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(54) **HARNESS AND BUNGEE SYSTEM**

(57) A harness comprises a first side portion and a second side portion, the first and second side portions each having at least one belt loop; first and second leg loops extending from the first and second side portions, respectively; a connecting portion extending between the first and second side portions; and a suspending belt extending through the at least one belt loop of each of the first and second portions. The suspending belt is configured to receive a suspending ring, the suspending ring being free to travel along a suspending portion of the suspending belt between the first and second side portions.

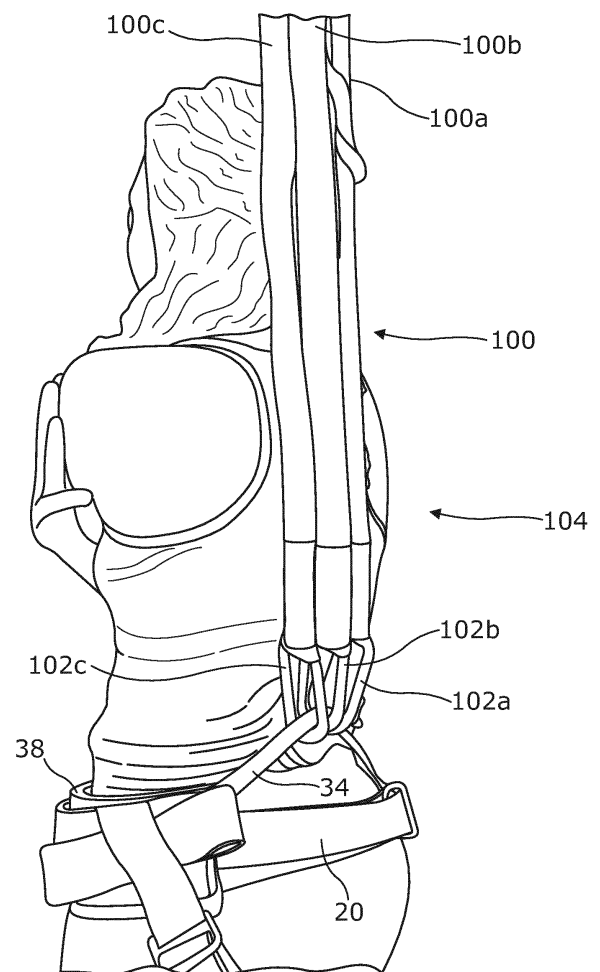


Fig. 6

Description

INTRODUCTION

[0001] The present invention relates to harnesses and particularly to harnesses for suspension of a user from an anchor point.

[0002] Known harnesses, such as those used in safety, climbing, bungee jumping, aerial dance and acrobatics, generally have a waist belt and two leg loops connected to the waist belt. One or more rings are attached to the waist belt. In use, a rope or bungee cord is clipped onto a ring to either prevent a user falling more than a predetermined distance when, for example, climbing or to suspend a user from an anchor point when taking part in aerial dance or acrobatics.

[0003] Known harnesses have rings that are fixed relative to the waist belt so as to maintain the centre of gravity of a user whilst they climb or suspend themselves to, for example, attend to lopping of tree branches or cleaning of windows.

[0004] However, these known harnesses are overly restrictive for use in more artistic applications such as, for example, aerial dance or aerobatics, in which expression of movement is required.

[0005] Also, when using known harness bungee systems to suspend a user from an anchor point on a bungee, the function of the harness and bungee depends on the characteristics of the user. Known harness bungee systems will function differently depending on, for example, the height and weight of the user. Accordingly, a different bungee has to be rigged up to an anchor point each time a different user wishes to use the harness bungee system. This is inconvenient, relatively time consuming and results in down-time of the system, which is particularly undesirable in commercial applications.

[0006] Moreover, in artistic applications, such as aerial dance, it is often desirable for a single user (i.e. aerial dancer) to be able to easily and quickly change the resistance of the bungee cord in order to, for example, increase speed, change direction and reach higher and/or lower positions.

[0007] Accordingly, there is a need for a harness which supports a user safely in a suspended state but which also enables a user to easily but significantly alter their centre of gravity in order to express movement and/or alter their direction.

[0008] It is also desirable for there to be a harness bungee system capable of quick and easy adjustment of the elasticity of the bungee to suit different users.

[0009] It is also desirable for there to be a harness bungee system capable of enabling a user to quickly and easily alter the elasticity of the bungee cord.

[0010] Accordingly, an object of the present invention is to provide a harness which supports a user safely in a suspended state and also enables a user to easily but significantly alter their centre of gravity, in use, in order to express movement and alter direction.

[0011] It is also an object of the present invention to provide a harness bungee system having a bungee elasticity which can be quickly and easily altered.

5 SUMMARY OF INVENTION

[0012] According to a first aspect of the present invention there is provided a harness comprising: a first side portion and a second side portion, the first and second side portions each having at least one belt loop; first and second leg loops extending from the first and second side portions, respectively; a connecting portion extending between the first and second side portions; and a suspending belt extending through the at least one belt loop of each of the first and second portions; wherein the suspending belt is configured to receive a suspending ring, the suspending ring being free to travel along a suspending portion of the suspending belt between the first and second side portions.

[0013] At least one of the first side portion, second side portion, belt loops, suspending belt, connecting portion and first and second leg portions is advantageously formed from a webbing material.

[0014] The first and second leg loops advantageously have means to adjust the functioning length of the leg loops.

[0015] The connecting portion advantageously has means for adjusting the functioning length of the connecting portion.

[0016] The suspending belt advantageously has means for adjusting the functioning length of the suspending belt.

[0017] The means for adjusting the length of the connecting portion is preferably a fastening.

[0018] Each of the first and second side portions advantageously comprise a pair of belt loops. The material of each pair of belt loops advantageously extends to form the first and second leg loops.

[0019] The first and second side portions advantageously comprise protective padding.

[0020] The harness preferably further comprises a suspending ring disposed around the suspending belt and operable to travel along the suspending portion of the suspending belt.

[0021] According to a second aspect of the present invention a bungee harness system comprises at least one bungee cord attachable to a harness according to the first aspect of the present invention.

[0022] The bungee harness system advantageously comprises a plurality of bungee cords.

[0023] Each of the plurality of bungee cords advantageously has a different elasticity.

[0024] The, or each, bungee cord advantageously comprises a clip detachably attachable to the suspending belt to provide the suspending ring.

[0025] The bungee harness system advantageously further comprises a harness system connector operable to connect the harness system to an anchor point.

[0026] The, or the plurality of, bungee cords are advantageously attached to the harness system connector.

[0027] According to a third aspect of the present invention, a bungee system comprises a plurality of bungee cords, wherein one end of each bungee cord comprises harness attachment means and the other ends of the plurality cords are fixed together at a bungee system connector.

[0028] At least one of the plurality of bungee cords is advantageously of a different elasticity relative to the other bungee cords.

DESCRIPTION

[0029] The present invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a drawing showing a view from above of a harness according to a first aspect of the present invention;

Figure 2 is a drawing from the front showing the harness of Figure 1 worn by a user;

Figure 3 is a drawing from the rear showing the harness of Figure 1 worn by a user;

Figure 4 is a drawing from the side showing the harness of Figure 1 worn by a user;

Figure 5 is a drawing of a harness bungee system and a bungee system according to a second and a third aspect of the present invention;

Figure 6 is a drawing showing a closer view of the harness bungee system and bungee system of Figure 5;

Figure 7 is a drawing showing how the bungee system of the present invention can be implemented having a bungee system connector for attaching the harness bungee system to an anchor point; and

Figure 8 is a drawing showing a view from above of a harness of Figure 1 which has differently sculpted padded portions for user comfort.

[0030] Referring to Figures 1 to 4 and 8, a harness 10, according to the present invention, comprises a first side portion 12, a second side portion 14, a first leg loop 16, a second leg loop 18, a connecting portion 20, and a suspending belt 22.

[0031] Referring particularly to Figure 4, the first side portion 12 and the second side portion 14 each have at least one belt loop, 24 and 26, respectively. Preferably, the first and second side portions, 12 and 14, have a plurality of belt loops, 24 and 26 and advantageously

there is a pair of first belt loops, 24a and 24b, fixed to the first side portion 12 and a pair of second belt loops, 26a and 26b, fixed to the second side portion 14.

[0032] The first leg loop 16 extends from the first side portion 12 and the second leg loop 18 extends from the second side portion 14. Advantageously, the first leg loop 16 is formed by extending the material which forms the pair of first belt loops, 24a and 24b, and the second leg loop 18 is formed by extending the material which forms the pair of second belt loops 26a and 26b. Forming the belt loops and leg loops in this way provides less material wastage and fewer steps during manufacturing of the harness and, in use, provides suitable positions for the leg loops to provide a comfortable fit and support between the side portions, 12 and 14, and the legs of the user, as can be seen particularly in Figures 2, 3 and 4.

[0033] The first leg loop 16 and the second leg loop 18 each have means for adjusting the functional length of the loops. The functional length refers to the circumference of the loop and not the length of material of the loop. The means for adjusting the functional length of the loops may be, for example, first and second adjustable fasteners, 28 and 30, which, in use, adjust the size of the leg loops, 16 and 18, to provide a secure and comfortable fit around the leg of a user, as shown in Figures 2, 3 and 4.

[0034] The connecting portion 20 is fixed relative to the first and second side portions, 12 and 14, such that it extends, in normal use, across the rear of a user, as best shown in Figure 3.

[0035] The suspending belt 22 extends across the rear of the harness 10, through the belt loops, 24a, 24b, 26a, 26b, and across the front of the harness 10 and is free to move through the belt loops, 24a, 24b, 26a, 26b, relative to the first and second side portions, 12 and 14.

[0036] The suspending belt 22 has means for adjusting the functional length of the loops. The functional length refers to the circumference of the suspending belt 22 and not necessarily the length of material. The means for adjusting the functional length of the suspending belt 22 may be, for example, a fastener 32 disposed at the front of the harness which, in use, enables adjustment of the circumference of the suspending belt 22, to thereby provide a secure and comfortable fit around the waist of a user, as best shown in Figure 2.

[0037] The suspending belt 22 comprises a suspending portion 34 which, in use, extends between the first and second side portions, 12 and 14, at the rear of the harness 10. The suspending portion 34 is operable to receive a suspending ring, which may be a detachably attachable clip, and to allow for the suspending ring to freely travel laterally along the suspending portion 34, between the first and second side portions, 12 and 14.

[0038] The first side portion 12, second side portion 14, first and second leg loops, 16 and 18, connecting portion 20, suspending belt 22, and belt loops 24 and 26 are formed from a webbing material.

[0039] The harness 10 further comprises first and second hip padded portions, 36 and 38, disposed on the

internal surfaces of the first and second side portions, 12 and 14, respectively. The hip padded portions are preferably made from a neoprene-type material and may be detachably attachable to the internal surfaces of the first and second side portions, 12 and 14, to provide further support and comfort for the user.

[0040] Figure 8 shows the harness 10 of the present invention from an opposite view to Figure 1 such that the suspending portion 34 of the suspending belt 22 can be clearly seen. The first and second side portions 12, 14 of the harness 10 of Figure 8 having differently sculpted hip padded portions 36, 38 with edge seams 40. In addition, one or more D-rings 42 can be attached to the first and/or second side portions 12, 14 and with the suspending belt 22 threaded therethrough for instead attaching to a detachably attachable clip 102 when in use, as shown in Figures 5 and 6.

[0041] In use, the harness 10 is worn by a user as shown in Figures 2, 3 and 4, and a bungee cord 100 is attached to the suspending portion 34 of the suspending belt 22, using a detachably attachable clip 102, as shown in Figure 5 and 6.

[0042] In use, a user is suspended from the rear of the harness 10. The user is comfortably and securely held in the harness 10 between the connecting portion 20, at the rear of the harness, and the suspending belt 22 at the front of the harness. In a steady state of suspension, gravitational force pulls the user towards the suspension belt 22 at the front of the harness against the elastic force of the bungee cord 100. Again, as the bungee cord 100 is extended further, the user is supported against the suspension belt 22 at the front of the harness against the elastic force of the bungee cord 100. During contraction of the bungee cord 100, the user is supported against the connecting portion 20. Because the connecting portion 20 and the suspending belt 22 are free to move relative to each other, the harness 10 provides for improved safety and comfort for a user when using a bungee cord.

[0043] In use, the clip 102 being able to freely travel laterally along the suspending portion 34 enables a suspended user to dynamically redistribute their body weight laterally relative to the point at which the bungee cord is clipped on to the harness 10. Also, the suspension belt 22 being free to move relative to the side portions, 12 and 14, and therefore free to move relative to the user's body, enables a suspended user to dynamically redistribute their body weight forwards or rearwards. Therefore, the harness 10 enables a suspended user to significantly alter their centre of gravity, relative to the point at which the bungee cord is clipped on to the harness 10, in order to express movement and alter direction.

[0044] Referring also to Figure 5 and 6, according to a second aspect of the present invention a harness bungee system 104 comprises a plurality of bungee cords. Figures 5 and 6 show a first second and third bungee cord, 100a, 100b and 100c. However, in alternative embodiments, two, four or any other number could be used depending on the application of the invention.

[0045] In one embodiment, each of the bungee cords 100a, 100b and 100c have a different elasticity. In alternative embodiments, all the bungee cords 100a, 100b and 100c, may have the same elasticity or two or more bungee cords may have the same elasticity.

[0046] On one end, each of the bungee cords, 100a, 100b and 100c, has an attachment clip, 102a, 102b and 102c, operable to detachably attach the respective bungee cord, 100a, 100b or 100c, to the suspension portion 34 of the harness 10. Once attached, the attachment clip 102 acts as a suspension ring operable to freely travel along the suspension portion 34, as previously described above.

[0047] On an opposite end, the bungee cords, 100a, 100b and 100c, are joined together at a bungee system connector 106. The bungee system connector 106 has a bungee connector ring (or clip) 108 for attaching the harness bungee system 104 to an anchor point or non-elastic cord, rope or webbing, 110.

[0048] In use, one or more bungee cords, 100a, 100b and 100c, are selected based on the relevant factors such as, for example, the type of bungee activity, the experience of the use and the weight and height of the user.

[0049] For example, if the plurality of bungee cords are of the same elasticity: a light weight user would clip only a single bungee cord, 100a, to the harness 10; a user of average weight would clip two bungee cords, 100a and 100b, to the harness 10; and a heavy weight user would clip three bungee cords, 100a, 100b and 100c to the harness 10. Additionally, or alternatively, the number of bungee cords used may be based on, for example, the experience of the user and/or to achieve different speeds and movements.

[0050] Alternatively, in the embodiment comprising a plurality of bungee cords having different predetermined elasticity, one or more of the bungee cords, 100a, 100b and/or 100c, may be clipped to the harness 10, to provide a combined elasticity, as shown in Figure 6. Again, the required elasticity may be determined based on characteristics of the user such as weight and height and/or the experience of the user or required speeds and movements.

[0051] Moreover, the elasticity of the bungee system can be easily and quickly altered by simply clipping on, or unclipping, one or more of the bungee cords, 100a, 100b and 100c, to or from the harness 10.

[0052] Any bungee cords which are not in use can be easily clipped on to the bungee system connector 106, as shown for bungee cord 100c in Figure 5.

[0053] Figure 7 shows a slightly different configuration of the bungee system 100 of the present invention. The construction of the bungee system 100 shown in Figure 7 is very similar to that of the second aspect of the invention and corresponding features have been given the same reference numerals. The bungee system 100 shown in Figure 7 differs from the second aspect of the invention in that instead of each of the ends of the bungee cords, 100a, 100b and 100c being joined together at a

single bungee system connector 106, each the bungee cords, 100a, 100b and 100c, are warped 112 around an attachment clip, 106a, 106b and 106c, which is then operable to detachably attach the respective bungee cord, 100a, 100b or 100c, to the bungee connector ring (or clip) 108 for attaching the harness bungee system 104 to an anchor point. Figure 7 shows that an optional intermediary rigging plate 114 can be placed between the attachment clips 106a, 106b and 106c and the swivelling bungee connector ring 108, but in a preferred embodiment a single D-ring (not shown) can receive the three warped ends 112 of the bungees 100a, 100b or 100c.

[0054] Figure 7 also shows further detail of the how the bungee system 100 is secured to the anchor point via a length of abseil rope 110 which is tied directly to the swivelling connector ring 108. The opposite end of the rope 110 passes to a mechanical ascender and karabiner arrangement 116 which facilitates a quick and easy way of adjusting the length the rope 110.

[0055] Therefore, the bungee system according to the present invention provides predetermined bungee elasticity which can be quickly and easily altered.

[0056] When used in this specification and claims, the terms "comprises" and "comprising" and variations thereof mean that the specified features, steps or integers are included. The terms are not to be interpreted to exclude the presence of other features, steps or components.

[0057] The features disclosed in the foregoing description, or the following claims, or the accompanying drawings, expressed in their specific forms or in the terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, as appropriate, separately, or in any combination of such features, be utilised for realising the invention in diverse forms thereof.

[0058] The invention is not intended to be limited to the details of the embodiments described herein, which are described by way of example only. It will be understood that features described in relation to any particular embodiment can be featured in combination with other embodiments.

[0059] It is contemplated by the inventor that various substitutions, alterations, and modifications may be made to the invention without departing from the spirit and scope of the invention as defined by the claims. Examples of these include the following:

Additional neoprene padding loops can be included with, or form part of, the harness 10 and which can be removed to wash or clean, as appropriate.

CLAUSES

[0060] The following clauses define preferred embodiments of the invention.

1. A harness comprising:

a first side portion and a second side portion,

the first and second side portions each having at least one belt loop;

first and second leg loops extending from the first and second side portions, respectively.

a connecting portion extending between the first and second side portions; and

a suspending belt extending through the at least one belt loop of each of the first and second portions;

wherein the suspending belt is configured to receive a suspending ring, the suspending ring being free to travel along a suspending portion of the suspending belt between the first and second side portions.

2. A harness according to clause 1, wherein at least one of the first side portion, second side portion, belt loops, suspending belt, connecting portion and first and second leg loops is formed from a webbing material.

3. A harness according to clauses 1 or 2, wherein the first and second leg loops have means to adjust the functioning length of the leg loops.

4. A harness according to any of the preceding clauses, wherein the connecting portion has means for adjusting the functioning length of the connecting portion.

5. A harness according to any of the preceding clauses, wherein the suspending belt has means for adjusting the functioning length of the suspending belt.

6. A harness according to clauses 3 to 5, wherein the means for adjusting the length of the connecting portion is a fastening.

7. A harness according to any of the preceding clauses, wherein each of the first and second side portions comprise a pair of belt loops, and wherein the material of each pair of belt loops extend to form the first and second leg loops.

8. A harness according to any of the preceding clauses, wherein the first and second side portions comprise protective padding.

9. A harness according to any of the preceding clauses, further comprising a suspending ring disposed around the suspending belt and operable to travel along the suspending portion of the suspending belt.

10. A bungee harness system comprising at least one bungee cord attachable to a harness according to any of the preceding clauses.

11. A bungee harness system according to clause

10, comprising a plurality of bungee cords.

12. A bungee harness system according to clause 11, wherein at least one bungee cord has a different elasticity relative to the other bungee cords.

13. A bungee harness system according to clauses 10 or 11, wherein the, or each, bungee cord comprises a clip detachably attachable to the suspending belt to provide the suspending ring.

14. A bungee harness system according to clauses 10 to 13, further comprising a bungee system connector operable to connect the harness system to an anchor point or pulley system.

15. A bungee harness system according to clause 14, wherein the, or the plurality of, bungee cords are attached to the bungee system connector.

16. A bungee system comprising a plurality of bungee cords, wherein one end of each bungee cord comprises harness attachment means and the other ends of the plurality cords are fixed together at a bungee system connector.

17. A bungee system according to clause 16, wherein at least one of the plurality of bungee cords is of a different elasticity relative to the other bungee cords.

Claims

1. A harness comprising:

a first side portion and a second side portion, the first and second side portions each having at least one belt loop;
first and second leg loops extending from the first and second side portions, respectively.
a connecting portion extending between the first and second side portions; and
a suspending belt extending through the at least one belt loop of each of the first and second portions;
wherein the suspending belt is configured to receive a suspending ring, the suspending ring being free to travel along a suspending portion of the suspending belt between the first and second side portions.

2. A harness as claimed in claim 1, wherein at least one of the first side portion, second side portion, belt loops, suspending belt, connecting portion and first and second leg loops is formed from a webbing material, and wherein the first and second leg loops have means to adjust the functioning length of the

leg loops.

3. A harness as claimed in any of the preceding claims, wherein the connecting portion has means for adjusting the functioning length of the connecting portion.

4. A harness as claimed in any of the preceding claims, wherein the suspending belt has means for adjusting the functioning length of the suspending belt.

5. A harness as claimed in claims 2 to 4, wherein the means for adjusting the length of the connecting portion is a fastening.

6. A harness as claimed in any of the preceding claims, wherein each of the first and second side portions comprise a pair of belt loops, and wherein the material of each pair of belt loops extend to form the first and second leg loops, and/or optionally wherein the first and second side portions comprise protective padding.

7. A harness as claimed in any of the preceding claims, further comprising a suspending ring disposed around the suspending belt and operable to travel along the suspending portion of the suspending belt.

8. A bungee harness system comprising at least one bungee cord attachable to a harness as claimed in any of the preceding claims.

9. A bungee harness system as claimed in claim 8, comprising a plurality of bungee cords.

10. A bungee harness system as claimed in claim 9, wherein at least one bungee cord has a different elasticity relative to the other bungee cords.

11. A bungee harness system as claimed in claim 8 or 9, wherein the, or each, bungee cord comprises a clip detachably attachable to the suspending belt to provide the suspending ring.

12. A bungee harness system as claimed in claims 8 to 11, further comprising a bungee system connector operable to connect the harness system to an anchor point or pulley system.

13. A bungee harness system as claimed in claim 12, wherein the, or the plurality of, bungee cords are attached to the bungee system connector.

14. A bungee system comprising a plurality of bungee cords, wherein one end of each bungee cord comprises harness attachment means and the other ends of the plurality cords are fixed together at a bungee system connector.

15. A bungee system as claimed in claim 14, wherein at least one of the plurality of bungee cords is of a different elasticity relative to the other bungee cords.

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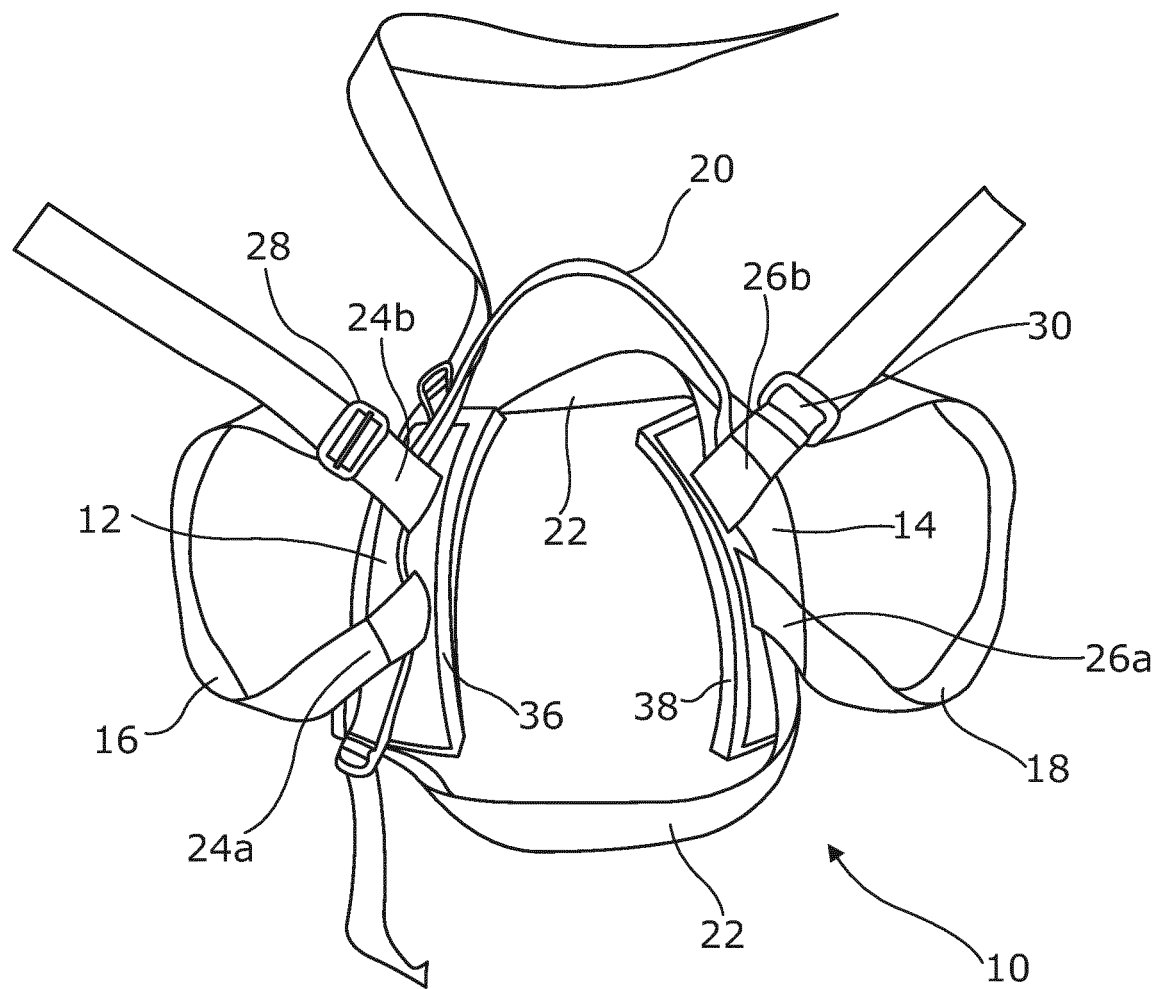


Fig. 1

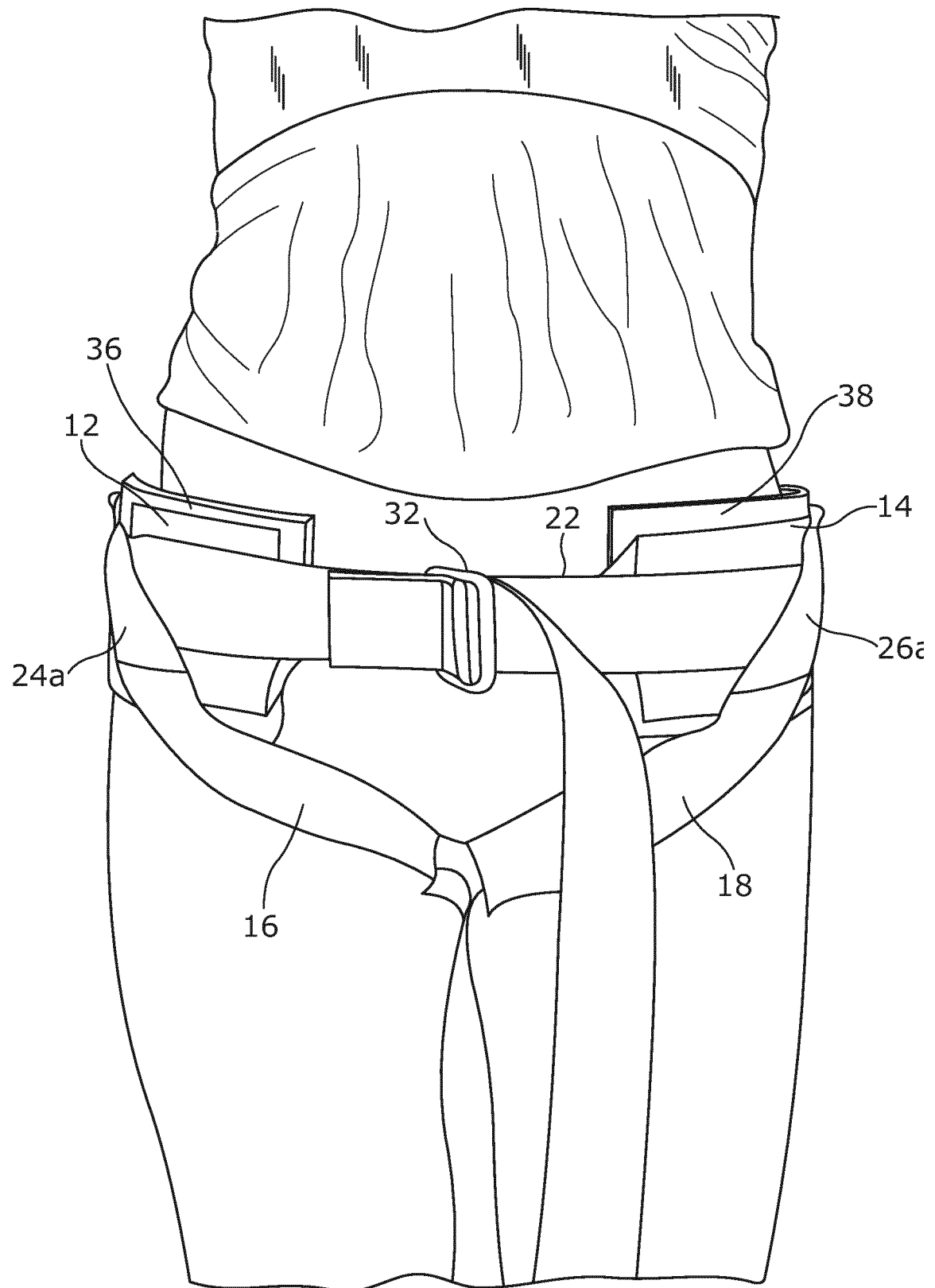


Fig. 2

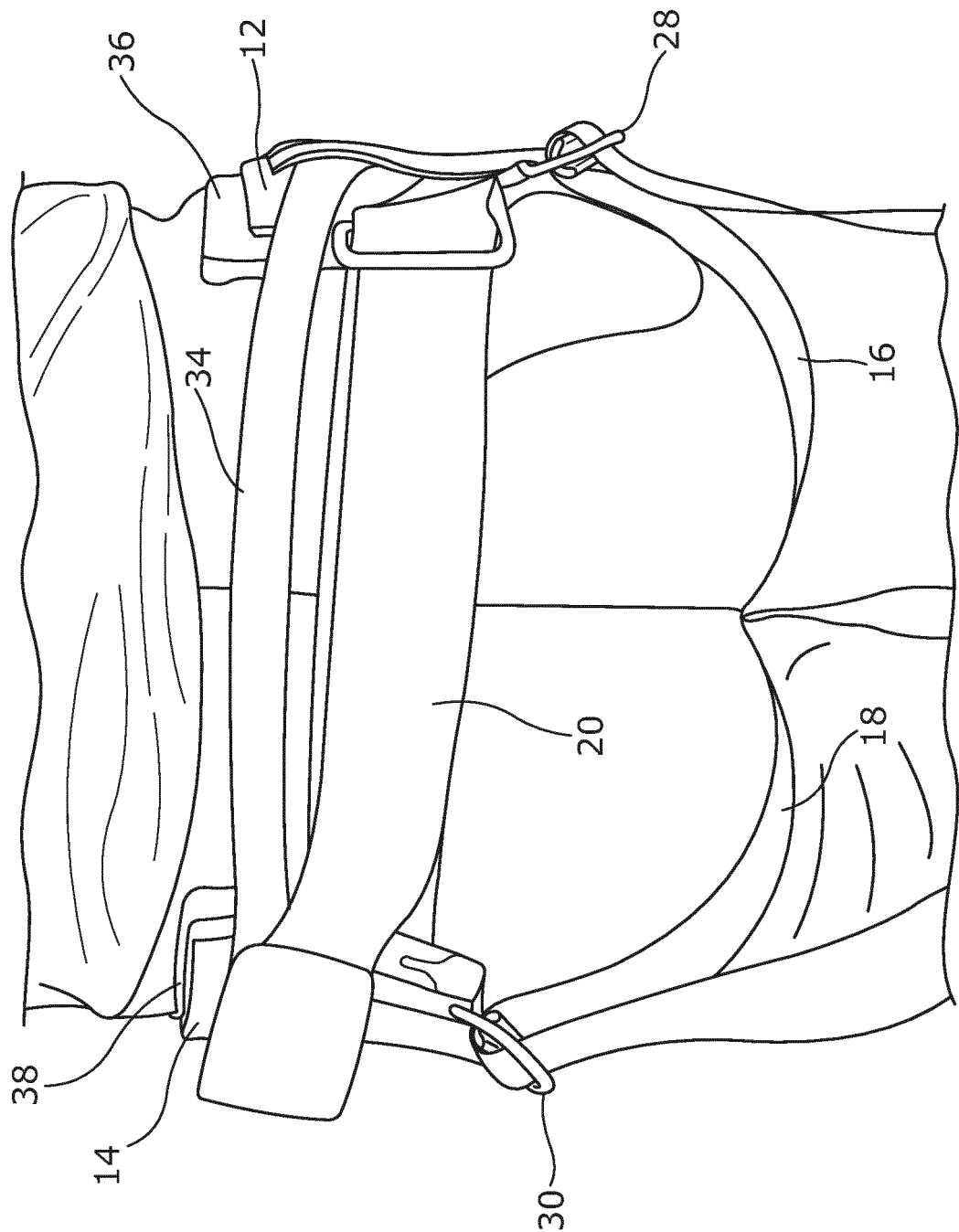


Fig. 3

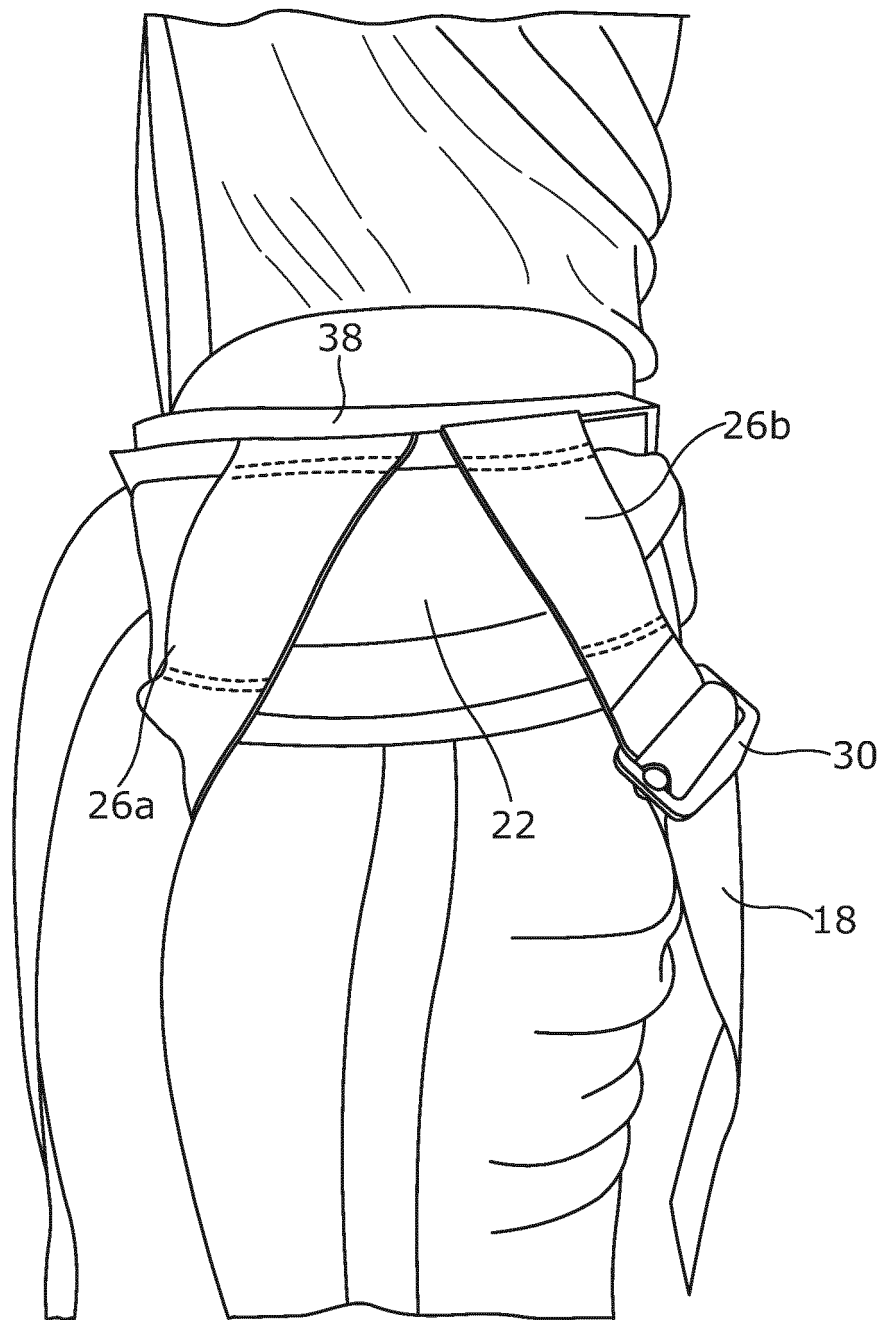


Fig. 4

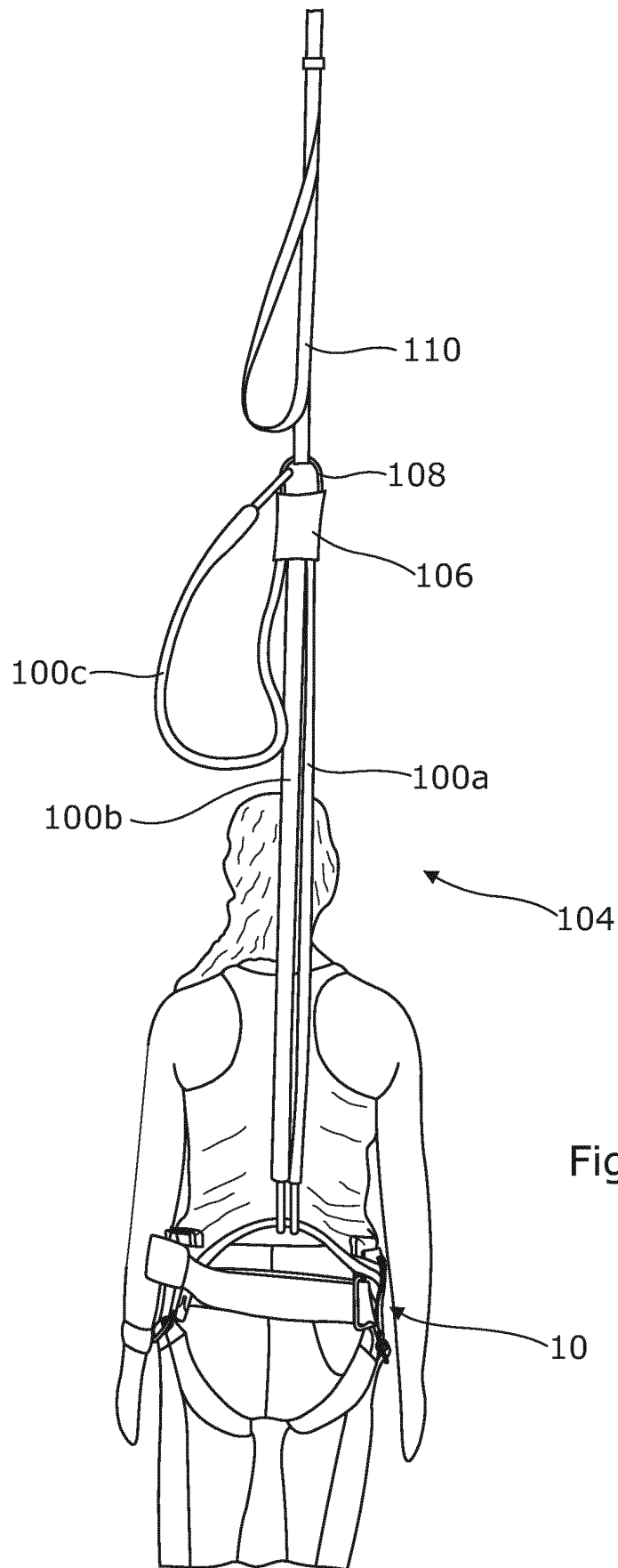


Fig. 5

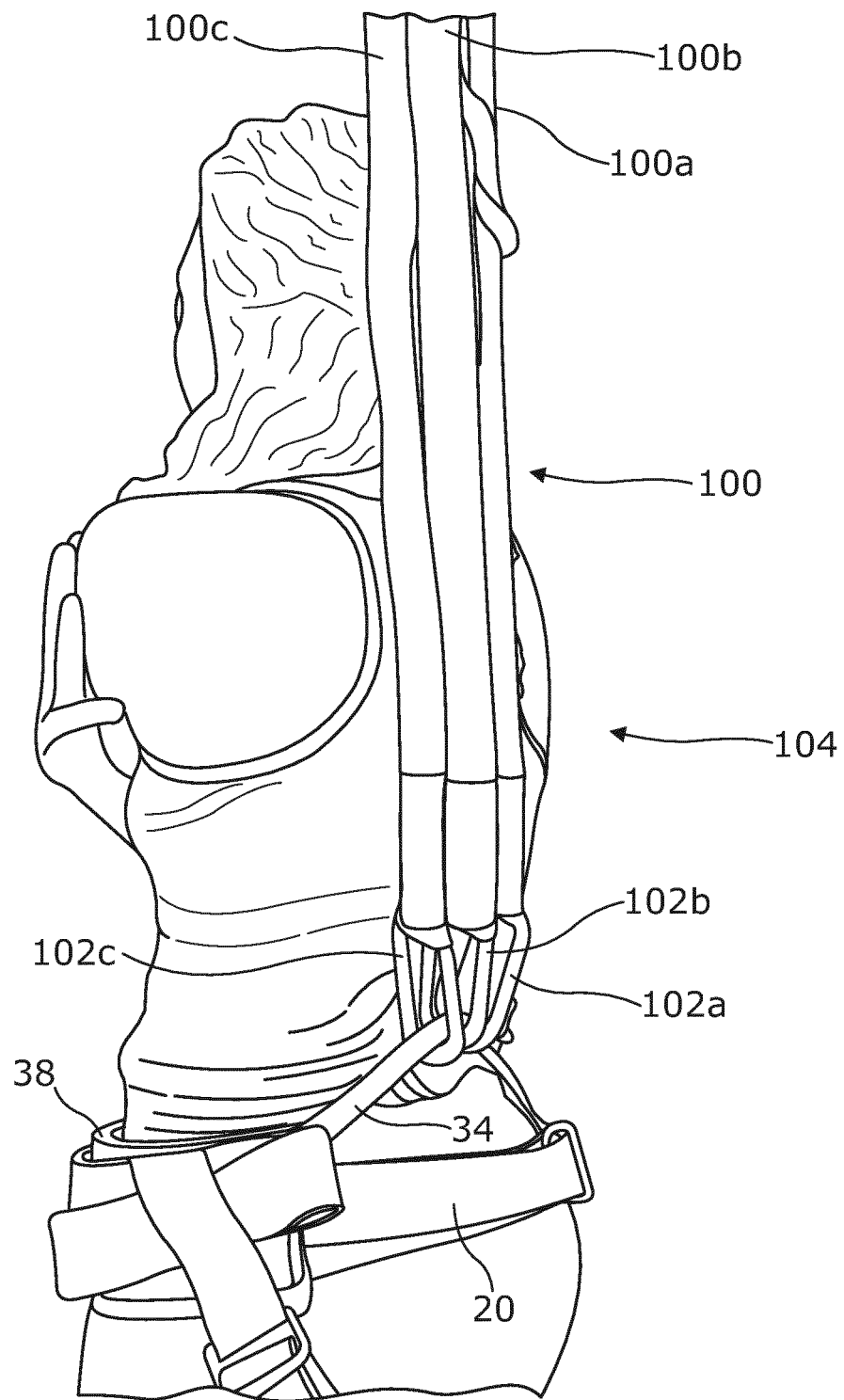


Fig. 6

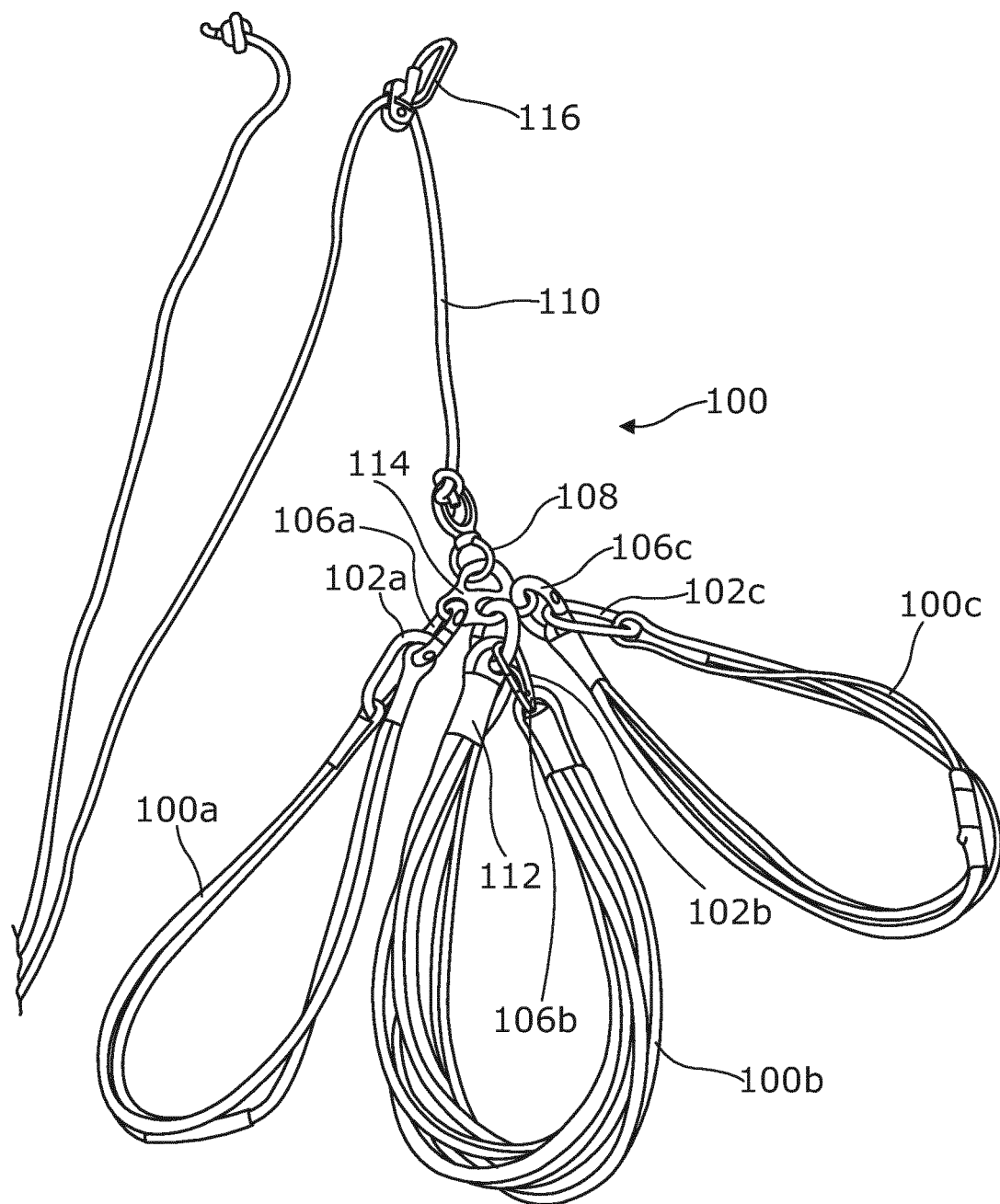


Fig. 7

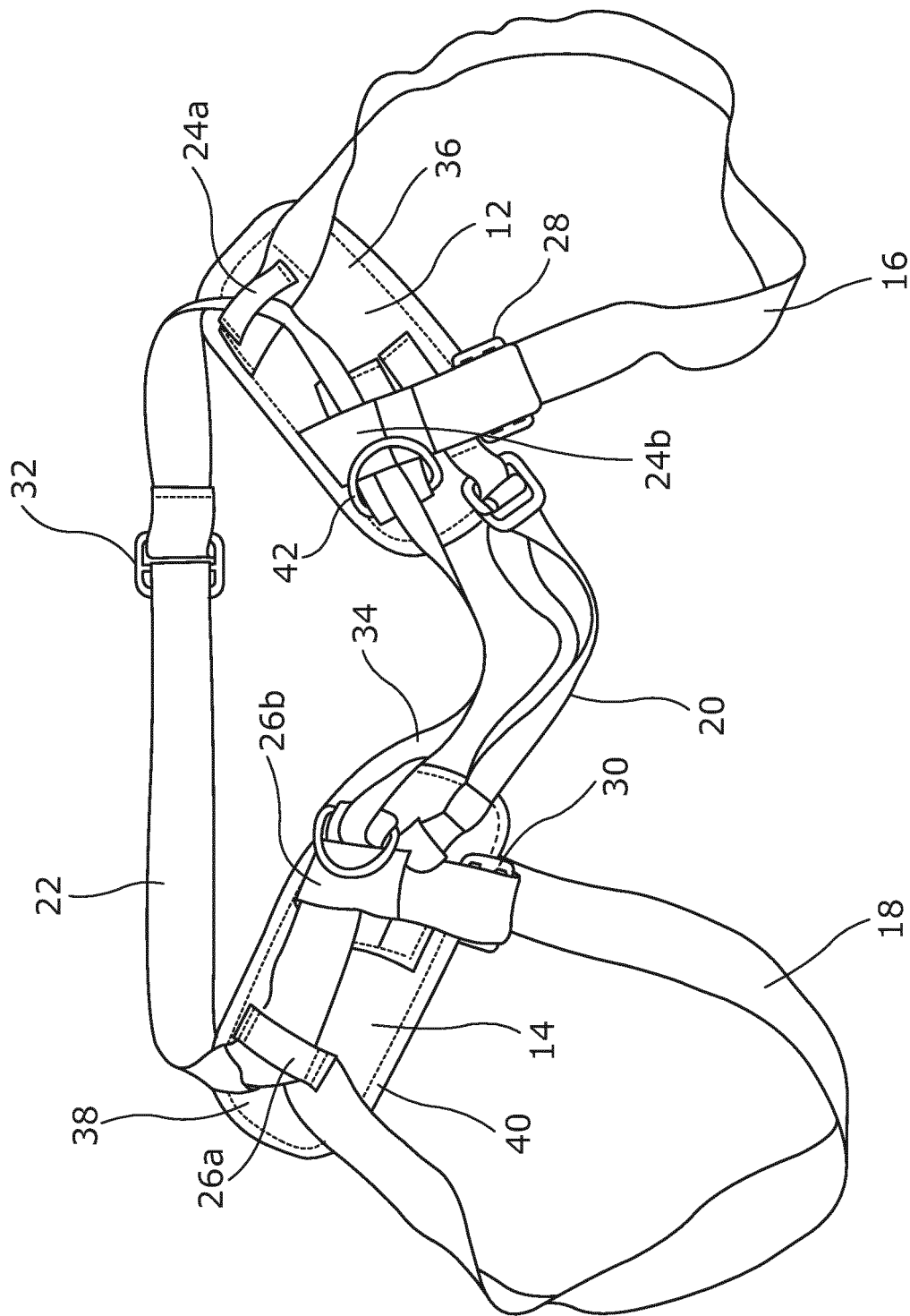


Fig. 8