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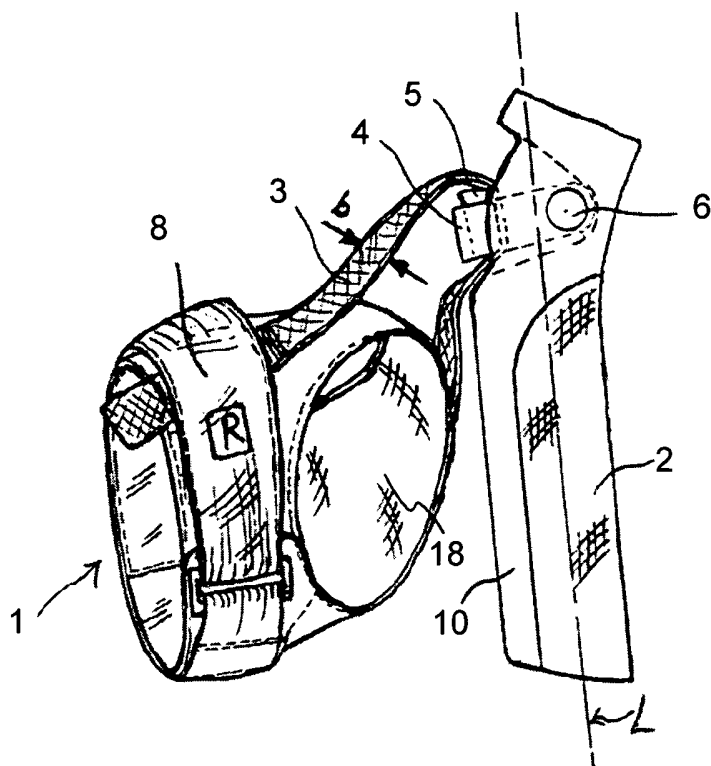
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(54) Title: HAND STRAP ASSEMBLY FOR A SPORTS POLE



(57) Abstract: The invention relates to a hand strap assembly for fixing a hand strap in a handle of a sports pole, such as a ski pole, a walking pole or a pole for roller-skating for example. The object of the invention is to provide a hand strap assembly, which is easy, reliable, efficient and ergonomic to use. The object of the invention is achieved by providing a hand strap assembly in which there is a joining element between the hand strap and the handle, and wherein the joining element is connected to the handle with an articulated joint allowing the joining element to turn during the use of the sports pole. This way bending of the strap can be reduced, and the user can easily change the grip on the handle. In some embodiments of the invention the joining element has a quick release joint with the handle to allow easy releasing and changing of hand straps.

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Hand Strap Assembly for a Sports Pole

The invention relates to a hand strap assembly for fixing a hand strap in a handle of a sports pole, such as a ski pole, a walking pole or a pole for roller-skating for example. Especially the invention relates to a hand strap which has
5 a joining element for joining the hand strap into the handle.

In a typical prior art arrangement the connecting part of the hand strap is fixed directly into the hand grip with some kind of a locking arrangement. One problem with such a prior art assembly is that the strap needs to bend at the interface between the strap and the handle whenever the user's hand moves.
10 This causes the strap to become worn at the point of the interface. Another problem with such an arrangement is that it is not very easy to release and insert the hand strap from/to the handle. Releasing the hand strap may be necessary, for example, in order to change the hand strap.

Patent document US 6502862 discloses a hand strap assembly, wherein a loop element of a the hand strap is fixed to the handle of a pole using separate drawing elements. These drawing elements may have a bolt element at their end for the attachment of the hand strap to the handle. It is thus possible to insert and release the bolt element and the hand strap from the handle.
15 However, there are certain disadvantages related to this solution. When the user pushes the sports pole downwards, a force is exerted to the drawing elements of the hand strap. The drawing element of the strap then makes a sharp turn downwards at the interface between the drawing element and the bolt element. Such a sharp angle together with a large force tends to cause a high stress to this interface point of the drawing element and may gradually
20 cause the drawing element wear out and break. Also, when the user's hand changes position at the handle up and down during use, the drawing element of the hand strap must bend during each movement, and this bending makes the stress of the drawing element even higher at the interface point.
25

Patent document CH 195360 discloses a partial solution to the problems
30 discussed above. This document discloses an arrangement wherein a strap loop is fixed to the handle of a pole using a releasable ring attachment. The strap is tread through the attachment ring and the strap can thus turn at the ring. The ring may also turn at the attachment to the handle. The strap loop

can be released from the handle by pulling the strap upwards and thus releasing the ring from the handle.

5 However, there are also disadvantages related to this mentioned prior art arrangement. Firstly, the hand strap loop may easily be released unintentionally from the handle. This may happen if the user loosens the grip from the handle while pulling the pole forward. In this situation the attachment ring is pulled upwards and is released from the handle. The unintentional falling away of the pole this way may be very undesirable, especially in sports competitions.

10 Secondly, the users of the sports poles often like to have their grip at the upper end of the handle. In such a situation the fixing ring may turn into wrong position under the user's hand. This may hurt the user's hand, or the ring may be in such a position where it can not bear the necessary forces.

15 Further, in this prior art solution fixing of the strap is made with a rivet through the strap. In such arrangements the strap can still easily tear at the fixing point, since stretch of the strap causes forces to the fixing area where the strap is weaker due to the fixing hole.

20 One further disadvantage of the above presented solutions is that they do not allow adjustment of the strap ends. Fixing of the strap ends is done from a chosen spot in the strap, which spot cannot be moved easily. Any moving is possible only in strap-shortening direction. And where a fixing ring is used, it is not at all possible to make the distance between the hand and the handle very short and steady as many users would like.

25 It is the object of the present invention to create a new hand strap assembly for sports poles wherein the above-mentioned problems are eliminated or reduced. The objective of the invention is therefore to provide a hand strap assembly, which is easy, reliable, efficient and ergonomic to use.

30 The object of the invention is achieved by providing a hand strap assembly in which there is a joining element between the hand strap and the handle, and wherein the joining element is connected to the handle with a joint allowing the joining element to turn during the use of the sports pole. This way bending of the strap can be reduced, and the user can easily change the grip on the handle. In some embodiments of the invention the joining element has a quick release joint

with the handle to allow easy releasing and changing of hand straps. It is also possible to provide an easy adjustment between the strap and the joining element.

5 An assembly according to the invention for fixing a hand strap in the handle of a sports pole, the assembly comprising a joining element which is connected to the handle and to at least one fixing strap of the hand strap, is characterized in that the joining element is fitted to the handle by means of a joint allowing the joining element to turn, and the joining element has at a distance from the joint an opening through which a fixing strap of the hand strap is threaded in order to fix
10 the fixing strap to the joining element, whereby the turning of the joining element allows a movement of the hand strap relative to the handle during the use of the sports pole.

Some preferable embodiments are described in the dependent claims.

15 According to one advantageous embodiment of the invention in each or most positions wherein the joining element can be turned around the joint at the handle, the distance from the interface between a fixing strap and the joining element to the closest point of the handle surface or extension thereof is smaller than the
20 distance from the joint between the joining element and the handle to said same point. This way it is possible to achieve a large range of movement for the hand strap, but still the joining element does not protrude much outside the surface or extended surface of the handle. Further, the movement of the interface between the fixing strap and the joining element has substantially a direction of the handle.
25 A very ergonomic solution is thus achieved.

The present invention offers several advantages when compared to the prior art hand strap assemblies. The straps do not need to make sharp bending when the position of the user's grip is changed e.g. in the direction of the
30 handle. The user can also pull the pole while moving the hand forward without any risk of the pole getting loosened from the strap/joint.

The joining element is able to turn even under the hand of the user, and the joining element does not get into any positions which could be harmful to the
35 user's hand, or positions where an exerted force of training might damage the parts, or positions where a proper usage of the pole is not possible.

One further advantage of the assembly according to the invention is that the fixing strap running from the hand strap can be locked into different positions in regards to the joining element in the handle, whereby it is possible to adjust the distance between the hand strap and the handle.

5

The fixing strap runs horizontally through an opening of the joining element retaining its width, whereat by stretching strain it need not bend/twist even if the handhold on the pole would change. As mentioned above, the joining element which is twistingly fixed in the handle secures that at skiing the strap does not get into bending when the handhold changes.

10

The strap can be easily locked to the joining element opening. Such locking means include e.g. a wedge, a buckle which can be integrated to the joining element, stickers at the surface of the straps. Thus the adjustment can be made easily without tools. Alternatively the fixing strap can also be sewed or otherwise permanently locked into a determined length.

15

The joining element can also be easily constructed removable by quick release locking, whereby the hand strap is easily changed for instance into a pole of different length. However, it is also possible to use a joint arrangement between the joining element and the handle, which does not allow easy removing of the hand strap. This would prevent hand straps from being stolen.

20

The term "sports pole" means in this patent application e.g. ski poles, walking poles or roller-skating poles. However, the term sports pole is not limited here to only certain use but it includes any poles used for human activities in leisure time, professional sports, etc.

25

The term "sticker" means in this patent application material, which has a surface that sticks to a surface of other similar material, such as velcro, thus providing repeated mutual attachment of two strap parts.

30

The term "surface extension" relates in this patent application to a handle which has a recess for a joining element. The surface extension means the area where the surface of the handle would be if the recess would not exist.

35

In the following, the invention is described in more detail by means of the enclosed drawings in which

- Fig. 1a illustrates an exemplary hand strap assembly according to the invention,
- 5 Fig. 1b illustrates a joining element and a wedge of the exemplary hand strap assembly of Figure 1a,
- Fig. 1c illustrates the attachment and allowable movement of joining element of the hand strap assembly of Figure 1a,
- 10 Fig. 2a illustrates a side view of another exemplary assembly according to the invention,
- Fig.2b illustrates an exploded view of the exemplary assembly of Figure 2a,
- Fig.2c illustrates a joining element of the exemplary assembly of Figure 2a,
- Fig.2d illustrates an exemplary attachment between the hand strap and a joining element in an assembly according to Figure 2a,
- 15 Fig. 3a illustrates a further exemplary assembly according to the invention, and
- Fig. 3b illustrates a joining element according to the exemplary assembly of Figure 3a, and
- Fig.3c illustrates an exemplary attachment between the hand strap and a joining element in an assembly according to Figure 3a,
- 20 Figure 1a shows an exemplary hand strap assembly 1 of a sports pole according to the invention. The strap has a wrist part comprising a self adhesive strap portion and a buckle for adjustment of the wrist part to match the measures of the user's hand. The tightening strap 8 of the wrist part is threaded through the buckle and turned back. Thanks to its self-adhesive sticker surface, part 8 gets re-fixed turned
- 25 from buckle to its own surface that remained on the other side of buckle. Figure 1 shows that also fixing strap 3 gets from its other end fixed below self adhesive portion 8. The length of the attachment strap 3 can be adjusted by selecting, on which spot the attachment strap is located below the part 8, and be locked there. The other end of the attachment strap 3 can be permanently sewed in the hand
- 30 strap. The attachment strap 3 circulates through a joining element 4 in the handle

portion 10, whereby the attachment between the hand strap and the handle is achieved. The strap 3 runs through an opening 9 of the joining element 4. The attachment strap 3 is thus bended only perpendicular to width direction, and thus only in the direction recommended for straps. Therefore no harmful stretching strain arises in the attachment strap 3.

The joining element 4 can be attached to the handle 10 by means of a joint 6. There is arranged a formation of a hollow in the handle 10 for the joining element as a turning space that it needs. The joining element is mainly inside the handle and there able to turn at least 20° , or even 30° . When the user's hand is moving in changing the grip at the handle, the joining element 4 turns accordingly. The attachment strap therefore does not get into bending even if the hand makes grip changes.

For the attachment of the joining element 4 there is a joint pin 6, for example. In one embodiment of the invention the joint does not allow a quick release of the joining element 4 from the handle. However, in this case the hand strap can still be removable, since the free-released end of attachment strap 3 can be thread trough opening 9 of the joining element 4. In another embodiment there is arranged a quick-release locking of the joint pin 6 in the articulation. The releasing may be implemented e.g. so that on pushing the joint pin 6 the joining element 4 releases the locking of pin 6 and the hand strap 1 is then removable.

Figure 1b shows an exemplary joining element 4 which can be used in a hand strap assembly according to the invention. In one end of the joining element there is a hole 7 for instance for locking by means of joint pin 6 and in the other end an opening 9, from which attachment strap 3 is thread through. Strap 3 is locked in opening 9 e.g. by means of a wedge 5, buckle or other manner known per se.

Figure 1c shows the upper part of an exemplary handle according to the invention. The handle 10 is shown partly cut, whereby the formation of the hollow formation for joining element 4 is illustrated as well as the space for turning of the joining element, angle α . In one portion 2 of the handle 10 there is, for instance, cork as coating.

Figure 2a illustrates side view of another exemplary hand strap assembly of the invention. The handle 20 has a space for a joining element 24, and the joining element is connected to the handle by means of a joint. The joint can be released

by pressing a button 26. The joining element also has a vertical hole 29 for the attachment of the fixing strap.

Figure 2b illustrates an exploded view of the assembly according to Figure 2a. The handle 20 has a space 268 for a joining element 24 and a support part 264. The handle also has a hole 261 for a press button 260. The press button 260 is installed from the inside of the handle into the hole 261. The button 260 has a shoulder, which prevents the button to come through the hole. After the button is installed in place the support part 264 is installed from above the handle into the space. The hole 265 of the support part will be located concentric with the hole 261 of the handle and with the button 260. Then the joining element is installed into the space 268 between the support part 264 and another side wall of the handle. The joining element 24 has a projecting part 27, which snaps into the hole 265 of the supporting part. Finally there is a cap 201 for covering the upper opening 202 of the handle.

The projecting part 27 of the joining element 24 can rotate within the hole 265 of the support part 264. Due to this articulated joint the joining element 24 can turn within the space 268. When button 260 is pressed, the button pushes the projecting part 27 out of the hole 265. Thus the joining element can be removed from the handle.

The hand strap is fixed to the hole 29 of the joining element. When using the sports pole, the force of the hand strap is led via the joining element and projecting part 27 to the support part 264 and further to the handle 20. Since there may be large forces applied, it is preferable to produce the joining element and the support part of a strong material. Thus the support element and/or the joining element may be made of different, stronger and more durable material than the main part of the handle 20. The support element and/or the joining element can be e.g. different type of plastics than the main part of the handle.

Figure 2c illustrates a joining element 24 of the assembly according to Figure 2a. The Figure shows the projecting part 27 and the opening 29. In the opening there is an integrated wedge in order to slightly tighten the strap into the opening and thus prevent sliding of the fixing strap.

Figure 2d illustrates one alternative for attaching the fixing strap to the joining element 24 of an assembly of Figure 2a. The main strap which is led between the thumb and the forefinger is marked 281. A separate fixing strap 231 is attached to

the main strap e.g. by sewing. The fixing strap 231 is thread through the opening 29 of the joining element.

Figure 3a illustrates a further exemplary embodiment according to the present invention. The handle 30 has a recess 368 for a joining element 34. The joining element has an articulated joint at both sides on the handle. The joining element has projecting parts 37 at its sides, and the projecting parts snap directly into circular holes at the sides of the handle 30. The projecting parts can rotate within the circular holes, and thus the joining element can turn around the middle axis of the holes. The joining element can be removed by pressing the projecting parts 37 at both sides. The projecting parts are thus turned out of the circular holes, and the joining element can be released by pulling it out from the handle.

The joining element 34 of Figure 3a has means for fixing two fixing straps to the joining element. A first, lower fixing strap can be led through openings 391 and 393. A second, upper fixing strap can be led through openings 392 and 393.

Figure 3b illustrates a joining element 34 of the assembly of Figure 3a. The Figure 3b shows the two projecting parts 371 and 372 of the joining element, which provide the articulating joint with the handle. The Figure 3b also shows the upper opening 392 and the middle opening 393 for fixing straps.

Figure 3c illustrates one alternative for attaching the fixing strap to the joining element 34 of an assembly of Figure 3a. The main strap parts are led directly to the joining element as fixing straps. The lower strap 281 is connected at a fixed length to the joining element. The upper strap 396 is lead through openings 393, around a shaft 395 and through openings 392 and 393. This way the joining part functions as a buckle and the upper fixing strap can be adjusted and locked to a desired length.

Above, some implementations of the invention have been described. The principle according to the invention can naturally be modified within the frame of the scope defined by the claims, e.g. by modification of the details of the implementation and ranges of use.

For example, the embodiments described above included arrangements where the joining element is mostly located within the handle. Although this is a preferable arrangement, it is also possible to locate e.g. the sides of the joining element outside the handle. For example, by producing the joining element in Figure 3a wider, it would be possible to have the sides at the outer surface of the handle.

The articulating joints could be made e.g. with a shaft without a quick release construction. Using such an arrangement it would be possible to make the recess within the handle much smaller. With a smaller recess the handle might also be stronger.

- 5 One should also note that there may be one or several fixing straps, which is/are fixed to the joining element. The fixing strap may be directly led from the wrist part of the hand strap, or the fixing strap may be a separate strap which is connected to a strap part being led between the thumb and forefinger of a user's hand. The fixing strap can be an integral part of the hand strap, and the hand strap, including
- 10 the fixing strap(s) can be made of a single fabric.

Also, although the described embodiments have a joining element including a hole for attaching the fixing strap, also other means for attaching the strap to the joining element can be designed.

- The advantageous applications of the present invention include walking poles, ski
- 15 poles and roller-skating poles, but the hand strap assemblies according to the scope of the invention include applications for any poles used for human activities.

CLAIMS

1. An assembly for fixing a hand strap (1) in the handle of a sports pole, the assembly comprising a joining element which is connected to the handle and to at least one fixing strap of the hand strap, **characterized** in that the joining element
5 (4) is fitted to the handle by means of a joint (6) allowing the joining element to turn, and the joining element has at a distance from the joint an opening through which a fixing strap of the hand strap is threaded in order to fix the fixing strap to the joining element, whereby the turning of the joining element allows a movement of the hand strap relative to the handle during the use of the sports pole.
- 10 2. An assembly according to claim 1, **characterized** in that the fixing strap is arranged to run through a joining element (4) and to return to the hand strap (1).
3. An assembly according to claim 1, **characterized** in that the strap (3) is arranged to run as a strap according to its horizontal width (6) to the joining element (4) to circulate through an opening (9) of the joining element and to
15 according to its horizontal width get off the joining element.
4. An assembly according to claim 1, **characterized** in that the joining element (4) is arranged to turn around the joint (6) at least 20° and preferably at least 30°.
5. An assembly according to claim 1, **characterized** in that joining element (4) can be removed from articulation by means of a release arrangement at the joint
20 (6), such as a quick-release lock in connection with a joint pin.
6. An assembly according to claim 1, **characterized** in that at least one end of the fixing strap (3) can be adjustably fixed in the joining element (4).
7. An assembly according to claim 1, **characterized** in that the fixation of articulation of the joint (6) is on the pole centre line (L) or on the opposite side of
25 the centre line with regard to the position of the hand strap.
8. An assembly according to claim 1, **characterized** in that there is a locking device for locking the strap into the opening in a desired spot of the strap.
9. An assembly according to claim 8, **characterized** in that the locking device is a wedge or a buckle.

10. An assembly according to claim 1, **characterized** in that a part of the joining element forms a buckle for locking a fixing strap, which threaded through said part of the joining element.
- 5 11. An assembly according to claim 1, **characterized** in that the point of articulation of the joining element is such that in each position of turning more than half and preferably most of the of the joining element is within the handle.
- 10 12. An assembly according to claim 1, **characterized** in that, in each turning position of the joining element at the handle, the distance from the interface between a fixing strap and the joining element to the closest point of the handle surface or extension thereof is smaller than the distance from the joint between the joining element and the handle to said same point.
- 15 13. An assembly according to claim 1, **characterized** in that the turning of the joining element allows a movement of the interface between the fixing strap and the joining element substantially in the direction of the handle throughout the turning range.

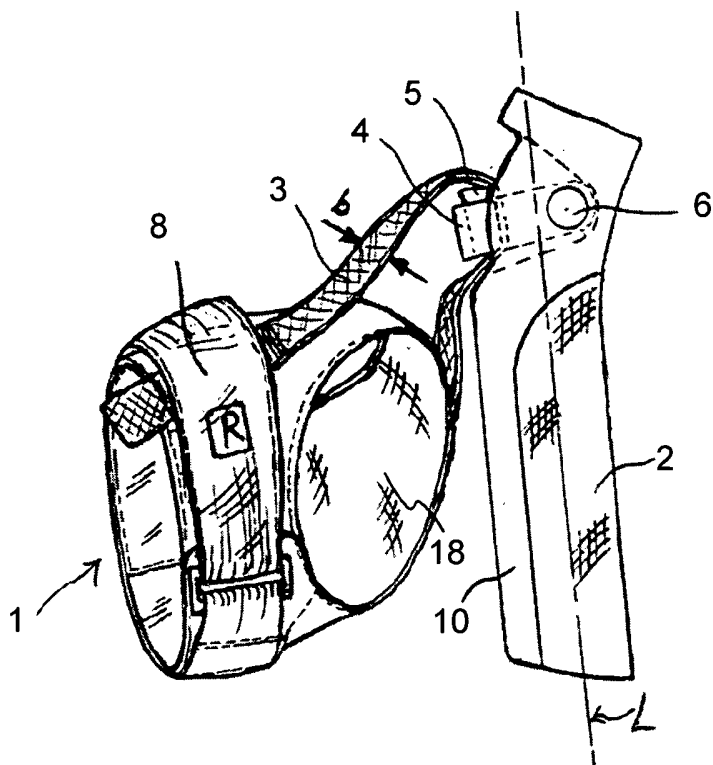


FIG. 1a

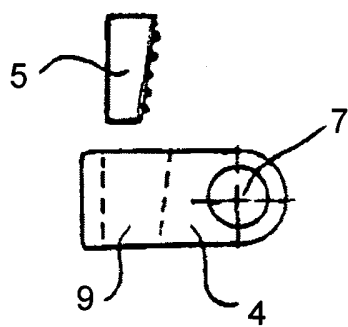


FIG. 1b

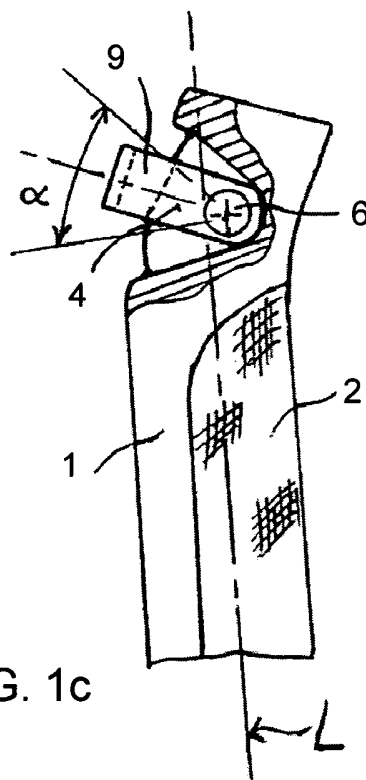


FIG. 1c

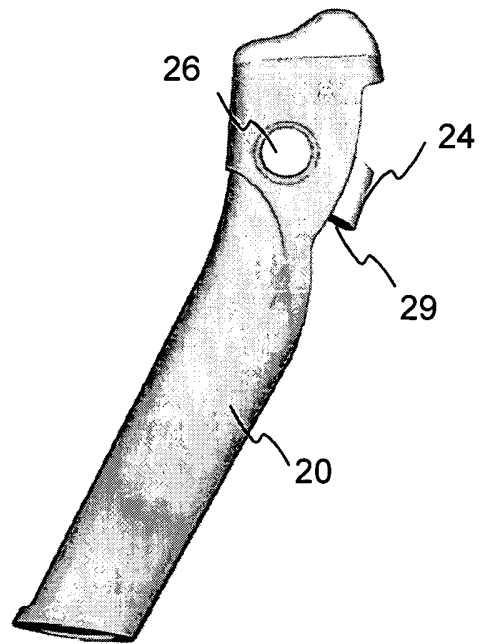


FIG. 2a

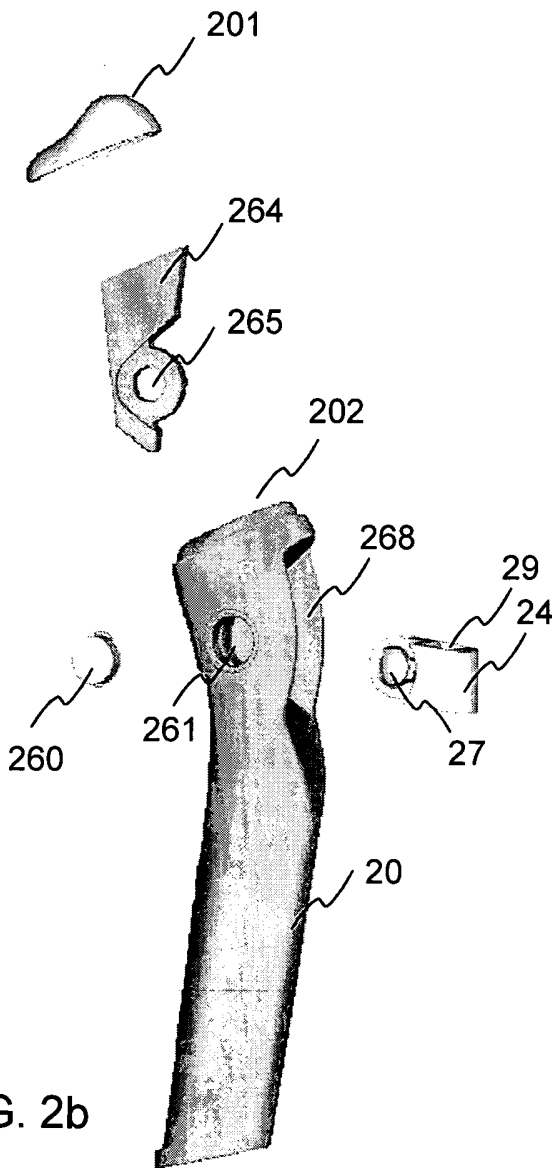


FIG. 2b

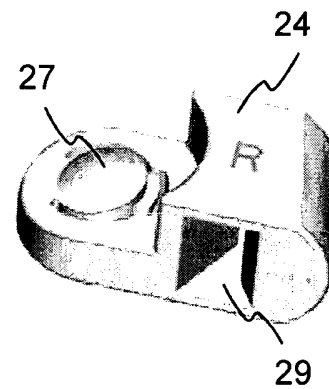


FIG. 2c

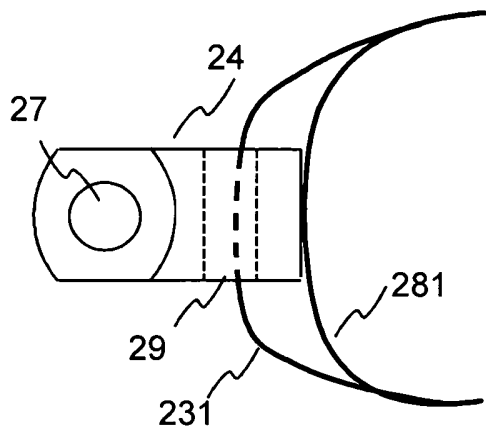


FIG. 2d

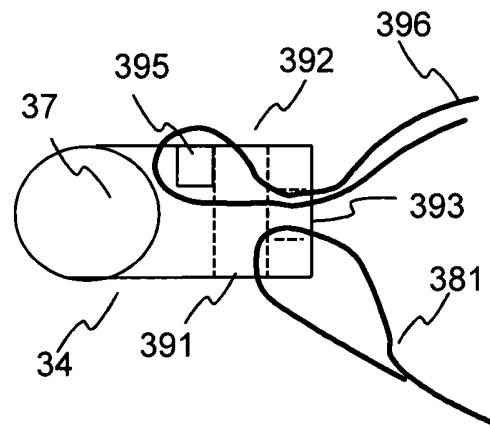


FIG. 3c

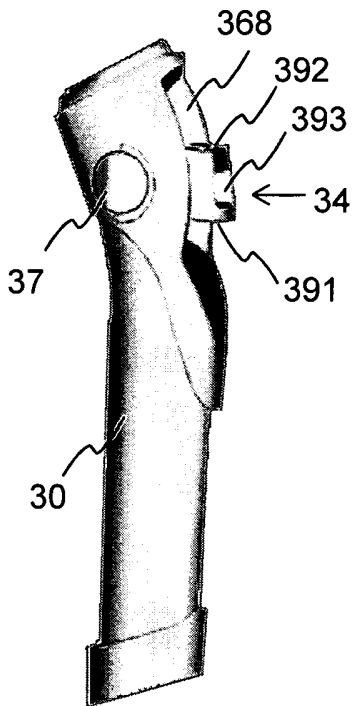


FIG. 3a

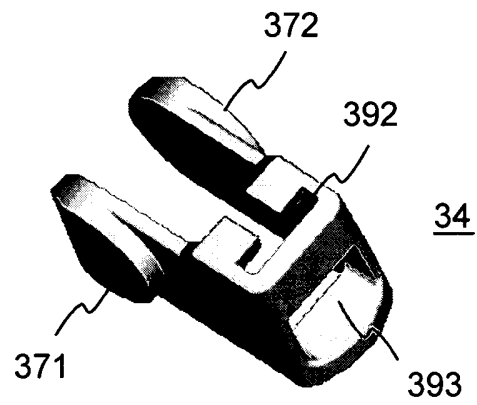


FIG. 3b