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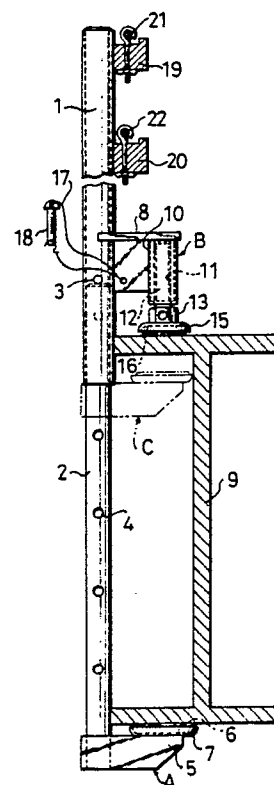
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54 **Stanchion or post.**

57 A stanchion or post suitable for use as a supporting post attachable to a scaffolding plate or board (9) on which a workperson can stand, said stanchion or post comprising inner and outer tubes (1, 1a), (2, 2a) and a clamping means (A, B) so that it can be clamped to the scaffolding plate or board (9) or any other support, which clamping is performed by sliding the inner and outer tubes (1, 1a), (2, 2a) relative to each other and/or by adjusting the clamping means (A, B) together with the inner and outer tubes (1, 1a), (2, 2a), or independently.

Fig.1



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STANCHION OR POST

The present invention relates to a stanchion or post, and more particularly, but not exclusively, to a stanchion or a supporting post suitable for supporting a handrail of scaffolding for supporting workers and working machines in building construction sites, ship building and repair, civil engineering work, etc.

In general, in building construction, ship building, assembly and repair or civil engineering work, most of the work is performed at heights considerably higher than ground level by using scaffolding. Handrails are provided on such scaffoldings by means of stanchions having tubes or ropes secured thereto, which scaffolding is assembled by arranging walkway plates or boards to the side of the object being constructed or repaired in order to enable the safe movement of workers or operating machinery. As for road works, wires or ropes are stretched horizontally in order to limit the construction site.

In order to stretch ropes and wires, and support horizontal tubes and other means to scaffolding or to limit a construction site, it is necessary to provide a stanchion for supporting such ropes, wires, tubes and other means. To provide scaffolding and construction sites with such stanchions, welding to other steel materials, clamping by using bolts and nuts, binding by ropes or any other methods are applied, which not only require very troublesome work upon their installation and removal, thus lowering the working efficiency, but also they are very uneconomical because of the requirement of many workers, tools and components.

Moreover, depending upon the condition of the construction site many posts or stanchions of different lengths are often required which results in considerable expense by requiring large numbers of components differing in length. Further, when the thickness of the plates or boards used for scaffolding vary, it is inevitable to have to use the stanchions corresponding to the thickness of the plates or boards used. In addition, the fixing of ropes or wires to stanchions by knotting also results in bad economy of operation together with very low operative efficiency.

According to the present invention there is provided a stanchion or post for clamping to a support plate or board, comprising an elongate member, clamping means provided on said elongate member for clamping the elongate member to a said support plate or board, said clamping means including a bolt in screw-threaded engagement with a screw-threaded part carried by said elongate member, said bolt having a first clamping member;

and a second clamping member carried by said elongate member and disposed parallel with and spaced from said first clamping member, said bolt being rotatable to move said first clamping member towards and away from said second clamping member; and means provided on said elongate member for supporting a handrail or a rope at a position located above the clamping means.

Some embodiments of the present invention will now be described, by way of example, with reference to the accompanying drawings, in which:-

Figure 1 is a side elevational view of a stanchion according to a first embodiment of the present invention, showing the stanchion mounted on a scaffolding plate or board;

Figure 2 is an enlarged cross-sectional view of a clamping means of the stanchion of Figure 1;

Figure 3 is a side elevational view of a modified stanchion according to a second embodiment of the invention;

Figure 4 is a side elevational view of another modified stanchion according to a third embodiment, showing a modified clamping means;

Figure 5 is a plan view of a fitting for receiving a rope, the fitting being mounted on the stanchion of Figure 4;

Figure 6 is a side elevational view of a further modified stanchion according to a fourth embodiment;

Figure 7 is a side elevational view of a still further modified stanchion according to a fifth embodiment, showing the location of the clamping means having been changed;

Figure 8 is a side elevational view of a still further modified stanchion according to a sixth embodiment;

Figure 9 is a cross-sectional view taken along line A - A of Figure 8;

Figure 10 is a perspective view of an upper portion of an inner tube; and

Figures 11 and 12 are half cross-sectional views respectively showing elastic materials used in the stanchion of Figure 8.

Figures 1 and 2 show a first embodiment of the invention, in which the stanchion or post comprises a tubular body 2 which is vertically slidably inserted in an outer tubular body 1. The outer body 1 is provided with a plurality of holes 3 located at equally spaced vertical locations along its height. The inner tubular body 2 is also provided with holes 4 in correspondence with the holes 3 provided in the outer tubular body 1 and at equal spacing. A laterally extending bracket 5 is fixed to the lower end of the inner tubular body 2, and a

dish 7 is provided on a bracket 5. The dish 7 contains an elastomeric material 6, such as hard rubber, and the dish 7 and the elastomeric material 6 form the lower part A of a clamping means.

The clamping means includes a freely expandible upper part B which is fixed to the outer tube 1 by a bracket 8 and which extends downwardly. The clamping means constituted by the lower part A and upper part B serves to clamp against the scaffolding plate or board 9 from both sides of the plate or board.

The upper part B of the clamping means comprises a cylindrical body 10 and a nut 1 fixed within the cylindrical body 10. A bolt 12 is engaged with the cylindrical body 10 through the nut 11 and may be threadably adjusted therein vertically. To the lower end of the bolt 12 is fixed a dish 15 which is fixed by the head portion 13 of the bolt 12 and a nut 14. An elastomeric material 16, such as hard rubber, is contained in the dish 15. A pin 18 is connected to the bracket 8 through a chain 17 and can be inserted through aligned holes 3 and 4. The stanchion is secured to the scaffolding plate or board 9 by the following steps:

If the thickness of a scaffolding plate or board 9 is considerably large, the inner tube 2 is slidably extended in correspondence with the thickness of the scaffolding plate or board 9 and at the location to align the hole 3 of the outer tube 1 with a hole 4 of the inner tube 2, and the pin 18 is inserted through the aligned holes 3 and 4 to fix the inner tube 2. With this arrangement, it is possible to adjust the length of the stanchion composed of the outer tube 1 and the inner tube 2.

Subsequently, the elastomeric material 6 of the lower clamping means A is applied to the lower surface of the scaffolding plate or board 9, and the upper clamping means B is located above the upper surface of the scaffolding plate or board 9. Thereafter, the elastic material 16 is applied to the plate or board 9 by rotating the head 13 of the bolt 12 and lower it. As a result, the scaffolding plate or board 9 is tightly clamped by means of the upper and lower parts A and B of the clamping means to fix the outer and inner tubes 1 and 2 tightly to the scaffolding plate or board 9. If the thickness of a scaffolding plate or board 9 is considerably small, it is possible to mount the stanchion to the scaffolding plate or board 9 simply only by sliding the inner tube 2 upwardly and by adjusting the upper part B of the clamping means.

After completion of the mounting of the stanchion to the scaffolding plate or board 9, it is possible to form a handrail by attaching ropes 21 and 22 to fittings 19 and 20 provided on the upper portion of the outer tube 1.

The stanchion shown in Figure 3 is substantially similar to the embodiment of Figures 1 and 2

except that the inner tube 2a is of a considerably larger length. The configuration of this stanchion is suitable where it is not required to adjust the stanchion length.

The inner tube 2a is slidably inserted through a short outer tube 1a, and an upper portion B of the clamping means is fixed to the outer tube 1a. In this case, the outer tube 1a is adapted to slide vertically on the outer surface of the inner tube 2a in order to adjust the height of the upper part B of the clamping means. The configuration and the operational procedure of the lower part A of the clamping means, the holes 3 and 4, the fitting 19 for the rope and the pin 19 are similar to the embodiment of Figures 1 and 2.

The stanchion shown in Figure 4 has a modified clamping means, which comprises an upper part E and lower part D on the extended line of the axis of the stanchion. In this configuration, to the lower end of a hollow post 23, a bolt 24 is screw-threadedly mounted for vertical movement, and to the lower end of the bolt 24, a clamping base 28 having a shape of a downwardly expanding bell-mouth is fixed through the head of the bolt 24. Moreover, to the distal end of the base 28, a cushioning elastomeric material is provided to form the upper portion E of the clamping means together with the bolt 24 and the clamping base 28. A C-shaped supporting member 29 is fixed at one end to the lower end of the post 23 and provided at the other end of the member 29 is a clamping base 30 having the shape of upwardly extending bell-mouth and located on the extended axis of the stanchion. Provided on the upper surface of the base 30, is an elastomeric material 31 so as to form a lower part D of the clamping means together with the clamping base 30.

At the upper end of the stanchion 23, as shown in Figure 5, is a fitting 32 for fixing a tube or rope, the fitting 32 being formed in a ring-shape in side elevation, and the distal ends 32a and 32b of the fitting 32 are opposed and separated by an appropriate gap so as to enable a one-touch mounting of a rope or tube within the fitting 32 through the gap provided therebetween the ends 32a, 32b.

As to the embodiment of the stanchion mentioned above, a scaffolding plate or board 33 is inserted between the upper and lower clamping bases 28 and 30, and the end of the scaffolding plate 33 is engaged with the inside of the C-shaped supporting member 24 while the bolt 24 is rotated by means of its head 26 so as to lower the upper clamping means E and to clamp the opposite surfaces of the scaffolding plate or board 33 by means of the elastomeric materials 28 and 31 enabling the tight mounting of the stanchion to the scaffolding plate or board 33. It is possible to form a handrail by inserting a rope or a tube into the

mounting member 32 under the condition as mentioned above.

In another embodiment shown in Figure 6, a stanchion is formed in a substantially similar way as of the embodiment shown in Figure 5, while in this case the mounting position of the clamping means of the stanchion is vertical.

In the embodiment shown in Figure 6, a cylindrical body 34 is fixed horizontally at the lower end of a stanchion 23a. A bolt 24 is screw-threadedly inserted through the cylindrical body 34 for movement in the lateral direction. On the right hand end of the bolt 24 as viewed in Figure 6, a clamping base 26 of a bellmouth shape is fixed by way of a head 27 for rotation. An elastomeric material 28 is fixed to the end of the clamping base 26 to form one side clamping means E' together with the bolt 24 and the bellmouth-shaped clamping base 26. Fixed to the lower portion of the stanchion 23a is a horizontal supporting member 35 having a J-shaped, and to the distal end of the supporting member 35 is provided a clamping base 30 having a bellmouth shape which is disposed opposite the bellmouth-shaped clamping base 26 forming a complete clamping means E'. The end of the clamping base 30 of the bellmouth-shape is covered with an elastomeric material 31 to form another part of the clamping means.

In the embodiment shown in Figure 6, a plate or board member 36 is inserted between the two parts of the clamping means E' and D', and upon abutment of the distal end of the member 36 with the J-shaped member 35, the bolt 24 is rotated to make rightward motion so as to clamp the member 36 by means of the two parts E' and D' of the clamping means and to complete the tight mounting of a stanchion 23 to the member 36 upright. This configuration is appropriate to mount a stanchion to a member 36 standing upright.

A fitting 32 for a rope or tube is mounted on the upper end of the stanchion 23a.

In the embodiment shown in Figure 7, which is a modification of the embodiment shown in Figure 4, a stanchion is constructed so as to cope with the situation, in which the thickness of the member 52 on which it is to be mounted is too thin or too thick to allow clamping by means of fine adjustment of the clamping system as mentioned above. In this case, the supporting post itself is constructed slidably so as to adjust the clamping width. In such case, the inner tube 37 to be used as a stanchion is slidably inserted into an outer tube 38 of an appropriate length. These tubes are fixed at the suitable location for required length by inserting a pin 41 through aligned holes 39 and 40 provided in the respective tubes 37 and 38. The pin 41 is connected to a reinforcing piece 42 mounted to the outer tube 38 by means of a cord 43. The lower

end of the post 37 is engaged by a bolt 44 for relative vertical motion, and a clamping base 46 is fixed to the bolt 44 by way of a head 45 of the bolt 44. An elastomeric material 46a covers the end or fills the clamping base 46. An upper portion G of a clamping means is formed by the bolt 44, the clamping base 46 and the elastomeric material 46a. A C-shaped or J-shaped supporting rod member 47 is fixed to the outer tube 38 by welding the upper end thereto and the other end of the member 47 is provided with a clamping base 48 located opposite to the clamping base 46 and covered or filled with an elastomeric material 48a to form a lower portion of a clamping means F. A hole or holes 49 are provided to the upper portion of the post 37 to be engaged by a hook bolt 50 so as to mount a rope or tube 51.

In the stanchion as shown in Figure 7, when the thickness of a scaffolding plate or board 52 is very large, it is possible to clamp such a plate by sliding the outer tube 38 downwardly to lower the supporting member 47 so that the gap between clamping bases may widen and by clamping tightly the scaffolding plate or board 52 inserted therebetween by means of the upper and lower portions F and G of the clamping means after the fine adjustment with the bolt 44. By providing the hook bolt 50 with a tube or rope 51, it is possible to form a complete handrail.

Figure 8 to 12 show a further modified stanchion which is similar in construction and operation with the embodiment of Figure 1 except that some parts are modified. Therefore, like reference numerals designate similar parts, and their detail description is omitted.

In the embodiment of Figure 8, an inner tubular body 2a is slidably inserted through an outer tubular body 1a. The outer tubular body 1a is in the shape of a cylinder with its lower end 1b of a small diameter, while the inside tubular body 2a is in the shape of a hollow rectangular shape, as shown in Figure 9.

As shown in Figure 10, the inside tubular body 2a has in its upper end a pair of diametrically opposed cut-outs a, forming a pair of tongues 2b, each extending obliquely outwardly from a peripheral edge of the respective cut-out a and serving as a stop.

The inside tubular body 2a may be formed by shaping a cylindrical tube into a rectangular hexahedron, or a tube in the shape of a rectangular hexahedron may be used for the inside tubular body 2a. The rectangular hexahedron causes an increased degree of strength and serves to prevent the inside tubular body 2a from being displaced in circumferential directions.

The inside tubular body 2a is inserted into the outer tubular body 1a from the upper end thereof

and; as the upper end of the inside tubular body 2a arrives at the lower end of the outer tubular body 1a, the two tongues 2b are brought into engagement with the small-diameter portion, thus preventing the inside tubular body 2a from being removed from the outer tubular body 1a. With this arrangement, it is unnecessary to provide a special stop, and the inside and outer tubular bodies 2a, 1a can be assembled together with ease.

One or more mounting members 32 are mounted on a peripheral surface of the outer tubular body 1a, through which members a handrail such as a rope or tube may be threaded. The structure of these mounting members 32 is identical with that of Figure 5.

A hook bolt d is inserted horizontally through the upper portion of the outer tubular body 1a and is secured at one end by a nut e. The hook bolt d is adapted to receive or support a handrail in the form of a tube.

A dish 7a mounted on the bracket 5 has a central hole, through which a downwardly tapered locking portion 6b of the elastomeric material 6a is to be forcibly inserted at that time the diameter of the locking portion 6b becomes smaller and, upon insertion, then recovers under its own elasticity, thus preventing the elastomeric material 6a from being removed from the dish 7a.

A dish 15 disposed at the upper part B has an inside taper surface, in which an upwardly outwardly diverging taper surface f (Figure 12) of the elastomeric material 16a is to be fitted so as to prevent the elastomeric material 16a from being removed from the dish 15.

The outer tubular body 1a has in its lower portion a pair of holes 3a, while the inside tubular body 2a has a plurality of holes 4a spaced at equal distance twice the distance between the two holes 3a in the outer tubular body 1a. With these holes 4a, the inside tubular body 2a can be varied in the range of vertical adjustment. For instance, if the distance between the adjacent holes 3a is 60 mm and the distance between the holes 4a is 120 mm, the inside tubular body 2a can be longitudinally adjusted within a range from 60 mm to 180 mm.

With the stanchion according to the present invention, the following advantageous results can be achieved:

(1) The stanchion can be attached to a plate or board as a scaffolding plate or board, irrespective of the thickness of the plate or board.

(2) Since the inside tubular body is tightened by means of a bolt and nut, a very simple mounting work can be achieved.

(3) Since the inside tubular body can be accommodated within the outer tubular body, the stanchion can be longitudinally reduced into a

compact size convenient to carry about and easy to keep in storage.

Claims

1. A stanchion or post for clamping to a support plate or board, comprising an elongate member (1, 2; 2a, 3; 23, 23a; 37, 38; 1a, 2a), clamping means (A, B; D, E; D', E'; F, G) provided on said elongate member for clamping the elongate member to a said support plate or board (9, 33, 36, 52), said clamping means including a bolt (12, 24) in screw-threaded engagement with a screw-threaded part (10, 11, 34) carried by said elongate member, said bolt having a first clamping member (16); and a second clamping member (7) carried by said elongate member and disposed parallel with and spaced from said first clamping member (16), said bolt (12, 24) being rotatable to move said first clamping member (16) towards and away from said second clamping member (7); and means (19, 21; 20, 22; 32; 50; c,d) provided on said elongate member for supporting a handrail (51) or a rope at a position located above the clamping means.

2. A stanchion as claimed in claim 1, in which said elongate member comprises first and second vertically extending tubular support members (1, 1a), (2, 2b), means for fixing said first and second support members in an adjusted telescopic position with one of said members extending outwardly from the other of said members, and said clamping means (A, B) carried by said first and second tubular support members (1, 1a), (2, 2a) includes a screw-threaded cylinder (10) on said first tubular support member (1, 1a), a bolt (12) threaded into said cylinder (10) and having an outer end with a first flat engagement surface (15), a second flat clamping surface (7) carried by said second tubular member (2, 2a) and parallel to and opposed to said first clamping surface (15), said bolt (12) being threadably adjustable to move said first clamping surface (15) toward and away from said second clamping surface (7), said first tubular member having at least one fitting (32) extending outwardly from said first tubular member (1, 1a) for supporting a said rope or handrail (51) at a location spaced above said first clamping surface (15).

3. A stanchion as claimed in claim 2, in which said second tubular support member (2, 2a) is a tube of rectangular cross-section and has at its upper end an outwardly diverging stop (2b) and said first tubular supporting member (1, 1a) is a tube of a circular cross-section and has at its lower end a reduced diameter portion.

Fig.1

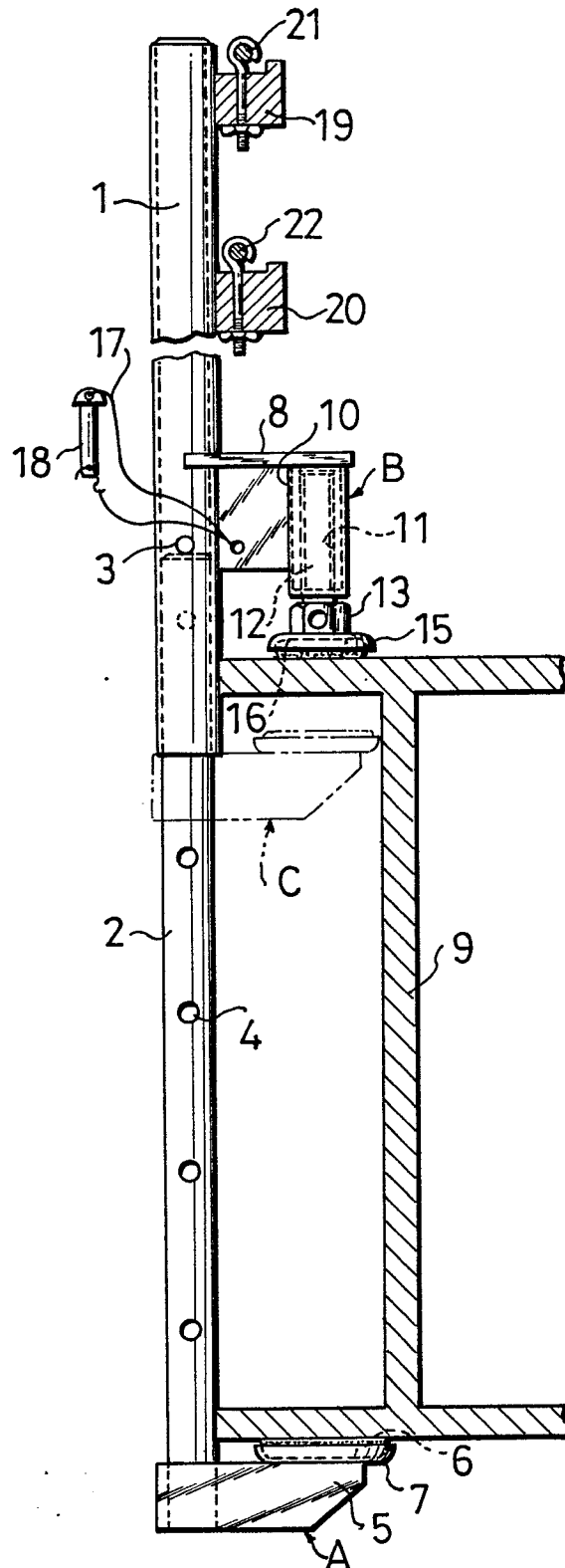


Fig.2

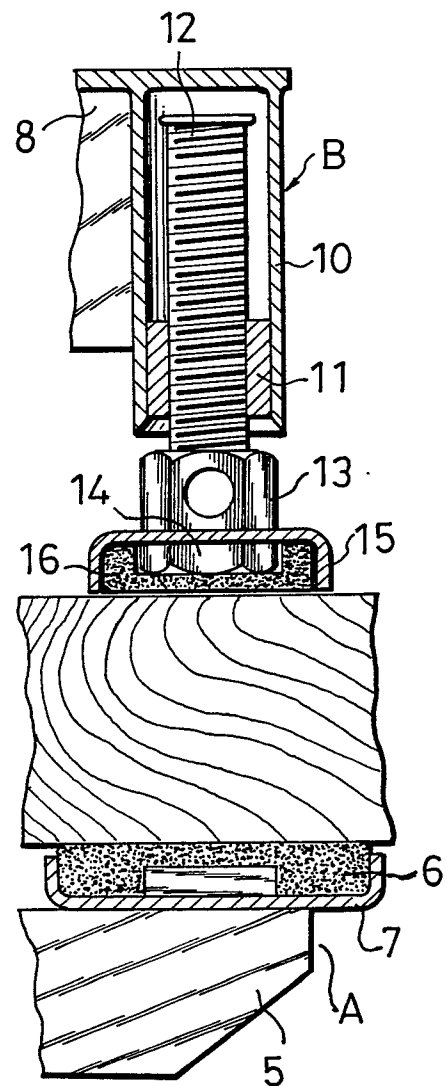


Fig. 6

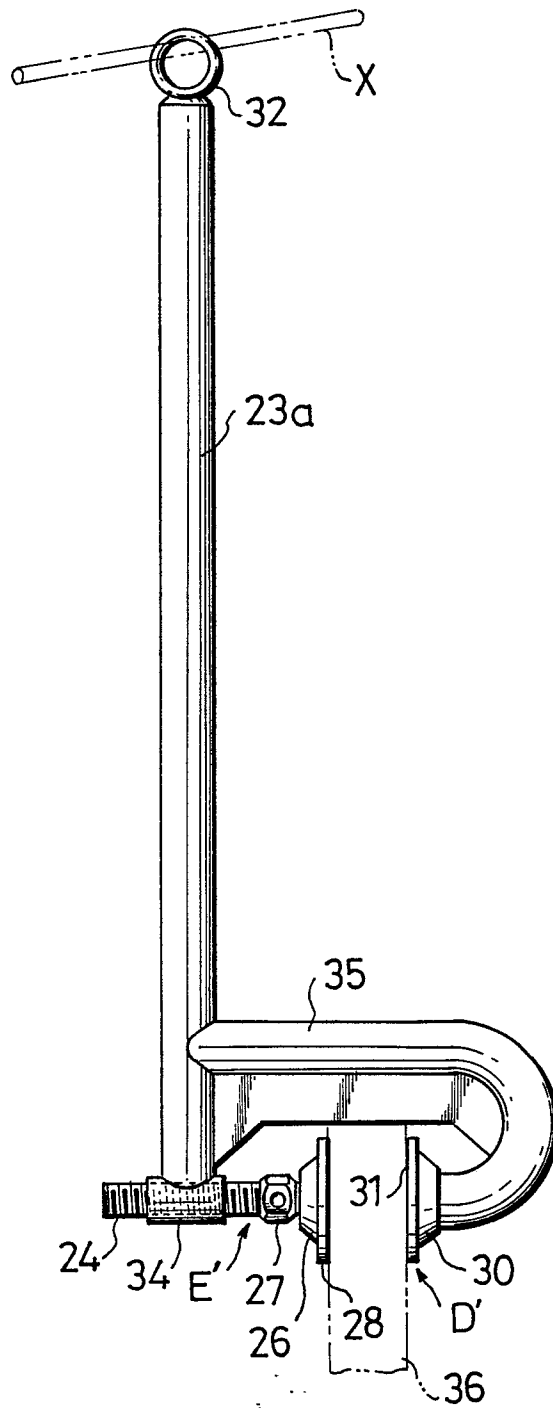


Fig. 7

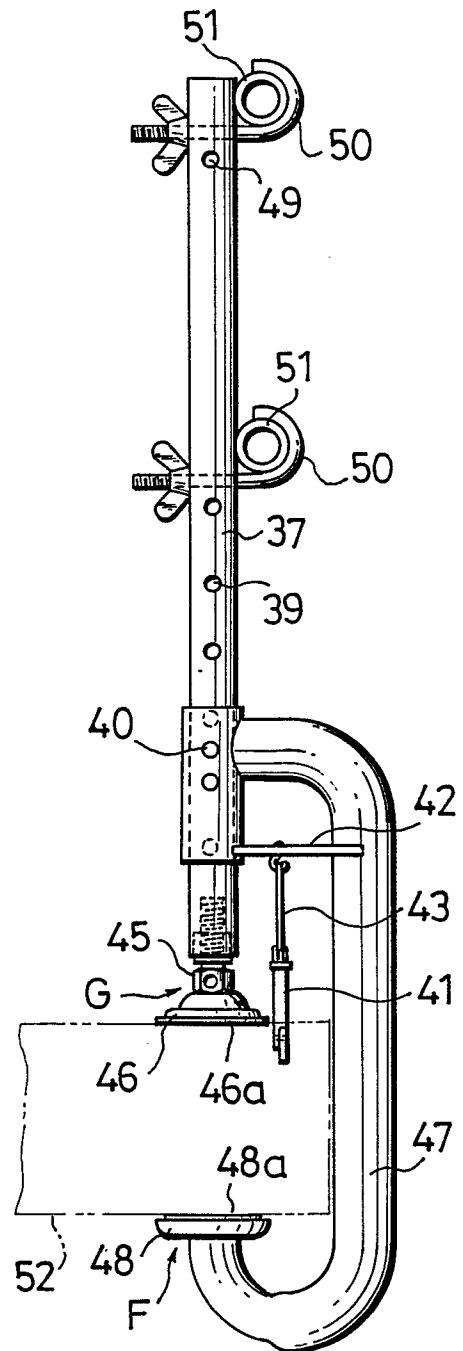


Fig.8

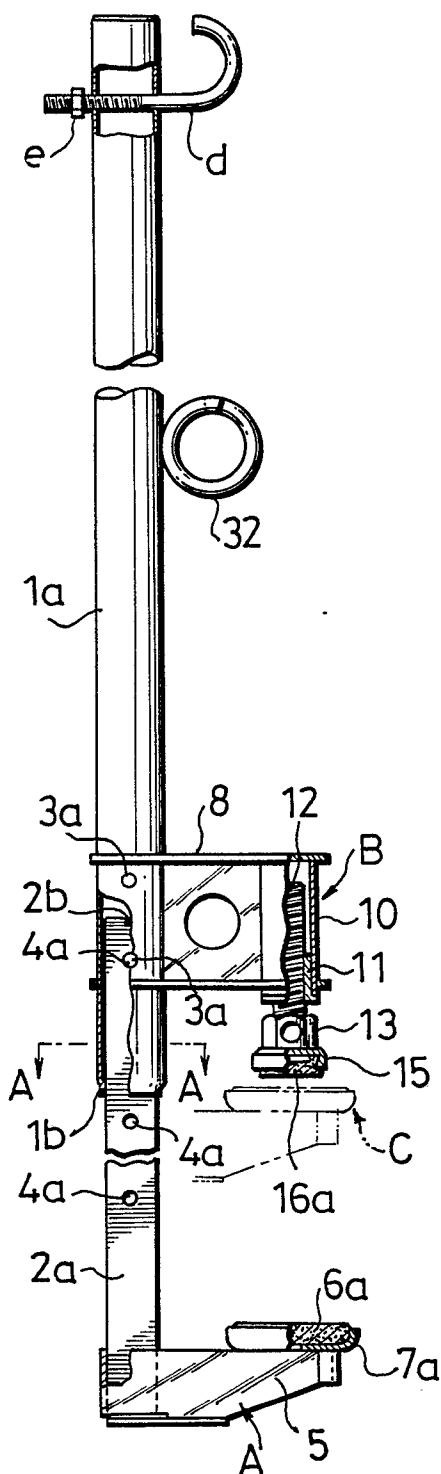


Fig.9

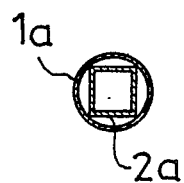


Fig.10

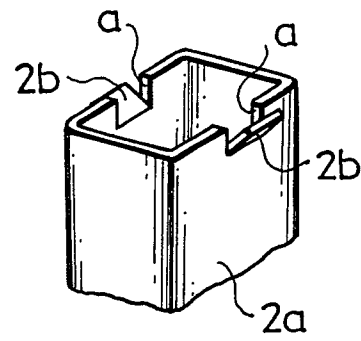


Fig.11

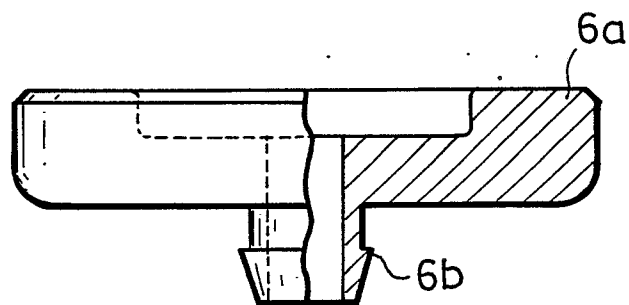
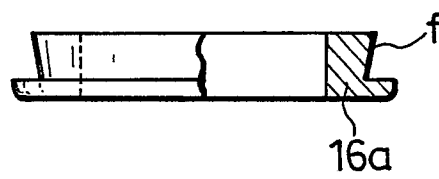


Fig.12





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)
X	US-A-3 938 619 (KURABAYASHI) * Column 2, lines 16-68; columns 3,4; column 5, lines 1-14; figures 1-7 *	1,2	E 04 G 21/32
A	US-A-3 946 992 (ELIAS) * Column 2, lines 24-68; column 3; figures 1-3 *	1,3	
A	US-A-3 980 278 (ELIAS)		
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			E 04 G
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 08-11-1988	Examiner VIJVERMAN W.C.
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			