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(54) Title: LIFT VEST WITH WEBBING TO REDUCE OR ELIMINATE VERTICAL SLIDING

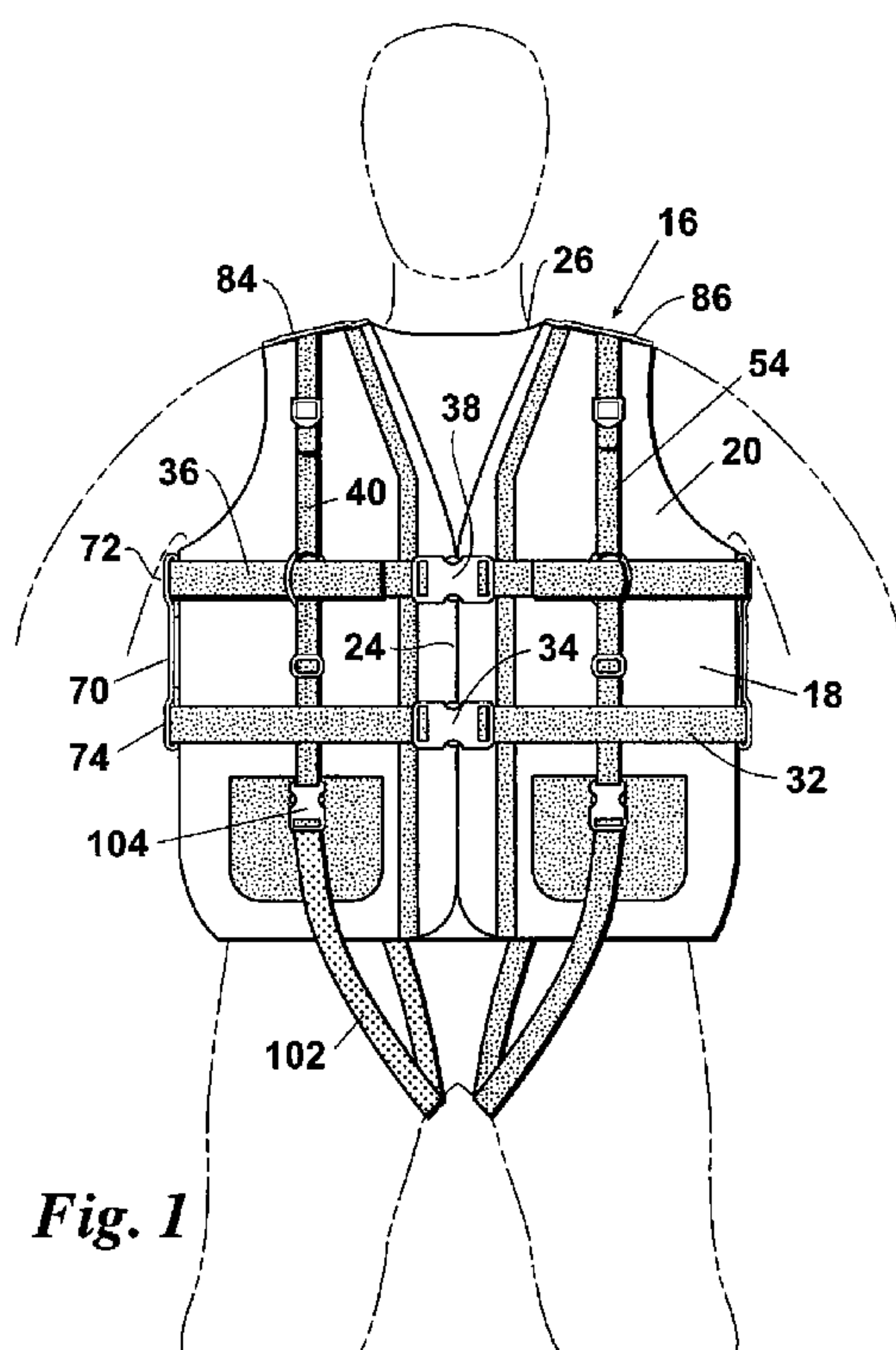


Fig. 1

(57) Abstract: A lift vest (16) includes a base garment (18) shaped to cover at least a substantial portion of upper torso of a patient, a waist belt (32) connected to the base garment (18), and a pair of crotch belts (102) removably connected to the waist belt (32). The base garment (18) may include a chest and waist belt (36/32) interconnected by cross-webbing. Pulling on one or both of the belts in any direction causes the webbing to tighten about the wearer's torso. The lift vest (16) may include a pair of knee belts (118) connected to the waist belt (32). The knee belts (118) can be fixed to the waist belt (36) or removably connected to it. The knee belt (118) may include a removable connection along its length. Other embodiments include a base garment (18) covering the upper torso below the armpits and having a single belt connected to garment (18) that provides a hand hold.

LIFT VEST WITH WEBBING TO REDUCE OR ELIMINATE VERTICAL SLIDING**BACKGROUND**

This disclosure is in the field of lift vests that enable a caregiver to assist a patient
5 wearing the vest to move from one position to another. The vests typically include a base
garment shaped to cover at least a substantial portion of the torso (chest, abdomen, and back)
of the patient and belts connected to the base garment that provide hand holds for the caregiver.
U.S. Patent No. 6,122,778 to Cohen, the contents of which are incorporated by reference
herein, provides an example.

10 The prior art lift vests work best in non-emergency situations, where there is sufficient
time to equip the patient with the vest, and when worn by patients that can bear weight. Even
when worn by weight-bearing patients, the vest may slide upwards during use, causing the top
or chest belt to move upwards towards the patient's arms.

SUMMARY

15 Embodiments of a lift vest of this disclosure include a base garment shaped to cover at
least a substantial portion of an upper torso of a patient, a waist belt connected to the base
garment, and a pair of crotch belts removably connected to the waist belt. Removable
connections may include quick-release buckles of a kind known in the art, hook-and-loop
fastener of a kind known in the art, or some combination of the two. The connections may be
20 adjustable connections.

In other embodiments, the base garment includes a chest and a waist belt interconnected
by cross-webbing. Pulling on one or both of the belts in any direction causes the webbing to
tighten about the wearer's torso.

In some embodiments, the lift vest includes a pair of knee belts connected to the waist belt. The knee belts can be fixed to the waist belt or removably connected to it. The knee belt may include a removable connection along its length.

Other embodiments of a lift vest of this disclosure include a base garment covering the
5 upper torso below the armpits and having a single belt connected to garment that provides a hand hold.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front elevation view of an embodiment of a lift vest of this disclosure.

FIG. 2 is a rear elevation view of the vest of FIG. 1.

10 FIG. 3 is a front elevation view of another embodiment of a lift vest of this disclosure.

FIG. 4 is a rear elevation view of the vest of FIG. 3.

FIG. 5 is a front elevation view of yet another embodiment of a lift vest of this disclosure.

FIG. 6 is a side elevation view of the vest of FIG. 5.

15 FIG. 7 is a front elevation view of still yet another embodiment of a lift vest of this disclosure.

FIG. 8 is a rear elevation view of the vest of FIG. 7.

FIG. 9 is a front elevation view of another embodiment of a lift vest of this disclosure.

FIG. 10 is a rear elevation view of the vest of FIG. 9.

DETAILED DESCRIPTION

In embodiments of a lift vest of this disclosure, the vest includes a garment with a lifting structure that helps transfer a caregiver's lifting force to the wearer's torso so the wearer may be lifted or moved. For purposes of this disclosure, torso refers to an area generally containing the chest, abdomen, and back. Upper torso means the chest and upper back (opposite that of the chest). Lower torso means the abdomen and the lower back (opposite that of the abdomen). A lift vest means a device worn by a patient as a clothing item and configured for safe patient handling and mobility during transfer and repositioning of the patient in any direction: front, back, or side. The vest may be made of fabric suitable for clothing items. The vest is foldable and rollable (unlike vests that contain flotation)

Referring to the drawings, embodiments of a lift vest 16 of this disclosure include a basic fabric garment 18 that is similar in many respects to a sleeveless vest but includes a lifting structure surrounding and forming a part of the vest that provides numerous hand hold places that enable a caregiver to assist the vest wearer. The garment 18 may include sleeve holes 20, a front 24 that may be closeable open front, a neck opening 26, and may be sized to cover the wearer's torso. The neck opening 26 may be a V-shape or rounded neck opening. In other embodiments, the garment 18 is a poncho-style garment (no closeable open front). In some embodiments, the garment 18 does not include sleeve holes 20 and is intended to only cover the upper torso below the armpits. The garment 18 may include a fire-resistant fabric of a kind known in the art.

The lifting structure may include one or more belts 32, 36, 40, 54 made of webbing and received by respective loops 72, 74, 84, 86 connected to the garment 18. A double belt loop 70 may form loops 72, 74. In some embodiments, the garment 18 includes only a chest belt 36. Waist belt 32 may include a single or double adjustable buckle 34 so that the length of waist belt 32 can be adjusted to snugly but comfortably fit around the waist of the wearer. Similarly,

chest belt 36 may include a single double adjustable buckle 38 so that the length of the chest belt 36 can be adjusted to snugly but comfortably fit around the upper torso portion of the patient. Waist belt 32 and chest belt 36 may be arranged horizontal and parallel to each other. In embodiments, the vest 16 may include shoulder straps 40, 54 the same or similar to those as disclosed in US 6,122,778 to Cohen, the contents of which are incorporated by reference herein. The straps 40, 54 may include a shoulder lift strap secured to the straps 40, 54. Loops 84, 86 may serve as the lift strap.

Embodiments of the lift vest 16 may include a pair of crotch belts 102 removably connected to the waist belt 32 by connectors 104. Connectors 104 may include quick-release buckles of a kind known in the art, hook-and-loop fastener of a kind known in the art, or some combination of the two. The connections may be adjustable connections. The crotch belts 102 help prevent the vest 16 from sliding upwards during vertical lifting movements. This is especially helpful when the wearer cannot bear her or his own weight. The crotch belts 102 may be crossed. See FIGS. 3 & 4. In some embodiments, the waist and chest belts 32, 36 may be configured like that shown in FIGS. 7 & 8 or 9 & 10.

Referring now to FIGS. 5-6, embodiments of the lift vest 16 include a vertical belt 112 made of webbing that is fixedly or removably connected at one end 114 to the waist belt 32 and at another end 116 to a knee belt 118 (also made of webbing). The removable connections may be made using connectors the same as or similar to connectors 104. In embodiments, knee belt 118 is an adjustable belt and may include a hook-and-loop fastener. Similar to the crotch belts 102, knee belts 118 help prevent the vest 16 from sliding upwards during vertical lifting movements. In some embodiments, the waist and chest belts 32, 36 may be configured like that shown in FIGS. 7 & 8 or 9 & 10.

Referring now to FIGS. 7 & 8, embodiments of the lift vest 16 include a chest belt 36 made of webbing that overlaps on itself — crossing on front 23 of the garment 18 — ending

with a half-loop 27 located along the back 25 of the garment 18 that serves as a handle. The garment 18 is sized to cover the upper torso below the armpits and opens and closes with a single buckle 38. The vest 16, which may be used in emergency situations like those encountered in police, fire, and rescue operations, self-tightens when the handle is pulled, preventing the vest 16 from slipping off no matter how much force is applied during a drag or lift.

Referring now to FIGS. 9 & 10, embodiments of the lift vest 16 include interconnected chest and waist belts 32, 36, with the belts 32, 36 made of webbing and crossing one another along a back 25 of the garment. When a belt 32, 36 is pulled in any direction, the webbing tightens the garment 18 around the torso of the wearer, preventing the vest 16 from sliding in a vertical direction. In some embodiments, the vest 16 may also include crotch belts 102 or knee belts 118. See FIGS. 5 & 6.

While embodiments of the lifting vest have been described and illustrated, modifications apart from those shown or suggested here may be made without departing from the scope of the following claims. The terms that are employed in the claims draw their meaning from the use of the terms in the specification. The same terms employed in the prior art may be broader in meaning than specifically employed here. Whenever there is a question between the broader definition of such terms used in the prior art and the more specific use of the terms herein, the more specific meaning is meant.

CLAIMS

1. A lift vest (16) including a base garment (18) providing hand holds connected to the base garment (18) by which a caregiver may assist a wearer of the lift vest (16) in moving from one position to another or in standing or walking, the lift vest (16) comprising:
- 5 a chest belt (36);
- a waist belt (32); and
- a pair of crotch belts (102), each crotch belt (102) of the pair including two ends removably connected to the waist belt (32).
- 10
2. The lift vest (16) of claim 1, further comprising:
- the chest and waist belt (36/32) interconnected and crossing over one another along a back of (25) the base garment (18).
- 15
3. A lift vest (16) including a base garment (18) providing hand holds connected to the base garment (18) by which a caregiver may assist a wearer of the lift vest (16) in moving from one position to another or in standing or walking, the lift vest (16) comprising:
- 20 a chest belt (36);
- a waist belt (32); and
- a pair of vertical belts (112), each vertical belt (112) of the pair connected at one end to the waist belt (32); and
- a pair of knee belts (118), each knee belt (118) of the pair connected to another end of the vertical belt (112).
- 25

4. The lift vest (16) of claim 3, further comprising:
the chest and waist belt (36/32) interconnected and crossing over one
another along a back (25) of the base garment (18).
5. The lift vest (16) of claim 3, further comprising:
the one end of each vertical belt (112) connected to the waist belt (32)
including a removeable connector (104).
6. The lift vest (16) of claim 3, further comprising:
the another end of each vertical belt (112) connected to the knee belt
(118) including a removeable connector (104).
7. The lift vest (16) of claim 3, further comprising:
each knee belt (118) being an adjustable knee belt.
8. A lift vest (16) including a base garment (18) providing hand holds connected
to the base garment (18) by which a caregiver may assist a wearer of the lift vest
(16) in moving from one position to another or in standing or walking, the lift
vest (16) comprising:
a chest belt (36);
a waist belt (32);
the chest and waist belt (36/32) interconnected and crossing over one another
along a back (25) of the base garment (18).

9. The lift vest (16) of claim 8, further comprising:

a pair of crotch belts (102), each crotch belt (102) of the pair including
two ends removably connected to the waist belt (32).

10. The lift vest (16) of claim 8, further comprising:

a pair of vertical belts (112), each vertical belt (112) of the pair
connected at one end to the waist belt (32); and
a pair of knee belts (118), each knee belt (118) of the pair connected to
another end of the vertical belt (112).

11. The lift vest (16) of claim 10, further comprising:

the one end of each vertical belt (112) connected to the waist belt (32)
including a removeable connector (104).

12. The lift vest (16) of claim 10, further comprising:

the another end of each vertical belt (112) connected to the knee belt
(118) including a removeable connector (104).

13. The lift vest (16) of claim 10, further comprising:

each knee belt (118) being an adjustable knee belt (118).

14. A lift vest (16) including a base garment (18) providing hand holds connected
to the base garment (18) by which a caregiver may assist a wearer of the lift vest
(16) in moving from one position to another or in standing or walking, the lift
vest (16) comprising:

a buckle (38);

a single belt passing through the buckle (38) and crossing over itself on

a front (23) of the base garment (18) and ending in a loop (27)

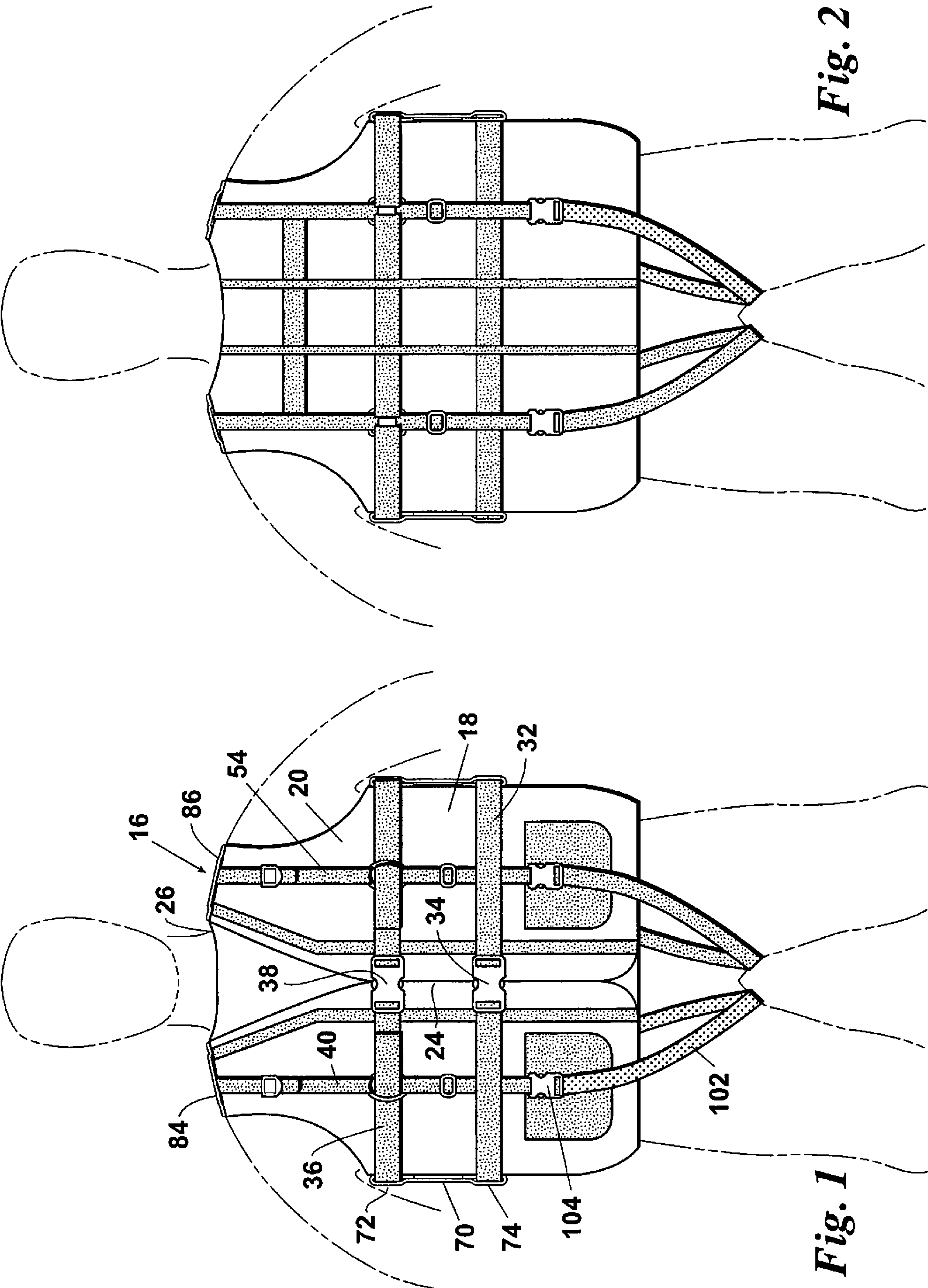
on a back (25) of the base garment (18);

5 the base garment (18) having no sleeve holes;

wherein when a pulling force is applied to the loop (27), the single belt

compresses the base garment (18).

15. The lift vest (16) of claim 14, the loop (27) running parallel to another portion
10 of the single belt on the back (25) of the base garment (18).



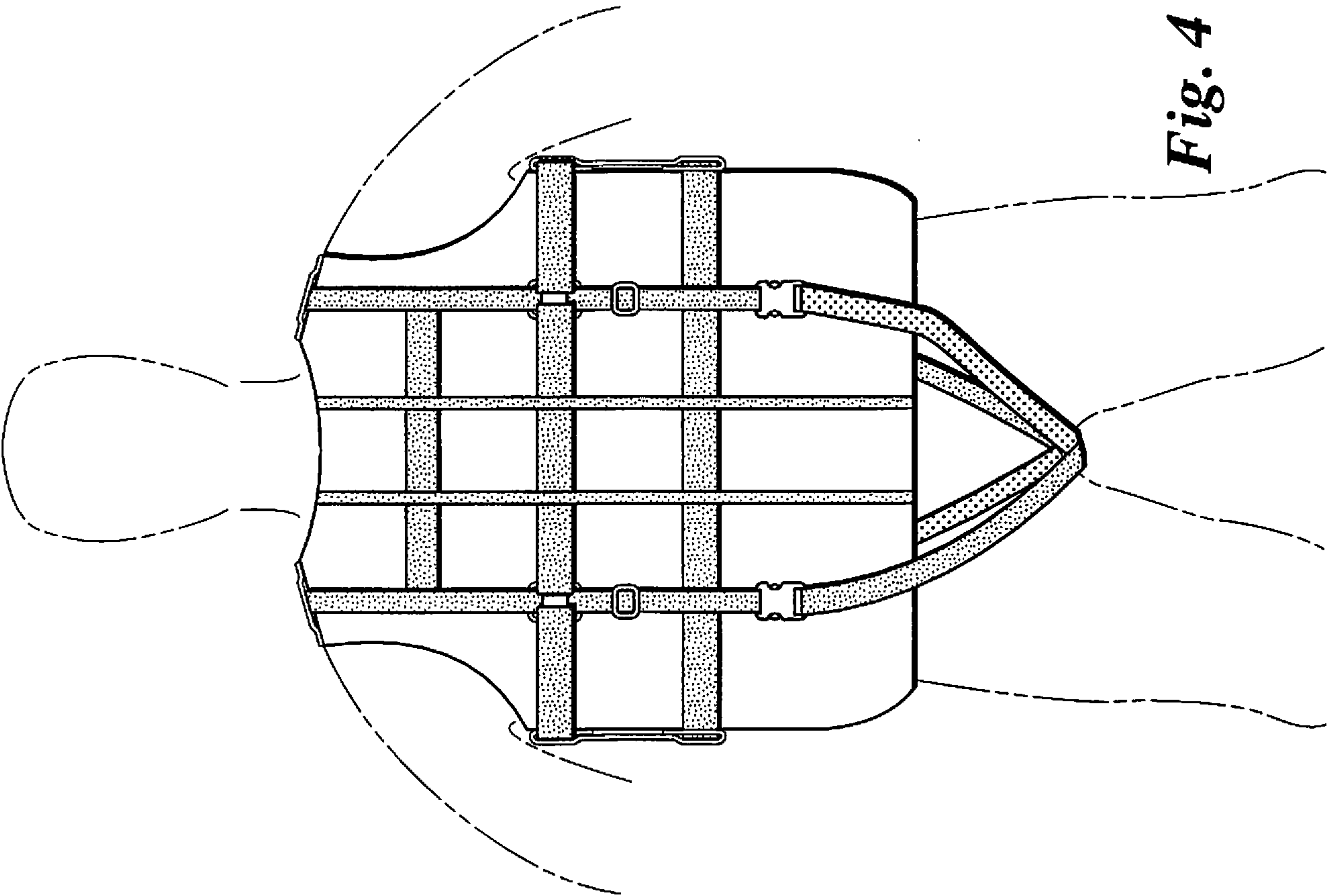


Fig. 4

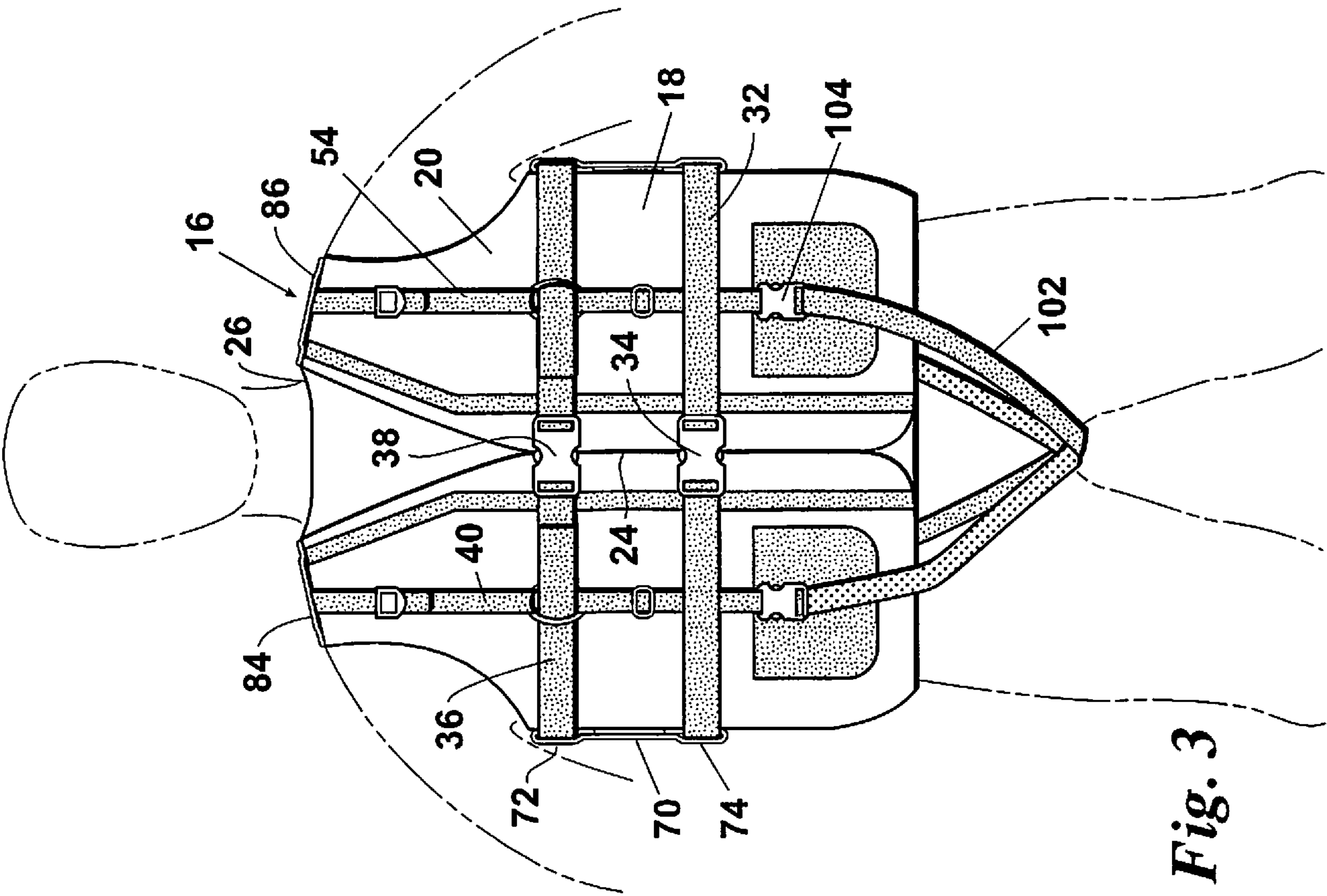


Fig. 3

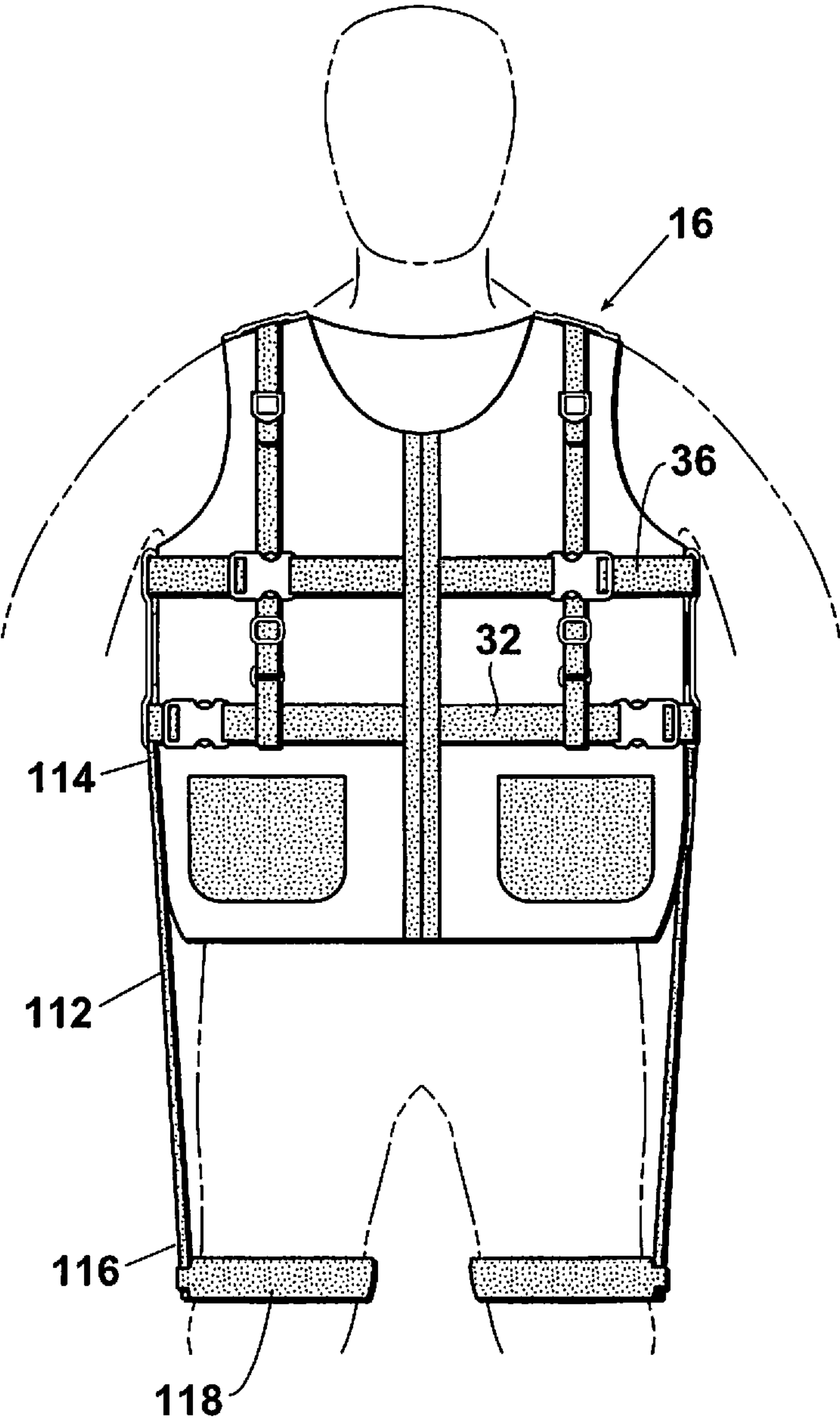


Fig. 5

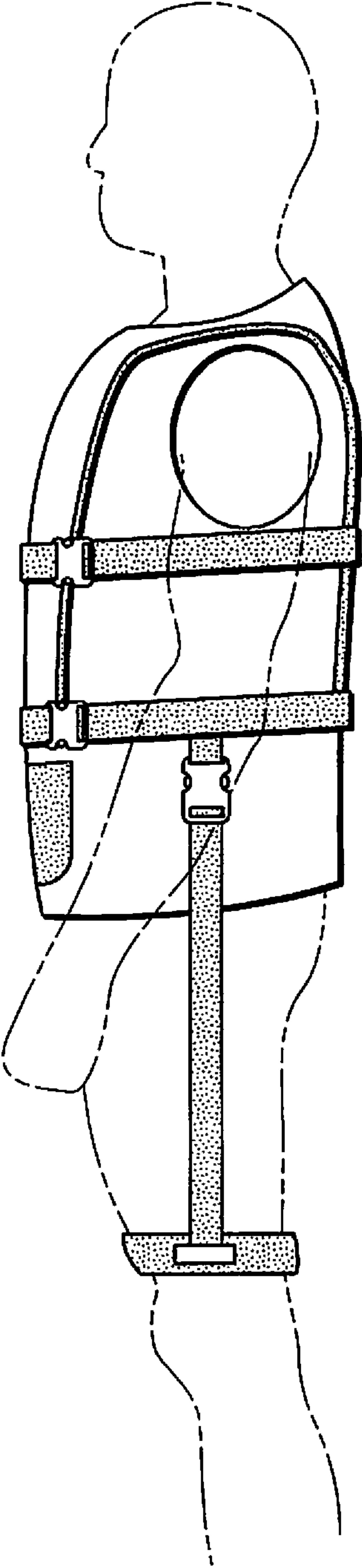


Fig. 6

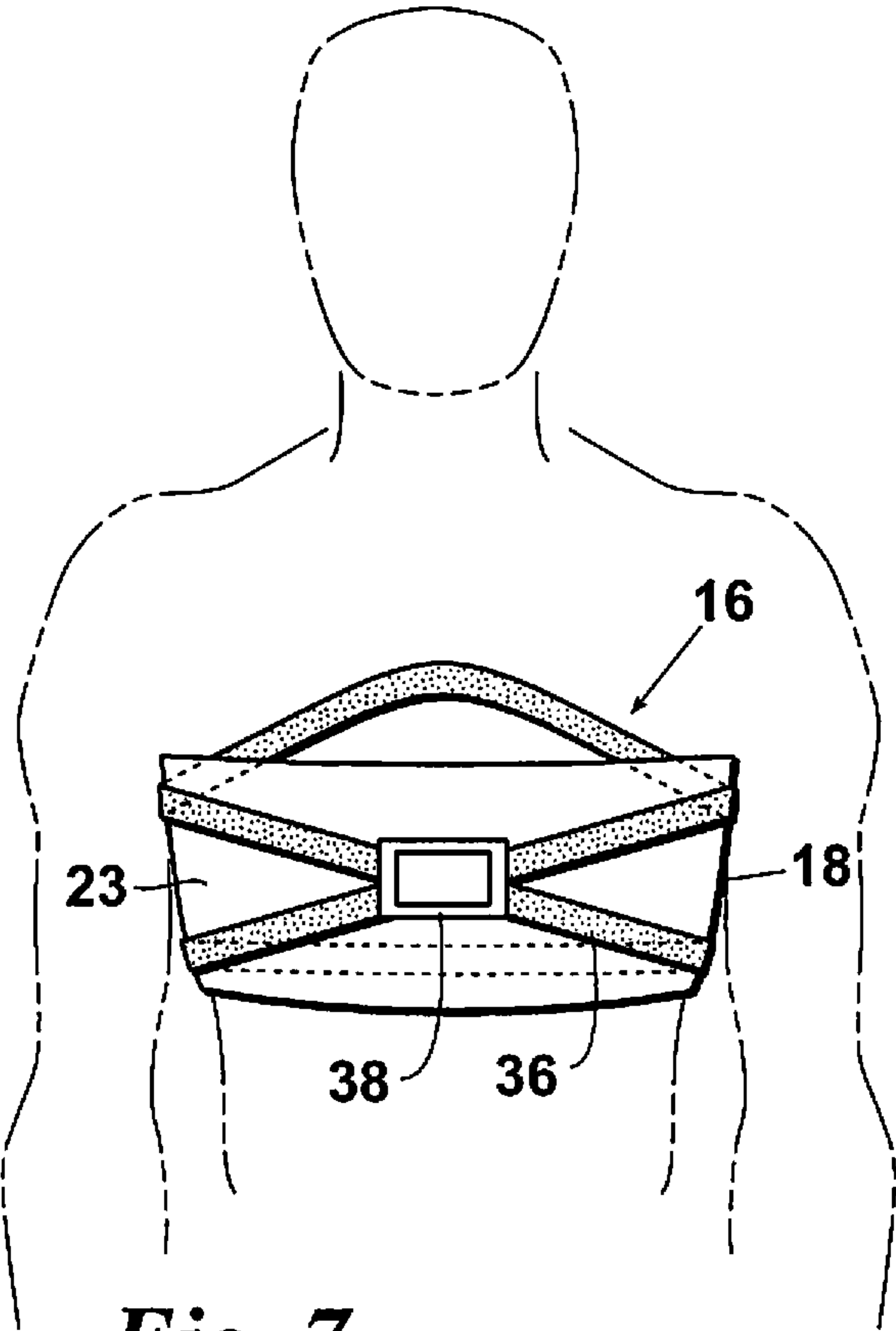


Fig. 7

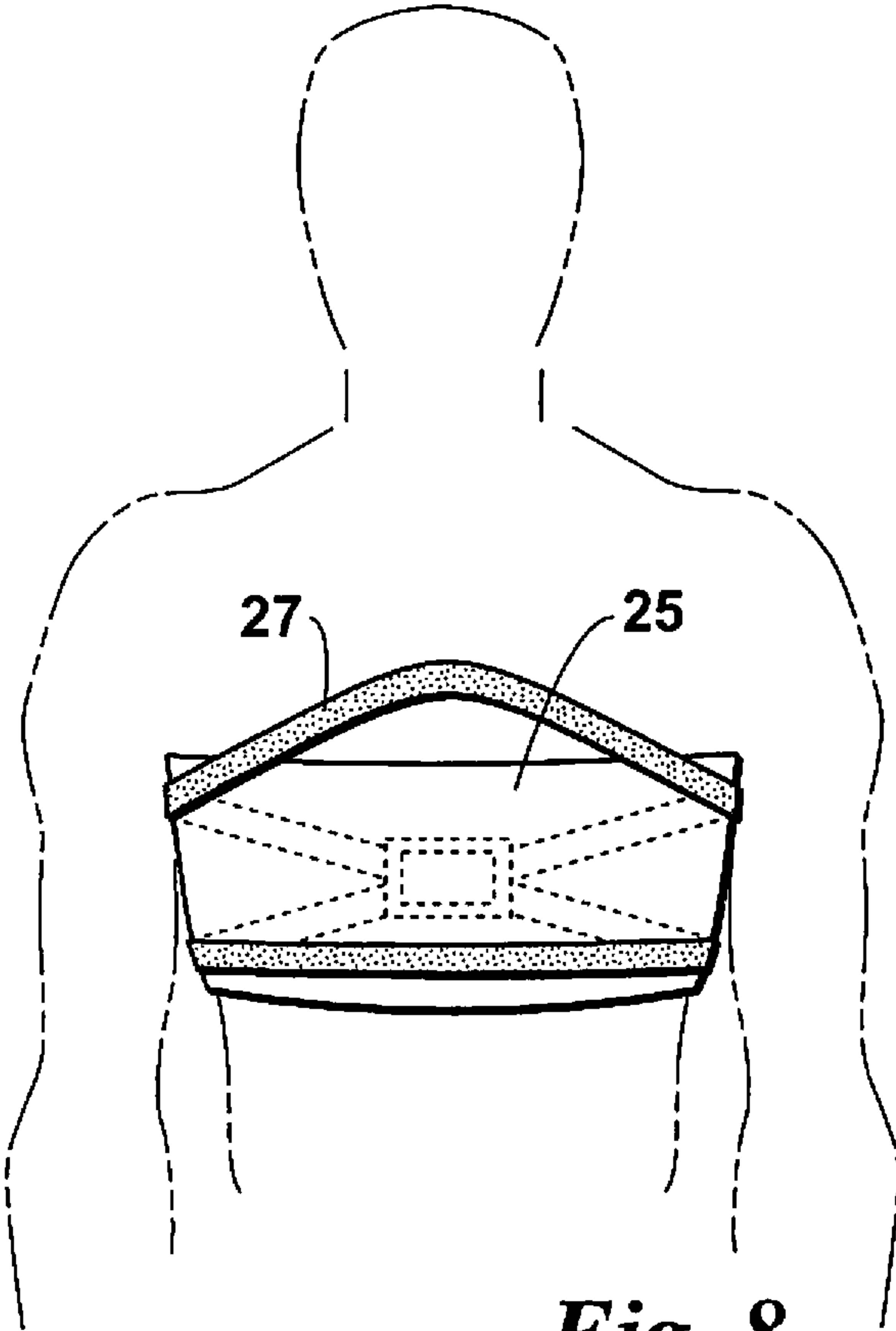


Fig. 8

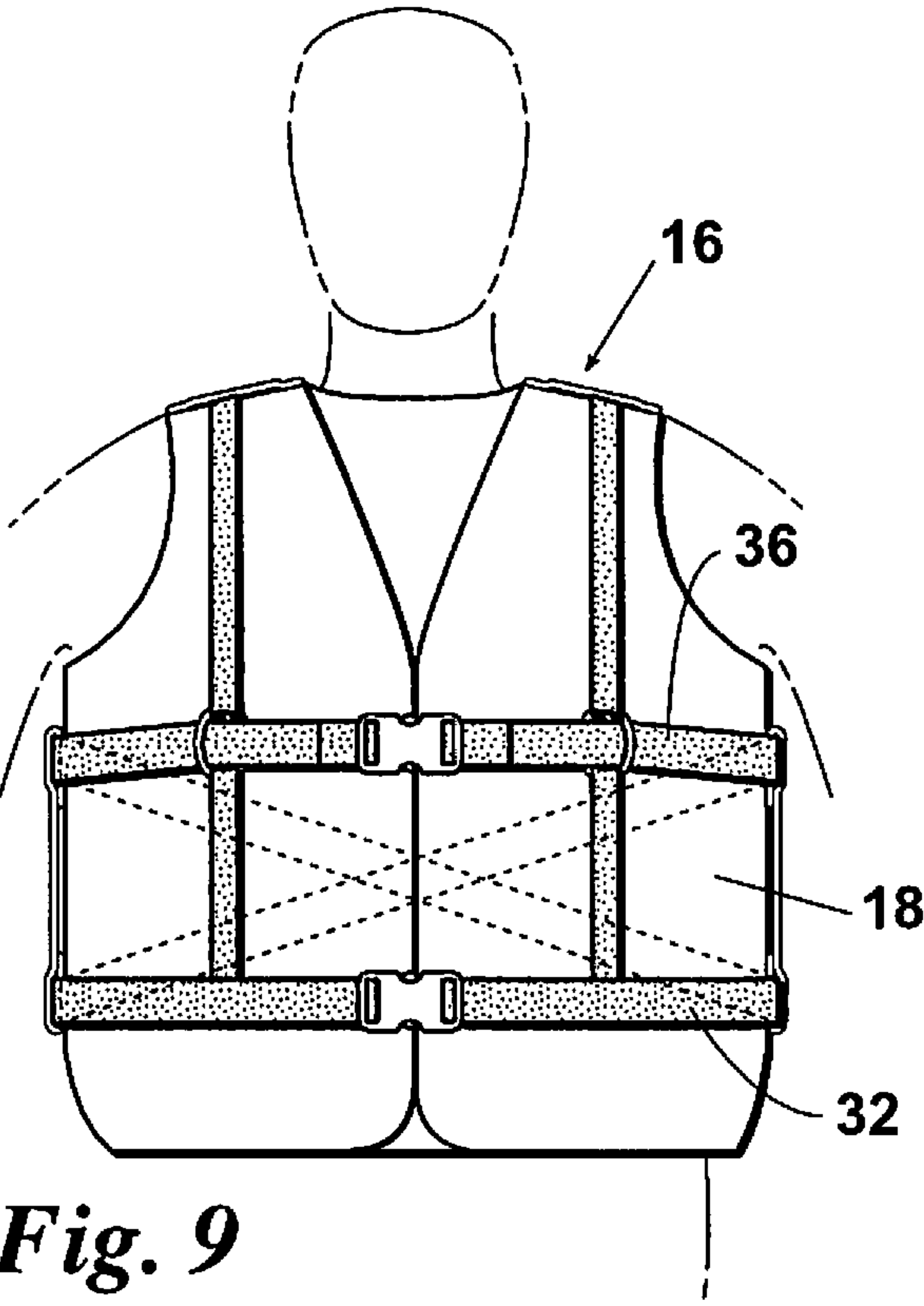


Fig. 9

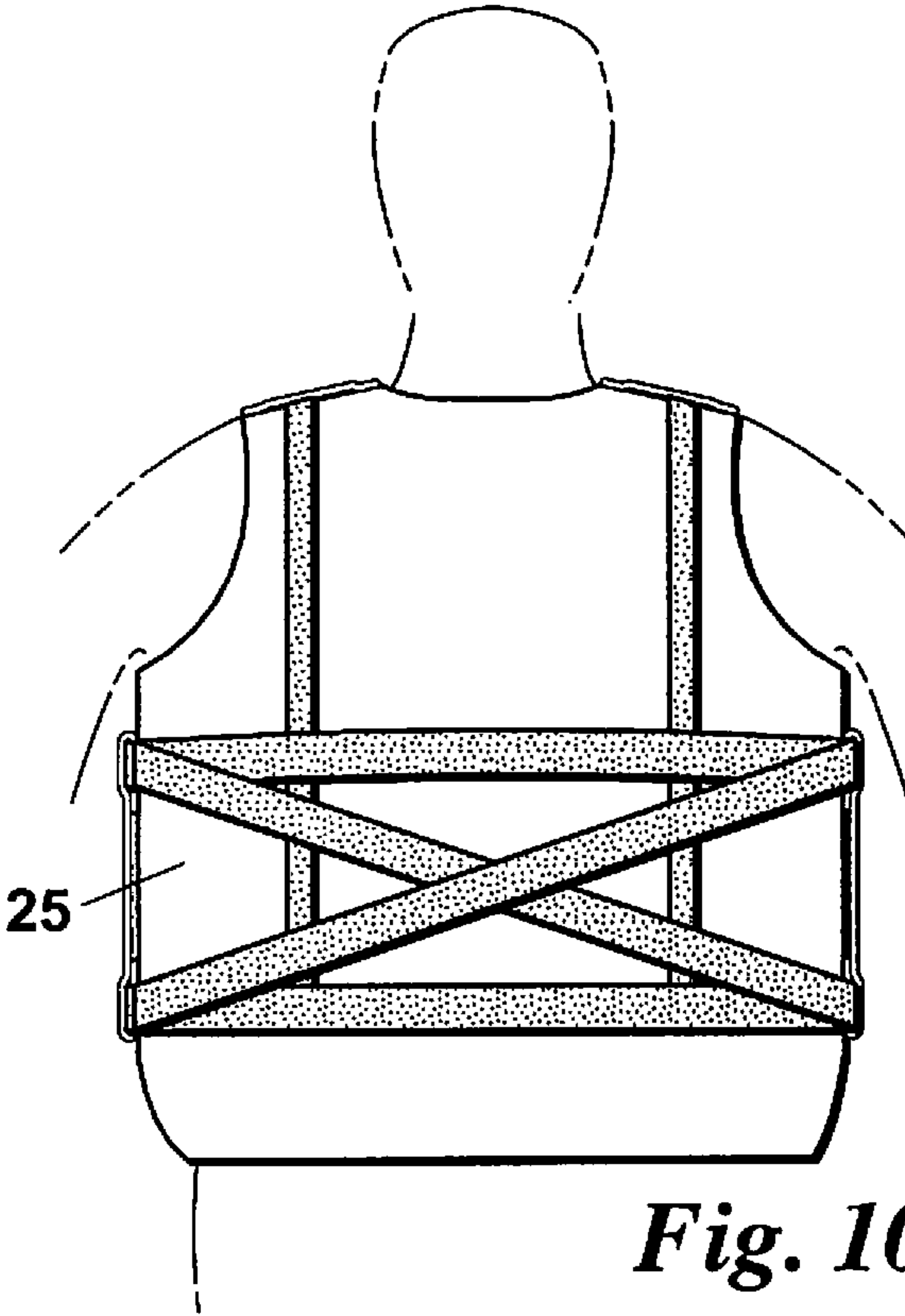


Fig. 10

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2020/058786

A. CLASSIFICATION OF SUBJECT MATTER

INV. A41D13/00 A41D13/12 A41D1/04 A41F9/00 A61G7/10
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A41D A61G A41F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2004/163156 A1 (SCHWEER JAMES R [US]) 26 August 2004 (2004-08-26) abstract; figures 4A-24B paragraph [0095] - paragraph [0097] paragraph [0104] - paragraph [0132] -----	1-13
X	US 2004/128734 A1 (JORDAN OMAR P [US]) 8 July 2004 (2004-07-08) abstract; figures 1-4 paragraph [0051] - paragraph [0089] -----	1,2,8,9
X	WO 2014/087388 A2 (MARTELLUS PTY LTD [AU]) 12 June 2014 (2014-06-12) abstract; figures 1-8 paragraph [0077] - paragraph [0104] ----- -/-	3,7



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

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Date of the actual completion of the international search

12 February 2021

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24/02/2021

Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2020/058786

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 10 420 689 B1 (FOSTER CATHY J [US] ET AL) 24 September 2019 (2019-09-24) abstract; figures 1-5 -----	8
X	WO 2005/034677 A1 (SPORTIV TECH LAB PTE LTD [SG]; ANDY CHAW CHONG SING [SG]) 21 April 2005 (2005-04-21) abstract; figures 1,2 -----	14,15

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2020/058786

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2004163156	A1	26-08-2004	NONE

US 2004128734	A1	08-07-2004	AT 461635 T 15-04-2010
		AU 2003297468 A1	14-07-2004
		EP 1589838 A1	02-11-2005
		US 2004128734 A1	08-07-2004
		WO 2004056222 A1	08-07-2004

WO 2014087388	A2	12-06-2014	NONE

US 10420689	B1	24-09-2019	NONE

WO 2005034677	A1	21-04-2005	SG 119201 A1 28-02-2006
		WO 2005034677 A1	21-04-2005
