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Description

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 scaffolding 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 scaffoldings 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.

Patent specification US-A-3938619 describes a stanchion for clamping to a support structure of the type comprising: an elongate member; a tubular member slidably mounted on the elongate member; means for releasably fixing the tubular member to the elongate member in any selected one of a plurality of positions; a pair of parallel opposed clamping jaws mounted on the elongate member and tubular member, respectively, one of the jaws comprising a screw-threaded socket into which an

adjustable screw-threaded jaw-piece is fitted, such that, with the fixing means holding the tubular member at a desired position on the elongate member, the jaws can be clamped onto the support structure with one of the members extending upwardly from the structure; and a fitting mounted on the upwardly extending member for supporting a rope or handrail.

Specifically, the stanchion of US-A-3938619 has support members of circular cross-section, and the fixing means comprises a pin which is passed through selectively aligned holes in the support member. A disadvantage with this known stanchion is that, during adjustment of the overall length of the stanchion, the support members may come completely apart. Also, when lining up the holes for the pin of the fixing means, it is necessary to adjust one support member with respect to the other rotationally in addition to longitudinally.

According to the invention, there is provided a stanchion for clamping to a support plate or board, comprising: an elongate member; a tubular member slidably mounted on the elongate member; means for releasably fixing the tubular member to the elongate member in any selected one of a plurality of positions; clamping means including a pair of parallel opposed clamping jaws mounted on the elongate member and tubular member, respectively, a first one of the jaws comprising a screw-threaded socket into which an adjustable screw-threaded bolt having a first jaw-piece is fitted, and the other jaw being disposed parallel with and spaced from the first jaw, such that, with the fixing means holding the tubular member at the desired position on the elongate member, the jaws can be clamped onto the support structure with one of the members extending upwardly from the structure, the bolt being rotatable to move the first jaw towards and away from the other jaw; and a fitting mounted on the tubular member for supporting a rope or handrail at a position located above the clamping means, characterised in that: the elongate member has a rectangular cross-section; the tubular member has a complementary rectangular portion so that the tubular member and the elongate member are prevented from rotating relative to each other; and means are provided to prevent the elongate member and tubular member becoming disengaged when the releasable fixing means is released.

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 the prior art 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 the present invention;

Figure 4 is a cross-sectional view taken along line A-A of Figure 3; and

Figure 5 is a perspective view of an upper portion of an inner tube of Figure 3.

Figures 6 and 7 are half cross-sectional views respectively showing elastic materials used in the stanchion of Figure 3.

Figures 1 and 2 show a known device, 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 11 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.

Figures 3 to 7 show a stanchion according to an embodiment of the invention which is similar in construction to some extent, to the stanchion of Figure 1. Therefore, like reference numerals designate similar parts, and their detail description is omitted.

In the embodiment of Figure 3 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 4.

As shown in Figure 5, 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.

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 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 rectangular it will not move circumferentially relative to the outer tubular body and since it is tightened by means of a bolt and nut, a very simple mounting 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 for clamping to a support plate or board, comprising:
 - an elongate member (2a);
 - a tubular member (1a) slidably mounted on the elongate member (2a);
 - means (3a, 4a) for releasably fixing the tubular member (1a) to the elongate member

in any selected one of a plurality of positions;

clamping means including a pair of parallel opposed clamping jaws (A, B) mounted on the elongate member and tubular member, respectively, a first one of the jaws (B) comprising a screw-threaded socket (11) into which an adjustable screw-threaded bolt having a first jaw-piece (15) is fitted, and the other jaw (A) being disposed parallel with and spaced from the first jaw (B), such that, with the fixing means holding the tubular member at the desired position on the elongate member, the jaws can be clamped onto the support structure with one of the members extending upwardly from the structure, the bolt being rotatable to move the first jaw (B) towards and away from the other jaw (A); and

a fitting mounted on the tubular member for supporting a rope or handrail at a position located above the clamping means,

characterised in that:

the elongate member has a rectangular cross-section;

the tubular member has a complementary rectangular portion (1a) so that the tubular member and the elongate member are prevented from rotating relative to each other; and

means are provided to prevent the elongate member and tubular member becoming disengaged when the releasable fixing means is released.

2. A stanchion as claimed in claim 1, wherein the disengagement preventing means comprises an outwardly diverging stop at an end of the elongate member within the tubular member.
3. A stanchion as claimed in claim 1 or 2, wherein the clamping jaws have respective snap-fitted clamping pads.

Patentansprüche

1. Ständer für eine Klemmverbindung mit einer Stützplatte oder einem Brett mit einem länglichen Teil (2a), einem auf dem länglichen Teil (2a) gleitbar angeordneten rohrförmigen Teil (1a), Einrichtungen (3a, 4a) zur lösbaren Befestigung des rohrförmigen Teils (1a) auf dem länglichen Teil in irgendeiner Stellung, die unter einer Vielzahl von Stellungen ausgewählt ist, Klemmeinrichtungen mit einem Paar parallel einander gegenüberliegender Klemmbacken (A, B), die auf dem länglichen Teil bzw. rohrförmigen Teil befestigt sind, wobei eine erste der Backen (B) eine Buchse (11) mit Schraub-

- gewinde umfaßt, in welche ein einstellbarer Bolzen mit Schraubgewinde und mit einem ersten Backenteil (15) eingepaßt ist und wobei die andere Backe (A) parallel zu der ersten Backe (B) und im Abstand von dieser derart angeordnet ist, daß, wenn die Befestigungseinrichtungen das rohrförmige Teil in der erwünschten Stellung auf dem länglichen Teil halten, die Backen auf der Stützkonstruktion mit einem der sich von der Konstruktion aus aufwärts erstreckenden Teile festgeklemmt werden können, wobei der Bolzen drehbar ist, um eine erste Backe (B) zu der anderen Backe (A) und von dieser weg zu bewegen, und einer auf dem rohrförmigen Teil befestigten Vorrichtung zum Halten eines Seiles oder eines Handlaufes in einer Stellung oberhalb der Festklemmeinrichtungen,
- dadurch gekennzeichnet, daß**
- das längliche Teil einen rechteckigen Querschnitt hat,
- das rohrförmige Teil einen komplementären rechteckigen Abschnitt (1a) hat, so daß das rohrförmige Teil und das längliche Teil daran gehindert sind, sich gegeneinander zu verdrehen, und
- Einrichtungen vorgesehen sind, um zu verhindern, daß das längliche Teil und das rohrförmige Teil voneinander gelöst werden, wenn die lösbaren Befestigungseinrichtungen gelöst werden.
2. Ständer nach Anspruch 1, bei dem die ein Lösen verhindernde Einrichtung am einen Ende des länglichen Teils in dem rohrförmigen Teil einen nach außen gehenden Anschlag aufweist.
3. Ständer nach Anspruch 1 oder 2, bei dem die Klemmbacken jeweils Klemmkissen mit Schnappsitz haben.
- douille taraudée (11) dans laquelle un boulon fileté réglable comportant une première pièce de serrage (15) est emboîté, et l'autre mâchoire (A) étant disposée parallèlement à la première mâchoire (B) et espacée de cette mâchoire, de manière que, avec le moyen de fixation maintenant l'élément tubulaire à la position souhaitée sur l'élément allongé, les mâchoires puissent être serrées sur la structure de support avec un des éléments s'étendant vers le haut depuis la structure, le boulon pouvant être tourné pour rapprocher et éloigner la première mâchoire (B) de l'autre mâchoire (A); et
- une fixation montée sur l'élément tubulaire pour supporter une corde ou une main courante en une position située au-dessus du moyen de serrage,
- caractérisé en ce que :
- l'élément allongé a une section transversale rectangulaire;
- l'élément tubulaire comporte une portion rectangulaire complémentaire (1a) de manière que l'élément tubulaire et l'élément allongé soient empêchés de tourner l'un par rapport à l'autre; et
- des moyens sont prévus pour empêcher l'élément allongé et l'élément tubulaire de se dégager lorsque le moyen de fixation amovible est libéré.
2. Poteau selon la revendication 1, dans lequel le moyen anti-dégagement comprend un arrêt allant en s'évasant à une extrémité de l'élément allongé au sein de l'élément tubulaire.
3. Poteau selon la revendication 1 ou 2, dans lequel les mâchoires de serrage comportent des patins de serrage respectifs s'encliquetant.

Revendications

1. Poteau pour fixation à une plaque ou planche de support, comprenant:
- un élément allongé (2a);
- un élément tubulaire (1a) monté de manière à coulisser sur l'élément allongé (2a);
- un moyen (3a, 4a) pour fixer, avec possibilité de détachage, l'élément tubulaire (1a) à l'élément allongé en une position sélectionnée parmi une pluralité;
- un moyen de serrage comprenant une paire de mâchoires de serrage opposées, parallèles (A, B), montées sur l'élément allongé et l'élément tubulaire, respectivement, une première (B) des mâchoires comprenant une

Fig.1

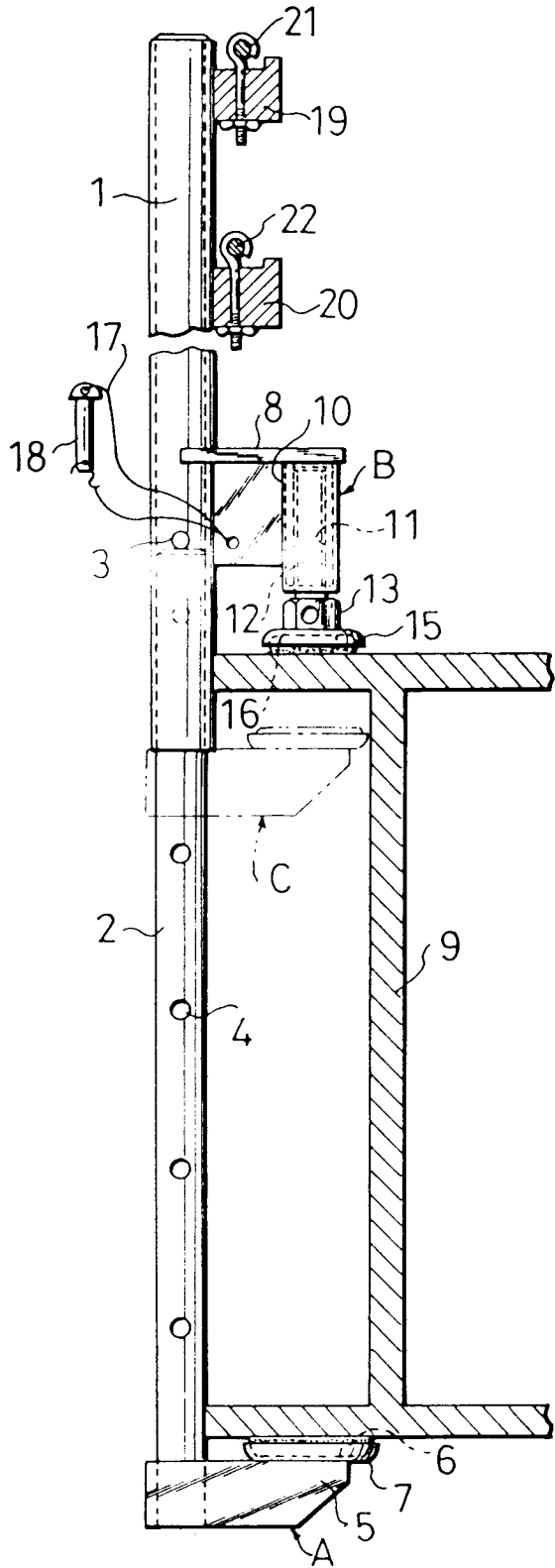


Fig.2

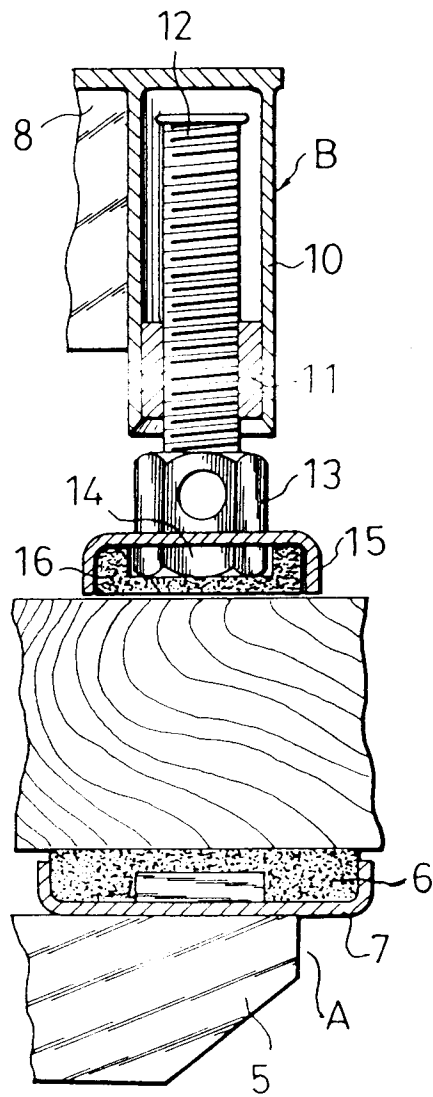


Fig.3

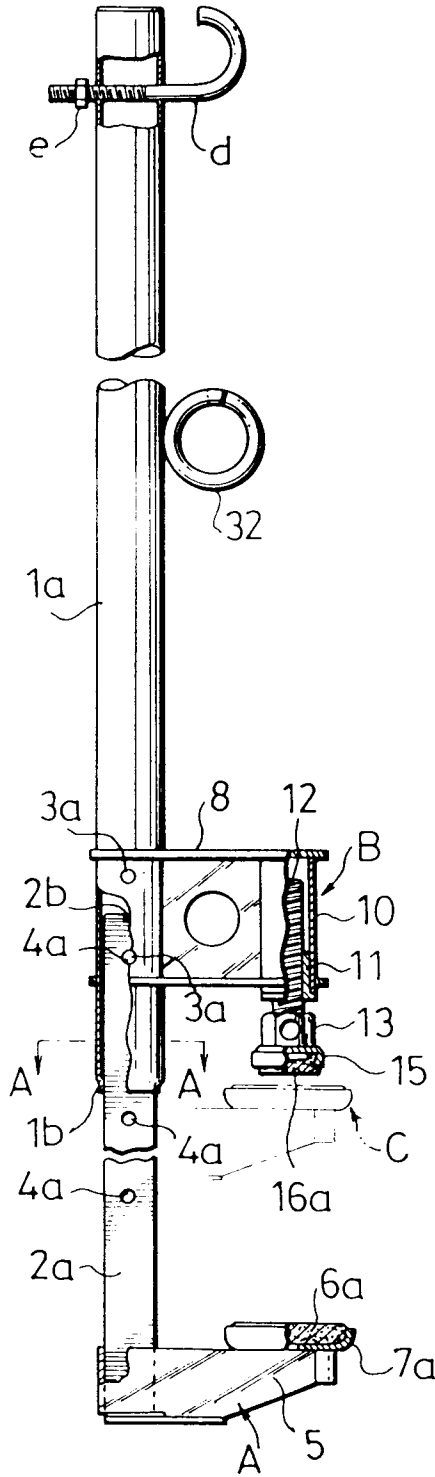


Fig.4

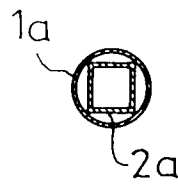


Fig.5

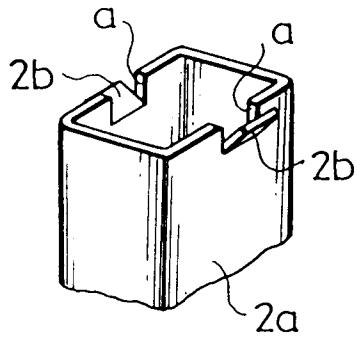


Fig.6

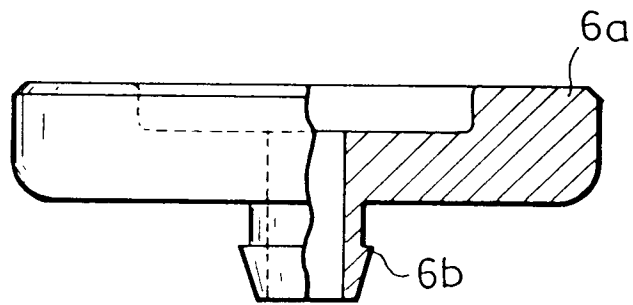


Fig.7

