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(54) **BACKPACK**

(57) The present invention relates to a backpack, in particular to a backpack for biking. In one embodiment, the backpack (100) comprises a main body (105), at least one cushioning shoulder strap (110) and at least two stability straps (120) individually connecting a distal part (211) of the at least one cushioning shoulder strap (110) to the main body (105). In another embodiment, the backpack (200) comprises a main body (205), at least one cushioning shoulder strap (210) and at least two coupling straps (230) individually connecting a proximal part (211) of the at least one cushioning shoulder strap (210) to the main body (205). The at least two coupling straps (230) are adapted to adjust the position of the proximal part (212) of the at least one cushioning shoulder strap (210).

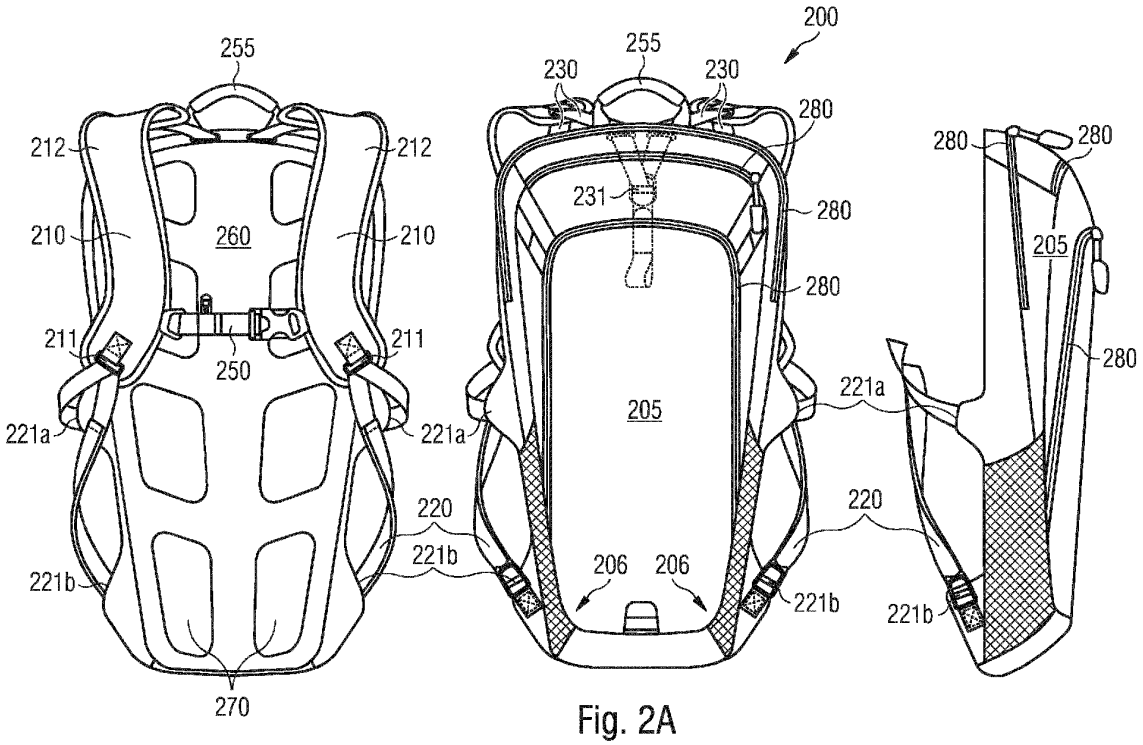

Fig. 2A

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Description

1. Technical field

[0001] The present invention relates to a backpack, in particular to a backpack for biking.

2. Description of the prior art

[0002] In recent years, backpacks for sports applications have become more and more popular. Backpacks are useful for many different sports, in particular for outdoor activities such as hiking and biking. In order to comfortably carry the backpack on a wearer's back, it is known to provide cushioning shoulder straps, e.g. straps comprising a cushioning material which extend over the shoulders of the wearer of the backpack.

[0003] For example, US 2011/0290843 A1 discloses a backpack having a convex back panel, wherein the convex back panel of the backpack may curve outward from the center of a wearer's back to minimize contact between the backpack and the wearer's back. The backpack may have a pair of shoulder straps operably connected to the convex back panel to secure the backpack to the back of the wearer.

[0004] Furthermore, US 6,164,509 A discloses an ergonomic bookpack with a series of top straps, side straps, bottom straps and optional support members serving to move the bookpack center of gravity higher in the bookpack and closer to the wearer's body, significantly redistributing the load of books borne by the wearer's shoulders along a longer portion of the body and the back.

[0005] Further prior art is disclosed in US 2006/0 289 586 A1 and US 2006/0 289 589 A1.

[0006] However, the backpacks known in the art do not allow an optimal and secure adjustment of their position on the wearer's back. An optimal and secure adjustment, however, is highly important for performance oriented applications such as downhill biking, where the backpack is subject to significant forces caused by gravity and sudden impacts.

[0007] Therefore, the underlying problem of the present invention is to further optimize backpacks and to at least partly overcome the above outline difficulties in a secure positioning of the backpack on the wearer's back.

3. Summary of the invention

[0008] The above-mentioned problem is at least partly solved by a backpack according to the independent claims. Advantageous embodiments are contained in the dependent claims. It has to be noted that any backpack according to claim 1 and its dependent claims may in addition also comprise features of the backpacks according to independent claim 8 and its dependent claims.

[0009] A first aspect of the present invention relates to a backpack comprising a main body, at least one cushioning shoulder strap and at least two stability straps individually connecting a distal part of the at least one cushioning shoulder strap to the main body. In the context of the present invention, the at least one cushioning shoulder strap has a proximal part closer to the main body and a distal part more away from the main body. Therefore, the proximal part of the cushioning shoulder strap may also be referred to as an upper part of the cushioning shoulder strap that is adjacent to the wearer's shoulder and the distal part may be referred to as a lower part of the cushioning shoulder strap.

[0010] Any undesired change of the position of the backpack during sports applications such as downhill biking will impair the performance of the wearer. The inventors have realized that the provision of two stability straps for a cushioning shoulder strap is sufficient to firmly and comfortably maintain the backpack in its proper position on the wearer's back. Therefore, an unintended movement of such a backpack on the wearer's back, for example towards the wearer's head, can be reliably avoided.

[0011] The at least two stability straps may be connected to the main body at a first and a second stability anchorage, wherein the first stability anchorage may be arranged closer to a proximal part of the cushioning shoulder strap than the second stability anchorage.

[0012] For example, when the backpack is used on a wearer's back, the first stability anchorage may be arranged closer to the shoulder of the wearer than the second stability anchorage. Such an arrangement of the stability anchorages of the stability straps can further optimize the secure positioning of the backpack.

[0013] In some embodiments, when the backpack is used on a wearer's back, the first stability anchorage may be arranged in a thorax area of the wearer. Moreover, the second stability anchorage may be arranged in a waist area of the wearer. Thus, the first stability anchorage may be located at a middle part of the backpack and the second stability anchorage may be located at a lower part of the backpack. These embodiments further help to avoid undesired movements of the backpack along the wearer's back as the distance between the stability strap at the thorax area of a wearer and the wearer's armpit is much smaller than for the straps of conventional backpacks. Therefore, even in sports applications like downhill biking with high external forces, the described backpack can essentially remain at an adjusted position on the wearer's back.

[0014] In some embodiments, the distance between the first stability anchorage and the second stability anchorage may be smaller than the distance between the first stability anchorage and a proximal part of the at least one cushioning shoulder strap. For example, when the backpack is used on a wearer's back, the distance between the first stability anchorage and the second stability anchorage may be smaller than the distance between the first stability anchorage and an upper end of the main body which is adjacent to the wearer's shoulder. The in-

ventors have noted that such a geometry further improves the secure adjustment of the desired position of the backpack.

[0015] In some embodiments, the at least two stability straps may be provided as a single strap extending from the main body to the distal part of the at least one cushioning shoulder strap and back to the main body. By providing the two stability straps as a single strap, a simple and cost-efficient construction can be provided. In addition, it allows to easily adjust the stability straps, for example to simultaneously tighten the two stability straps simply by shortening the overall single strap.

[0016] Another aspect of the present invention relates to a backpack comprising a main body, at least one cushioning shoulder strap and at least two coupling straps individually connecting a proximal part of the at least one cushioning shoulder strap to the main body. The at least two coupling straps are adapted to adjust the position of the proximal part of the at least one cushioning shoulder strap. Moreover, the at least two coupling straps may be adapted to adjust the position of the proximal part of the at least one cushioning shoulder strap in a lateral direction which is orthogonal to the longitudinal extension of the at least one cushioning shoulder strap.

[0017] Whereas in the prior art mentioned above the cushioning shoulder strap is attached to the main body without the possibility for any adjustment, the embodiments of the invention provide a fundamentally new approach for adjusting the position of the backpack on a wearer's back and improving the wearer's comfort: Having two coupling straps allows to adjust the position of the proximal part of the cushioning shoulder strap not only so as to obtain a tighter fit but also in other directions, for example in a lateral direction, to adapt to different shoulder widths.

[0018] In some embodiments, the at least two coupling straps may be connected to the main body at a first and a second coupling anchorage. Preferably, at least one of the first and second coupling anchorages is arranged on an inner surface of the main body.

[0019] In some embodiments, the at least two coupling straps may be provided as a single strap extending from the main body to the proximal part of the at least one cushioning shoulder strap and back to the main body. Similar to the stability straps, such a construction reduces manufacturing costs and allows for an easier tightening.

[0020] In some embodiments, the backpack may comprise a first and a second pair of coupling straps, wherein the first pair is connected to a proximal part of a first cushioning shoulder strap and to the main body and the second pair is connected to a proximal part of a second cushioning shoulder strap and to the main body. Moreover, a coupling strap of the first pair may be connected to a coupling strap of the second pair. Similarly, such an arrangement facilitates the manufacture and the adjustment of the fit, as only a reduced number of couplings straps must be adjusted.

[0021] Moreover, the connection of the first pair and the second pair of coupling straps may be arranged on an inner surface of the main body. Such arrangement can avoid an unintentional disconnection of the secured connection between the first and second pairs of coupling straps during sports applications such as downhill biking or backcountry snowboarding, where a wearer of the backpack may be in dangerous situation as they may have a touch with trees and bushes.

[0022] In some embodiments, the main body may comprise a back panel. Such a back panel may provide support for the main body of the backpack and may minimize the contact between the backpack and the wearer's back. As a result, a durable and breathable backpack may be provided for sports applications.

[0023] In some embodiments, at least one of the lengths of the at least two stability straps may be adjustable. Moreover, at least one of the lengths of the at least two coupling straps may be adjustable. Such embodiments provide a higher degree for varied adjustments of the backpack's position on the wearer's back so that the optimized wearer's comfort can be achieved.

[0024] In some embodiments, the backpack may have two cushioning shoulder straps and at least one supporting strap connecting the two cushioning shoulder straps. The supporting strap cooperates with the stability straps and/or the coupling straps to maintain the two cushioning shoulder straps at a comfortable and secured position on a wearer's back.

4-. Short description of the figures

[0025] Aspects of the present invention will be explained in more detail with reference to the accompanying figures in the following. These figures present:

Fig. 1:	a possible embodiment of a backpack according to the present invention worn by a wearer;
Figs. 2A - 2C:	further possible embodiments of a backpack according to the present invention; and
Fig. 3:	a still further possible embodiment of a backpack according to the present invention.

5. Detailed description of preferred embodiments

[0026] Possible embodiments and variations of the present invention are described in the following with reference to a backpack for sports applications, in particular for downhill biking. However, the concept of the present invention can identically or similarly be applied to any kind of sport application where a backpack is feasible and helpful, such as snowboarding or backcountry snowboarding, skiing or touring skiing, skateboarding or longboarding, hiking, running (e.g. as a hydration pack), etc.

Moreover, the underlying principle of the present invention can also be applied to any backpack for carrying items or heavy loads in daily life or for travelling such as a knapsack, rucksack, single strap pack, training backpack, daypack, high-end backpack equipped with solar panels, movpack, commuting backpack, pack, external or internal frame pack, fanny pack or sackpack as well as for professional use such as a military backpack, tactical backpack for ammunition during military-style combat games such as paintball and airsoft, a specialist backpack designed for professional cooks and culinary students for carrying knives, cooking tools and other miscellaneous equipment such as notebooks, towels, and uniforms, or other specialist backpacks for fire services for wildfire fighting and for rescue services for Search and Rescue. Furthermore, the present invention is not limited to backpacks but can be applied to any type of container for the transport of items such as a messenger bag, bookbag, shopping bag (e.g. used by high-end retailers), kitbag, handbag, schoolbag or suitcase, satchels, sling bag, postbag, duffel bag, etc.

[0027] Moreover, for brevity only a limited number of embodiments are described in the following. However, the skilled person will recognize that the specific features described with reference to these embodiments can be modified and combined differently and that certain aspects of the specific embodiments may also be omitted. Moreover, it is noted that the aspects described in the subsequent detailed description may be combined with aspects described in the above summary section.

[0028] Fig. 1 presents a possible embodiment of a backpack 100 according to the present invention worn by a wearer 102 in front view, rear view and side view. According to the first aspect of the present invention, the backpack 100 comprises a main body 105, two cushioning shoulder straps 110 adapted for cushioning a load of the main body 105 and two pairs of stability straps 120 individually connecting a distal part of each cushioning shoulder strap 110 to the main body 105. In general, the cushioning shoulder strap 110 has an elongated shape with a proximal part closer to the main body 105 and a distal part more away from the main body 105. As shown in Fig. 1, the distal part may be referred to as a lower part of the cushioning shoulder strap 110 that is distant from the wearer's shoulder. Preferably, when the backpack 100 is worn by the wearer 102, each of the stability straps 120 is adapted to extend below an armpit of the wearer 102 and between an arm 103 and the body side of the wearer 102. As a result, the main body 105 is maintained in a desired position, especially during sports applications such as downhill biking, which provides a secure positioning of the backpack 100 on the wearer's back.

[0029] In the context of this application, the term "main body" is understood as the part of the backpack which contains items packed in the backpack and which is usually worn on the wearer's back. The main body may comprise at least one compartment and / or pocket which may be closed for storing the items.

[0030] As can be seen from the side view of the preferred embodiment in Fig. 1, an upper stability strap 120 is connected to the main body 105 at a first stability anchorage 121a (indicated by a dashed circle in Fig. 1) which is arranged in a thorax area of the wearer 102. In addition, a lower stability strap 120 is connected to the main body 105 at a second stability anchorage 121b (also depicted by a dashed circle) which is arranged in a waist area of the wearer 102. The first stability anchorage 121a is arranged closer to a shoulder of the wearer 102 than the second stability anchorage 121b. The distance between the first stability anchorage 121a and the second stability anchorage 121b is smaller than the distance between the first stability anchorage 121a and an upper end of the main body 105. As shown in Fig. 1, when the backpack 100 is worn on the wearer's back, the upper end of the main body 105 may be the part of the main body that is adjacent to the wearer's shoulder. The stability anchorages will be described in more detail with reference to Figs. 2A - 2C. It is also conceivable to provide any other suitable arrangement of the stability anchorages on the backpack 100 in order to provide an improved secure positioning of the backpack 100 on the wearer's back for sports applications.

[0031] In the preferred embodiment of Fig. 1, the backpack 100 further comprises a supporting strap 150 connecting the two cushioning shoulder straps 110. It is also conceivable that a backpack according to the invention may comprise more than one supporting strap 150 as will be described below with reference to Fig. 3. The supporting strap 150 may cooperate with the four stability straps 120 to maintain the two cushioning shoulder straps 110 at a comfortable and secured position on the wearer's back.

[0032] In one embodiment, the cushioning shoulder straps 110 may comprise tubular knitwear. Tubular knitwear allows for easy padding or cushioning by placing a corresponding insert in the void formed by the tubular knitwear.

[0033] Figs. **2A - 2C** present further possible embodiments of a backpack 200 according to the present invention. Fig. 2A presents the backpack 200 in rear view, front view and side view. Fig. 2B presents a detailed front view of the backpack 200 for explaining the second aspect of the present invention and Fig. 2C presents a particular embodiment of the backpack 200 in side view for explaining the first aspect of the present invention.

[0034] In the preferred embodiment of Fig. 2A, the backpack 200 comprises a main body 205, two cushioning shoulder straps 210 adapted for cushioning a load of the main body 205 and two pairs of stability straps 220 individually connecting a distal part 211 of each cushioning shoulder strap 210 to the main body 205. The arrangement of the stability straps 220 may form a "V" shape when each of the stability straps 220 is stretched, where the distal part 211 of the cushioning shoulder strap 210 is at the tip of the "V" shape.

[0035] In the preferred embodiment of Fig. 2A, the sta-

bility straps 220 individually connecting the distal part 211 of each cushioning shoulder strap 210 to the main body 205 are provided as a single stability strap 220 extending from the main body 205 to the distal part 211 of the cushioning shoulder strap 210 and back to the main body 205. An upper part of the stability strap 220 is connected to the main body 205 at a first stability anchorage 221a and a lower part of the stability strap 220 is connected to the main body 205 at a second stability anchorage 221b. The first stability anchorage 221a and second stability anchorage 221b may be arranged similar to the above described embodiment shown in Fig. 1, e.g. at the thorax and the waist area of a wearer wearing the backpack 200.

[0036] As can be seen in Fig. 2A, the backpack 200 also comprises two pairs of coupling straps 230 individually connecting a proximal part 212 of each cushioning shoulder strap 210 with the main body 205. Similarly, the cushioning shoulder strap 210 has an elongated shape with a proximal part 212 closer to the main body 205 and a distal part 211 more away from the main body 205. As shown in Fig. 2A, the proximal part 212 of the cushioning shoulder strap 210 may be referred to as an upper part of the cushioning shoulder strap 210 that is adjacent to the wearer's shoulder. The coupling straps 230 are adapted to adjust the position of the proximal part 212 of each cushioning shoulder strap 210. Moreover, the coupling straps 230 may be adapted to adjust the position of the proximal part 212 of each shoulder strap in a lateral direction which is orthogonal to the longitudinal extension of each cushioning shoulder strap 210.

[0037] Furthermore, each of the coupling straps 230 may be connected to the main body at a first and a second coupling anchorage (not shown in Fig. 2A). Preferably, at least one of the coupling anchorages is arranged on an inner surface of the main body 205. The arrangement of the coupling straps 230 may also form a "V" shape when each of the coupling straps 230 is stretched, where the proximal part 212 of the cushioning shoulder strap 210 is at the tip of the "V" shape. The coupling straps 230 and their anchorages will be further described in more detail in Fig. 2B.

[0038] The main body 205 and at least one of the different straps may be at least partially manufactured by various techniques in order to achieve desired characteristics or functions including bendability, stretchability (expressed as Young's modulus, for example), permeability to air/breathability and water, thermoconductivity, thermal capacity, moisture absorption, static friction, abrasion resistance, reinforcement, hardness and thickness, etc. Permeability to air and breathability can for example be achieved by knitting a more open mesh- or web-like structure. For example by using knitting techniques (e.g. weft-knitted fabrics, single-thread warp-knitted fabrics, warp-knitted fabrics, three-dimensional knitting, functional knitting, etc.), this may include the selection of fibers and yarns, coating the fibers, yarns or knitwear with polymer or other materials, the use of monofilaments, the combination of monofilaments and polymer coating, the application of fusible/melted yarns, and multi-layer textile material. In general, the yarns used for the manufacture of knitwear may be quipped, i.e. coated accordingly. Additionally or alternatively, the finished knitwear may be equipped accordingly. It is also conceivable to use any other suitable techniques as known by the person skilled in the art.

[0039] The main body 205 may comprise at least one area which is coated. The coating may for example provide water-repellency or abrasion-resistance. The area may be coated with a thermoplastic polyurethane, TPU, coating. TPU is rather easy to handle and to apply. Additionally or alternatively, the area may be coated with ultraviolet, UV, glue. UV glue may be applied in liquid form and cures under UV light by a photochemical process. In general, other coatings may be used as well.

[0040] Moreover, the main body 205 and at least one of the different straps may comprise a flexible material, preferably from a waterproof material and particularly preferred from a plastic fabric, e.g. Cordura®. Parts of the main body may also comprise a rigid or a bendable hard material. Additionally or alternatively, the main body 205 may comprise different regions having different materials, for example the regions 206, which may comprise suitable fabrics for reinforcement of the main body 205.

[0041] The stability anchorages 221a, 221b and / or the coupling anchorages may comprise at least one of the following: sewing, a buckle, a ring, or any type of connecting or fastening element that is feasible to connect and attach the different straps to the main body 205.

[0042] The backpack 200 further comprises a supporting strap 250 connecting the two cushioning shoulder straps 210. The supporting strap 250 may function in the same way as supporting strap 150 described above.

[0043] In one embodiment, the shoulder straps 210 may comprise a convex shape, which is adapted to go around a wearer's breast, e.g. if the wearer is a woman. The shoulder straps 210 with the convex shape can cooperate with the stability straps 220, the coupling straps 230 and the supporting straps to provide an optimized position of the shoulder straps around a wearer's body and thus a comfortable wearing experience of the backpack 200.

[0044] In a still further embodiment, the distal or lower part of the at least one cushioning shoulder strap 210 may be arranged on a front torso area of the wearer.

[0045] As can be seen in Fig. 2A, the backpack 200 may further comprise at least one handle, e.g. one handle 255. This allows the backpack 200 to be easily carried with a single hand. The handle 255 may be knitted in one piece with the main body 205 of the backpack 200. In this way, additional manufacturing steps of producing the handle 255 and attaching it to the backpack 200 are omitted. The additional efforts and costs for providing the handle 255 are reduced.

[0046] Furthermore, the backpack 200 may comprise a back panel 260. It is also conceivable that the backpack

may further comprise at least one additional panel such as a front panel, one or more side panels which may form and / or reinforce the main body 205.

[0047] In one embodiment, at least one of the anchorages may be arranged on the back panel 260 of the backpack 200. Additionally or alternatively, the anchorages may be arranged at the edge between the back panel 260 and one side panel of the backpack. Moreover, the back panel 260 may comprise at least one protrusion or opening 270, which may provide a better breathability of the wearer's back. Additionally or alternatively, the back panel 260 may comprise at least some areas covered by a cushion material, which provide more comfortability for a wearer of the backpack 200.

[0048] As can be seen in Fig. 2A, the backpack 200 comprises three zippers 280 for closing parts or pockets of the main body 205. Instead of a zipper 280, other means of closing the main body 205 may be used, such as a snap button, a hook-and-loop fastener or a magnetic closure. The main body 205 could also comprise no closure mechanism.

[0049] Fig. **2B** presents a detailed view of the coupling straps 230 of the backpack 200. Parts of the main body 205 are removed so that the main body 205 shown in this figure only comprises the back panel 260.

[0050] As can be seen in Fig. 2B, the backpack 200 comprises a first and a second pair of coupling straps 230, wherein the first pair is connected to a proximal part of a first cushioning shoulder strap 210 (e.g. the left one) and to the back panel 260 and the second pair is connected to a proximal part of a second cushioning shoulder strap 210 (e.g. the right one) and to the back panel 260.

[0051] As mentioned above, the coupling straps 230 individually connect a proximal part 212 of each cushioning shoulder strap 210 with the back panel 260, wherein the coupling straps 230 are adapted to adjust the position of the proximal part 212 of each cushioning shoulder strap 210. In particular, the coupling straps 230 may be adapted to adjust the position of the proximal part 212 of each shoulder strap in a lateral direction (indicated by the two double arrows) which is essentially orthogonal to the longitudinal extension (indicated by the dashed arrow) of each cushioning shoulder strap 210. The coupling straps 230 can be adjusted, for example by adjusting at least one length of one of the coupling straps 203.

[0052] Moreover, with respect to each cushion shoulder strap 210, the at least two coupling straps 230 may be provided as a single strap extending from the main body 205 to the proximal part 212 of each cushioning shoulder strap 210 and back to the main body 205. For example, the coupling straps 230 (e.g. the left ones) may be connected to the main body at a first coupling anchorage (not shown in Fig. 2B) and a second coupling anchorage 231. As shown in Fig. 2B, the main body 205 may further comprise at least one aperture, such that the coupling straps 230 extends through the aperture and connects to the main body at the second coupling anchorage 231, which is arranged on the back panel 260 and on an inner surface of the main body 205. As mentioned above, such a construction reduces manufacturing costs and allows for an easier adjustment of the coupling straps, e.g. tightening.

[0053] Moreover, a coupling strap 230 of the first pair may be connected to a coupling strap 230 of the second pair, wherein the connection may be arranged on an inner surface of the main body 205, e.g. on an inner side of the back panel 260. As mentioned above, such an arrangement facilitates the manufacture and the adjustment of the fit, as only a reduced number of couplings straps 230 must be adjusted.

[0054] In the preferred embodiment of Fig. 2B, the second coupling anchorage 231 is provided as a buckle and by sewing, and the coupling strap 230 is connected to the proximal part of the cushioning shoulder strap 210 via a ring, so that the length of the coupling strap 230 is flexibly adjustable.

[0055] Fig. 2C presents a particular embodiment of the backpack 200 in side view according to the first aspect of the present invention.

[0056] As mentioned above, the stability straps 220 individually connecting the distal part 211 of each cushioning shoulder strap 210 to the main body 205 are provided as a single stability strap 220 extending from the main body 205 to the distal part 211 of the cushioning shoulder strap 210 and back to the main body 205.

[0057] The stability strap 220 is connected to the main body 205 at a first stability anchorage 221a and at a second stability anchorage 221b. Here the stability anchorages 221a and 221b comprise sewing of the stability strap 220 to the main body 205, and the stability strap 220 is connected to the distal part of the cushioning shoulder strap 210 via a ring. A buckle is positioned at the second stability anchorage 221b. By such an arrangement, the length of the stability strap 220 is adjustable through the buckle and the ring. For example, the stability strap 220 may slide through the ring, and the lower part of the stability strap 220 may be longer or shorter than the upper part of the stability strap.

[0058] The first stability anchorage 221a and second stability anchorage 221b may be arranged with respect to a longitudinal direction of the backpack 200. In the embodiment shown in Fig. 2A, the stability anchorages 221a, 221b are at a lower portion of the backpack 200 and are vertically spaced from each other. The first stability anchorage 221a is closer to an upper end of the backpack, which may be adjacent to a wearer's shoulder during use. The second stability anchorage 221b is more distant from the upper end of the backpack.

[0059] The first stability anchorage 221a and second stability anchorage 221b may again be arranged in the thorax and the waist area of a wearer of the backpack 200, so that they extend below an armpit of a wearer and between an arm and the body side of the wearer of the backpack 200 to maintain the main body 205 in a desired position.

As can be seen in Fig. 2C, the backpack 200 may further

comprise a waist belt 290 for securely positioning the backpack 200 on a wearer's back and waist. The waist belt 290 may further comprise a means for closing similar to the supporting strap 250 as mentioned above.

[0060] Fig. **3** presents a further possible embodiment of a backpack 300 according to the present invention in front and side view. The backpack 300 may comprise similar features as the backpacks 100 and 200 as shown in Figs. 1 - 2C.

[0061] In the preferred embodiment of Fig. 3, the two cushioning shoulder straps 310 comprise a cushioning mesh material. Such an embodiment provides a better breathability for a wearer of the backpack 300 and is advantageous for sports applications, such as for use in higher temperatures. Additionally or alternatively, the back panel of the main body may also comprise a mesh.

[0062] Moreover, the backpack 300 comprises two supporting straps 350 to cooperate with the stability straps 320 to maintain the two cushioning shoulder straps 310 at a comfortable position on a wearer's back. For example, the distance between the cushioning shoulder straps 310 may be increased when a wearer adjusts the length of at least one of the stability straps 320, such that the cushioning shoulder straps 310 are no longer close to each other. In this case, the supporting straps 350 may be adjusted to provide a proper distance of the two cushioning shoulder straps 310 and thus to maintain an optimized position of the backpack on a wearer's back.

[0063] In the following, further embodiments are described to facilitate the understanding of the invention:

1. A backpack (100; 200; 300) comprising:

   a. a main body (105; 205);
   b. at least one cushioning shoulder strap (110; 210; 310); and
   c. at least two stability straps (120; 220; 320) individually connecting a distal part (211) of the at least one cushioning shoulder strap (110; 210; 310) to the main body (105; 205).

2. Backpack according to the preceding embodiment, wherein the at least two stability straps (120; 220; 320) are connected to the main body (105; 205) at a first (121a; 221a; 321a) and a second stability anchorage (121b; 221b; 321b), the first stability anchorage (121a; 221a; 321a) being arranged closer to a proximal part (212) of the cushioning shoulder strap (110; 210; 310) than the second stability anchorage (121b; 221b; 321b).

3. Backpack (100; 200; 300) according to the preceding embodiment, wherein the first stability anchorage (121a; 221a; 321a) is arranged in a thorax area of a wearer (102) using the backpack.

4. Backpack (100; 200; 300) according to one of the embodiments 2 or 3, wherein the second stability anchorage (121b; 221b; 321b) is arranged in a waist area of the wearer (102) using the backpack.

5. Backpack (100; 200; 300) according to one of the embodiments 2 - 4, wherein the distance between the first stability anchorage (121a; 221a; 321a) and the second stability anchorage (121b; 221b; 321b) is smaller than the distance between the first stability anchorage (121a; 221a; 321a) and the proximal part (212) of the at least one cushioning shoulder strap (110; 210; 310).

6. Backpack (100; 200; 300) according to one of the preceding embodiments, wherein the at least two stability straps (120; 220; 320) are provided as a single strap extending from the main body (105; 205) to the distal part (211) of the at least one cushioning shoulder strap (110; 210; 310) and back to the main body (105; 205).

7. Backpack (100; 200; 300) according to one of the preceding embodiments, wherein at least one of the lengths of the at least two stability straps (120; 220; 320) is adjustable.

8. A backpack (200) comprising:

   a. a main body (205);
   b. at least one cushioning shoulder strap (210); and
   c. at least two coupling straps (230) individually connecting a proximal part (212) of the at least one cushioning shoulder strap (210) to the main body (205);
   d. wherein the at least two coupling straps (230) are adapted to adjust the position of the proximal part (212) of the at least one cushioning shoulder strap (210).

9. Backpack (200) according to the preceding embodiment, wherein the at least two coupling straps (230) are adapted to adjust the position of the proximal part (212) of the at least one cushioning shoulder strap (210) in a lateral direction which is orthogonal to the longitudinal extension of the at least one cushioning shoulder strap (210).

10. Backpack (200) according to one of the embodiments 8 or 9, wherein the at least two coupling straps (230) are connected to the main body (205) at a first and a second coupling anchorage (231).

11. Backpack (200) according to the preceding embodiment, wherein at least one of the coupling anchorages is arranged on an inner surface of the main body (205).

12. Backpack (200) according to one of the embod-

iments 8 - 11, wherein the at least two coupling straps (230) are provided as a single strap extending from the main body (205) to the proximal part (212) of the at least one cushioning shoulder strap (210) and back to the main body (205).

13. Backpack (200) according to one of the embodiments 8 - 12, comprising a first and a second pair of coupling straps (230), wherein the first pair is connected to a proximal part (212) of a first cushioning shoulder strap (210) and to the main body (205) and the second pair is connected to a proximal part (212) of a second cushioning shoulder strap (210) and to the main body (205).

14. Backpack (200) according to the preceding embodiment, wherein a coupling strap of the first pair is connected to a coupling strap of the second pair.

15. Backpack (200) according to the preceding embodiment, wherein the connection is arranged on an inner surface of the main body (205).

16. Backpack (200) according to one of the embodiments 8 - 15, wherein at least one of the lengths of the at least two coupling straps (230) is adjustable.

17. Backpack according to one of the embodiments 1-7 further comprising the features according to one of the embodiments 8 - 16.

18. Backpack (100; 200) according to one of the preceding embodiments, wherein the main body (105; 205) comprises a back panel (260).

19. Backpack according to one of the preceding embodiments, comprising at least two cushioning shoulder straps (210) and at least one supporting strap (150, 250, 350) connecting the at least two cushioning shoulder straps (210).

Claims

1. A backpack (100; 200; 300) comprising:

   a. a main body (105; 205);
   b. at least one cushioning shoulder strap (110; 210; 310); and
   c. at least two stability straps (120; 220; 320) individually connecting a distal part (211) of the at least one cushioning shoulder strap (110; 210; 310) to the main body (105; 205).

2. Backpack according to the preceding claim, wherein the at least two stability straps (120; 220; 320) are connected to the main body (105; 205) at a first (121a; 221a; 321a) and a second stability anchorage (121b; 221b; 321b), the first stability anchorage (121a; 221a; 321a) being arranged closer to a proximal part (212) of the cushioning shoulder strap (110; 210; 310) than the second stability anchorage (121b; 221b; 321b).

3. Backpack (100; 200; 300) according to the preceding claim, wherein the first stability anchorage (121a; 221a; 321a) is arranged in a thorax area of a wearer (102) using the backpack.

4. Backpack (100; 200; 300) according to one of the claims 2 or 3, wherein the second stability anchorage (121b; 221b; 321b) is arranged in a waist area of the wearer (102) using the backpack.

5. Backpack (100; 200; 300) according to one of the preceding claims, wherein the at least two stability straps (120; 220; 320) are provided as a single strap extending from the main body (105; 205) to the distal part (211) of the at least one cushioning shoulder strap (110; 210; 310) and back to the main body (105; 205).

6. A backpack (200) comprising:

   a. a main body (205);
   b. at least one cushioning shoulder strap (210); and
   c. at least two coupling straps (230) individually connecting a proximal part (212) of the at least one cushioning shoulder strap (210) to the main body (205);
   d. wherein the at least two coupling straps (230) are adapted to adjust the position of the proximal part (212) of the at least one cushioning shoulder strap (210).

7. Backpack (200) according to the preceding claim, wherein the at least two coupling straps (230) are adapted to adjust the position of the proximal part (212) of the at least one cushioning shoulder strap (210) in a lateral direction which is orthogonal to the longitudinal extension of the at least one cushioning shoulder strap (210).

8. Backpack (200) according to one of the claims 6 or 7, wherein the at least two coupling straps (230) are connected to the main body (205) at a first and a second coupling anchorage (231).

9. Backpack (200) according to the preceding claim, wherein at least one of the coupling anchorages is arranged on an inner surface of the main body (205).

10. Backpack (200) according to one of the claims 6 - 9, wherein the at least two coupling straps (230) are provided as a single strap extending from the main

body (205) to the proximal part (212) of the at least one cushioning shoulder strap (210) and back to the main body (205).

11. Backpack (200) according to one of the claims 6 - 10, comprising a first and a second pair of coupling straps (230), wherein the first pair is connected to a proximal part (212) of a first cushioning shoulder strap (210) and to the main body (205) and the second pair is connected to a proximal part (212) of a second cushioning shoulder strap (210) and to the main body (205).

12. Backpack (200) according to the preceding claim, wherein a coupling strap of the first pair is connected to a coupling strap of the second pair.

13. Backpack (200) according to the preceding claim, wherein the connection is arranged on an inner surface of the main body (205).

14. Backpack according to one of the claims 1 - 5 further comprising the features according to one of the claims 6 - 13.

15. Backpack (100; 200) according to one of the preceding claims, wherein the main body (105; 205) comprises a back panel (260).

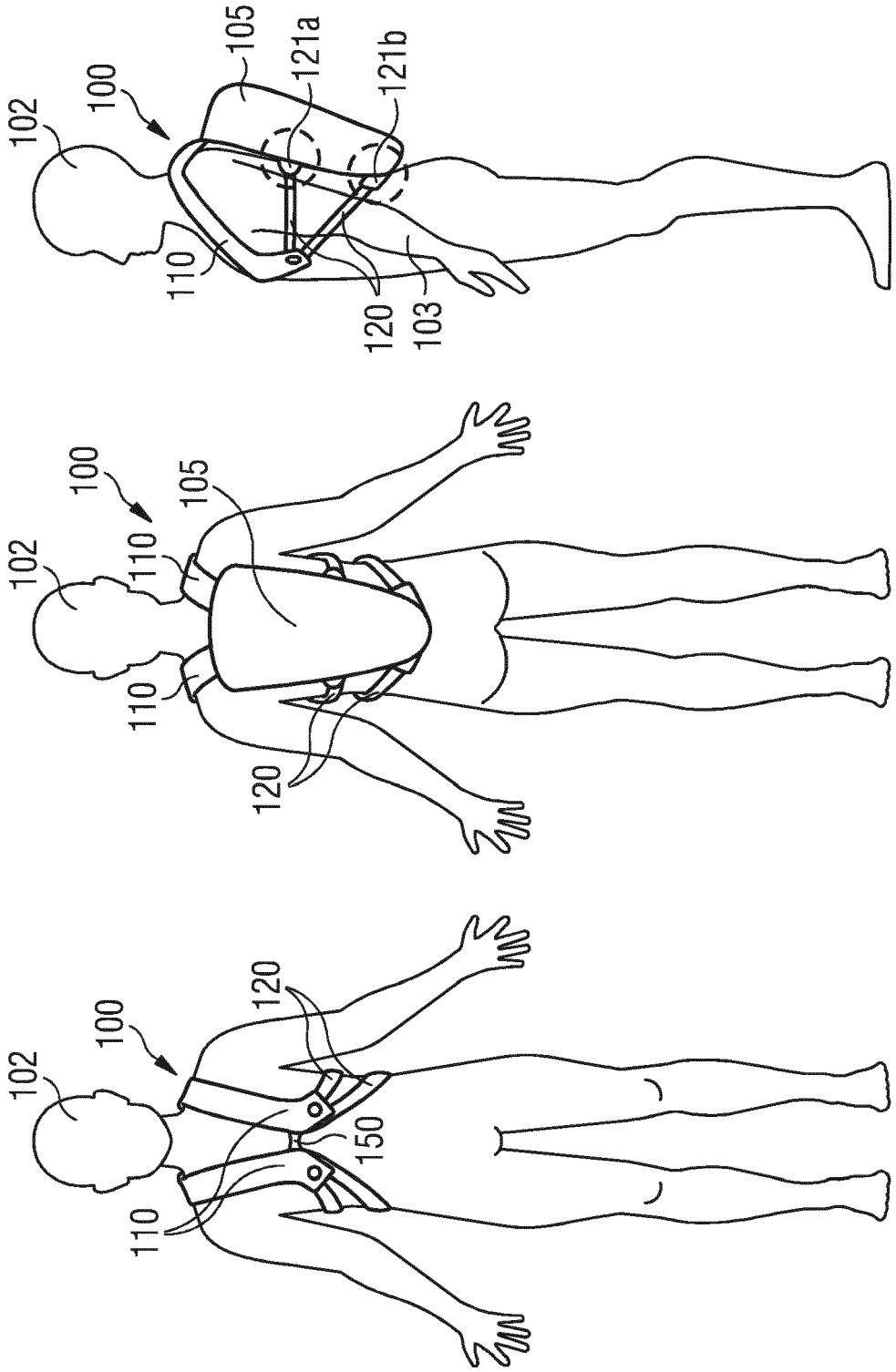
102
100
105
121a
121b
110
120
103
102
100
105
110
110
120
102
100
120
150
110

Fig. 1

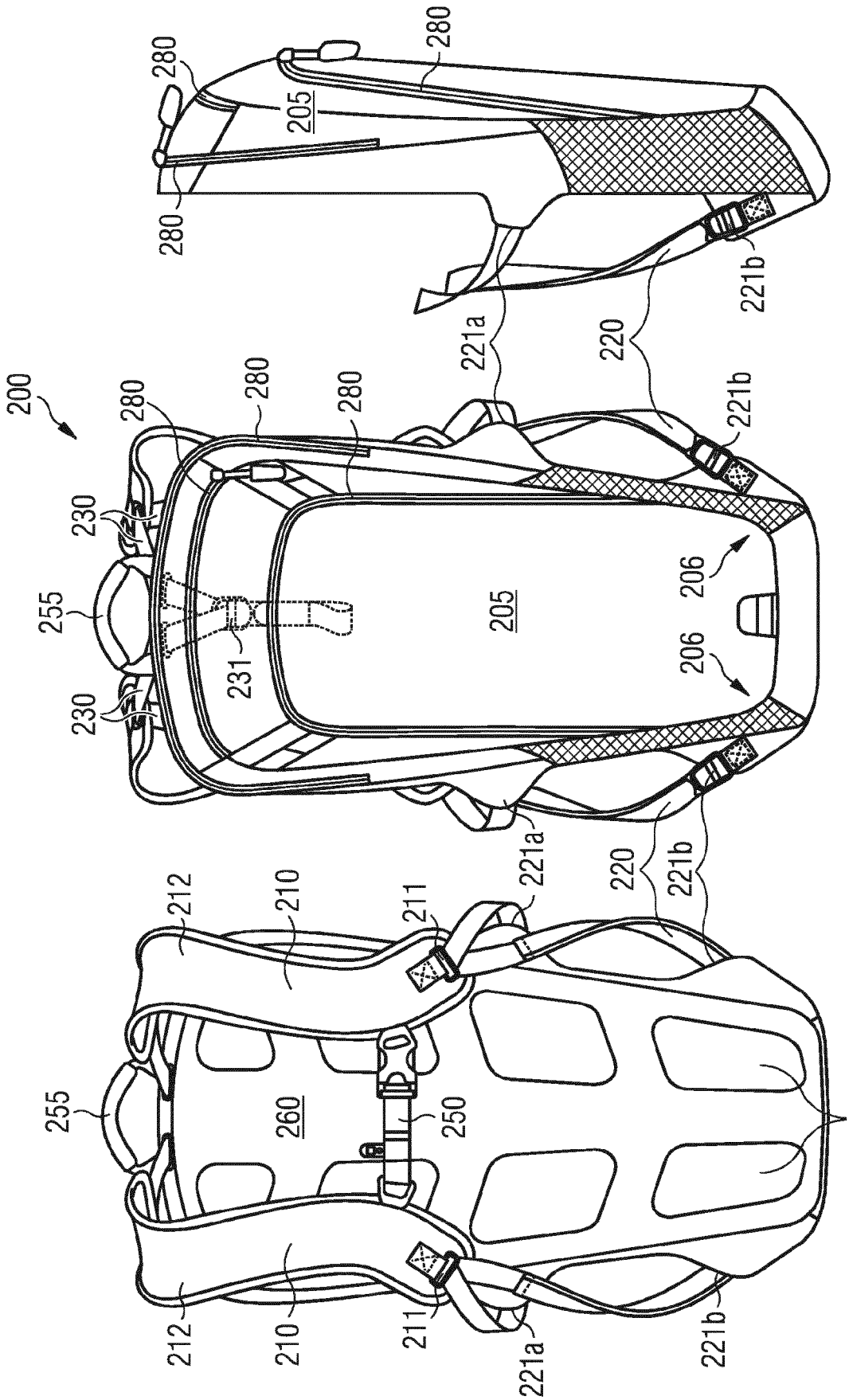
200
280
205
221a
221b
220
230
231
255
206
210
211
212
260
250
270

Fig. 2A

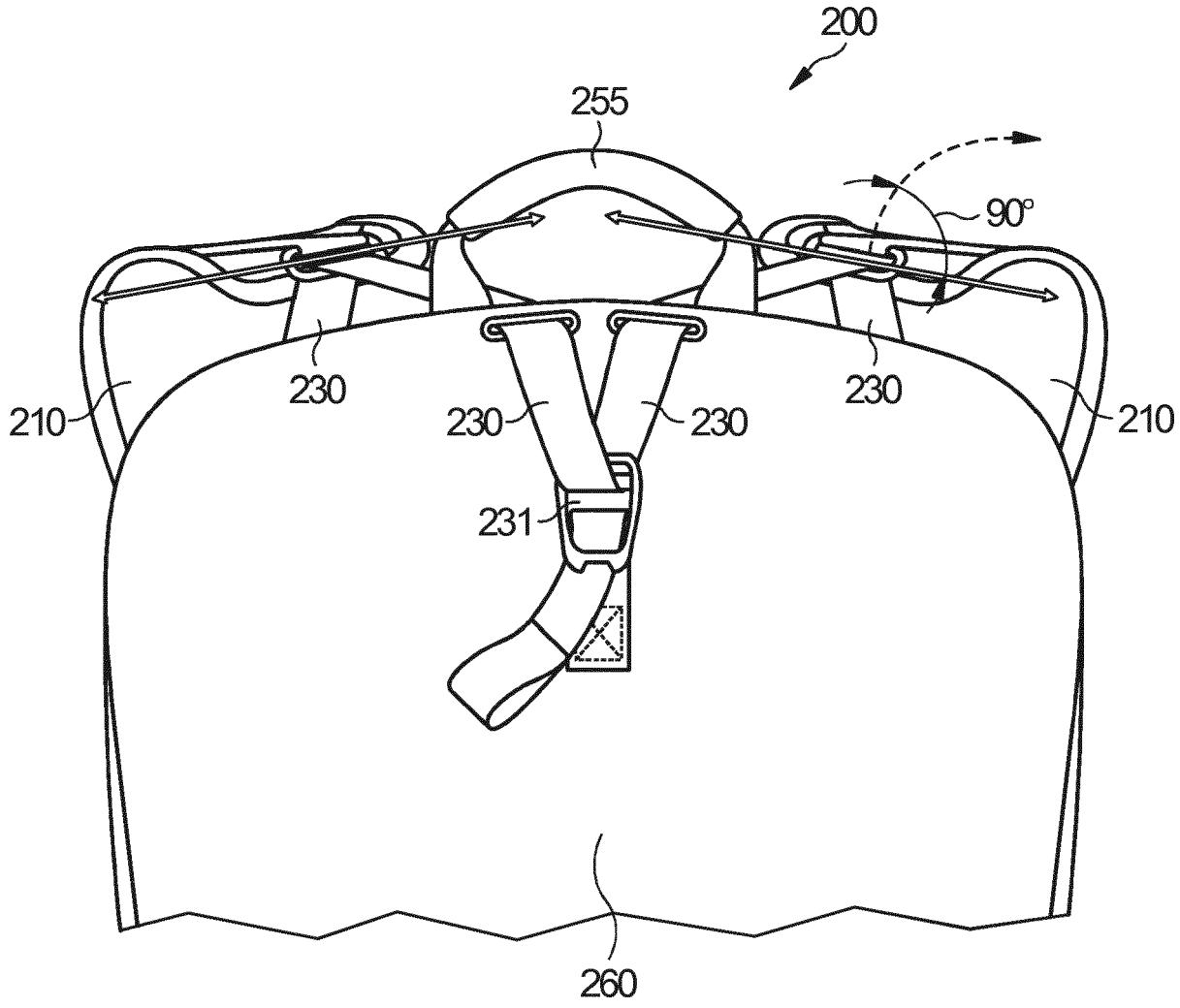

Fig. 2B

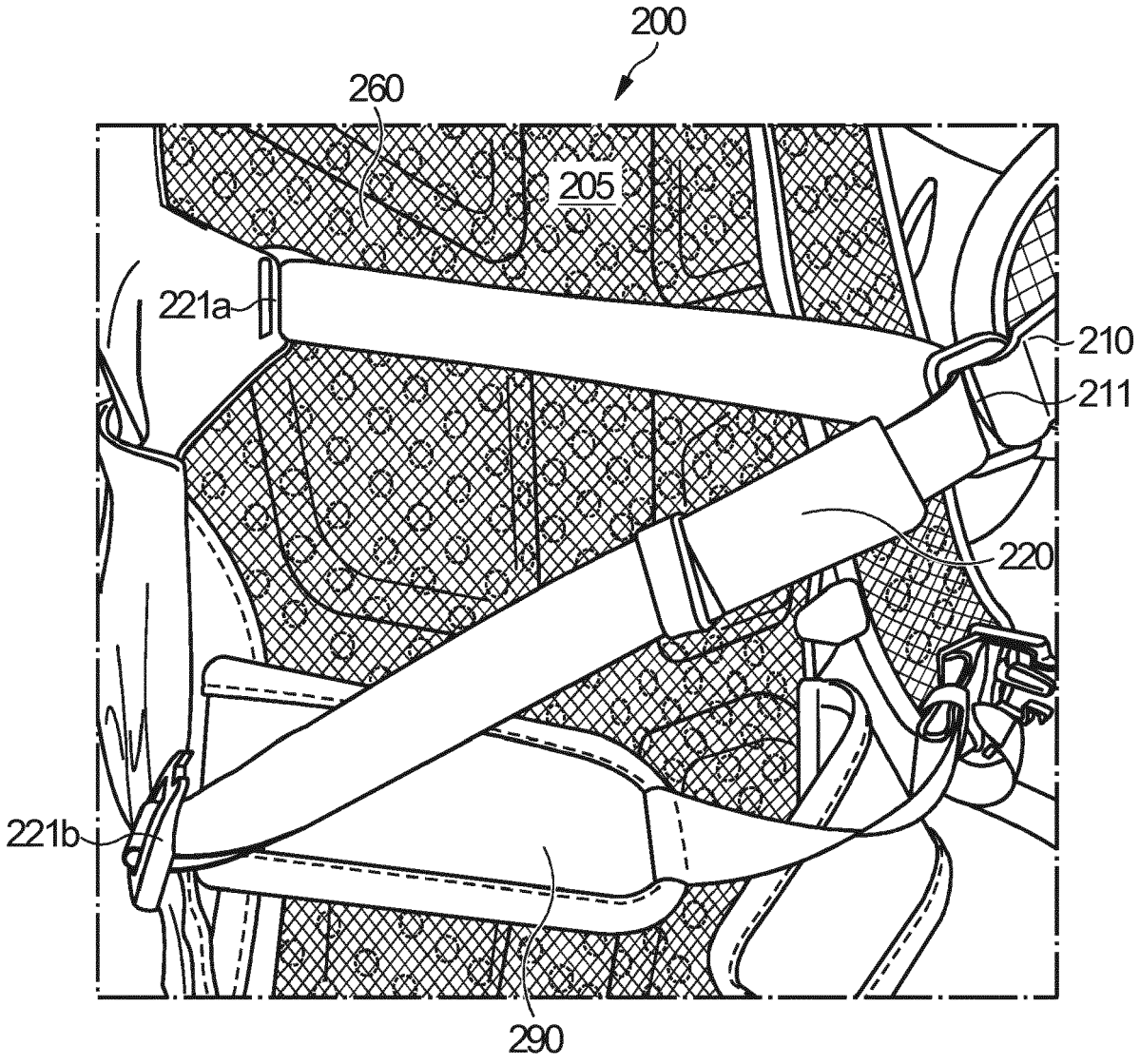

Fig. 2C

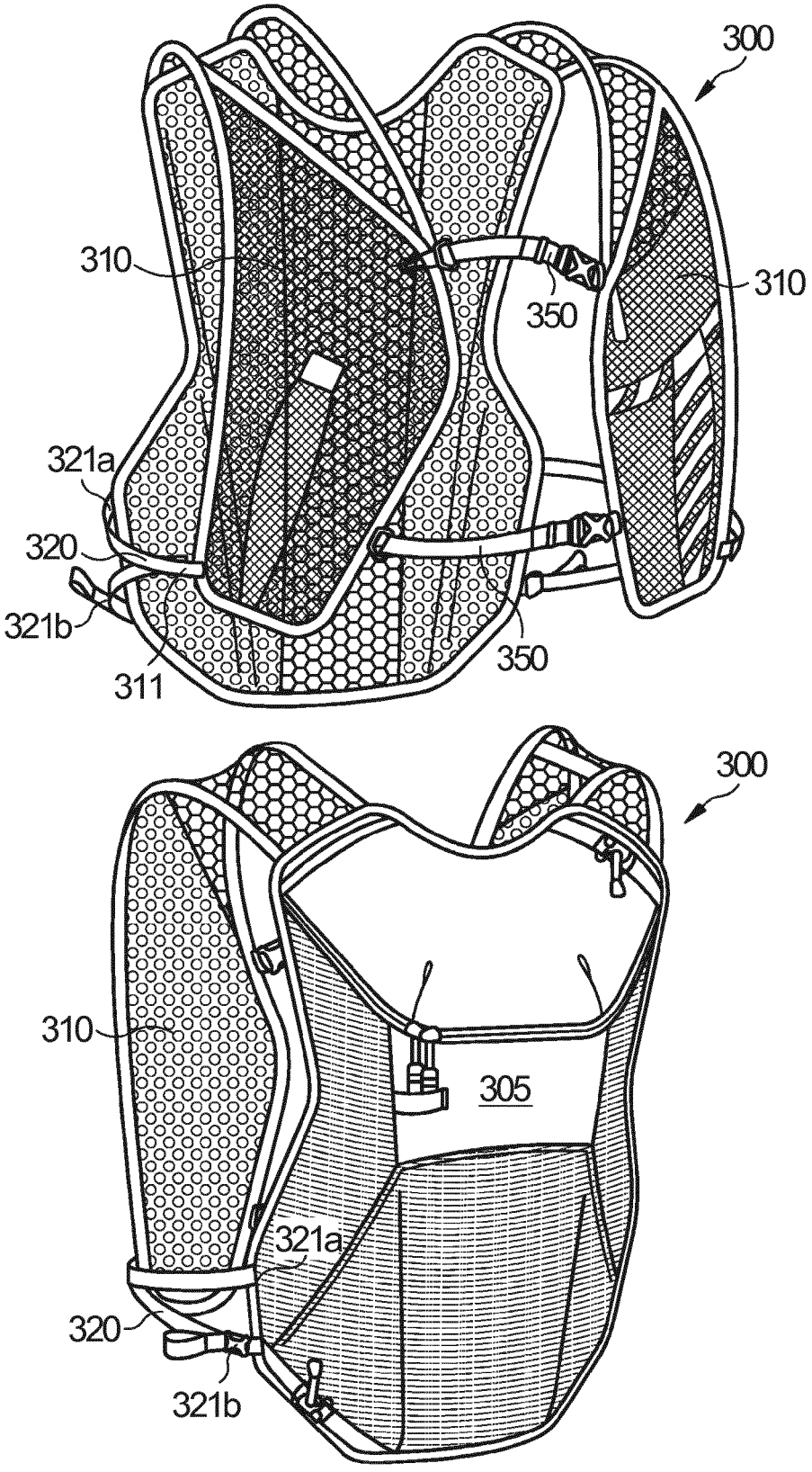

Fig. 3

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EUROPEAN SEARCH REPORT

Application Number
EP 17 20 8750

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	16 April 2018	Frank, Lucia

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X : particularly relevant if taken alone
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REFERENCES CITED IN THE DESCRIPTION

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