

EUROPEAN PATENT APPLICATION

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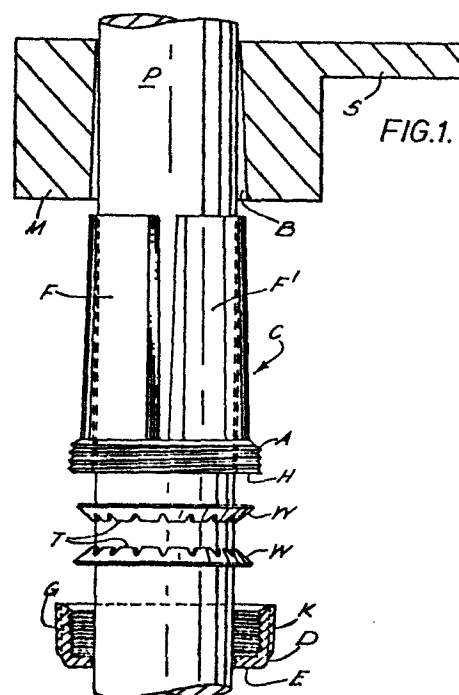
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Post gripping system.

A supported shelf system comprises a collar (C) mounted on a post (P) and engaging the shelf. The collar has a lower threaded part (A) which is engaged by a nut (D) having an internal thread. According to the invention a washer (W) having teeth (T) is present between the collar (A) and the nut (D) and is compressed when the nut (D) is threaded on to provide an improved gripping effect.



POST GRIPPING SYSTEM

This invention relates to a post gripping system, e.g. for shelving, and more particularly to a system in which a shelf or the like is to be at any chosen height along a post or other upright which may be plain or smooth, i.e. not formed with holes or other location means for the shelf.

It is known from GB-A-2106971 to locate a collar on an upright post to support a corner of a shelf, the collar being rotated to cause an intervening gripping member to hold the collar to the post. The gripping member may be a coiled spring of rectangular cross-section.

It is also known from GB-A-451680 to secure one telescopic post length within another by threading the end of the host post length to receive an internally threaded nut and to locate a gripping member in between. The member takes the form of two split rings which are compressed when the nut is threaded on the host post length, and so exert a frictionally gripping effect. The interior surfaces of the

post lengths are shaped to receive the rings.

It is also known from GB-A-969534 to provide a clip with a bore to engage rod, the inner wall of the bore having inwardly extending tongues to frictionally engage the rod, the clip including a finger to release the tongues from gripping the rod.

In our GB patent application 83.26254 (2129674A), we have described and claimed a shelf system comprising a plurality of upright posts and at least one shelf, the shelf having mounting parts mounted on collars located on the posts, each collar comprising a split sleeve having an internal smooth surface, the sleeve comprising a base part having an external thread, an upper part engaged with the mounting part of the shelf, and a nut having an internal thread engaged with the base part and urging the collar base part to the post by urging the two sides of the sleeve towards each other.

It is an object of this invention to provide a system for locating a shelf on a post, which system can be used on a smooth or plain surface post, does not require the use of tools and which will provide an improved gripping engagement of the support collar and the post.

According to this invention, there is provided a supported shelf assembly having at least one post, at least one collar surrounding and movable longitudinally of the post, the collar having an upper shelf supporting means to engage in wedging manner a mounting part of the shelf and a lower externally threaded part, an annular body member having a base surrounding the post with a sidewall upstanding therefrom and having an internal thread adapted to engage the external thread of the collar characterised in that at least one frusto conical washer surrounds the post between the collar and the body member and in that the inner periphery of the washer has teeth whereby when the washer is compressed between the collar and the body the teeth are caused to grip the post.

Any or all of the components of the system may be of metal or a suitable plastic material.

Preferably two, similar, washers are located on the post between the collar and body member, the washers being in a mutually inverted relationship and tapering towards one another. Preferably each washer is of a flexible but non-elastomeric material, such as metal or a suitable plastics material, and each is preferably formed with a series of

circumferentially spaced slits which open to the smaller diameter periphery of the washer but do not extend to the larger diameter periphery. Each of these slits may be substantially parallel-sided with a U-shaped base or may be of trapezium shape tapering outwardly of the washer, so that the smaller-diameter end of the undeformed frusto-conical washer has a castellated appearance and the castellations represent shallowly curved or blunt teeth which will grip the post under a strong gripping action but without inflicting severe damage or marking.

The outer surface of the sidewall of the body member is preferably knurled or otherwise provided with means to facilitate gripping and turning it by hand. The outer surface may also have flats engageable by a spanner-like tool.

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

Figure 1 is a side elevation, partly in section, of a shelving system in accordance with the invention, and Figure 2 is a view in perspective and on an enlarged scale of one of the washers W shown in Figure 1.

The shelving system comprises a post P, which may be a cylindrical post having a plain or smooth surface, which supports a shelf S by the interengagement of a collar C with a mounting part M on the shelf. The mounting part M is integral with the shelf and has a frusto-conical bore B through which the post P passes. The collar C is a sliding fit on the post P and has upwardly-directed finger portions F, F1 etc. which, when received in the bore B will deflect into contact with the post. The collar C has a lower externally threaded part A.

The collar C, and therefore the shelf S, is held in a chosen position along the post P by screwing a base member D shown in cross-section in Figure 1 on to the part A. The member D has an annular bottom part E in a plane perpendicular to the axis of the post P, the inner periphery of the bottom part being a sliding fit on the post. Upstanding from the outer periphery of the collar part E is an annular sidewall G which is internally screw-threaded to engage the screw-threads of part A of the collar.

Between the collar C and base D two similar washers W surround the post P. These are dimensioned to be received within the sidewall G and to be compressed between the

bottom H of the collar C and the bottom E of the base D when the collar is tightened onto the post. Each ring is a complete circle and has no splits or cut outs so that a complete gripping circle about the post is provided.

The washers W are frusto-conical and are arranged on the post P so that they taper towards one another. The periphery of the larger diameter end of each washer is plain but the periphery of the smaller-diameter end of each is formed with circumferentially-spaced, blunt teeth T separated by recesses U.

In the unstressed condition of each washer W the teeth T surround but are slidable over the post P. The effect of flattening the washer (i.e. reducing its axial length) when compressed between the collar C and base D is to flatten the washer to cause the teeth T to bite into and grip the post P.

It will be evident that it is not essential to provide two washers W. One may serve or more than two may be provided. Variation is also possible in the attitude of each washer W on the post P.

Each washer W is preferably of spring metal or a resilient

plastics material. Preferably it is not of an elastomeric material because of the degradation of such material when exposed to low temperatures, e.g. if the shelving system were used in a cold store.

To assist in turning the base D its outer periphery may be knurled as at K or provided with formations for engagement by a suitable tool.

CLAIMS

1. A supported shelf assembly having at least one post (P), at least one collar (C) surrounding and movable longitudinally of the post (P), the collar (C) having an upper shelf supporting means (F) to engage in wedging manner a mounting part (M) of the shelf and a lower externally threaded part (A), an annular body member (D) having a base surrounding the post (P) with a sidewall (G) upstanding therefrom and having an internal thread adapted to engage the external thread (A) of the collar (C) characterised in that at least one frusto conical washer (W) surrounds the post (P) between the collar (C) and the body member (D) and in that the inner periphery of the washer (W) has teeth (T) whereby when the washer (W) is compressed between the collar (C) and the body (D) the teeth (T) are caused to grip the post (P).
2. An assembly according to Claim 1 characterised in

that two washers (W) are present, and they are in mutual inverted relation and taper towards one another.

3. An assembly according to Claim 1 or 2 characterised in that each washer (W) has a series of circumferential slits (U) which define the teeth (T), the slits (U) being open to the smaller diameter of the washer but do not extend to the larger diameter periphery.
4. An assembly according to Claim 3 characterised in that castellations (T) are formed between the slits (U), and have shallowly curved or blunt teeth which will grip the post (P) without causing the post severe damage or marking.
5. An assembly according to any preceding Claim characterised in that the or each washer (W) is a complete circle.
6. An assembly according to any preceding Claim characterised in that the collar (C) has upstanding fingers (F, Fl,) which between them define a slot, and the connecting part (M) of the shelf (S) includes a dimple (not shown) to be received in the slot to hold the collar (C) and shelf (S) together and prevent relative movement while the body member (D) is further hand tightened.

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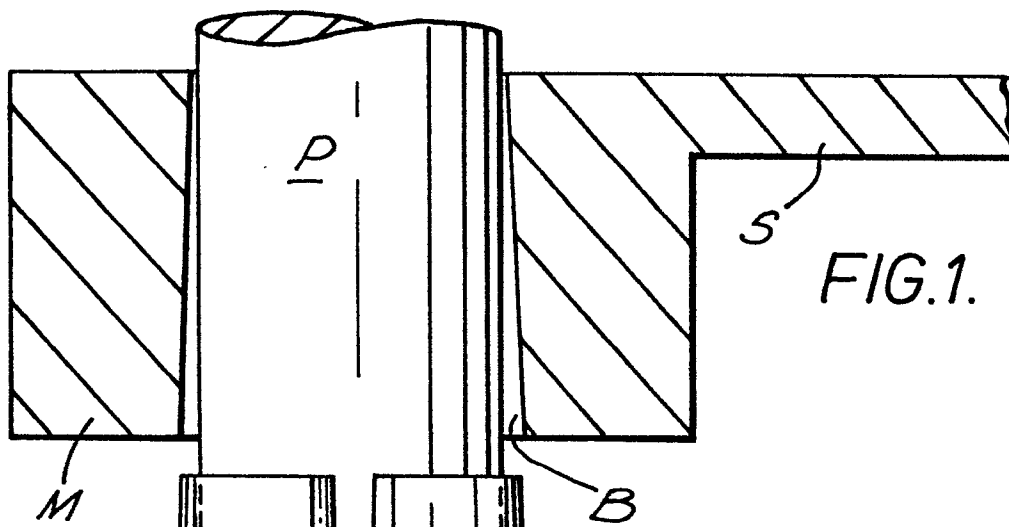


FIG. 1.

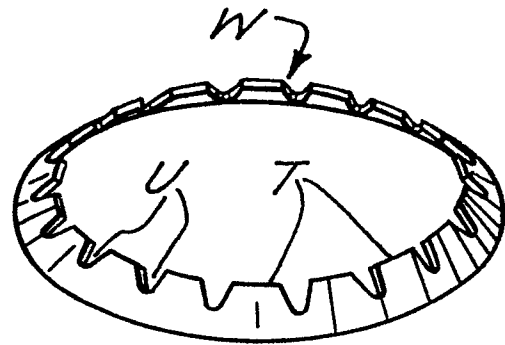
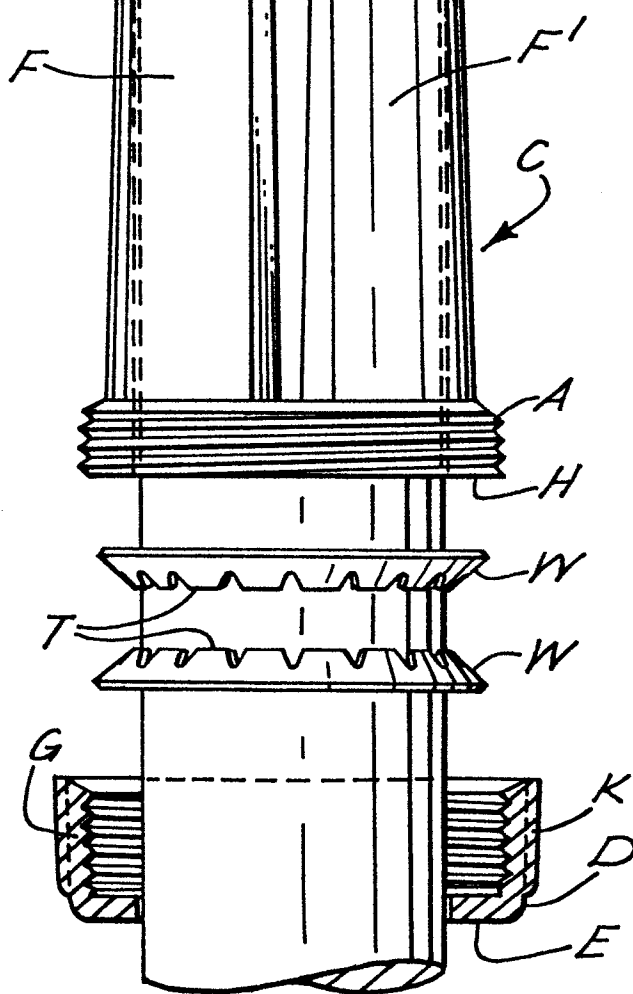


FIG. 2.



European Patent
Office

EUROPEAN SEARCH REPORT

0179613
Application number

EP 85 30 7465

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. 4)
Y	GB-A- 451 680 (CLAYFIELD) * Page 2, lines 36-76; figures 2,3 *	1	A 47 B 57/26
D,A	---	2	
Y	GB-A- 969 534 (CARR FASTENER) * Claim 1; figure 1 *	1	
D,A	---	3,4	
Y	FR-A-1 403 015 (LE GOC) * Page 2, right-hand column, paragraph 7; figures 1,4 *	1	
A	---	5	TECHNICAL FIELDS SEARCHED (Int. Cl. 4)
A,D	GB-A-2 109 671 (CRAVEN) * Abstract; figure 1 *	1,6	A 47 B A 47 F F 16 B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 21-01-1986	Examiner SCHMITTER BERNARD
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			