



(51) International Patent Classification:

A61G 1/003 (2006.01) A62B 3/00 (2006.01)
A61G 1/01 (2006.01) A61G 1/044 (2006.01)

(21) International Application Number:

PCT/EP2016/051229

(22) International Filing Date:

21 January 2016 (21.01.2016)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

15152559.9 26 January 2015 (26.01.2015) EP

(72) Inventor; and

(71) Applicant : VAN DER ZWAAN, Paulus, Johannes,
Wilhelmus, Maria [NL/NL]; Kerkpad 16, 1261 TJ Blaricum (NL).

(74) Agent: VAN HEUVEL, Margaretha; P.O. Box 2350,
1200 CJ Hilversum (NL).

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

(54) Title: A METHOD OF RESCUING A SUBJECT POSITIONED IN A VEHICLE AND A RESCUE DEVICE

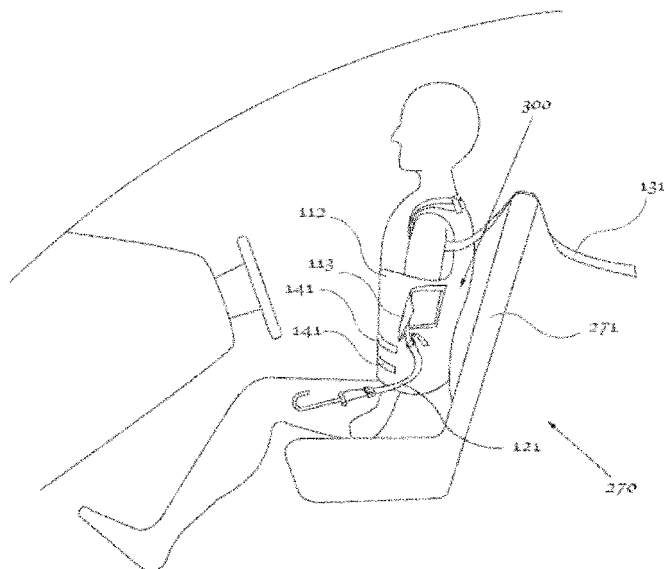


Fig. 3

(57) Abstract: A rescue device for moving a subject comprising i) a brace member for securing the arms and the torso of the subject together, the brace member comprising i. a central section; ii. a first and second lateral section, and iii. fastening means; wherein the brace member is capable of forming a loop for securing the arms and the torso of the subject together by fastening the first lateral section to the second lateral section with the fastening means, and ii) a ribbon member pair for moving and/or stabilizing a subject wearing the brace member when said rescue device is in use, the ribbon member pair comprising i. a first ribbon member having a first portion connected to the brace member; and ii. a second ribbon member having a second portion connected to the brace member.

A METHOD OF RESCUING A SUBJECT POSITIONED IN A VEHICLE AND A RESCUE DEVICE

FIELD OF THE INVENTION

5

The invention is in the field of rescue devices for taking out a subject seated in the cabin of a vehicle of said cabin.

BACKGROUND OF THE INVENTION

10

In a vehicle, for example a car or a truck, a subject can get trapped within the cabin after a collision of the vehicle. In such circumstance, the cabin is usually deformed due to the collision and the subject to be rescued may be unconscious in a position wherein a path to get said subject out of the vehicle is blocked.

15

US7360543 discloses a patient assist lift (PAL) device which enables rescuers to lift and mobilize an injured person and reduces or eliminates risks of injury said rescuers or injured person during mobilization. The PAL comprises ergonomic handles and straps.

20

A problem is that the rescuers do not have much room to operate within the cabin, making it hard for them to maneuver the subject's body when taking said subject's body out of the cabin.

It is an object of the invention to alleviate the above mentioned problem.

SUMMARY OF THE INVENTION

25

A first aspect of the invention relates to a method of rescuing a subject positioned in a vehicle, wherein a rescue device is used for moving the subject, the rescue device comprising:

30

- i) a brace member for securing the arms and the torso of the subject together, the brace member comprising
 - i. a central section for holding the back of a subject when in use;
 - ii. a first lateral section extending from the central section; and
 - iii. a second lateral section extending from the central section opposite to the first lateral section; and
- iv. fastening means;

35

wherein said brace member is capable forming a loop for securing the arms and the torso of the subject together by fastening the first lateral section to the second lateral

section with the fastening means, the loop defining a longitudinal direction and a perimeter, and wherein said fastening means is capable of adjusting the perimeter of the loop; and

ii) a ribbon member pair for moving and/or stabilizing the subject wearing the brace member, the ribbon member pair comprising

i. a first ribbon member having a first portion connected to the brace member; and

ii. a second ribbon member having a second portion connected to the brace member;

wherein the first ribbon member and the second ribbon member both comprise anchoring means for anchoring the first ribbon member and the second ribbon member to a fixed element of the cabin of the vehicle; and wherein the method comprises the steps of

- placing the rescue device between the subject and the backrest of the seat such that the central section of the brace member is facing the back of the torso of the subject;

- fastening the first lateral section and the second lateral section together by the fastening means to form the loop extending in the longitudinal direction along the torso of the subject to secure the arms and the torso of said subject together; and

- moving and/or stabilizing the subject by pulling at least one of the first ribbon member and the second ribbon member of the ribbon member pair in a direction transverse to the longitudinal direction of the loop;

wherein the method comprises the step of stabilizing the subject by anchoring said anchoring means to a fixed element of the vehicle.

A second aspect of the invention relates to a rescue device for moving a subject in a vehicle comprising

i) a brace member for securing the arms and the torso of the subject together, the brace member comprising

i. a central section for holding the back of a subject when in use;

ii. a first lateral section extending from the central section; and

iii. a second lateral section extending from the central section opposite to the first lateral section;

iv. fastening means; and

wherein said brace member is capable forming a loop for securing the arms and the torso of the subject together by fastening the first lateral section to the second lateral section with the fastening means, the loop defining a longitudinal direction and a

perimeter, and wherein said fastening means is capable of adjusting the perimeter of the loop; and

ii) a ribbon member pair for moving and/or stabilizing a subject wearing the brace member, the ribbon member pair comprising

5 i. a first ribbon member having a first portion connected to the brace member; and

ii. a second ribbon member having a second portion connected to the brace member;

wherein the first ribbon member and the second ribbon member both comprise

10 anchoring means for anchoring the first ribbon member and the second ribbon member to a fixed element of the cabin of the vehicle

wherein the first ribbon member and the second ribbon member also comprise

- means for adjusting the length of said first ribbon member and second ribbon member between the anchoring means and the corresponding first portion and

15 second portion; and

- means to detach said ribbon members from the brace member.

DETAILED DESCRIPTION OF THE INVENTION

20 A first aspect of the invention concerns a method for rescuing a subject positioned in a vehicle according to claim 1. The method makes use of a rescue device as recited in claim 1.

A subject present in the cabin of a vehicle in a first position, for instance a position incurred by an accident, in general a seated position, can be maneuvered by
25 rescuers using the rescue device, even when said rescuers are outside said cabin. Once the rescue device is placed between the subject and the backrest of the seat, the brace member of the rescue device is formed in a loop, in general having cylindrical shape, by fastening the first lateral section and the second lateral section of the brace member. In this way, the loop defines a longitudinal direction along which the arms and
30 the torso of the subject are wrapped together to secure them. Then, said subject can be moved from the first position to any desired second position by pulling at least one of the first ribbon member and the second ribbon member of the ribbon member pair. For example, said subject can be moved forward to keep his torso and arms away from the backrest of the seat wherein said subject is seated if said backrest is to be cut off.
35 Alternatively or additionally, the subject can be moved laterally to keep said subject away from a door to be cut off. Besides, once the subject has been moved to the second position, the arms and the torso of said subject can be stabilized, meaning that

the subject's body remains in said second position, for example by continuously pulling at least one of the ribbon members. Further, in the method the first ribbon member and/or the second ribbon member may extend through the openings of the windows of the vehicle and consequently the rescuers need not have to operate within the cabin to
5 move the subject to and/or to stabilize the arms and the torso of the subject in the second position. In order to better control the movement and/or stabilization process, it is preferred to pull both ribbon members at the same time.

Since the loop of the brace member secures the arms and the torso of the subject together, the risk of movement of the arms relative to the torso when the
10 subject is being moved is reduced. Thus, the subject may be moved easily because the risk of bumping of said arms against different elements present in the cabin is reduced. Further, when the subject's body is stabilized in the second position, the risk of injuring said subject is also reduced when an element of the cabin, for example the backrest or the door needs to be cut off.

15 The ribbon members work as a ribbon member pair, allowing for a controlled movement of the subject wearing the rescue device. In general, the first portion and the second portion of the ribbon members are symmetrically connected to the brace member with respect to a plane of symmetry in the longitudinal direction of the loop.

It is preferred that the first lateral section and the second lateral section
20 comprise the fastening means and that the first ribbon member and the second ribbon member are hingedly connected to the central section of the brace member for pivoting said ribbon members about the longitudinal direction of the loop. In this way, the load that the ribbon members apply to the brace member when the subject is being pulled to the second position and/or stabilized in said second position is mainly applied to the
25 central section, and the risk of accidentally opening of said fastening means is reduced. As consequence, Velcro may advantageously be used, which allows for a cheap, quick and easy fastening of the first lateral section and the second lateral section.

The at least one of the first ribbon member and the second ribbon member of the ribbon member pair comprises anchoring means and the method comprises the
30 step of stabilizing the subject by anchoring said anchoring means to an element of the vehicle. In this way, the torso and arms of the subject can be stabilized in any second position without a continuous active pulling of said ribbon member by the rescuers. The anchoring means is capable of anchoring the at least first ribbon member or the second ribbon member to a fixed element of the cabin, for example the steering wheel, an air
35 conditioning diffuser or grid or a handler present in a door.

Preferably, the ribbon member comprising the anchoring means may comprise means to adjust the length of said ribbon member between the anchoring means and

the corresponding section of said ribbon member connected to the brace member, for example a fastening belt or an adjuster. The anchoring means can be anchored after moving the subject to the second position. It is also possible to anchor the ribbon member first and to move the subject to the second position by decreasing the length of said ribbon member. Further, the ribbon member comprising the anchoring means may also comprise means to detach said ribbon member from the brace member.

In general both the first ribbon member and the second ribbon member of the ribbon member pair comprise anchoring means.

In an embodiment, the rescue device comprises a further ribbon member pair for moving and/or stabilizing the subject wearing the brace member, the further ribbon member pair comprising

- i) a third ribbon member having a third portion connected to the central section of the brace member; and
- ii) a fourth ribbon member having a fourth portion connected to the central section of the brace member;

wherein in the step of placing the rescue device between the subject and the backrest of the seat, the third ribbon member and the fourth ribbon member are respectively arranged around each of the shoulders and subsequently under the underarms of said subject; and wherein said subject is moved by pulling the further ribbon member pair. In this way, the load is mainly applied to the shoulders when the ribbon members of the further ribbon member pair are being pulled during the rescue. Consequently, the risk of accidentally opening the fastening means of the brace member is reduced. Besides, it is possible to pull the subject out of the car through a window of the vehicle, in general the rear window, and the risk of sliding the brace member along the torso and pressing the throat causing suffocation of the subject is also reduced. In general, when the person is being pulled out of the vehicle, a rigid board may be placed under the back of the subject already wearing the rescue device in order to facilitate the rescue.

In general, the third portion and the fourth portion of the further ribbon member pair are symmetrically connected to the brace member with respect to a plane of symmetry in the longitudinal direction of the loop. The ribbon members of the further ribbon member pair have a length allowing for extending said ribbons around the shoulders and under the underarms and also to allow the rescuers to pull the subject out of the vehicle, for example from the rear window and/or when said rescuers are outside the vehicle.

A second aspect of the invention relates to a rescue device according to claim 3. The brace member of the rescue device in general is made of a cloth or sheet

comprising a material that is both flexible and resistant to shear stress, such as woven fabric, woven polymer, leather, plastic, rubber, etc. Consequently, the brace member can easily be placed in position and the loop is easily formed. The material may preferably comprise a fire resistant material, for example aramid fibers, such as

5 Nomex.

In this aspect, the term flexible means that said brace member is capable of adapting to the shape of the subject's torso and arms together. Thus, the rescue device may be placed very easily even if there is not much room between the subject and the seat where the subject is. The brace member may also be reinforced to avoid

10 undesirable movement of the subject. Reinforcement may for instance be effectuated by a rigid member that may be placed within a pocket of the brace member. The rigid member may be a panel and/or one or more stripes comprising a metal or a rigid polymer. The rigid member is more rigid than the brace member. It is preferred that the rigid member is in the central section of the brace member to reduce injury to the spine
15 of the subject, to facilitate the placement of said rescue device between the subject and the backrest of the seat and/or to facilitate the movement of said subject.

The term resistant to shear stress means that said brace member is capable of supporting the weight of a subject of at least 80 kg, preferably at least 100 kg and more preferably at least 120 kg, preferably without deformation of the brace member.

20 In order to form the loop, the first lateral section and the second lateral section are fastened together by any fastening means known in the art. When the loop is formed, the first lateral section and the second lateral section may or may not overlap. When said first lateral section and second lateral section do not overlap, the fastening means forms part of said loop. Since the brace member has to be capable of adapting
25 to the size of different people, the diameter of the loop is adjustable, which is achieved by the fastening means, for example when the fastening means comprises an adjuster.

In the present invention a ribbon member may be any strip, string, rope or ribbon capable of pulling and/or stabilizing the subject wearing the brace member. The ribbon members are also made of a material that is both flexible and resistant to shear,
30 making them bendable in different directions and allowing said ribbon members to be pulled in different directions and/or at different angles. The ribbon members may comprise any adjuster known in the art to reduce their length, although at full length they are in the range of 60-120 cm, preferably between 70-100 cm and more preferably about 80 cm long.

35 The first ribbon member and the second ribbon member are respectively connected to the brace member at a first portion and at a second portion. The first and the second portions may be fixed directly to the brace member, for example if the

ribbons members are sewn to the brace member. Alternatively, the first portion and second portions may be fixed to the brace member via an element, such as a flap or a ring, provided in the brace member. In a different embodiment, the first ribbon member and the second ribbon member may be detachably connected to said brace member
5 by any means known in the art, for example by a buckle or by a guiding section on the brace member receiving the ribbon member.

The first portion of the first ribbon member and the second portion of the second ribbon member may be the same, i.e. may overlap, meaning that the first ribbon and the second ribbon are connected together to the brace member. It is also possible that
10 the first ribbon member and the second ribbon member form a single ribbon member. Such a single ribbon member is preferably detachably connected by using guiding sections on the brace member that receive the single ribbon member.

The at least one of the first ribbon member and the second ribbon member comprises anchoring means for securing the at least one of the first ribbon member and the second ribbon member. In this way, the ribbon member comprising the
15 anchoring means can be anchored to provide stability to the subject wearing the rescue device. Anchoring means can be any known in the art, for example a carabiner. Preferably, the ribbon member comprising the anchoring means also comprises means for adjusting the length of said ribbon member between the anchoring means and the
20 corresponding portion at which said ribbon member is connected to the brace member. Then it becomes possible to pull and/or stabilize the subject wearing brace member by reducing the length of said ribbon once the anchoring means has been anchored. It is preferred that the anchoring means is a hook, since it can be anchored/unanchored in a relatively fast and easy way.

25 In an embodiment,

- i) the first lateral section and the second lateral section comprise the fastening means; and
- ii) the first portion of the first ribbon member and the second portion of the second ribbon member are connected to the central section of the brace member.

30 In this way, the load that the ribbon members apply to the brace member when the subject is being pulled in a direction transverse to the longitudinal of the loop is mainly applied to the central section of said brace member, and the risk of accidentally opening of said fastening means is reduced.

In an embodiment, the first portion and the second portion of the first and the
35 second ribbon members are hingedly connected to the brace member for pivoting said ribbon members about the longitudinal direction of the loop. In this way, the first ribbon member and the second ribbon member can be pivoted about the longitudinal direction

of the loop when being pulled and/or stabilized, for example by a ring attached to the brace member to which the first portion or the second portion of the corresponding ribbon member is connected, and the tension that the ribbon members may cause to the fastening means is even more reduced. This is specially advantageous when the fastening means comprises Velcro that allows for fastening and for adjusting the perimeter of the loop in a single step. It is preferred that said ribbon members are hingedly connected by flap sections, each flap section providing a strong attachment to the brace member.

In an embodiment, the first ribbon member and/or the second ribbon member are respectively detachably connected to the brace member. In this way the brace member can be freed from a ribbon member, for example because said ribbon member is anchored by the anchoring means or have been trapped during the rescue with an element present in the cabin. Preferably, the ribbons are detachably connected at the flap sections.

In an embodiment the rescue device comprises a further ribbon member pair for moving and/or stabilizing a subject wearing the brace member, the further ribbon member pair comprising

- i) a third ribbon member having a third portion connected to the central section of the brace member; and
- ii) a fourth ribbon member having a fourth portion connected to said central section of the brace member.

wherein the third ribbon member and the fourth ribbon member are connected to the central section closer to the perimeter of the loop, when said loop is formed, than the first ribbon member and the second ribbon member. In this way, the upper part of the back of the torso of the subject being rescued can be held and/or easily directed when being moved in a direction parallel to the longitudinal of the loop, which is advantageous when said subject is being pulled out of the vehicle, e.g. through the rear window. It is preferred that the third ribbon member and the fourth ribbon member form a single ribbon member connected by a guiding section provided in the central section of the brace member, the guiding section extending along the longitudinal direction of the loop formed when the rescue device is in use. In this way, the tension that the rescue device may cause to the neck of the subject when in used is also reduced.

The further ribbon member pair may comprise any feature already discussed for the ribbon member pair. The full length of the third ribbon member or fourth ribbon member is in the range of 150-200 cm, preferably between 160-180 cm and more preferably about 170 cm.

The present invention also envisages a combination of the previous mentioned

embodiments. The rescue device according to the invention may also comprise any combination of features discussed in the method and vice-versa.

BRIEF DESCRIPTION OF THE DRAWINGS

5

For the purpose of illustrating the invention, the drawings show aspects of one or more embodiments of said invention. However, it should be understood that the present invention is not limited to the precise arrangements and instrumentalities shown in the drawings, wherein:

10 Fig. 1A shows a view of the rescue device shown in a unfolded state.

Fig. 1B shows a view of a rescue device depicted in Fig. 1A in an partially folded state.

Fig. 2 shows a side view of a subject to be rescued in a vehicle, wherein the rescue device shown in Fig. 1 is placed between the backrest and the subject's back.

15 Fig. 3 shows a side view of the subject wherein the rescue device is fastened to secure the arms and the torso of the subject together.

Fig. 4 shows a perspective top view of a flap section present in the rescue device.

20 Fig. 5 shows a side view of the subject stabilized in a second position by the rescue device

Fig. 6 shows a view of the subject when the backrest of the seat is removed and the subject is prepared to be pulled out of the vehicle.

DETAILED DESCRIPTION OF THE DRAWINGS

25

It should be noted that items which have the same reference numbers in different figures, have the same structural features and the same functions. Where the function and/or structure of such item has been explained, there is no necessity for repeated explanation thereof in the detailed description.

30 It should also be noted that the above-mentioned embodiments illustrate rather than limit the invention, and that those skilled in the art will be able to design many alternative embodiments.

Figure 1A and Figure 1B depict a rescue device 100 according to the invention. Figure 1A shows the rescue device 100 in an unfolded state. The rescue device 100
35 comprises a brace member 110, a ribbon member pair 120 and a further ribbon member pair 130 and fastening means 140.

In the present example, the brace member 110 is a cloth comprising a central

section 111, a first lateral section 112 and a second lateral section 112'. Both lateral sections extend from the central section 111 in opposite directions. The brace member 110 is made of aramid fibers, for example Nomex TM, for providing heat-resistance, flexibility and strength.

5 As shown in Fig. 1A, the ribbon member pair 120 comprises a first ribbon member 121 and a second ribbon member 121', in the present example a first ribbon 121 and a second ribbon 121' respectively. The first ribbon 121 comprises a free end 125 and a first portion 126 at which said first ribbon 121 is connected to a first flap section 113 sewn to the central section 111 of the brace member 110. Similarly, the
10 second ribbon 121' comprises a free end 125' and a second portion 126' at which said second ribbon 121' is connected to a second flap section 113' sewn to the central section 111. In this example both the first ribbon 121 and the second ribbon 121' are made of woven polyamide for providing flexibility and strength to said ribbons. The function of the flap sections 113 and 113' will be explained later.

15 The first ribbon 121 comprises anchoring means 122, in the present example a hook 122. The first ribbon 121 also comprises means 123 for detaching the hook 122 from the first flap section 113, in the present example a buckle 123, and means 124 for adjusting the length between the first portion 126 and the hook 122, in the present example an adjuster 124. The means 123 and 124 are known in the art. Similarly, the
20 second ribbon 121' also comprise a hook 122', buckle 123', and an adjuster 124'. The full length between the corresponding anchoring means and the portion in each ribbon is in the range of 60-120 cm, preferably between 70-100 cm long, and more preferably about 80cm. The full length can be reduced by the adjusters 124 and 124'.

The central section 111 comprises a further ribbon member 130. In the present
25 example the further ribbon member 130 is a single ribbon member comprising a handler 132 and 132'. The single ribbon member is made of woven polyamide for providing flexibility and strength and the length is in the range of 150-200 cm, preferably between 160-180 cm and more preferably about 170 cm.

The further ribbon member 130 is connected to the central section 111 of the
30 brace member 110 by a guiding section 160. The guiding section 160 defines for the further ribbon member 130 a single portion 160 at which said further ribbon member is connected to the central section. The portion of the single ribbon member between the single portion 160 and the handler 132 defines a third ribbon member 131. Similarly, the section of the single ribbon member between the single portion 160 and the handler
35 132' defines a fourth ribbon member 131'.

As shown in Fig. 1A, the fastening means 140 comprises strips 141 sewn to the first lateral section 112 and strips 142 sewn to the second lateral section 112'. The

strips 141 and the strips 142 are provided with Velcro portions to fasten them together when the device is in use.

The rescue device 100 also comprises a first strip 151 sewn to the first lateral section 112 and a second strip 151' sewn to the second lateral section 112'. The

5 function of said strips will be explained later.

The rescue device 100 may be kept in a folded state as shown in Figure 1B. In the folded state the first lateral section 112 and the second lateral section 112' can be folded with respect to the central section 111 since the cloth defining the brace member 110 is flexible. In the folded state the first ribbon 121 and second ribbon 121' are

10 packed within pockets 114 and 114' present in the flap sections 113 and 113' respectively; the third ribbon 131 and the fourth ribbon 131' are kept in a rolled state by strips 150 and the strips 141 and 142 are kept in a rolled state by strips 150 present in the first lateral section 112 and second lateral section 112'.

Figures 2 to 6 show the steps of an example of a method of rescuing a subject

15 from the interior of a vehicle 290 after an accident, the method using the rescue device 100 shown in Figures 1A and 1B. In the present example, the subject is seated in front of the steering wheel 295 in a first position. Said subject is, for example, going to be rescued via a path through a hatch generated by removing the rear window (not shown). In order to free the path, the backrest 271 of a seat 270 where said subject is

20 placed has to be removed, in the present example by cutting said backrest 271 off at the bottom side thereof.

As shown in Figure 2, the rescue device 100 is placed between the torso of the subject and the backrest 271 such that the central section 111 of the brace member 110 is facing the back of the torso, and the third ribbon 131 and the fourth ribbon 131' are

25 slung over the shoulders. In order to make it more easy, all the ribbons are in the folded state. Besides, if there is not much room between the back of the subject and the backrest 271, the rescuers may pull down the rescue device by pulling downward from the strips 151 and 151'. Then, said third ribbon 131 and fourth ribbon 131' are unrolled and extended over the shoulders and subsequently under the underarms of

30 said subject. Finally, the third ribbon 131 and fourth ribbon 131' are positioned over the top of the backrest 271 towards the rear window of the car 290.

Figures 3 and 4 depict a loop 300 formed subsequently when the first lateral section 112 and the second lateral section 112' are fastened to each other by fastening the strips 142 to the strips 141. The loop 300 secures the arms and the torso of the

35 subject together, preventing the arms from moving relatively to the torso.

The flap sections 113 and 113' are hinged to the central section 111. Figure 4 shows the capability of the flap section 113' to pivot about the longitudinal

direction of the loop 300. Therefore, the second ribbon 121' can pivot without applying tension to the fastening means 140. The same effect is to be acknowledged to the flap section 113 and the first ribbon 121.

Figure 5 depicts a further state wherein the subject wearing the rescue device 100 is moved and stabilized in the second position. In the present example, the first ribbon 121 and the second ribbon 121' are extending out of the pockets 114 and 114' respectively. The first ribbon 121 and the second ribbon 121' are anchored respectively by using the hooks 122 and 122' in this example to the steering wheel 295 and to an air conditioning diffuser (not shown) present in the car 290. Then, by pulling the free ends 125 and 125' of the first ribbon 121 and second ribbon 121' along a direction A, the full length in each of said ribbons between the corresponding anchoring means and the portion is reduced thanks to the means 124 and 124', moving the arms and the torso of the subject along a direction of arrow B, in the present example towards the steering wheel. Therefore, the torso and the arms are relatively far from the backrest 271 than in the first position. In this scenario, the backrest 271 can be cut off reducing the possibility of injury said subject and there is no need for a rescuer to keep said subject in the second position. Further, since the flap sections 113 and 113' are sewn to the central section 111, the tension applied to the fastening means 140 is also reduced when the subject is being moved and/or stabilized.

Figure 6 depicts the last state of the method according to the present example. Once the backrest 271 has been cut off, the rescue path is free for transporting the subject, for example by placing a rescue board 250 near the bottom part of the subject's back. Then, the hook 122 of the first ribbon 121 and the hook 122' of the second ribbon 121' are detached from the brace member 110 by using the buckles 123 and 123' while a rescuer is holding the subject. Finally, said subject is pulled out through a rear window (not shown) by pulling the third ribbon 131 and the fourth ribbon 131' of the further ribbon member pair 130 along the direction of arrow C. In this situation, the handlers 132 and 132' are used to apply tension for moving the subject.

The present invention may be varied within the scope of the appending claims. For example, in the method the subject, after being stabilized by means of the first ribbon 121 and second ribbon 121' in the second position, may be rescued out of the vehicle via a path that extends lateral to the direction of arrow C, for example after a door has been removed or via a lateral window.

CLAIMS

1. A method of rescuing a subject positioned in a vehicle (290), wherein a rescue device (100) is used for moving the subject, the rescue device (100) comprising

5 i) a brace member (110) for securing the arms and the torso of the subject together, the brace member (110) comprising

i. a central section (111) for holding the back of a subject when in use;

ii. a first lateral section (112) extending from the central section (111);

10 iii. a second lateral section (112') extending from the central section (111) opposite to the first lateral section (112); and

iv. fastening means (140);

wherein said brace member (110) is capable forming a loop (300) for securing the arms and the torso of the subject together by fastening the first lateral section (112) to the second lateral section (112') with the fastening means (140), the loop defining a longitudinal direction and a perimeter, and wherein said fastening means (140) is

15 capable of adjusting the perimeter of the loop (300); and

ii) a ribbon member pair (120) for moving and/or stabilizing the a subject wearing the brace member (110), the ribbon member pair (120) comprising

20 i. a first ribbon member (121) having a first portion (126) connected to the brace member (110); and

ii. a second ribbon member (121') having a second portion (126') connected to the brace member (110);

wherein the first ribbon member (121) and the second ribbon member (121') both comprise anchoring means (122, 122') for anchoring the first ribbon member (121) and the second ribbon member (121') to a fixed element of the cabin of the vehicle

25 (290); and wherein the method comprises the steps of:

- placing the rescue device (100) between the subject and the backrest (271) of the seat (270) such that the central section (111) of the brace member is facing the back of the torso of the subject;

30 - fastening the first lateral section (112) and the second lateral section (112') together by the fastening means (140) to form the loop (300) extending in the longitudinal direction along the torso of the subject to hold the arms and the torso of said subject together; and

- moving and/or stabilizing the subject by pulling at least one of the first ribbon member (121) and the second ribbon member (121') of the ribbon member pair (120) in a direction transverse to the longitudinal direction of the loop (300);

35

characterized in that the method comprises the step of stabilizing the subject

by anchoring said anchoring means (122, 122') to a fixed element of the vehicle (290).

2. The method according to claim 1, wherein the rescue device (100) comprises a further ribbon member pair (130) for moving and/or stabilizing, the further
5 ribbon member pair (130) comprising

- i) a third ribbon member (131) having a third portion connected to the central section (111) of the brace member (110); and
- ii) a fourth ribbon member (131') having a fourth portion connected to said central section (111) of the brace member (110);

10 wherein in the step of placing the rescue device (100) between the subject and the backrest (271) of the seat (270), the third ribbon member (131) and the fourth ribbon member (131') are respectively arranged around each of the shoulders and subsequently under the underarms of said subject; and wherein said subject is moved by pulling the further ribbon member pair (130).

15 3. A rescue device (100) for moving a subject in a vehicle (290) comprising

i) a brace member (110) for securing the arms and the torso of the subject together, the brace member (110) comprising

- i. a central section (111) for holding the back of a subject when in use;
- 20 ii. a first lateral section (112) extending from the central section (111);
- iii. a second lateral section (112') extending from the central section (111) opposite to the first lateral section (112); and
- iv. fastening means (140);

25 wherein the brace member (110) is capable of forming a loop (300) for securing the arms and the torso of the subject together by fastening the first lateral section (112) to the second lateral section (112') with the fastening means (140), the loop (300) defining a longitudinal direction and a perimeter, and wherein said fastening means (140) is capable of adjusting the perimeter of the loop (300); and

30 ii) a ribbon member pair (120) for moving and/or stabilizing a subject wearing the brace member (110) when said rescue device (100) is in use, the ribbon member pair (120) comprising

- i. a first ribbon member (121) having a first portion (126) connected to the brace member (110); and
- 35 ii. a second ribbon member (121') having a second portion (126') connected to the brace member (110);

wherein the first ribbon member (121) and the second ribbon member (121') both comprise anchoring means (122, 122') for anchoring the first ribbon member (121)

and the second ribbon member (121') to a fixed element of the cabin of the vehicle (290)

characterized in that the first ribbon member (121) and the second ribbon member (121') also comprise

- 5 - means (124, 124') for adjusting the length of said first ribbon member (121) and second ribbon member (121') between the anchoring means (122, 122') and the corresponding first portion (126) and second portion (126'); and
- 10 - means (123, 123') to detach said ribbon members (121, 121') from the brace member (110).

4. The rescue device (100) according to claim 3, wherein

i. the first lateral section (112) and the second lateral section (112') comprise the fastening means (140); and

15 ii. the first portion (126) of the first ribbon member (121) and the second portion (126') of the second ribbon member (121') are connected to the central section (111) of the brace member (110).

5. The rescue device according to claim 4, wherein the first portion (126)

20 and the second portion (126') are hingedly connected to the brace member for pivoting said ribbon members about the longitudinal direction of the loop (300).

6. The rescue device (100) according to claim 5, wherein the first ribbon

25 member (121) is hingedly connected by a first flap section (113) and the second ribbon member (121') is hingedly connected by a second flap section (113').

7. The rescue device (100) according to any of the claims 4 to 6, wherein

the fastening means (140) comprises Velcro.

8. The rescue device (100) according to claim 3, wherein the anchoring

30 means (122, 122') is a hook (122, 122').

9. The rescue device (100) according to any of claims 3 to 8, wherein the

35 first ribbon member (121) and/or the second ribbon member (121') are respectively detachably connected to the brace member (110).

10. The rescue device (100) according to any of claims 3 to 9, wherein the rescue device comprises a further ribbon member pair (130) for moving and/or stabilizing a subject wearing the brace member (110), the further ribbon member pair (130) comprising

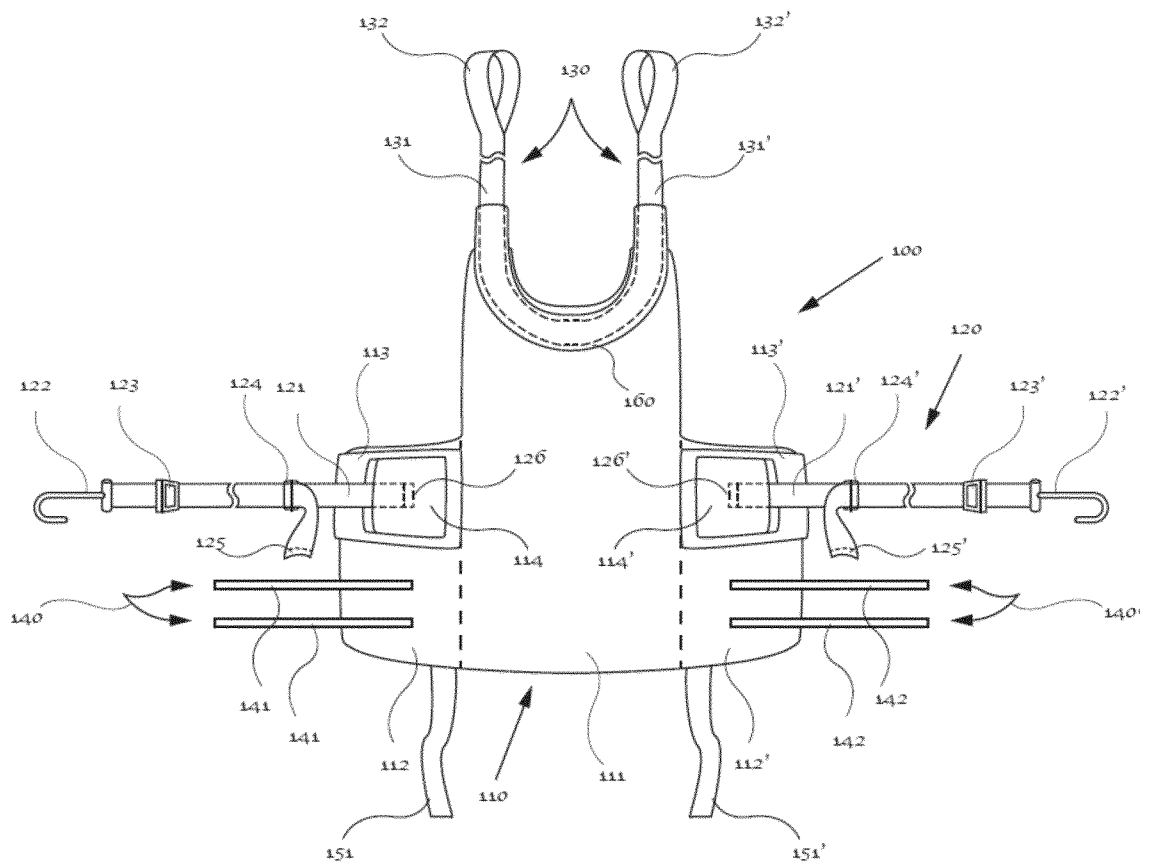
5 ii) a third ribbon member (131) having a third portion connected to the central section (111) of the brace member (110); and

 iii) a fourth ribbon member (131') having a fourth portion connected to said central section (111) of the brace member (110).

 wherein the third ribbon member (131) and the fourth ribbon member
10 (131') are connected to the central section (111) closer to the perimeter of the loop, when said loop is formed, than the first ribbon member (121) and the second ribbon member (121').

11. The rescue device according to claim 10, wherein the third ribbon
15 member (131) and the fourth ribbon member (131') form a single ribbon member connected to the brace member by a guiding section (160) provided in the central section.

* * * * *

**Fig. 1A**

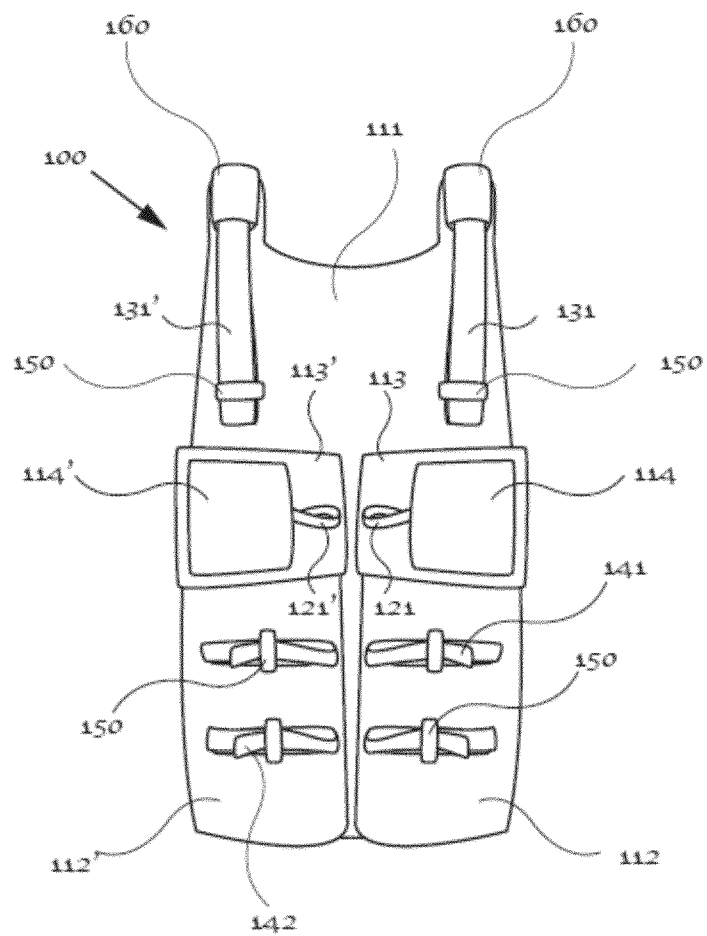
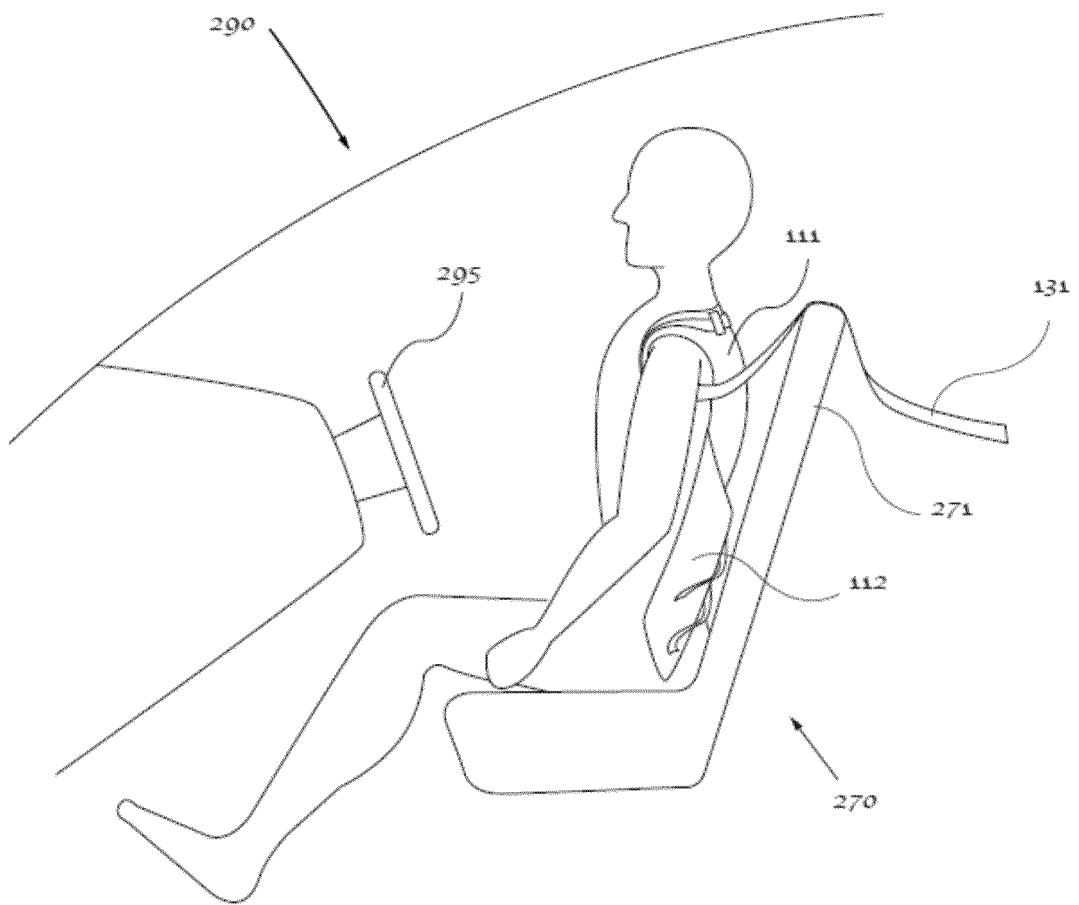


Fig. 1B

**Fig. 2**

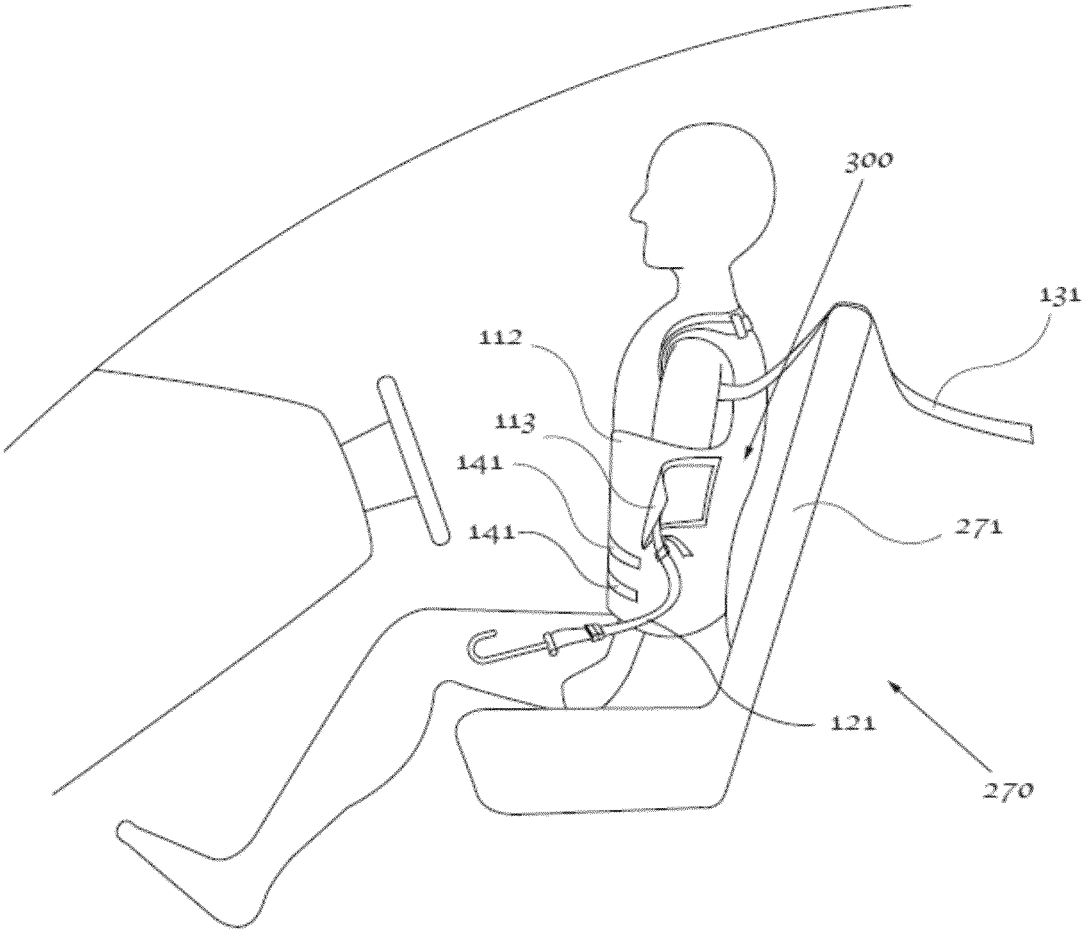


Fig. 3

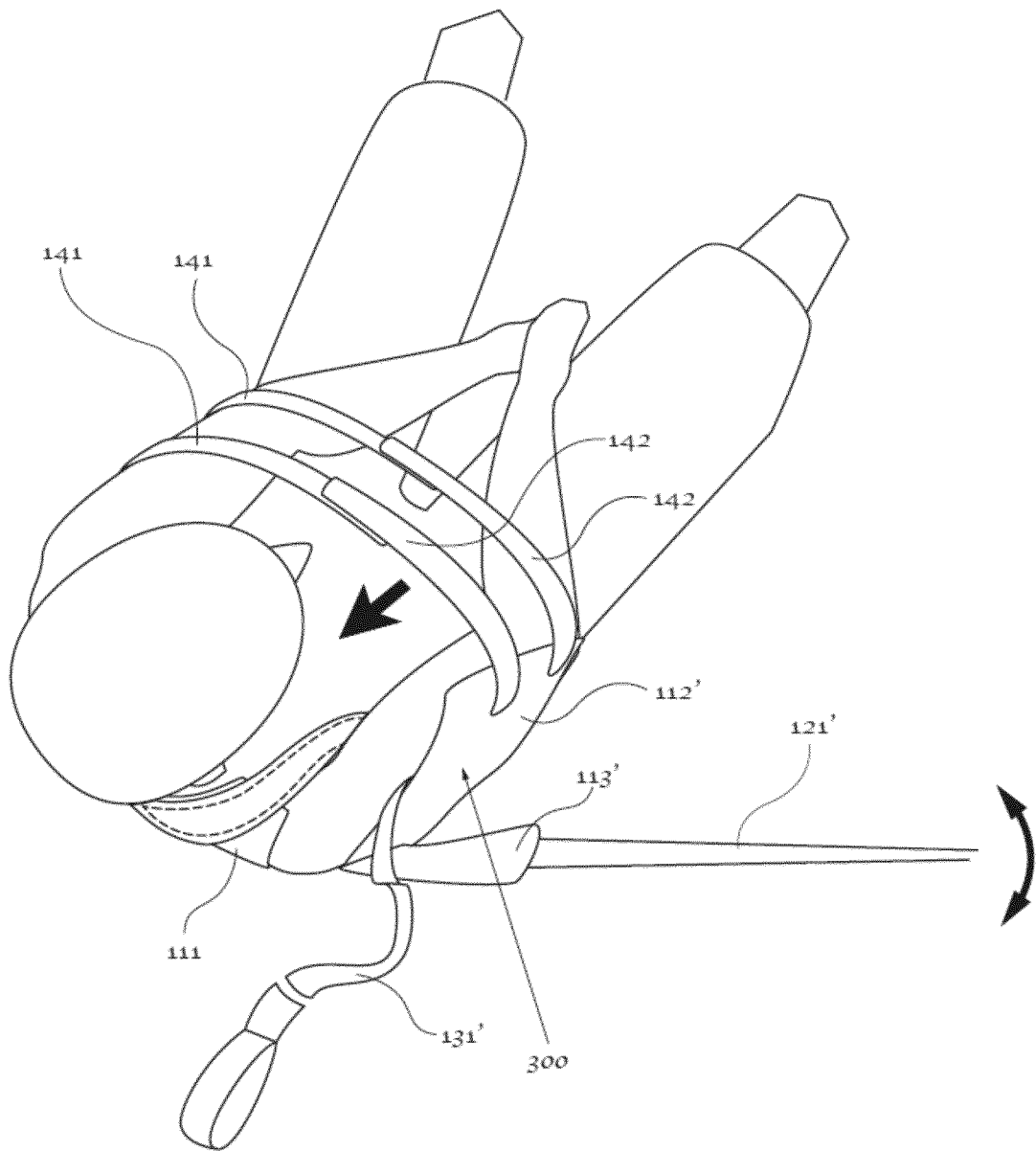
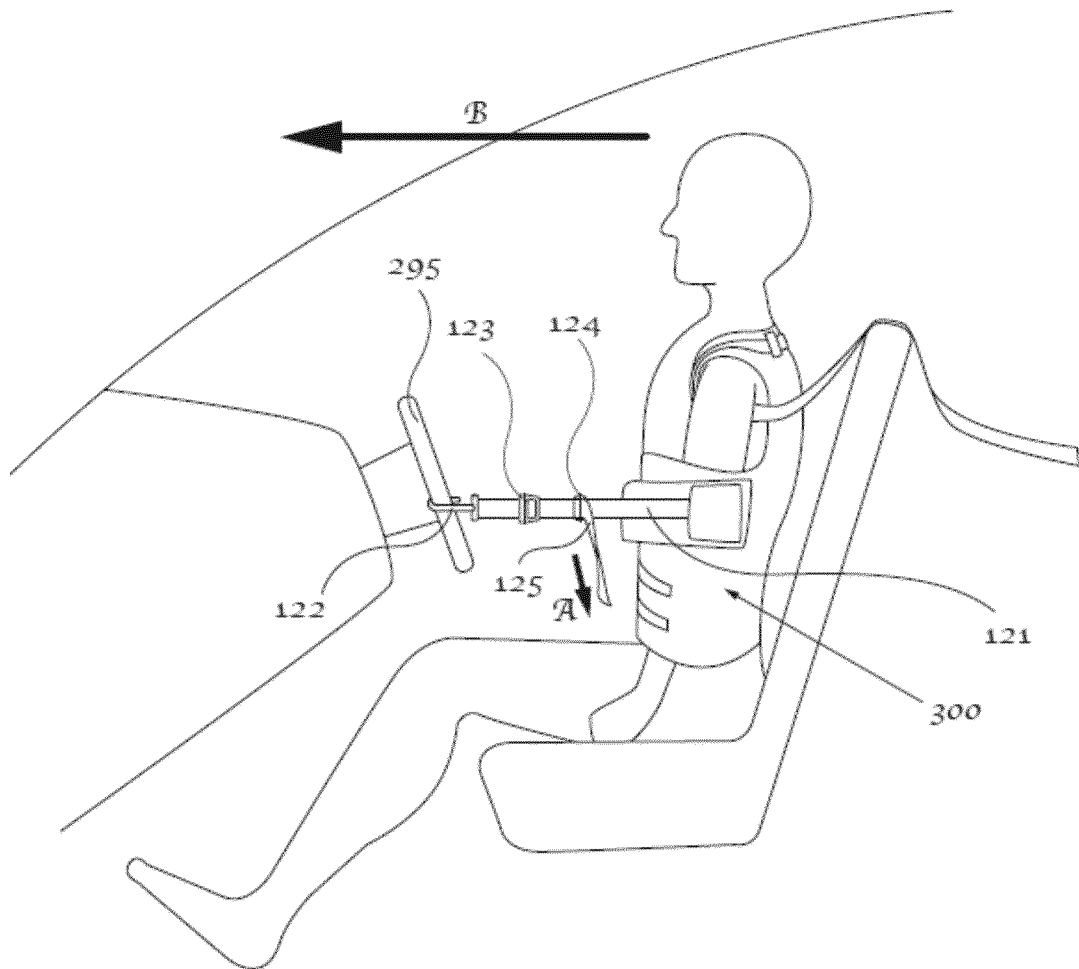


Fig. 4

**Fig. 5**

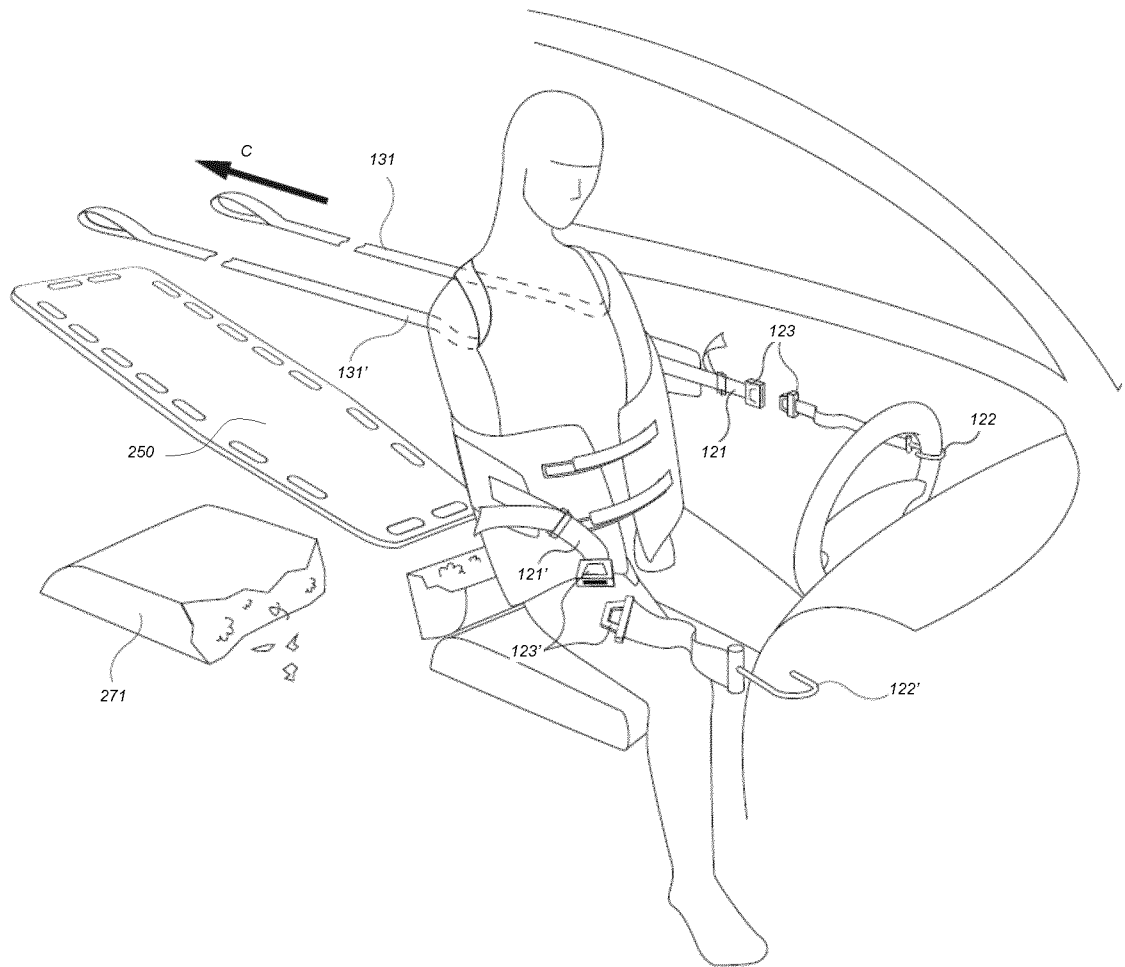


Fig. 6

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2016/051229

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61G1/003 A61G1/01 A62B3/00 A61G1/044
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)
A61G A62B

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.
A	US 7 360 543 B1 (COLEMAN GARY [US] ET AL) 22 April 2008 (2008-04-22) cited in the application column 1, lines 6-7 column 4, lines 1-14 column 4, line 58 - column 5, line 60 figures 1-3	1-11
A	----- WO 2012/057668 A1 (JONSSON BERTIL [SE]) 3 May 2012 (2012-05-03) page 2, lines 19-24 page 5, lines 8-22 page 6, lines 4-11 page 8, lines 8-14 page 9, lines 4-32 figures 1,5,6-12 ----- -/-	1-11



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

3 May 2016

Date of mailing of the international search report

13/05/2016

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Horrix, Doerte

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2016/051229

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2007/272484 A1 (HELMS JAMES K [US]) 29 November 2007 (2007-11-29) paragraph [0026]; figures 1-3 -----	1-11
A	GB 1 485 651 A (BARROW HEPBURN EQUIP LTD) 14 September 1977 (1977-09-14) page 1, column 2, line 66 - page 2, column 2, line 83 figures 1-3 -----	1-11
A	US 4 422 454 A (ENGLISH PAUL R [US]) 27 December 1983 (1983-12-27) column 6, lines 9-29; figures 8-11 -----	1-11

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2016/051229

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 7360543	B1	22-04-2008	NONE
WO 2012057668	A1	03-05-2012	SE 1001047 A1 26-04-2012 WO 2012057668 A1 03-05-2012
US 2007272484	A1	29-11-2007	US 2007272484 A1 29-11-2007 US 2009038884 A1 12-02-2009 US 2012055737 A1 08-03-2012 WO 2007139954 A2 06-12-2007
GB 1485651	A	14-09-1977	NONE
US 4422454	A	27-12-1983	NONE