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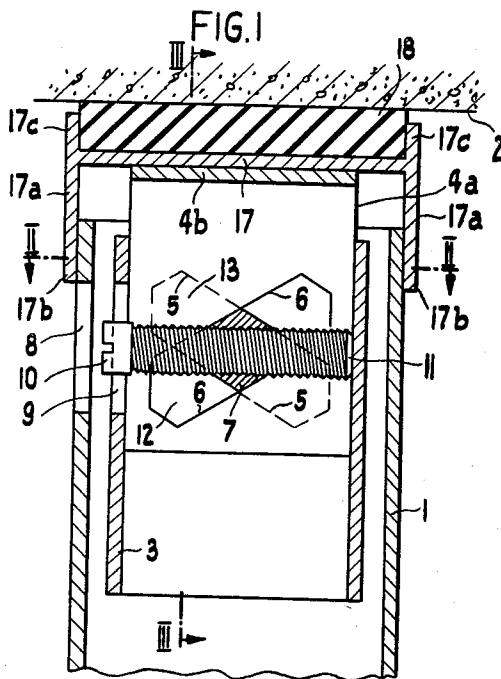
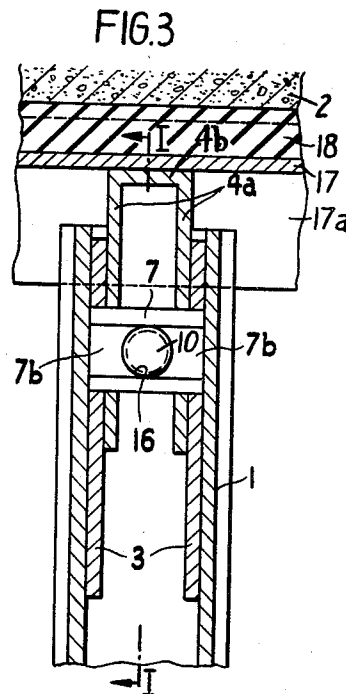
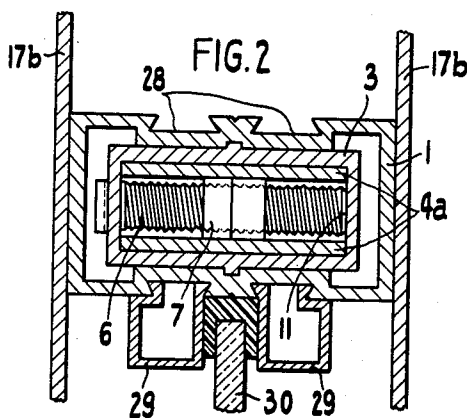
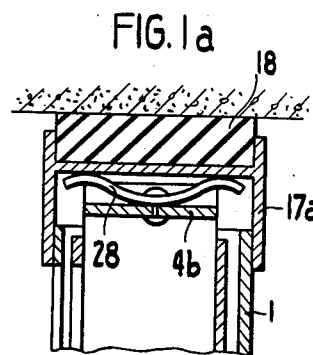
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2,949,983

MEANS FOR SUPPORTING AND CLAMPING A HOLLOW METAL
POST RELATIVELY TO CEILINGS OR WALLS

Filed Jan. 13, 1959

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

FIG. 4

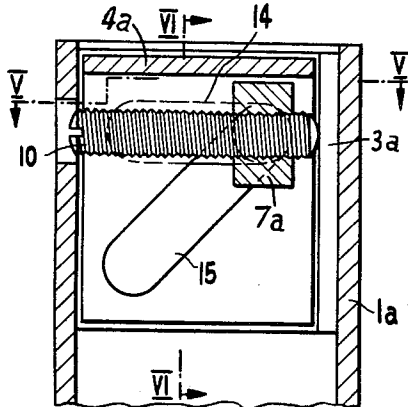


FIG. 5

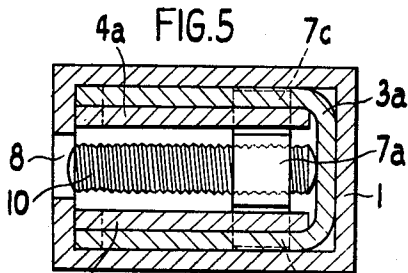
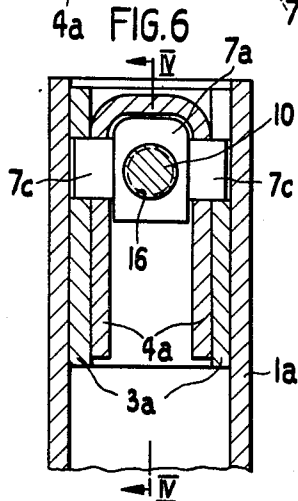


FIG. 6



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MEANS FOR SUPPORTING AND CLAMPING A HOLLOW METAL POST RELATIVELY TO CEILINGS OR WALLS

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The invention relates to a means for supporting and clamping a hollow metal post relatively to ceilings or walls. Such hollow metal posts are more especially required for components of a portable glass partition.

In one known constructional form, there is employed as tightening means a vertically arranged tightening screw bolt which is adapted to be screwed with its lower thread portion into a cross-member fixed in the hollow post and is supported with its head against the ceiling, and which comprises in its middle portion a hexagon which is arranged above the end of the post and serves for screwing the tightening bolt by means of a hexagonal spanner. This tensioning means has certain fundamental disadvantages.

On erecting the portable glass partition, the connecting bars can only be fitted subsequently, i.e. after tightening the posts. This assembly of the connecting bars is difficult and requires technically skilled workmen, and it is also to be born in mind that two connecting bars must always be fixed independently of one another on both sides of the post. With the prior known construction, there is a considerable spacing between the ends of the post and the ceiling, and therefore very wide connecting bars are necessary, which are not only undesirable from an architectural point of view, but necessitate a considerable expenditure for material. With this construction, moreover, the tensioning bolt or the screwthread thereof must take up the full tensioning force and even substantially stronger forces which can arise with a relatively heavy ceiling load. Having regard to this heavy loading of the tightening bolt, a comparatively heavy construction is necessary.

These disadvantages are obviated by the supporting and tensioning means according to the invention, which is characterised by the following essential parts: an adjusting element to be fixed in the hollow post, a vertically displaceable pressure element which is guided in this adjusting element, slide surfaces on the adjusting element and pressure element at an acute angle to one another, a sliding ring or block in the form of a nut bearing on these slide surfaces, and a horizontally arranged tensioning screw which is accessible through lateral openings in the hollow post and adjusting element and which supports the sliding ring or block, the said screw being supported at one end on the adjusting element.

This new arrangement for hollow metal posts has inter alia the following advantages: the connecting bars can be already fitted before assembling and tightening the posts. In this case, the two connecting bars on both sides of the posts or uprights can be combined in one member in the form of a U-section rail. This produces a considerable simplification in the assembly, so that skilled workmen are not necessary for this purpose. Since, moreover, the tensioning screw of the new tensioning arrangement is arranged inside the post and is accessible from the side, the end of the post can extend as far as the immediate vicinity of the ceiling, so that comparatively narrow connecting bars can be used.

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With this new construction, moreover, the sliding block substantially takes up the tensioning force or ceiling load, while only comparatively small forces are operative on the tensioning screw serving to adjust the sliding block. This tensioning screw can therefore be made comparatively light and in addition permits easy tightening of the post with considerable clamping forces between the post and ceiling or floor.

Embodiments of the invention are shown by way of example in the accompanying drawings, in which:

Fig. 1 is a vertical section on the line I—I of Fig. 3 showing a hollow post with tensioning means,

Fig. 1a is a vertical section illustrating another embodiment of the invention,

Fig. 2 is a cross-section on the line II—II of Fig. 1,

Fig. 3 is a section on the line III—III of Fig. 1,

Fig. 4 is a vertical section on the line IV—IV of Fig. 6 showing a second embodiment of a tensioning means,

Fig. 5 is a cross-section on the line V—V of Fig. 4, and

Fig. 6 is a vertical section on the line VI—VI of Fig. 4.

In Figures 1-3, the reference 1 represents a support in the form of a hollow post which forms a part of a portable glass partition. The tensioning means serving to clamp this post or upright between the floor and ceiling 2 consists of a guide means formed by a guide element 3 fixed in the hollow post, a vertically displaceable pressure means in the form of a pressure element 4a, 4b guided in this guide element, slide surfaces 5 and 6 on the guide element 3 and pressure element 4a, respectively, and inclined at an acute angle to one another, a sliding member or block 7 formed as a nut and supported on these slide surfaces and a horizontally arranged tensioning screw 10 which is accessible through lateral openings 8 and 9 formed in the hollow post 1 and element 3, respectively, and which supports the sliding block 7, the said screw bearing at one end at 11 on the guide element which at its portion engaging screw 10 forms a means preventing longitudinal movement of screw 10 in one direction. With the particularly advantageous embodiment which is illustrated in Figs. 1 to 3, the pressure element consists of a U-section member with vertically arranged arms 4a and a cross-piece 4b, while the element 3 consists of a rectangular section member embracing the said arms 4a. In the constructional form shown in Figs. 4 to 6, guide element consists of a U-section member 3a embracing the arms 4a. In both constructional forms, the sliding block 7 or 7a engages at both ends 7b and 7c in slots 12, 13 and 14, 15 respectively, which are inclined relatively to one another, while its middle portion disposed between the arms 4a of the pressure element comprises a female screwthread 16 for the tensioning screw 10. In the constructional form according to Figures 1 to 3, the sliding block has a hexagonal contour, which co-operates by its inclined surfaces with the slide surfaces 5 and 6. Moreover, the slots 12 and 13 formed in the pressure element and guide element, respectively, are arranged symmetrically of the horizontal. The tensioning screw 10, which is accessible through the lateral slot 8 of the hollow post can for example be turned by means of a screw-driver. By this rotation, the sliding block 7 is displaced horizontally, whereby the pressure element 4a, 4b is displaced vertically in the guide element 3. By turning the tensioning screw 10, the post can therefore conveniently and without effort be clamped between the floor and ceiling. The cross-piece 4b of the pressure element is supported against the cross-piece 17 of an I-shaped connecting rail. As will be seen from Fig. 1, this connecting rail comprises flanges 17b and 17c which are of unequal length and which together form the connecting bars 17a.

As will be seen from Fig. 1, the connecting rail accommodates the hollow post 1 between the long flanges 17b while a resilient pad 18 of rubber or the like is arranged

in the space between the web 17 and short flanges 17c, the said pad serving to bear against the ceiling or wall. By means of this rubber pad 18, an elastic tensioning of the post 1 is obtained.

An additional elastic tensioning can of course also be obtained by interposition of a spring, for example a leaf spring 28, as shown in Fig. 1a of the drawing.

The tensioning means according to the invention can also be constructed in accordance with Figures 4 to 6. In this case, the slots 14 in the guide element 3a are arranged horizontally, while the slots 15 in the pressure element are arranged at a suitable inclination. The cylindrical ends 7c of the sliding block 7a engage in the slots 14 and 15 which cross each other. It will be seen that the slots 12 and 13 also cross each other.

Figure 1 only shows the support of the hollow post 1 in relation to the ceiling 2. For supporting this post on the floor, there is also employed a connecting rail which corresponds to the connecting rail 17, 17a. The lower end of the hollow post fitted into the connecting rail is supported directly on the web or cross-piece of this connecting rail. As shown in Figure 2, the previously described hollow posts 1 together with the tensioning means form part of a partition. As shown in Figure 2, dovetail grooves 28 are provided on both sides of the hollow post, these grooves serving for the securing of suitable additional sections, for example glazing strips 29 which serve for mounting a pane of glass 30.

I claim:

1. A support, comprising a hollow metal post formed with a lateral access opening near one end thereof; a guide element fixed within one end of said post, formed with a lateral access opening in register with the access opening of said post and provided with a slide surface; a pressure element guided by said guide element for displacement relative thereto axially of said post and provided with a slide surface inclined at an acute angle to said first-mentioned slide surface; a nut slidably engaged with said first- and second-mentioned slide surfaces; and a tensioning screw disposed transversely to the axis of said post in screw-threaded engagement with said nut, said screw having one of its ends accessible through the lateral openings of said post and said guide element and its other end bearing against said adjusting element, said slide surfaces being constituted by edges of mutually inclined slots formed respectively in said guide element and said pressure element.

2. A support according to claim 1, wherein said nut has two sets of external surfaces slidably engaging the edges of said slots.

3. A support according to claim 1, wherein the pressure element is a U-section member having two limbs extending parallel to the axis of said post and each formed with one of said inclined slots, the guide element is a rectangular member embracing both limbs of the pressure element and the nut has two end portions slidably engaged respectively in the inclined slots in said two limbs and a middle portion disposed between said two limbs.

4. A support, comprising a hollow metal post formed with a lateral access opening near one end thereof; a guide element fixed within one end of said post, formed with a lateral access opening in register with the access opening of said post and provided with at least one slot inclined with respect to the axis of said post; a pressure element mounted in and guided by said guide element for displacement relative thereto axially of said post and provided with at least one slot inclined with respect to the axis of said post at an equal angle to the first-mentioned slot but

in the opposite direction; a hexagonal nut slidably engaged in both of said slots; and a tensioning screw disposed transversely to the axis of said post in screw-threaded engagement with said nut, said screw having one of its ends accessible through the lateral openings of said post and said guide element and its other end bearing against said guide element.

5. A support according to claim 1, wherein a surface-engaging pad is mounted on the outer end of the pressure element so as to be axially movable with respect thereto and a leaf spring is arranged between said pressure element and said surface-engaging pad.

6. A support, comprising a hollow metal post formed with a lateral access opening near one end thereof; a guide element fixed within one end of said post, formed with a lateral access opening in register with the access opening of said post and provided with a slide surface; a pressure element mounted in and guided by said guide element for displacement relative thereto axially of said post and provided with a slide surface inclined at an acute angle to and extending across said first-mentioned slide surface; a nut slidably engaged with said first- and second-mentioned slide surfaces; a tensioning screw disposed transversely to the axis of said post in screw-threaded engagement with said nut, said screw having one of its ends accessible through the lateral openings of said post and said guide element and its other end bearing against said guide element; a connecting rail of I-section having flanges of unequal length arranged with its longer flanges slidably engaging the end part of the post; and a resilient surface engaging pad arranged in the space between the web and the shorter flanges of the connecting rail.

7. A support comprising, in combination, an elongated support member adapted to extend almost all the way between a pair of surfaces such as a floor surface and a ceiling surface; guide means fixed to said support member adjacent an end thereof; pressure means slidably guided by said guide means for movement axially of said support member beyond said end thereof into pressing engagement with one of said surfaces, said guide means and pressure means being respectively formed with a pair of slide surfaces located beside and crossing each other; a slide member extending transversely of the axis of said support member and transversely of said slide surfaces and slidably engaging the latter, said slide member being subjected to a shearing stress due to the location of said slide surfaces beside each other; a screw member extending perpendicularly with respect to said axis and said slide member threadedly engaging said slide member; and means cooperating with said screw member for preventing longitudinal movement thereof in one direction.

8. A support according to claim 1, wherein said guide element is in the form of a hollow tube of rectangular cross section.

9. A support according to claim 1, wherein said guide element is of a U-shaped configuration having a pair of legs and an end wall extending between said legs, and said tensioning screw engaging said end wall.

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