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(54) **POST MOUNTING FOOTING**

FUNDAMENT FÜR MASTMONTAGE

SOCLE DE MONTAGE DE POTEAU

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(56) References cited:

WO-A1-2008/019499

WO-A1-2009/118667

FR-A1- 2 934 624

GB-A- 2 192 218

US-A- 3 688 439

US-A- 3 956 853

US-A- 6 050 032

EP 2 459 820 B1

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Description

[0001] The present invention relates to a post mounting footing and particularly but not exclusively to a post mounting footing for mounting a support post for a guard-rail.

[0002] Safety guardrails are known which can be mounted in areas of potential danger, such as for example on roof structures. Such guardrails may have support posts mounted in socket footing structures either permanently fixed in position or temporarily. Cross members are typically clamped or otherwise secured between adjacent support posts. It is known for such guardrail structures to be hingedly mounted at a hinge footing in order to enable the guardrail to be folded flat from an upright position.

[0003] US6050032 discloses a known safety fence for a square hatched formed in a slab of a building. WO2008/019499 discloses a post support assembly for an adjustable safety rail barricade comprised of a flat attachment base plate to which a post is secured. GB 2 192 218 A discloses a collapsible barrier assembly with the features of the preamble of claim 1. An improved arrangement has now been devised.

[0004] The present invention provides a post mounting footing, particularly suitable for a guardrail or barrier system, comprising:

a lower part;

an upper part, hinge mounted with respect to the lower part;

wherein the upper and lower parts are configured to be re-orientatable between a first position in which hinge operation is inhibited; and a second position in which clearance between the upper and lower parts is enabled so as to permit hinging;

wherein a hinge formation is fixed to one of the upper and lower parts and is received in a slot provided in a tongue portion in the other of the upper and lower parts, the hinge formation being movable along the slot when the upper and lower parts are re-orientated between the first and second position;

wherein the slot runs in an upward and downward direction and extends completely across the width of the tongue portion; and

wherein a locking element is received in a bore, the bore extending completely through the tongue portion in a direction transverse to, and intersecting with, the slot, such that the locking element is positionable immediately below the hinge formation to inhibit movement of the hinge formation along the slot, thereby locking the upper and lower parts to prevent the upper and lower parts being re-orientated between the first and second position.

[0005] In one embodiment, it is preferred that the upper and lower parts are configured to be re-orientatable between a first position in which abutment portions of the

upper and lower parts abut one another to inhibit hinge operation; and a second position in which clearance between the abutment portions is enabled so as to permit hinging.

[0006] Beneficially, the upper part is arranged to be displaced upwardly relative to the lower part in order to move from the first position to the second position.

[0007] A preferred feature is that the upper and lower parts are configured to permit hinging through substantially greater than 90 degrees.

[0008] It is preferred in certain realisations that, in the first position the upper part rests in load bearing contact on the lower part.

[0009] In a preferred embodiment one of the upper and lower parts (preferably the lower part) is provided with a recess having an open upper portion, an open side portion and a closed side portion opposed to the open side portion. The other of the upper and lower parts comprises the tongue portion arranged to be received in the recess of the other part. Beneficially a surface of the closed side portion comprises an abutment surface.

[0010] In a preferred embodiment the upper and lower parts hinge such that in the hinged position, one of the parts extends out of the other part through the open side portion.

[0011] The invention will now be further described in a specific embodiment by way of example only and with reference to the accompanying drawings, in which:

Figure 1 is a perspective exploded view of a Post mounting footing in accordance with the invention;

Figure 2 is a side view of the post mounting footing of figure 1 ;

Figure 3 is a sectional view of the post mounting footing of figures 1 and 2;

Figure 4 is a view of detail of figure 3;

Figure 5 is a view, in section of the post mounting footing of the preceding figures in the process of re-orientation from an upright mounting configuration to a lowered configuration;

Figure 6 is a view, in section of the post mounting footing of the preceding figures re-orientated to a lowered configuration;

Figure 7 is a detailed view of figure 6;

Figure 8 is a perspective view of the post mounting footing of the preceding figures re-orientated to the lowered configuration.

[0012] Referring to the drawings, and initially to figure 1, there is shown a post mounting footing 1 comprising a lower base structure 2 and a post receiving upper part

3 arranged to receive a lower end of a post 4 of a guardrail system. The base structure includes a lower hinge mounting body 5 which is arranged to be received in a socket base 6. The socket base 6 can be bolted or otherwise secured (temporarily or permanently) to a surface or structure to which the guardrail system is mounted.

[0013] The lower hinge body 5 includes a part 5a which is received within the socket base 6, and an upper part 5b provided with a hinge mounting structure.

[0014] The upper part 5b of the lower mounting body 5 is provided with a recess 7 for accommodating a tongue portion 8 of the upper part 3. The recess is provided in the upper portion and one side portion 5a of the lower mounting body 5b. The other side part 5c of the lower mounting body 5b is closed.

[0015] The upper part 3 of the post mounting footing 1 is of two-part construction and comprises a first shell piece 3a that co-operates with a second shell piece 3b to define a pair of socket opening 9 shaped to receive a pair of posts 4 in side by side relationship.

[0016] The shell piece 3a carries the tongue portion 8 extending downwardly. The tongue portion 8 is provided with an elongate slot 10 running in an upward and downward direction and extending completely across the width of the tongue portion 8. The tongue portion 8 of the upper part 3 also includes a bore 11 extending completely through the tongue portion 8 in a direction transverse to (and intersecting with) the slot 10. The end of the bore 11 is provided with a screw thread for threaded engagement with the end of a fixing bolt 12 that fits into the bore 11. The other end of the bore 11 is countersunk to receive the head of the fixing bolt. The fixing bolt 12 head can be accessed when screwed in by means of an Allen key or other mechanical torque drive tool.

[0017] The upper part 5b of the lower mounting body 5 is provided with a hinge pivot rod 13 which is mounted in respective mounting apertures 14 in upright walls 5d 5e spaced at opposite sides of the recess 7.

[0018] The post mounting footing 1 is assembled such that the upper part 3 rests in weight bearing contact on the lower mounting body 5 with the tongue 8 at a home position received in the recess 7 of the lower mounting body 5. The hinge pivot rod 13 extends through the slot 10 and is positioned at the uppermost extent of the slot 10. The fixing bolt 12 is screwed into place extending through the bore 11 such that it is positioned immediately below the hinge pivot rod 13. This situation, with the bore 11 positioned to position the bolt 12 immediately below the hinge pivot rod is shown clearly in figures 3 and 4. In this position the tongue 8 is positioned immediately adjacent the internal surface of closed side part 5c. The upper part 3 is prevented from pivoting out of the upright orientation by the presence of the fixing bolt 12 and the tongue 8 being is positioned immediately adjacent the internal surface of closed side part 5c.

[0019] The upper part 3 is however capable of pivoting on the hinge pivot rod 13 to the position shown in figures 6 7 and 8. In order to achieve this, the fixing bolt 12 is

first removed from the bore 11 in the upper part 3. This enables the upper part 3 to be displaced from a home or first position, vertically upwardly (arrow A in figure 5) such that a major part of the tongue 8 comes out of the recess 7 in the lower mounting body 5b. In so moving to the upwardly displaced (or second position), the hinge pivot rod 13 moves downwardly relative to the slot 10 until it abuts against the bottom end of the slot 10. From this position, the upper part 3 can be pivoted in the direction of arrow B in figure 5 in order to re-orientate the upper part 3 to the post lowered configuration as shown in figures 6 7 and 8.

[0020] Because the upper part is first raised upwardly before pivoting (to provide the clearance of the upper part 3 and tongue 4 from the lower mounting body 5b and slot 7, the upper part can hinge through greater than 90 degrees, enabling the post lowered configuration to position the support post 4 at an angle inclined downwardly from the post mounting footing. This is particularly advantageous where the post mounting footing is used on a parapet 20 as shown in figure 6, because it means that the end 4a of the post 4 can rest on the horizontal surface 21 spaced below the level of the parapet. If the upper part 3 of the post mounting footing 1 could only hinge or pivot through 90 degrees, then the post 4 would extend directly out from the parapet as a cantilevered beam. Any accidental loading of the cantilevered beam would likely result in buckling of the beam or breakage stress at the post mounting footing. In the case of the present invention the configuration as shown in figure 6 would ensure greater spreading of any loading of the post in the lowered configuration to be spread over more than one loading point at either end of the post.

[0021] Also the fact that the upper part 3 is required to be lifted in order to re-orientate from the upright position provides added safety benefits because it makes accidental pivoting/hinging more difficult to occur (for example if the bolt 12 is not in place).

Claims

1. A post mounting footing (1) comprising:

- a lower part (2);
- an upper part (3), hinge mounted with respect to the lower part (2);
- wherein the upper and lower parts are configured to be re-orientatable between a first position in which hinge operation is inhibited; and a second position in which clearance between the upper and lower parts is enabled so as to permit hinging;
- wherein a hinge formation (5) is fixed to one of the upper (3) and lower (2) parts and is received in a slot (10) provided in a tongue portion (8) in the other of the upper (3) and lower (2) parts, the hinge formation (5) being movable along the

- slot (10) when the upper and lower parts are re-orientated between the first and second position;
wherein the slot (10) runs in an upward and downward direction and extends completely across the width of the tongue portion (8); **characterized in that** a locking element is received in a bore (11), the bore (11) extending completely through the tongue portion (8) in a direction transverse to, and intersecting with, the slot (10), such that the locking element is positionable immediately below the hinge formation (5) to inhibit movement of the hinge formation along the slot (10), thereby locking the upper and lower parts to prevent the upper and lower parts being re-orientated between the first and second position.
2. A post mounting footing according to claim 1, wherein; the upper (3) and lower (2) parts are configured to be re-orientatable between a first position in which abutment portions of the upper and lower parts abut one another to inhibit hinge operation; and a second position in which clearance between the abutment portions is enabled so as to permit hinging.
3. A post mounting footing according to claim 1 or 2, wherein the upper part (3) is arranged to be displaced upwardly relative to the lower part (2) in order to move from the first position to the second position.
4. A post mounting footing according to any preceding claim, wherein the upper (3) and lower (2) parts are configured to permit hinging through substantially greater than 90 degrees.
5. A post mounting footing according to any preceding claim, wherein the first position the upper part (3) rests in load bearing contact on the lower part (2).
6. A post mounting footing according to claim 1, wherein the locking element comprises a fixing bolt (12) passing through the upper part (3).
7. A post mounting footing according to any preceding claim wherein one of the upper and lower parts is provided with a recess (7) having an open upper portion (5b), an open side portion (5a) and a closed side portion (5c) opposed to the open side portion (5a).
8. A post mounting footing according to claim 7, wherein;
the tongue portion (8) of the other of the upper and lower parts is arranged to be received in the recess (7) of the other part; and/or
wherein a surface of the closed side portion (5c) comprises an abutment surface.
9. A post mounting footing according to claim 7 or claim 8, wherein the upper and lower parts hinge such that, in the hinged position, one of the parts extends out of the other part through the open side portion (5a).
10. A post mounting footing according to any preceding claim further comprising a socket base (6) for securing to a structure, the socket base (6) being arranged to receive the lower part (5a) of the post mounting footing (5) preferably wherein the lower part includes a part which is received within the socket base, and an upper part (5b), including a hinge formation, positioned upwardly of the socket base (6).
11. A mounting footing for a guardrail or barrier system, the mounting footing comprising a footing according to any preceding claim.
12. A guardrail or barrier system including one or more post mounting footings according to any of claims 1 to 10.

Patentansprüche

1. Fundament für Mastmontage (1), umfassend:

einen unteren Teil (2),
einen oberen Teil (3), der in Bezug auf den unteren Teil (2) verschwenkbar montiert ist,
wobei der obere und der untere Teil dazu ausgelegt sind, zwischen einer ersten Stellung, in der ein Schwenkbetrieb blockiert ist, und einer zweiten Stellung, in der ein Freiraum zwischen dem oberen und dem unteren Teil ermöglicht ist, um eine Verschwenkung zu erlauben, umorientierbar zu sein,
wobei eine Schwenkanordnung (5) an einem von dem oberen (3) und dem unteren (2) Teil befestigt und in einem Schlitz (10) aufgenommen ist, der in einem Zungenabschnitt (8) in dem anderen von dem oberen (3) und dem unteren (2) Teil vorgesehen ist, wobei die Schwenkanordnung (5) entlang dem Schlitz (10) bewegbar ist, wenn der obere und der untere Teil zwischen der ersten und der zweiten Stellung umorientiert werden,
wobei der Schlitz (10) in einer nach oben und unten verlaufenden Richtung verläuft und sich vollständig über die Breite des Zungenabschnitts (8) erstreckt,
dadurch gekennzeichnet, dass ein Verriegelungselement in einer Bohrung (11) aufgenommen ist, wobei sich die Bohrung (11) in einer quer zu dem Schlitz (10) verlaufenden und diesen kreuzenden Richtung auf eine solche Weise vollständig durch den Zungenabschnitt (8) erstreckt, dass das Verriegelungselement unmit-

- telbar unter der Schwenkanordnung (5) positioniert werden kann, um eine Bewegung der Schwenkanordnung entlang dem Schlitz (10) zu blockieren, wodurch der obere und der untere Teil verriegelt werden, um zu verhindern, dass der obere und der untere Teil zwischen der ersten und der zweiten Stellung umorientiert werden.
2. Fundament für Mastmontage nach Anspruch 1, wobei der obere (3) und der untere (2) Teil dazu ausgelegt sind, zwischen einer ersten Stellung, in der Auflagerabschnitte des oberen und des unteren Teils aneinander anliegen, um einen Schwenkbetrieb zu blockieren, und einer zweiten Stellung, in der ein Freiraum zwischen den Auflagerabschnitten ermöglicht ist, um eine Verschwenkung zu erlauben, umorientierbar zu sein.
 3. Fundament für Mastmontage nach Anspruch 1 oder 2, wobei der obere Teil (3) so angeordnet ist, dass er relativ zu dem unteren Teil (2) nach oben verlagert wird, um sich aus der ersten Stellung in die zweite Stellung zu bewegen.
 4. Fundament für Mastmontage nach einem der vorhergehenden Ansprüche, wobei der obere (3) und der untere Teil (2) dazu ausgelegt sind, eine Verschwenkung über im Wesentlichen mehr als 90 Grad zu erlauben.
 5. Fundament für Mastmontage nach einem der vorhergehenden Ansprüche, wobei der obere Teil (3) in der ersten Stellung in tragendem Kontakt auf dem unteren Teil (2) ruht.
 6. Fundament für Mastmontage nach Anspruch 1, wobei das Verriegelungselement eine Befestigungsschraube (12) umfasst, die durch den oberen Teil (3) führt.
 7. Fundament für Mastmontage nach einem der vorhergehenden Ansprüche, wobei einer von dem oberen und dem unteren Teil mit einer Vertiefung (7) versehen ist, die einen offenen oberen Abschnitt (5b), einen offenen seitlichen Abschnitt (5a) und einen dem offenen seitlichen Abschnitt (5a) gegenüberliegenden geschlossenen seitlichen Abschnitt (5c) aufweist.
 8. Fundament für Mastmontage nach Anspruch 7, wobei der Zungenabschnitt (8) des anderen des oberen und des unteren Teils so angeordnet ist, dass er in der Vertiefung (7) des anderen Teils aufgenommen ist, und/oder wobei eine Fläche des geschlossenen seitlichen Abschnitts (5c) eine Auflagerfläche umfasst.
 9. Fundament für Mastmontage nach Anspruch 7 oder Anspruch 8, wobei der obere und der untere Teil so verschwenkt werden, dass sich einer der Teile in der verschwenkten Stellung durch den offenen seitlichen Abschnitt (5a) aus dem anderen Teil heraus erstreckt.
 10. Fundament für Mastmontage nach einem der vorhergehenden Ansprüche, das ferner eine Muffenbasis (6) zum Befestigen einer Struktur umfasst, wobei die Muffenbasis (6) so angeordnet ist, dass sie den unteren Teil (5a) des Fundaments (5) für Mastmontage aufnimmt, wobei vorzugsweise der untere Teil einen Teil, der in der Muffenbasis aufgenommen ist, enthält und einen oberen Teil (5b), der eine Schwenkanordnung enthält und oberhalb der Muffenbasis (6) positioniert ist.
 11. Montagefundament für eine Geländer- oder Schutz Einrichtung, wobei das Montagefundament ein Fundament nach einem der vorhergehenden Ansprüche umfasst.
 12. Geländer- oder Schutz Einrichtung, die ein oder mehrere Fundamente für Mastmontage nach einem der Ansprüche 1 bis 10 enthält.
- ### Revendications
1. Socle de montage de poteau (1), comprenant:
 - une partie inférieure (2);
 - une partie supérieure (3), et une charnière montée par rapport à la partie inférieure (2), dans lequel les parties supérieure et inférieure sont configurées de manière à être réorientables entre une première position, dans laquelle une opération de pivotement est empêchée, et une seconde position, dans laquelle un espace entre les parties supérieure et inférieure est autorisé de manière à permettre un pivotement; dans lequel une formation de charnière (5) est fixée à une première des parties supérieure (3) et inférieure (2) et est reçue dans une fente (10) prévue dans une partie de languette (8) dans l'autre des parties supérieure (3) et inférieure (2), la formation de charnière (5) étant mobile le long de la fente (10) lorsque les parties supérieure et inférieure sont réorientées entre les première et seconde positions, dans lequel la fente (10) court dans une direction ascendante et descendante et s'étend complètement à travers la largeur de la partie de languette (8),
 - caractérisé en ce qu'**un élément de verrouillage est reçu dans un alésage (11), l'alésage (11) s'étendant complètement à travers la partie de

- languette (8) dans une direction transversale à, et coupant, la fente (10), de telle sorte que l'élément de verrouillage puisse être positionné immédiatement en dessous de la formation de charnière (5) afin d'empêcher le déplacement de la formation de charnière le long de la fente (10), verrouillant de ce fait les parties supérieure et inférieure dans le but d'empêcher les parties supérieure et inférieure d'être réorientées entre les première et seconde positions. 5 10
2. Socle de montage de poteau selon la revendication 1, dans lequel les parties supérieure (3) et inférieure (2) sont configurées de manière à être réorientables entre une première position, dans laquelle des parties de butée des parties supérieure et inférieure butent l'une contre l'autre dans le but d'empêcher une opération de pivotement, et une seconde position, dans laquelle un espace entre les parties de butée est autorisé de manière à permettre un pivotement. 15 20
3. Socle de montage de poteau selon la revendication 1 ou 2, dans lequel la partie supérieure (3) est agencée de manière à être déplacée vers le haut par rapport à la partie inférieure (2) dans le but de se déplacer depuis la première position jusqu'à la seconde position. 25
4. Socle de montage de poteau selon l'une quelconque des revendications précédentes, dans lequel les parties supérieure (3) et inférieure (2) sont configurées de manière à permettre un pivotement à travers une plage de sensiblement plus de 90 degrés. 30
5. Socle de montage de poteau selon l'une quelconque des revendications précédentes, dans lequel, dans la première position, la partie supérieure (3) se trouve dans une situation de contact de support de charge contact sur la partie inférieure (2). 35 40
6. Socle de montage de poteau selon la revendication 1, dans lequel l'élément de verrouillage comprend un boulon de fixation (12) qui passe à travers la partie supérieure (3). 45
7. Socle de montage de poteau selon l'une quelconque des revendications précédentes, dans lequel une des parties supérieure et inférieure comporte un évidement (7) qui présente une partie supérieure ouverte (5b), une partie latérale ouverte (5a) et une partie latérale fermée (5c) opposée à la partie latérale ouverte (5a). 50
8. Socle de montage de poteau selon la revendication 7, dans lequel: 55
- la partie de languette (8) de l'autre des parties supérieure et inférieure est agencée de manière
- à être reçue dans l'évidement (7) de l'autre partie; et/ou
- dans lequel une surface de la partie latérale fermée (5c) présente une surface de butée.
9. Socle de montage de poteau selon la revendication 7 ou la revendication 8, dans lequel les parties supérieure et inférieure s'articulent de telle sorte que, dans la position articulée, une des parties s'étende hors de l'autre partie à travers la partie latérale ouverte (5a).
10. Socle de montage de poteau selon l'une quelconque des revendications précédentes, comprenant en outre une base de douille (6) à fixer à une structure, la base de douille (6) étant agencée de manière à recevoir la partie inférieure (5a) du socle de montage de poteau (5), de préférence dans lequel la partie inférieure comprend une partie qui est reçue à l'intérieur de la base de douille, et une partie supérieure (5b), comprenant une formation de charnière, qui est positionnée vers le haut de la base de douille (6).
11. Socle de montage pour un système de garde-corps ou de barrière, le socle de montage comprenant un socle selon l'une quelconque des revendications précédentes.
12. Système de garde-corps ou de barrière comprenant un ou plusieurs socle(s) de montage de poteau selon l'une quelconque des revendications 1 à 10.

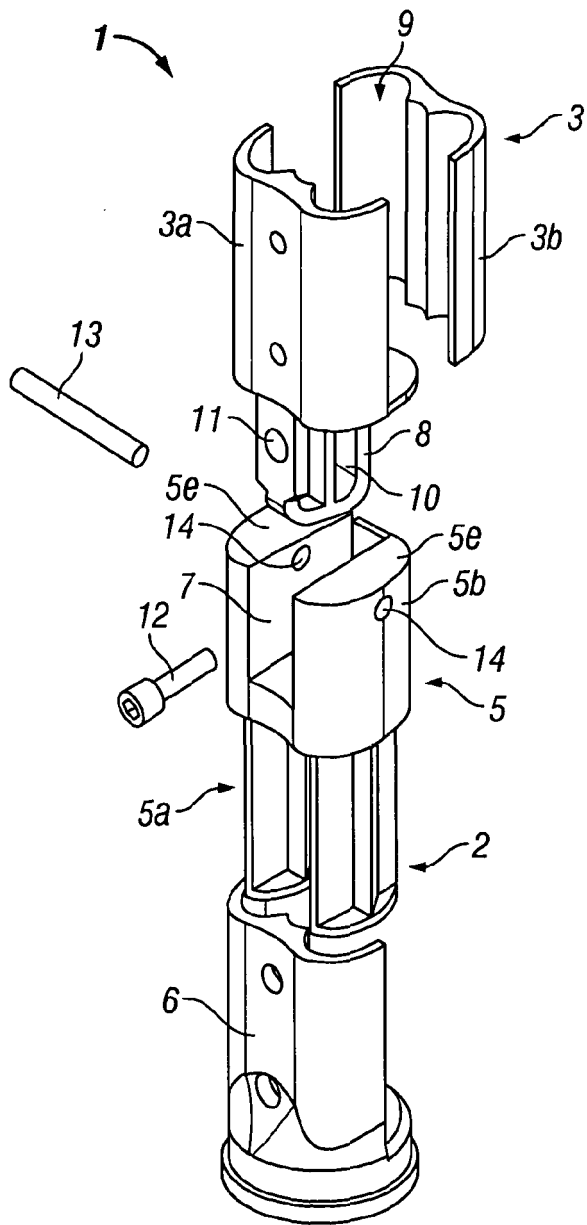


FIG. 1

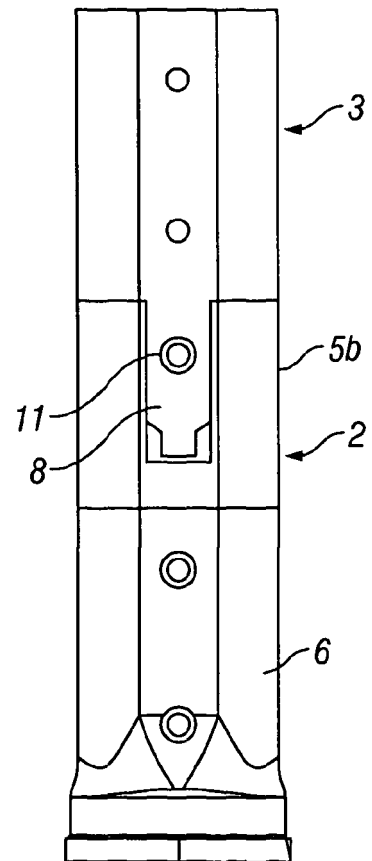


FIG. 2

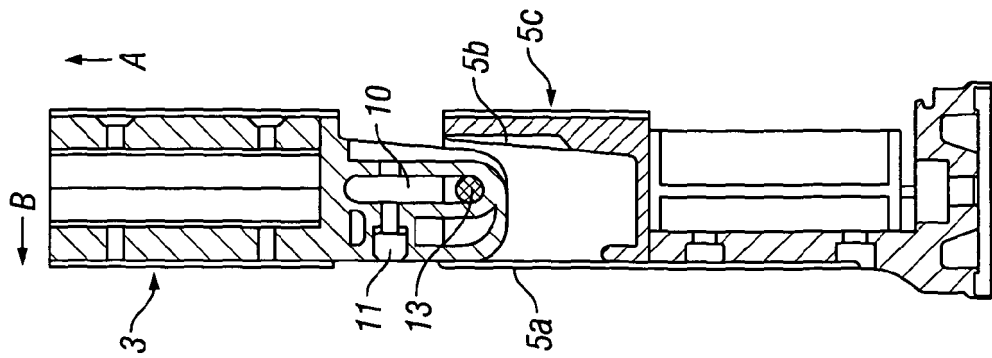


FIG. 5

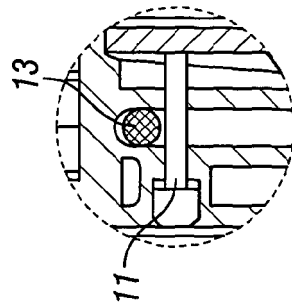


FIG. 4

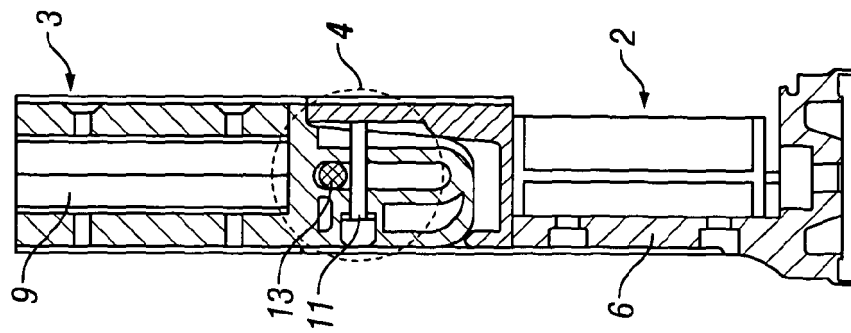


FIG. 3

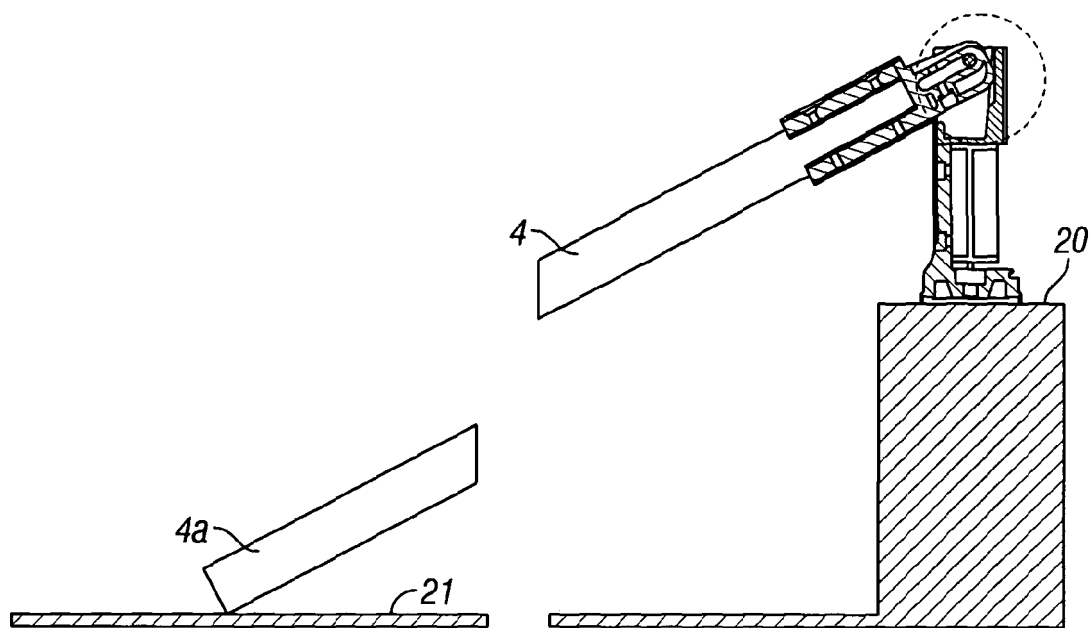


FIG. 6

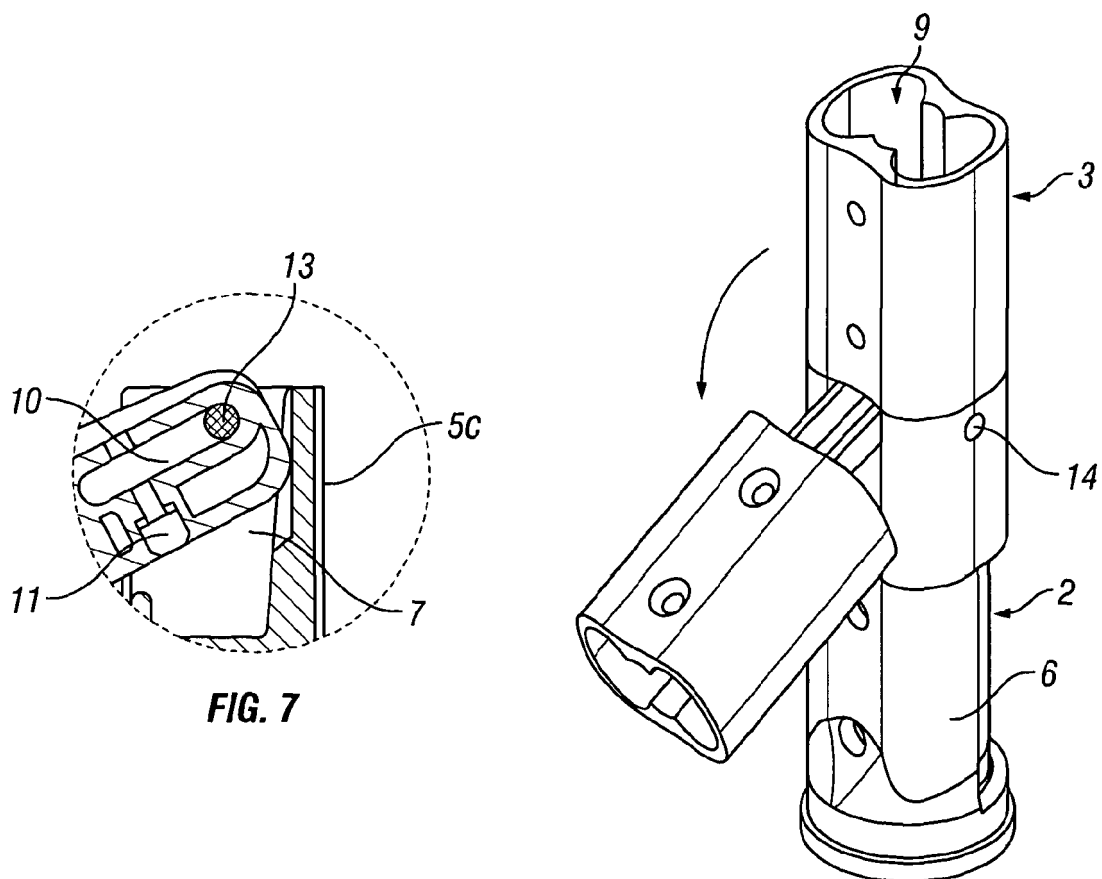


FIG. 7

FIG. 8

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 6050032 A [0003]
- WO 2008019499 A [0003]
- GB 2192218 A [0003]