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(54) MODULAR GARMENT HARNESS SYSTEM

(57) One embodiment of the present invention relates to a modular garment harness system including a lower body garment (120), a waist member (140), a leg loop member (160), and a coupler. The waist member may act as both a belt and waist portion of the harness by encircling the waist region of the lower body garment. The waist member may be coupled to the lower body garment so as to enable a user to single handedly adjust the internal circumference of the waist region. The leg loop member and coupler are modular components in that they may be easily stored and engaged when full harness operation is necessary. The coupler may enable a user to intercouple the anterior middle region of the leg loop member, the posterior middle region of the leg loop member, and the fixed gap (142) formed between the waist member and lower body garment.

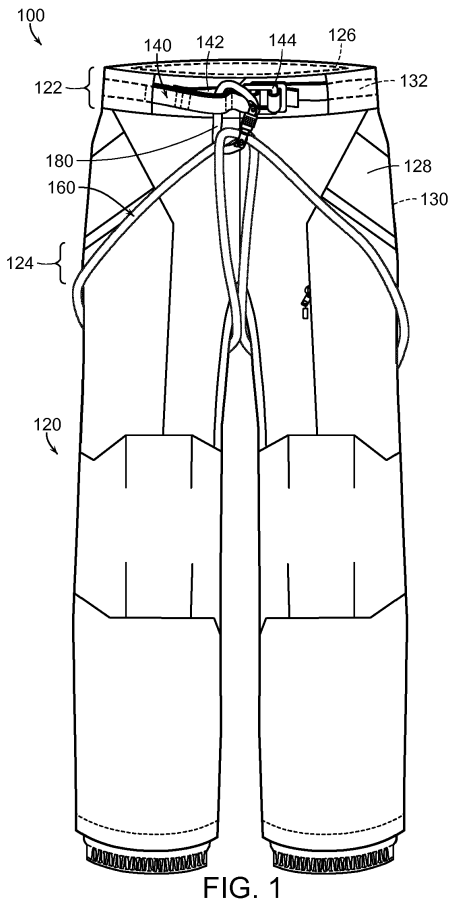

FIG. 1

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Description

FIELD OF THE INVENTION

[0001] The invention generally relates to both garments and harness systems. In particular, the present invention relates to an modular garment harness system.

BACKGROUND OF THE INVENTION

[0002] Cold weather outdoor garments are used to both conserve heat and protect users from external moisture. For example, jackets and pants are commonly worn during snow sports to regulate body temperature by conserving internal body heat and preventing snow contact. Cold weather garments must be specifically designed to articulate in response to various user movements to facilitate full range of motion and thereby unrestricted optimal performance during snow sports. For example, the arm portions of a jacket must be stitched to the torso portion such that a user can raise their hands over their head.

[0003] Harnesses are used to intercouple a user with some form of safety line such as a rope or cable. The most common type of harness used in outdoor sports is coupled around a user's waist and legs. In various outdoor sports, a harness is used during ascent and descent of technical terrain to enable a user to intercouple with a rope. For example, in roped climbing related activities, an individual will generally wear a harness to provide a coupling point for the rope. Likewise, during roped descents and rappels, a harness is necessary to facilitate the controlled rope descent.

[0004] One of the common problems with conventional harness systems is the inefficient process required to engage and remove the harness from a user's body. For example, a user must raise and tighten the waist region around their waist and individually raise and tighten each leg loop around their legs. Likewise, to remove the harness, each step must be reversed, including loosening and descending the harness from the waist and legs. Winter sports generally require wearing gloves or other forms of hand insulation, reducing the dexterity capability of the user. In addition, winter sports require varying garment layers over the waist and legs depending on the temperature, thereby requiring either very large or adjustable harness systems to accommodate varying thicknesses. Further, certain winter sports only require very infrequent harness usage at unpredictable times. Therefore, conventional harness systems are inappropriate for certain situations and activities which may involve varying garment thicknesses, reduced dexterity, and/or infrequent usage.

[0005] Therefore, there is a need in the industry for a modular garment harness system that overcomes the problems of conventional harness systems.

SUMMARY OF THE INVENTION

[0006] The invention generally relates to both garments and harness systems. One embodiment of the present invention relates to a modular garment harness system including a lower body garment, a waist member, a leg loop member, and a coupler. The waist member may act as both a belt and waist portion of the harness by encircling the waist region of the lower body garment through a sleeve and a buckle member. The waist member may be coupled to the lower body garment so as to enable a user to single handedly adjust the internal circumference of the waist region. The coupling between the waist member and the lower body garment also forms a fixed gap which may be used in conjunction with the leg loop member as a harness tie-in point. The leg loop member and coupler are modular components in that they may be easily stored and engaged when full harness operation is necessary. The leg loop member is a continuous loop having a circumference greater than the hip region. The coupler may be a carabiner to enable a user to intercouple the anterior middle region of the leg loop member, the posterior middle region of the leg loop member, and the fixed gap formed between the waist member and lower body garment. A second embodiment of the present invention relates to a method of engaging a modular harness, including encircling the leg loop member and intercoupling anterior middle region of the leg loop member, the posterior middle region of the leg loop member, and the fixed gap to form a complete tie-in point.

[0007] Embodiments of the present invention represent a significant advance in the field of harness systems. Existing external harness systems are unnecessarily cumbersome, as they prevent a user from coupling/decoupling the harness system while wearing any type of glove or mitten. In addition, existing harness systems are not sufficiently adjustable to accommodate the varying layers of garments used during winter sports activities such as ski mountaineering. Finally, existing harness systems are inefficient to engage/remove for activities that require very infrequent or unpredictable usage.

[0008] These and other features and advantages of the present invention will be set forth or will become more fully apparent in the description that follows and in the appended claims. The features and advantages may be realized and obtained by means of the instruments and combinations particularly pointed out in the appended claims. Furthermore, the features and advantages of the invention may be learned by the practice of the invention or will be obvious from the description, as set forth hereinafter.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The following description of the invention can be understood in light of the Figures, which illustrate specific aspects of the invention and are a part of the specification. Together with the following description, the Fig-

ures demonstrate and explain the principles of the invention. In the Figures, the physical dimensions may be exaggerated for clarity. The same reference numerals in different drawings represent the same element, and thus their descriptions will be omitted.

Figure 1 illustrates a perspective view of a modular garment harness system including in accordance with embodiments of the present invention;

Figure 2A illustrates a schematic component view of a modular garment harness system in accordance with the embodiment illustrated in Figure 1;

Figure 2B illustrates a schematic structural view of certain components of the modular garment harness system in accordance with the embodiment illustrated in Figure 1;

Figure 2C illustrates a schematic view of the waist region of the modular garment harness system in accordance with the embodiment illustrated in Figure 1;

Figure 3A illustrates a perspective view of the lower body garment in a non-harness configuration in accordance with embodiments of the present invention; and

Figure 3B illustrates a perspective view of the lower body garment in a harness configuration in accordance with embodiments of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0010] One embodiment of the present invention relates to a modular garment harness system including a lower body garment, a waist member, a leg loop member, and a coupler. The waist member may act as both a belt and waist portion of the harness by encircling the waist region of the lower body garment through a sleeve and a buckle member. The waist member may be coupled to the lower body garment so as to enable a user to single handedly adjust the internal circumference of the waist region. The coupling between the waist member and the lower body garment also forms a fixed gap which may be used in conjunction with the leg loop member as a harness tie-in point. The leg loop member and coupler are modular components in that they may be easily stored and engaged when full harness operation is necessary. The leg loop member is a continuous loop having a circumference greater than the hip region. The coupler may be a carabiner to enable a user to intercouple the anterior middle region of the leg loop member, the posterior middle region of the leg loop member, and the fixed gap formed between the waist member and lower body garment. A second embodiment of the present invention relates to a method of engaging a modular harness, including encircling the leg loop member and intercoupling anterior middle region of the leg loop member, the posterior middle region of the leg loop member, and the fixed gap to form a complete tie-in point. Also, while embodiments are described in reference to a modular lower body garment harness systems, it will be appreciated that the teachings of the present invention are applicable to other types of modular harness systems including but not limited to a modular upper body garment harness system.

[0011] The following terms are defined as follows:

DEFINITIONS

[0012] Garment - an article of clothing worn over a portion of a user's body, including but not limited to pants, shorts, shirts, jackets, etc. A lower body garment in particular describes an article of clothing worn over the lower body such as a pair of pants. Likewise, an upper body garment refers to an article of clothing worn over the upper body such as a shirt or jacket.

[0013] Harness -- a harness is referred to as an intercoupled system encircling both a user's waist and legs. A "rigger's harness" or "harness belt" is in contrast defined as only the waist portion of a harness. The term harness is used to define a certain type of harness which is likely compliant with recreational type safety certifications.

[0014] Modular - a system of components which may be intercoupled in a plurality of configurations. For example, a modular garment harness system may include both a non-harness configuration and a harness configuration.

[0015] Posterior/anterior -- anatomical terms referring to the front and back side of a human body. Correspondingly named garment regions refer to the portions disposed over the front and back sides of the user. For example, the posterior side of a pair of pants refers to the back region when worn by a user.

[0016] Reference is initially made to Figure 1, which illustrates a modular garment harness system, designated generally at 100. The system 100 includes a waist member 140, a leg loop member 160, a coupler 180, and a lower body garment 120. The illustrated lower body garment 120 is a pair of pants, but it will be appreciated that any form of lower body garment may be utilized, including but not limited to shorts, bibs, skirts, tights, etc. The lower body garment includes a waist region 122, an internal circumference 126, a hip region 124, an anterior side 128, a posterior side 130, and a sleeve 132. The waist region 122 is located along an upper edge of the lower body garment 120 and is disposed over the waist and/or naval area of a user (not shown). The internal circumference 126 is within the waist region 122 and extends continuously around a user. The internal circumference 126 may be adjusted by tightening/loosening the waist member 140 around the external side of the waist region 122. The hip region 124 is located below the waist region 122 and partially above the leg regions. It will be appreciated that the exact location of the hip region 124 may depend in part on the anatomy of a user. The anterior side 128 and posterior side 130 correspond to the front and back of the lower body garment 120 when worn. The sleeve 132 is an internal region disposed on the waist

region 122. The sleeve 132 may extend substantially around the entire waist region 122 other than the front naval region. The sleeve 132 may include numerous stitches extending circumferentially and vertically around the waist region 122. It will be appreciated that the sleeve 132 covers significantly more area of the waist region 122 than a traditional set of belt loops. Therefore, the sleeve 132 creates a stronger coupling between an internal waist member (i.e. belt) and the remainder of the lower body garment 120 versus a convention belt and belt loop-type coupling. The lower body garment 120 may be comprised of various material designed for abrasion resistance, insulation, etc. In particular, the waist region 122 and sleeve 132 may include higher strength materials and stitches than the remainder of the lower body garment 120.

[0017] The waist member 140 forms a continuous loop around the waist region 122 by extending through the sleeve 132 and a buckle member 144. The portion of the waist member extending through the buckle member 144 forms an adjustable coupling with the waist region 122 of the lower body garment 120. The portion of the waist member 140 extending internally through the sleeve 132 may include one or more fixed couplings to the waist region 122. A portion of the waist member 140 extends through the buckle and is referred to as the tightening portion 146 (See Figure 3A). The buckle member 144 may be any type of adjustable buckle member which both provides adjustment and prevents slippage. The waist member 140 comprises a high-tensile strength material such as nylon or spectra webbing. The waist member 140 functions as both a belt to adjust the internal circumference 126 and as the waist portion of the harness system 100. The operation of the buckle member 144 enables a user to tighten or loosen the waist member 140 with a single hand. For example, a user may extend the tightening portion 146 away from the buckle member 144, thereby restricting the waist member 140 around the waist region 122 and reducing the internal circumference 126. The waist member 140 further includes a fixed gap 142 disposed over the naval region/anterior side of the waist region 122. The fixed gap 142 is disposed between portions of the waist member 140 which are fixably coupled (i.e. stitches) to the waist member 140 and the waist region 122 of the lower body garment 120. The fixed gap 142 may be disposed between the sleeve 132 openings and may be adjacent to the buckle member 144. The fixed gap 142 includes an opening between the waist member 140 and the waist region 122 of the lower body garment 120. The fixed gap 142 may include an independent internal loop between the waist member 140 and the waist region 122. The independent internal loop may be stitched within the fixed gap 142 to provide increased shear strength for the waist member 140 to waist region coupling 122. Adding shear strength of the fixed gap 142 prevents the coupler 180 from translating against the buckle member 144. It is desirable for both the buckle member 144 and the fixed gap 142 to be disposed on the naval region. Embodiments of the present invention provide the novel waist member features of a single harness waist coupling point and the dual purpose buckle (belt and harness).

[0018] The leg loop member 160 and coupler 180 are deployable components of the modular garment harness system 100. Therefore, the leg loop member 160 and coupler 180 may stored and efficiently intercoupled with the waist member to engage the harness configuration of the system. The leg loop member 160 is a continuous loop of material with a circumference greater than the hip region 124 of the lower body garment. When the leg loop member is coupled around the hip region 124 of the lower body garment, it includes an anterior mid region 164 and a posterior mid region 162 corresponding to the anterior and posterior sides 128, 130 of the lower body garment. Figure 1 shows the posterior mid region 162 of the leg loop member 160 routed between the leg region and intercoupled with the anterior mid region 164. The coupler 180 may be a carabiner, karabiner, or snaphook configured to releasably couple the leg loop member 169 and the waist member 140.

[0019] Reference is next made to Figures 2A-C, which illustrate specific schematic views of the components of the system 100. Figures 2A and 2C illustrate the primary modular components of the system 100 which create the harness including the waist region 122, waist member 140, coupler 180, and leg loop member 160. As described above, the coupler 180 and leg loop member 180 are portable, releasable components intended to complete the harness system 100 when its use is necessary. In contrast, the waist member 140 is adjustably and fixably coupled to the waist region 122 of the lower body garment 120 and is intended to be worn for an extended time period. The integration of the waist member 140 within the lower body garment 120 creates an efficient method for placing a primary portion of the harness system 100 on the user in an efficient, unrestricted manner that functions essentially like a convention pants belt.

[0020] Figure 2B illustrates the selective coupling of the waist member 140, coupler 180, and leg loop member 160 to create the harness system 100. In operation, the user encircles the waist member 140 around the waist region 122 by engaging the lower body garment 120. The user may then engage in whatever activity using the lower body garment in a normal manner. When a harness system is necessary (i.e. ascending or descending steep cliff), a user may remove the coupler 180 and leg loop member 160 from some form of portable storage such as a pocket. The user may then encircle the leg loop member 160 around the hip region 124 of the lower body garment 120. The encircling of the leg loop member 160 around the hip region 124 may include routing the leg loop member 160 down over the head or up over the feet. Finally, the user may couple the anterior mid region 162, the posterior mid region 164 (through the legs), and the fixed gap 142 with the coupler 180, creating the harness system 100. The coupler 180 may also be used to couple

the system 100 to a belay or descent rope-coupling device (i.e. ATC, Figure 8, etc.).

[0021] Reference is next made to Figures 3A-B, which illustrate operational views of the system 100 in the non-harness (Figure 3A) and harness (Figure 3B) configurations. Figure 3A illustrates the lower body garment 120 and waist member 140 without the leg loop member 160 and coupler 180. The configuration illustrated in Figure 3A is intended to illustrate that the lower body garment 120 may be used like any lower body garment during recreational activities without interference from the waist member 140. In particular, the waist member 140 is configured to function as a belt to enable the user to tighten/loosen the internal circumference 126 with a single hand. Single-hand operation is preferable for cold weather activities in which the user may be wearing gloves or mittens. As described above, the waist member 140 is fixably and adjustably coupled to the waist region 122 of the lower body garment 120. The waist member 140 encircles the waist region 122 through the sleeve 132 and the buckle member 144. The waist member 140 includes the fixed gap 142, buckle member 144, and tightening portion 146. Figure 3B illustrates the deployment of the leg loop member 160 and the coupler 180 to create the harness configuration of the system 100. In particular, the posterior mid region 162 and anterior mid region 164 of the leg loop member 160 are intercoupled with the fixed gap 142 of the waist member 140 by the coupler 180 to create the intercoupled harness configuration. The system 100 may therefore be quickly switched between an unrestricted non-harness configuration (Figure 3A) and a functional harness configuration (Figure 3B). Therefore, a user may optimize performance in activities that require both time periods of optimal lower body garment articulation (i.e. skiing, ice climbing, mountaineering, etc.) and periods of harness protection (i.e. ascending and descending steep cliff faces).

[0022] It should be noted that various alternative system designs may be practiced in accordance with the present invention, including one or more portions or concepts of the embodiment illustrated in Figure 1 or described above. Various other embodiments have been contemplated, including combinations in whole or in part of the embodiments described above.

Claims

1. A modular garment harness system comprising:

a lower body garment configured to be worn over a user's lower body including a waist region and a hip region corresponding to the navel and hip regions of the user respectively, wherein the waist region has an internal circumference, and wherein the lower body garment includes an anterior and a posterior region corresponding to the anterior and posterior of the user;

a waist member encircling the waist region of the lower body garment through a sleeve and a buckle member, wherein the waist member is adjustably and fixably coupled to the lower body garment to effect the internal circumference of the waist region, and wherein the coupling between the waist member and the lower body garment forms a fixed gap external of the sleeve;

a leg loop member configured to encircle the hip region of the lower body garment, wherein the leg loop member is a continuous loop having a circumference greater than the hip region, and wherein the leg loop member includes an anterior mid region and a posterior mid region corresponding to the anterior and posterior sides of the lower body garment; and

a coupler configured to releasably couple the anterior mid region, the posterior mid region, and the fixed gap.

2. The system of claim 1, wherein the sleeve extends substantially around a non-navel portion of the waist region of the lower body garment.

3. The system of claim 1, wherein the sleeve includes an external member circumferentially coupled around a top and bottom of the waist region.

4. The system of claim 1, wherein the waist member is fixably coupled to a first ends of the buckle member and adjustably coupled to a second end of the buckle member.

5. The system of claim 1, wherein the adjustable coupling between the waist member and the lower body garment is configured to permit a user to reduce the internal circumference with a single hand operation.

6. The system of claim 1, wherein the fixed gap is adjacent to the buckle member and the sleeve.

7. The system of claim 1, wherein the fixed gap and buckle member are substantially disposed on the waist region corresponding to the navel region of the user.

8. The system of claim 1, wherein the fixed gap includes an internal loop fixably coupled to the waist member and the waist region.

9. The system of claim 1, wherein the waist member and buckle member form a continuous loop around the waist region.

10. The system of claim 1, wherein the coupler is a carabiner.

11. A modular garment harness system comprising:

a lower body garment configured to be worn over a user's lower body including a waist region and a hip region corresponding to the navel and hip regions of the user respectively, wherein the waist region has an internal circumference, and wherein the lower body garment includes an anterior and a posterior region corresponding to the anterior and posterior of the user;

a waist member encircling the waist region of the lower body garment through a sleeve and a buckle member, wherein the sleeve extends substantially around a non-navel portion of the waist region of the lower body garment, and wherein the waist member and buckle member form a continuous loop around the waist region, and wherein the waist member is adjustably and fixably coupled to the lower body garment to effect the internal circumference of the waist region, and wherein the coupling between the waist member and the lower body garment forms a fixed gap external of the sleeve;

a leg loop member configured to encircle the hip region of the lower body garment, wherein the leg loop member is a continuous loop having a circumference greater than the hip region, and wherein the leg loop member includes an anterior mid region and a posterior mid region corresponding to the anterior and posterior sides of the lower body garment; and

a coupler configured to releasably couple the anterior mid region, the posterior mid region, and the fixed gap.

12. A method for engaging a modular harness system on a lower body garment comprising the acts of:

providing a lower body garment configured to be worn over a user's lower body including a waist region and a hip region corresponding to the navel and hip regions of the user respectively, wherein the waist region has an internal circumference, and wherein the lower body garment includes an anterior and a posterior region corresponding to the anterior and posterior of the user;

encircling a waist member around the waist region of the lower body garment through a sleeve and a buckle member, including adjustably and fixably coupling the waist member is to the lower body garment to effect the internal circumference of the waist region, and creating a fixed gap external of the sleeve between the waist member and the lower body garment;

encircling a leg loop member around the hip region of the lower body garment, wherein the leg loop member is a continuous loop having a circumference greater than the hip region, and wherein the leg loop member includes an anterior mid region and a posterior mid region corresponding to the anterior and posterior sides of the lower body garment; and

coupling the anterior mid region, the posterior mid region, and the fixed gap.

13. The method of claim 12, wherein the act of coupling the anterior mid region, the posterior mid region, and the fixed gap includes routing the posterior mid region under and between a set of leg regions of the lower body garment to the anterior mid region.

14. The method of claim 12, wherein the act of coupling the anterior mid region, the posterior mid region, and the fixed gap includes translating the anterior and posterior mid regions to substantial proximity with the fixed gap.

15. The method of claim 12, wherein the act of coupling the anterior mid region, the posterior mid region, and the fixed gap includes routing a carabiner through the fixed gap and across both the anterior and posterior mid regions.

16. The method of claim 12, wherein the act of encircling a leg loop member around the hip region of the lower body garment includes the acts of:

routing the leg loop member over at least one of the user's head and feet; and

translating the leg loop member to the hip region of the user.

17. The method of claim 12, wherein the act of encircling a waist member around the waist region of the lower body garment through a sleeve and a buckle member includes forming a continuous loop around the waist region with the waist member and the buckle.

18. The method of claim 12, wherein the act of creating a fixed gap external of the sleeve between the waist member and the lower body garment includes coupling an internal loop within the fixed loop to the waist member and the waist region.

19. The method of claim 12, wherein the act of encircling a waist member around the waist region of the lower body garment through a sleeve and a buckle member includes extending the sleeve substantially around a non-navel portion of the waist region of the lower body garment.

20. The method of claim 12, where the act of adjustably and fixably coupling the waist member is to the lower body garment to effect the internal circumference of the waist region includes enabling a user to reduce the internal circumference with a single hand operation.

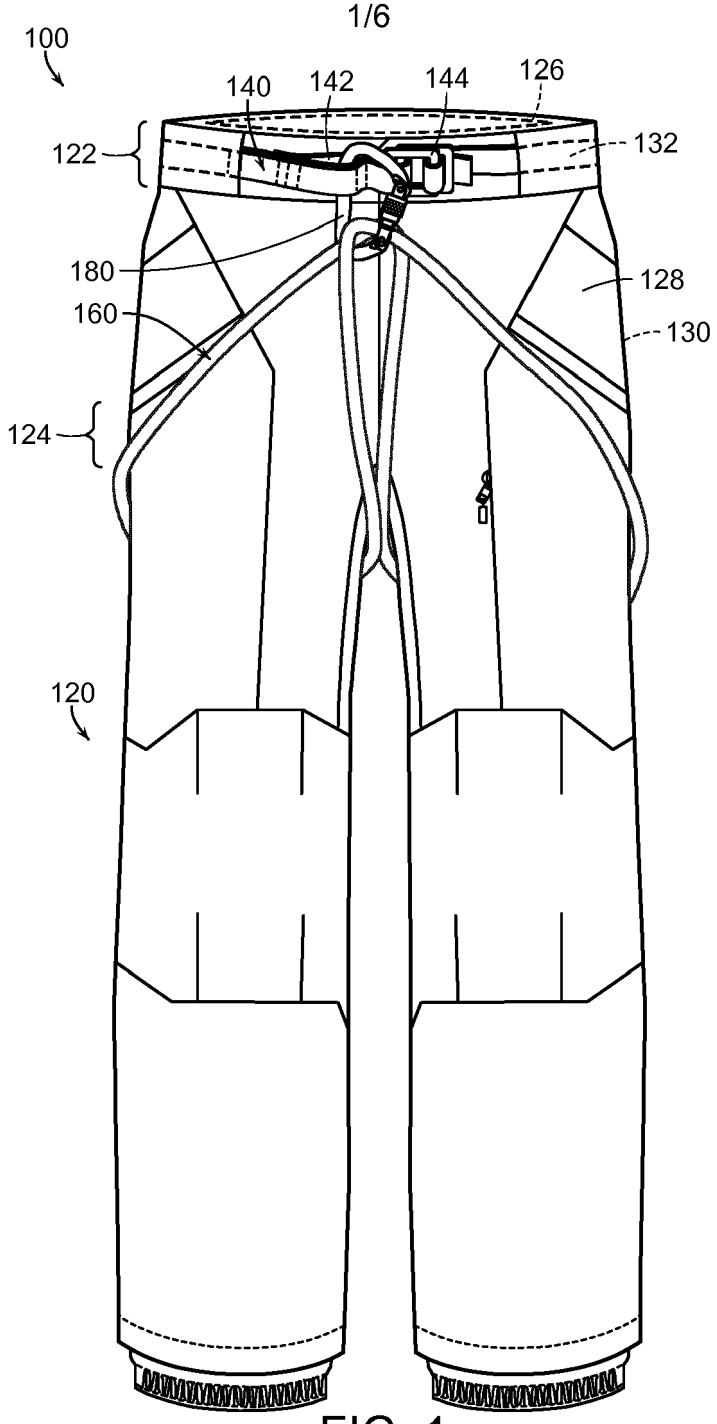

FIG. 1

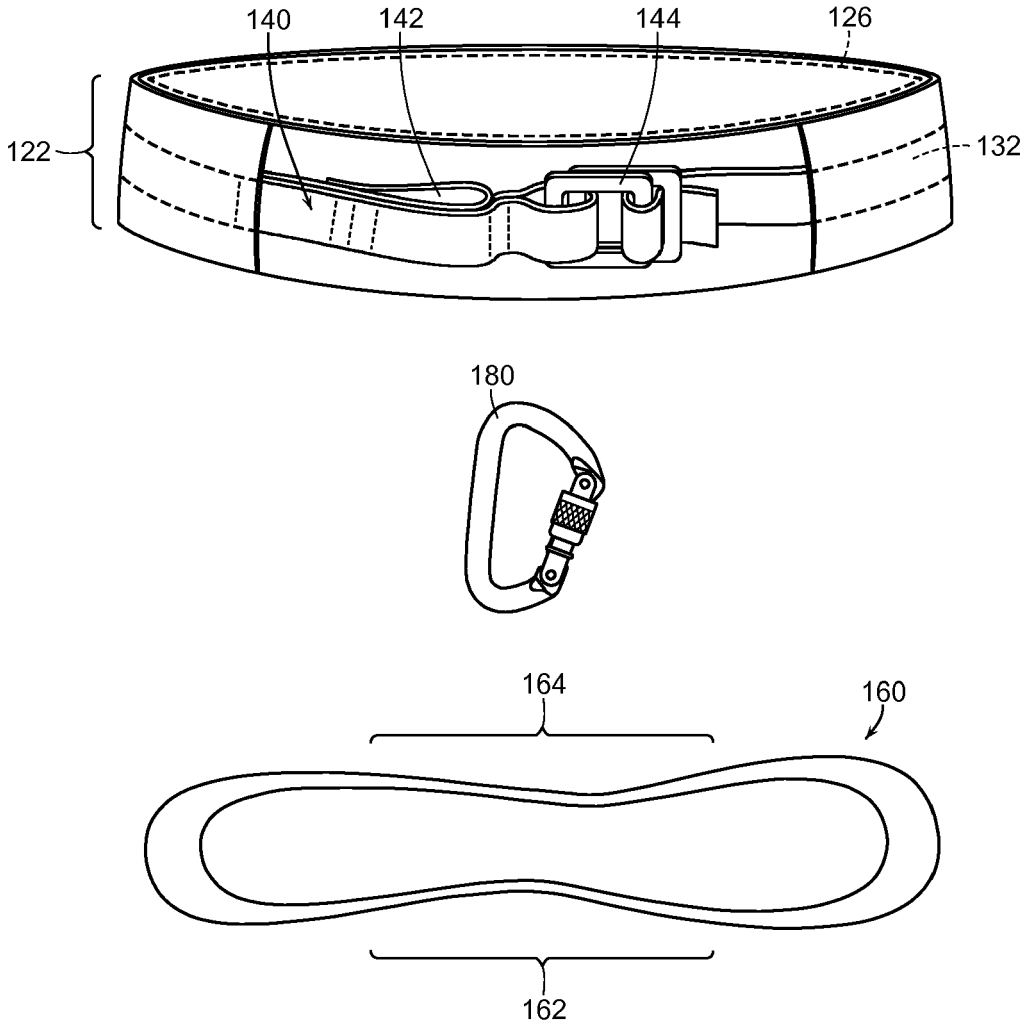

FIG. 2A

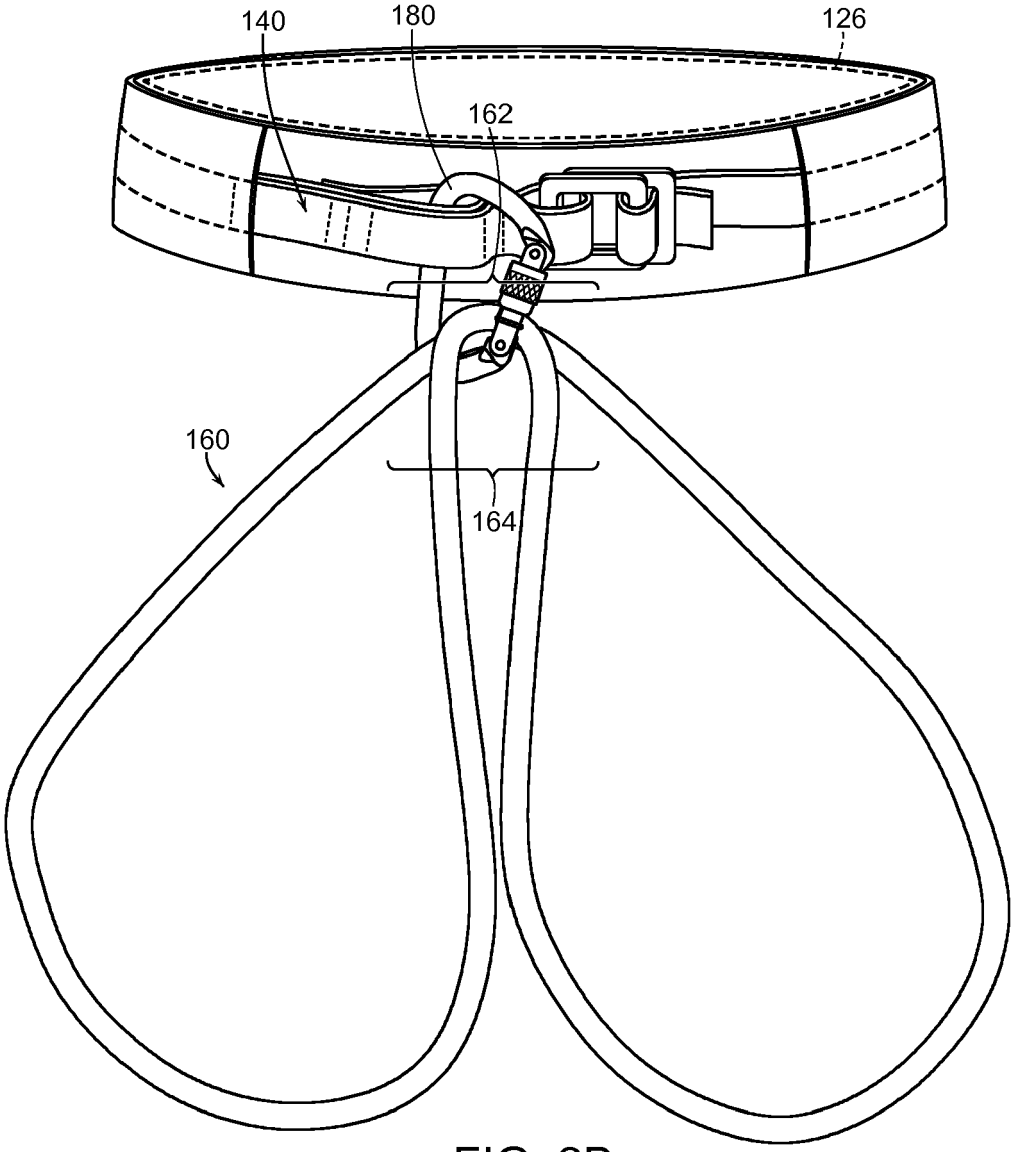

FIG. 2B

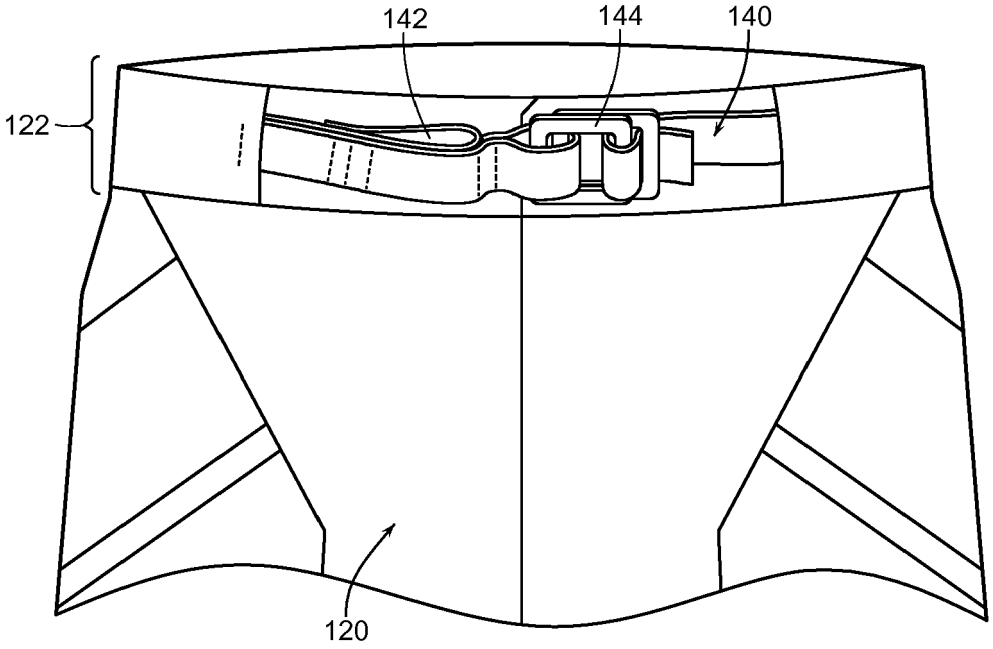

FIG. 2C

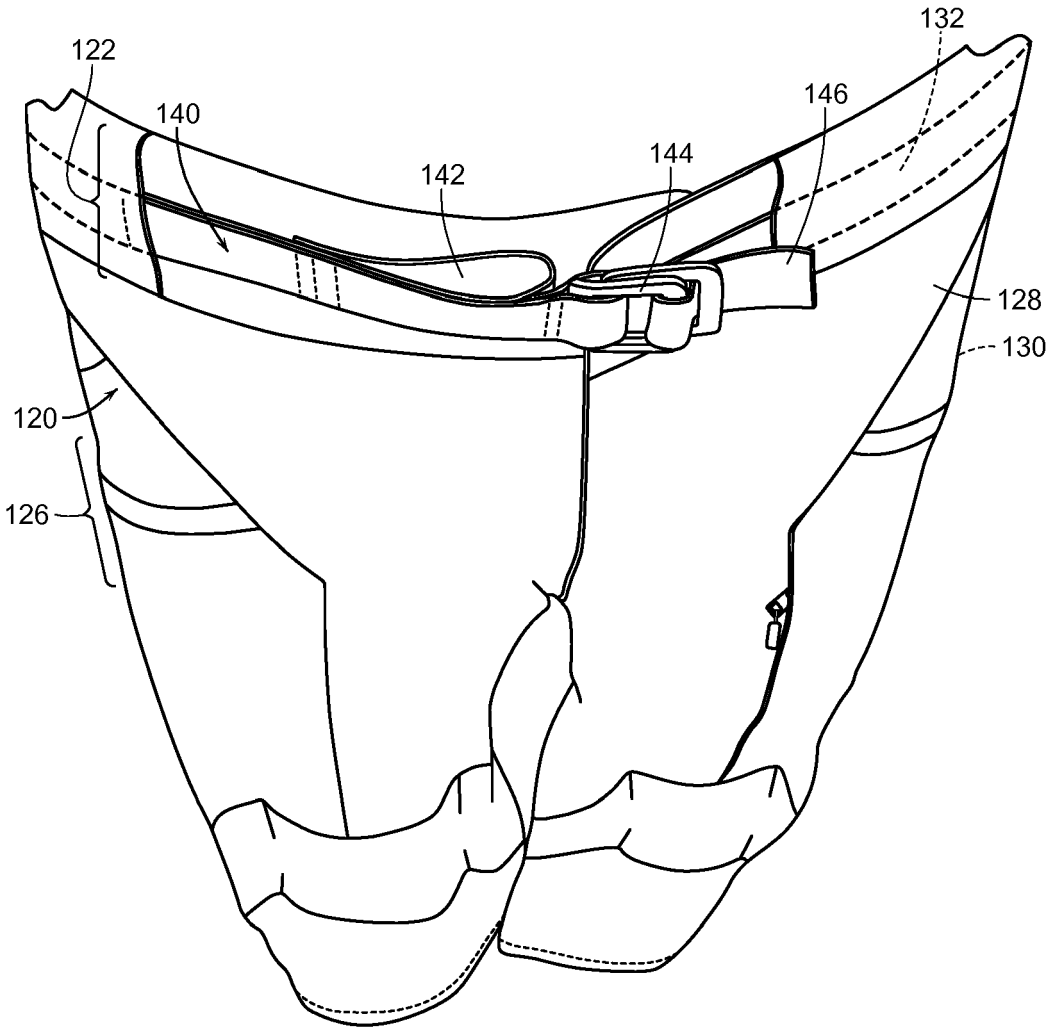

FIG. 3A

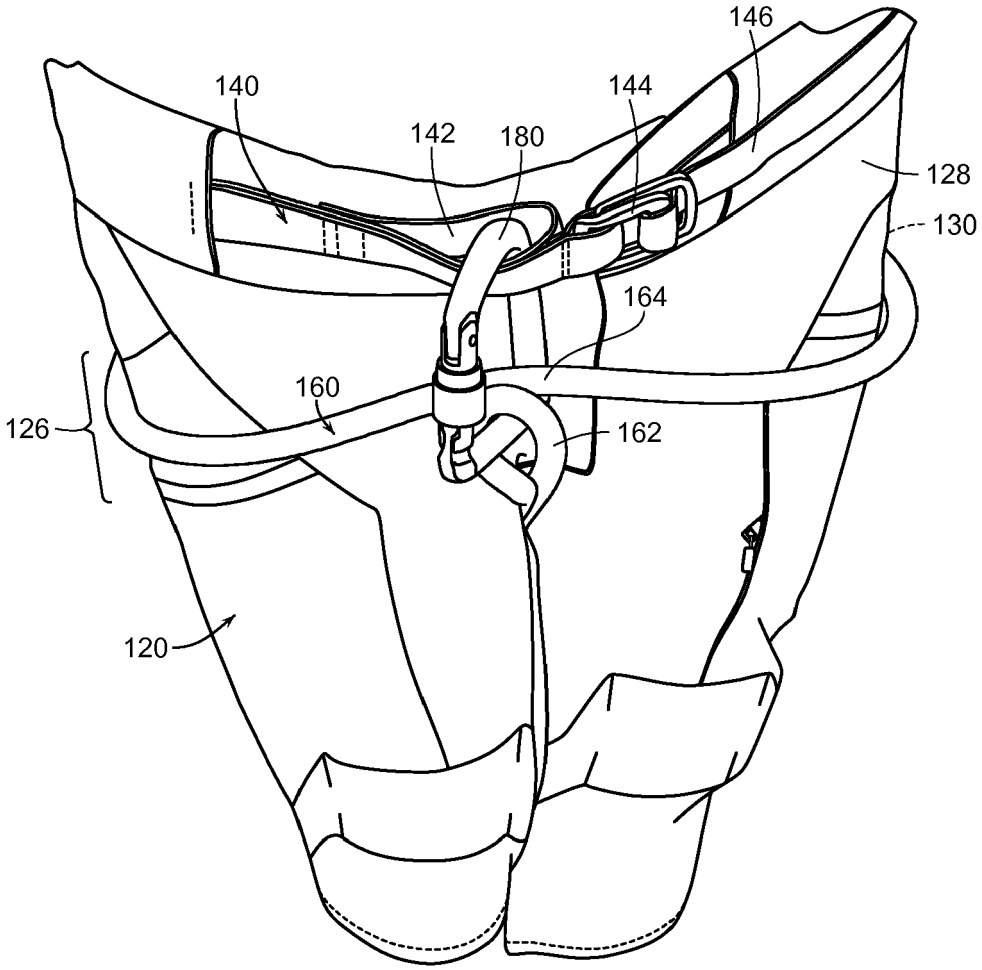

FIG. 3B

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EUROPEAN SEARCH REPORT

Application Number
EP 15 18 0962

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 6 244 379 B1 (LARSON MIKAEL [SE]) 12 June 2001 (2001-06-12) * column 2, line 64 - column 4, line 28; figures 1-7 *	1-20	INV. A41D13/00 A62B35/00
A	US 6 189 651 B1 (SADECK JAMES E [US]) 20 February 2001 (2001-02-20) * column 2, line 55 - column 4, line 15; figures 1-6 *	1-20	
A	US 2001/047904 A1 (ANTONIO ISHMAEL L [US]) 6 December 2001 (2001-12-06) * paragraph [0020] - paragraph [0028]; figures 2-4, 11F, 12C-12J *	1-20	
A	US 6 105 169 A (COLORADO JUANCARLOS [US]) 22 August 2000 (2000-08-22) * column 2, line 5 - column 3, line 9; figures 1-6 *	1-20	
A	US 4 714 135 A (BELL ROBERT L [US] ET AL) 22 December 1987 (1987-12-22) * claims 1-5; figures 1,5,6 *	1-20	TECHNICAL FIELDS SEARCHED (IPC) A62B A41D
A	US 2007/204377 A1 (MORDECAI MARK [US] ET AL) 6 September 2007 (2007-09-06) * figures 7-9 *	1-20	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	10 December 2015	Simpson, Estelle

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 15 18 0962

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
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10-12-2015

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6244379 B1	12-06-2001	AT 184800 T	15-10-1999
		DE 69604387 D1	28-10-1999
		DE 69604387 T2	11-05-2000
		DK 0819018 T3	27-03-2000
		EP 0819018 A1	21-01-1998
		ES 2138329 T3	01-01-2000
		JP 3952212 B2	01-08-2007
		JP H11503050 A	23-03-1999
		NO 974594 A	03-10-1997
		US 6244379 B1	12-06-2001
		WO 9631254 A1	10-10-1996
US 6189651 B1	20-02-2001	NONE	
US 2001047904 A1	06-12-2001	NONE	
US 6105169 A	22-08-2000	NONE	
US 4714135 A	22-12-1987	EP 0230965 A2	05-08-1987
		US 4714135 A	22-12-1987
US 2007204377 A1	06-09-2007	NONE	

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