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(54) Improvements relating to shelving.

(57) A shelving assembly is described which includes a shelf (24) and a mounting member (10) a portion (20) of which is received by and extends within an opening (22) in the edge of the shelf (24). A friction bush (32) is provided to resist relative movement between the shelf (24) and the mounting member (10) and comprises a sleeve (34) having an internal surface (36) an an external surface (38) and is sized so as to be received upon that portion (20) of the mounting member (10) which is in turn received within the edge of the shelf (24). The sleeve (34) is provided with a first means (40) on the internal surface (36) to mate with cooperating means (26) provided on that portion (20) of the mounting member (10) that receives the sleeve (34) and second means (42) on the external surface (38) to engage within the opening (22) in edge of the shelf (24).

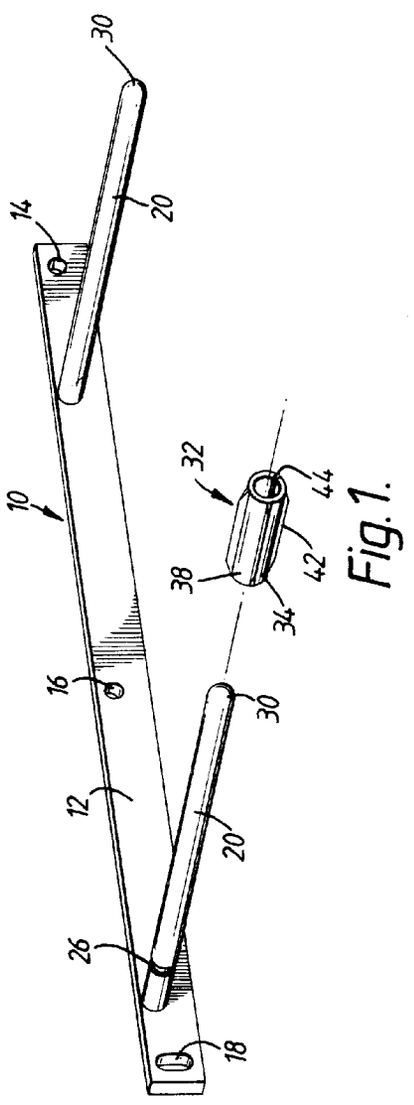

Fig. 1.

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This invention relates to shelving of the kind suitable for securing to an existing vertical wall to provide support for a shelf and in particular to shelving in which a mounting member is received within an edge of the shelf.

Many known shelving assemblies have forms of support which are visible, such as brackets, metal strips and visible fixings or screwheads. These forms of support gather dust, are difficult to clean, obstruct free access to the whole shelf area, create difficulties in redecoration, particularly wall paper hanging, and impose difficulties for the handyman with regard to erection or dis-assembly. As a result shelving assemblies have been developed employing mounting members which in use are hidden within an opening in an edge of the shelf. Examples of a number of such assemblies are disclosed in GB-A-2,214,414.

A disadvantage of the hidden shelving assemblies developed to date is that often the only force preventing accidental removal of the shelf from the mounting member in a direction parallel to that in which the mounting member extends within the opening in the edge of the shelf is the friction that exists between the mounting member and the shelf as a result of the closeness of the fit of the member within the opening. As will be readily appreciated, if, as is common, the mounting member is of metal and the shelf is of wood or plastics material the required frictional force will be small unless the opening in the shelf and the mounting member are manufactured to a high dimensional tolerance in which case they may be difficult to assemble and costly to produce.

According to a first aspect of the present invention there is provided a shelving assembly comprising a mounting member having a surface for attachment to a wall and a projecting portion extending substantially perpendicularly to the said surface, a shelf having an opening in an edge thereof in which the said projecting portion is received so that the shelf is supported by the projecting portion and can be moved relative to the mounting in a direction substantially parallel to the extent of the projecting portion, and a friction bush comprising a sleeve carried on the projecting portion and so engaging with the projecting portion that the bush is held against movement in a direction substantially parallel to the extent of the projecting portion, the sleeve having an external surface provided with at least one deformable projection which engages the opening in the edge of the shelf so as to resist movement of the shelf away from the mounting member in a direction substantially parallel to the extent of the projecting portion.

In a preferred embodiment of this first aspect of the invention the sleeve is held against said movement by the reception of at least one projection provided on a first of the sleeve or mounting member within at least one recess provided on the other of the said sleeve or mounting member.

In a further preferred embodiment of this first aspect of the present invention the sleeve may be split in a direction substantially parallel to the extent of the projecting portion.

According to a second aspect of the present invention there is provided a friction bush for use in preventing relative movement between a shelf and a mounting member a portion of which is received by and extends within an opening in an edge of the shelf comprising a sleeve having at least one projection on an internal surface thereof to engage with at least one recess provided on that portion of the mounting member that receives the sleeve to hold the bush against movement in a direction substantially parallel to the extent of the projecting portion, and at least one deformable projection on an external surface thereof to engage within the opening in the edge of the shelf so as to resist movement of the shelf away from the mounting member in a direction substantially parallel to the extent of the projecting portion.

An embodiment of the present invention will now be described by way of example with reference to the accompanying drawings in which:

Figure 1 shows an exploded view of a friction bush in accordance with the present invention and a mounting member for receipt thereof;

Figure 2 shows an end view of the frictional bush of Figure 1;

Figure 3 shows a cross-sectional side view of the frictional bush of Figures 1 and 2;

Figure 4 shows a side view of the mounting member of Figure 1; and

Figure 5 shows a perspective view of an edge of a shelf to be supported by the mounting member of Figure 1.

Figure 1 shows a mounting member 10 for attachment to a vertical wall (not shown). The mounting member 10 includes a plate 12 provided with fixing holes 14 and 16 and fixing slot 18 for receiving screws or nails to fix the mounting member 10 against the wall with a rear surface of the plate 12 bearing against the wall. The mounting member 10 also includes two cylindrical rods 20 that project substantially perpendicularly from a front surface of the plate 12 for receipt within corresponding openings 22 in an edge of a shelf 24 so that the shelf 24 is supported by the projecting rods 20 and can be moved relative to the mounting member 10 in a direction substantially parallel to their length. A circumferential groove 26 is provided on each of the projecting rods 20 at an end adjacent the plate 12 while the end of each projecting rod 20 remote from the plate 12 is provided with a rounded surface 30.

A friction bush 32 is carried by each projecting rod 20 and comprises a cylindrical sleeve 34 having an internal surface 36 and an external surface 38. The internal surface 36 is provided with a radially inwardly projecting circumferential rib 40 while the external

surface 38 is provided with a plurality of axially extending, angularly spaced, deformable ribs 42 which are bevelled at both ends. The sleeve 34 of the friction bush 32 is split axially at 44. Each bush 32 is preferably made of a deformable plastics material.

In use a separate friction bush 32 is pushed onto each projecting rod 20, facilitated by the rounded end surface 30 of the rod and the axial split 44 of the bush, and is slid along the rod 20 until the radially inwardly projecting circumferential rib 44 is received in, and mates with the circumferential groove 26. Having mated with the groove 26, the friction bush 32 is prevented from movement relative to the mounting member 10 in a direction substantially parallel to the length of the projecting rod 20.

The openings 22 in the edge of the shelf 24 are then pushed over the projecting rods 20 so that the edge of the shelf is slid toward the plate 12. As the edge approaches the plate 12 the internal surfaces of the openings 22 are engaged by the axially extending, angularly spaced, deformable ribs 42 of the friction bushes 32 which then grip the shelf 24. The friction bushes 32 thus hold the shelf 24 on the mounting member 10 in such a way as to resist the accidental removal of the shelf in a direction substantially parallel to the length of the projecting rods 20.

It will be apparent that the engagement between each bush 32 and the associated rod 20 need not necessarily be by the use of a single circumferential rib as shown but may be replaced by a plurality of projections that engage a corresponding plurality of recesses provided on the associated projecting rod 20. If these projections on the internal surface 36 are in the form of ribs they of course need not necessarily extend circumferentially. In either case the projections, whether in the form of ribs or not, or whether extending substantially circumferentially or not, need not necessarily be provided on the internal surface 36 of the sleeve 34 but may be provided on the projecting rod 20 adjacent the plate 12 and received within corresponding recesses provided on the internal surface 36 of the sleeve 34.

The ribs 42 are sized so as to enable the bush 32 to be received within and engage openings of differing internal diameters thereby diminishing the dimensional tolerance to which the openings have to be manufactured. It will be apparent that the number of projections 42 may vary and need not be in the form of ribs or if they are in the form of ribs they need not necessarily extend axially.

The projections provided on either surface of the friction bush 42 or on the surface of the projecting rod may be in the form of barbs to prevent accidental removal of the shelf in a direction substantially parallel to the length of the rod.

The sleeve 34 need not necessarily be split nor need it necessarily be cylindrical provided that it substantially conforms to the cross-section of that portion of the rod member that is received within the edge of the shelf. This of course reflects the fact that the rod need not be of circular cross- section, but could be of any suitable cross-section.

A shelving assembly in accordance with the present invention need not necessarily comprise a mounting member having two projecting portions but may comprise one or more mounting members each of which may have one or more projecting portions.

Claims

1. A shelving assembly comprising a mounting member having a surface for attachment to a wall and a projecting portion extending substantially perpendicularly to the said surface, a shelf having an opening in an edge thereof in which the said projecting portion is received so that the shelf is supported by the projecting portion and can be moved relative to the mounting in a direction substantially parallel to the extent of the projecting portion, and a friction bush comprising a sleeve carried on the projecting portion and so engaging with the projecting portion that the bush is held against movement in a direction substantially parallel to the extent of the projecting portion, the sleeve having an external surface provided with at least one deformable projection which engages the opening in the edge of the shelf so as to resist movement of the shelf away from the mounting member in a direction substantially parallel to the extent of the projecting portion.

2. A shelving assembly in accordance with claim 1 wherein the sleeve is held against said movement by the reception of at least one projection provided on a first of the sleeve or projecting portion within at least one recess provided on the other of the said sleeve or projecting portion.

3. A shelving assembly in accordance with claim 2 wherein the said at least one projection is provided on an internal surface of the sleeve and the said at least one recess is provided on the projecting portion.

4. A shelving assembly in accordance with claim 2 wherein the said at least one projection is provided on the projecting portion and the said at least one recess is provided on an internal surface of the sleeve.

5. A shelving assembly in accordance with any preceding claim wherein the sleeve is split in a direction substantially parallel to the extent of the projecting portion.

6. A shelving assembly in accordance with claim 3 wherein the said at least one projection comprises a rib extending around the internal surface of the sleeve in a plane substantially normal to the axis of the sleeve and the said at least one recess comprises a cooperative groove extending around the projecting portion in a plane substantially normal to the extent of the projecting portion.

7. A shelving assembly in accordance with any preceding claim wherein the projecting portion is an elongate rod.

8. A shelving assembly in accordance with any preceding claim wherein the said at least one deformable projection comprises a plurality of axially extending, angularly spaced ribs.

9. A shelving assembly in accordance with any preceding claim wherein the sleeve is of a deformable plastics material.

10. A friction bush for use in preventing relative movement between a shelf and a mounting member a portion of which is received by and extends within an opening in an edge of the shelf comprising a sleeve having at least one projection on an internal surface thereof to engage with at least one recess provided on that portion of the mounting member that receives the sleeve to hold the bush against movement in a direction substantially parallel to the extent of the projecting portion, and at least one deformable projection on an external surface thereof to engage within the opening in the edge of the shelf so as to resist movement of the shelf away from the mounting member in a direction substantially parallel to the extent of the projecting portion.

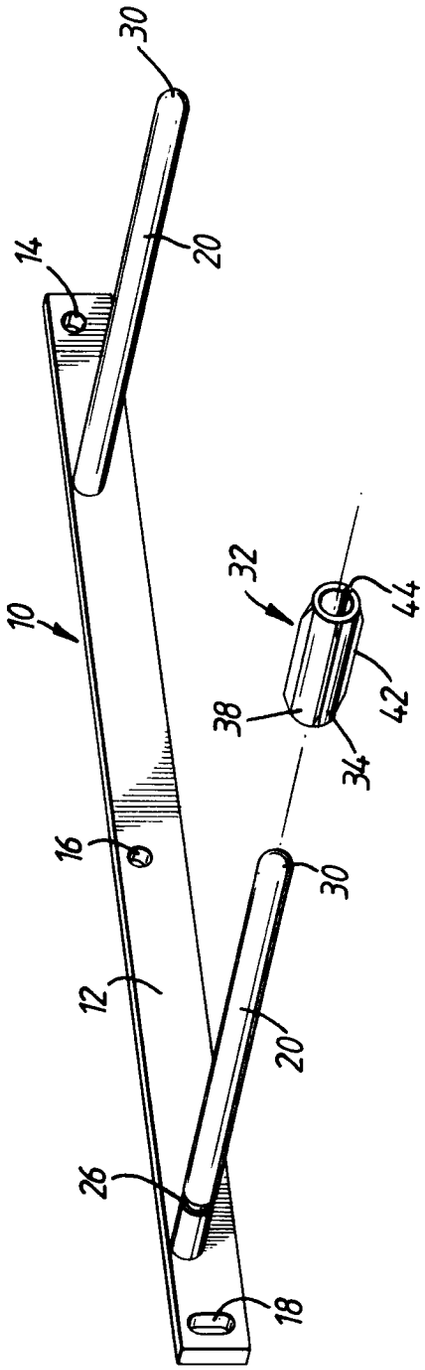

Fig.1.

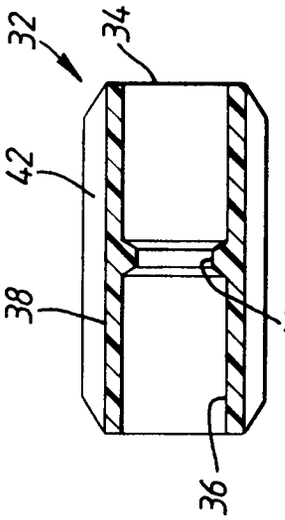

Fig.3.

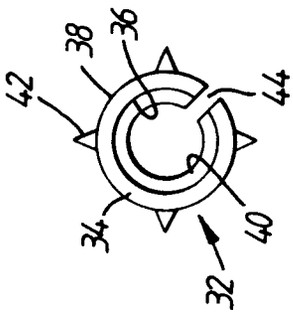

Fig.2.

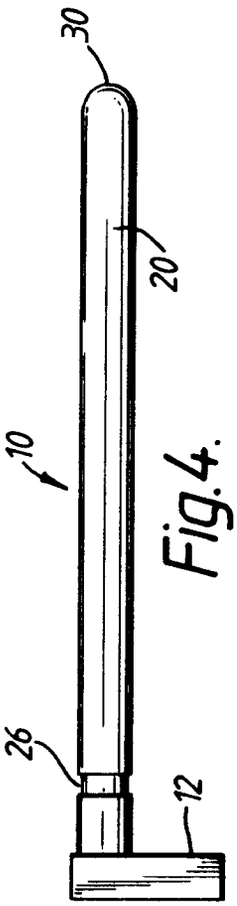

Fig.4.

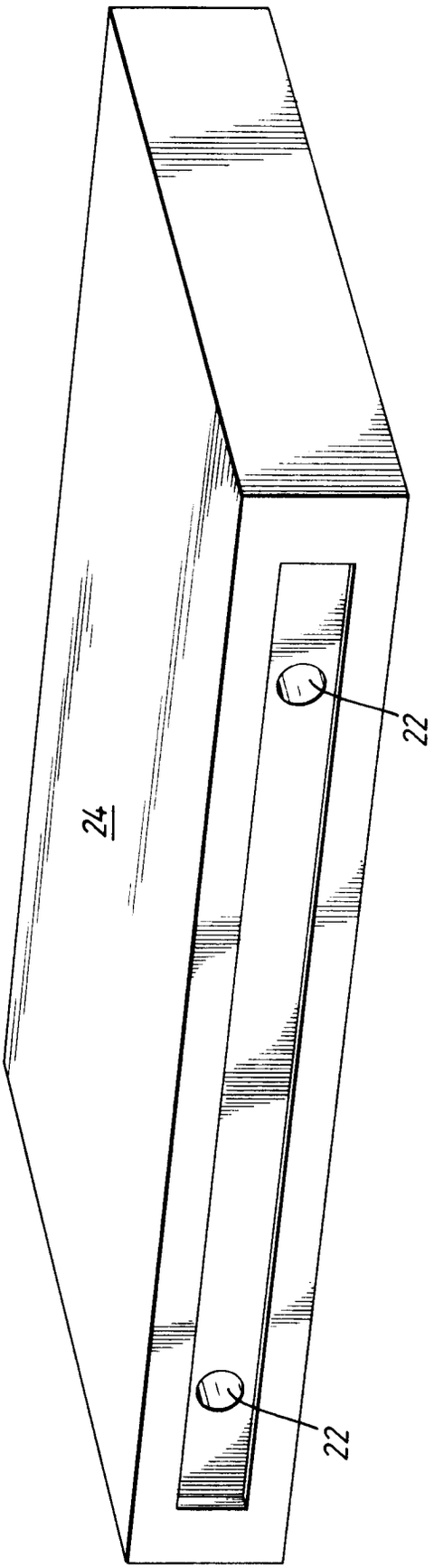

Fig.5.

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EUROPEAN SEARCH REPORT

Application Number

EP 91 31 0970

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	GB-A-867 322 (SPERRING) * claim 6; figures 2,3 * ---	1,2,3,7	A47B96/06 A47B96/02
A	US-A-3 563 626 (FERDINAND, KULBERSH) * abstract; figure 19 * * column 5, line 48 - line 52 * ---	1,2,4	
A,O	GB-A-2 214 414 (BELLPLEX LTD.) * abstract; figures 1A,1B * ---	1	
A	US-A-4 736 997 (BESORE, RWARK) -----		

TECHNICAL FIELDS SEARCHED (Int. Cl.5)
A47B A47F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	11 MARCH 1992	JONES C.T.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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