



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
24.06.2015 Bulletin 2015/26

(51) Int Cl.:
A45F 3/04 (2006.01)

(21) Application number: **13199108.5**

(22) Date of filing: **20.12.2013**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(72) Inventor: **Kax, Henrik**
116 28 Stockholm (SE)

(74) Representative: **Wachenhausen, Marc**
Bird & Bird LLP
Maximiliansplatz 22
80333 München (DE)

(71) Applicant: **Thule IP AB**
214 31 Malmö (SE)

(54) **Hip wing of a hip belt**

(57) A hip wing (1) of a hip belt (20) for a back pack (40) is disclosed which comprises a size adjusting part (2) and a reinforcing part (3) adjustable to each other, wherein the reinforcing part (3) comprises at least one contact means (4a, 4b), wherein the size adjusting part (2) comprises at least one receiving means (5a-5f),

wherein the at least one contact means (4a, 4b) is arranged for modifiably adjusting the position of the reinforcing part (3) in relation to the size adjusting part (2) by engaging the at least one contact means (4a, 4b) with the at least one receiving means (5a-5f).

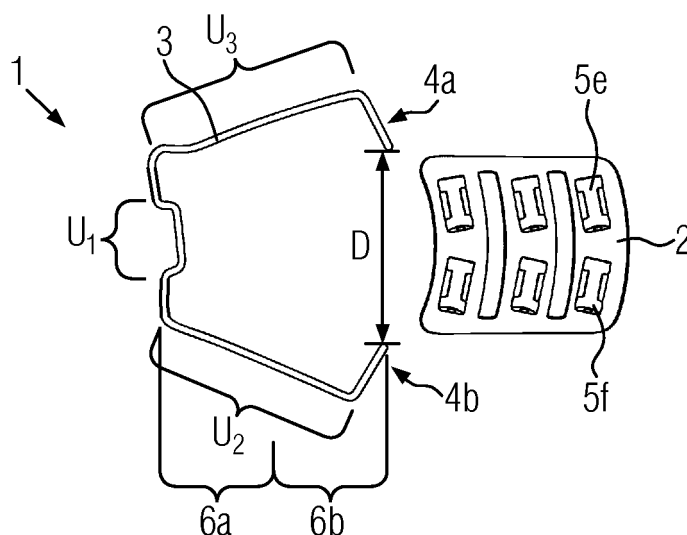


FIG. 1b

Description

BACKGROUND OF THE DESCRIPTION

[0001] The present subject matter relates to a hip wing of a hip belt for a backpack and a backpack.

[0002] Known hip belts comprise a belt having two opposite end portions and an attaching portion arranged in-between of the end portions. Such a belt encircles a hip of a user for load-distributing a load e.g. carried in a backpack.

[0003] The end portions are adapted such that the circumference of the belt can be adjusted to different hips for different users. Usually, the end portions comprise a buckle or other means for securing the end portions to each other. The attaching portion is adapted for detachably mounting the hip belt to a backpack.

[0004] Further, another commonly known hip belt comprises an attaching portion and two opposite hip wings for enclosing a hip of a user. Each hip wing comprises two ends, wherein a first end is affixed to the attaching portion and a second end comprises an end portion which is adapted such that the belt's circumference can be adjusted to the hip of different users as already mentioned. The end portions comprise a strap buckle assembly or other means for securing the end portions to each other so that the length of the hip wing enclosing a user's hip is adjustable to the personal conditions of the user.

[0005] Thus, on one end portion normally a free end of a strap is positioned, wherein on the other end portion a buckle having a maze is positioned. The free end is guided through the maze forming a pathway which guides the strap. The pathway and the maze, respectively, is normally formed by two bars of the buckle displaced to each other such that between strap and bars a high friction force is produced.

[0006] For adjusting the length of the strap, the distance of the two end portions of the two ends of the hip wing relative to each other is increased or decreased. This is done by adapting the length between the two end portions of the belt.

[0007] Further, each hip wing comprises a greater width in comparison to the strap so that a high surface area of the hip wing contacts the hip and the hip bone of a user, respectively. The broadened hip wings get in contact on the left and on the right of a user's hip so that the above mentioned surface area forms a part and a prolongation of the hip and the hip bone, respectively. Thus, a part of the surface area sits on the user's hip bone. By this, a load e.g. carried in a backpack can be load-distributed to a hip of a user.

[0008] Due to the fact that the length of the hip wings are predetermined and due to the fact that each user of a hip belt has a different anatomy, especially with regard to the hip bone, commonly known hip belts cannot be fitted exactly to each user's needs. This is because, for instance, women comprises another hip anatomy in comparison to men, wherein men need usually a greater

length of the hip wing and the hip belt, respectively, to fit and load-distribute optimally to the respective hip. Thus, different hip belts for different anatomies have to be produced increasing production costs.

[0009] Further, as a hip belt and its hip wing, respectively, e.g. encircles optimally the hip of a first person, the same belt can only encircle a part of hip of a second person. This is because e.g. in the first situation the hip belt and its hip wing fit to the hip bone of the first person, wherein in the second situation the belt and the wing, respectively, does not fit to the hip bone of the second person.

[0010] Even further, during use of a commonly known hip belt with hip wings some users receive pain from the load carried in a backpack when the load is supported by a hip wing to a user's hip. Thus, the user gets an inconvenient feeling of carrying such a backpack with such a hip wing, wherein such a hip wing causes pain and limits the time for wearing, in particular, limits the time for carrying a backpack.

SUMMARY

[0011] The present subject matter relates to a hip wing of a hip belt for a backpack and a backpack.

[0012] According to a first aspect of the subject matter, a hip wing of a hip belt for a backpack comprises a size adjusting part and a reinforcing part adjustable to each other. Thus, the relative position of both can be freely adjusted. Further, the reinforcing part comprises preferably at least one contact means, wherein the size adjusting part comprises at least two receiving means. It is also possible that the size adjusting part comprises at least one receiving means. Advantageously, an adjusting of both the at least one contact means and the at least one or two receiving means is realizable.

[0013] Preferably, the at least one contact means is arranged for modifiably adjusting the position of the reinforcing part in relation to the size adjusting part by selectively engaging the at least one contact means with one of the at least two receiving means. Advantageously, a selectively engaging of the at least one contact means can also be possible with the at least one receiving means. Thus, it is also preferred that the at least one contact means is arranged for modifiably adjusting the position of the reinforcing part in relation to the size adjusting part by engaging the at least one contact means with the at least one receiving means.

[0014] This adjusting allows the relative positioning of the size adjusting part and the reinforcing part to each other in relative positions. These relative positions are realized by engaging of the at least one contact means with the at least one or two receiving means. Preferably, in case of only at least one receiving means the receiving means as well as the at least one contact means are adapted to engage each other in any freely chosen relative position to each other. This means that preferably the at least one receiving means comprises e.g. a rail in

which the at least one contact means can engage. This can be realized by using a dovetail groove, for instance. Using such a rail and a groove, respectively, the relative position of the reinforcing part and the size adjusting part to each other can be arbitrarily adjusted.

[0015] In another case, in which for example at least two receiving means are used, the sized adjusting part preferably comprises predetermined positions. In these positions an engaging of the at least one contact means of the receiving part can engage. Thus, relative positions for the reinforcing part in relation to the size adjusting part can be predetermined.

[0016] In other words, if using at least one receiving means of a size adjusting part the at least one contact means of the reinforcing part is arranged for modifiably adjusting the position of the reinforcing part in relation to the size adjusting part in any desired position to each other. Further, in case of using at least two receiving means the relative position of the at least one contact means of the reinforcing part is arranged for modifiably adjusting the position of the reinforcing part in relation to the size adjusting part in predetermined position to each other.

[0017] Thus, by choosing a system of engagement of the size adjusting part with the reinforcing part the variability of a hip wing of a hip belt for a backpack can be increased by the adaption of the relative position of the reinforcing part to size adjusting part in either predetermined positions or in any desired position.

[0018] Hence, the size and the length, respectively, of a hip wing of a hip belt is modifiably adjustable. Further, the hip wing of the hip belt can be positioned such to a user's hip and hip bone, respectively, that the hip wing is optimally fitted on and to the hip bones of a user. This allows an optimal load distribution to the user's hip.

[0019] According to an embodiment of the present subject matter, the at least one contact means is formed by a section of the reinforcing part. Preferably, the reinforcing part has two sections, wherein in particular the second section comprises at least one contact means, and wherein typically the first section comprises means for mounting. Thus, using the means for mounting and mounting means, respectively, the reinforcing part of the hip wing can be mounted to another element, member or part of the hip belt or a backpack.

[0020] According to an embodiment of the present subject matter, the at least one receiving means or the at least two receiving means comprises a socket. Such a socket provides an easy, cost effective and low maintenance realization of a member adapted for connecting to another element of the hip wing.

[0021] According to an embodiment of the present subject matter, the at least one contact means of the reinforcing part comprises a first end and a second end which are adjacent to each other. Advantageously, the first end and the second end comprise each at least one surface facing to each other. Preferably, the first and the second end of the reinforcing part are springingly, flexible or elas-

tic mounted such that a force pushes the two ends together. In particular, the at least one surface of the first end and the at least one surface of the second end are subjected to a force pushing the at least one surface of the first end into the direction of the at least one surface of the second end.

[0022] In this context, it is preferred that the reinforcing part is formed in a loop-shape, in particular in a sigma shape. Moreover, preferably the reinforcing part comprises a flexible wire, in particular made of metal, spring steel and/or a cylindrical piece of steel. Under the preferred precondition that the reinforcing part is formed in a loop-shape having a recess, wherein the recess preferably forms the first and second end, it is possible that the section having the recess and the two ends, respectively, is the second section of the reinforcing part and the section opposite to the recess and the first and second end, respectively, typically is the first section of the reinforcing part.

[0023] By forming a loop-shape an easy and cost effective way of building a spring force is realizable. Thus, the first and second end of a loop-shaped reinforcing part can be easily pushed together such that the spring force tries to close the recess in the loop-shaped reinforcing part.

[0024] A loop can comprise a shape and a loop-shape, respectively, similar to a rectangle, wherein the rectangle comprises a recess for realizing a first and a second end being adjacent to each other.

[0025] Preferably, the reinforcing part comprises a sigma shape, in particular a shape similar to a sigma. This shape is similar to a loop, wherein the special form of the sigma forms a first section and a second section. It is preferred that the second section has a first and a second end which are adjacent to each other. Further, it is preferred that the first section in which the sigma comprises its special sigma form a mounting of the reinforcing part and of the first section, respectively, can be easily realized. Thus, a mounting of the reinforcing part is possible to a further member. The advantage of the sigma-shape in particular of its closed area opposite to the open ends is that a vertical translational movement of such a sigma-shaped reinforcing part can be restricted.

[0026] According to an embodiment of the present subject matter, the reinforcing part comprises two sections positioned adjacent to each other. Preferably, in the first section the reinforcing part is pivotably arrangeable. Thus, by engaging the at least one contact means of the reinforcing part with the at least one/two receiving means of the size adjusting part for example the reinforcing part is able to pivot about the size adjusting part and vice versa.

[0027] Advantageously, in the second section the at least one contact means of the reinforcing part is engageable with the adjusting part. Thus, it is possible to engage and disengage the reinforcing part with the adjusting part. By this an easy and reliable way for connecting and disconnecting the reinforcing part and the adjusting part is

realized.

[0028] According to an embodiment of the present subject matter, the at least two receiving means of the size adjusting part are arranged in sequence. Preferably, the at least two receiving means are positioned such that the length of the hip wing is variable. Due to this arrangement the relative position of the reinforcing part and the size adjusting part is modifiably adjustable. Thus, the sequence of the receiving means is adapted to determine the length of the hip wing. Depending on the distance of the at least two receiving means to each other, predetermined positions and a predetermined length, respectively, of the hip wing is determined for the respective position of the at least two receiving means.

[0029] According to an embodiment of the present subject matter, the size adjusting part and/or the reinforcing part comprises a locking means, preferably securing the reinforcing part to the size adjusting part. Advantageously, the locking means is a retaining clamp. Such locking means prevents detaching of the size adjusting part from the reinforcing part and vice versa. Thus, the security using a hip wing having such a locking means can be enhanced. An easy and cost efficient solution for a locking means is a retaining clamp. This clamp typically clamps the reinforcing part and preferably one of its ends (first end, second end) and at least one contact means, respectively, in a position in which a disengaging of the end with the size adjusting part can be prevented. Clamping can be improved by a groove provided on the at least one contact means, in particular at the ends of the reinforcing part.

[0030] According to an embodiment of the present subject matter, the reinforcing part and the size adjusting part comprise a curved-shape, preferably adapted to human hip. Thus, a hip belt and its hip wing, respectively, encircle optimally a hip of a user such that a load carried in a backpack can be load-distributed to the hip bone of the user in an optimal manner. Hence, a convenient comfort in carrying and wearing, respectively, of a hip wing can be realized.

[0031] Preferably, the size adjusting part forms an extension of the curved-shape of the reinforcing part. Thus, the curved-shape of the reinforcing part can be optimally prolonged such that an adaption to human hip of different and several users, respectively, is realized.

[0032] According to an embodiment of the present subject matter, the contours of the reinforcing part and the size adjusting part are adapted to each other. By this, an extension of e.g. the curved-shape of the reinforcing part is possible in a telescopic manner. This allows a perfectly fitted hip wing to human hips of different users.

[0033] According to a further embodiment of the present subject matter, the reinforcing part and/or the size adjusting part comprise a hook-and-loop fastener for attaching a pad. A pad typically comprises a surface having a convenient wearing comfort for a user. Due to the hook and loop fastener an easy way for cleaning the pad is realized. Further, depending on the relative posi-

tion of the size adjusting part to the reinforcing part a pad adapted to the size and the distance of the aforementioned part, respectively, is positionable to the reinforcing part and/or the size adjusting part.

[0034] According to a second aspect of the present subject matter, a hip belt has a central bridging section, at least one hinge, and at least one hip wing, wherein the at least one hinge pivotably connects the at least one hip wing to the central bridging section.

[0035] Such an embodiment with the at least one hinge guarantees that the at least one hip wing is pivotable to the central bridging section and vice versa. Thus, an adaption to a human hip of such a hip belt is realizable. Further, the pivoting allows an adaption to different hips such that a hip wing and a hip belt, respectively, of the present invention is usable for e.g. a woman and a man.

[0036] According to an embodiment of the present subject matter, the hip wing employed in the second aspect can be structured as discussed for the first aspect and corresponding embodiments.

[0037] According to an embodiment of the present subject matter, the at least one hinge comprises at least one pivoting area. The pivoting area preferably comprises a contact area such that a bending above the pivoting area is restricted. Advantageously, the at least one hinge is arranged at the central bridging section. Thus, in case of a mounting of the central bridging section to a backpack the at least one hip wing is pivotable about the hinge, the at least one hinge and the central bridging section, respectively.

[0038] According to an embodiment of the present subject matter, the at least one hinge comprises two pivoting areas spaced from each other. This further enhances the prevention of bending moments and movements, respectively, so that the mechanical stability of such an arrangement is enhanced. Preferably, the two pivoting areas comprise a common pivoting axis. This guarantees an easy and smooth running movement of the at least one hip wing about the central bridging section.

[0039] According to a further embodiment of the present subject matter, the reinforcing part is guided by the at least one hinge. Thus, the pivoting movement of the reinforcing part of the at least one hip wing is guided in its rotation by the at least one hinge. Hence, the at least one hinge specifies the movement of the reinforcing part about the hinge and the central bridging section, respectively.

[0040] According to an embodiment of the present subject matter, the reinforcing part comprises a U-shaped segment restricting the relative movement in the direction substantially parallel to a pivoting axis of the hinge. This means that the reinforcing part comprises at least one segment which is not aligned in line with a common pivoting axis of the two pivoting areas and one pivoting area, respectively, so that a movement of the reinforcing part along the pivoting axis is restricted.

[0041] Preferably, the U-shaped form is positioned between two pivoting areas of the at least one hinge. As

already explained above, the U-shaped form realizes that a part of the reinforcing part is not coaxially aligned to a pivoting axis of the hinge. This part is arranged outside of a pivoting area of the at least one hinge such that the U-shaped form is positioned adjacent to a pivoting area. Thus, the U abuts on the at least one hinge. This abutment restricts a translational movement of the reinforcing part in the direction substantially parallel to the pivoting axis of the at least one hinge.

[0042] According to an embodiment of the present subject matter, the at least one hinge comprises a bushing. Such a bushing enhances a rotation movement. Thus, the rotation of the reinforcing part about the central bridging section and the at least one hinge, respectively, is enhanced due to a reduction of friction.

[0043] According to a third aspect of the present subject matter, a backpack has a hip belt extending substantially in a horizontal direction, and a supporting element stiffening the backpack and extending in a substantially vertical direction, wherein the supporting element and the hip belt are relatively moveable to each other. Thus, a relative movement of the hip belt concerning the supporting element of the backpack is realizable. Such a movement allows a perfect adaption to the movement of a user of a backpack while carrying such a backpack with a load. Hence, a convenient wearing comfort is provided together with a mechanical stability of a hip belt with a backpack having a supporting element.

[0044] According to an embodiment of the present subject matter, the backpack employed in the third aspect can be structured as discussed for the first aspect plus corresponding embodiments and/or for the second aspect plus corresponding embodiments.

[0045] According to an embodiment of the present subject matter, the hip belt is detachably mounted to the supporting element. This allows an easy and comfortable adjustment of the hip belt to a user's hip such that a load carried in a backpack can be perfectly distributed on the user's hip and hip bone, respectively. Thus, an adaption of the hip belt to the anatomy of the user can be done before wearing a backpack having a hip belt.

[0046] According to an embodiment of the present subject matter, the supporting element having two ends comprises a seat element connecting the supporting element to the hip belt. Advantageously, the seat element is adapted to transfer forces from the supporting element and the load carried in the backpack, respectively, to the hip belt. Preferably, the seat element is arranged at an end of the supporting element. Thus, the seat element builds the lowest point of the supporting element at which the hip belt can be connected. Hence, all the forces acting on a backpack having a supporting element are transferred to the seat element which transfers the forces received to the connected hip belt and the user's hip and hip bone, respectively.

[0047] According to an embodiment of the present subject matter, a central bridging section of the hip belt comprises a latching element mounting the hip belt to the

supporting element. By this, an unintentional detaching of the hip belt from the supporting element and the seat element, respectively, can be restricted. The latching element is preferably constructed such that only an active intervention of a user allows solving and detaching, respectively, of the hip belt from the supporting element of the backpack.

[0048] According to an embodiment of the present subject matter, the hip belt is tiltable about the seat element of the supporting element. This means that a movement of a user's hip and hip bone, respectively, is mainly independent from the movement of the supporting element. Thus, by decoupling the rotational movement of the hip bone of a user with the rotational movement of a backpack a user wearing such a backpack saves energy. This is because the backpack mainly remains in its orientation relative to the user while the user moves his/her hip bone during carrying the backpack.

[0049] According to a further embodiment of the present subject matter, the hip belt is mountable to the supporting element by engaging the latching element with the seat element of the supporting element. Thus, an easy way for connecting the hip belt with the supporting element is realizable. Moreover, it is preferred that the hip belt is detachable by disengaging the latching element from the seat element. This means that by activating and using, respectively, the latching element can be disengaged from the seat element. Such a disconnecting and disengaging, respectively, allows a perfect adaption of a hip belt to a user's hip bone. Again, the adaption optimally transfers loads from the backpack to the hip belt and the hip of a user, respectively due to a load distribution to the hip.

[0050] According to an embodiment of the present subject matter, the hip belt is pivotably arranged such that the hip belt is rotatable at least in a direction substantially perpendicular to the extending direction of the supporting element.

[0051] Such a rotation movement allows an independent movement of the backpack and the hip belt, respectively. Thus, while carrying a backpack the hip of a user normally makes a pivoting movement which can be compensated by the pivotable arrangement of the hip belt to the supporting element. This enhances the wearing comfort as carrying such a backpack is more convenient to a user.

[0052] Preferably, the hip belt is arranged at the supporting element in a gyroscopic way. Such allows a three dimensional movement of the hip belt, wherein this movement is decoupled from the movement of the backpack and the supporting element, respectively. Thus, an enhanced decoupling of the movements of the hip belt and the backpack is realized. Such a mounting enhances the wearing comfort for a user.

[0053] According to an embodiment of the present subject matter, the seat element and the latching element form a snap-in-mounting. This is an easy and reliable way to connect the hip belt with the supporting element.

Such a mounting is also cost efficient and has a low maintenance. Preferably, the latching element snaps into the seat element. Advantageously, the latching element is formed like a slot having a hook and an end of the seat element is formed like a recess which is engageable with the hook.

[0054] Moreover, it is preferred that the seat element comprises a through hole. By this a rotation about the hole of the hip belt can be easily realized.

BRIEF DESCRIPTION OF THE DRAWINGS

[0055]

Figure 1a shows a plan view of a size adjusting part and a reinforcing part of a hip wing in a first relative position to each other;

Figure 1b shows a plan view of a size adjusting part and a reinforcing part of the hip wing disengaged from each other;

Figure 1c shows a plan view of a size adjusting part and a reinforcing part of the hip wing in a second relative position to each other;

Figure 2a shows a hip belt with two hip wings in a first position;

Figure 2b shows a hip belt with two hip wings;

Figure 2c shows a hip belt with two hip wings in a second position;

Figure 2d shows the hip belt of figure 2c having a cover on each hip wing;

Figure 2e shows the hip belt of Figure 2d in a back view together with three pads;

Figure 2f shows a plan view of the hip belt of Figure 2e with one assembled pad;

Figure 3a shows a plan view of backpack with a supporting element a hip belt in a first position;

Figure 3b shows a plan view of backpack with a supporting element a hip belt in a second position;

Figure 4a shows an enlarged plan view of Figure 3b;

Figure 4b shows a cross-section along line A-A shown in Figure 4a; and

Figure 5a shows a hip belt in a three-dimensional view;

Figure 5b shows a backpack with the hip belt of Figures 2g and the supporting element of Figure 3b in an attached positioned and in different rotating angles.

DESCRIPTION OF THE EMBODIMENTS

[0056] In the following an embodiment of the present subject matter is explained based on the drawings. It is noticed that the drawings show a specific embodiment as explained below and further alternative modifications as specified in the description are at least in part not illustrated. Further, same reference signs used in the figures denote same components.

EMBODIMENT

[0057] An embodiment of a hip wing 1 of a hip belt 20 of the present subject matter is shown in a plan view in Figure 1. The hip wing 1 comprises a size adjusting part 2 and a reinforcing part 3 which are positioned in a first relative position to each other. The size adjusting part 2 comprises six receiving means 5a, 5b, 5c, 5d, 5e, 5f for engaging with the reinforcing part 3. The receiving means are - as shown - arranged in sequence. The sequence consists of a matrix having three columns and two rows. Each receiving means is constructed as a socket in which a further component can be introduced for engaging.

[0058] The sockets of a row are oriented in the same direction. However, the sockets of the two columns and each column, respectively, comprise two sockets oriented in different positions. This means that e.g. the sockets 5e, 5f engaged by the receiving means 3 forms a "V", wherein the "V" has its open side directed to the left and its acute side to the right. By this, the rotation angle of the reinforcing part 3 about the sockets 5a, 5b, 5c, 5d, 5e, 5f of the size adjusting part 2 can be limited. Thus, the orientation of the sockets 5a-5f relative to each other influences the rotation of the reinforcing part 3 about the size adjusting part 2. Hence, the orientation of the sockets functions as a stiff joint so that the reinforcing part 3 and the size adjusting part 2 act as one part.

[0059] The reinforcing part 3 comprises two contact means 4a, 4b which engage with and are introduced into, respectively, the sockets 5e, 5f. Due to this engagement a first length L1 of the hip wing 1 is realized, wherein the length L1 is measured from one end of the reinforcing part 3 to the opposite end of the size adjusting part 2. Thus, the maximum length of the hip wing 1 is characterized by the length L1 in Figure 1a.

[0060] Figure 1b shows a plan view of the size adjusting part 2 and the reinforcing part 3 of the hip wing 1 disengaged from each other. By this, the whole size adjusting part 2 and the whole reinforcing part 3 are shown separately, wherein the shape of the reinforcing part 3 is depicted.

[0061] The reinforcing part 3 comprises a flexible wire having a round cross-section, wherein the wire is made

of spring steel. Also other steel or metal is possible. Moreover, the reinforcing part 3 is formed in a sigma-shape. The sigma shape comprises three U-shaped segments U1, U2, U3, wherein U1 connects U2 to U3. Further, U2 and U3 comprise the same shape, but, U3 is upside down with regard to U2. The open end of the U-shaped U1 is oriented to the left, wherein the open ends of U2 and U3 face each other.

[0062] The reinforcing part 3 comprises two sections 6a, 6b positioned adjacent to each other. In the first section 6a the reinforcing part 3 can be pivotably arranged, in particular at the portions connecting the U1 segment with the U2 and U3 segments, respectively. Further, in the portions connecting the segments U1 with U2 and U1 with U3 a mounting of the reinforcing part 3 is realized so that it is possible to mount the reinforcing part 3 to a further member.

[0063] In the second section 6b the reinforcing part 3 comprises a recess and a gap, respectively. Due to this gap a first and second end 4a, 4b are built forming the contact means 4a, 4b of the reinforcing part 3. Due to the U-shape of U2 and U3, respectively, the ends 4a, 4b are formed like a hook (e.g. formed in an "L"-shape) in the second section 6b.

[0064] Further, the hook-formed contact means and the ends 4a, 4b, respectively, are engageable with the size adjusting part 2 as can be seen in Figures 1a and 1c. For this, the ends 4a, 4b are introduced into sockets 5a-5f. In order to hold the ends 4a, 4b reliably in the sockets, the first and the second hook-formed end 4a, 4b of the reinforcing part 3 are springingly mounted such that a force pushes the two ends 4a, 4b together for closing the sigma-shape. Such a spring force is generated by the sigma-shape in combination with e.g. spring steel for the reinforcing part 3.

[0065] By forming the sigma-shape an easy and cost effective way of building a spring and a spring force, respectively, is realized. Thus, the first 4a and second end 4b of the sigma-shaped reinforcing part 3 are pushed together such that the spring force tries to close the recess in the second section 6b of the sigma-shaped reinforcing part 3.

[0066] In case that a material is used having no spring characteristics, it is also possible that the size adjusting part and the reinforcing part 3 and its first and second end 4a, 4b comprise locking means securing the reinforcing part 3 to the size adjusting part 2. In this context, it is preferred that the reinforcing part 3 comprises e.g. a groove as a locking means in which a retaining clamp being a locking means of the size adjusting part 2 engages the first and the second end 4a, 4b, respectively. Thus, the ends of the reinforcing part 3 cannot be disengaged from and pulled out of the sockets 5a to 5f, respectively, of the size adjusting part 2. This is because each retaining clamp abuts against the size adjusting part and restricting thus the movement of the reinforcing part 3.

[0067] In Figure 1a the spring force generated by the

sigma-shaped reinforcing part 3 holds the first and second end 4a, 4b and the contact means, respectively, in the sockets 5e and 5f. Same is shown in Figure 1c, where-as the first and second end 4a, 4b are engaged in the sockets 5a and 5b. However, in Figure 1b a force acts in opposite directions to the spring force of the reinforcing part 3. This means that the segments U2 und U3 and the first and second end 4a, 4b of the reinforcing part 3, respectively, are moved in opposite directions (U3 upwards and U2 downwards). By this, the first and second end 4a, 4b are disengaged from the sockets 5e, 5f of Figure 1a. Thus, two disconnected parts (the reinforcing part 3 and the size adjusting part 2) are obtained as shown in Figure 1b.

[0068] Moreover, by comparing Figure 1a with Figure 1b, a force acting on the segments U2 und U3 in Figure 1b against the spring force of the sigma-shape increases the distance D between the first and second end 4a, 4b. Thus, the distance D in Figure 1b is greater than in comparison to Figure 1a or also Figure 1c.

[0069] This increase in distance D also enables an engagement of the contact means 4a, 4b with the receiving means 5a-5f and the sockets, respectively, in another position as shown e.g. in Figure 1a.

[0070] Figure 1c shows the hip wing 1 of the hip belt 20 of the present subject matter in a plan view, wherein the size adjusting part 2 and the reinforcing part 3 are positioned in a second relative position to each other.

[0071] In this second relative position the first and second end 4a, 4b of the reinforcing part 3 are engaged in the sockets 5a, 5b. Due to this engagement a second length L2 of the hip wing 1 is realized, wherein the length L2 is measured from one end of the reinforcing part 3 to the opposite end of the size adjusting part 2. Thus, the maximum length of the hip wing 1 is characterized by the length L2 in Figure 1c.

[0072] By this, a greater length L2 in comparison to the length L1 shown in Figure 1a is realized. Thus, such a hip wing 1 can be worn and fitted, respectively, to another hip of a person in comparison to that one shown in Figure 1a.

[0073] Moreover, with regard to Figures 1a to 1c also a third relative position of the size adjusting part 2 and the reinforcing part 3 is realizable. Because the contact means 4a, 4b can also engage the sockets 5c and 5d of the size adjusting part 2. By this, a third length L3 of the hip wing 1 can be adjusted, wherein the length L3 is greater than L1, but shorter than L2. Hence, L3 comprises a length between L1 and L2.

[0074] Thus, the six receiving means 5a-5f and the sockets, respectively, are positioned such on the size adjusting part 2 that the length L of the hip wing 1 is variable. This is realized by the arrangement in a sequence having a matrix of three columns and two rows. For further relative positions of the size adjusting part 2 to the reinforcing part 3 it is possible that further sockets are arranged at the size adjusting part. Moreover, also the distance of the sockets to each other can be varied

to change the length of the hip wing 1.

[0075] Summarizing the above, the size adjusting part 2 and the reinforcing part 3 are adjustable to each other. This is realized as the contact means 4a, 4b of the reinforcing part 3 are arranged for modifiably adjusting the position of the reinforcing part 3 in relation to the size adjusting part 2 by selectively engaging the contact means 4a, 4b with the receiving means 5a-5f.

[0076] Figure 2a shows a hip belt 20 with two hip wings 1 in a first length L4. The hip belt 20 comprises a central bridging section 21, two hinges 22a, 22b and two hip wings 1a, 1b, wherein the hinges are arranged on opposite sides of the central bridging section 21. Each hip wing 1a, 1b has a reinforcing part 3a, 3b and a size adjusting part 2a, 2b, wherein contact means 4a, 4b, 4c, 4d and first and second ends 4a, 4b, 4c, 4d, respectively, engage sockets and receiving means 5e, 5f, 5k, 5l, respectively.

[0077] Due to this engagement a first length 4 of the hip belt 20 is realized, wherein the length 4 is measured from an end of the left size adjusting part 2a to the opposite end of the right size adjusting part 2b. Thus, the maximum length of the hip belt 20 is characterized by the relative position of the reinforcing parts 3a, 3b and the size adjusting parts 2a, 2b.

[0078] For a more detailed description of the hip wings 1a, 1b it is referred to Figures 1a to 1c as a hip wing 1 is there already described. This description of the hip wing 1 of Figures 1a to 1c applies by analogy, whereby the contact means 4c, 4d of the left wing 1a are engagable with the sockets and the receiving means 5g, 5h, 5i, 5j, 5k, 5l, respectively. Thus, the length of the left hip belt is also adjustable.

[0079] The hinges 22a, 22b and the hip wings 1a, 1b, respectively, are spaced from each other in a horizontal direction H. Further, the hinges pivotably connect the hip wings 1a, 1b to the central bridging section 21. Thus, the hip wings 1a, 1b are rotatable about the central bridging section 21.

[0080] In the following for the sake of ease only the right hip wing 1a of the hip belt 20 is described, wherein the explanations made apply also for the left hip wing 1b by analogy. Further, it is referred to the description of Figures 1a to 1c concerning explanations of the hip wing. These explanations made to Figures 1a to 1c also apply here by analogy.

[0081] The right hinge 22a comprises two pivoting areas 23a, 23b which are spaced from each other in a vertical direction V, wherein the pivoting areas 23a, 23b have a common pivoting axis A. The space between the areas 23a, 23b enhances the prevention of bending moments so that the mechanical stability of such an arrangement is enhanced.

[0082] The hinge 22a and the pivoting areas 23a, 23b, respectively, guide the reinforcing part 3a, in particular in the first section 6a of the reinforcing part 3a of the hip wings 1a. Further, the hinge 22 comprises a bushing (not shown) which allows a reliable rotation of the reinforcing

part 3a together with the size adjusting part 2a about the pivoting axis A.

[0083] The hinge 22a and the pivoting areas 23a, 23b, respectively, extend mainly in a vertical direction V such that a rotational movement of the reinforcing part 3a about the axis A is guaranteed.

[0084] Between the two pivoting areas 23a, 23b of the hinge 22a the reinforcing part 3a comprises the U-shaped segment U1 which is already explained with regard to Figures 1a to 1c. The U-shaped segment U1 restricts a movement of the reinforcing part 3a relative to the central bridging section 21 in a direction substantially parallel to the pivoting area axis A of the hinge 22a. Hence, due to the two-part hinge 22 having the two pivoting areas 23a, 23b only a rotational movement of the reinforcing means 3a relative to the central bridging section 21 is possible, whereas a translational movement is restricted.

[0085] The sigma-shaped reinforcing part 3a is an easy and cost effective way of forming a spring and a spring force, respectively. The spring force acts on the first 4a and second end 4b of the sigma-shaped reinforcing part 3a so that the ends 4a, 4b are pushed together such that the spring force tries to close the recess in the second section 6b of the sigma-shaped reinforcing part 3a.

[0086] As shown in Figure 2b, the first end 4a as well as the second end 4b of the reinforcing part 3a is bent without any translational movement of the reinforcing part 3a in comparison to Figure 1a. For bending a force acts in opposite directions to the spring force of the reinforcing part 3a. This means that the segments U2 and U3 and the first and second end 4a, 4b of the reinforcing part 3a, respectively, are moved in opposite directions (U3 upwards and U2 downwards). Thus, the first and second end 4a, 4b are disengaged from the sockets 5e, 5f of Figure 2a. Hence, the reinforcing part 3a is disconnected from the size adjusting part 2a as shown in Figure 2b. And thus, the first and second end 4a, 4b of the reinforcing part 3 with the sockets 5e, 5f of the size adjusting part 2a is disengaged.

[0087] In other words, a bending force acts on the segments U2 and U3 in Figure 2b against the spring force of the sigma-shaped reinforcing means 3. Thus, the distance D between the first and second end 4a, 4b is increased, wherein the distance D in Figure 2b is greater than in comparison to Figure 2a or also Figure 2c.

[0088] This increase in distance D also enables an engagement of the contact means 4a, 4b with the receiving means 5a-5f and the sockets, respectively, in another position as shown e.g. in Figure 2a comparing with Figure 2c. Due to the bending of the first and second end portions 4a, 4b of the reinforcing part 3a, the size adjusting part 2a - as shown in Figure 2b - is detached from the hip belt 20.

[0089] Figure 2c shows a hip belt 20 with two hip wings 1 in a second length L5. In this Figure the size adjusting part 2a of the hip wing 1a of Figure 2b is attached to the reinforcing part 3a and the central bridging section 21, respectively. Further, the first and the second ends 4a,

4b are again attached to the size adjusting part 2a, but, in other sockets 5a, 5b as shown in comparison to Figure 2a. Same applies for the left hip wing 1b by analogy.

[0090] As can be easily understood with regard to Figures 2a and 2b, the length L5 of the hip belt 20 as shown in Figure 2c is greater than the length L4 of the hip belt 20 as shown in Figure 2a. Thus, the length of the hip belt 20 is variable and adaptable to different human being's hip anatomy.

[0091] Figure 2d shows the hip belt 20 of Figure 2c having a cover 30a, 30b on the hip wings 1a, 1b. The covers comprise a cushion absorbing shocks from the hip belt 20 to e.g. the back of a user. Further, the reinforcing part 3a, 3b and/or the size adjusting part 2a, 2b can comprise on a surface a hook-and-loop fastener for attaching the covers 30a, 30b to of the parts 2a, 2b, 3a, 3b. This realizes an easy and reliable connection between two parts 2, 3 and the covers 30a, 30b.

[0092] Figure 2e shows the hip belt 20 of Figure 2d in a back view together with three different pads 31a, 31b, 31c. The pads 31 differ with regard to their width W1, W2, W3. This is because of the adjustability of the hip wing 1 and the size adjusting part 2 in connection with the reinforcing part 3, respectively. Because of the adjustability of the size adjusting part 2 relative to the reinforcing part 3 and the central bridging section 21, respectively, the length of the hip belt 20 is variable. Thus, the distance between the covers 30a, 30b differs. Depending on that distance and the length of the hip belt 20, respectively, the corresponding pad 31a, 31b, 31c is used. This means the greater the length of the hip belt 20 the greater the pad 31a, 31b, 31c, wherein the pad 31a comprises the largest width W1 and 31c the smallest width W3. Further, instead of using three parts, namely two covers and one pad, only a one-part pad can be used.

[0093] Further, also the pads 31a, 31b, 31c use cushioning means to absorb shocks from the hip belt 20 and its central bridging section 21, respectively, to the back of a user. Moreover, the pads 31a, 31b, 31c as well as the central bridging section 21 comprise a surface having a hook-and-loop fastener to detachably mount a pad to the central bridging section 21.

[0094] Figure 2f shows a plan view of the hip belt 20 of Figure 2e with one assembled pad. More precisely, in Figure 2f the pad 31a having a mating surface is attached to the hip belt 20 and its central bridging section 21, respectively, also having a mating surface. The mating surfaces comprise as already mentioned a hook-and-loop fastener. Due to the assembled pad 31a a continuous area is realized giving a comfortable feeling to a user wearing such a hip belt 20.

[0095] Figure 3a shows a plan view of backpack 40 with a supporting element 41 and a hip belt 20, wherein the hip belt 20 extends substantially in a horizontal direction H and the supporting element 41 stiffens the backpack 40 and extends in a substantially vertical direction V.

[0096] The supporting element 41 comprises a mainly rectangular solid shape and has two ends 41a, 41b and

a seat element 42. The seat element 42 serves for connecting the supporting element 41 to the hip belt 20. Further, the seat element 42 is arranged at the lower end 41b of the supporting element 41. As can be further seen in Figure 3a, the seat element 42 comprises a through hole 42a which is adapted to engage with a latching element 43 of the central bridging section 21 of the hip belt 20.

[0097] The central bridging section 21 comprises the latching element 43 which mounts and holds, respectively, the hip belt 20 to the supporting element 41, wherein the central bridging section 21 and the hip belt 20, respectively, is detachably mounted to the supporting element 41. The latching element 43 is adapted such that the element engages with the through hole 42a of the seat element 42. Due to this arrangement, the supporting element 41 and the hip belt 20 are relatively moveable to each other.

[0098] Whereas in Figure 3a the supporting element 31 and the hip belt 20 are disengaged from each other, Figures 3b shows the second end 41b of the supporting element 41 engaged with the hip belt 20 and its central bridging section 21, respectively. Thus, the latching element 43 interacts with the through hole 42a so that a relative translational movement of the central bridging section 21 and the supporting element 41 of the backpack 40 is restricted along the vertical direction V.

[0099] Figure 4a shows an enlarged plan view of Figure 3b, wherein the supporting element 41 is engaged with the bridging section 21. As shown, the latching element 43 comprises a round shape so that the hip belt 20 is tiltable about the seat element 42 of the supporting element 41. In other words, due to the round shape of the latching element 43 and the through hole 42a in which the latching element engages a rotational movement of the central bridging section 21 relative to the supporting element 41 is possible, wherein the rotation axis is oriented substantially perpendicular to the plane of projection of Figure 4a.

[0100] Further, the seat element 42 and the latching element 43 form a snap-in-mounting 44, wherein the latching element 43 snaps into the seat element 42 and its through hole 42a, respectively.

[0101] Figure 4b is a cross-section along line A-A of Figure 4a. Figure 4b shows the central bridging section 21 and the latching element 43 in cross section, wherein the latching element is formed like a slot 45 for receiving the supporting element 41 and its seat element 42, respectively, inside.

[0102] At a lower closed end opposite to an open end at which the supporting element 41 is received, the central bridging section 21 of the hip belt 20 comprises mentioned latching element 43 for mounting the hip belt 20 to the supporting element 41.

[0103] The latching element 43 comprises a hook for engaging with the seat element 42 and the through hole 42a, respectively, of the supporting element 41. The hook is elastically deformable. Thus, the hook of the latching

element 43 is movable for engaging and disengaging the supporting element 41 with and from, respectively, the central bridging section 21. Further, for enhancing the mechanical stability the supporting element 41 comprises a protrusion 46. This protrusion serves as an additional support restricting bending moments while the supporting element 41 is introduced in the slot 45 of the central bridging section 21 (see Figure 4b).

[0104] When the end 41b of the supporting element 41 and its seat element 42, respectively, engages the slot 45 of the central bridging section 21 the latching element 43 and the hook 43a, respectively, are pressed in a horizontal direction to the outside of the slot 45 and the central bridging section 21, respectively. After the seat element 42 and the end 41b, respectively, has passed by the latching element 43, the hook snaps into the trough hole 42a of the seat element 42. Thus, the supporting element 41 is translationally fixed to the central bridging section 21.

[0105] While the hip belt 20 is mountable to the supporting element 41 by engaging of the latching element 43 with the seat element 42 of the supporting element 41, the hip belt 20 is also detachable by disengaging the latching element 43 from the seat element 42. This is done by pressing the latching element 43 and the hook 43a, respectively, in the horizontal direction H such that the hook moves to the outside of the central bridging section 21. By this, the through hole of the supporting element 41 and the end 41b, respectively, is not engaged anymore by the latching element 43. Thus, the supporting element 41 can be moved in the vertical direction V relative to the hip belt 20. By this, a position similar shown in Figure 3a is obtained.

[0106] Figure 5a shows a hip belt 20 in a three-dimensional view. In particular, Figure 5a shows the hip belt 20 of Figure 2c in the second position in which the hip belt comprises its largest width. Moreover, the reinforcing part 3 and the size adjusting part 2 have a curved shape. This shape is adapted to a human hip such that a load carried in the backpack 40 can be easily carried and load-distributed to a human hip and the hip bone, respectively. Further, the size adjusting part 2 forms an extension of the curved shape of the reinforcing part 3. Thus, the curved-shaped of the reinforcing part 3a, 3b can be optimally prolonged such that an adaption to human hip of different and several users, respectively, is realized.

[0107] Figure 5b shows a backpack 40 with the hip belt 20 of Figures 3 to 5. The supporting element 41 is attached to the hip belt 20. In particular, it is shown that the hip belt 20 is pivotably arranged such that the hip belt 20 is rotatable in a direction substantially perpendicular to the extending direction of the supporting element 41. Moreover, three rotational positions of the hip belt 20 relative to the supporting element 42 are shown, wherein the hip belt 20 is rotatable about an axis substantially perpendicular to the plane of projection.

REFERENCE SIGNS

[0108]

5	1	Hip wing
	1a	Hip wing
	1b	Hip wing
	2	Size adjusting part
	2a	Reinforcing part
10	2b	Reinforcing part
	3	Reinforcing part
	3a	Size adjusting part
	3b	Size adjusting part
	4a	Contact means
15	4b	Contact means
	4c	Contact means
	4d	Contact means
	5a	Receiving means, sockets
	5b	Receiving means, sockets
20	5c	Receiving means, sockets
	5d	Receiving means, sockets
	5e	Receiving means, sockets
	5f	Receiving means, sockets
	5g	Receiving means
25	5h	Receiving means
	5i	Receiving means
	5j	Receiving means
	5k	Receiving means
	5l	Receiving means
30	6a	Section
	6b	Section
	20	Hip belt
	21	Central bridging section
	22a	Hinge
35	22b	Hinge
	23a	Pivoting area
	23b	Pivoting area
	30a	Cover
	30b	Cover
40	31	Pad
	31a	Pad
	31b	Pad
	31c	Pad
	40	Backpack
45	41	Supporting element
	41a	Upper end of supporting element
	41b	Lower end of supporting element
	42	Seat element
	42a	Through hole
50	43	Latching element
	43a	Hook
	44	Snap-in mounting
	45	Slot
	46	Protrusion
55	A	Pivoting axis
	D	Distance
	H	Horizontal direction
	L1	Length of hip wing

L2	Length of hip wing
L3	Length of hip wing
L4	Length of hip belt
L5	Length of hip belt
U1	Segment
U2	Segment
U3	Segment
V	Vertical direction
W1	Width of a pad
W2	Width of a pad
W3	Width of a pad

Claims

1. Hip wing (1) of a hip belt (20) for a back pack (40) comprising

- a size adjusting part (2) and a reinforcing part (3) adjustable to each other,
- wherein the reinforcing part (3) comprises at least one contact means (4a, 4b),
- wherein the size adjusting part (2) comprises at least one receiving means (5a-5f),
- wherein the at least one contact means (4a, 4b) is arranged for modifiably adjusting the position of the reinforcing part (3) in relation to the size adjusting part (2) by engaging the at least one contact means (4a, 4b) with the at least one receiving means (5a-5f).

2. Hip wing according to claim 1, wherein the size adjusting part (2) comprises at least two receiving means (5a-5f), and wherein the at least one contact means (4a, 4b) is arranged for modifiably adjusting the position of the reinforcing part (3) in relation to the size adjusting part (2) by selectively engaging the at least one contact means (4a, 4b) with one of the at least two receiving means (5a-5f).

3. Hip wing according to one of the claims 1 or 2, wherein the at least one receiving means or the at least two receiving means comprises a socket (5a-5f).

4. Hip wing according to one of the preceding claims, wherein the at least one contact means (4a, 4b) of the reinforcing part (3) comprises a first end (4a) and a second end (4b) which are adjacent to each other.

5. Hip wing according to one of the preceding claims, wherein the at least one contact means (4a, 4b) of the reinforcing part (3) comprises two sections (6a, 6b) positioned adjacent to each other, wherein in the first section (6a) the reinforcing part (3) is pivotably arrangable and in the second section (6b) the at least one contact means (4a, 4b) of the reinforcing part (3) is engageable with the size adjusting part (2).

6. Hip wing according to one of the preceding claims, wherein the at least two receiving means (5a-5f) of the size adjusting part (2) are arranged in sequence, wherein preferably the at least two receiving means (5a-5f) are positioned such that the length (L) of the hip wing (1) is variable.

7. Hip wing according to one of the preceding claims, wherein the reinforcing part (3) and the size adjusting part (2) comprise a curved shape adapted to human waist, wherein the size adjusting part (2) forms an extension of the curved shape of the reinforcing part (3).

8. Hip belt (20) having

- a central bridging section (21),
- at least one hinge (22a, 22b), and
- at least one hip wing (1),
- wherein the at least one hinge (22) pivotably connects the at least one hip wing (1) to the central bridging section (21).

9. Hip belt according to claim 8, wherein the at least one hinge (22a, 22b) comprises at least one pivoting area (23a, 23b), wherein preferably the at least one hinge (22a, 22b) is arranged at the central bridging section (21).

10. Hip belt according to one of claims 8 or 9, wherein the at least one hinge (22a, 22b) comprises two pivoting areas (23a, 23b) spaced from each other, wherein preferably the two pivoting areas (23a, 23b) comprise a common pivoting axis (A).

11. Backpack (30) having

- a hip belt (20) extending substantially in a horizontal direction (H), and
- a supporting element (31) stiffening the backpack (30) and extending in a substantially vertical direction (V),
- wherein the supporting element (31) and the hip belt (20) are relatively moveable to each other.

12. Backpack according to claim 11, wherein the hip belt (20) is detachably mounted to the supporting element (31).

13. Backpack according to one of claims 11 or 12, wherein the supporting element (31) having two ends (31a, 31b) comprises a seat element (32) connecting the supporting element (31) to the hip belt (20), wherein preferably the seat element (32) is arranged at an end (31a, 31b) of the supporting element (31).

14. Backpack according to one of claims 11 to 13, where-

in a central bridging section (21) of the hip belt (20) comprises a latching element (33) mounting the hip belt (20) to the supporting element (31), and wherein preferably the hip belt (20) is tiltable about the seat element (32) of the supporting element (31).

5

15. Backpack according to claim 14, wherein the hip belt (20) is mountable to the supporting element (31) by engaging the latching element (43) with the seat element (32) of the supporting element (31) and detachable by disengaging the latching element (33) from the seat element (32).

10

15

20

25

30

35

40

45

50

55

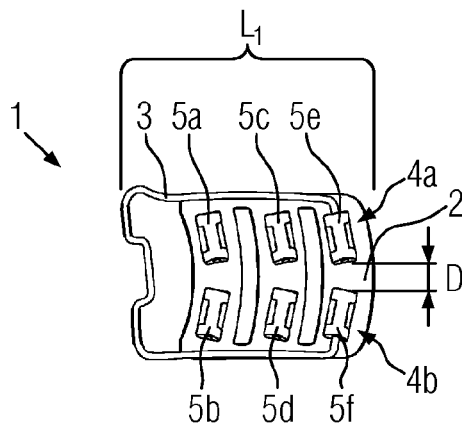


FIG. 1a

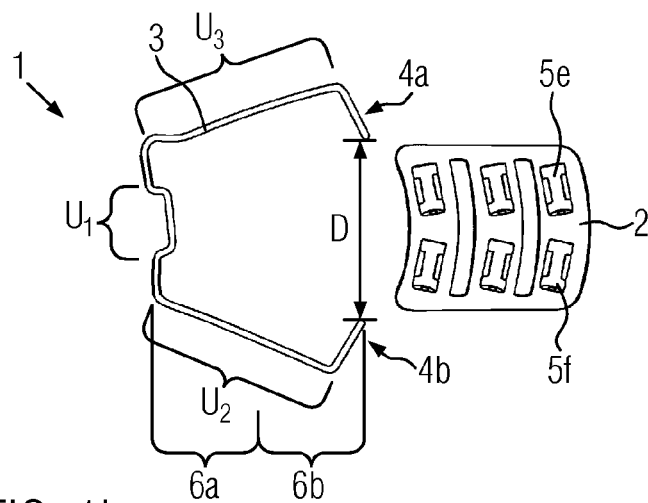


FIG. 1b

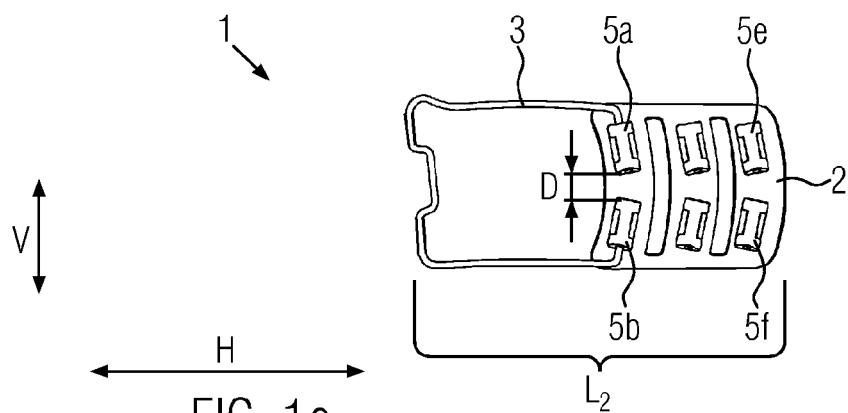


FIG. 1c

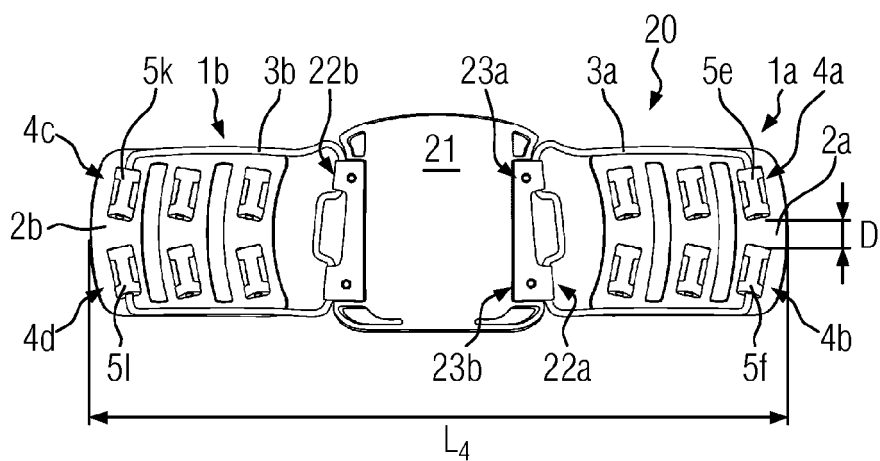


FIG. 2a

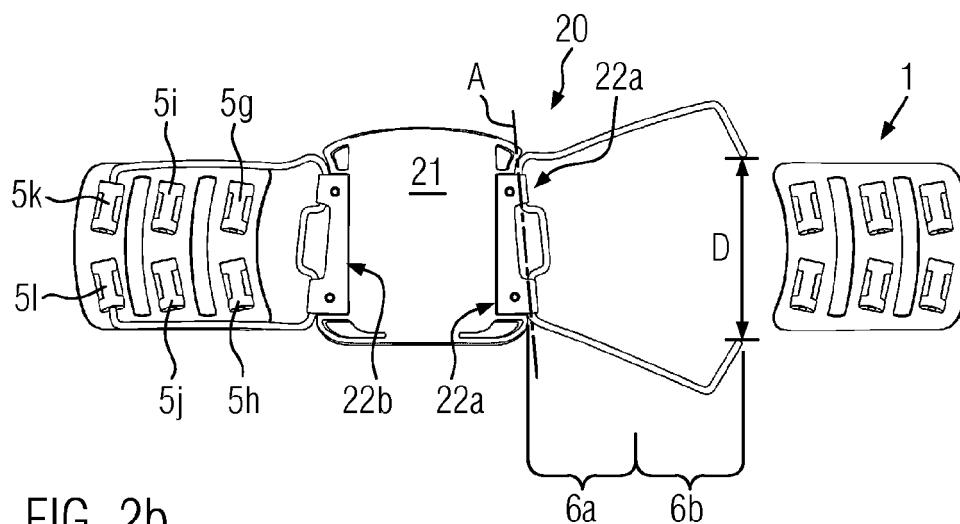


FIG. 2b

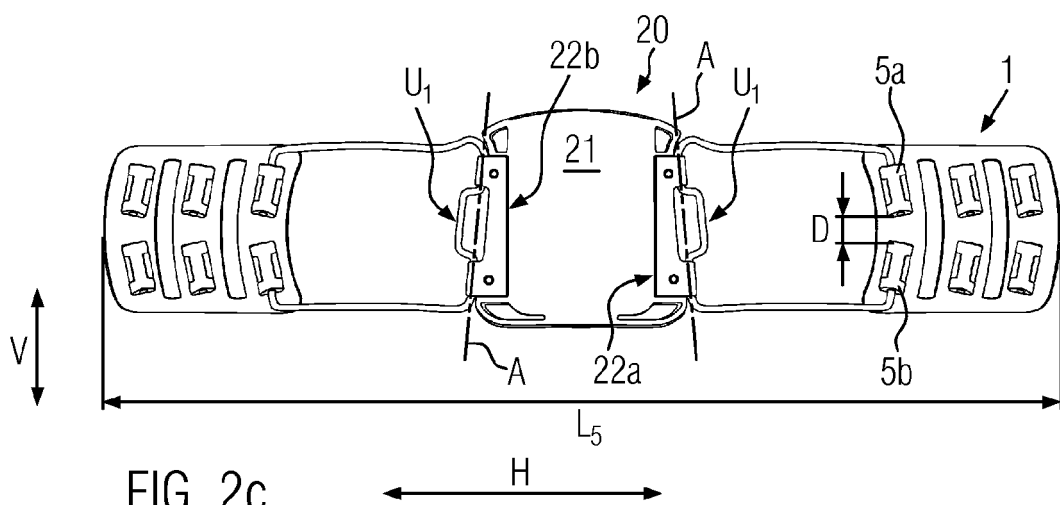
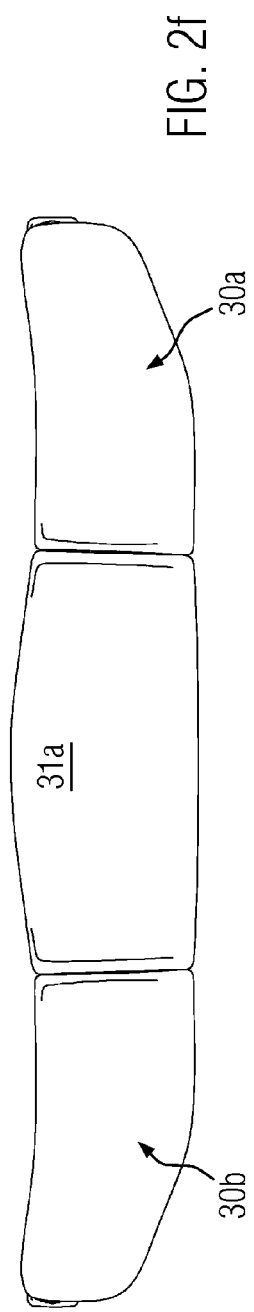
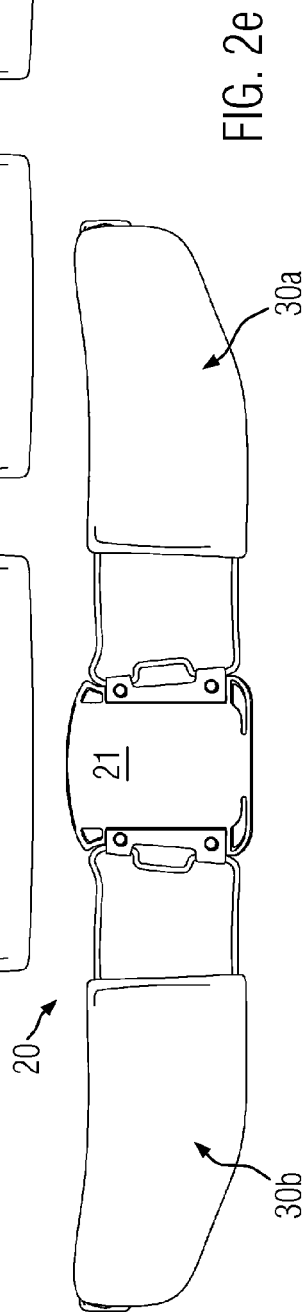
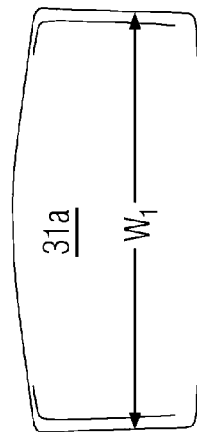
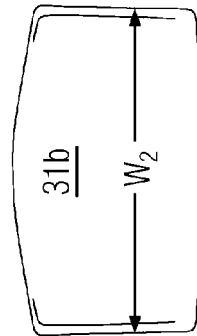
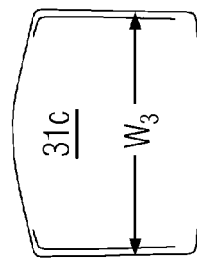
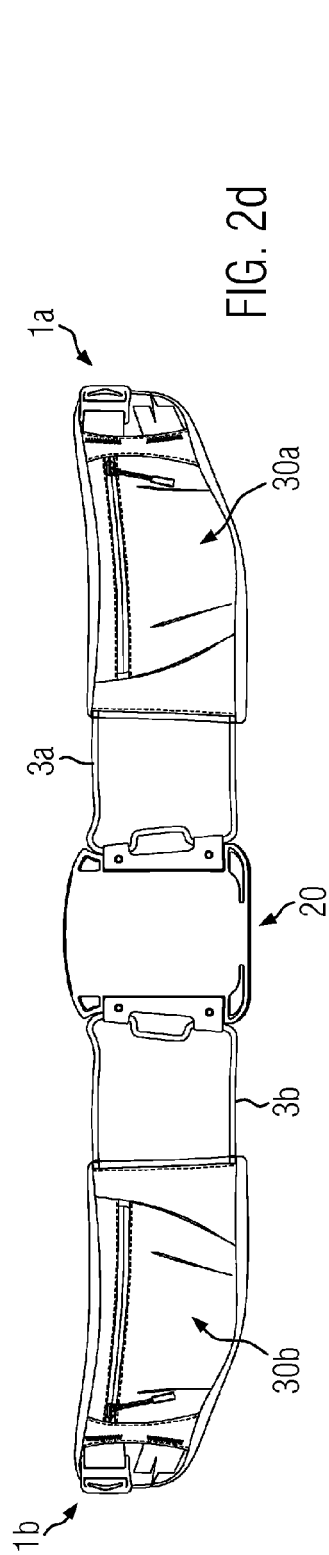


FIG. 2c



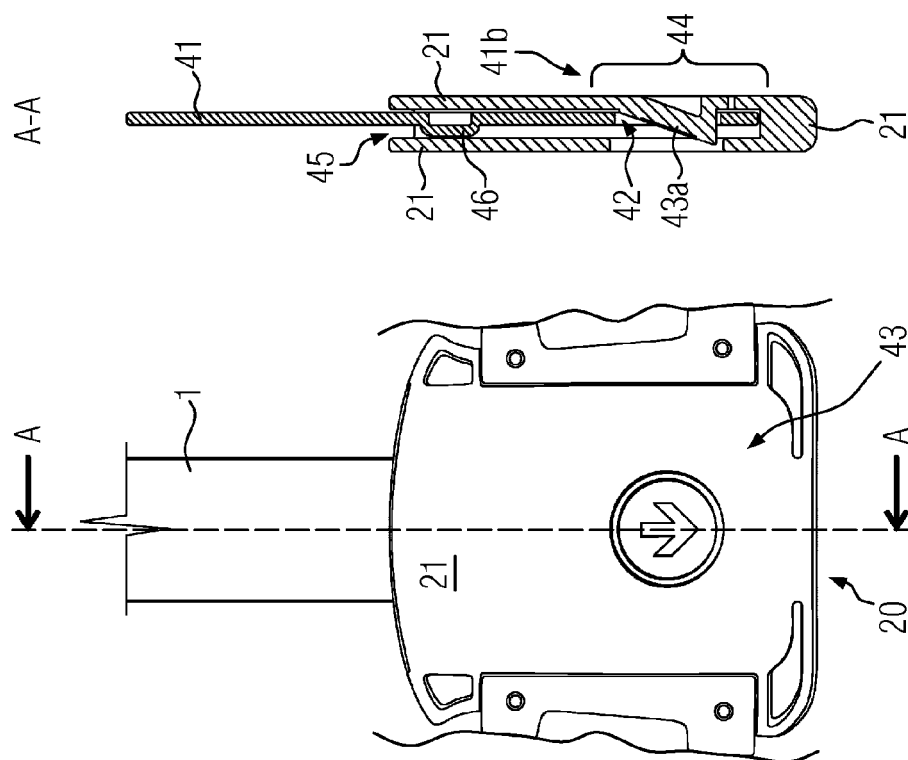
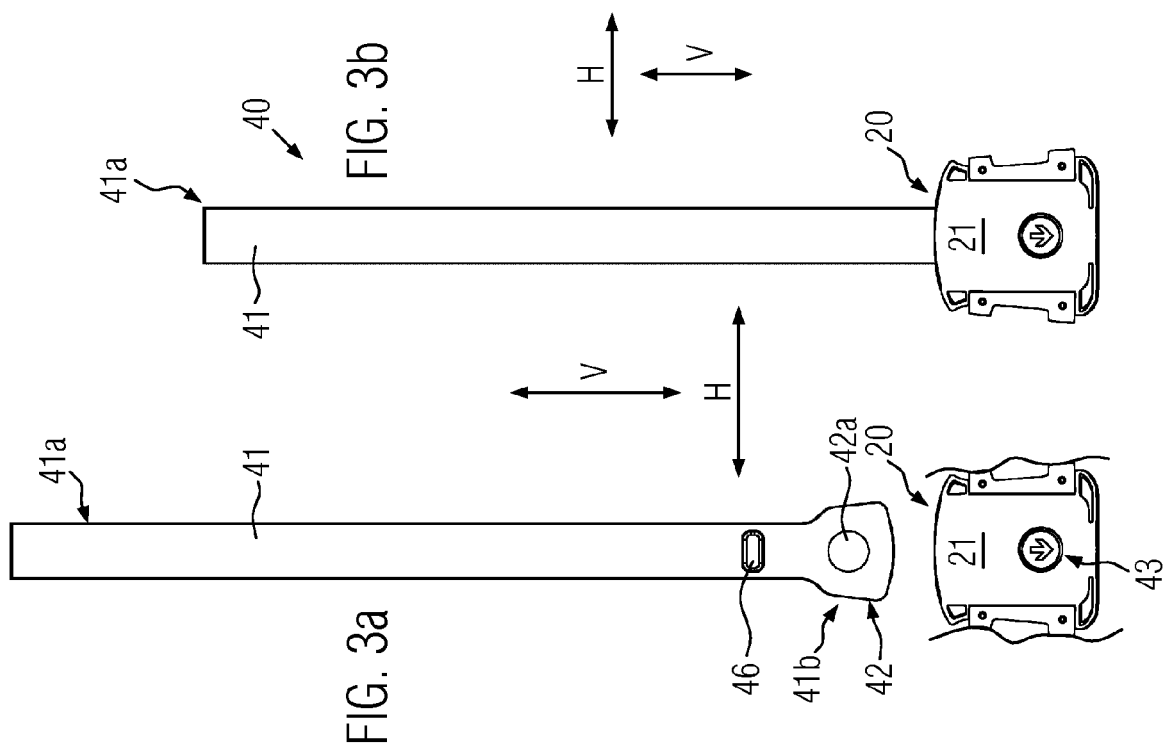


FIG. 4b

FIG. 4a

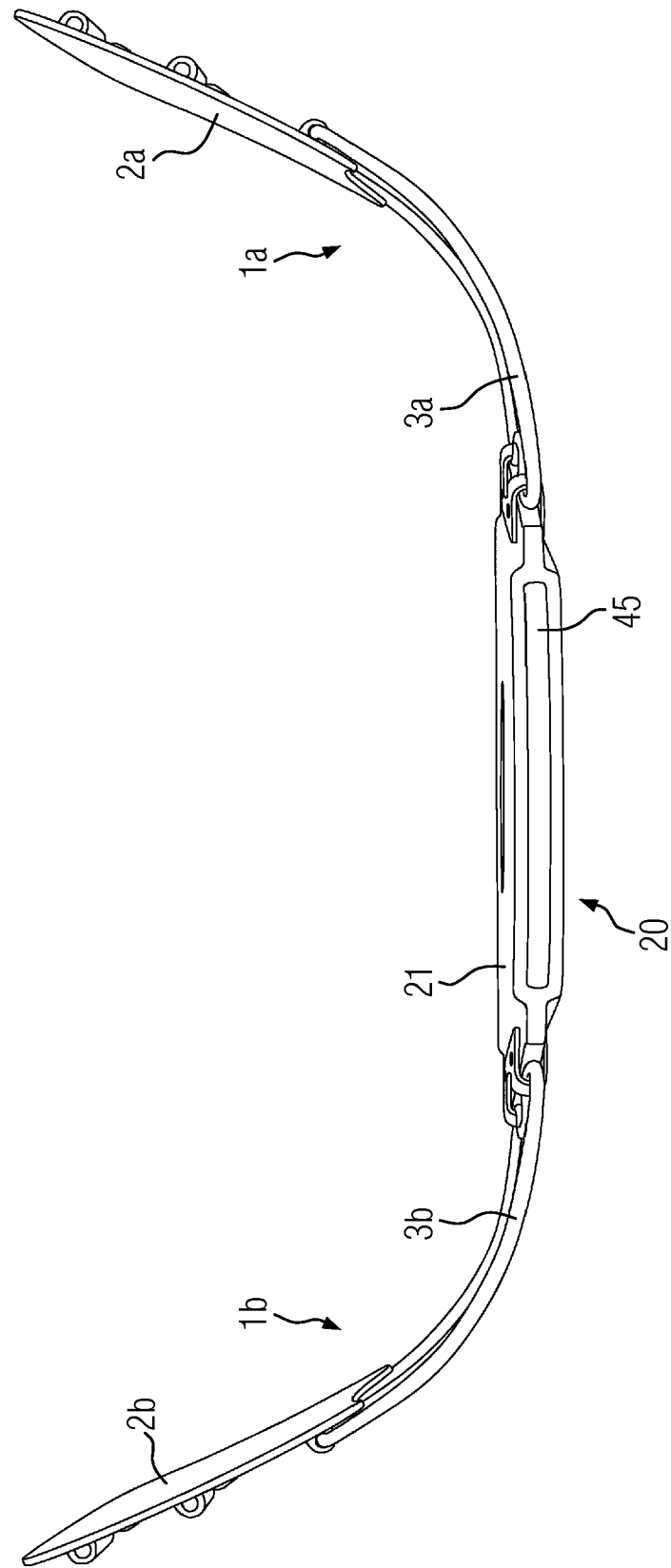


FIG. 5a

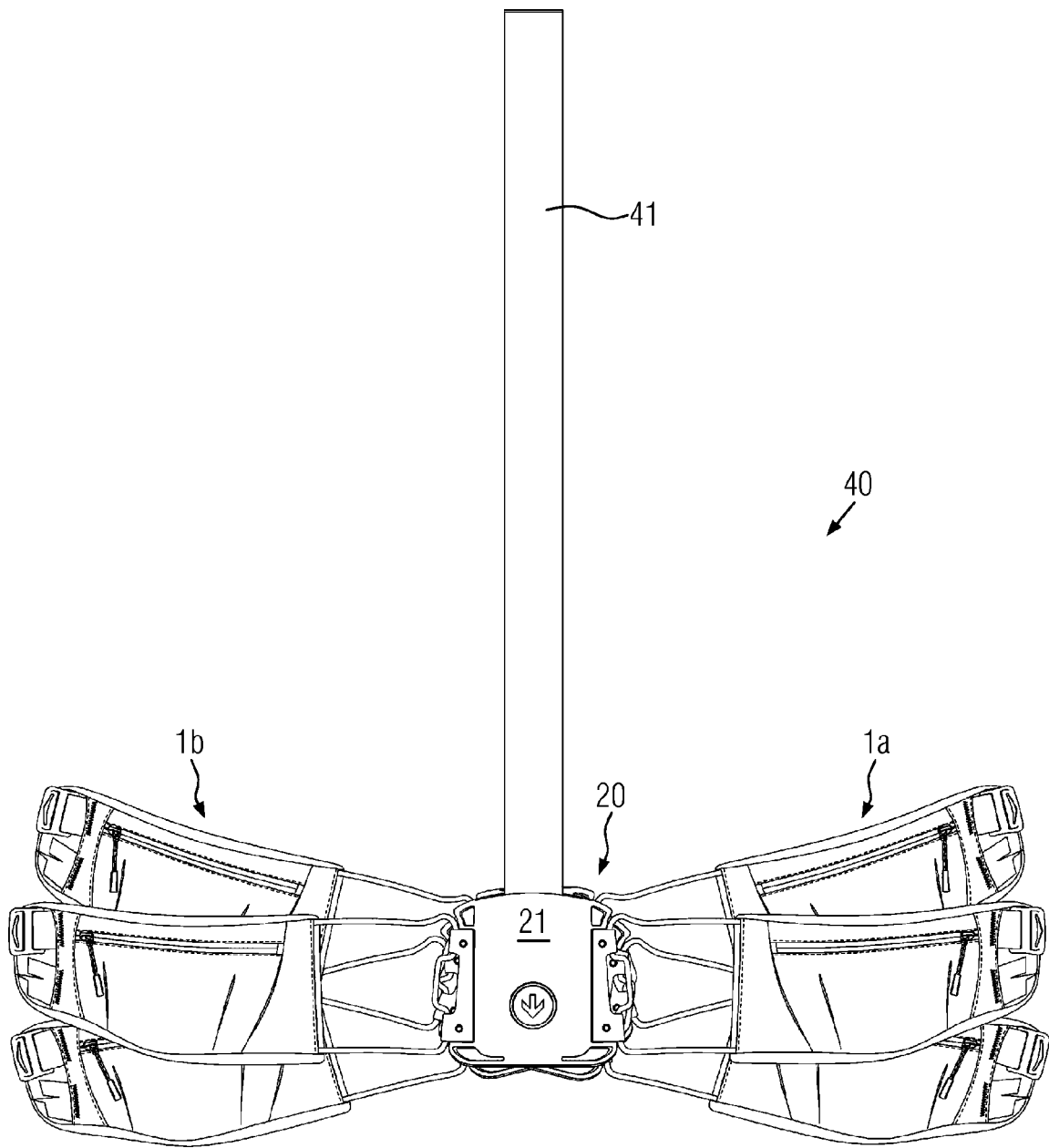


FIG. 5b



EUROPEAN SEARCH REPORT

Application Number
EP 13 19 9108

5

10

15

20

25

30

35

40

45

50

55

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2002/145027 A1 (GODSHAW DONALD E [US] ET AL) 10 October 2002 (2002-10-10) * paragraphs [0030], [0031] * * figures 6,7 *	1-7	INV. A45F3/04
X	EP 0 122 764 A2 (KARRIMOR INT LTD [GB]) 24 October 1984 (1984-10-24) * page 8, line 9 - page 11, line 3 * * figures *	1-10	
A	FR 2 913 315 A1 (RAYMOND ET CIE SOC EN COMMANDI [FR]) 12 September 2008 (2008-09-12) * abstract * * figure 1 *	3	
A	US 2 900 696 A (BACON JOHN H) 25 August 1959 (1959-08-25) * figures 1-5 *	3	
X	WO 91/05494 A1 (KARRIMOR INT LTD [GB]) 2 May 1991 (1991-05-02) * page 6, line 2 - page 9, line 13 * * figures 1,2,8-10,14,15 *	11-15	TECHNICAL FIELDS SEARCHED (IPC) A45F A44B A41F
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 15 April 2014	Examiner Frank, Lucia
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 13 19 9108

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.

15-04-2014

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2002145027 A1	10-10-2002	US 2002145027 A1	10-10-2002
		US 2003102344 A1	05-06-2003
		US 2004238586 A1	02-12-2004
		US 2006086769 A1	27-04-2006
		US 2006102674 A1	18-05-2006
		US 2006289585 A1	28-12-2006

EP 0122764 A2	24-10-1984	AU 561631 B2	14-05-1987
		AU 2672384 A	18-10-1984
		DE 122764 T1	27-02-1986
		DE 3468312 D1	11-02-1988
		EP 0122764 A2	24-10-1984
		IE 55146 B1	06-06-1990
		JP H0157567 B2	06-12-1989
		JP S59207109 A	24-11-1984
		NO 841504 A	16-10-1984

FR 2913315 A1	12-09-2008	AT 481875 T	15-10-2010
		AU 2008224196 A1	12-09-2008
		CA 2679283 A1	12-09-2008
		EP 2134162 A1	23-12-2009
		ES 2353245 T3	28-02-2011
		FR 2913315 A1	12-09-2008
		NZ 579504 A	30-06-2011
		RU 2009136629 A	20-04-2011
		US 2010024174 A1	04-02-2010
		WO 2008107054 A1	12-09-2008

US 2900696 A	25-08-1959	NONE	

WO 9105494 A1	02-05-1991	AU 6539390 A	16-05-1991
		DE 69017464 D1	06-04-1995
		DE 69017464 T2	14-09-1995
		DK 0495853 T3	10-07-1995
		EP 0495853 A1	29-07-1992
		WO 9105494 A1	02-05-1991

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82