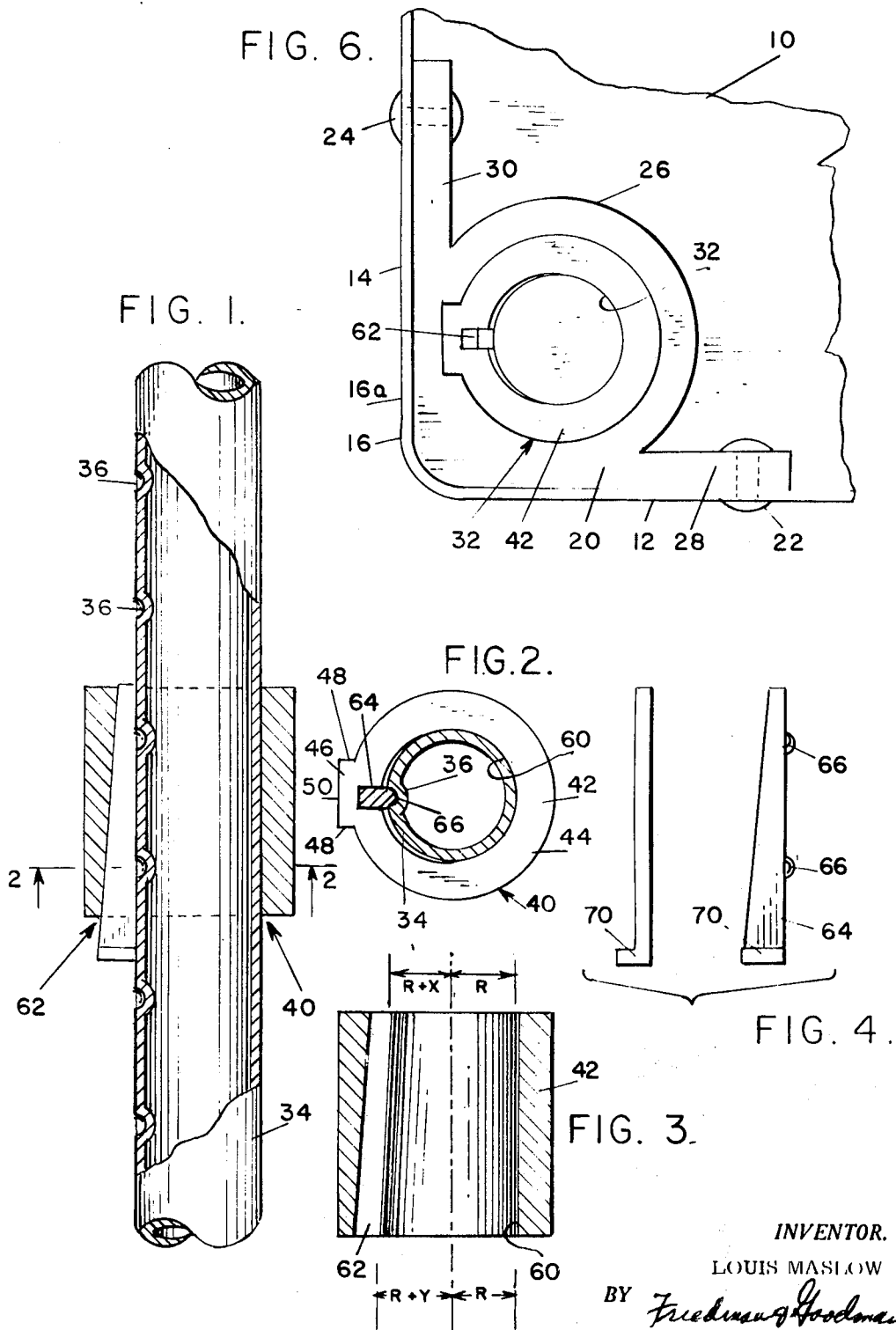
[52] U.S. Cl..... **108/144,**
 108/151, 248/188
 [51] Int. Cl..... **A47b 9/08**
 [50] Field of Search..... 108/151,
 156, 106, 107, 62, 144; 248/188, 188.2, 188.8,
 244, 245, 407, 412

[56] **References Cited**
UNITED STATES PATENTS

3,344,756 10/1967 Kelson..... 248/188 X
 1,221,306 4/1917 Gall..... 248/407
 499,671 6/1893 Gard et al..... 248/407

ABSTRACT: Adjustable shelving comprising a flat shelf member having corner supports secured thereto at each corner of said shelf member, said corner supports being adapted to receive and securely hold corner posts provided with graduate indents spaced at predetermined increments along their vertical dimension, said corner supports being provided with locking post supports for holding said corner supports and corner posts in secured relation, said post supports each further comprising a unitary collar associated with means for locking the collar to said post. The spacing of the shelving is adjusted by varying the position of the locking post supports along the height of the corner posts.





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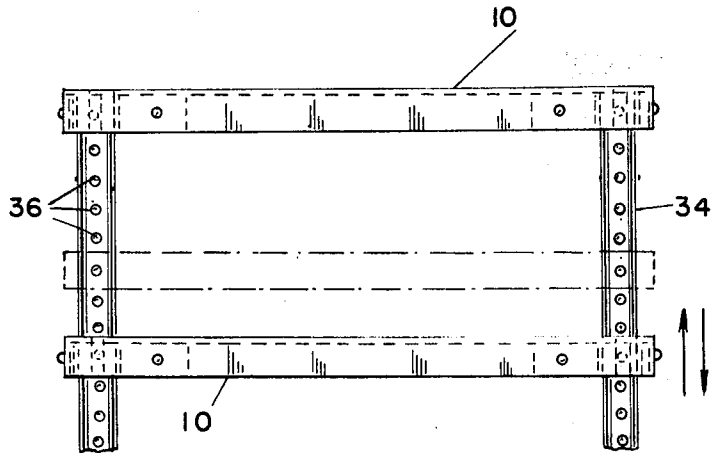


FIG. 5.

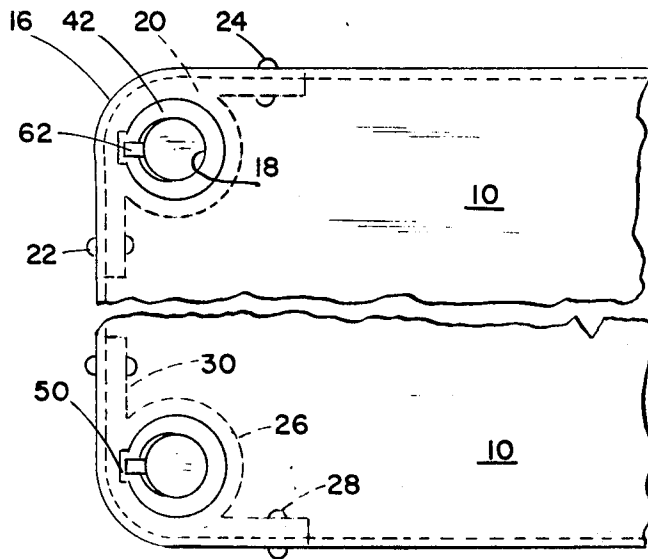


FIG. 7.

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SHELVING

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to shelving. More particularly, the invention relates to improved adjustable shelving which may be readily adjusted to various desired heights or readily assembled and disassembled.

2. Description of the Prior Art

Adjustable metal shelving is known. So-called "knock-down" metal shelving is also known. However, it is a distinct disadvantage, among others, in the aforementioned prior art shelving that the corner supports therefore, through which the corner posts extend are provided with set screw or set bolts which proceed through threaded apertures, by means of which the corner support is affixed to each corner post. Thus, in order to adjust the height of the shelf, or to assemble it or disassemble it, the set screws must be loosened or tightened, as the circumstance may require, by suitable tools before such action can be accomplished. As mentioned, in order to assemble the posts and shelves a tool, such as a screw driver, is required. Often times, in attempting to assure a tight fit of corner support to corner post, the set screw or bolt is turned for an excessive number of revolutions, and the post is thereby caused to be dented or similarly damaged; or, additionally, the threads of the set screw become stripped requiring its replacement. On the other hand, if the screw is threaded too loosely into the threaded aperture to prevent damage to the post or screw, then the shelf, loaded with goods may collapse. Still further, if the set screw is lost the shelving is useless until the proper size set screw is obtained.

SUMMARY OF THE INVENTION

It is, therefore, among one of the principal objectives of this invention to overcome the aforementioned prior art disadvantages by providing shelving requiring no set screws or set bolts, or the use of tools in conjunction therewith.

In accordance with the present invention readily assemblable shelving is provided comprising a shelf member having corner supports secured thereto at each corner of said shelf member, said corner supports being adapted to receive and securely hold corner posts provided with graduated notches along their vertical dimension, and said corner supports also being provided with locking posts supports for holding said corner support and corner post in secured relation, said post supports further comprising a unitary collar associated with means for locking the collar to said post. The spacing of the shelving, relative to each other, is adjusted by varying the positions of the post supports along the height of the corner posts.

BRIEF DESCRIPTION OF THE DRAWING

The invention will be hereinafter more fully described with reference to the accompanying drawing, in which:

FIG. 1 shows a fragmented elevated sectional view of a locking support, in locked relation with a corner post. The corner support being removed from the post support. In this view.

FIG. 2 shows a sectional view taken along line 2—2 of FIG. 1.

FIG. 3 is an elevated sectional view of the post support shown in FIG. 2, while

FIG. 4 is a front and side elevated view of the locking means therefore.

FIG. 5 is a front view of the shelving as assembled, with one shelf member, shown by phantom lines at an adjusted height, being movable up or down in the direction of the arrows, with the corner posts partially cutaway.

FIG. 6 is a fragmented bottom plan view of one corner of the shelving.

FIG. 7 is a top plan view of a shelf member with corner supports secured at two corners thereof, said shelf member being partially cutaway.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the figures of the drawing, each shelf member has a flat panel 10 of generally rectangular shape and integrally connected therewith are right angularly disposed downwardly extending end flanges 12 and side flanges 14. The shelves shown herein are composed of sheet metal, such as stainless steel, steel, aluminum, aluminized steel or the like. The shelves may also be made of plastic. Each corner 16 of panel 10 is rounded substantially to conform to an arc of a circle. A flange 16A conforming therewith is integral with said corner 16 and with end flange 12 and side flange 14. At said rounded corners 16, inwardly disposed therefrom, are provided substantially circular apertures 18, which apertures would be in generally concentric relation to an imaginary circle drawn from the arc of said rounded corner 16. Secured at each corner of panel 10 is a corner support 20, by means of rivets 22 and 24 through flanges 12 and 14, respectively. Although rivets are preferred, other fasteners or securing means may be used. Each corner support 20, best illustrated in FIG. 6, comprises a central body portion 26 having integrally connected therewith, right angularly disposed arms 28 and 30. The depth of each corner support 20 is equal to that of flanges 12, 14 and 16A, less one thickness of the material which forms the panel 10. The corner supports 20 may be of cast or formed metal or formed in any other manner of suitable material. It will be seen from FIG. 5, for example, that when corner support 20 is secured to flanges 12 and 14, at its arm 28 and 30, respectively, as by means of rivets 22 and 24, respectively, to the underside of corner 16 and panel 10, the corner support 20 will be flush with the lower edges of flanges 12, 14 and 16A. By referring to FIG. 6, it will also be seen that central body portion 26 is adapted to be in concentric relation with rounded corner 16 and its flange 16A, that is as if an imaginary circle were to be drawn in conformity thereto, so that it can be seen that corner support 20 fits in abutting smooth relation with flanges 12, 14 and 16A. A central bore 32 is provided in central body 26, said central bore 32 being in a registry with aperture 18 of panel 10.

A corner post 34, usually metal as above, is provided for each corner support 20, each of said corner posts being provided in turn with notches 36, graduated 1 inch apart along the vertical dimension. Although the notches 36 are described as 1 inch apart, it is clear that they may be graduated in larger spacings as may be desired and shaped other than circular.

A post support 40 is provided at each corner support 20, which post support is adapted to fit around corner posts 34. Post supports 40 each form a part of corner support 20, being either welded thereto, or cast therewith as an integral piece. Post support 40 further comprises a unitary collar 42 of generally cylindrical form best seen by referring to FIG. 3, while collar 42 is substantially annular in transverse cross section, as best seen by referring to FIG. 2, an arc of the circle forming the peripheral wall 44 thereof is removed therefrom and in its place there is provided an outwardly displaced integral extension 46 of the wall 44. Extension 46 has a pair of parallel opposing end portions 48 connected by a straight elongated front portion 50.

A preferably generally off-central bore 60 is provided in collar 42 for the passage of corner post 34 therethrough. An elongated keyway 62 is also provided in collar 42 running in a generally vertical plane and extending laterally in the direction of extension 50. A wedge shaped key 64 is sized to fit between keyway 62 and corner post 34, and projections or curved bosses 66, graduated 1 inch apart, are provided on said key. Keyway 62 and key 64 are associatingly shaped, as mentioned, both being in the shape of a right-angle triangle whose apex is sheared off. A laterally extensible gripping member 70 is provided at the base of the key 64, for ease of insertion, as will be subsequently described below.

It is a feature of the invention that central bore 60 of collar 42 be not formed as a perfect circle. In other words, central bore 60 has two sets of radii, as it were, one is R and the other is R plus some small increment X at the upper end of collar 42;

while at the lower end, one is R plus some small increment Y (which is larger than X). Thus, the radius R for one-half of the bore is constant while for the other half it is between R+X and R+Y. As an illustrative example, R may be one-half inch, X may be one sixty-fourth inch and Y may be one thirty-second inch.

Describing now the operation of the invention, a shelf member 10 with its collars 42 forming a part of each corner support 20 is slipped over each corner post 34 via collars 42 to the desired level while a key 64 is disposed for insertion in keyway 62 so that rounded bosses 66 engage in notches 36 provided on each post 34, thereby locking collar 42 in place. When all four collars are so locked the flat panel 10 is firmly seated in place.

By virtue of the fact that one-half of central bore 60 is of constant radius R a twofold advantage is realized: (1) a slight give or "resilience" exists prior to the insertion of the key at each corner providing for a tighter fit of corner support and its post support with the corner post upon the insertion of the key, and (2) the corner post always seats against the semicircle, defined by radius R, of constant dimension when the key is lightly inserted. Moreover, because of the shape of the bore and the simplicity of the locking mechanism of the post support, the corner posts become easier to insert therein, and consequently the entire shelving is easily assembled.

It is, of course, to be understood that if the distance between the notches 36 is changed that the distance between associatingly adapted rounded bosses 66 on key 64 must also accordingly be changed to conform thereto. While only one boss 66 on a key will be utilizable in the practice of the invention, this is less preferred than two or more bosses on a key.

What is claimed is:

1. Shelving comprising a flat shelf member having corner supports secured thereto at each corner of said shelf member, said corner supports being adapted to receive and securely hold corner posts provided with graduated indents spaced at predetermined increments along their vertical dimension, said corner supports being provided with locking post supports for holding said corner supports and corner posts in secured relation, said post supports further comprising a unitary collar provided with an axially extending keyway and removable wedge shaped key means adapted to be received in said keyway for locking the collar to said post, each collar including a body of generally cylindrical form, said collar body being substantially annular in transverse cross section, a portion of the resulting peripheral wall of said collar body being provided with an outwardly displaced integral extension of said wall, a generally off-central bore being provided in said collar body to receive one of said corner posts, said keyway extending laterally in the direction of said extension of said wall and communicating with said collar body bore, said removable wedge shaped key means being provided with projecting means for lockingly engaging the graduated indents provided on each of said corner posts, said removable wedge shaped key means including a key shaped to associatingly conform to the shape of said keyway, and means securing said post supports and said collar to said corner supports for movement with said flat shelf member.

2. Shelving according to claim 1, wherein each of said corner supports comprise a body portion, a central bore being provided in said body portion, said shelf member being provided with an aperture in each corner thereof, said body portion bore being in registry with the aperture at each of the

shelf corners.

3. Shelving according to claim 1, wherein said off-central bore forms substantially a circle, of which only one-half is of constant radius throughout.

4. Shelving according to claim 1, wherein the height of said shelf member is adjusted by varying the position of the said post supports along the vertical dimension of said corner posts with respect to said graduated indents.

5. Shelving according to claim 1, wherein said shelf member comprises a flat panel of generally rectangular shape and having integrally connected therewith right angularly disposed downwardly extending end flanges and side flanges, each corner of said panel being rounded, with a flange integrally conforming therewith downwardly extending and also being integrally connected with said end and side flanges, an aperture being provided at each of said rounded corners.

6. Shelving according to claim 1 wherein said post supports are secured to said corner supports by welding to move in association with said flat shelf member.

7. Shelving according to claim 1, wherein said keyway and said key are each shaped to conform generally to a right-angle triangle, the apex of said triangle being cut off.

8. Shelving according to claim 8, wherein a laterally extensible gripping member is provided at the base of said key.

9. Shelving according to claim 1, wherein said projecting means for lockingly engaging said graduated indents comprise at least one rounded boss provided on said key.

10. Shelving comprising a flat shelf member having corner supports secured thereto at each corner of said shelf member, said corner supports being adapted to receive and securely hold corner posts provided with graduated indents spaced at predetermined increments along their vertical dimension, said corner supports being provided with locking post supports for holding said corner supports and corner posts in secured relation, said post supports further comprising a unitary collar associated with removable means for locking the collar to said post, wherein each of said corner supports comprise a body portion, a central bore being provided in said body portion, said shelf member being provided with an aperture in each corner thereof, said bore being in registry with the aperture at each of the shelf corners, wherein each collar is a body of generally cylindrical form, said body being substantially annular in transverse cross section, a portion of the resulting peripheral wall of said body being provided with an outwardly displaced integral extension of said wall, a generally off-central bore being provided in said body forming the collar, an elongated keyway being provided in said collar running in a generally vertical plane and extending laterally in the direction of said extension of said wall, said removable means for locking said collar to said post comprising a wedge shaped key to associatingly conform to the shape of said keyway said key being provided with projecting means for lockingly engaging said graduated indents provided on each of said corner posts, said projecting means including at least one rounded boss, and wherein said off-central bore forms substantially a circle, of which only one-half is of constant radius throughout, and means securing said post supports and said collar to said corner supports for movement with said flat shelf member.

11. Shelving according to claim 9, wherein at least a pair of rounded bosses are provided in graduated association with said indents.

12. Shelving according to claim 1, wherein said corner supports and post supports therefor are cast as an integral unit.