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• **Gray, Aron**
Middlesbrough, Yorkshire TS6 0BH (GB)

(72) Inventors:
• **Wesson, Scott**
Middlesbrough Yorkshire TS6 0AR (GB)
• **Gray, Aron**
Middlesbrough, Yorkshire TS6 0BH (GB)

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(74) Representative: **Tomkinson, Alexandra et al**
Bailey Walsh & Co LLP
1 York Place
Leeds, LS1 2DR (GB)

(71) Applicants:
• **Wesson, Scott**
Middlesbrough Yorkshire TS6 0AR (GB)

(54) **SCAFFOLD FITTING MEANS AND METHOD OF USE THEREOF**

(57) Scaffold fitting means are provided that include attachment means for attaching the scaffold fitting means to at least one further scaffold component in use. The attachment means define at least one aperture and/or channel when in at least an attached position for the location of the further scaffold component therethrough in use. Toe board location means are provided for locating a toe board with the scaffold fitting means in use. A central or substantially central axis of the aperture and/or channel is transverse or perpendicular to a longitudinal axis of said toe board location means and/or a longitudinal axis of the scaffolding fitting means.

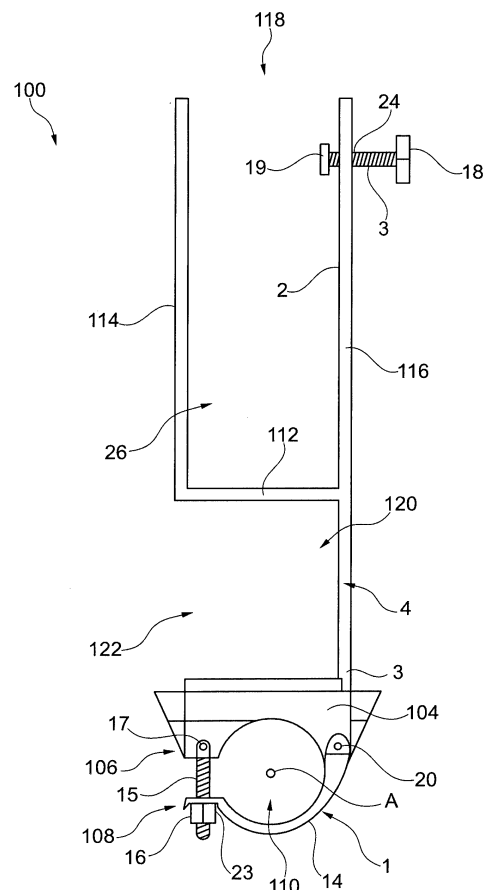


Fig. 1a

Description

[0001] This invention relates to scaffold fitting means and to a method of use thereof.

[0002] Scaffolding is a temporary structure that is typically erected around a building or structure to safely support a person and/or materials during the construction of the building or structure. The basic components of scaffolding are tubes, couplers for connecting two or more tubes together, and boards. The key elements of a scaffold are "standards", "ledgers", "transoms" and "aberdeens". The standards are typically vertical tubes that transfer the weight of the structure to the ground. Ledgers are typically horizontal tubes which are connected between standards. Transoms are typically horizontal tubes that rest upon ledgers and are located at right angles to the same. Aberdeens are typically horizontal tubes that are fitted parallel to a transom, underneath the ledger and are attached to the standards.

[0003] European safety standards typically specify the performance requirements and design arrangements for scaffolding to make currently used scaffolding systems as safe as possible. One such safety standard is that a toe board is provided on each scaffolding level to prevent tools and/or materials from being kicked off the scaffolding and landing and/or injuring a person below the scaffolding level, and/or to prevent an operative's foot from slipping off the scaffolding walkway. Toe boards are typically provided adjacent an edge of the scaffold platform and are upstanding. They are typically connected to standards in use to ensure the toe boards are securely held in place.

[0004] GB2377248 describes a scaffolding connector for connecting a toe board to a standard in use. The connector includes a toe board receiving slot for receiving an end of a toe board in use.

[0005] GB2056545 discloses a coupling device for mounting a hand guard rail and a toe board on a scaffold platform. The coupling device comprises a U-shaped recess for retaining a top edge of the toe board in use and a coupler for allowing connection to a standard.

[0006] GB2434397 discloses a security system for scaffolding comprising a restraining element suitable for location around one or more components of a scaffold and a clip. The restraining element has a U-shaped recess element for supporting a toe board in place in use.

[0007] Where a standard is not available, a "dead man" is typically used to connect the toe board in place. A "dead man" is a vertical tube that is attached to an upper and lower handrail of a scaffold system using couplers that reaches down to the toe board and holds the same in place. An example of a deadman type of connection is disclosed in GB2127887, which describes a scaffolding connector assembly for connecting a toe board to a horizontal hand rail in use. The assembly includes a vertical post having a first finial connection at one end for connection to a horizontal tube below a platform, and a clamp at an opposite end for mounting to a horizontal hand

guard rail. Two clamps are provided on the vertical post a spaced distance apart. Each clamp has a recess for supporting a toe board therebetween in use.

[0008] The "dead man" arrangement does not offer the same support as a standard. In addition, in order to fit a dead man, two ninety degree couplers and three fittings are required to be tightened using five securing nuts. This takes a fitter a significant amount of time to fit, thereby increasing labour costs, and it adds a significant amount of weight to the overall scaffolding structure and to transportation of the scaffolding structure when disassembled.

[0009] It is therefore an aim of the present invention to provide scaffold fitting means that removes the requirement for dead man fittings to be used.

[0010] It is an aim of the present invention to provide scaffold fitting means that fully complies with all safety standards, such as for example the UK Safety Standard SG4:10 guidelines.

[0011] It is a yet further aim of the present invention to provide scaffold fitting means that allows a toe board to be held more securely in use.

[0012] It is a yet further aim of the present invention to provide toe board scaffold fitting means.

[0013] It is a yet further aim of the present invention to provide a method of using scaffold fitting means.

[0014] According to a first aspect of the present invention there is provided scaffold fitting means, said scaffold fitting means including:

attachment means for attaching the scaffold fitting means to at least one further scaffold component in use, said attachment means defining at least one aperture and/or channel therein for the location of the further scaffold component therethrough in use; toe board location means for locating a toe board with the scaffold fitting means in use; and

characterised in that a central or substantially central axis of said aperture and/or channel is transverse or perpendicular to a longitudinal axis of said toe board location means and/or a longitudinal axis of the scaffolding fitting means.

[0015] Thus, the scaffold fitting means of the present invention is arranged for attachment to a horizontal or substantially horizontal further scaffold component, such as for example, a transom tube, a ledger tube and/or an Aberdeen tube. This is in contrast to prior art toe board attachment devices which are arranged for attachment to a standard or vertical scaffold component, such as a dead man. In prior art devices, the central axis of the attachment aperture is typically parallel or substantially parallel to a longitudinal axis of one or more side walls of the toe board location means. The scaffold fitting means of the present invention fully complies with the required safety standards. It has the advantage of removing the requirement of a deadman fitting which, in practice, typically removes the requirement for the use of a 5ft vertical tube, two double clip connectors and a

single clip connector. Over a large scaffolding structure, it will be appreciated that removal of a large number of deadman fittings would provide a huge cost saving, significantly reduced time to fit the scaffolding and significantly reduced weight of the scaffolding.

[0016] It is to be noted that the terms transverse and perpendicular also encompass the terms substantially transverse and substantially perpendicular respectively.

[0017] Preferably the toe board location means includes a base wall and one or more side walls protruding outwardly from said base wall. Preferably the central or substantially axis of said aperture and/or channel is transverse or perpendicular to a longitudinal axis of the side walls of the toe board location means. Preferably the longitudinal axis of the side walls is from a base edge of the side wall where it attaches to the base wall of the toe board location means, and a free edge of the side wall opposite the base edge.

[0018] Preferably the longitudinal axis of the scaffold fitting means is from a lower part of the attachment means to an upper part of the toe board location means.

[0019] Preferably the central or substantially central axis of the attachment means aperture and/or channel is non-radial or the central or substantially central axis is non-planar to the aperture and/or channel or to an open end of the aperture and/or channel.

[0020] The central or substantially central axis of the attachment means aperture and/or channel is preferably the axis passing through the centre of the aperture and/or channel. Preferably the axis runs from a front opening of the aperture/channel to a rear opening of the aperture/channel.

[0021] In one embodiment wherein the attachment means is or includes a channel, preferably the channel has a central or substantially central axis that runs longitudinally of the same. This central or substantially central axis is transverse or perpendicular to a longitudinal axis of one or more, and preferably all, side walls of the said toe board location means and/or the scaffold fitting means.

[0022] Preferably the fitting means itself has a longitudinal axis and the central or substantially central axis of the aperture/channel is transverse or perpendicular to the longitudinal axis of the fitting means.

[0023] In one embodiment wherein the attachment means is or includes an aperture, preferably the central or substantially central axis of the attachment means aperture/channel is parallel or substantially parallel to a longitudinal axis of the further scaffold component to be located through the aperture/channel in use or with a longitudinal axis of the toe board that is to be located in the toe board location means in use.

[0024] Further preferably the central or substantially central axis of the attachment means aperture/channel is arranged to be co-axial or substantially co-axial to a longitudinal axis of the further scaffold component to be located through the aperture in use.

[0025] Preferably the aperture and/or channel of the

attachment means is formed when the attachment means is in at least an attached/clamped position.

[0026] Preferably the aperture and/or channel of the attachment means is also formed when the attachment means is in a detached/unclamped position.

[0027] Preferably the attachment means aperture is circular or substantially circular in shape, and preferably particularly so when the attachment means is in a clamped or attached position.

[0028] Preferably the attachment means channel is cylindrical or substantially cylindrical in shape, and preferably particularly so when the attachment means is in a clamped or attached position.

[0029] Preferably the further scaffold component to be located through the aperture/channel in use is cylindrical or substantially cylindrical in shape.

[0030] In one embodiment the attachment means are arranged so as to allow the scaffold fitting means to be fitted to at least one horizontal or horizontally arrangeable scaffold tube in use, such as a transom, a ledger an Ab-erdeen and/or the like.

[0031] In one embodiment a first or single attachment means is provided to allow the scaffolding fitting means to be fitted to a single scaffold tube or component in use.

In an alternative embodiment a first and at least second attachment means are provided, or at least two attachment means are provided on the scaffold fitting means, to allow the scaffolding fitting means to be fitted to two or more scaffold tubes or components in use. The at least two attachment means can be located adjacent to each other or a spaced distance apart.

[0032] Preferably the first and/or at least second attachment means are movable between a clamped/attached position, and an unclamped/detached position in use. In the clamped/attached position, the attachment means is typically securely attachable to the further scaffold component. In the unclamped/detached position, the further scaffold component is typically movable relative to the attachment means for insertion or removal therefrom.

[0033] In one embodiment the attachment means includes an attachment mechanism for maintaining the attachment means in the clamped/attached position. Release and/or undoing of the attachment mechanism typically moves the attachment means from the clamped/attached position to the unclamped/detached position. Tightening and/or engagement of the attachment mechanism typically moves the attachment means from the unclamped/detached position to the clamped/attached position.

[0034] In one embodiment the aperture or channel of the attachment means is smaller in diameter, width and/or dimensions when in the clamped/attached position compared to the diameter, width and/or dimensions in the unclamped/detached position.

[0035] Preferably each of the first and/or at least second attachment means includes first and at least second clamping portions or members, parts or free ends of at

least the first and second clamping portions or members which have an attachment mechanism provided on or associated with the same to allow the clamping portions or members to be retained in the clamped/attached position in use.

[0036] Preferably the first and at least second clamping portions or members are movable between a clamped/attached position, wherein the parts or free ends of one or more of the clamping portions or members are moved towards each other for secure attachment around a scaffold component in use, and an unclamped/detached position, wherein the parts or free ends of the one or more clamping portions or members are moved away from each other to allow detachment or insertion around a scaffold component in use.

[0037] Preferably the first and at least second clamping portions or members define the at least one aperture or channel therebetween when in at least the clamped/attached position.

[0038] Preferably the first and at least second clamping portions or members form or substantially form a circle or annular member when in at least the clamped/attached position. This allows a scaffold component, such as a transom, ledger or Aberdeen, having a substantially circular cross section to be securely fitted within or between the first and at least second clamping portions or members in use.

[0039] The attachment mean and/or mechanism can include any or any combination of one or more clips, nuts and bolts, screws, inter-engagement members, clamps and/or the like. Preferably any or any part of the attachment means and/or mechanism can be pivotably mounted to the scaffold fitting means if required.

[0040] In one embodiment the toe board location means has an opening or the toe board location means includes a recess portion having an opening to said recess portion. The recess portion is preferably defined between a base wall and side walls of the toe board location means. An edge of a toe board, and preferably a base, narrow edge and/or longitudinal edge of a toe board, is typically located through said opening in use and rests in said recess portion or toe board location means.

[0041] Preferably the recess portion and/or toe board location means is shaped such that a toe board can be freely supported in said location means or recess portion without any further component being required. For example, in one example, the recess portion and/or toe board location means allows the toe board to be freely upstanding, vertical or substantially vertical therein in use.

[0042] Preferably the recess portion or toe board location means is U-shaped or substantially U-shaped.

[0043] Preferably the recess portion and/or toe board location means has a base wall and at least first and second side walls. The first and second side walls are typically parallel or substantially parallel and a spaced distance apart from each other. Preferably the first and

second side walls are provided opposite or substantially opposite to each other.

[0044] The first and/or at least second side walls typically protrude outwardly/upwardly from a surface of the base wall. Both or all side walls preferably protrude outwardly from the same surface of the base wall.

[0045] Preferably the height of the first and/or second side walls or the U-shaped recess portion is approximately, or at least, half the height of a toe board that is to be fitted in an upstanding position with the same in use.

[0046] Preferably the attachment means are located at or adjacent a first or base end of the scaffold fitting means and the opening to the recess portion and/or toe board location means are located at or adjacent a second or top end of the scaffold fitting means in use.

[0047] The first end of the scaffold fitting means is typically opposite, and preferably directly opposite, to the second end of the scaffold fitting means.

[0048] Preferably the opening of the recess portion and/or the toe board location means faces away from the attachment means of the scaffold fitting means. The plane of a top opening of the toe board location means/recess portion is typically transverse, perpendicular or substantially transverse or perpendicular to the plane of the aperture/aperture opening/channel/ channel opening.

[0049] Preferably the side walls of the recess portion and/or toe board location means are plate like or sheet like in form.

[0050] In one embodiment one or more side walls of the toe board location means facing the toe board in use are planar or substantially planar.

[0051] In one embodiment one or more side walls of the toe board location means facing the toe board in use is non-planar, has an inwardly protruding section and/or is angled so as to improve engagement with the toe board in use.

[0052] In one embodiment toe board securing means are provided on or associated with the toe board location means for securing the toe board in position when located in said toe board location means.

[0053] In one embodiment the toe board securing means are provided on or associated with the recess portion and/or toe board location means to allow a toe board to be secured in said recess portion or location means in use.

[0054] Preferably the toe board securing means and/or attachment means/mechanism of the attachment means are provided on a front of the scaffold fixing means facing outwardly of the scaffold structure in use. This prevents the same from causing a tripping hazard on an inwardly facing surface of the scaffolding system.

[0055] In one embodiment the toe board securing means can include any or any combination of one or more nuts and bolts, clips, screws, inter-engaging members, biasing means, resilient biasing means, friction fit means and/or the like.

[0056] In one example, the resilient biasing means can include any or any combination of a spring or sprung

member or members.

[0057] In one embodiment the toe board securing means is provided on or associated with a side wall of the recess portion or toe board location means, and preferably at or adjacent a top edge or free end of the side wall.

[0058] In one embodiment an aperture can be defined in the side wall of the recess portion or side wall of the toe board location means through which a securing bolt, screw, other securing means and/or the like can be located in use. The securing bolt, screw or other securing means can be detachably attached in the aperture or can be permanently attached therein.

[0059] Preferably the aperture is a threaded aperture to allow rotatable engagement with a complementary threaded securing means, securing bolt or screw in use.

[0060] In one embodiment a washer or support member is typically provided at one end or the toe board contact end of the toe board securing means for engaging with a surface of the toe board in use. The washer or support member is arranged so as to typically spread the clamping force provided by the toe board securing means over a larger surface area of the toe board. This helps to prevent damage to the toe board in use. Thus, in one example, the washer or support member has larger dimensions or surface area than the end of the toe board securing means or bolt to which it is attached.

[0061] Preferably the toe board securing means includes gripping means to allow a user to grip and/or actuate the securing means in use.

[0062] Preferably the washer or support member is located within the recess portion and/or between the side walls of the toe board location means and the gripping means is located external to the recess portion or side walls of the toe board location means in use.

[0063] Preferably the washer or support member is pivotally or rotatably mounted on the toe board securing means so as to improve the fit of the same against the toe board surface with which it engages in use. Thus the washer or support member can pivot or rotate with respect to the remainder of the toe board securing means in use.

[0064] A toe board is typically an elongate board member having a front surface, a rear surface, two ends and two longitudinal sides. The front and rear surfaces are typically parallel to the longitudinal axis of the board. The front surface is arranged to face outwardly of the scaffolding structure when assembled and the rear surface of arranged to face inwardly of the scaffolding structure when assembled. The two longitudinal sides are typically also parallel to the longitudinal axis of the board. A lower side or edge typically engages against the base wall of the recess portion or U-shaped portion and faces in a downwardly direction when fitted in use. An upper side typically faces in an upwardly direction in use and away from the recess portion, U-shaped portion or toe board location means when fitted in use. The ends of the toe board are typically parallel to the standards of the scaffolding structure in use.

folding structure in use.

[0065] In one embodiment one or more protruding members are provided on the scaffold fitting means for engagement with one or more scaffold boards in use. The one or more other scaffold boards are typically boards that are arranged perpendicularly or substantially perpendicular to the toe boards in use and/or are horizontal or substantially horizontally arranged.

[0066] Preferably the one or more protruding members are arranged so as to be substantially parallel to a base of the recess portion or the toe board location means.

[0067] In one embodiment the protruding members are preferably separate to and/or in addition to the toe board location means and the attachment means.

[0068] In one embodiment a protruding member protrudes outwardly from either side of the base of the recess portion or the toe board location means.

[0069] The one or more protruding members can be substantially planar and/or plate like members or can be arched, curved or angled so as to grip the scaffold boards firmly in use.

[0070] In one embodiment a base wall of the toe board location means/ recess portion is arranged or is of such width so as to help secure scaffold boards in place on a scaffolding structure in use.

[0071] Thus, for example, the width of the base wall can be significantly greater than the width of the attachment means so as to protrude from either side of the attachment means.

[0072] In one embodiment a body portion or stem is provided between the attachment means and the toe board location means. The body portion or stem is of such dimensions so as to space the toe board location means a required space from the attachment means. Thus, for example, different scaffold fitting means could be provided with different length stems suitable for fitting to or sitting off an Aberdeen tube, a transom tube, a ledger tube and/or the like.

[0073] In one embodiment the body portion or stem is arranged so as to define further location means for the location of one or more further scaffold components, such as for example a scaffold board, an Aberdeen tube, a transom tube, a ledger tube and/or the like.

[0074] Preferably the body portion, stem or attachment means is in the form of a board tie.

[0075] In one embodiment the body portion or stem is substantially plate like or sheet like in form so as to allow the stem to be locatable in a gap between two adjacent scaffold boards in use.

[0076] In one embodiment adjustment means are provided on the scaffold fitting means so as to allow the distance between the toe board location means and the attachment means to be adjusted in use. This allows a single device to be used on two or more different types of horizontal scaffold tubes, such as for example transom tubes or ledger tubes.

[0077] Preferably the adjustment means allows the distance between the toe board location means and the

attachment means to be moved between approximately 30mm-150mm.

[0078] Preferably the base wall of the toe board location means or recess portion is movable relative to at least part of the attachment means using the adjustment means.

[0079] Preferably the base wall includes or is associated with a protruding member or portion which is slidably movable in a slot provided in the stem, body portion and/or side wall of the toe board location means.

[0080] Preferably a longitudinal axis of the slot is provided parallel or substantially parallel to a longitudinal axis of the side wall of the toe board location means.

[0081] Preferably user actuation means are provided on or associated with the adjustment means and/or protruding member or portion for allowing user actuation of the same in use.

[0082] In one example the protruding member or portion includes or is in the form of a plunger. User actuation means in the form of a gripping portion is associated with the protruding member or portion and is provided on an exterior side of the toe board location means for allowing actuation of the adjustment means in use.

[0083] Preferably the adjustment means can be moved between a movable position, wherein the distance between the toe board location means and the attachment means can be adjusted, and a fixed position, wherein the distance between the toe board location means and the attachment means is maintained.

[0084] In one embodiment the adjustment of the toe board location means and the attachment means is user selected or used defined. In an alternative embodiment the adjustment of the toe board location means is between two or more pre-defined positions with respect to the attachment means.

[0085] The scaffold fitting means of the present invention can be formed from a single integrally formed component or it can be formed from two or more components that are joined together via suitable joining means.

[0086] Suitable joining means could include adhesive, welding, one or more nuts and bolts and/or the like.

[0087] The scaffold fitting means could be formed by mechanical bending, pressing, drop forging, moulding and/or the like.

[0088] The scaffold fitting means can be formed from any or any combination of metal, plastic, wood, rubber and/or the like.

[0089] According to a second aspect of the present invention there is provided a method of using scaffold fitting means, said method includes the steps of attaching the scaffold fitting means to at least one further scaffold component in use using attachment means provided on the scaffold fitting means, said attachment means defining at least one aperture and/or channel therein for locating the further scaffold component there-through;

locating a toe board in toe board location means provided on the scaffold fitting means;

characterised in that a central or substantially central axis of said aperture and/or channel is transverse or perpendicular to a longitudinal axis of said toe board location means and/or a longitudinal axis of the scaffold fitting means.

[0090] In one embodiment the method of use includes the step of fitting the scaffold fitting means to a horizontal or substantially horizontal scaffold component.

[0091] Preferably a horizontal or substantially horizontal scaffold component is located through the aperture and/or channel of the attachment means in use.

[0092] According to a third aspect of the present invention there is provided scaffold fitting means, said scaffold fitting means including:

attachment means for attaching the scaffold fitting means to at least one further scaffold component in use;

toe board location means for locating a toe board with the scaffold fitting means in use; and

toe board securing means for securing the toe board in position when located in said toe board location means.

[0093] Thus, in contrast to the prior art, the present invention provides toe board securing means for securing a toe board in position in the toe board location means in use. This improves the safety of the scaffold fitting and removes the likelihood of a toe board accidentally being kicked out of the toe board location means in use. Furthermore, the provision of the toe board securing means allows the scaffold fitting means to be attached to a horizontal scaffold tube and/or a vertical scaffold tube in use.

[0094] According to a fourth aspect of the present invention there is provided a method of using scaffold fitting means, said method including the steps of:

attaching the scaffold fitting means to at least one further scaffold component in use using attachment means;

locating a toe board in toe board location means forming part of the scaffold fitting means in use; and securing said toe board in place in the toe board location means using toe board securing means.

[0095] According to a fifth aspect of the present invention there is provided scaffold fitting means, said scaffold fitting means including:

attachment means for attaching the scaffold fitting means to at least one further scaffold component in use;

toe board location means for locating a toe board with the scaffold fitting means in use; and

wherein adjustment means are provided for adjusting the distance of the toe board location means with respect to the attachment means.

[0096] This aspect of the present invention has the advantage that it allows a single scaffold fitting means to be used on two or more different types of horizontal scaffold components, such as for example for use on ledgers and transoms. The distance of the toe board location means from the attachment means is adjusted by a required amount.

[0097] According to a sixth aspect of the present invention there is provided a method of using scaffold fitting means, said scaffold fitting means including: attachment means for attaching the scaffold fitting means to at least one further scaffold component in use; and toe board location means for locating a toe board with the scaffold fitting means in use; and wherein said method includes the step of adjusting the distance of the toe board location means from the attachment means to a required position.

[0098] It will be appreciated that a scaffold fitting means of the present invention could include any or any combination of the abovementioned features.

[0099] Embodiments of the present invention will now be described with reference to the accompanying figures, wherein:

Figures 1a, 1b, 1c show a side view, front view and rear view respectively of a scaffold fitting device according to an embodiment of the present invention;

Figure 2 shows the scaffold fitting device of figures 1a-1c with a toe board and other scaffold components fitted in use;

Figure 3 shows the scaffold fitting device of figures 1a-2 when fitted to a scaffolding structure in use;

Figures 4a-4c show a side view, front view and rear view respectively of a scaffold fitting device according to a further embodiment of the present invention;

Figure 5 shows the scaffold fitting device of figures 4a-4c with a toe board fitted in use;

Figure 6 shows the scaffold fitting device of figures 4a-5 when fitted to a scaffolding structure in use;

Figures 7a-7c show a side view, front view, and rear view respectively of a scaffold fitting device according to a yet further embodiment of the present invention;

Figure 8 shows the scaffold fitting device of figures 7a-7c with a toe board fitted in use;

Figure 9 shows the scaffold fitting device of figures 7a-8 when fitted to a scaffolding structure in use;

Figures 10a-10c shows a side view, front view, and rear view respectively of a scaffold fitting device according to a yet further embodiment of the present

invention;

Figure 11 shows the scaffold fitting device of figures 10a-10c with a toe board fitted in use.

[0100] Referring firstly to figures 1a-3, there is illustrated a scaffold fitting device 100 according to an embodiment of the present invention. The device 100 of the present invention allows a toe board 13 to be fitted to a scaffolding structure 102 without needing a conventional dead man fitting. In this embodiment, the scaffold fitting device 100 is for fitting to a horizontal ledger tube 10. However, the device also includes further attachment means for attachment to a horizontal scaffold board 9 and a horizontal transom tube 7 in use.

[0101] In particular, scaffold fitting device 100 includes attachment means in the form of a ledger coupler 1, toe board location means in the form of a U-shaped recess portion 2, and stem portion 4.

[0102] Ledger coupler 1 comprises a first clamping member 104 and a second clamping member 14. An end of second clamping member 14 is pivotably mounted via pivot pin 20 to an end of first clamping member 104 to allow the second clamping member 14 to be pivotably moved between a clamped/attached position and an unclamped/detached position in use. The free ends 106, 108 of first and second clamping members 104, 14 respectively are maintained in the clamped position via an attachment mechanism in the form of a coupler bolt 15 and a coupler nut 16. More particularly, one end of coupler bolt 15 is pivotably mounted to free end 106 of the first clamping member 104 via pin 17. The other end of coupler bolt 15 is located through an aperture defined in free end 108 of second clamping member 14 and is secured thereto using coupler nut 16. A washer 23 is provided between second clamping member 14 and nut 16.

[0103] The interior surfaces of the first and second clamping members 104, 14 are formed so as to be complementary in shape, when in the clamped position, to a ledger tube, around which the clamping members engage in use. In the clamped/attached position, an aperture 110 is defined between the inwardly facing surfaces of first and second clamping members 104, 14. The aperture 110 is for the location of a ledger tube therethrough in use. In the clamped position, the free ends 106, 108 of the clamping members are moved towards each other and secured in a clamped position such that the ledger tube is firmly held in position between the first and second clamping members. In the unclamped position, the free ends 106, 108 of the clamping members are moved apart from each other so that a ledger tube can be located in and/or removed from the aperture defined between the clamping members.

[0104] Aperture 110 has a central axis (A) when the clamping members are in an attached/clamped position that is perpendicular to the planar opening or axis (B) of aperture 110.

[0105] The toe board location recess 2 comprises a

base wall 112 and two opposing side walls 114, 116 that protrude outwardly and away from base wall 112. An opening 118 is defined between free upper most edges of the side walls 114, 116. The opening 118 is for the location of a longitudinal edge of a toe board therethrough in use. The base wall 112 and the side walls 114, 116 define a substantially U-shaped space 26 therebetween.

[0106] Side walls 114, 116 have a longitudinal axis C that is parallel to the planar axis B of aperture 110 but perpendicular to central axis A of aperture 110. This is necessary for the scaffold device 100 to be joined to a horizontal scaffold component in use and to be upstanding or vertically arranged with respect to the horizontal scaffold component to which it is attached to in use.

[0107] Toe board securing means in the form of a securing bolt 3 and nut 18 are provided for securing a toe board within the toe board location recess 2 in use. A threaded aperture 24 is defined in an upper section of side wall 116 to allow the securing bolt 3 to be rotatably mounted therein. The nut 18 is located on an exterior side of the recess 2. A pivotably mounted washer 19 is provided on an end of bolt 3 that is located within the recess 2. Washer 19 has a larger surface area than the end of bolt 3, thereby providing a greater clamping surface area for engaging with the toe board in use.

[0108] In one example, the width of the interior space between side walls 114, 116 is 41mm which is slightly larger than the narrow or end width of a standard toe board 13. The height of the side walls 114, 116 is approximately 110mm, which is greater than half of the height of a toe board 13 when in an upstanding position. These dimensions ensure the toe board is held firmly within the toe board location recess. The securing nut and bolt 3, 18 ensure the toe board 13 is securely held in place within the recess.

[0109] In this embodiment the toe board location recess 2, located at a top end of the fitting device 100, is a spaced distance apart from the attachment means 1, located at a base end of the fitting device 100. A stem section 4 is provided between the attachment means 1 and the toe board location recess 2 and this stem section is of such dimensions to allow location of one or more further scaffold components therebetween. In this specific example, the stem section is of such length (typically approximately 91mm in this example) so as to define a space 120 sufficient to allow the location of a scaffold board 9 (i.e. the longitudinal side edge of a scaffold board) and a transom tube 7 therein in use, as shown in figure 2. The stem section 4 defines a recess/space 120 between a lower surface of base wall 112, an upper surface of the first clamping member 104 and the interior wall of stem 4. An opening 122 is defined opposite stem 4 for the location of the further scaffolding components therethrough in use. A lip or side wall can be provided on a rear wall of device 100 to reduce the size of opening 122 so as to hold a scaffold component within the space 120 in use.

[0110] It is to be noted that the attachment bolt 15 for

the attachment means 1 can be located on a rear side of the device (i.e. the side opposite to the toe board securing bolt) or can be located on a front side of the device (i.e. the same side as the toe board securing bolt) as required.

[0111] The toe board securing bolt 3 is preferably arranged on a front side of the device (i.e. a side of the device facing outwardly of the scaffolding structure in use. This allows easy user manipulation of the same and prevents it being a tripping hazard to anyone walking of the scaffolding structure in use.

[0112] Figure 3 shows two devices 100 in position on a scaffolding structure 102 fitted to a ledger tube 10. In the illustration, standard tubes 11 are arranged in a vertical manner. Horizontal transom tubes 7 are arranged a spaced distance apart between two spaced apart parallel ledger tubes 10. Horizontal scaffold boards are located on top of the transom tubes.

[0113] A further embodiment of the present invention is described with reference to figures 4a-6. The same reference numerals have been used to describe the same features as in figures 1a-3. In this embodiment, the scaffold fitting device is arranged for fitting to a transom tube 7 rather than a ledger tube. As such, it is acting as a transom tie. More particularly, aperture 110 defined between the first and second clamping members 104, 14 is sized so as to allow a transom tube 7 to be located therethrough in use. The stem 4 located between the first clamping member 4 and the base wall 112 of the toe board location recess 2 is significantly shorter in height than the previous embodiment and there is no requirement for further scaffolding components to be located therewith in use. For example, the length of the stem 4 between the base wall 112 and the interior surface of the first clamping member 104 is approx. 39mm. The device functions in a similar manner to the device previously described. The stem 4 is of such dimensions that it can fit through a gap 124 between two adjacent scaffold boards 9. This allows a toe board to be secured perpendicular to the longitudinal axis of the scaffold boards 9 in use.

[0114] The external surface 6 of base wall 112 can have a concave shape so as to allow this surface to secure one or more scaffold boards in position in use.

[0115] A yet further embodiment of the present invention is described with reference to figures 7a-9. In this embodiment, the scaffold fitting device is arranged for fitting to a horizontal Aberdeen tube 25 rather than a ledger tube. As such, it is acting as an Aberdeen tie. More particularly, aperture 110 defined between the first and second clamping members 104, 14 is sized so as to allow an Aberdeen tube 25 to be located therethrough in use. The stem 4 located between the first clamping member 4 and the base wall 112 of the toe board location recess 2 is of such dimensions that it can fit through a gap 124 between two adjacent scaffold boards 9. This allows a toe board to be secured perpendicular to the longitudinal axis of the scaffold boards 9 in use. The distance between

base wall 112 and the top of aperture 110 of the coupler 1 is approx. 150mm.

[0116] Although the following embodiments only show a single toe board securing bolt being used to secure the toe board in place in the location recess, it will be appreciated that any number of toe board securing means could be provided. Use of a single toe board securing means only has the obvious advantage that a skilled person is only required to actuate a single securing mechanism, rather than multiple securing mechanisms.

[0117] A yet further embodiment of the present invention is described with reference to figures 10a-11. In this embodiment, the scaffold fitting device has adjustment means for adjusting the distance between the toe board location recess 2 and the ledger coupler or attachment means 1. More specifically a plunger 130 is attached to base wall 112 of the recess 2. Plunger 130 is a protruding member which has a portion protruding inwardly of the recess 2 and a portion protruding outwardly of recess 2. Plunger 130 is slidably mounted in a slot 131 defined in side wall 114. User actuation means in the form of a gripping plate 132 is provided on the exterior side of the plunger 130 to allow a user to grip the same and move the plunger between raised and lowered positions with respect to the ledger coupler 1. The plunger 130 is engaged in a required position using engaging means 134. By allowing the distance between the toe board recess 2 and the coupler ledger 1 to be adjusted, a single scaffold fitting device can be used on any of the three abovementioned earlier embodiments for use with ledger tubes, transom tubes and/or Aberdeen tubes.

Claims

1. Scaffold fitting means, said scaffold fitting means including:

attachment means for attaching the scaffold fitting means to at least one further scaffold component in use, said attachment means defining at least one aperture and/or channel therein for the location of the further scaffold component therethrough in use;

toe board location means for locating a toe board with the scaffold fitting means in use;

characterised in that a central or substantially central axis of said aperture and/or channel is transverse or perpendicular to a longitudinal axis of said toe board location means and/or a longitudinal axis of the scaffolding fitting means.

2. Scaffold fitting means according to claim 1 **characterised in that** said toe board location means includes a base wall and one or more side walls protruding outwardly from said base wall, the central or substantially central axis of the aperture and/or chan-

nel being transverse or perpendicular to a longitudinal axis of one or more side walls of the toe board location means.

3. Scaffold fitting means according to claim 1 **characterised in that** first and at least second attachment means are provided to allow at least two further scaffold components to be located with the same in use.
4. Scaffold fitting means according to claim 1 **characterised in that** the attachment means are movable between a clamped/attached position, wherein a further scaffold component can be secured to the same, and an unclamped/detached position, wherein a further scaffold component can be inserted or removed from the same.
5. Scaffold fitting means according to claim 1 **characterised in that** the attachment means includes first and at least second clamping portions or member, an attachment mechanism provided on or associated with parts or free ends of the first and at least second clamping portions or members to allow the clamping portions or members to be retained in a clamped/attached position in use.
6. Scaffold fitting means according to claim 1 or claim 5 **characterised in that** the attachment means and/or mechanism includes any or any combination of one or more clips, nuts and bolts, screws, inter-engagement members or clamps.
7. Scaffold fitting means according to claim 1 **characterised in that** toe board securing means are provided on or associated with the toe board location means for securing a toe board in position in use.
8. Scaffold fitting means according to claim 7 **characterised in that** the toe board securing means include any or any combination of one or more butts and bolts, clips, screws, inter-engaging members, biasing means, resilient biasing means or friction fit means.
9. Scaffold fitting means according to claim 7 **characterised in that** a washer or support member is provided at one end or a toe board contact end of the toe board securing means and has a larger surface area than the end of the toe board securing means to which it is attached.
10. Scaffold fitting means according to claim 1 **characterised in that** one or more protruding members are provided on the scaffold fitting means for engagement with one or more scaffold boards in use.
11. Scaffold fitting means according to claim 1 **characterised in that** a body portion or stem is provided between the attachment means and the toe board

location means so as to provide the attachment means and toe board a spaced distance apart from each other.

12. Scaffold fitting means according to claim 1 or 11 **characterised in that** body portion, stem or attachment means is in the form of a board tie. 5
13. Scaffold fitting means according to claim 1 **characterised in that** adjustment means are provided to allow the distance between the toe board location means and the attachment means to be adjusted in use. 10
14. Scaffold fitting means according to claim 13 **characterised in that** the adjustment means includes a protruding member or portion that is slidably movable in a slot defined in a stem or body portion provided between the attachment means and the toe board location means and/or in a side wall of the toe board location means. 15
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15. A method of using scaffold fitting means, said method includes the steps of
attaching the scaffold fitting means to at least one further scaffold component in use using attachment means provided on the scaffold fitting means, said attachment means defining at least one aperture and/or channel therein for locating the further scaffold component therethrough; 25
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locating a toe board in toe board location means provided on the scaffold fitting means;
characterised in that a central or substantially central axis of said aperture and/or channel is transverse or perpendicular to a longitudinal axis of said toe board location means and/or a longitudinal axis of the scaffolding fitting means. 35

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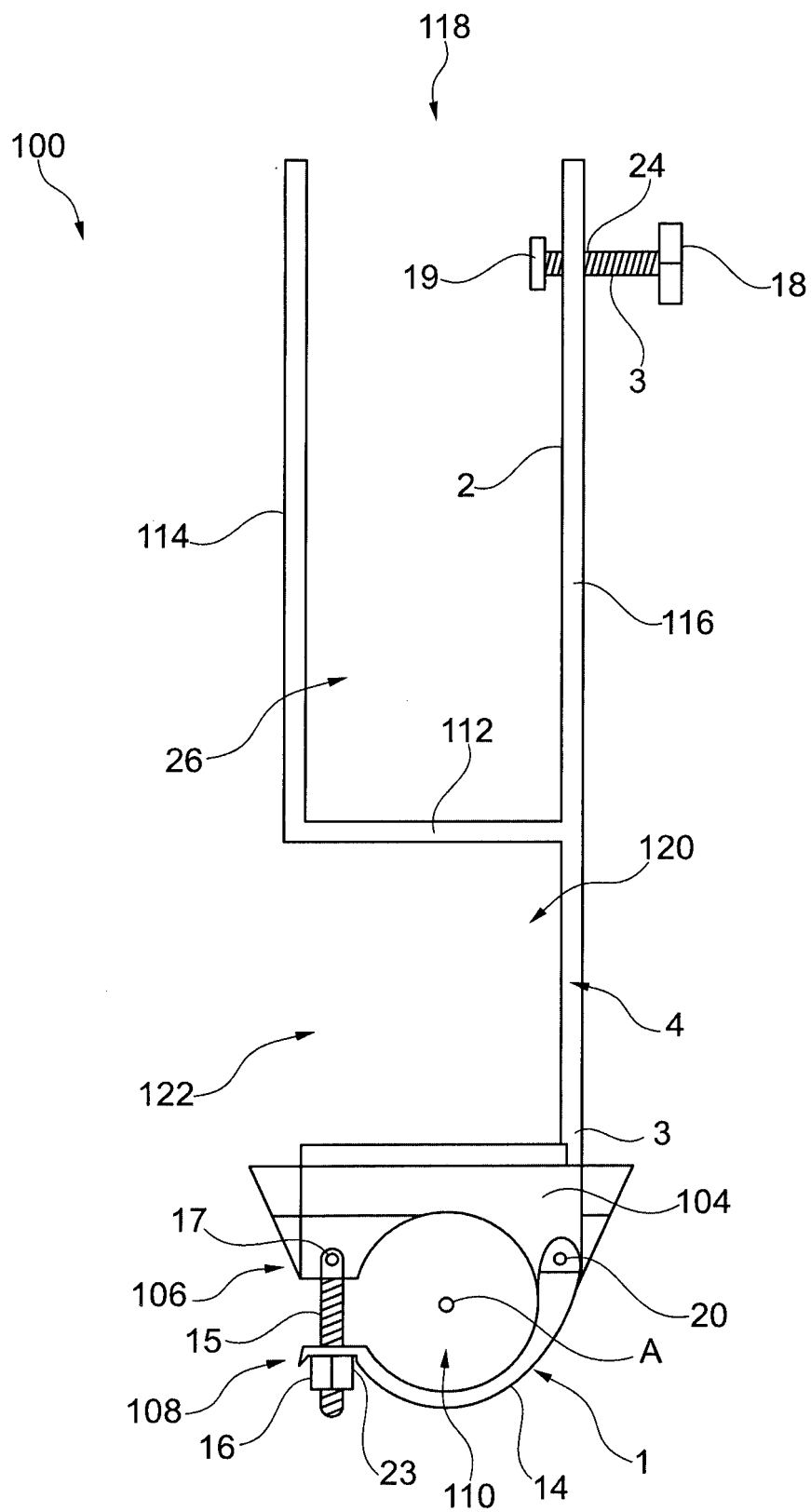


Fig. 1a

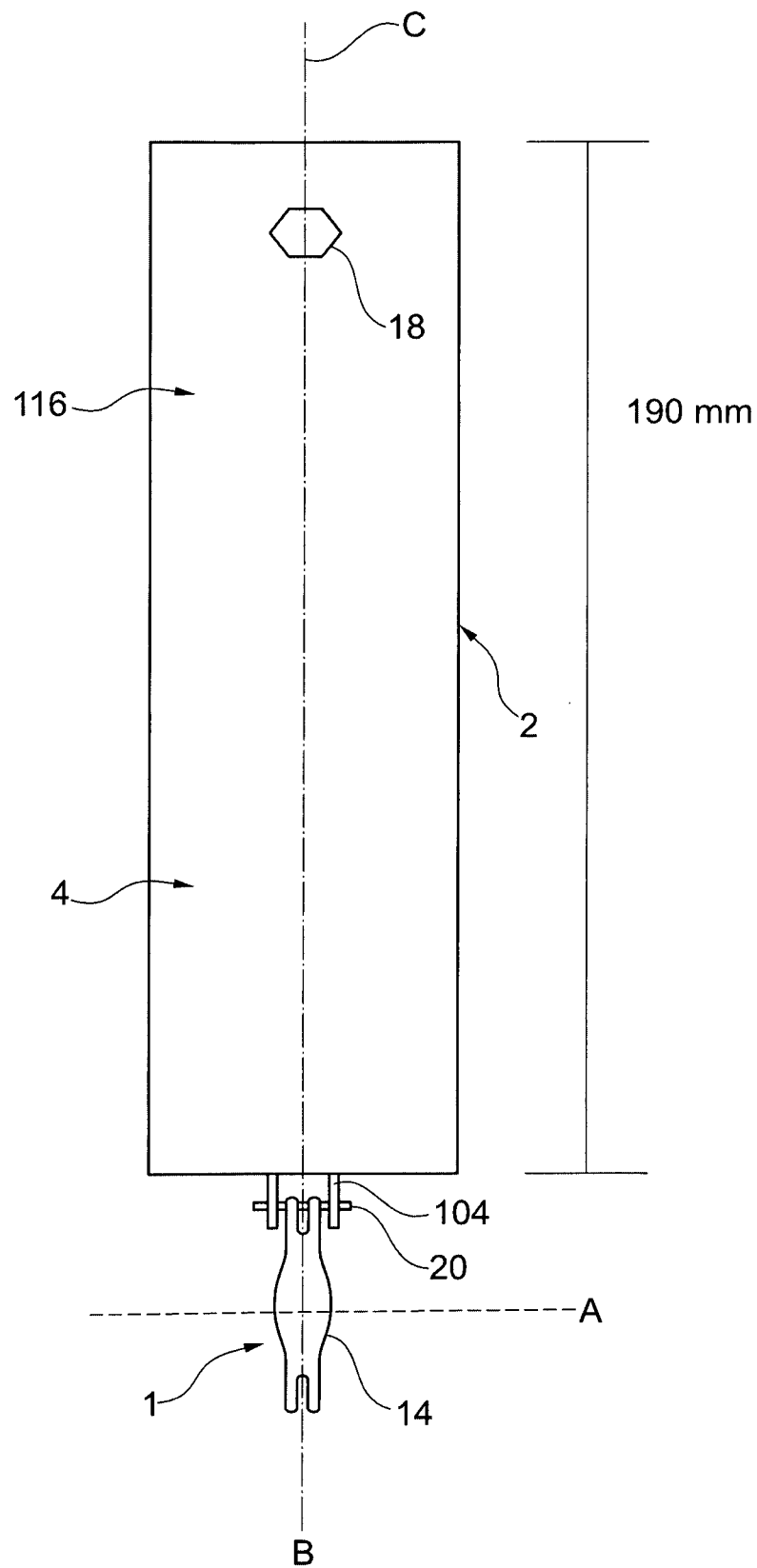


Fig. 1b

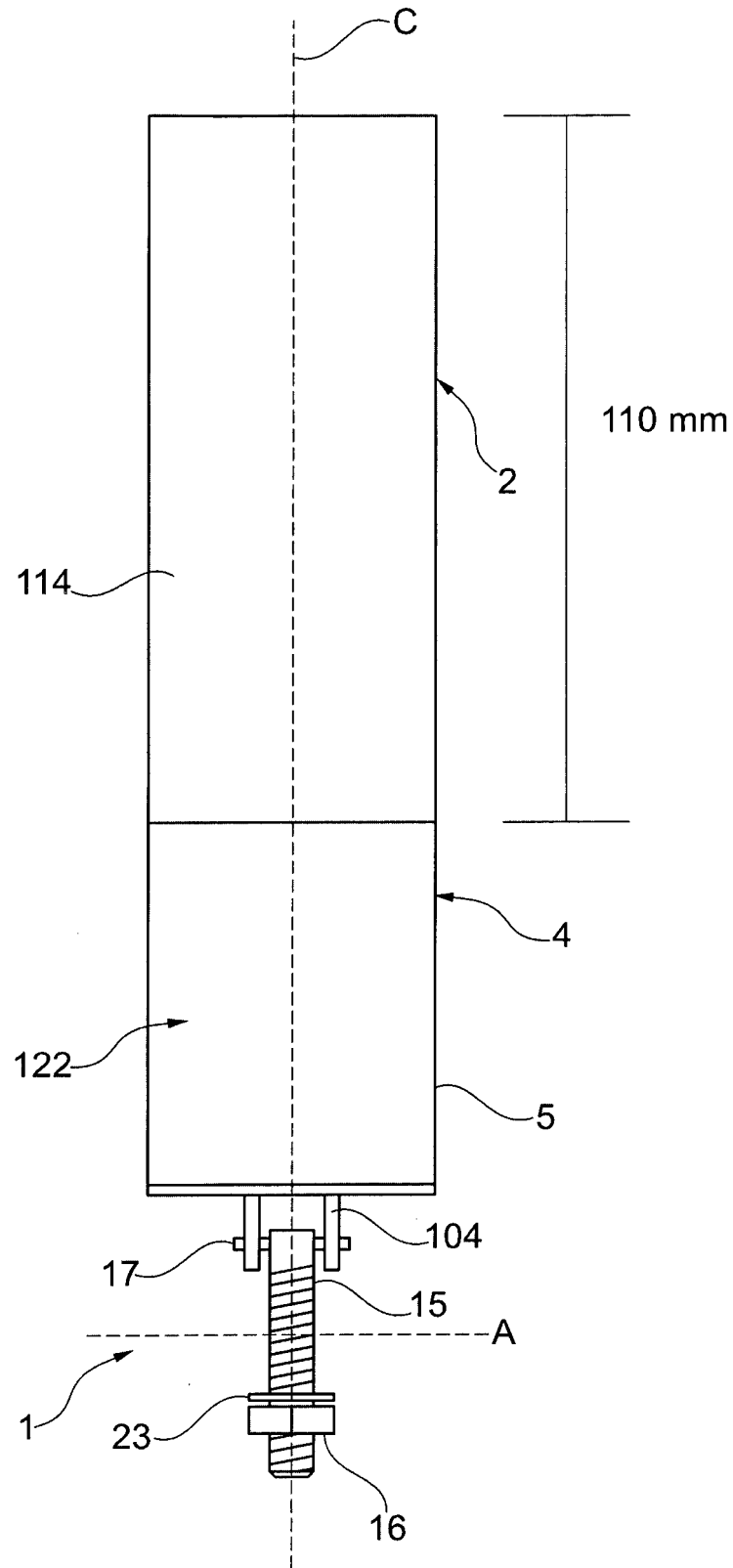


Fig. 1c

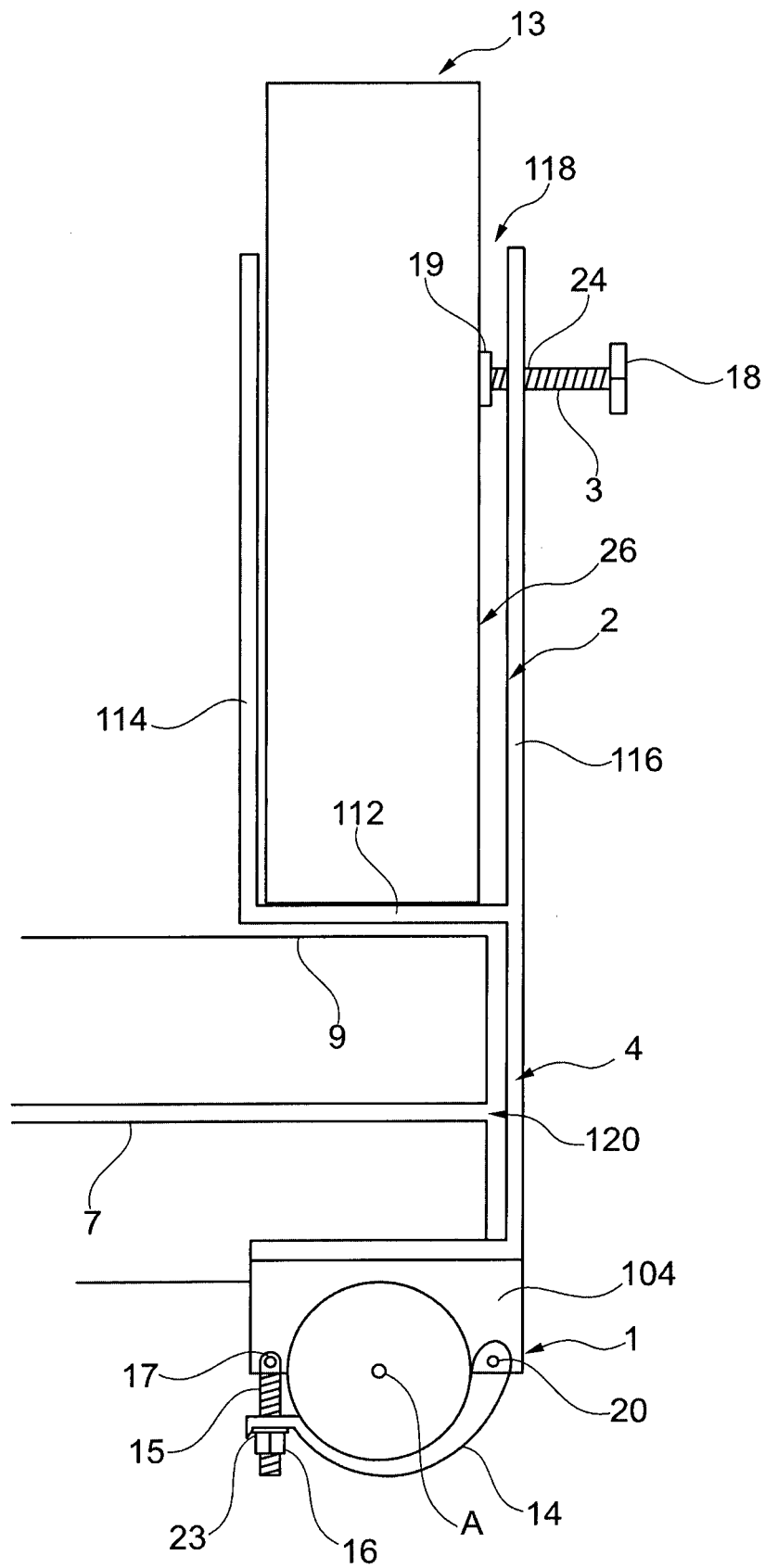


Fig. 2

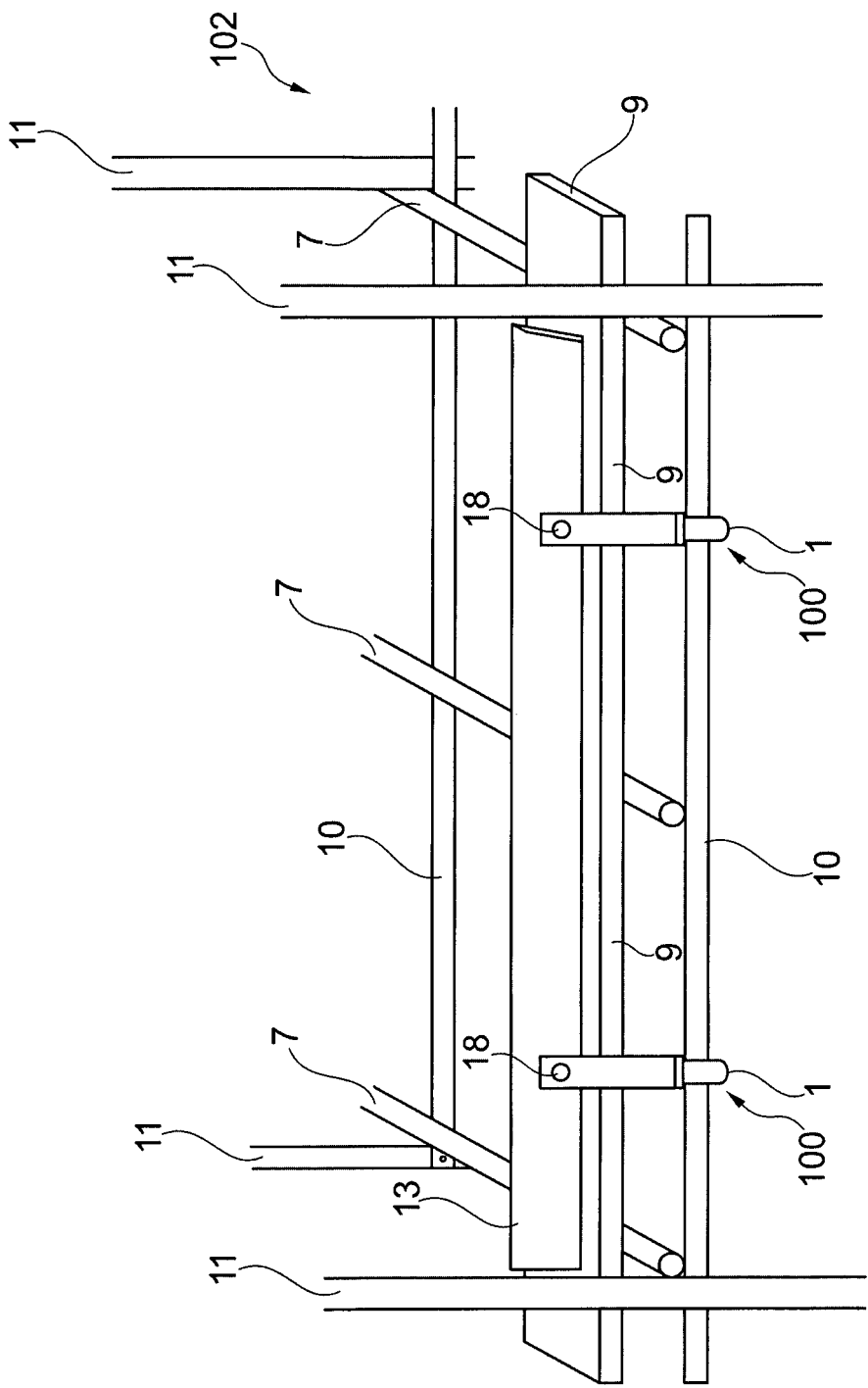


Fig. 3

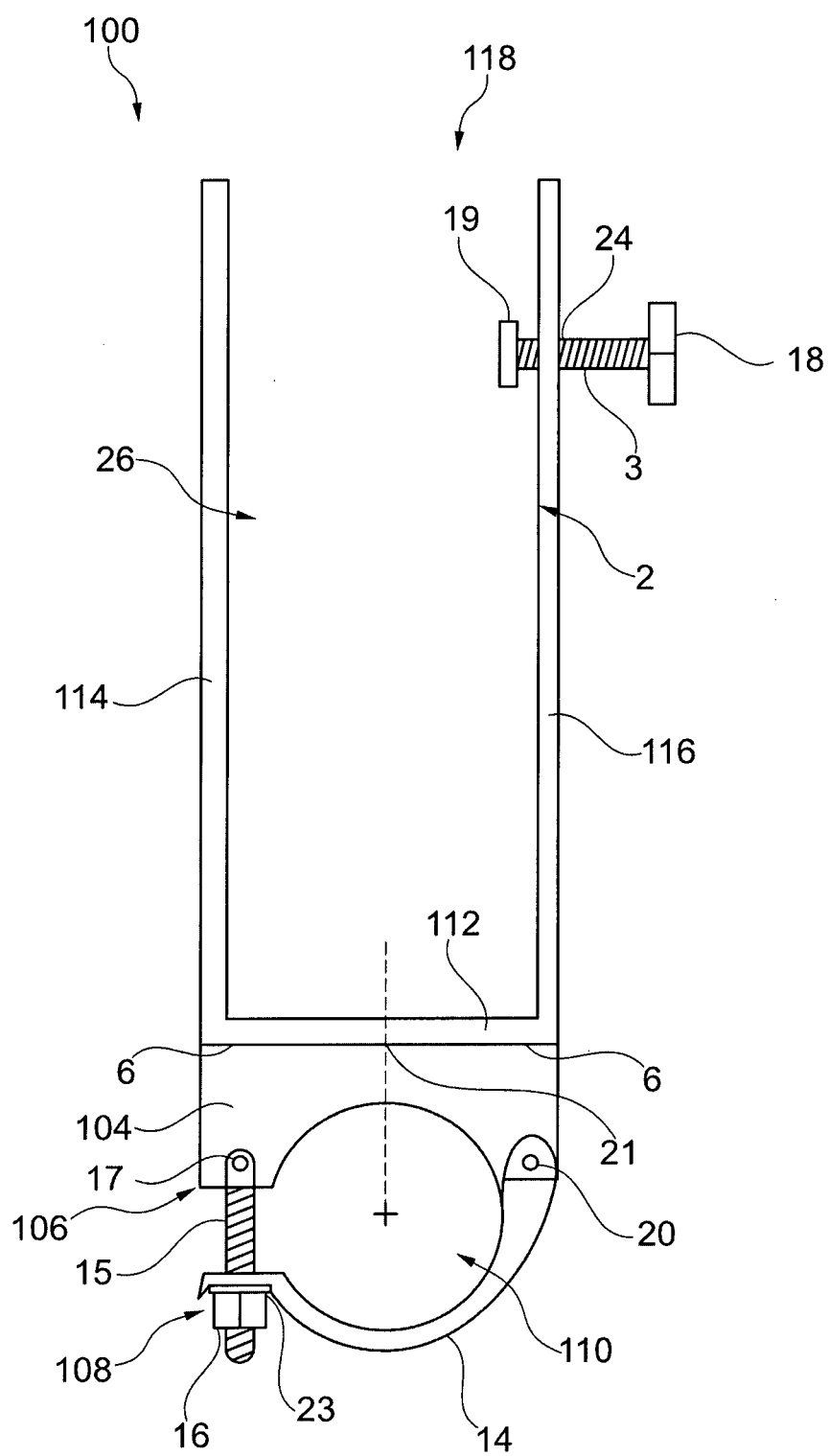


Fig. 4a

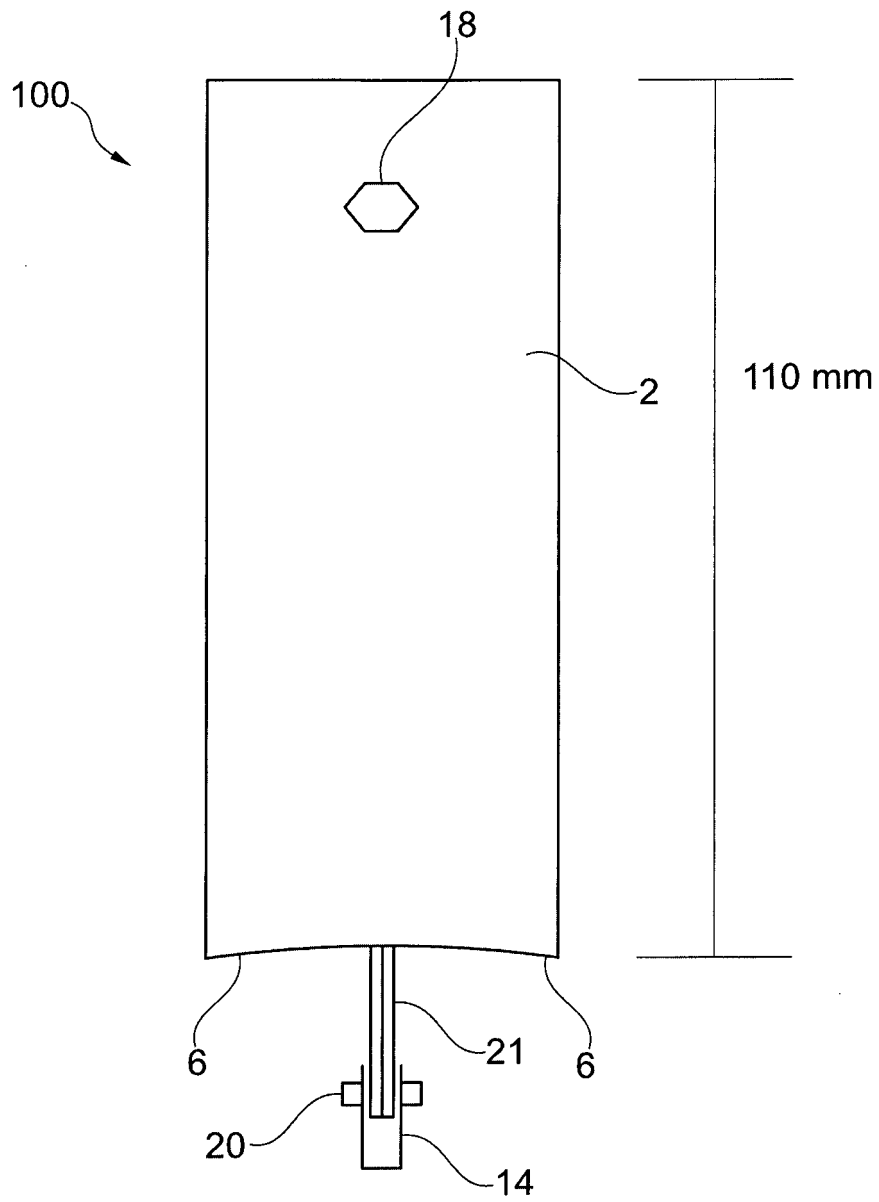


Fig. 4b

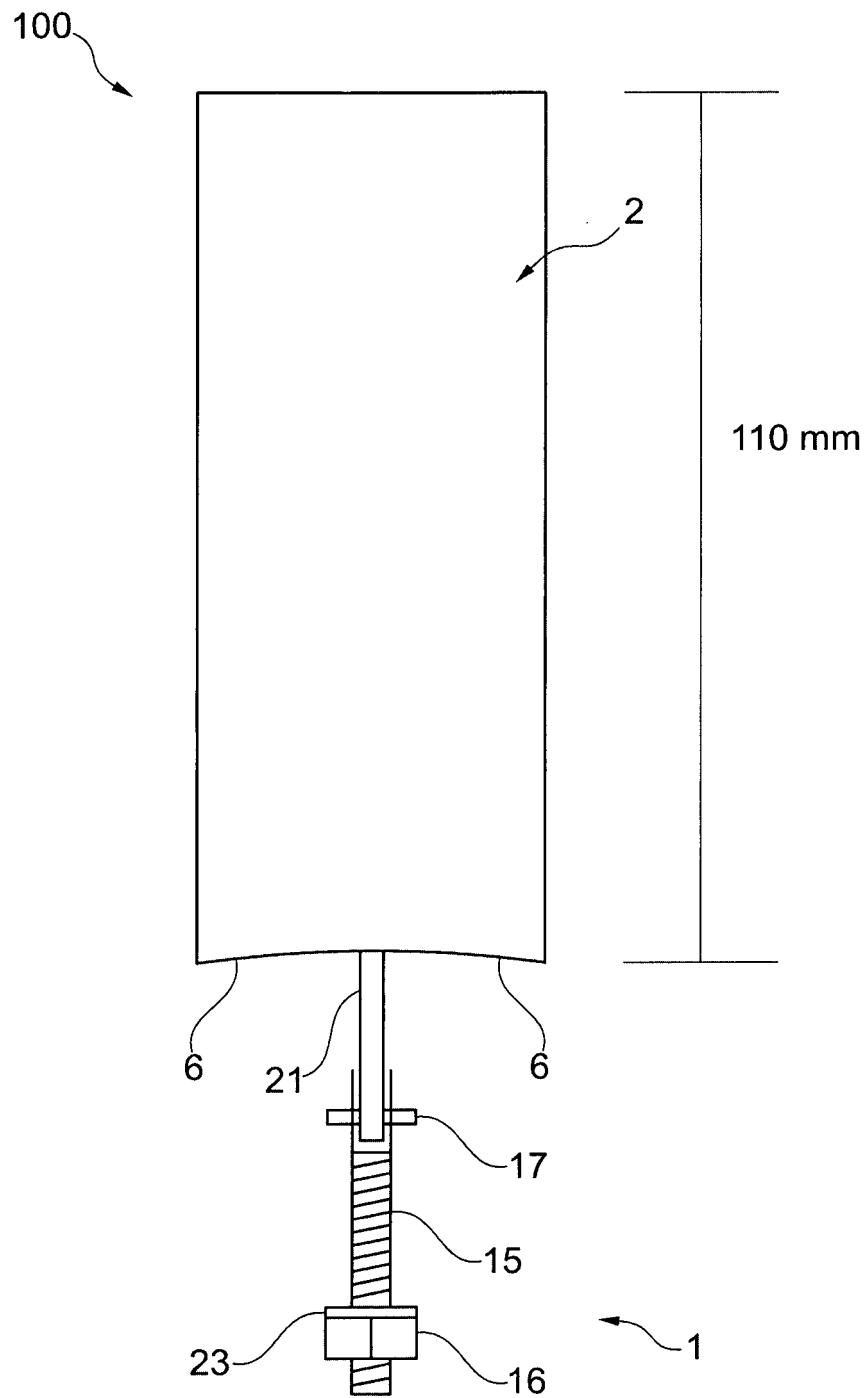


Fig. 4c

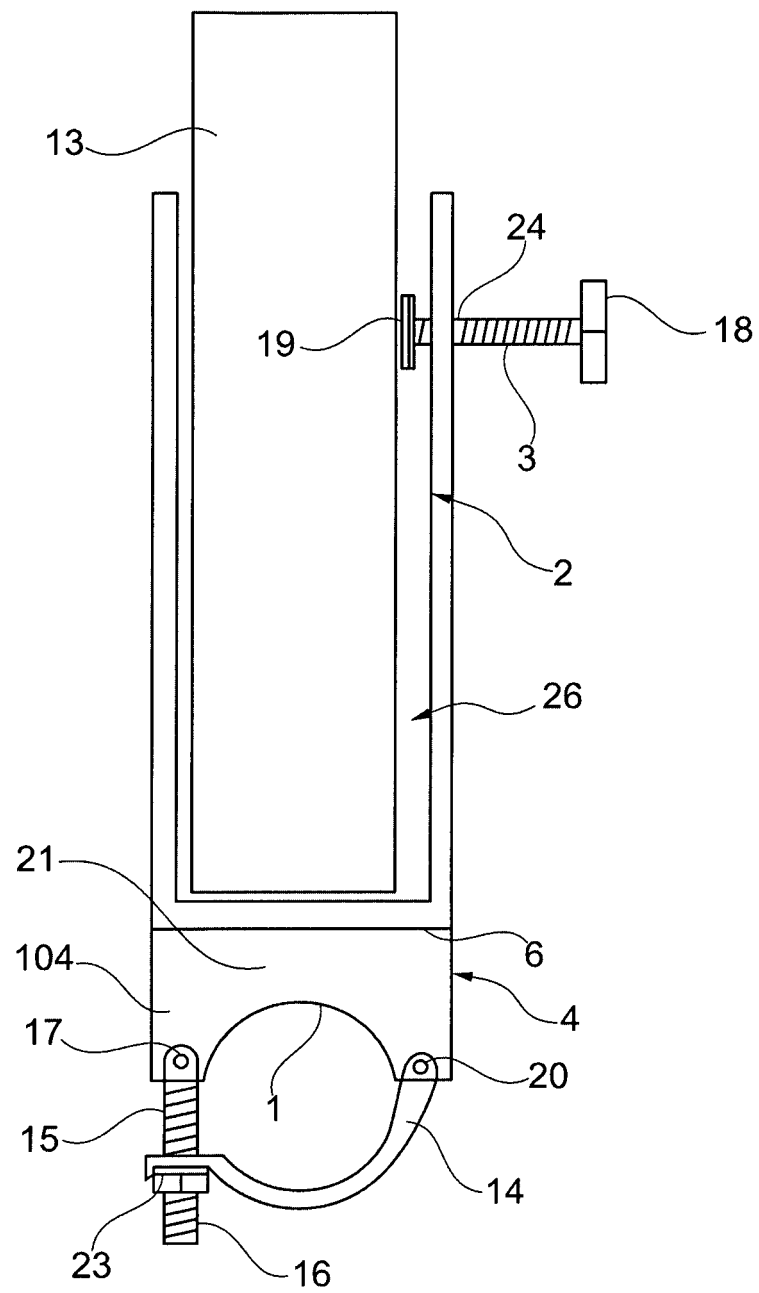


Fig. 5

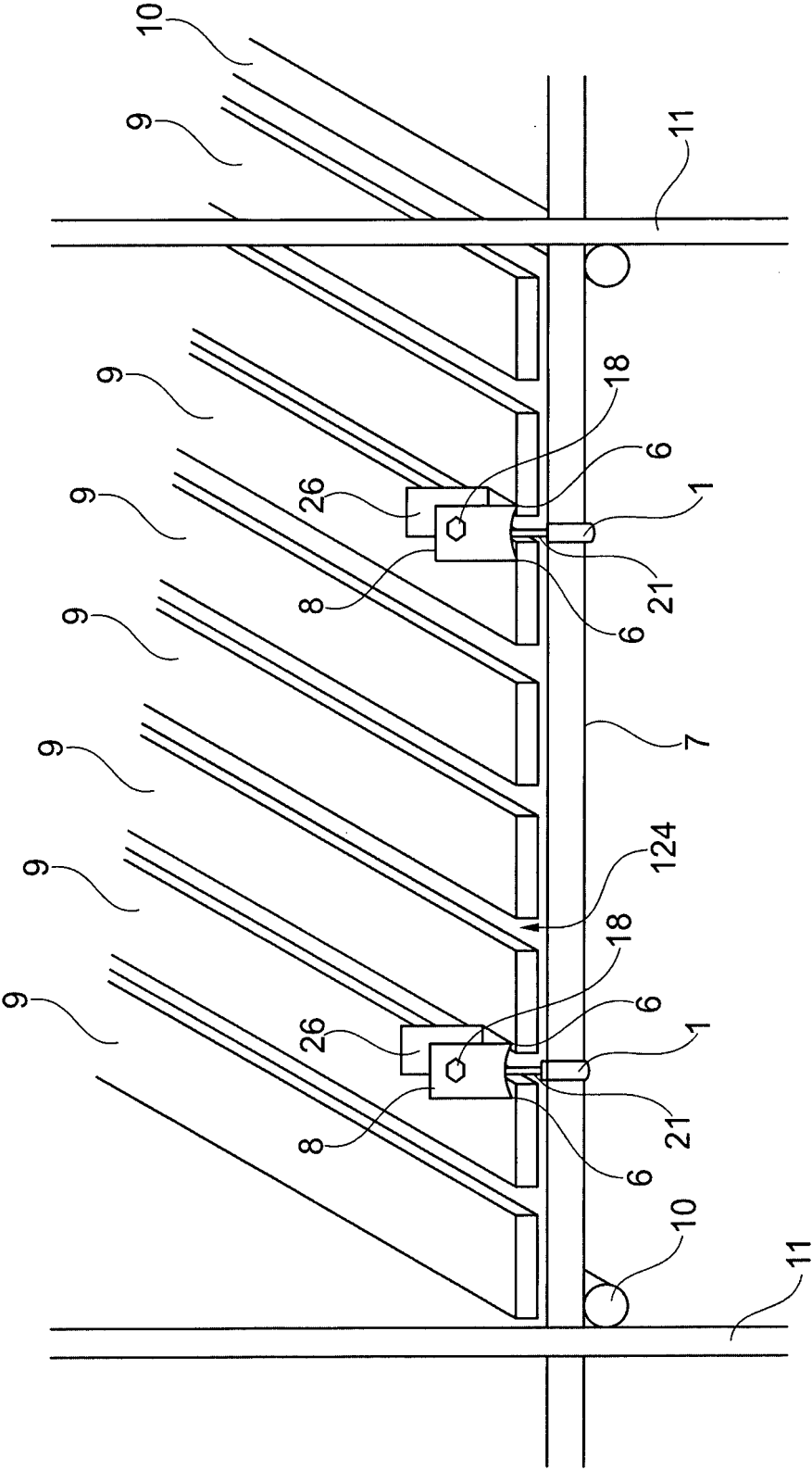


Fig. 6

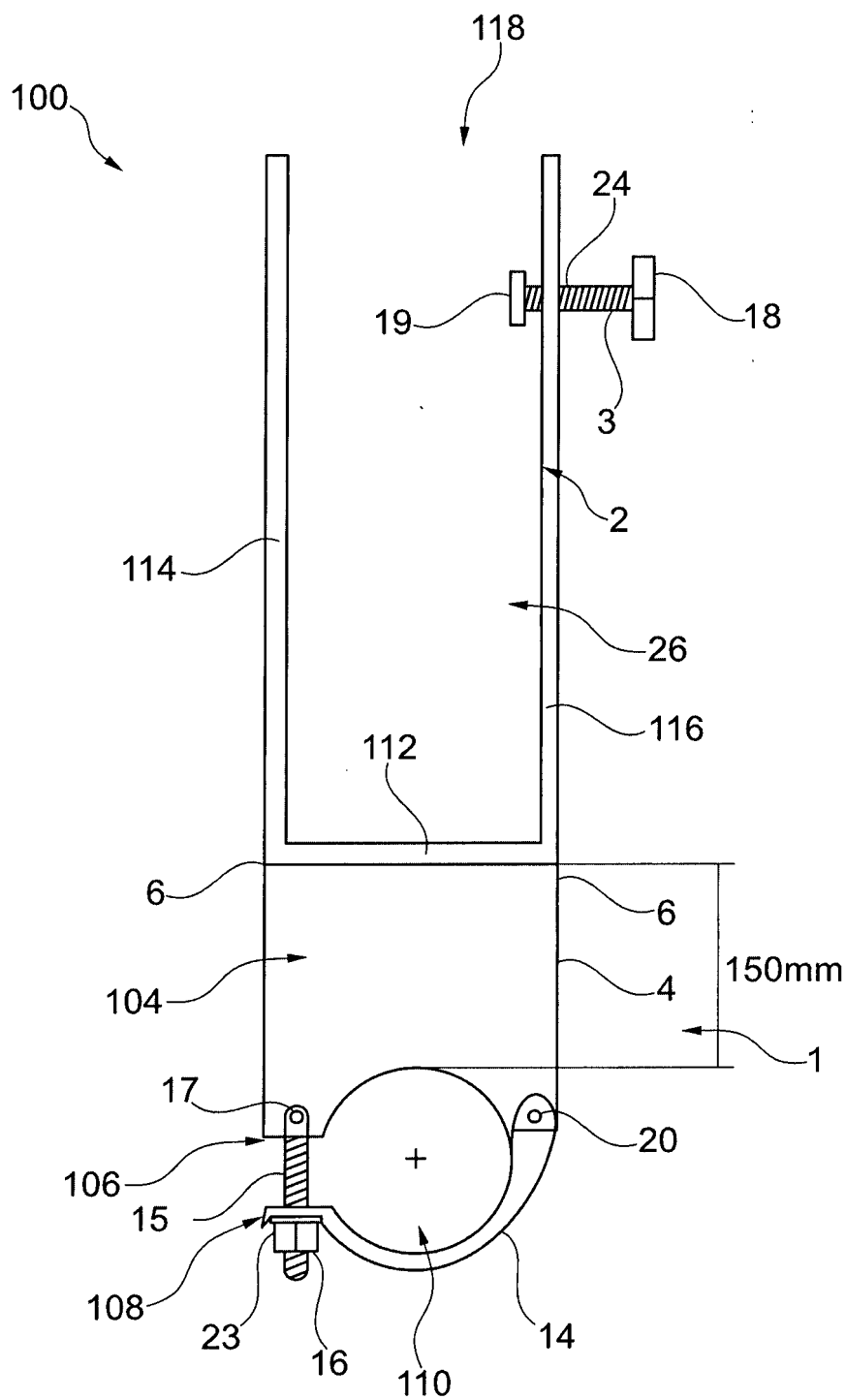


Fig. 7a

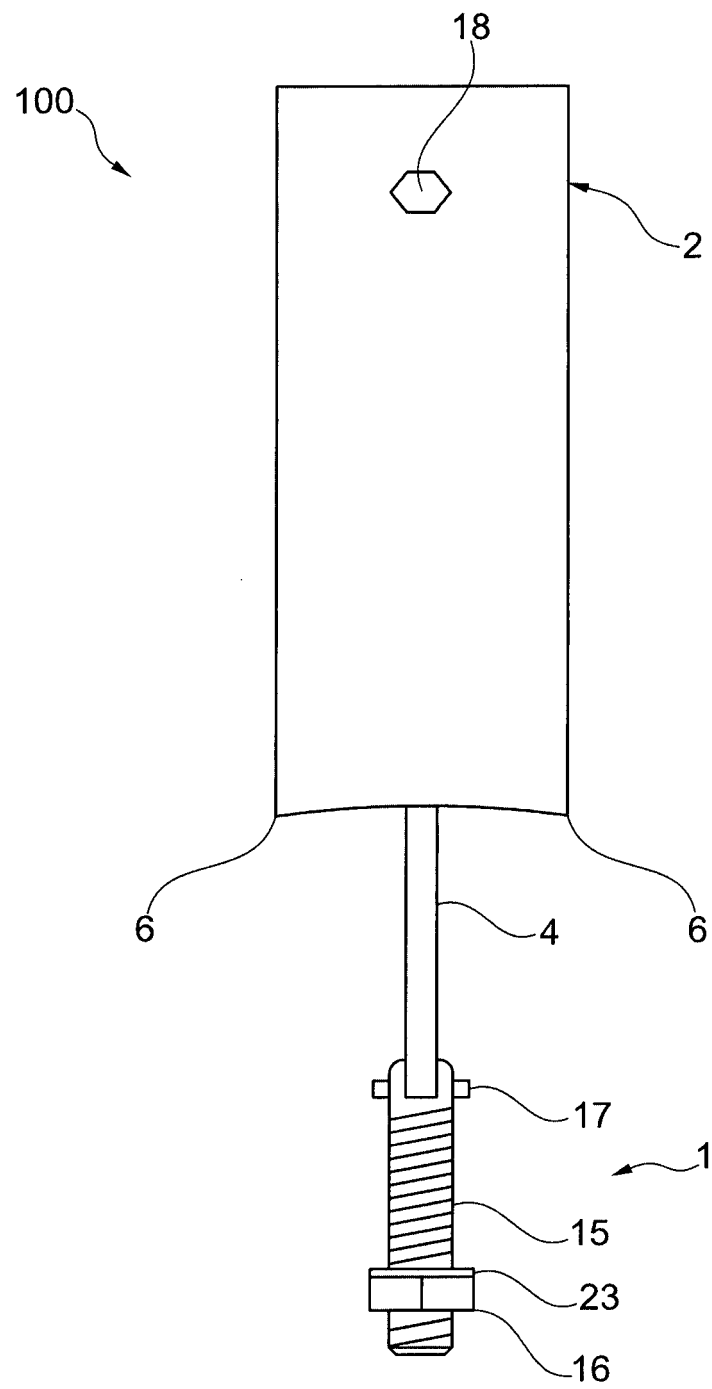


Fig. 7b

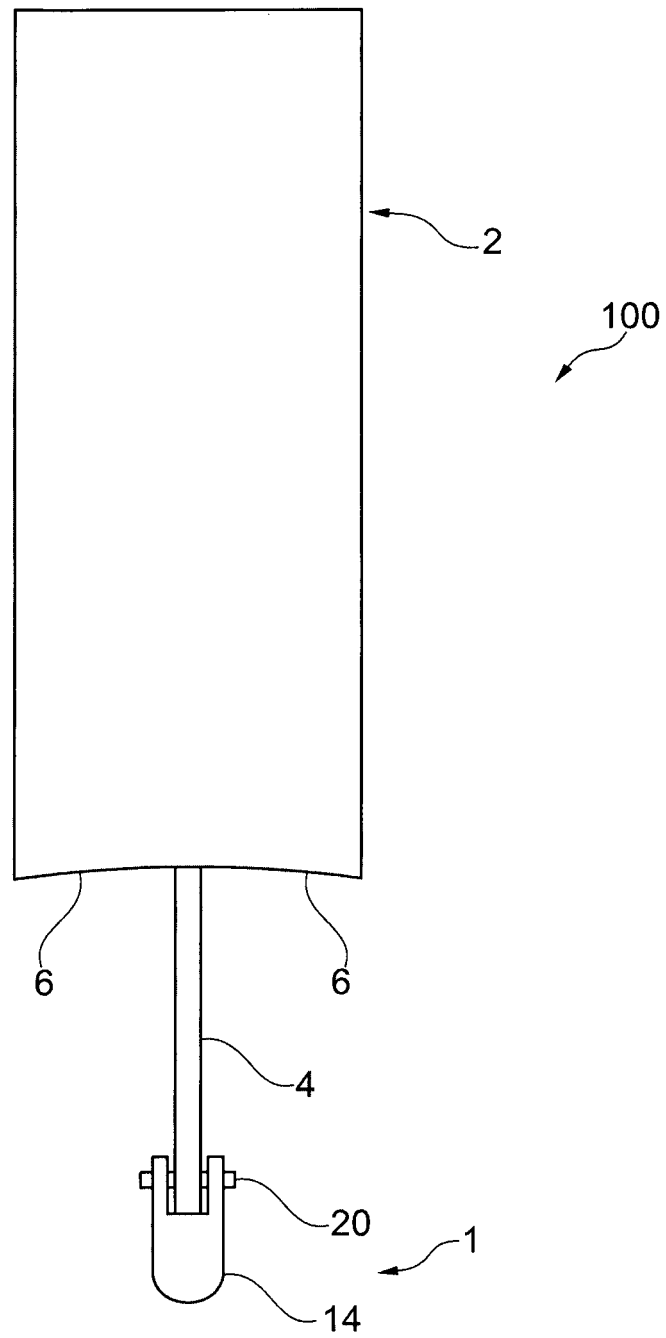


Fig. 7c

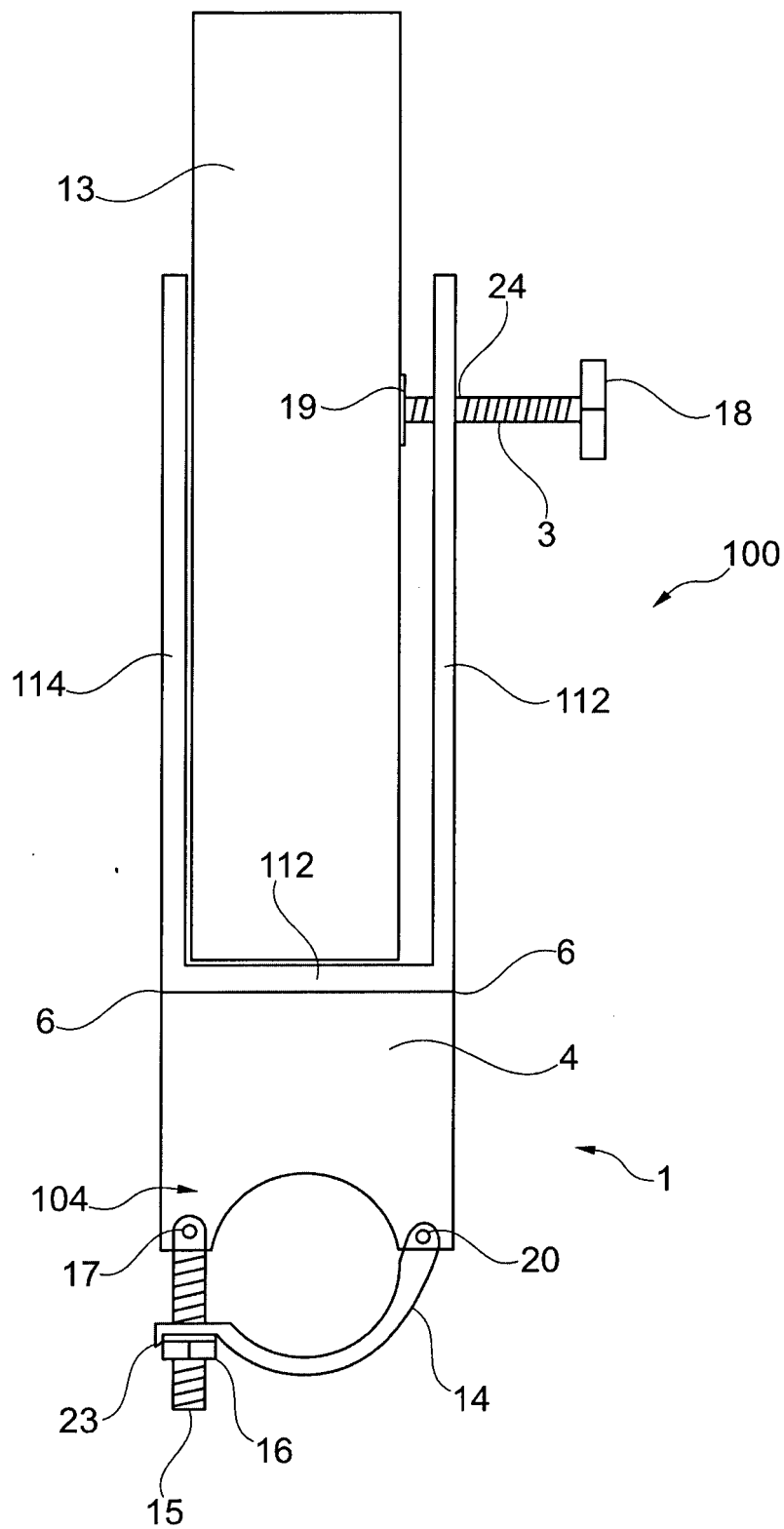


Fig. 8

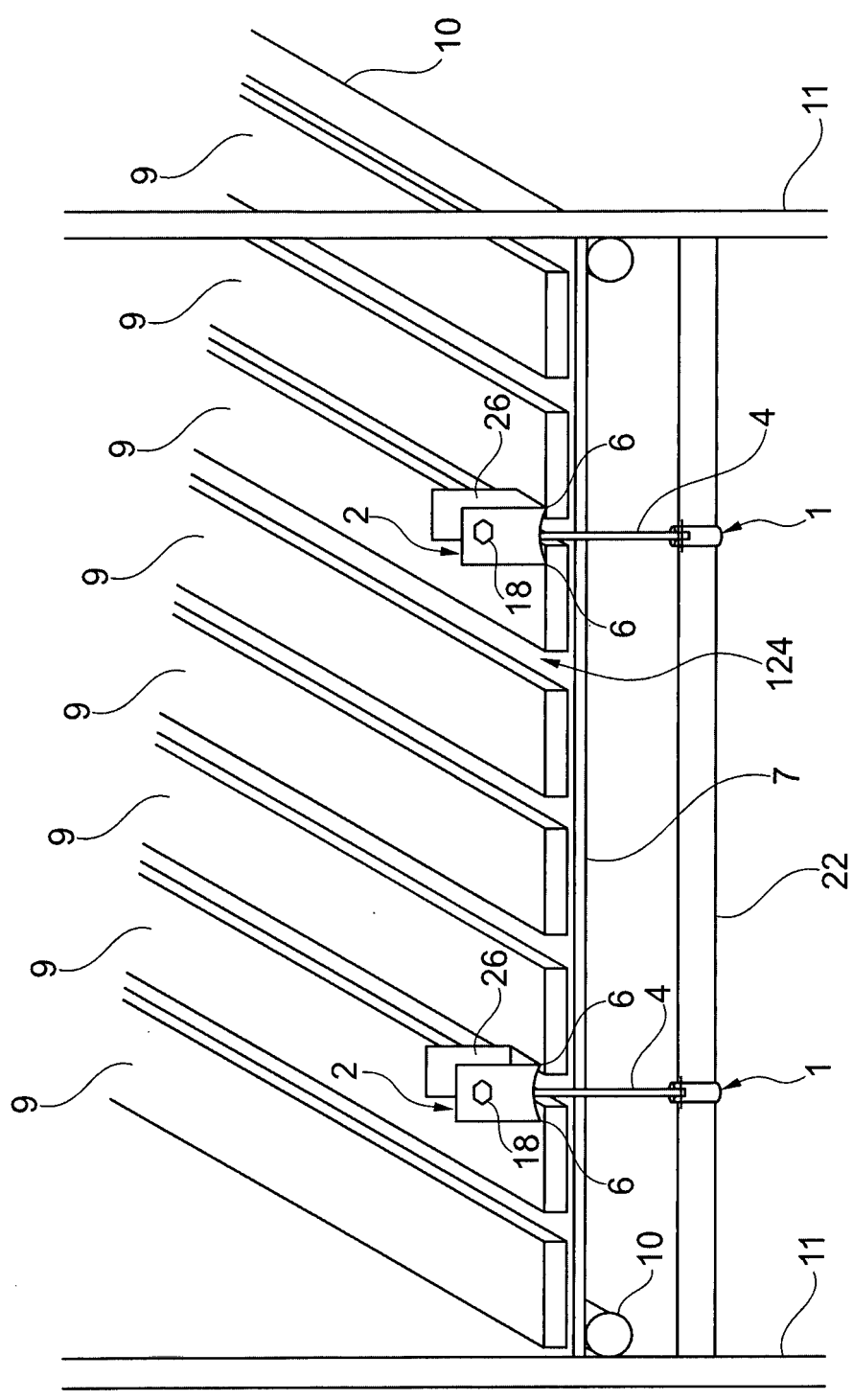


Fig. 9

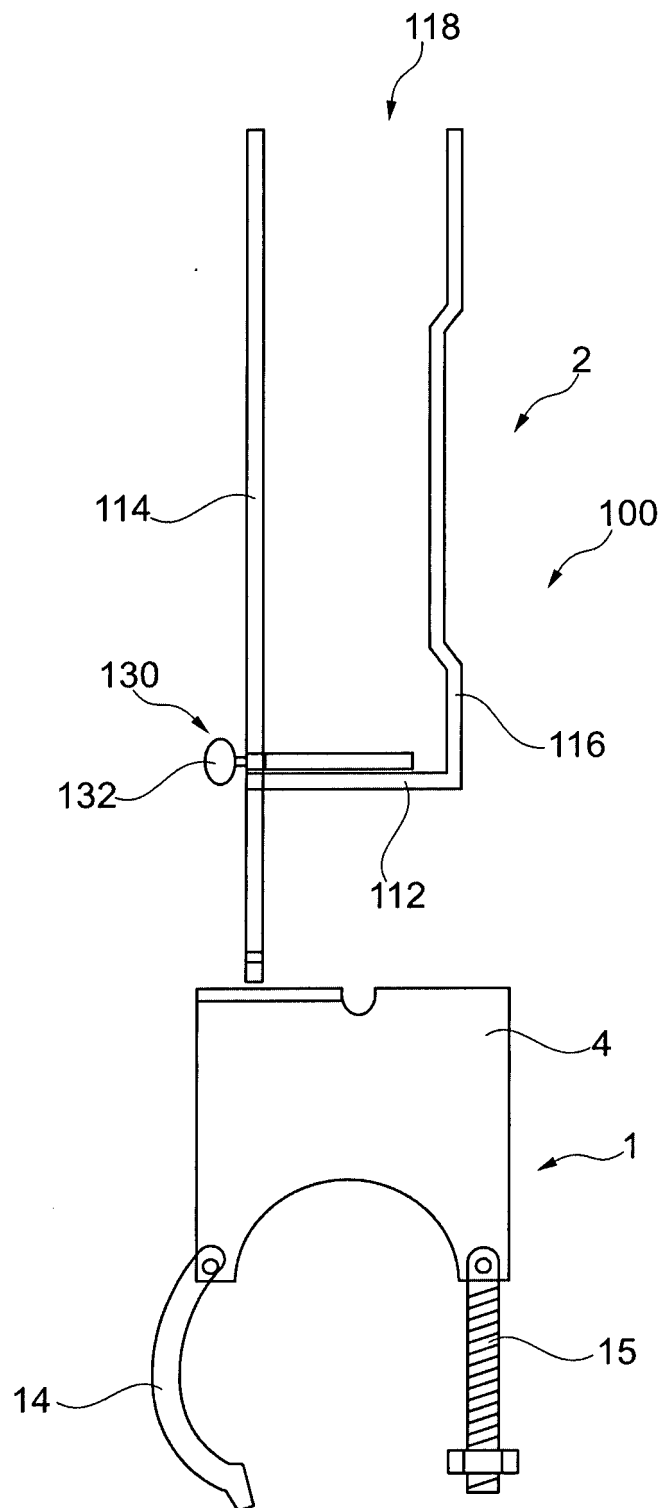


Fig. 10a

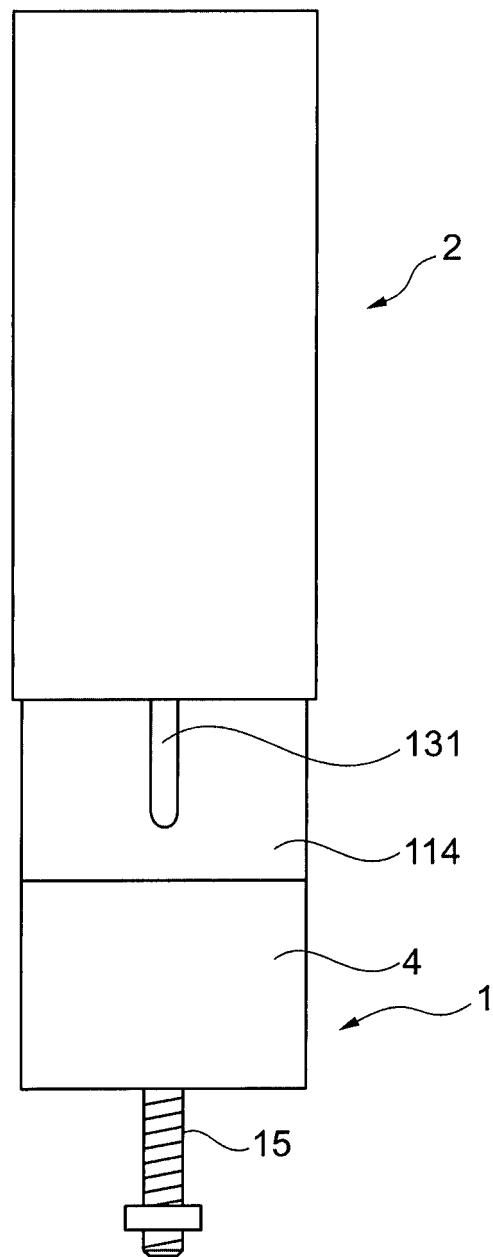


Fig. 10b

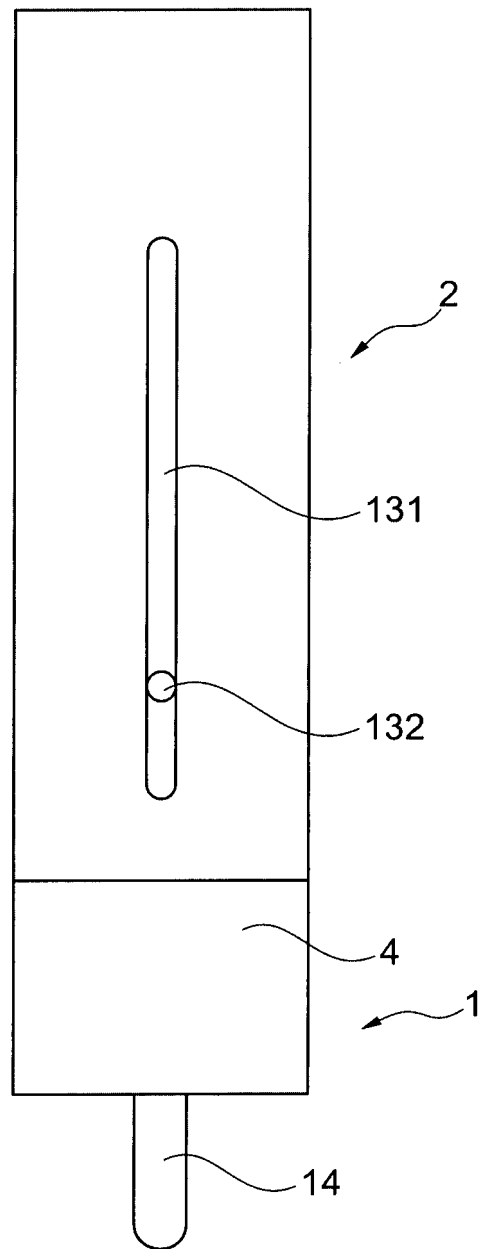


Fig. 10c



EUROPEAN SEARCH REPORT

Application Number
EP 16 27 5009

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A	* abstract; figures 1-5 *	3,7,8, 10,13,14	
X	JP 2011 246994 A (NAKAO KIMIYO) 8 December 2011 (2011-12-08)	1,2,4-8, 10-15	
A	* abstract; figures 1-12 *	3,9	
X	GB 2 240 804 A (MCGIBBON PETER BARTHOLEMEW) 14 August 1991 (1991-08-14) * page 2, line 21 - page 4, line 19; figure 2 *	1,2,4-8, 15	
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A	* page 1, line 98 - page 2, line 87; figures 1-2 *	9,13,14	
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 19 May 2016	Examiner Manera, Marco
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			

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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