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(54) Infant carrier

(57) An infant carrier, comprising first (2) and second (6) frame parts; a harness arrangement (4) fitted to the first (2) frame part; and an infant seat arrangement (8) supported by the second (6) frame part; wherein the first (2) and second (6) frame parts are connected via at least one shock absorbing arrangement (22).

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Description

[0001] The present invention relates to an infant carrier, and in particular to a back pack type infant carrier to be worn on the back of an adult and for carrying a baby, toddler or young child.

[0002] Back type infant carriers are known in which a seat arrangement is supported on a frame suitable for seating an infant. Such infant carriers are generally suitable for infants aged between 6 months and 4 years and up to a weight of around 20kg. The frame is carried on the back of an adult using a harness arrangement similar to those used on ruck sacks, knap sacks or back packs. Generally, the frame is secured on an adult's back via two shoulder straps of the harness that pass one over each shoulder and under the associated arm. The frame may be of a rigid material, for example metal, and is generally integrated into a padded fabric body. The seat arrangement in which an infant can sit will generally have associated safety straps for securing the infant safely within the seat. Usually, the harness includes a series of straps which attach to the body and works with the frame to distribute the weight of an infant in the seat and hold the infant carrier in place on an adult's back. Such infant carriers generally have a back section which fits closely to the adult's back, allowing the pack to be closely attached to the body so as to give a predictable movement of the load.

[0003] According to one aspect of the present invention there is provided an infant carrier, comprising: first and second frame parts; a harness arrangement fitted to the first frame part; and an infant seat arrangement supported by the second frame part; wherein the first and second frame parts are connected via at least one shock absorbing arrangement. The shock absorbing arrangements make the ride for an infant carried in the carrier smoother by damping any sudden movement of the first frame part, for example caused by an adult carrying the infant carrier over rough ground. In addition the shock! absorbing arrangements also make the load from the seat arrangement applied to an adult carrying the infant carrier smoother, again by damping any sudden relative movement between the first and second frame parts. The infant carrier of this aspect of the invention may additionally comprise any suitable harness arrangement, including but not limited to a harness arrangement as described herein.

[0004] According to another aspect of the present invention there is provided an infant carrier, comprising: first and second frame parts; a harness arrangement fitted to the first frame part; and an infant seat arrangement supported by the second frame part; wherein the harness arrangement comprises a central panel of the harness extending between two arms of the first frame part defining a plurality of vertically spaced holes; and a shoulder strap panel from which upper ends of a pair of shoulder straps of the harness depend and comprising a fixing strap; wherein the shoulder strap panel can be fitted on the central panel by passing the fixing strap in one direction through a first of the vertically spaced holes and then in an opposite direction through a second one of the vertically spaced holes. This enables the position of the shoulder straps of the harness arrangement to be comfortably adjusted to the height and back length of an adult carrying the infant carrier. The infant carrier of this aspect of the invention may additionally comprise at least one shock absorbing arrangement connecting the first and second frame parts, for example as described herein.

[0005] The harness arrangement of the infant carrier may be adapted to support the infant carrier on a person's back.

[0006] The pair of shoulder straps may be releaseably fitted at their upper end to a harness support, which harness support may be fitted onto the first frame part and may comprise the central panel. The position of the upper ends of the shoulder straps can be adjusted, upwardly or downwardly, on the central panel. This adjustment may be achieved by selected an appropriate one of the vertically spaced holes through which to pass an end of the fixing strap, in a first direction. The end of the strap is then passed, in an opposite direction, through another of the holes such that the pair of holes selected are vertically spaced by a pre-determined distance. The end of the strap may then be secured in place by any suitable fixing means, such as by Velcro™.

[0007] Either of the first or second frame parts may be formed from more than one frame components, although single piece frame parts may be preferred. At least one of the frame parts may be formed from more than one frame components. The first frame part may comprise a pair of side-by-side, for example substantially parallel, arms connected together by at least one cross-bar. Likewise, the second frame part may comprise a pair of side-by-side, for example substantially parallel, legs connected together by at least one cross-bar.

[0008] In particular, the first frame part may be U-shaped and comprise a lower cross-bar. For example, the first frame part may be U-shaped and may have arms which extend upwardly with respect to a central part of the U-shape. Also, the second frame part may be U-shaped and comprise an upper cross-bar positioned above the lower cross-bar. For example, the second frame part may be U-shaped and may have legs which extend downwardly with respect to a central part of the U-shape.

[0009] The first frame part may be U-shaped, with upper arm portions of the first frame part bent upwardly with respect to a central portion including a central part of the U-shape. Also, the second frame part may be U-shaped, with lower leg portions of the second frame part extending downwardly with respect to a central part of the U-shape. In this case, the ends of the lower legs may be connected to respective arms of the first frame park, via the shock absorbing arrangement (when present) where the upper arm portions begin to bend upwardly.

[0010] The first frame part may comprise two arms and

the second frame part may comprise two legs and a first shock absorbing arrangement may be connected via a first one of the legs and an associated first one of the arms and a second shock absorbing arrangement may be connected via a second one of the legs and an associated second one of the arms. For example, each shock absorbing arrangement may be attached to the associated arm of the first frame part and may be attached to the associated leg of the second frame part via a shock absorbing means.

[0011] The or each shock absorbing arrangement may include a tube fixed with respect to an associated arm of the first frame part, within which is slidingly received an associated leg of the second frame part and a shock absorbing means may be located within the tube and may act to absorb shock between the associated leg and arm. In particular the end of the associated leg may rest upon the shock absorbing means.

[0012] The or each shock absorbing arrangement may comprise: a support block attached to an associated arm of the first frame part; a support tube extending from the support block for slidingly receiving the associated leg of the second frame part; and a shock absorbing means located within the tube and upon which the end of the associated leg rests. For example, the shock absorbing means may be a compression spring.

[0013] The infant carrier may further comprise a support means for supporting the infant carrier, especially the infant seat arrangement, in a substantially upright (i.e. vertical) position when the infant carrier is located on a horizontal surface. The support means supports and holds the infant carrier, especially the infant seat arrangement, in a substantially upright position to facilitate the loading and unloading of an infant into and out of the seat prior to and following the wearing of the infant carrier on the back of an adult.

[0014] The support means may be moveable into a deployed position in which the infant carrier, especially the infant seat arrangement, is supported in the substantially upright position. For example, the support means may be moveable between the aforementioned deployed position and a retracted position in which the support means does not substantially protrude from the body of the infant carrier, especially the infant seat arrangement. Preferably, the support means is lockable in the deployed and/or retracted position,

[0015] The support means may comprise one or more legs hingedly connected to the infant carrier such that the or each leg is moveable between the retracted position, in which the or each leg is substantially flush with the carrier, and the deployed position, in which the or each leg is located at an suitable angle to the infant carrier so as to support the weight of the infant carrier as the infant is loaded into or unloaded from the seat and to hold the infant carrier in the desired (upright) position. Both the height of the or each leg and the angle of rotation provided by the hinge connection is selected so as to provide the required support in the desired position. The support means may, for example, comprise two substantially parallel legs, optionally connected together by at least one cross-bar, which legs may each be connected, by means of a suitable hinge arrangement, to the infant carrier, such as to the first frame part.

[0016] The invention will now be described by way of example only and with reference to the accompanying schematic drawings, wherein:

Figure 1 shows a side view of an infant carrier according to the present invention;
Figure 2 shows a rear perspective view of the internal frame of the infant carrier of Figure 1;
Figure 3 shows a side view of a connection between the two parts of the internal frame;
Figure 4 shows a cross-section through the connection of Figure 3;
Figure 5 shows a rear view of the infant carrier of Figure 1 showing the harness arrangement;
Figure 6 shows a front view of a central panel connecting the upper ends of the shoulder straps which can be releaseably fitted to the remainder of the harness arrangement at a desired position; and
Figure 7 shows a rear view of the infant carrier of Figure 1 including a support means.

[0017] The infant carrier shown in the Figures comprises a two part internal frame. The frame is made of a rigid material, for example hollow metal tubing. A first part of the frame (2) carries a harness arrangement (4) of the infant carrier and a second part of the frame (8) carries an infant seat arrangement (8). The harness arrangement (4) is suitable for wearing on the back of an adult.

[0018] The first frame part (2) is U-shaped and comprises a lower cross-bar (10) and a pair of arms (12, 14) which extend from the cross-bar. Each arm (12, 14) has a lower portion (12a, 14a), which extend substantially parallel to each other in a first forward direction from the lower cross-bar (10). Each arm (12, 14) also has an upper portion (12b, 14b), which extends upwardly from the lower portions (12a, 14a) via a curved portion of each arm (12c, 14c), so that the upper arm portions (12b, 14b) extend at substantially a right angle to the lower portions (12a, 14a). The upper arm portions (12b, 14b) extend upwardly, side by side, bending partially towards each other, so that upper parts of the upper arm portions are closer to each other than lower parts of the upper arm portions.

[0019] The second frame part (6) is also U-shaped and comprises an upper cross-bar (16) and a pair of legs (18, 20) which extend below the upper cross-bar. Each leg (18, 20) has an upper portion (18a, 20a) which extends substantially downwardly from the upper cross-bar (16). Each leg (18, 20) also has a lower portion (18b, 20b) which extends at an angle to the associated upper leg portion (18a, 20a) via slightly curved leg portions (18c, 20c). The ends of the lower leg portions (18b, 20b) remote from the upper cross-bar (16) are supported on the first

frame part, via a pair of shock absorbing arrangements (22).

[0020] Each shock absorbing arrangement (22) comprises a support block (24), a support tube (26) and a compression spring (28). Each support block (24), is made out of a rigid material, for example rigid plastic, and has a substantially square cross-section with rounded corners, and a depth slightly greater than the diameter of the arms (12, 14) of the first frame part. A U-shaped channel (30) is formed along two side edges of each support block (24), with the base of the channel shaped to accommodate the curvature of an associated arm (12, 14) of the first frame part (2) around the interface of the upper arm portions (12b, 14c) and the curved arm portions (12c, 14c). Each support block (24) is formed with a through hole for receiving a first fixing element (32), which passes through the side walls of the U-shaped channel (30) and through an aligned through hole formed in the associated arm (12, 14).

[0021] At the corner of each support block (24) remote from the channel (30) is formed a cylindrical recess for receiving an end of the support tube (26). Each support block (24) is configured so that with the block fixed to an associated arm (12, 14) of the first frame part (2), the support tube (26) extends from the cylindrical recess in an upward direction angled rearwardly with respect to the upper portion of the arms (12b, 14b). Thus, the support tubes (26) extend in a direction between the upper arm portions (12b, 14b) and the lower arm portions (12a, 14a) of the first frame part (2). The support tubes (26) extend at a smaller angle to the upper arm portions (12b, 14b) than to the lower arm portions (12a, 14a), as is shown in Figures 3 and 4. Each support tube (26) is fixed in an associated support block (24) via a second fixing element (34) which passes through holes formed in opposing side walls of the cylindrical recess and through an aligned through hole formed through an associated support tube.

[0022] The ends of the lower leg portions (18b, 20b) are slidingly received within an associated one of the support tubes (26). Each compression spring (28) is located within an associated one of the support tubes and is supported at its lower end on the second fixing element (34). The end of the associated lower leg portion (18b) is supported on an upper end of the compression spring (28). Therefore, the compression spring (28) is able to damp relative movement between the lower leg portion (18b) and the support tube (26) in the compression direction of the compression spring and in this way acts as a shock absorber.

[0023] Each shock absorbing arrangement (22) of Figures 3 and 4, acts between the arms (12, 14) of the first frame part (2) and the legs (18, 20) of the second frame part (6). The shock absorbing arrangements are located at the lowest part of the legs (18, 20) and towards the lowest part of the arms (12, 14).

[0024] The seat arrangement (8) comprises a padded fabric hood (40) which fits snugly over the second frame part (6) (see leg (20) and upper cross-bar (16) of second frame part (6) shown in dotted lines in Figure 1), so that the seat arrangement (8) is supported on the second frame part (6). The padded fabric hood (40) also fits around the lower cross-bar (10) and the lower arm portions (12a, 14a) of the first frame part (2) (see arm portion (14a) and cross-bar (10) of first frame part (2) shown in dotted lines in Figure 1). The hood (40) is also used as a zip up compartment for carrying items. A fabric pocket (41) is formed in the base of the padded hood (40) for snugly receiving the lower cross-bar (10) and lower arm portions (12a, 14a) of the first frame part (2).

[0025] The harness arrangement (4) comprises a pair of shoulder straps (42) which are releaseably fitted at their upper end to a harness support (44). The harness support (44) is made of padded fabric and channels are sewn in the harness support, which channels extend up both sides of the harness support, and each one is dimensioned so as to snugly receive an associated one of the upper arm portions (12b, 14b) of the first frame part (2) (see upper arm (14b) of first frame part (2) shown in dotted lines in Figure 1). The upper arms (12b, 14b) of the first frame part (2) are fixed within the harness support (44) by connecting an open packet (45) at the base of the harness support (44) over the curved arm portion (12c, 14c) of the first frame part (2). Then the base of the harness support (44) is connected to the base of the padded hood (40) of the seat arrangement (8) by a pair of connectors (47), one at either side of the bases. Each connector (47) may comprise a first strap (70) connected to the base of the harness support (44) and a second strap (72) connected to the base of the hood (40) and a buckle arrangement (74), which may be a snap fit buckle arrangement, for connecting the first and second straps (70, 72) and for removing any slack in the straps. In this way the harness support (44) is fitted onto the first frame part (2). A central panel (46) of the harness support (44) is made of a padded fabric and extends between the upper arm portions (12b, 14b) of the first frame part (2). The central panel (46) is formed with an array of substantially horizontal slots (48), which slots extend through the central panel. The slots (48) are arrayed one above the other in a line along the central panel (46), i.e. so as to be vertically spaced.

[0026] The position of the upper ends of the shoulder straps (42) can be adjusted, upwardly or downwardly on the central panel (46) of the harness support (44). The upper ends of the shoulder straps (42) extends from either side of an adjustment panel (50), shown in Figure 6. The adjustment panel (50) has a fixing area (52), for example a Velcro™ fixing, on the side of the adjustment panel to which the shoulder straps (42) extend and a strap (54) depends from the adjustment panel. The end of the strap (54) remote from the adjustment panel (50) has a complementary fixing area (66) on its opposite side to that shown in Figure 6 (shown in dotted lines in Figure 6).

[0027] The shoulder straps (42) can be fitted to the

central panel (46) of the harness support (44) by positioning the shoulder strap adjustment panel (50) in the desired position, passing the end of the strap (54) from front to back through the one of the slots (48) just below the adjustment panel, then passing the end of the strap (54) from back to front through another of the slots (48) just above the adjustment panel and then securing the fixing area (56) at the end of the strap (54) to the fixing area (52) in the centre of the adjustment panel. Any easily re-fixable fixing arrangement could be used in the fixing areas (52, 56), for example press-studs, or a buckle, for example snap fit buckle, arrangement.

[0028] The strap (54) will pass through a pair of the slots (48) which are vertically spaced by a pre-determined distance dependent on the vertical dimension of the adjustment panel (50). In order for a user to easily identify the correct slot (48) through which to pass the strap (54) from back to front, the pairs of slots vertically spaced by the pre-determined distance are made the same colour.

[0029] The infant carrier shown in Figure 7 comprises a support means (60) comprising two legs (62, 64) connected together by a cross-bar (66) and hingedly connected to the infant carrier. The legs are moveable between a retracted position in which they are substantially flush with the rear of the infant seat arrangement (8) (not shown) and a deployed position in which they are located at an angle to the rear of the infant seat arrangement (8) (shown in Figure 7) so as to support the weight of the infant carrier and hold the infant carrier in a position suitable for loading and unloading an infant into and from the seat.

Claims

1. An infant carrier, comprising:

first and second frame parts;
a harness arrangement fitted to the first frame part; and
an infant seat arrangement supported by the second frame part;

wherein the first and second frame parts are connected via at least one shock absorbing arrangement.

2. An infant carrier according to claim 1, wherein the harness arrangement comprises:

a central panel of the harness extending between two arms of the first frame part defining a plurality of vertically spaced holes; and
a shoulder strap panel from which upper ends of a pair of shoulder straps of the harness depend and comprising a fixing strap;

wherein the shoulder strap panel can be fitted on the central panel by passing the fixing strap in one direction through a first of the vertically spaced holes and then in an opposite direction through at second one of the vertically spaced holes.

3. An infant carrier, comprising:

first and second frame parts;
a harness arrangement fitted to the first frame part; and
an infant seat arrangement supported by the second frame part;

wherein the harness arrangement comprises a central panel of the harness extending between two arms of the first frame part defining a plurality of vertically spaced holes; and
a shoulder strap panel from which upper ends of a pair of shoulder straps of the harness depend and comprising a fixing strap;
wherein the shoulder strap panel can be fitted on the central panel by passing the fixing strap in one direction through a first of the vertically spaced holes and then in an opposite direction through a second one of the vertically spaced holes.

4. An infant carrier according to claim 3, wherein the first and second frame parts are connected via at least one shock absorbing arrangement.

5. An infant carrier according to any one of the preceding claims, wherein the harness arrangement is adapted to support the infant carrier on a person's back.

6. An infant carrier according to any one of the preceding claims, wherein at least one of the frame parts is formed from more than one frame components.

7. An infant carrier according to any one of the preceding claims, wherein the first frame part comprises a pair of side-by-side arms connected together by at least one cross-bar.

8. An infant carrier according to any one of the preceding claims, wherein the second frame part comprises a pair of side-by-side legs connected together by at least one cross-bar.

9. An infant carrier according to any one of the preceding claims, wherein the first frame part is U-shaped and comprises a lower cross-bar and the second frame part is U-shaped and comprises an upper cross-bar positioned above the lower cross-bar.

10. An infant carrier according to any one of the preceding claims, wherein the first and second frame parts

are U-shaped and the first frame part has arms which extend upwardly with respect to a central part of the U-shape and the second frame has legs which extend downwardly with respect to a central part of the U-shape.

11. An infant carrier according to any one of claims 1, 2 and 4 to 10,
wherein the first frame part is U-shaped, with upper arm portions of the first frame part bent upwardly with respect to a central portion including a central part of the U-shape and the second frame part is U-shaped, with lower leg portions of the second frame part extending downwardly with respect to a central part of the U-shape and wherein the ends of the lower legs are connected to respective arms of the first frame part, via one of the shock absorbing arrangements where the upper arm portions begin to bend upwardly.

12. An infant carrier according to any one of claims 1, 2 and 4 to 11, in which the first frame part comprises two arms and the second frame part comprises two legs and a first shock absorbing arrangement is connected via a first one of the legs and an associated first one of the arms and a second shock absorbing arrangement is connected via a second one of the legs and an associated second one of the arms.

13. An infant carrier according to claim 12, wherein each shock absorbing arrangement is fixed to the associated arm of the first frame part and is attached to the associated leg of the second frame part via a shock absorbing means.

14. An infant carrier according to claim 12 or claim 13 wherein each shock absorbing arrangement comprises a tube fixed with respect to the associated arm of the first frame part, within which is slidingly received the associated leg of the second frame part and the shock absorbing means is located within the tube and acts to absorb shock between the associated leg and arm.

15. An infant carrier according to claim 14, wherein the end of the associated leg rests upon the shock absorbing means.

16. An infant carrier according to any one of claims 12 to 15 wherein each shock absorbing arrangement comprises:

a support block attached to the associated arm of the first frame part;
a support tube extending from the support block for slidingly receiving the associated leg of the second frame part; and
a shock absorbing means located within the tube and upon which the end of the associated leg rests.

17. An infant carrier according to any one of claim 13 to 16, wherein the shock absorbing means is a compression spring.

18. An infant carrier according to any one of the preceding claims, further comprising a support means for supporting the infant carrier In a substantially upright position when the infant carrier is located on a horizontal surface.

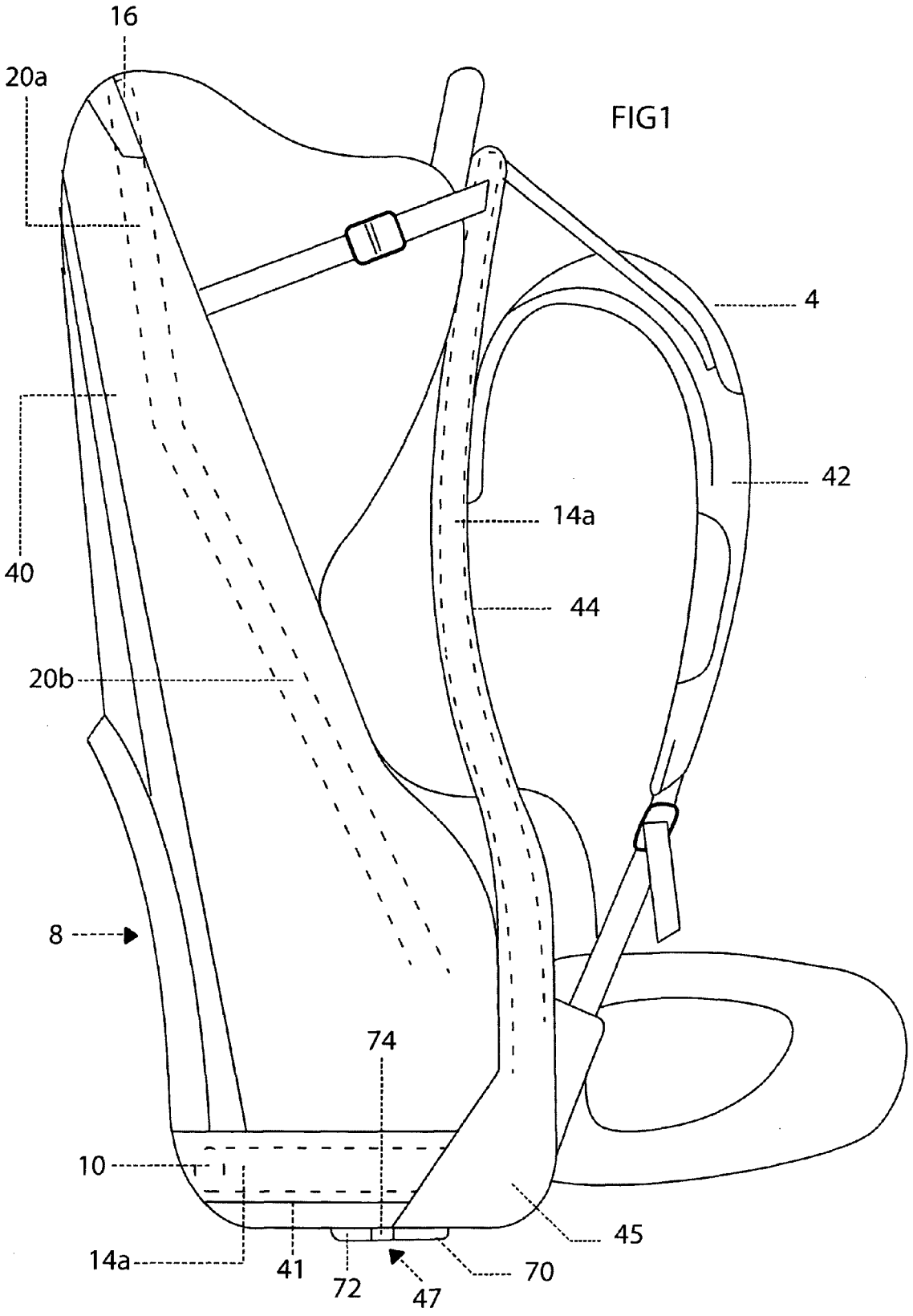
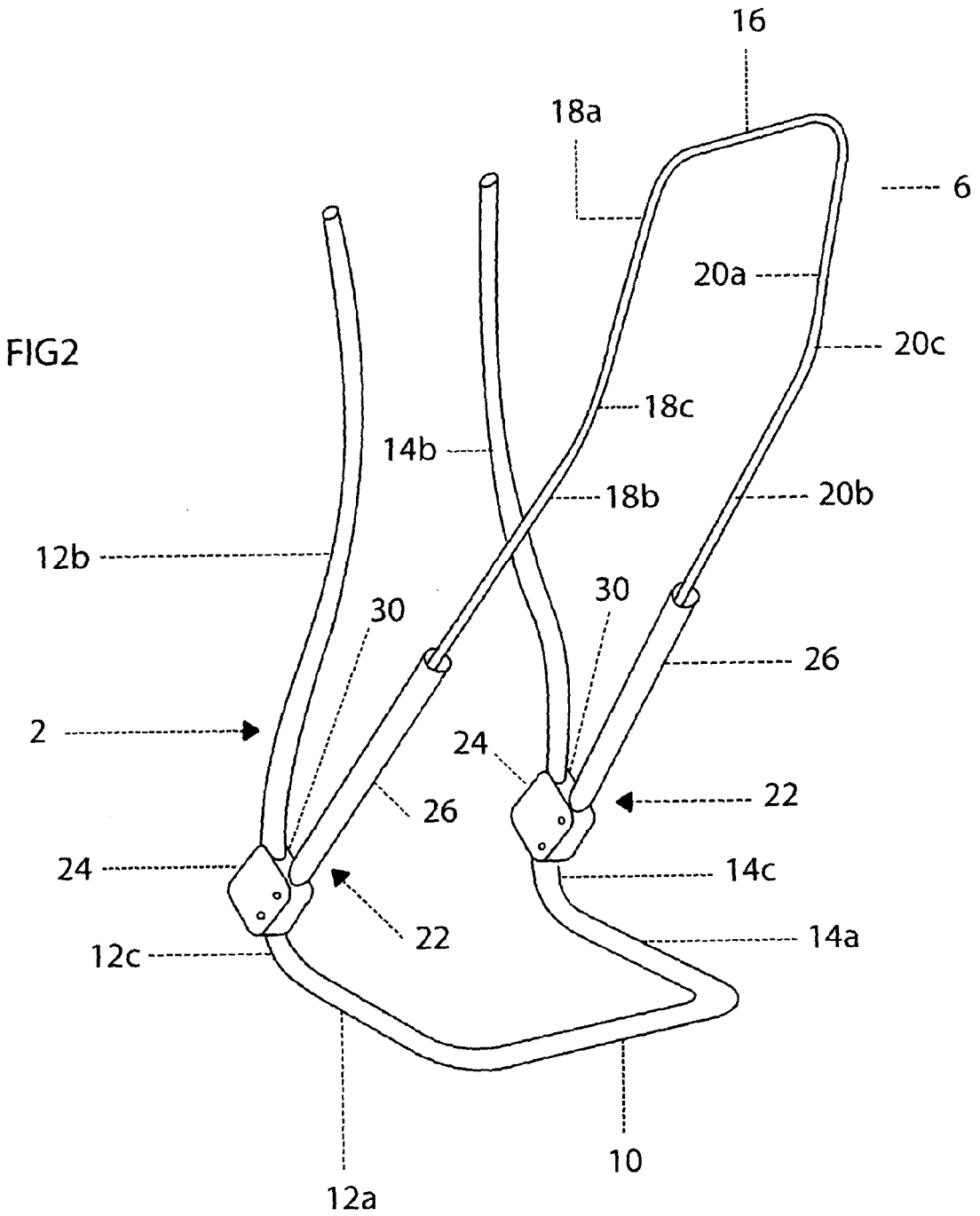


FIG1

FIG2


16
18a
6
20a
20c
18c
14b
18b
20b
12b
30
30
26
2
24
22
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24
14c
22
14a
12c
10
12a

FIG3

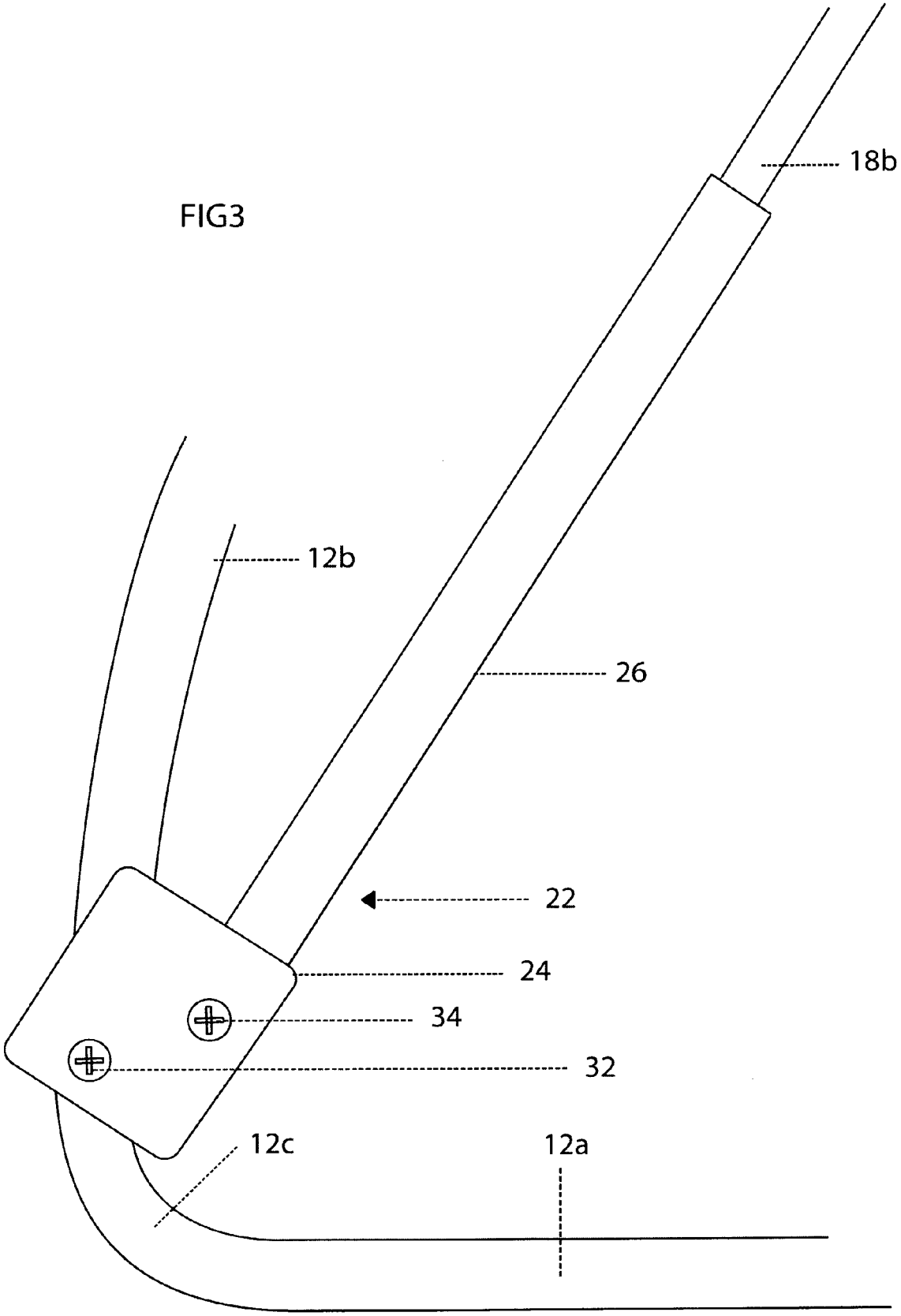


FIG4

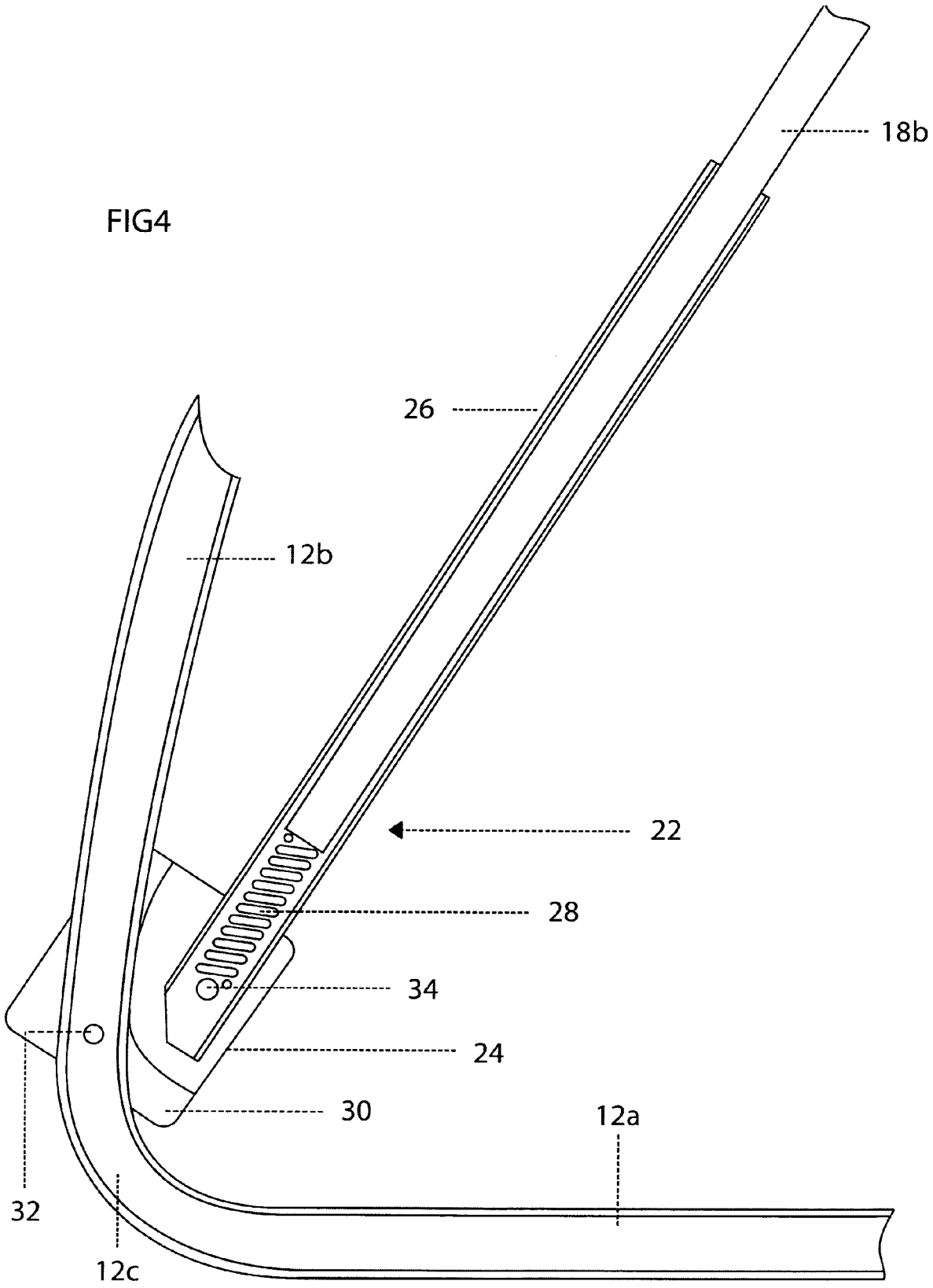


FIG5

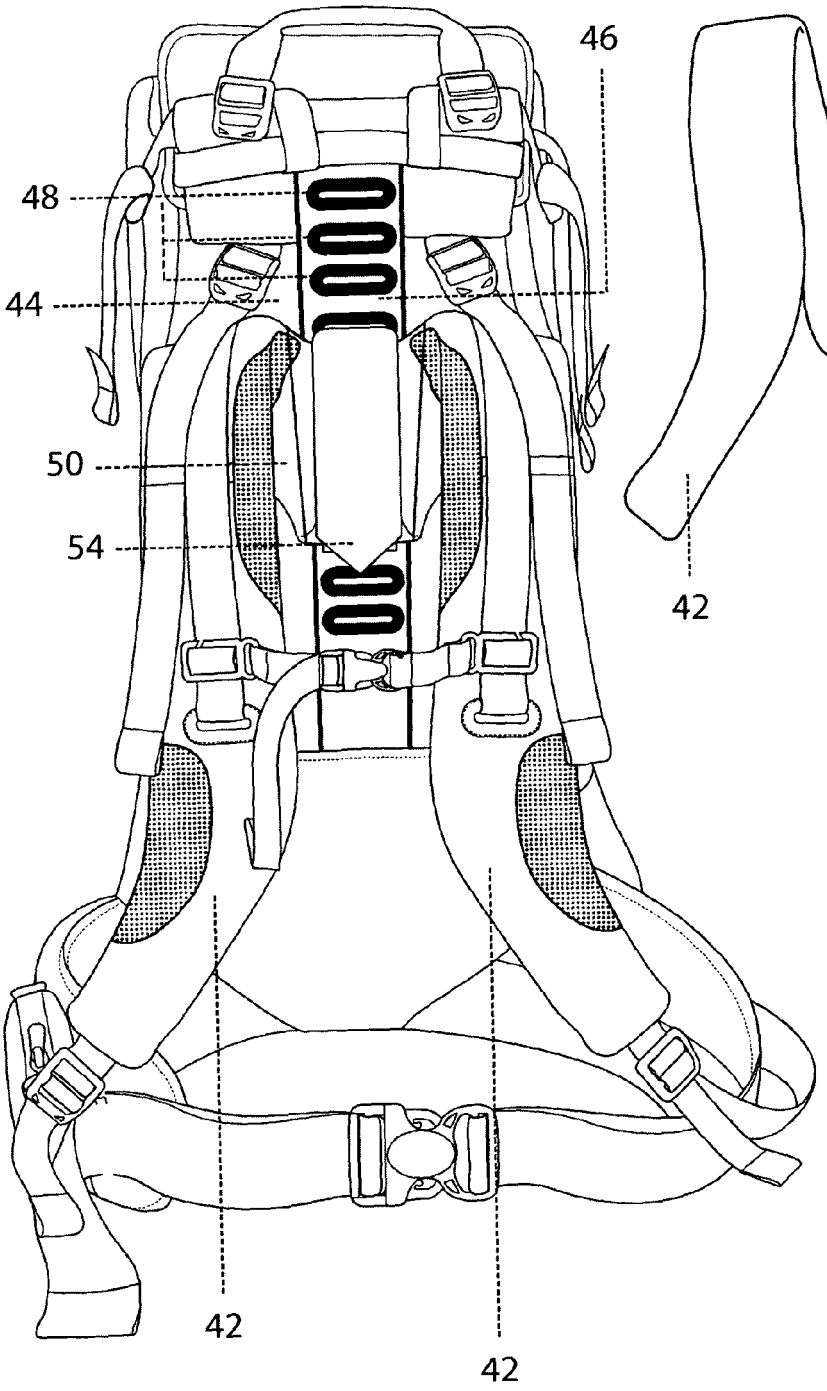


FIG6

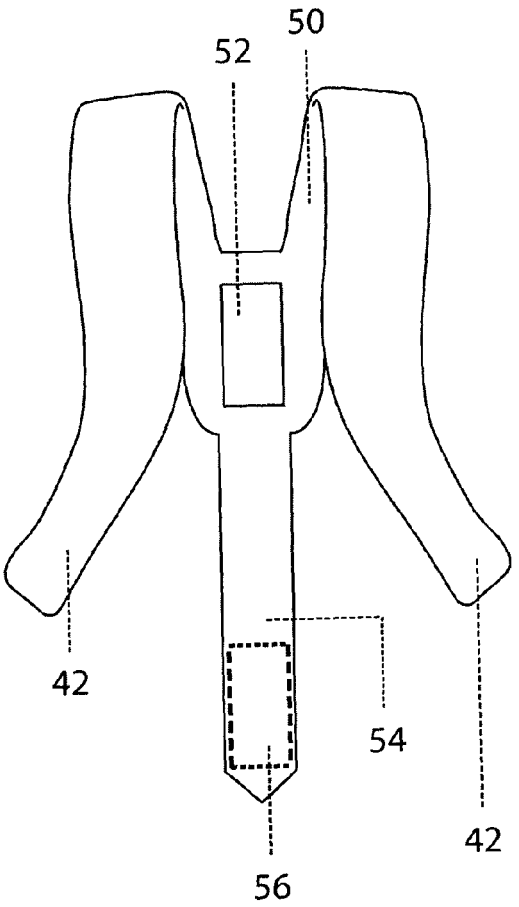
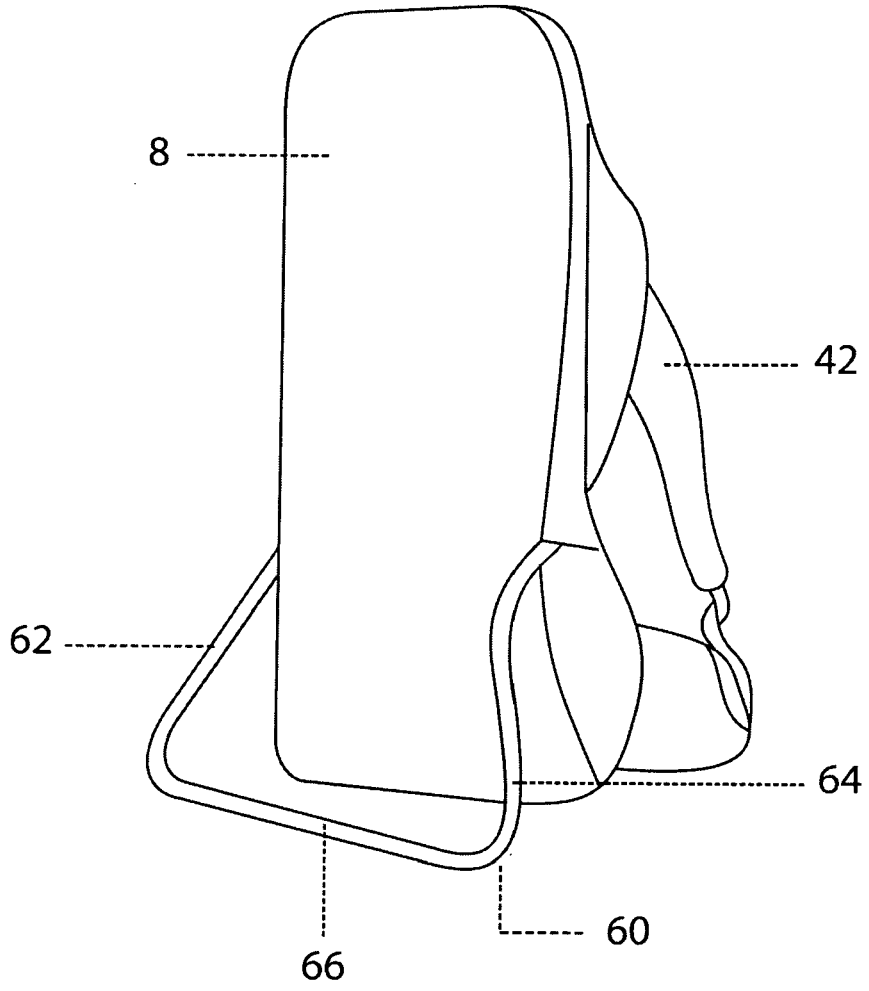


FIG 7



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EUROPEAN SEARCH REPORT

Application Number
EP 08 25 2404

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 6 619 523 B1 (DUCKWORTH DAVID G [US]) 16 September 2003 (2003-09-16) * column 6, line 6 - line 18; figure 6 *	1,5-18	INV. A47D13/02 A45F3/04
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TECHNICAL FIELDS SEARCHED (IPC)

A47D
A45F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	13 November 2008	Kus, Slawomir

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 08 25 2404

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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13-11-2008

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