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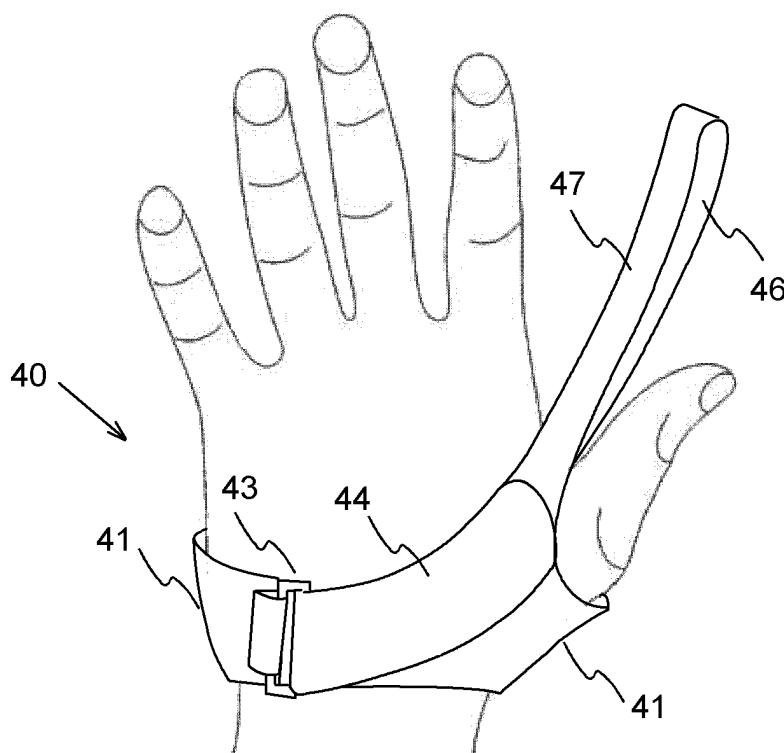
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(54) **Hand strap for a sports pole**

(57) The invention relates to a hand strap for a sports pole, such as a ski pole, a walking pole or a pole for roller-skating. The object of the invention is achieved by providing a hand strap (40) in which the attachment part (44) is not totally aligned in the same plane with the loop of the wrist part (41), but the alignment of the attachment part has an non-zero angle in relation to said plane. The attachment part is (44) advantageously directed partly

above the outer connecting part (47) of the hand strap located between the thumb and the index finger of the user. The open end of the attachment part (44) thus remains outside user's sleeves for easy access. Because of its to its alignment it is possible to prevent an unintentional opening of the attachment part (44) due to touching the user's waist during use. The invention also allows reducing maximum pressure directed from the outer connecting part (47) to the back surface of the hand.



**FIG. 4**

## Description

**[0001]** The invention relates to a hand strap for 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 a wrist part for attaching the hand strap to the user's hand, and an outer connecting part which connects the wrist part to the handle of a sports pole, wherein the outer connecting part is led via the outer surface of the user's hand between the thumb and the index finger.

**[0002]** Some prior art hand straps for sports poles are described in documents US5110154, US5328205, WO96/34665, and WO00/78416. Enclosed Figure 1 illustrates an exemplary prior art hand strap 10. The hand strap includes a wrist part 11 and an attachment part 14 for attaching the strap to the user's hand. The wrist part is placed around the user's wrist and tightened with the attachment part into suitable strain. The wrist part of the hand strap is connected to the handle of a sports pole with an outer connecting part 17 and an inner connecting part 16. These connecting parts may form a loop as shown in Figure 1, or the connecting parts may have separate, open ends for the connection to the handle.

**[0003]** Figure 2a shows commonly used means for tightening the hand strap around the user's wrist. The wrist part 11 comprises a buckle 13 which has an opening. A front view of the buckle is also shown in the Figure. One end of the wrist part of the strap is permanently fixed to a first side 13a of the buckle frame. Extending from the other end of the wrist part there is an attachment part 14 which is threaded through the opening of the buckle 13, around the second side 13b of the buckle frame. The wrist part of the strap is tightened by pulling the attachment part 14 of the strap. After a suitable strain is achieved the attachment part is turned against the wrist part of the strap, and attached. The attachment between the wrist part and the attachment part is commonly made using sheets of sticker material 11s and 14s, which are mounted to the outer surface of the wrist part 11 and to the inner surface of the attachment part 14. These strap parts are thus easily attached by pressing the wrist part and the attachment parts towards each other. The strap is opened by pulling the end of the attachment part 14 upright away from the wrist part.

**[0004]** Figure 2b shows other prior art means for tightening the hand strap around the user's wrist. The wrist part 21 comprises a buckle 23 which has two openings and a middle bar between the openings. One end of the wrist part of the strap is permanently fixed to a first side 23a of the buckle frame. Extending from the other end of the wrist part there is an attachment part 24 which is threaded through the both openings of the buckle 23. The attachment part is led above the second side 23b of the buckle frame and under the middle bar 23c of the buckle frame. The wrist part of the strap is tightened by pulling the attachment part 24 of the strap. After a suitable strain is achieved the attachment part is pressed against

the wrist part of the strap, and attached. The attachment between the wrist part and the attachment part is also in this case made using sheets of sticker material 21s and 24s, which are mounted to the inner surface of the attachment part 24 and to the outer surface of the wrist part 21.

**[0005]** There are certain problems related to the prior art hand straps. Firstly, the wrist parts of the hand straps are often inside the sleeves of user's pullover or jacket. This tends to make it difficult to access the attachment part and to detach the hand strap from the user's hand. This could be solved by using shorter sleeves or keeping the ends of the sleeves higher above the wrists in some other way. However, this could bring another problem. During the use of a sports pole the user's hands easily touch the waist of the user when the pole is pushed backwards. When the wrist part and the attachment part of the strap are bare on the wrists, the end of the attachment part 14 easily touches the user's waist also, and may to turn the attachment part and thus open the strap inadvertently from the user's hand. One solution for this problem could be interchanging the locations of the buckle and the attachment part so that the attachment part would be directed to the opposite direction. However, this arrangement would make it difficult to tighten, attach and detach the strap because the attachment part would locate at the outer edge of the wrist.

**[0006]** Figure 3 illustrates a prior art hand strap in a common using position. Especially, the Figure 3 shows the forces which are applied to the outer connecting part of the hand strap when the pole is pushed downwards. The force downwards applied by the user's hand is marked F. This force is partly applied to the connecting parts of the hand strap. The force applied to the inner connecting part 16 is approximately parallel to the direction of the inner connecting part. However, since the direction of the outer connecting part has an angle in relation to the force F, the force F causes two components of forces in the outer connecting part: component  $F_c$  which has a direction of the outer connecting part, and component  $F_h$  which has a perpendicular direction in relation to the outer connecting part, the force  $F_h$  thus affecting against the user's hand. Naturally, the force component  $F_h$  causes an additional pressure to the user's hand.

**[0007]** It is the object of the present invention to create a new hand strap for a sports pole wherein the above-mentioned problems are eliminated or reduced. The objective of the invention is therefore to provide a hand strap which is easy, reliable and ergonomic to use.

**[0008]** The object of the invention is achieved by providing a hand strap in which the attachment part is not totally aligned in the same plane with the loop of the wrist part, but the alignment of the attachment part has a non-zero angle in relation to said plane. The attachment part is advantageously slightly directed above the outer connecting part of the hand strap located between the thumb and the index finger of the user.

**[0009]** A hand strap according to the invention for a sports pole, the hand strap comprising

- a wrist part for providing a loop around user's hand,
- an attachment part, which extends from the wrist part,
- attaching means in said wrist part and/or in said attachment part for attaching the attachment part to the wrist part, in order to attach the hand strap around users wrist,
- an outer connecting part for connecting the wrist part to a handle of the sports pole,

is characterized in that the attachment part has a form, in which the open end of the attachment part extends away from the plane of the loop which is formed by the wrist part when attached to a user's hand.

**[0010]** Some preferable embodiments are described in the dependent claims.

**[0011]** The present invention offers several advantages when compared to the prior art hand straps. The attachment part is easy to open because due to the bended form of the attachment part it extends out from the sleeve of a jacket or a pullover. Also, the attachment part has a location where it's end does not touch the users waist so easily. And even if the attachment part would touch the user's waist, the movement direction of the hand relating to the alignment of the attachment part is such that touching the waist does not cause of the attachment part to open so easily.

**[0012]** A further advantage relates to the finding that the forces applied to the outer connecting part can be partly distributed to the attachment part according to the invention. Therefore it is possible to reduce the pressure caused by the outer connecting part to the hand. When the attachment part extends over the outer connecting part and is attached to it, the force component  $F_h$  which is directed towards the hand is distributed into larger area within the strap thus reducing the maximum value of the pressure which the force causes to the back of the user's hand.

**[0013]** 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.

**[0014]** The expression "attaching a hand strap to user's hand" means in this patent application providing attachment within the hand strap when placed e.g. around the user's wrist in order to make the hand strap stay at hand when the hand strap is used.

**[0015]** 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.

**[0016]** In the following, the invention is described in more detail by means of the enclosed drawings in which

- Fig. 1 illustrates a prior art hand strap,
- Fig. 2a illustrates commonly used tightening and attachment means of the wrist part in a prior art hand strap,
- Fig. 2b illustrates another commonly used tightening and attachment means of the wrist part in a prior art hand strap,
- Fig. 3 illustrates distribution of forces in the outer connecting part of a prior art hand strap,
- Fig. 4 illustrates an exemplary hand strap according to the invention attached to a user's hand,
- Fig. 5 illustrates the angle of the attachment part in an exemplary hand strap according to the invention,
- Fig. 6 illustrates some alternative locations of the attachment part depending on the size of user's hand in an exemplary hand strap according to the invention,
- Fig. 7 illustrates location of the attachment sticker sheets in an exemplary hand strap according to the invention, and
- Fig. 8 illustrates an opened exemplary hand strap according to the invention.

**[0017]** Figures 1-3 where already described in the prior art part of the description above.

**[0018]** Figure 4 illustrates a left-hand exemplary hand strap 40 according to the invention, shown on user's hand. The hand strap has a wrist part 41 which forms a loop around the user's hand. The hand strap is connected to a handle of a ski pole with an outer connecting part 47 and an inner connecting part 46. These connecting parts may form a loop as shown in Figure 4, or the connecting parts may have separate, open ends for the connection to the handle. There may also be a specific connector piece at the end of the connecting parts to provide a connection to the handle.

**[0019]** One end of the wrist part is fixed to one side of a buckle 43 through the opening of the buckle. The other end of the wrist part extends as an attachment part 44. The attachment part is threaded through the opening and around the second side of the buckle. The attachment part is turned towards the wrist part 41 and the outer connecting part 47.

**[0020]** Figure 4 shows how the attachment part has a bended form and thus has a direction, which extends away from the wrist part towards the outer connecting

part. The attachment part has an arc form which follows the edge of the wrist part and the outer connecting part. Thus, according to the present invention, the direction of the attachment part is not in line with the plane of a (middle) loop formed by the wrist part.

**[0021]** Figure 5 illustrates the position and direction of the attachment part in an exemplary hand strap according to the invention. The hand strap corresponds to the hand strap shown in Figure 4. Line 41 p denotes a plane of the loop which the wrist part forms around the user's wrist. The plane 41 p is approximately a loop plane which is formed by the middle line of the wrist part. The middle line of the attachment part is shown as a broken line 44m. This middle line of the attachment part forms an arc which has a small angle with the plane 41 p near to the buckle 43. Further from the buckle the angle becomes larger and at the open end of the attachment part the angle reaches its maximum value, which is marked  $\beta$ . Line 44 $\beta$  shows the direction of the middle line at the end of the attachment part. In this exemplary hand strap the angle  $\beta$  has an approximate value of 45 degrees. The value of the angle  $\beta$  is preferably at least 15 degrees, and more preferably more than 30 degrees in order to achieve the advantages of the invention.

**[0022]** Figure 6 illustrates some positions of the attachment part of an exemplary hand strap, as a function of the size of the user's wrist. 44a illustrates the edge of the attachment part when the size of the wrist is large. With smaller sizes of the wrist the edge of the attachment part extends more above the outer connecting part 47. 44e shows the position of the open end of the attachment part when the size of the wrist is small. The arrows in Figure 6 show the direction of movement of the attachment part when the hand strap is tightened/loosened. As shown in the Figure, the movement direction follows the shape of the attachment part 44.

**[0023]** Figure 7 shows the location of sticker sheets in an exemplary hand strap according to the invention. The location of the sticker 44s of the attachment part 44 and the sticker 41 s of the wrist part 41 is shown as a hatched area in the Figure. The stickers for the attachment are located at the back surface of the attachment part and at the front surface of the wrist part. The stickers are therefore mostly not visible when the hand strap is attached to hand.

**[0024]** Figure 8 illustrates an exemplary left-hand hand strap 80 according to the invention. It shows the front surface of the wrist part 41 and the back surface of the attachment part 44. The attachment sticker of the attachment part is denoted 44s and the sticker of the wrist part is denoted 41 s. There is an adjustment area 45 between the wrist part 41 and the attachment part 44. When the size of the user's wrist is small, most of the adjustment area is within the attachment part when the hand strap is tightened. Correspondingly, when the size of the user's wrist is large, most of the adjustment area is within the wrist part of the hand strap when the hand strap is tightened and attached. The outer connecting part 47 and the

inner connecting part 46 are made of unitary fabric and they thus form a loop. Figure 8 also shows edge knitting and a triangular reflector 89 of this exemplary hand strap.

**[0025]** Figure 8 also shows the arcs of the attachment part and the wrist part. The arc of the attachment part edge has a radius 44r, and the wrist part edge which extends from the attachment part has an arc with a radius 41 r. As is visible from the Figure 8 the radius 41 s and the radius 44r are of the same value in this exemplary hand strap according to the invention. The arc with the same radius allows the adjustment of the strap as was illustrated in Figure 6.

**[0026]** 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.

**[0027]** For example, although the wrist part, attachment part and the connecting parts of described embodiments can be manufactured as a unitary fabric, the invention can naturally also be applied to hand straps made of separate, interconnected parts. The described embodiments also disclose an attachment part which has curved edges. It is naturally possible to use other alternative forms, such as straight lines with intervening angles, i.e. polygonal forms.

**[0028]** The attachment between the attachment part and the wrist part is advantageously made using sticker fabric (velcro). However, other alternative ways of attachment can naturally be applied, such as snap fasteners. It is also possible to use alternative intermediate means instead of the buckle, or a direct attachment without such intermediate means.

**[0029]** Further, the embodiments illustrated in Figures show two connecting parts for connecting the wrist part to the handle of a sports pole: an outer connecting part and an inner connecting part. Although this is a preferred embodiment of the invention, it is also possible to apply the invention in a hand strap which has an outer connecting part but which does not have an inner connecting part.

**[0030]** The advantageous applications of the present invention include walking poles, ski poles and roller-skating poles, but the hand straps according to the scope of the invention include applications for any poles used for human activities.

## Claims

1. A hand strap (40) for a sports pole, comprising

- a wrist part (41) for providing a loop around user's hand,
- an attachment part (44), which extends from the wrist part,
- attaching means (41 s, 44s) in said wrist part and/or in said attachment part for attaching the attachment part to the wrist part, in order to at-

tach the hand strap around users wrist,  
 - an outer connecting part (47) for connecting  
 the wrist part (41) to a handle (2) of the sports  
 pole,

**characterized in that** the attachment part (44) has  
 a form, in which the open end of the attachment part  
 extends away from the plane of the loop which is  
 formed by the wrist part (41) when attached to a user's  
 hand.

2. A hand strap according to claim 1, **characterized in  
 that** the outer connecting part (47) is designed to  
 locate between the user's thumb and index finger at  
 the outer side of the user's hand. 15
3. A hand strap according to claim 1, **characterized in  
 that** it comprises an inner connecting part (46) for  
 connecting the wrist part (41) to the handle (2) of a  
 sports pole from between the users hand (1) and the  
 pole handle (2). 20
4. A hand strap according to claim 1, **characterized in  
 that** the maximum angle ( $\beta$ ) between the middle line  
 (44m) of the attachment part (44) and the middle  
 loop plane (41p) of the wrist part (41) is at least 15  
 degrees, and preferably at least 30 degrees. 25
5. A hand strap according to claim 1, **characterized in  
 that** the direction of the middle line (44m) of the at-  
 tachment part (44) is between the middle loop plane  
 (41p) of the wrist part (41) and the direction of the  
 outer connecting part. 30
6. A hand strap according to claim 1, **characterized in  
 that** it comprises a buckle (43) at a first end of the  
 wrist part (41), and the attachment part (44) extends  
 from the opposite end of the wrist part, wherein the  
 attachment part is led through an opening of the  
 buckle and turned above the second end of the wrist  
 part when being attached. 35  
 40
7. A hand strap according to claim 1, **characterized in  
 that** it comprises a buckle (43) at a first end of the  
 wrist part (41), and the attachment part (44) extends  
 from the opposite end of the wrist part, wherein the  
 attachment part is led through an opening of the  
 buckle and placed above the first end of the wrist  
 part when being attached. 45  
 50
8. A hand strap according to claim 1, **characterized in  
 that** the edge of the wrist part (41), which edge ex-  
 tends from the outer connecting part (47), has an arc  
 (41 r) shape, and the attachment part has an edge  
 of an arc (44r) shape, which edge of the attachment  
 part comes above said edge of the wrist part when  
 being attached, wherein said arcs of the wrist part  
 and the attachment part have substantially same ra- 55

dus.

9. A hand strap according to claim 1, **characterized in  
 that** the open end of the attachment part (44) is  
 adapted to move substantially in the direction of the  
 outer connecting part (47) when the attachment part  
 is pulled for tightening the hand strap to the user's  
 wrist. 5
10. A hand strap according to claim 1, **characterized in  
 that** the wrist part (41), attachment part (44), the out-  
 er connecting part (47), and possibly the inner con-  
 necting part (46) are made of unitary fabric. 10  
 15

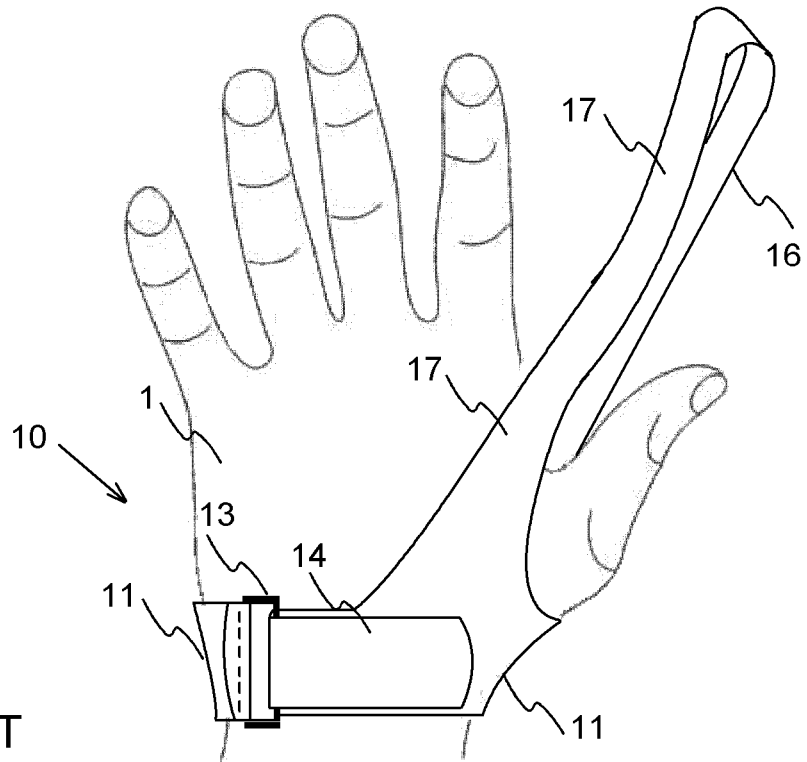


FIG. 1  
PRIOR ART

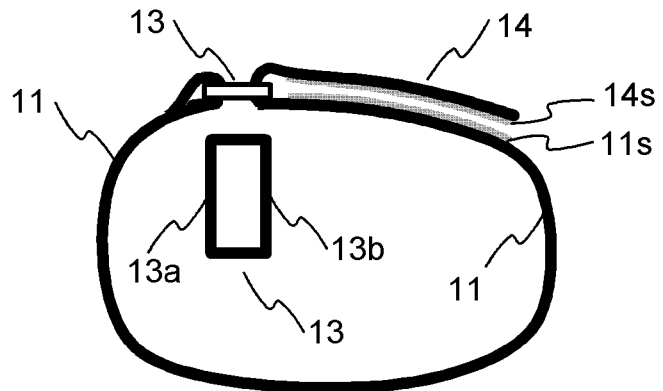


FIG. 2a  
PRIOR ART

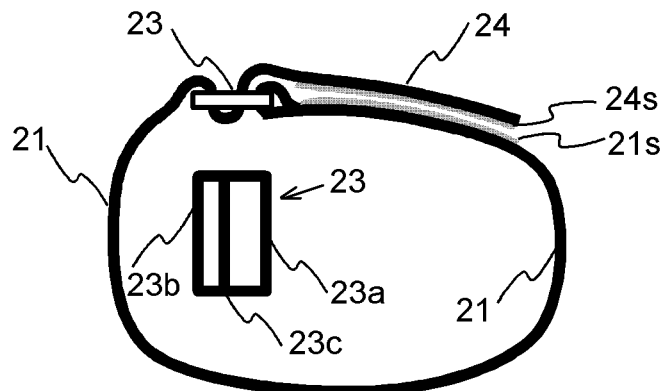


FIG. 2b  
PRIOR ART

FIG. 3

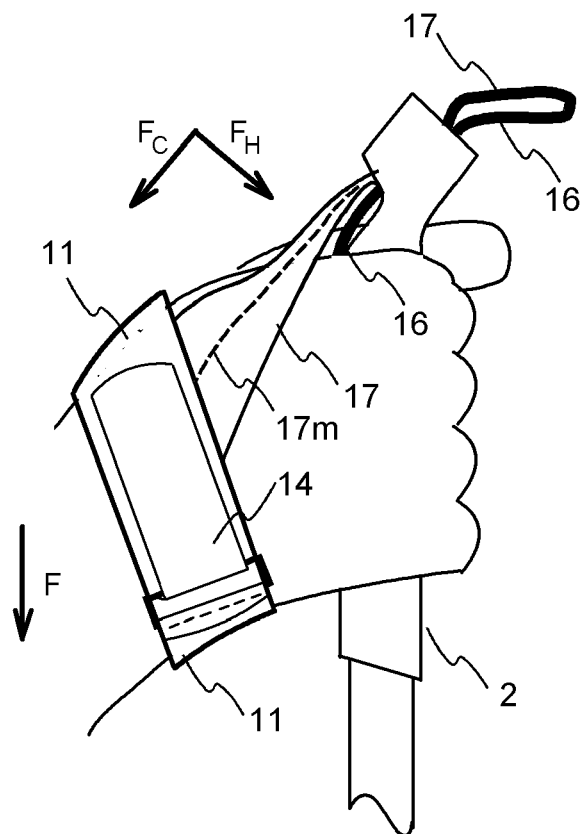
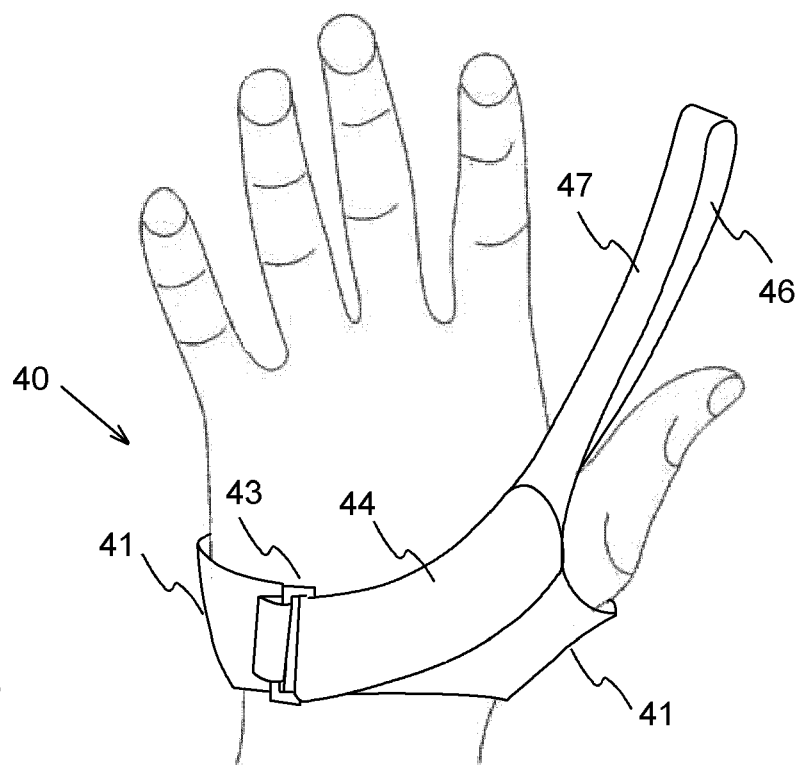
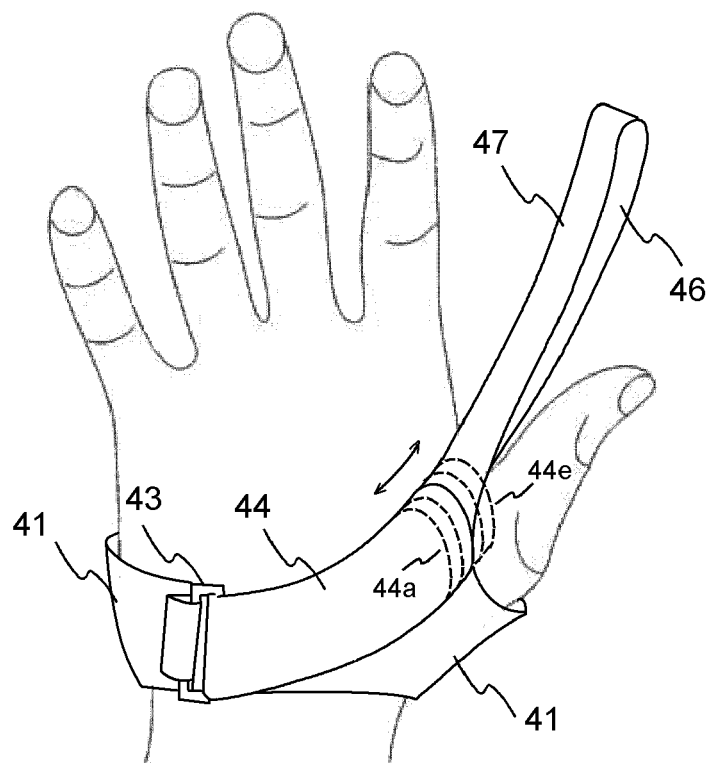
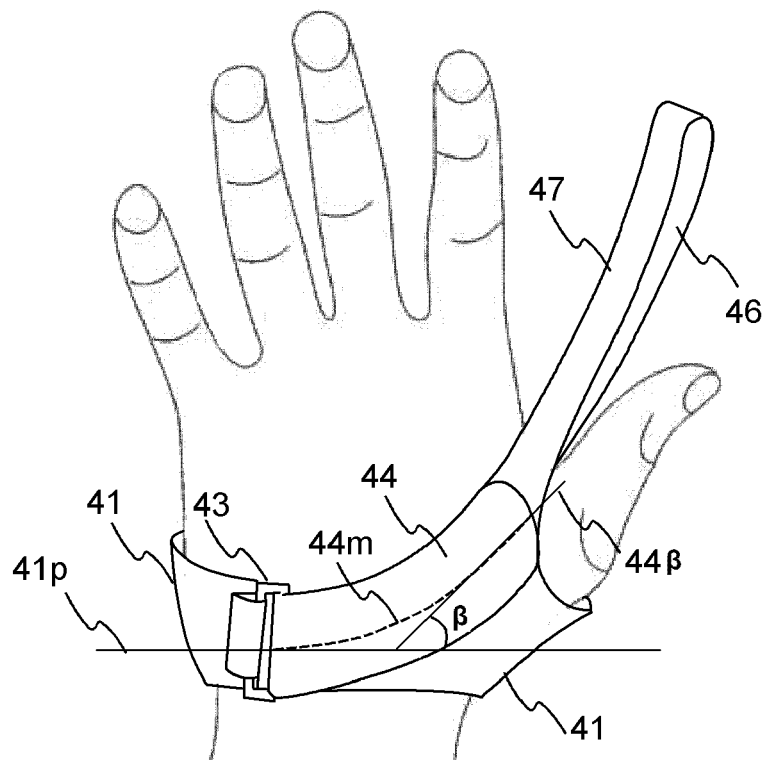
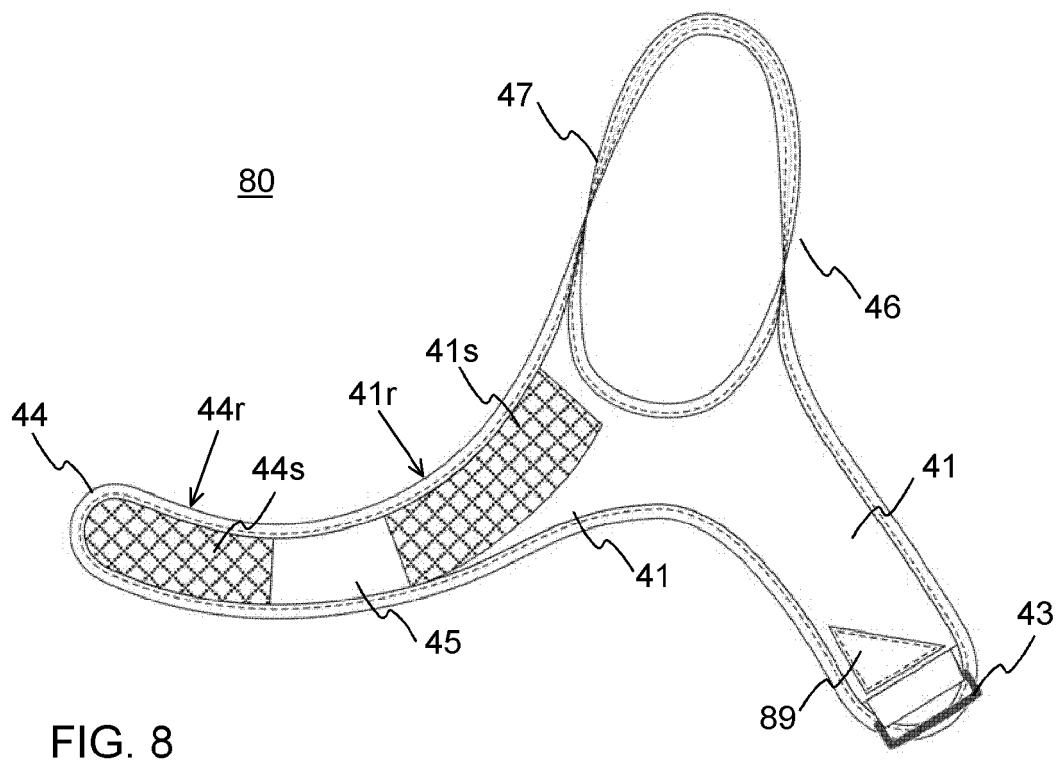
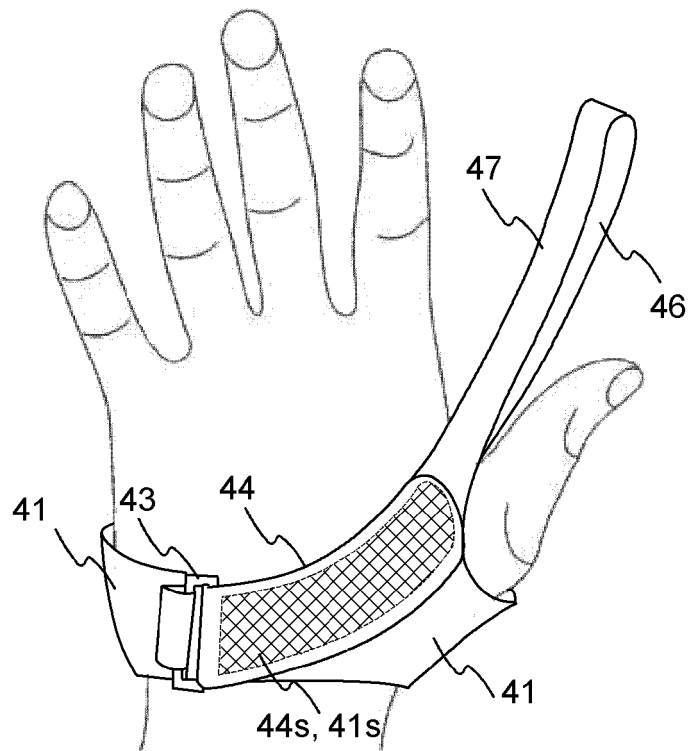


FIG. 4









European Patent  
Office

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Application Number  
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| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                     |                                                 |                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------|-------------------------------------------|
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| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Place of search<br>Munich                                                                           | Date of completion of the search<br>29 May 2007 | Examiner<br>Murer, Michael                |
| <p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone<br/>Y : particularly relevant if combined with another document of the same category<br/>A : technological background<br/>O : non-written disclosure<br/>P : intermediate document</p> <p>T : theory or principle underlying the invention<br/>E : earlier patent document, but published on, or after the filing date<br/>D : document cited in the application<br/>L : document cited for other reasons<br/>&amp; : member of the same patent family, corresponding document</p> |                                                                                                     |                                                 |                                           |

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
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