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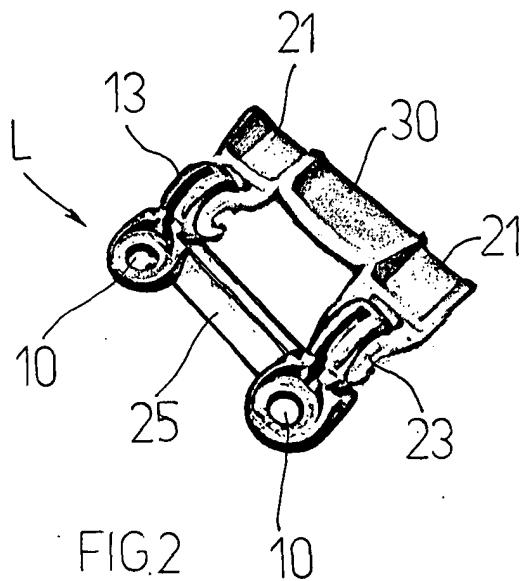
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### (54) Hook for laces

(57) Hook for laces of footwear characterized in that it is made up of a first and second body (L, U), one of which (L) is intended to be fixed to the vamp of a shoe and is made of a plurality of elements (1) either joined together or separated, while the other (U) is mobile as regards to the first one and is made of a plurality of el-

ements (2) joined together, two by two, by means of bridges (30): the said elements (1, 2), in cooperation with one another, delimit multiple passages (4, 203) for a lace (S) in which the lace results tightened or loosened, depending on the position of the second body (U) in relation to the first body (L).



EP 1 579 777 A1

**Description**

**[0001]** The present invention relates to a hook for laces, particularly, to a lace-guiding hook for footwear to be used in the accident prevention field.

**[0002]** It is known that the shoes used by those who operate in work environments with risk of accident must have special characteristics, among which the possibility of being taken off as quickly as possible, both after an accident and upon an impending danger, such as, for example, when a foot of the operator gets caught in a point of the work environment exposed to the transit of vehicles, trolleys or loads moved by other machines, or exposed to the risk of toxic or high-temperature fluid leakages.

**[0003]** For this purpose, accident prevention shoes are equipped with a hook for laces, according to the invention, allowing the quickest possible loosening of laces.

**[0004]** At the present time, safety hooks for accident prevention shoes require, in case of need, a separate maneuver for each hook. Therefore, in emergency situations, the time necessary to open all hooks and release the laces may be excessive.

**[0005]** The main objective of the present invention is to propose a hook for laces which is practical, safe, cost-effective and which allows for the quick release of laces and, consequently, for the quick removal of the shoe.

**[0006]** This result has been achieved, according to the invention, by adopting the idea of making an apparatus having the characteristics disclosed in claim 1.

**[0007]** Further characteristics of the present invention are dealt with in the dependent claims.

**[0008]** The advantages deriving from the present invention lie in the fact that, in an emergency situation, it is possible to loosen the laces with the maximum ease, rapidity and safety, and, at the same time, to ensure the proper retention of laces in normal conditions. Besides, a hook for laces according to the invention, is easy to make, cost-effective and reliable also after a prolonged use.

**[0009]** These and other advantages and characteristics of the invention will be best understood by anyone skilled in this technical field from a reading of the following description in conjunction with the attached drawings given as a practical example of the invention, but not to be considered in a limited sense, wherein:

Fig 1. is a schematic, rear-lateral perspective of a double hook for footwear, according to the invention, in a closed position;

Fig 2. is a schematic rear-lateral perspective of the hook in Fig. 1 in the position of opening or release of a lace;

Fig. 3 is a schematic rear-lateral perspective of a double hook, according to the invention, in an open position, where, unlike the hook in Fig. 1 and Fig. 2, the main body is separated into two elements in-

stead of being a single unit;

Fig. 4 is a schematic rear-lateral perspective of a triple hook, according to the invention, in a closed position;

Fig. 5 is a schematic rear-lateral perspective of the hook in Fig. 4, according to the invention, in an open or lace loosening position;

Fig. 6 is a schematic rear-lateral perspective of a triple hook, according to the invention, in an open position, where, unlike the hook in Fig. 4 and Fig. 5, the main body is separated into three elements instead of being a single unit;

Fig. 7 is a schematic lateral perspective of the hook, according to the invention, in an open position, that is in a position of release or unhinging of a hook;

Fig. 8 is a schematic perspective similar to that in Fig. 7 but with the hook in a closed position,

Fig. 9 is identical to Fig. 2 but with a different numbering of parts;

Fig. 10 is a perspective of two elements (1,2) of the main body and of the mobile body of the hook, according to the invention, in a closed position, viewed separately from the other homologous elements of the same hook in order to highlight their structural characteristics;

Fig. 11 is a perspective of the elements shown in Fig. 10, but in an open hook position;

Figs. 12-14 show a further example of a safety hook according to the invention;

Figs. 15-17 show another example of a safety hook according to the invention.

**[0010]** Reduced to its basic structure, and reference being made to the figures in the attached drawings, a

hook for footwear, according to the invention, is made of a first body, or main body (L), intended to be attached to a preset point of the vamp, and of a second body (U), which is mobile and bound to the main body (L). For example, and as described more in depth in the continuation, the second body (U) is attached to the first body (L) so that it is possible for the former to rotate around to the latter.

**[0011]** With reference being made to the examples shown in Figs. 1-7 in the attached drawings, both the

main body (L) and the mobile body (U) are made of a plurality of elements (1, 2): two elements as shown in Figs. 1-3, three elements (1, 2) as shown in Figs. 4-6. More precisely, the said main body (L) is made of a plurality of elements (1) intended to be attached to corresponding and preset points of the vamp (3) of a shoe.

For example, the said elements (1) which, in the whole, form the first body (L), may be attached to the vamp by means of corresponding rivets or similar devices set through a hole (10) formed in each of the same elements (1) in correspondence of the rear portion (11) of the main body (L), that is, in correspondence of a portion exhibiting a surface (12) intended to make contact with the vamp (3). Moreover, each of the said elements (1) form-

ing the main body (L) is also provided with a front portion (13) having substantially a hook-shaped profile, that is, a profile in the form of a circle arc with an angular extension greater than 180°, and with the concavity facing said surface (12). For example, the said elements (1) may be made in a single piece by die-casting technique. Moreover, the said elements (1) may stand alone (as in the examples in Fig. 3 and Fig. 6) or may be joined together (as in the examples in Fig. 2 and Fig. 4) by small bars (25), which, two by two, unite the respective rear portions (11). It is understood that the any other way of attaching the elements (1) to the vamp (3) is adequate.

**[0012]** The second body (U) is made of a plurality of elements (2), each of which, similarly to the elements (1) forming the main body (L), is provided with a front portion (20) and a rear portion (21). For example, the said elements (2) may be made of plastic material, such as nylon 66. The front portion (20) of each element (2) has a hook-like profile, that is, a profile in the form of a circle arc with an angular extension greater than 180°. The rear portion (21) of each element (2) exhibits a substantially straight profile. The concavity of the front portion (20) of each element (2), forming the mobile body (U) of the multiple hook in question, faces the axis of longitudinal development of the rear portion (21). Provided in correspondence of the region (200) joining the front and rear portions (20, 21) of each element (2) is a slit (22) whose width (a) corresponds substantially to that of the front portion (13) of each element (1) forming the main body (L). The rear portions (21) of said elements (2) are joined together, two by two, by bridges (30) made of the same molding material. A double hook (as shown in Figs. 1-3) necessitates only one bridge (30) because there are only two elements (2) to be connected; whereas, a triple hook (as shown in Figs. 4-6) necessitates two bridges because there are three elements to be connected (2).

**[0013]** Each of the said elements (1, 2), when viewed in profile and alone, that is separated from the other elements (1, 2), has a shape like the body of a question mark.

**[0014]** The outer diameter of the front portion (20) of each element (2) forming the mobile body (U) is the same as the inner diameter of the front portion (13) of each element (1) forming the main body (L).

**[0015]** Each element (1) forming the main body (L) is paired with a corresponding element (2) of the mobile body (U), so that, when the rear portion (12) of an element (2) of the mobile body (U) lies on the corresponding portion (11) of a corresponding element (1) of the main body (L), as shown in Fig. 1 and Fig. 4, the two front portions (13, 20) of the two elements delimit, with the respective concavities facing one another, a transversal hole (4) through which the lace (S) is made to pass in order to tighten the vamp around the foot. When the rear portion (21) of the elements (2) is lifted by applying the action of a finger of a hand to any one of the bridges (30), as indicated by the arrow (E) in Fig. 8, so

that all the rear portions (21) of the elements (2) appear as in Fig. 3 and Fig. 6, the corresponding consequent rotation of the relative front portions (20) about the axis of the hole (4) causes the hole to open up on one side,

5 which side is precisely that of the hook facing the vamp (3), so that the lace can come out of it and become loose.

**[0016]** Advantageously, in correspondence of both its sides, the front portion (20) of each element (2) forming the mobile body (U), exhibits a projecting edge (23),

10 which forms a groove (24) between the sides of the same portion (20) which, during the rotation of the second element (2) about the axis (b) of the hole (4), is able to slide with a slight friction onto the inner surface (130) of the corresponding element (1) of the main body (L),

15 thereby contributing to stabilizing the rotation.

**[0017]** Also advantageously, the said bridges (30) are curved, with the concavity facing downwards, that is, facing the rear portions (11) of the elements (1), thereby allowing the opening of the hook to be performed easily

20 by only one finger of a hand.

**[0018]** The assembly of the two bodies (L, U) is made as follows.

**[0019]** Each element (2) rests on the corresponding element (1) so that one side of the respective front portion (20) will result on one side of the front portion (13) of the element (1), and that the region (200), joining the front and rear portions of the element (2), will result between the two ends (131, 132) of the front arc-shaped portion (13) of the element (1). Then, a slight pressure is exerted on each element (2), pushing them towards the elements (1), thereby facilitating the flexing of each of said sides, that is the flexing of the relevant edge (23), firstly in direction of the groove (24) and then in the opposite direction, so that the inner surface of the portion (13) of each element (1) will result in contact with the groove (24) of the corresponding element (2). Finally, the whole body of elements (2) is pivoted about the said axis (b), by passing the ends (131) of the front portions (13) of the elements (1) through the slits (22) of the elements (2).

**[0020]** In conclusion, a hook for laces according to the present invention and constructed as shown in Figs. 1-7, is made up of two bodies (L, U) having coaxial portions (13, 20) and engaged to each other, one of which (L) is intended to be fixed to the vamp of the shoe, while the other (U) can pivot about the common axis (b) of the coaxial portions: the coaxial portions (13, 20) of said bodies (U, L) delimiting, in cooperation with each other, multiple coaxial holes (4) for the passage of a lace which result either fully closed or open on one side, depending on the mutual angular position of the two bodies (L, U).

**[0021]** With reference being made to the construction examples as shown in Figs. 12-14 of the attached drawings, there is, all the same, a main body (L), made of plurality of elements (1) to be attached to preset points of the vamp of a shoe (which elements 1 may be joined together or also separated) and a mobile body (U), pivotally attached to the main body (L) and made of a plu-

rality of elements (2) joined together, two by two, by bridges (30) made of the same material used for the construction of the elements (2). In regards to the case described above, the mobile body (U) is attached to the fixed main body (L) by multiple pins set through the corresponding elements (1, 2). In more detail, each element (2) of the top upper body (U) exhibits two bars (202) between which an appendage (101) of a corresponding element (1) of the lower fixed body (L) is inserted, and the two elements are linked by a pin (204) which lies in a transversal position between the said bars (202) and the said appendage (101).

**[0022]** Moreover, the said elements (2) forming the upper body (U) exhibit a groove (203) which is parallel to the pins attaching the elements (2) to the elements (1) of the fixed main body (L) and provides an open passage for a lace. The said groove (203) lies between the two bars (202) of each element (2) of the upper mobile body (U) and faces the rear part of the respective element (1), thereby resulting in a rear position as regards to the respective pin connecting the element (1) to the main body (L).

**[0023]** A double hook, which could as well be a triple, quadruple or multiple hook, is illustrated in Figs. 12-14, which refer to closed, intermediary and open positions, as shown in the attached drawings.

**[0024]** The bridge (30) uniting two elements (2) of the upper body (U) is advantageously provided with a protruding piece (30) for maneuvering, thereby allowing the rotation to be performed by only one finger of a hand. With reference being made to the example shown in Figs. 15-17 of the attached drawings, there is always a main body (L), made of a plurality of elements (1) to be fixed to preset points of the vamp of a shoe (which elements 1 can be joined together or also separated) and a mobile body (U), pivotally attached to the main body (L) and made of a plurality of elements (2) joined together, two by two, by bridges (30) made of the same molded material used for the construction of the elements (2). As in the second example, the mobile body (U) is attached to the fixed main body (L) by multiple pins set through the corresponding elements (1, 2). In more detail, as described in the second example, each element (2) of the upper mobile body (U) exhibits two bars (202) through which an appendage (101) of a corresponding element (1) of the lower fixed body (L) is inserted and the two elements are linked by a pin (204) which lies in a transversal position between the said bars (202) and the said appendage (101). The said elements (2) forming the upper body (U) exhibit a groove (203) which is parallel to the pins attaching them to the elements (1) of the fixed body (L) and provides an open passage for a lace. The said groove (203) lies between the two bars (202) of each element (2) of the upper mobile body (U) and faces the rear part of the respective element (1), thereby resulting in a lower position with regards to the respective pin connecting the element (1) of the main body (L), in as much as the said bars (202) and the said

appendage (101) extend upwards so that the connecting pin lies in a higher position than the groove (203).

**[0025]** As in the above examples, when the mobile body (U) is raised above the fixed body (L), the lace in the groove (203) results loosened or released, while, when the mobile body (U) is lowered the lace in the groove (203) is locked.

**[0026]** The above description outlines the safe operation and simple construction of the proposed multiple hook, which, though being multiple, requires only a single maneuver in order to release or loosen the laces, when needed.

**[0027]** Practically speaking, in any case, executional details can vary equally, regardless of the shape, dimensions, disposition of elements and materials used, without, moreover, exceeding the parameters of the idea for the adopted solution and thus remaining within the limits of the tutelage accorded by the present patent.

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## Claims

1. Hook for laces of footwear **characterized in that** it is made up of a first and second body (L, U), one of which (L) is intended to be fixed to the vamp of a shoe and is made of a plurality of elements (1) either joined together or separated, while the other (U) is mobile as regards to the first one and is made of a plurality of elements (2) joined together, two by two, by means of bridges (30): the said elements (1, 2), in cooperation with one another, delimit multiple passages (4, 203) for a lace (S) in which the lace results tightened or loosened, depending on the position of the second body (U) in relation to the first body (L).
2. Hook for laces, according to claim 1, **characterized in that** the second body (U) is made to pivot about the first body (L).
3. Hook for laces, according to claim 1, **characterized in that** the said two bodies (L, U) exhibit coaxial components (13, 20) and the second body (U) is can pivot about the common axis (b) of the coaxial components: the coaxial components (13, 20) of said bodies (U, L) delimit, in cooperation with one another, multiple coaxial holes (4) for the passage of a lace which result either fully closed or open on one side, depending on the mutual angular position of the two bodies (L, U).
4. Hook for laces, according to claim 1, **characterized in that** the said elements (1, 2), forming respectively the said first body (L) and the said second body (U), are bound together by corresponding pins.
5. Hook for laces, according to claim 1, **characterized in that** each element (2) of the upper mobile body

(U) exhibits two bars (202) in the middle of which an appendage (101) of the corresponding element (1) of the lower fixed body (L) is inserted and the two elements (1, 2) are bound together by a pin which lies in a transversal position between the said bars (202) and the said appendage (101). 5

6. Hook, according to claims 1 and 5, **characterized in that** each of the said elements (2) of the mobile body (U) exhibits a groove (203) for the passage of 10 a lace.

7. Hook, according to claims 1, 5 and 6, **characterized in that** the said groove (203) lies in a rear position as regards to the respective pin which connects the element (2) with the corresponding element (1) of the main body (L). 15

8. Hook, according to claims 1, 5, and 6, **characterized in that** the said groove (203) lies in a lower position in regards to the respective pin which connects the element (2) with the corresponding element (1) of the main body (L). 20

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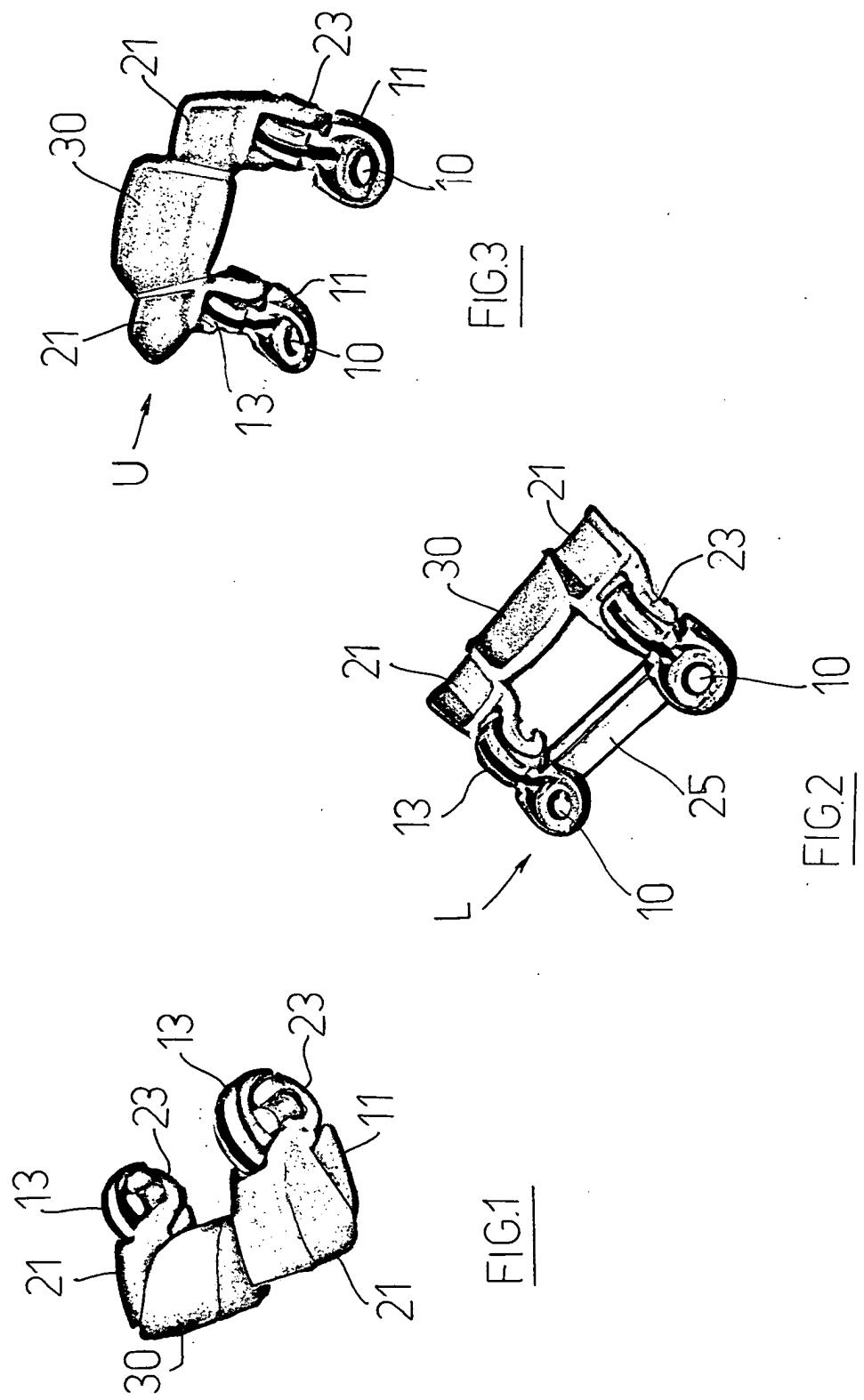
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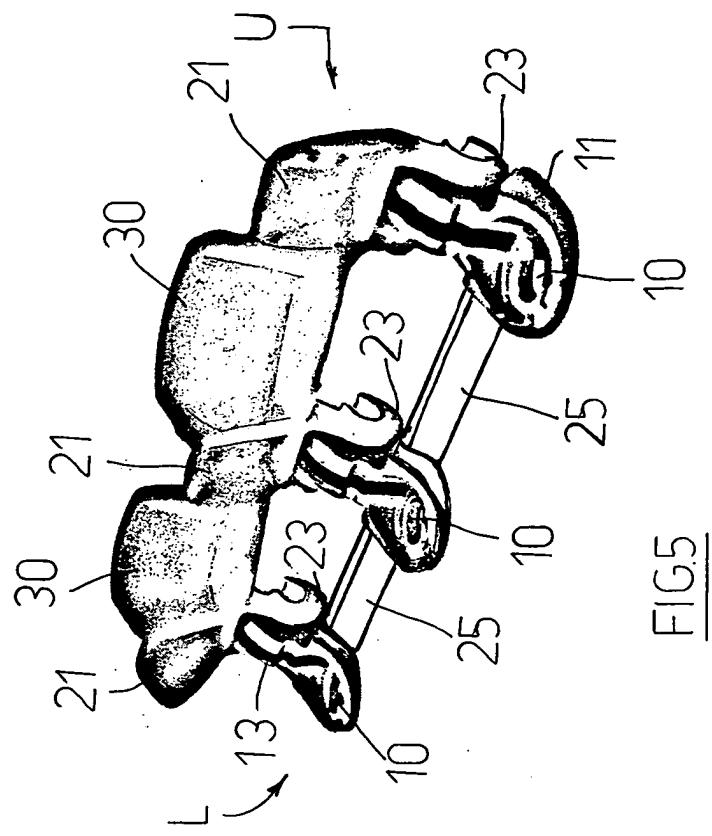


FIG 5

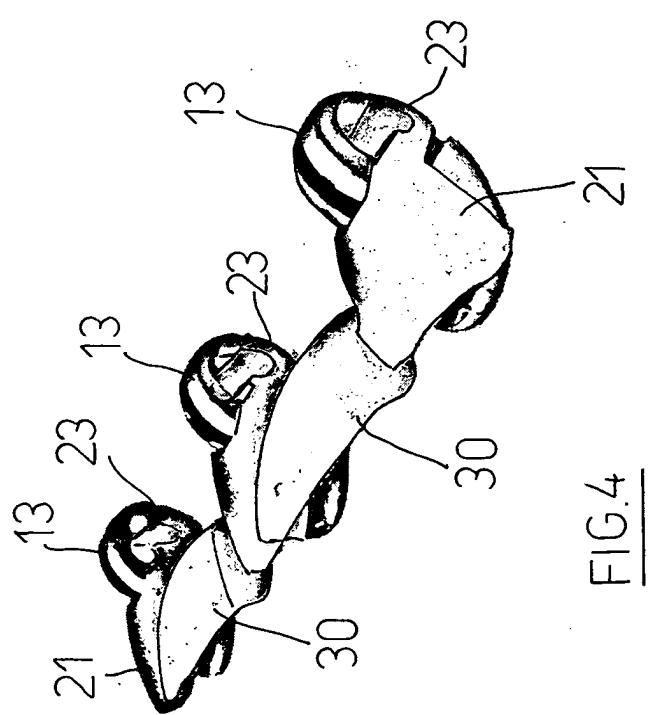


FIG 4

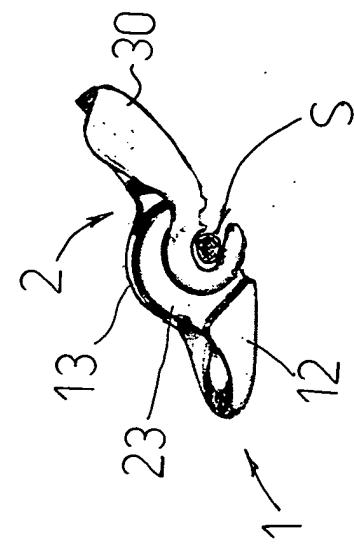


FIG.7

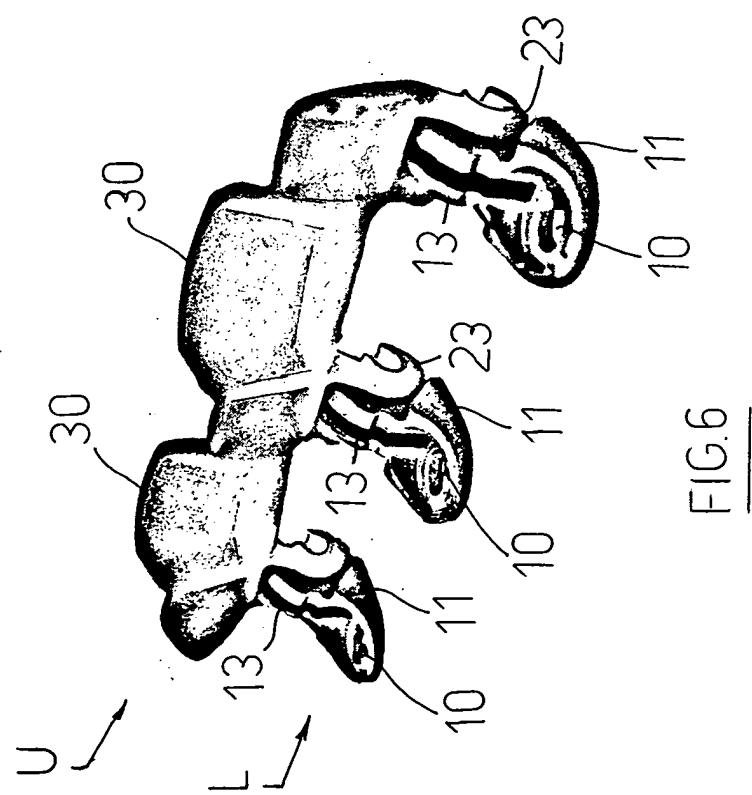


FIG.6

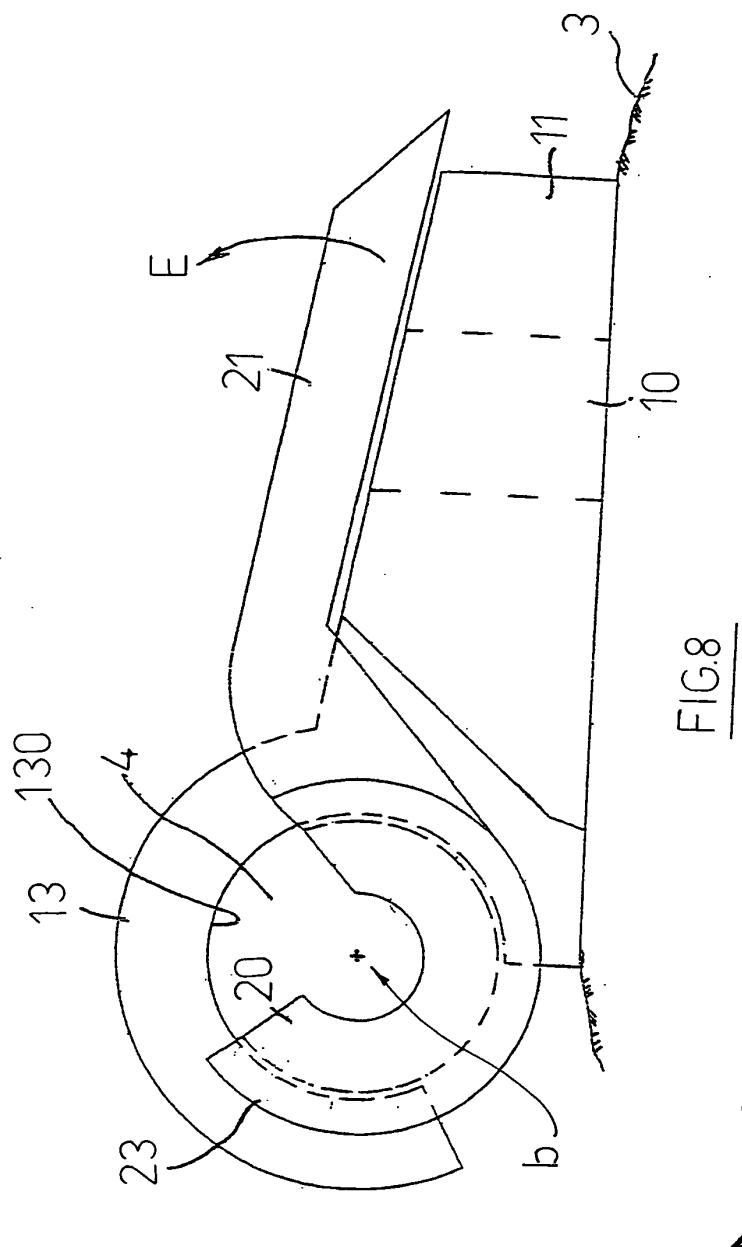


FIG. 8

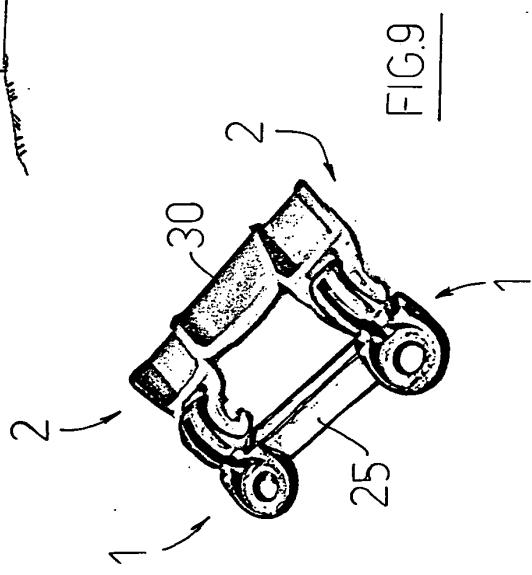
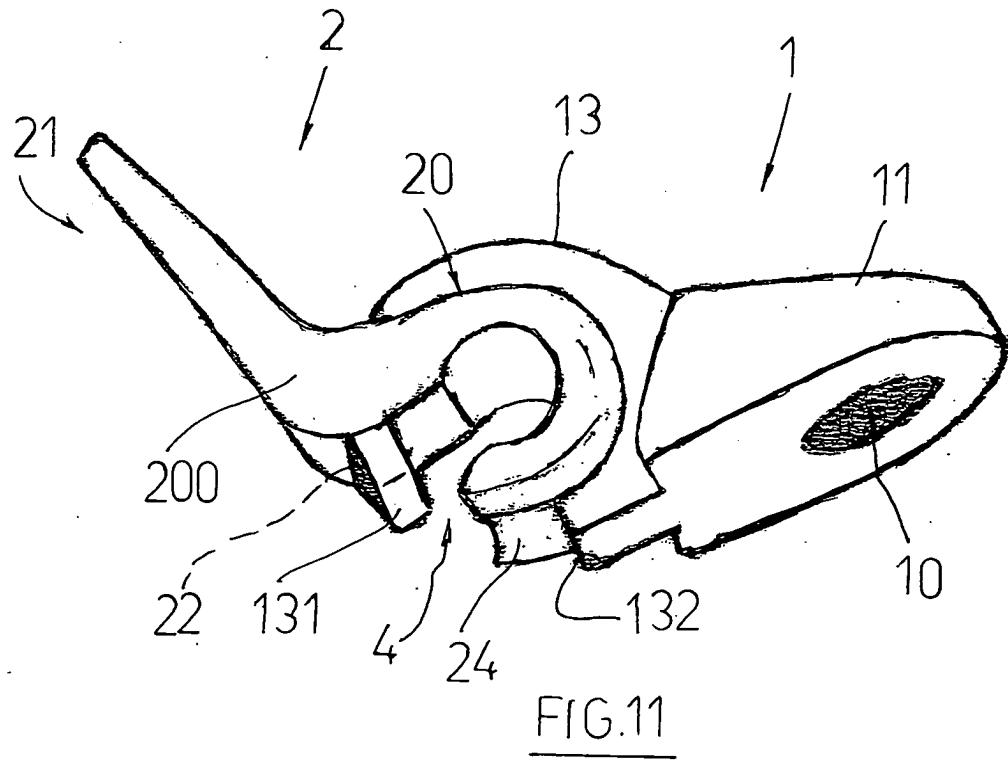
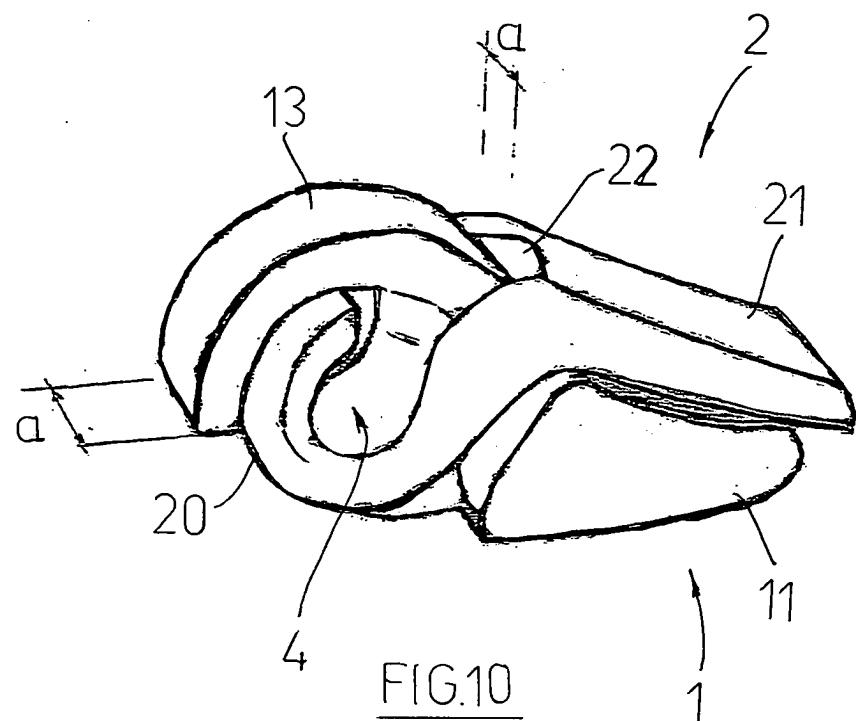


FIG. 9



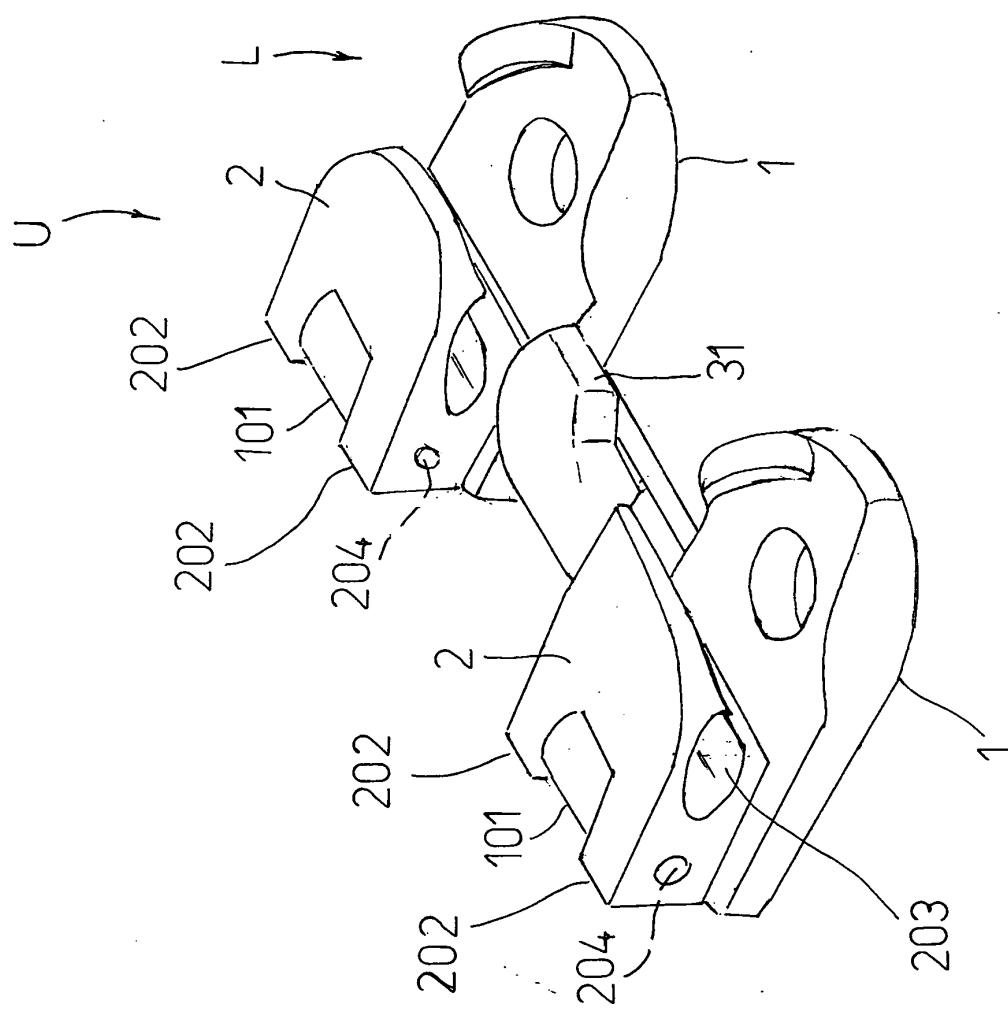


FIG.12

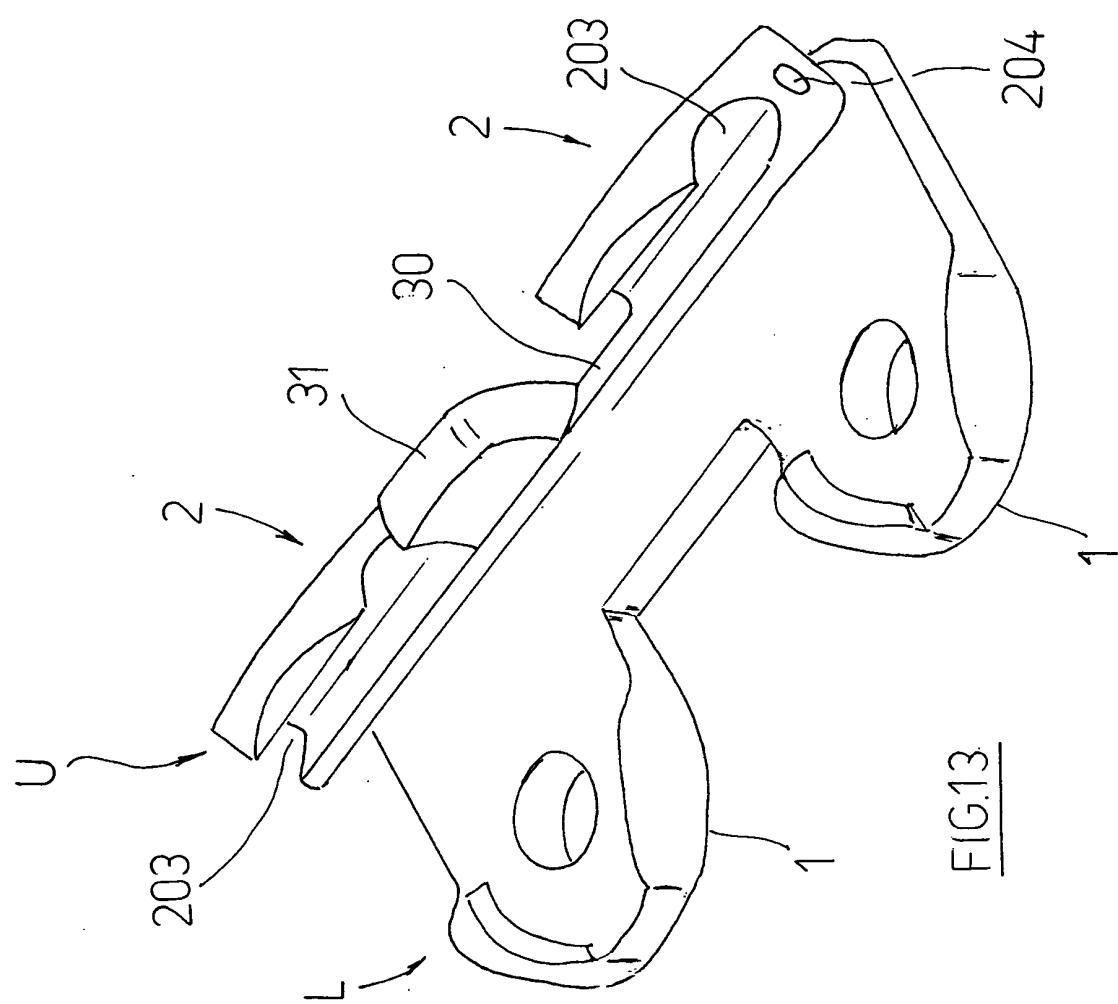


FIG.13

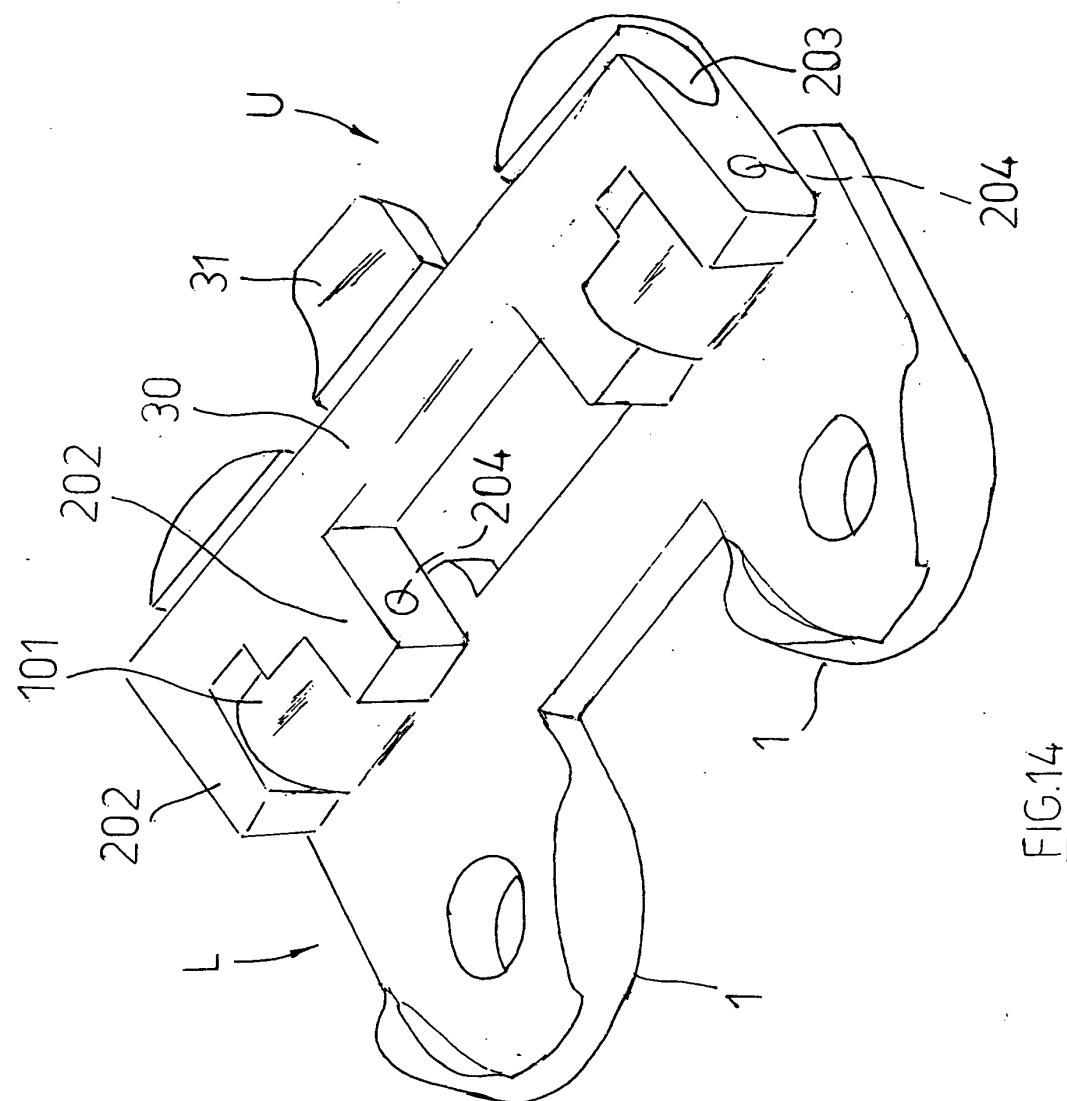


FIG.14

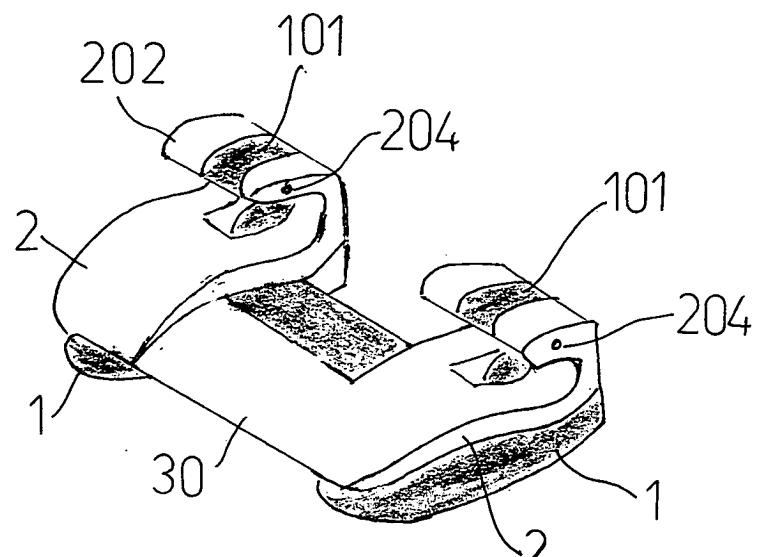


FIG.15

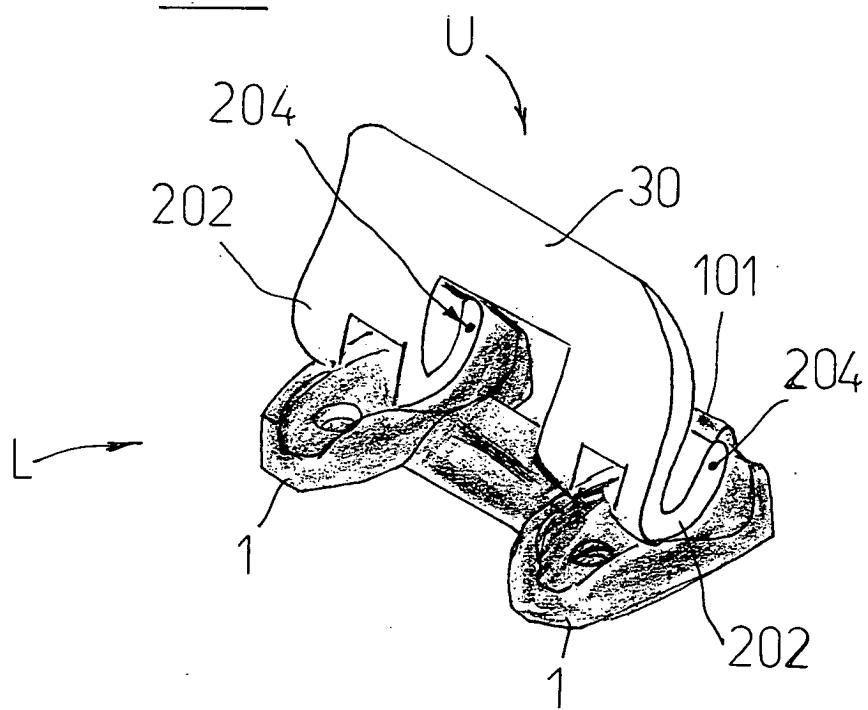


FIG.16

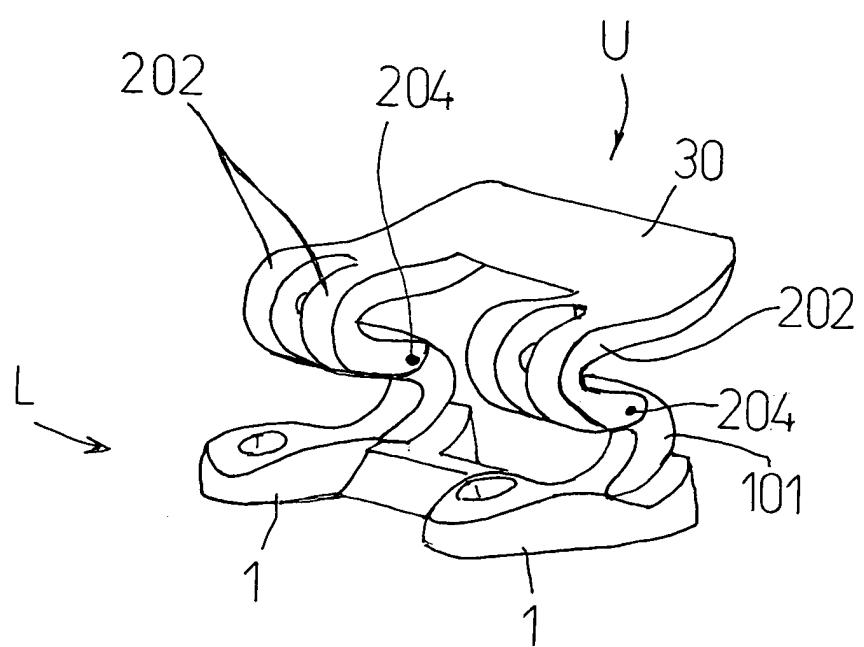


FIG.17



DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.7)						
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim							
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)						
			A43C						
<p>1 The present search report has been drawn up for all claims</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Place of search</td> <td style="width: 33%;">Date of completion of the search</td> <td style="width: 34%;">Examiner</td> </tr> <tr> <td>The Hague</td> <td>23 May 2005</td> <td>Claudel, B</td> </tr> </table> <p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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  .....  &amp; : member of the same patent family, corresponding document</p>				Place of search	Date of completion of the search	Examiner	The Hague	23 May 2005	Claudel, B
Place of search	Date of completion of the search	Examiner							
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**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 05 00 5307

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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