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(54) **Gate**

(57) A kit of parts for installing a gate across a gap between a first (2) and a second (3) elongate member within a framework or structure comprises at least one securing means (9'). The securing means (9') extends,

in use, around the first (2) or second (3) elongate member to fix a component to the first (2) or second (3) elongate member. The kit of parts may have particular utility in the installation of ladder gates on offshore oil or gas platforms.

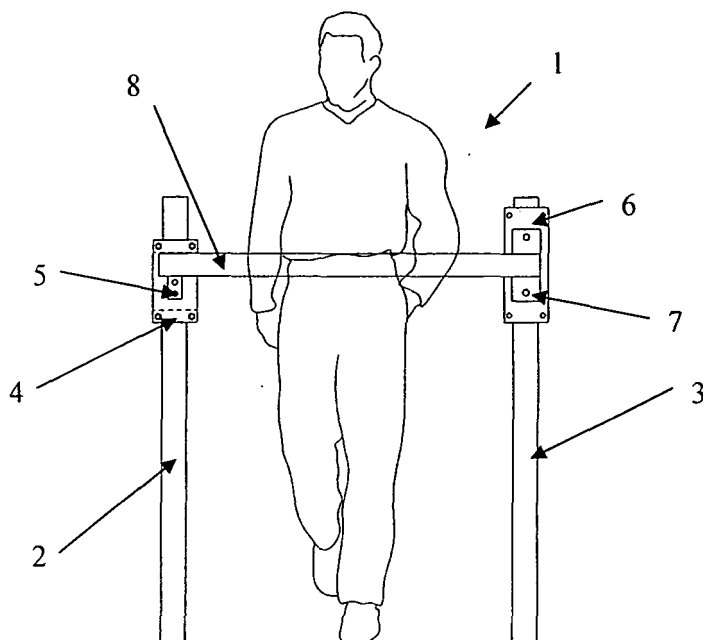


Figure 1(a)

## Description

**[0001]** The present invention relates to gates, in particular ladder gates, i.e. gates positioned next to, e.g. at the top of, ladders, and methods of installing the same.

**[0002]** Gates are positioned at the top of ladders, primarily for safety reasons. Indeed, British (BS5395-3: 1985) and European (EEMUA 105) standards require that ladders in industrial premises must be fitted with a safety gate to prevent accidental falls from height.

**[0003]** Such ladder gates may typically comprise a steel drop bar or a steel gate using bolts as a hinge or a chain link.

**[0004]** However, corrosion of the hinge or chain shackles of these ladder gates can result in their becoming difficult or impossible to operate. In this instance, people may be tempted to try to step or climb over or scramble or crawl under the ladder gate, thereby potentially placing themselves at risk. Accordingly, the ladder may have to be condemned as unsafe until such time as the gate is fixed or replaced. Clearly, this is inconvenient and may also result in operational inefficiency and/or increased maintenance costs.

**[0005]** A further problem with drop bar or chain link ladder gates is that they require the user to take one hand off the ladder in order to open the gate. By removing a hand from the ladder, the user may be inadvertently increasing the risk of falling.

**[0006]** Self-closing swing bar gates are known. Such gates may be opened simply by a person walking into the bar and will close automatically once the person has passed through the gate. Typically, when used as a ladder gate, the gate will be located such that, in use, the bar is pushed away from the ladder and onto the platform. Accordingly, the user may not have to remove a hand from the ladder in order to pass through the gate.

**[0007]** An example of a known self-closing security gate is designed and manufactured by Intrepid Industries Inc. and marketed by PAR Group. This gate is a self closing gate, moulded completely from polyurethane. The gate has a horizontal swing, not a vertical drop. The design of the gate relies solely on gravity. It does not depend on springs, cams, bearings or the operator. When opened, the gate's hinge design causes the blade to travel slightly upward. When the opening force is released, the blade is pulled downward by gravity and swings back to the closed position.

**[0008]** However, there is a problem associated with installing this gate design as a ladder gate, especially in offshore situations. In order to fix the gate in place, it is necessary to drill a number of holes, e.g. in the existing steelwork associated with the ladder and platform. Drilling such holes offshore, e.g. on an oil rig, typically requires safety permits to be obtained, which may be time consuming. Further, the core crew on an oil rig typically does not have the specialist skills required for this operation. Accordingly, it may be necessary to bring in someone with the requisite skills to install the gate, which may

be time consuming and/or expensive.

**[0009]** Accordingly, it is a non-exclusive object of the present invention to provide the means and a method for installing a gate, e.g. a ladder gate, which mitigates or overcomes at least some of the problems associated with the prior art.

**[0010]** A first aspect of the invention provides a kit of parts for installing a gate, preferably a ladder gate, across a gap between a first and a second elongate member within a framework or structure comprising at least one securing means which extends, in use, around the first or second elongate member to fix a component to the first or second elongate member.

**[0011]** The kit may further comprise at least one support block, at least a portion of the or each support block being locatable, in use, between a portion of the or each securing means and the first or second elongate member. The or each support block may be releasably engageable with or adhered or fixed to the or each securing means. For instance, the or each support block may comprise a groove for receiving a complementarily-shaped portion of the or each securing means.

**[0012]** The support block may further comprise an aperture extending therethrough, through which, in use, there passes at least a portion of the or each securing means.

**[0013]** The or each securing means may comprise at least one u-shaped support bracket.

**[0014]** The kit may further comprise a first and a second component adapted to have one or more parts of a gate mounted thereon. The first and/or second components may each comprise a backing plate having at least one aperture therethrough for receiving a portion of the or each securing means.

**[0015]** The kit may further comprise a gate or the parts thereof. Preferably, the gate may be a swing bar gate. Preferably, the gate comprises a bar, which swings, in use, in a substantially horizontal plane about a hinge. Most preferably, the gate may be a self-closing swing bar gate.

**[0016]** Preferably, the first component or a or the body mounted thereon comprises a or the hinge attached to a part, typically an end portion, of a bar such that the bar may be pivotable about the hinge.

**[0017]** Preferably, the second component or a or the body mounted thereon comprises a support block upon which a portion of the bar may rest.

**[0018]** Advantageously, the kit of parts may be packaged together and delivered to a remote location, e.g. an oil rig, whereupon the core crew will be able to follow a set of instructions contained therein to install the gate without the need for any specialist skills, e.g. drilling on offshore oil platforms. Of course, kits of parts may be kept in stock.

**[0019]** Advantageously, the kit of parts may be used to install a gate at a new location or across a gap where a previously-installed gate needs to be replaced.

**[0020]** A second aspect of the invention provides a

method of installing a gate, preferably a ladder gate, across a gap between a first and a second elongate member within a framework or structure, the method comprising:

- fixing a first component to the first elongate member using securing means which extend around the first elongate member;
- fixing a second component to the second elongate member using securing means which extend around the second elongate member; and
- installing a gate across the gap between the first component and the second component.

**[0021]** Advantageously, the method of the present invention may be carried out by the core crew of an oil rig without the need for any specialist skills. In particular, no drilling is required in the method of the invention. Thus, not only is the installation process made simpler, it may also be considerably quicker than known installation processes involving drilling. For instance, it is envisaged that the time required for the installation of a self-closing swing bar gate using the method of the present invention may be of the order of 20 minutes, as compared with four to five hours using the previously-known method.

**[0022]** A third aspect of the invention provides securing means for installing a gate, preferably a ladder gate, across a gap between a first and a second elongate member within a framework or structure, where the first and/or second elongate member has an L-shaped transverse cross-section, the securing means comprising a support bracket and a support block, the support block being engagable, e.g. releasably engagable, with, adherable or fixable to at least a portion of the support bracket, **characterised in that** the support block is locatable within the angle of the L-shaped transverse cross-section of the first or second elongate member and the support bracket is operable to extend around the first or second elongate member to secure, in use, a component proximal to or adjacent a face of the first or second elongate member such that at least a portion of the first or second elongate member is disposed between the support block and the component.

**[0023]** In order that the invention may be more fully understood, it will now be described by way of example only with reference to the accompanying drawings in which:

Figure 1(a) shows a person approaching a swing bar gate;

Figure 1(b) shows a person passing through a swing bar gate;

Figure 2 shows a typical front entry ladder;

Figure 3 is a side elevation of a swing gate support block attached to a section of steelwork;

Figure 4 is a front elevation of the assembly shown in Figure 3;

Figure 5 shows a front elevation of a section of ex-

isting steelwork with a backing plate attached thereto.

Figure 6 is a cross-sectional view of a body attached to the backing plate and steelwork of Figure 5;

Figure 7 is a plan view of a u-shaped support bracket and a support block in place around a section of steelwork;

Figure 8 shows a plan view of the support block of Figure 7;

Figure 9 shows a first side elevation of the support block of Figure 7; and

Figure 10 shows a second side elevation of the support block of Figure 7.

Figure 1 (a) shows a person approaching a swing bar gate installed in accordance with the present invention and Figure 1 (b) shows a person passing through a swing bar gate installed in accordance with the present invention.

**[0024]** In Figure 1 (a), the swing bar gate 1 is shown in a front elevation. A first upright post 2 and a second upright post 3 are shown, the posts 2 and 3 having a gap between them, which gap is spanned by a swing bar 8 extending in a direction substantially perpendicular to the posts 2 and 3.

**[0025]** Secured to the first post 2 is a first rectangular plate 4 on which is mounted a bar support block 5.

**[0026]** Secured to the second post 3 is a second rectangular plate 6 on which is mounted a body 7 comprising a hinge mechanism.

**[0027]** Swing bar 8 is attached at one end to the body 7 by the hinge mechanism. When the gate is closed, i.e. as shown in Figure 1(a), the other end of swing bar 8 rests on or just above bar support block 5.

**[0028]** As shown in Figure 1 (a), a person is approaching the gate 1 from behind, such that he would be able to simply walk through the gate. For example, the person may be approaching the gate having just reached the top of a ladder.

**[0029]** Figure 1 (b) shows a side view of a person walking through a swing bar gate 1' installed according to the present invention. The gate 1' is substantially the same as the gate shown in Figure 1 (a), except that it is operable to swing in the opposite direction. Accordingly, Figure 1 (b) shows a post 3' attached to which is a plate 6'. The plate 6' is attached to the post 3' by two support brackets 9'. Mounted on the plate 6' is a body 7' comprising a hinge mechanism, attached to which is a swing bar 8'.

**[0030]** As shown in Figure 1 (b), the swing bar 8' will open, when a person walks through the gate. The swing bar 8' will automatically close once the person has passed through the gate. It will be appreciated that a person going in the opposite direction through the gate would have to pull the swing bar 8' towards them in order to open the gate. Nevertheless, the swing bar 8' would automatically close once the person has passed through the gate.

**[0031]** Accordingly, in the case of a ladder gate it will

generally be desirable for the gate to be installed and configured such that a person may simply walk through the gate when moving from a ladder on to a platform, but not in the opposite direction. Accordingly, the gate is both safe and convenient to use for the person going from the ladder to the platform and provides a security barrier against accidental falls from the platform.

**[0032]** Figure 2 shows, in elevation, a typical front entry ladder as may be found in an industrial establishment, e.g. a petrochemical plant or an offshore oil or gas platform. Figure 2 shows a ladder 20 having a plurality of rungs 21. The ladder 20 extends upwardly from a first level 22 to a platform 23. A safety handrail 25 is provided to prevent accidental falls from the platform 23. An upper portion of the ladder 20 passes within a safety cage 24. There is a gap in the safety handrail 25 at the top of the ladder 20 to allow access from the ladder 20 to the platform 23 and *vice versa*. The safety cage 24 extends upwardly beyond the uppermost rung of the ladder 20 to the safety handrail 25. A ladder gate (not shown) would be installed across the gap in the safety handrail 25.

**[0033]** Typically, the ladder 20, the platform 23, the safety handrail 25 and the safety cage 24 may be made from steel, e.g. grade 43 steel. Preferably, the steel may be hot dip galvanised.

**[0034]** In use, a person wishing to ascend from the first level 22 to the platform 23 would climb the ladder 20. As he approaches the top of the ladder 20, he will pass upwardly into and through the safety cage 24. At the top of the ladder 20, he will still be within the safety cage 24 and will open the ladder gate that is in place to step from the ladder 20 on to the platform 23.

**[0035]** Figure 3 shows a side elevation of a swing gate support block 33 attached to a section of steelwork 30.

**[0036]** The section of steelwork 30 is an existing section of steelwork located at the top of a ladder (not shown) on an offshore gas platform (not shown). The steelwork 30 is a 70 mm by 70 mm angle section, which comprises a first section 30a in the plane of the paper and a second section 30b extending perpendicularly from the first section 30a in a direction out of the plane of the paper. Attached to the steelwork 30 is a gate closure latch 31. The gate closure latch 31 is a relic from a previous ladder gate, which has not been removed to make way for a new gate.

**[0037]** Below the gate closure latch 31, there is a backing plate 32 on which is mounted swing gate support block 33. Two bolts 37a, 37b attach the support block 33 to the backing plate 32. Alternatively, the support block 33 may be adhered to the backing plate 32.

**[0038]** Backing plate 32 lies substantially parallel with, but is spaced from, a major face of second section 30b of the steelwork 30. The support block 33 protrudes substantially perpendicularly from a major face of the backing plate 32 in a direction away from the steelwork 30. An end portion of swing gate bar 34 is shown just above the support block 33. Preferably, the clearance between the bar 34 and the support block 33 may be approximately

2 mm. The swing gate is operable to open by virtue of the bar 34 swinging in a substantially horizontal direction away from the backing plate 32 and steelwork 30.

**[0039]** Between backing plate 32 and said major face of second section 30b are upper and lower spacer plates 39a, 39b. The backing plate 32 comprises an upper pair of apertures and a lower pair of apertures therethrough. The upper pair of apertures is aligned with apertures passing through upper spacer plate 39a, while the lower pair of apertures is aligned with apertures passing through lower spacer plate 39b. Upper u-bolt support bracket 35a passes through the upper pair of apertures in the backing plate 32, upper spacer plate 39a and around the steelwork 30. Lower u-bolt support bracket 35b passes through the lower pair of apertures in the backing plate 32, lower spacer plate 39b and around the steelwork 30. Upper and lower support blocks 36a, 36b are located within the angle of the steelwork 30 and engage with upper and lower u-bolt support brackets 35a, 35b respectively. Nuts 38a, 38b are tightened on the ends of upper and lower u-bolt support brackets to securely hold the backing plate 32 in place.

**[0040]** Figure 4 shows a front elevation of the assembly of Figure 3. Accordingly, like features have been accorded the same reference numerals.

**[0041]** Figure 4 shows a major surface of second section 30b of existing steelwork 30.

Backing plate 32 with swing gate support block 33 protruding therefrom is secured to the steelwork 30 by upper and lower u-bolt support brackets 35a, 35b. Nuts 38a, 38b are engagable with the end of upper and lower u-bolt support brackets 35a, 35b respectively to securely hold the backing plate 32 in place. An end portion of swing gate bar 34 is shown above the support block 33.

**[0042]** Figure 5 shows a front elevation of a section of existing steelwork 52, attached to which is a backing plate 53.

**[0043]** The backing plate 53 is rectangular in shape. In one embodiment, the rectangle may have a longer dimension of 327 mm and a shorter dimension of 126 mm. The backing plate may be 10 mm thick.

**[0044]** The backing plate 53 has four apertures 55 therethrough, which apertures 55 are located proximal to the corners of the backing plate 53. In use, apertures 55 receive securing means (not shown), typically u-shaped brackets, to secure the backing plate 53 to the steelwork 52. The securing means are described in more detail later.

**[0045]** The backing plate 53 further comprises two further apertures 54, which are located in a centre region of the backing plate 53. In use apertures 54 receive bolts (not shown) to mount a body (not shown) comprising a hinge mechanism (not shown) on the backing plate 53.

**[0046]** Figure 6 shows in cross section along the longitudinal centre line of the backing plate 53 with a body 57 mounted thereon section along the longitudinal centre line of the backing plate 53. Backing plate 53 has a rear face 53a and a front face 53b. Two apertures 54 pass

through the backing plate 53. The apertures are spaced apart one above the other. In one embodiment the distance from the top of the backing plate 53 to the centre of the upper aperture is 83 mm, the distance between the centres of the two apertures is 158 mm and the distance between the centre of the lower aperture and the bottom of the backing plate 53 is 86 mm.

**[0047]** A body 57 is mounted on the front face 53b of the backing plate 53. Bolts 56, e.g. M16 stud bolts, passing through apertures 54 and into the body 57 secure the body 57 to the backing plate 53.

**[0048]** The body 57 comprises a channel 58 having a base substantially parallel with the backing plate 53 and two perpendicular side walls. The channel 58 houses hinge connection means (not shown) adapted for attachment to an end of a swing bar (not shown)

**[0049]** Figure 7 shows a plan view detail of a u-bolt support bracket 60 and a support block 61 in place around a section of steelwork 62.

**[0050]** The steelwork 62 is an angle section. For example, the steelwork may be 70 mm by 70 mm or 50 mm by 50 mm in dimension. The dimensions of the steelwork are not considered critical to the invention and it is envisaged that the invention may be used with any common dimensions.

**[0051]** A plate 63 is secured to the steelwork 62 by the u-shaped support bracket 60. The plate 63 may carry a bar support block or a hinge device for one or other end of a swing gate bar (not shown).

**[0052]** The support block 61 is located within the angle of the steelwork 62. As shown in plan view in Figure 6, the support block is L-shaped in cross section having a first wing 61a and a second wing 61 b, the second wing 61 b being perpendicular to the first 61a. The first wing 61a is parallel to the plate 63.

**[0053]** The first wing 61a has an aperture there-through, through which the u-shaped support bracket 60 passes.

**[0054]** The second wing 61 b has at an end a groove for receiving, in use, a portion of the u-shaped support bracket 60. The groove may be dimensioned to provide a snap-fit with the portion of the u-shaped support bracket 60.

**[0055]** On the opposite side of the plate 63 from the support block 61, each end of the u-shaped support bracket 60 is furnished with a spacer 64 and nut 65.

**[0056]** Each of the spacers 64 is made from nylon and had a diameter of 30 mm and a thickness of 20 mm.

**[0057]** Each of the nuts 65 is also made from nylon. By tightening the nuts 65, the u-shaped support bracket 60 securely holds the plate 63 in place.

**[0058]** Figures 8, 9 and 10 show further details of the support block 61; Figure 8 is a plan view, Figure 9 is a side elevation and Figure 10 is a front elevation.

**[0059]** In plan view, as shown in Figure 8, the support block 61 comprises two wings 61a, 61 b, which are perpendicularly disposed to one another to give an overall L-shape. As shown in Figure 8, the L-shape has six sides

610a, 610b, 610c, 610d, 610e and 610f. Side 610a is parallel to sides 610c and 610e and side 610b is parallel to sides 610d and 610f. Sides 610e and 610f meet each other at right angles. Side 610a is shorter than side 610c; side 610b is longer than side 610d; and side 610e is shorter than side 610f. An aperture 611 passes through the wing 61a from side 610b to 610f in a direction parallel to side 610a. Side 610d comprises a groove 612, which extends along the length of side 610d from side 610c to side 610e.

**[0060]** In a preferred embodiment, side 610a may be 50 mm long; side 610b may be 87 mm long; side 610c may be 68 mm long; and side 610d may be 52 mm long.

**[0061]** Figure 9 shows an elevation of side 610c of support block 61. As shown in Figure 9, side 610c is essentially rectangular in shape. In a preferred embodiment, the longer dimension of the rectangle may be 71 mm and the shorter dimension may be 30 mm. In this elevation, groove 612 is shown in transverse cross section. Groove 612 extends into the support block 61 from one of the shorter dimensions of side 610c. The transverse cross-section of groove 612 is symmetrical about a mirror plane parallel to and halfway between the longer dimensions of side 610c. In a preferred embodiment, groove 612 is substantially semi-circular in cross section and has a depth of around 9 mm.

**[0062]** Figure 10 shows an elevation of side 610b of support block 61. As shown in Figure 10, side 610b is rectangular in shape. In a preferred embodiment, the longer dimension of the rectangle may be 90 mm and the shorter dimension may be 30 mm. In this elevation, aperture 611 is shown in transverse cross section. Aperture 611 extends into the support block 61 perpendicularly from side 610b. In a preferred embodiment, aperture 611 is substantially circular in cross section. As shown in Figure 10, the centre of the aperture 611 is located half-way up the height of side 610b and towards an end of side 610b. For instance, the distance from the centre of the aperture 611 to the further of the two shorter ends of side 610b may be 73 mm.

**[0063]** While the support block 61 and u-shaped support bracket 60 have been described as separate components, they may be provided as a single body, which is to say that the support block and u-shaped support bracket may be adhered or otherwise fixed or bonded to one another prior to their delivery to a site of use.

**[0064]** Also, while the specific support block 61 and support bracket 60 described herein are particularly well suited for use in the installation of gates to sections of steelwork which are L-shaped in transverse cross section, it will be appreciated that they may be readily adapted for use with sections of other, typically irregular or complex, transverse cross sections.

## Claims

1. A kit of parts for installing a gate across a gap be-

- tween a first (2, 30) and a second (3, 52) elongate member within a framework or structure comprising at least one securing means (9', 35a, 35b, 60) **characterised in that** the securing means (9', 35a, 35b, 60) extends, in use, around the first (2, 30) or second (3, 52) elongate member to fix a component to the first (2, 30) or second (3, 52) elongate member. 5
2. A kit as claimed in claim 1 further comprising at least one support block (36a, 36b, 61), at least a portion of the or each support block (36a, 36b, 61) being locatable, in use, between a portion of the or each securing means (9', 35a, 35b, 60) and the first (2, 30) or second (3, 52) elongate member. 10
3. A kit as claimed in claim 2, wherein the or each support block (36a, 36b, 61) is releasably engagable with the or each securing means (9', 35a, 35b, 60). 15
4. A kit as claimed in claim 2, wherein the or each support block (36a, 36b, 61) is adhered or fixed to the or each securing means (9', 35a, 35b, 60). 20
5. A kit as claimed in any one of the preceding claims further comprising a first and a second component adapted to have one or more parts of a gate mounted thereon, wherein the first and/or second components each comprise a backing plate (32, 53) having at least one aperture (55) therethrough for receiving a portion of the or each securing means (9', 35a, 35b, 60). 25 30
6. A kit as claimed in any one of the preceding claims further comprising a self-closing swing bar gate. 35
7. A method of installing a gate across a gap between a first and a second elongate member within a framework or structure comprising:
- a. fixing a first component to the first elongate member using securing means which extend around the first elongate member; 40
  - b. fixing a second component to the second elongate member using securing means which extend around the second elongate member; 45
  - and
  - c. installing a gate across the gap between the first component and the second component.
8. Securing means for installing a gate across a gap between a first (2, 30) and a second (3, 52) elongate member within a framework or structure, where the first (2, 30) and/or second (3, 52) elongate member has an L-shaped transverse cross-section, the securing means comprising a support bracket (9', 35a, 35b, 60) and a support block (36a, 36b, 61), the support block (36a, 36b, 61) being engagable with, adherable or fixable to at least a portion of the support bracket (9', 35a, 35b, 60), **characterised in that** the support block (36a, 36b, 61) is locatable within the angle of the L-shaped transverse cross-section of the first (2, 30) or second (3, 52) elongate member and the support bracket (36a, 36b, 61) is operable to extend around the first (2, 30) or second (3, 52) elongate member to secure, in use, a component proximal to or adjacent a face of the first (2, 30) or second (3, 52) elongate member such that at least a portion of the first (2, 30) or second elongate member (3, 52) is disposed between the support block (36a, 36b, 61) and the component. 55

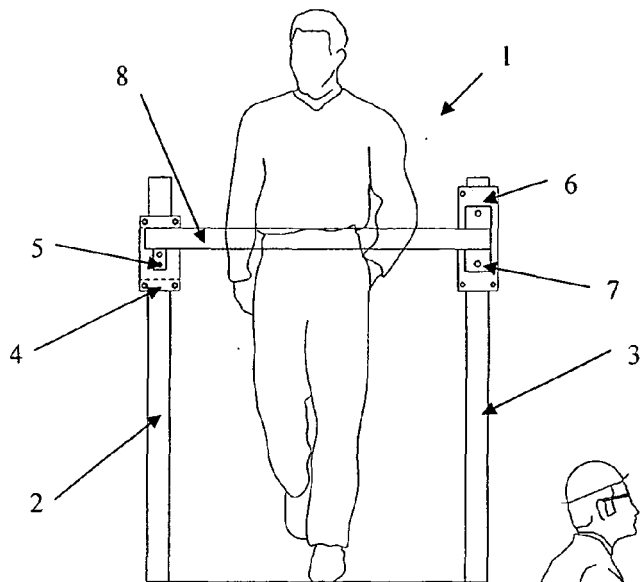


Figure 1(a)

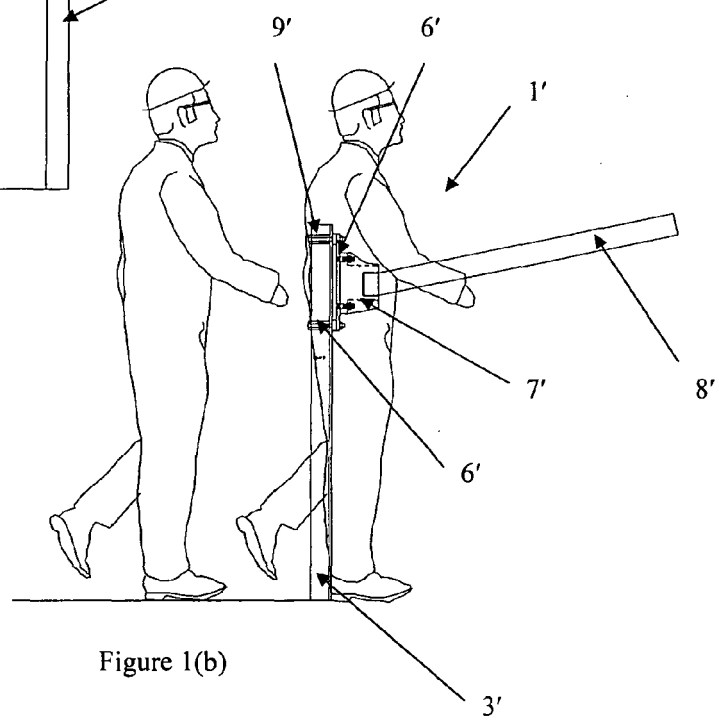


Figure 1(b)

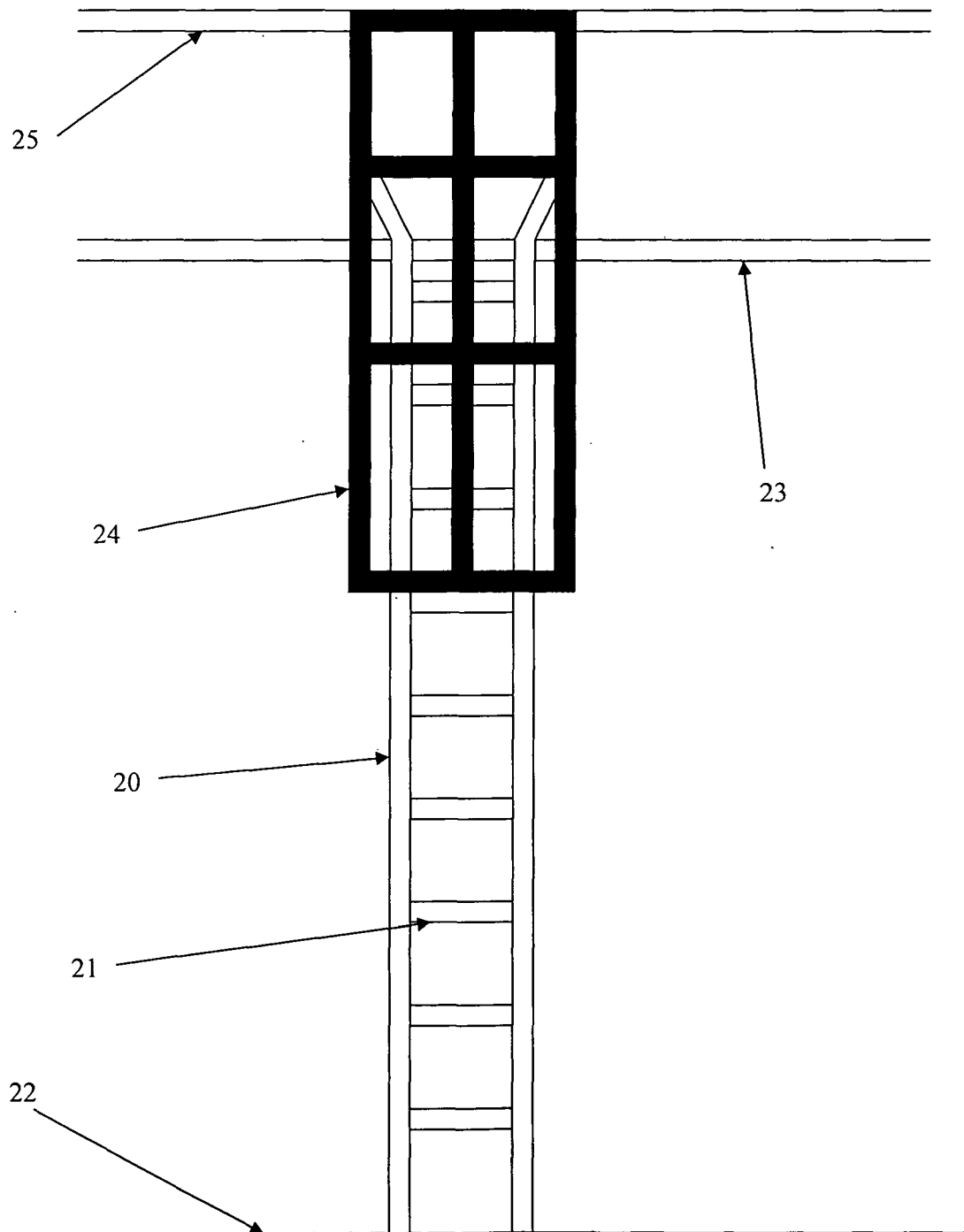


Figure 2



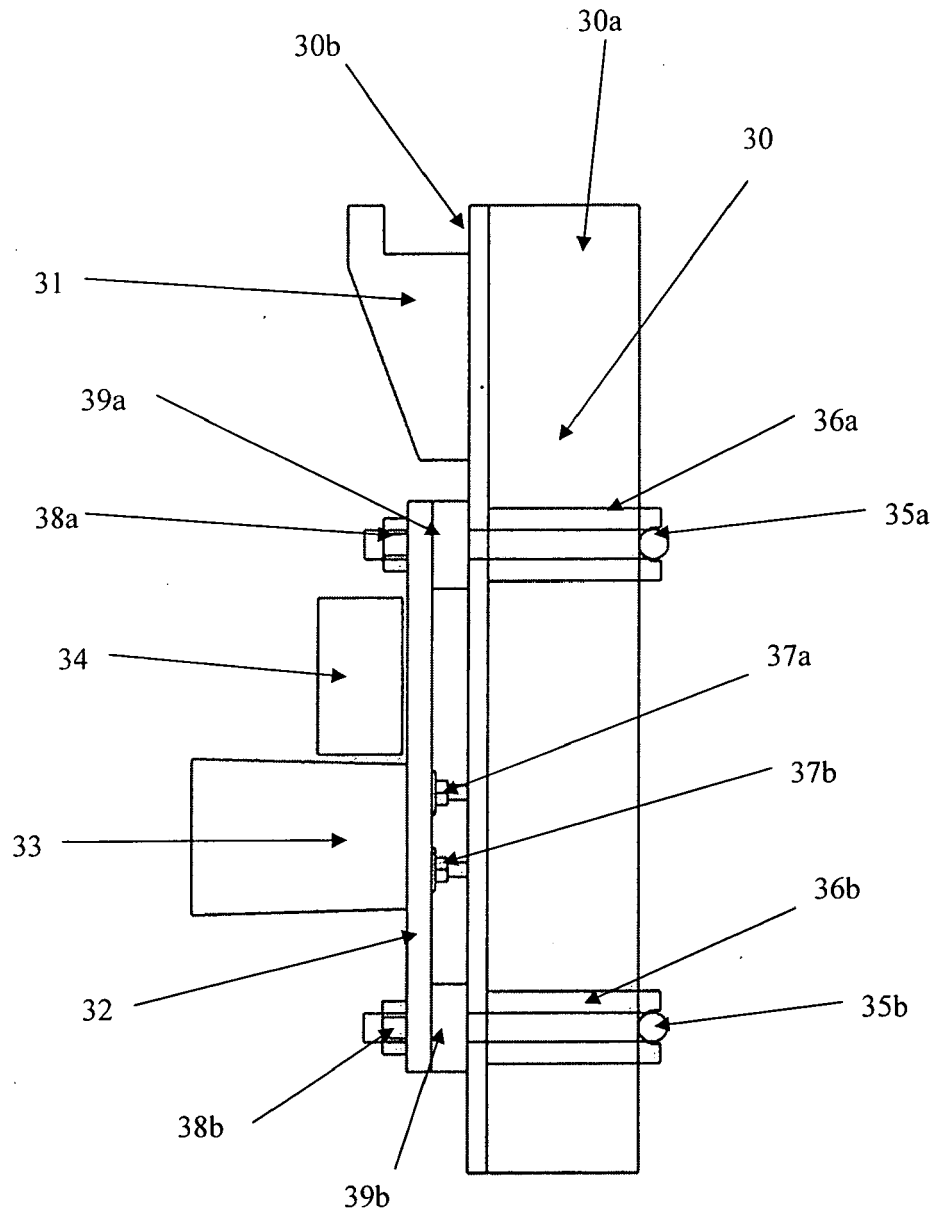


Figure 3

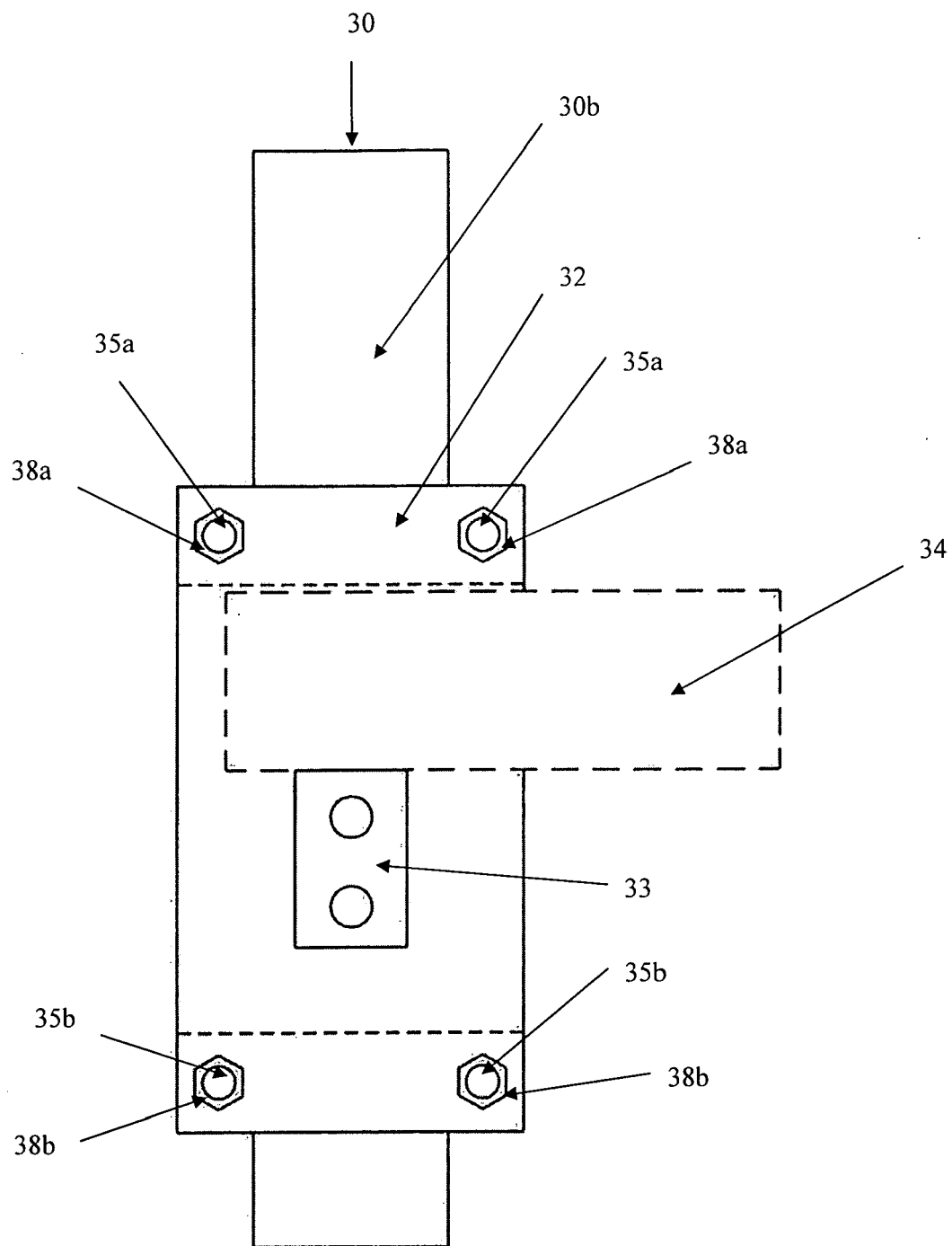


Figure 4

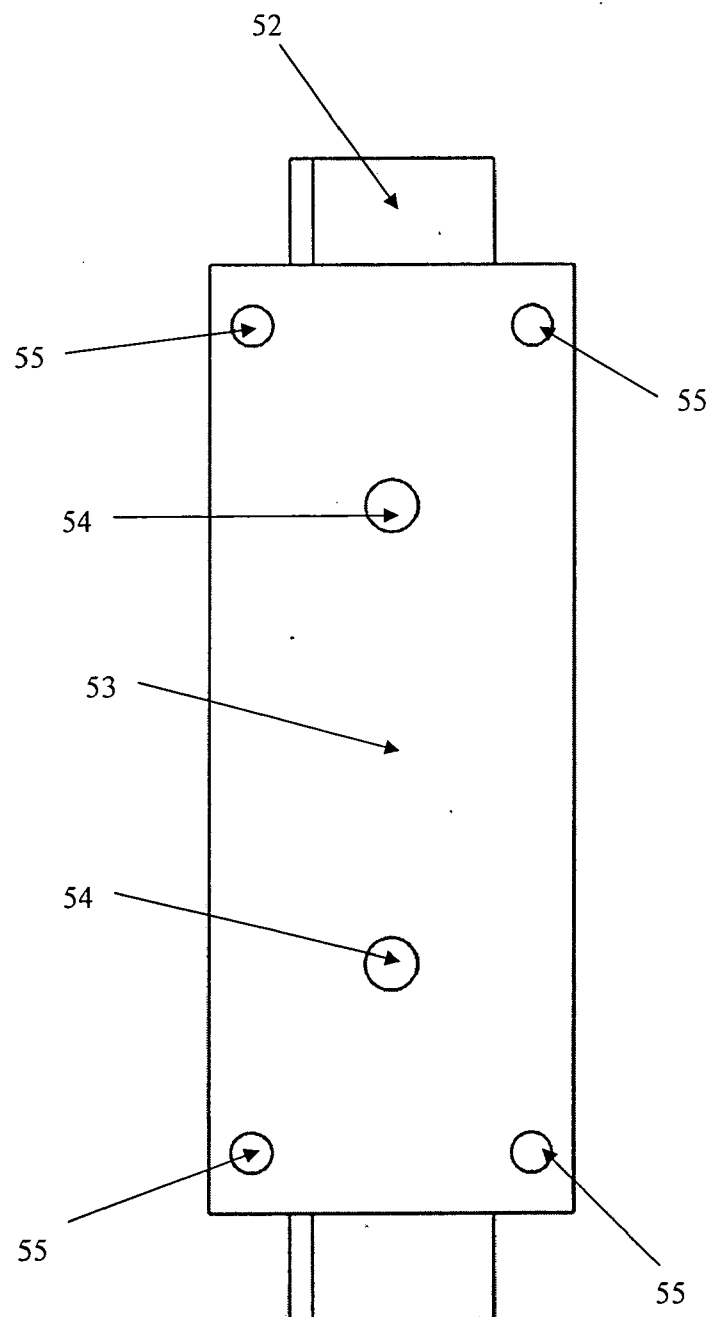


Figure 5

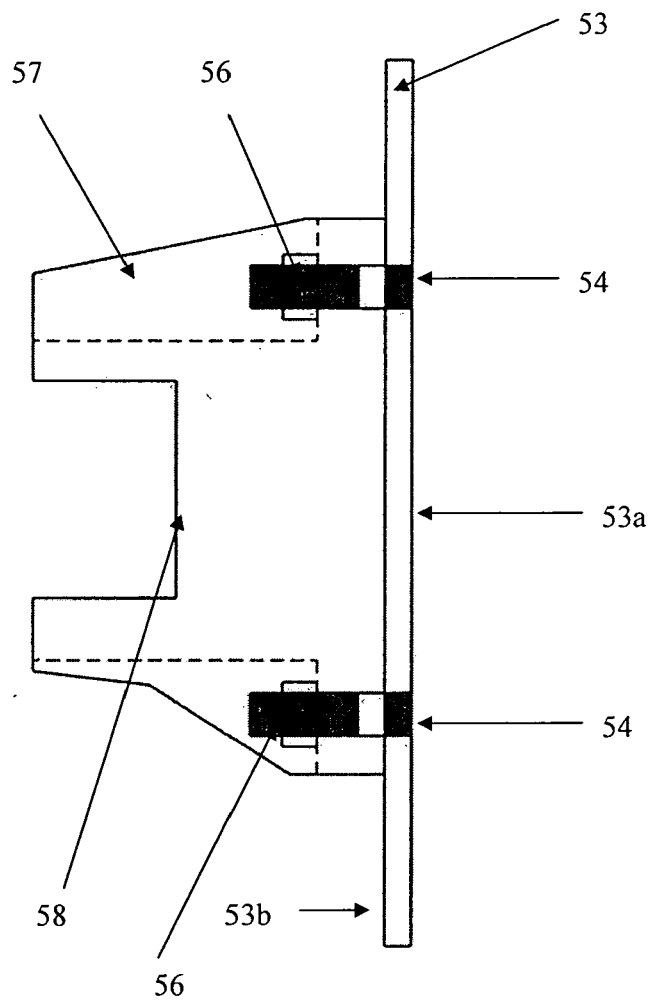


Figure 6

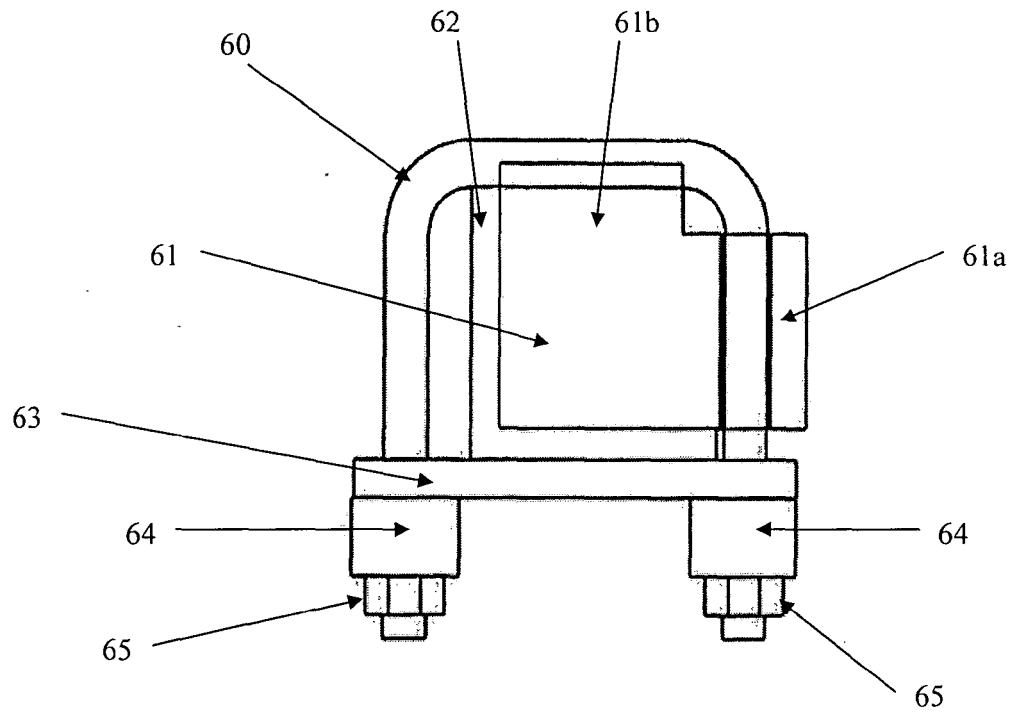


Figure 7

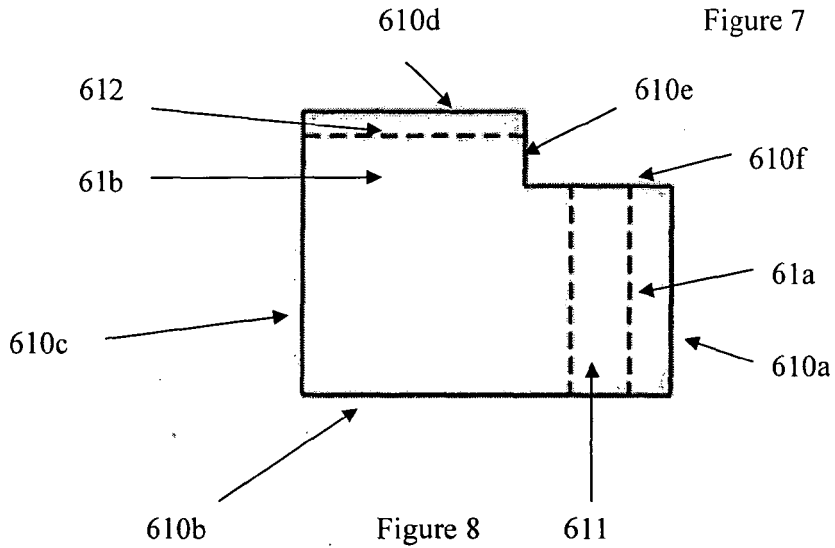


Figure 8

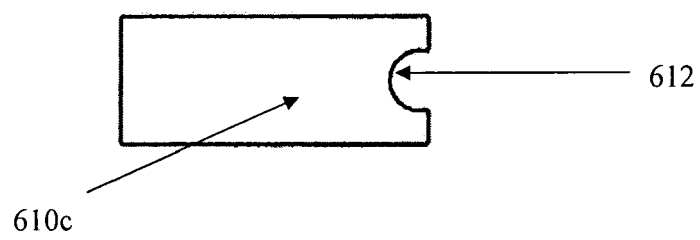


Figure 9

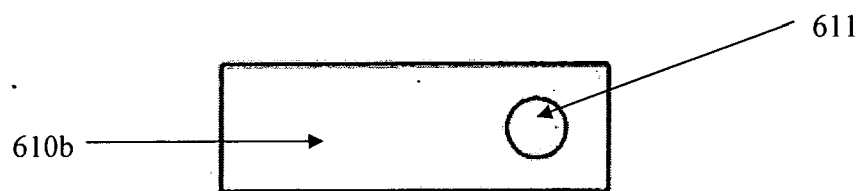


Figure 10



## EUROPEAN SEARCH REPORT

Application Number  
EP 09 25 0475

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 5 080 192 A (KERR JAMES F [US]) 14 January 1992 (1992-01-14) * column 2, line 4 - line 26; figures 1-5 *	1-7	INV. E06C7/00 E04G21/32 E04G5/14
X	----- NL 1 012 205 C1 (SPREEUWENBERG STEIGERBOUW B V [NL]) 4 December 2000 (2000-12-04) * figures 1,2 *	1-4,6,7	
X	----- GB 2 383 074 A (HARPER STANLEY ERNEST [GB]) 18 June 2003 (2003-06-18) * figure 1 *	1	
A	----- FR 2 621 346 A (ANGLADE RENE [FR]) 7 April 1989 (1989-04-07) * figures 2,3,5,6 *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			E06C E04G
The present search report has been drawn up for all claims			
Place of search <b>Munich</b>		Date of completion of the search <b>18 August 2009</b>	Examiner <b>Bastian, Almut</b>
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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