



(11) **EP 2 091 365 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention  
of the grant of the patent:  
**01.09.2010 Bulletin 2010/35**

(51) Int Cl.:  
**A41D 13/018** <sup>(2006.01)</sup> **A41D 27/26** <sup>(2006.01)</sup>  
**A41D 15/00** <sup>(2006.01)</sup> **A41F 15/00** <sup>(2006.01)</sup>

(21) Application number: **07826730.9**

(86) International application number:  
**PCT/IB2007/054167**

(22) Date of filing: **12.10.2007**

(87) International publication number:  
**WO 2008/044222 (17.04.2008 Gazette 2008/16)**

(54) **INFLATABLE DEVICE FOR PERSONAL PROTECTION AND GARMENT COMPRISING THE SAME**

AUFBLASBARE VORRICHTUNG FÜR DEN PERSONENSCHUTZ UND DIESE UMFASSENDES  
KLEIDUNGSSTÜCK

DISPOSITIF GONFLABLE POUR PROTECTION INDIVIDUELLE ET VETEMENT COMPRENANT  
CELUI-CI

(84) Designated Contracting States:  
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR  
HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE  
SI SK TR**

(30) Priority: **12.10.2006 IT RM20060548**

(43) Date of publication of application:  
**26.08.2009 Bulletin 2009/35**

(73) Proprietor: **Dainese S.p.A.**  
**36060 Molvena VI (IT)**

(72) Inventor: **PRETTO, Paolo**  
**36060 Molvena Vi (IT)**

(74) Representative: **Manfrin, Marta et al**  
**Società Italiana Brevetti S.p.A.**  
**Stradone San Fermo 21 sc. B**  
**37121 Verona (VR) (IT)**

(56) References cited:  
**WO-A-94/26136 WO-A-2005/013737**  
**DE-A1- 19 754 541 US-A- 5 133 084**  
**US-A1- 2006 212 986**

**EP 2 091 365 B1**

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

## Description

**[0001]** The present invention relates to an inflatable device for personal protection and to a garment comprising the same.

**[0002]** During the last years, after a constant search for safety during all sports activities, but more in general also all those dangerous activities as made under extreme conditions or at high speeds, a plurality of devices both for the person's active and passive safety has been devised.

**[0003]** The motorcycle field pays particularly attention to such problems and, therefore, during the last years, it has been searching for the development of an airbag system allowing to implement a motorcyclist's effective protection which has also to be practical.

**[0004]** The most practical solution has revealed to be the use of garments which can be inflated in case of impact, slide or fall in general.

**[0005]** Therefore, a plurality of garments has been developed, comprising one or more bags which can be inflated by means of cylinders of different types of cold gas which activate in case of impact.

**[0006]** However, the garments of known art do not reveal to be sufficiently effective and practical in protecting the driver, in particular during the use in the sports competitions.

**[0007]** The protection, in fact, is provided by inflatable members fastened to the garment and, when deflated, put inside specific pockets, which, apart from inflating in sufficiently short time, have also to protect, when inflated, the body parts which are potentially involved by the impacts. Furthermore, other important features relate to the overall dimensions which have to be kept limited as a whole, as it is advisable that the garment be practical during the normal use.

**[0008]** In fact, it must be understood that the bags and the related inflating means are worn by the user and such components have not negligible sizes and weights in case of use during the competitions.

**[0009]** In the motorcyclist races, in fact, the drivers use suits which must have high aerodynamic penetration features and consequently the use of inflatable members has not to jeopardize the driver's performances in any way, nor be cause of discomfort for the same.

**[0010]** Furthermore, one of the main causes for which the inflatable garments have never found application in the motorcyclist races is related to the fact that often the drivers, even after ruinous falls, succeed in rising again and continuing the race. However, it is clear that the garment, once inflated, does not allow the driver to continue the race any more, as it is excessively bulky and it makes the driver's motions practically impossible.

**[0011]** WO2005/ 01 3737 discloses a pneumatic devices for personal protection. US 2006/21 2986 discloses a pedestrian air bag device. DE 197 54 541 discloses a head protector with ring-shaped airbag system.

**[0012]** Therefore, the technical problem underlying the

present invention is to provide an inflatable protective garment allowing to obviate the drawbacks mentioned above by referring to the known art.

**[0013]** Such problem is solved by an inflatable device for personal protection according to claim 1 and by a garment according to claim 23.

**[0014]** The present invention provides some important advantages. The main advantage lies in the fact of providing an inflatable device which can be placed so as to allow an effective protection of the user without limiting the mobility and the aerodynamic properties of the garment. Furthermore, even in case of opening after falling or other event, the device according to the present invention can be removed so as to allow the driver to continue the race without particular discomforts.

**[0015]** Other advantages, features and application modes of the present invention will be made evident by the following detailed description of some embodiments thereof, shown by way of example and not for limitative purpose. The figures of the enclosed drawings will be referred to wherein:

- figure 1 is a perspective view illustrating a first embodiment of an inflatable device for personal protection according to the present invention fastened to a garment;
- figure 1A is a detail of figure 1, illustrating means for the connection between the protection device and the garment;
- figures 2A and 2B are two side views showing the garment with the protective device of figure 1 and the same arranged according to an inflated configuration, respectively;
- figures 3A and 3B are two perspective views showing the garment with the protective device of figure 1 and the same arranged according to an inflated configuration, respectively;
- figures 4A and 4B are two rear views showing the garment with the protective device of figure 1 and the same arranged according to an inflated configuration, respectively;
- figures 5A and 5B are two perspective views showing a garment with a second embodiment of an inflatable device for personal protection, according to the present invention and the same arranged according to an inflated configuration, respectively;
- figures 6A and 6B are two rear views showing the garment with the protective device of figure 5A and the same arranged according to an inflated configuration, respectively; and
- figures 7A and 7B are two perspective views showing the inside of a pocket for containing an inflatable member of the protective device of figure 5A.

**[0016]** By firstly referring to figure 2B, an inflatable device for personal protection comprises at least one inflatable member 1, illustrated in the present figure in an inflated configuration.

**[0017]** In such configuration, the inflatable member 1 is filled-up with air or other gas so as to provide protection and defence to the body of a user in case of fall, slide or impact. According to a preferred embodiment, and as it will be illustrated hereinafter in detail, the inflatable member 1 comprises a rear portion 11, apt to protect the upper part of the user's back, portions 12 protecting the shoulders and partially the arms, portions 13 arranged between shoulders and neck for protecting the latter and portions 14 apt to protect an upper area of the chest, illustrated according to different views in figures 2B, 3B and 4B.

**[0018]** Such portions allow to protect the body parts which are more exposed to the risk of trauma during impacts and falls occurring in the motorcyclist practice, considering that the garments used by the drivers in the races have specific back-guards so as to require just the protection of the upper part of the back and neck by means of the inflatable member.

**[0019]** In order to implement the inflation of the inflatable member 1 in case of fall and/or slide and/or impact by an user or a vehicle whereon he/she proceeds, the device according to the present invention is apt to cooperate with specific activation and inflation means, not illustrated in figure.

**[0020]** Such means can comprise cylinders of compressed gas or gas generators of pyrotechnical or hybrid type or other typologies known to the state of art. Said inflation means is controlled by a control unit based upon the detection of the state of the vehicle/driver system; for example, said control unit can implement a system for predicting the fall allowing a timely identification of the fall event and a reliable prediction thereof by means of accelerometric sensors integral to the vehicle (or to the driver) and a processing unit of the signals produced by the sensors themselves. As an alternative, the device according to the present invention finds also application by using an activation wire connected to the vehicle, which controls the inflation of the inflatable member after moving away the user from the vehicle, for example after a fall or an impact.

**[0021]** Anyhow, the abovementioned activation and inflation means can be integrated in the device according to the present invention or placed outside the same.

**[0022]** It is also to be noted that, even if the activation modes are an aspect of particular importance for an effective operation of the device, they will not be described hereinafter in greater details as they are mainly already known methods, at least in the simplest embodiments, to the person skilled in the art.

**[0023]** Still according to a preferred embodiment, the inflatable member 1 has a bag-like shape and it is implemented by a single body whereon the previously-described portions 11, 12, 13 and 14 are defined, so as to make simpler and more effective the inflating operation. However, also in this case the inflation member can be implemented in several parts distinct therebetween or, in case, a higher number of inflation members can be

provided to protect different areas of the user's body.

**[0024]** By then referring to figure 2A, the inflatable member, when it is without gas inside thereof and therefore when it is usually worn by the user, is put into suitable containing means 2, which can be connected to a garment 4 according to modes which will be described hereinafter.

**[0025]** The containing means 2 substantially comprises a pocket having an edge 24 which can be opened and which, during the normal use of the device, is kept closed by means of specific closing means 25.

**[0026]** In other words, according to the present embodiment, the closing means 25 allows to keep the edge 24 in contact with the remaining part of the containing means 2, so as to define a pocket wherein the inflatable member 1 is housed.

**[0027]** Such closing means 25 is then implemented so as to give way after the inflation of the inflatable member 1 and after the consequent pushing action produced by the member 1 during the inflation step.

**[0028]** The closing means 25 will be then calibrated so as to release the edge 24 under such action and to allow, at the same, the outcoming of the inflatable member 1 from the containing means 2.

**[0029]** By way of example, the closing means 25 could be implemented by means of snap fasteners, as in the present embodiment, or by means of seams using threads having a calibrated breakdown tension, or, moreover, by means of closing devices including members made of Velcro®.

**[0030]** Still by referring to figure 2A, the containing means 2 can be instead connected to the garment 4 by means of reversible connection means 3, illustrated in figure 1, so that the containing means 2, when connected to the garment 4, comprises portions at shoulders 21, upper part of the chest 22 and the back 20, illustrated according to different views in figures 2A, 3A and 4A.

**[0031]** Such configuration reveals to be particularly advantageous as it has to be understood that the suits usually utilized by the drivers have an appendix with aerodynamic functions in the same area wherein the portion 20 is placed at the upper part of the back.

**[0032]** Therefore, the device according to the present invention, once connected to a garment, allows the containing means on the one hand to play the same aerodynamic function of the usual motorcycling suits and on the other hand to house the inflatable member 1 in a position which is not uncomfortable to the user.

**[0033]** Consequently, the portion 20 defines an aerodynamic appendix 20 shaped like a "hump", in a way analogous to what usually existing in the suits utilized by the motorcycling drivers.

**[0034]** It is also to be noted that the aerodynamic appendix has dimensions which can be sufficient also to contain the activation and inflation means, with additional advantage in the device size.

**[0035]** In order to obtain a more effective protection of the user, still after the connection of the device to the

garment, the containing means is arranged, as previously mentioned, also at shoulders and upper part of the chest, so as to allow the outcoming from such areas of the portions 13 and 14 of the inflation member 1, to cover neck and chest.

**[0036]** However, it is clear that, according to a preferred embodiment, the inflation member 1 is folded up so as to be arranged inside the containing means by occupying less room as possible, considering that the greatest part of the room usable to house the member 1 is present at the portion 20.

**[0037]** By now referring to figure 1 and 1A, the connection means 3 is implemented so that it is possible to remove the inflatable member 1 from the garment 4 once the inflation of the inflatable member itself has occurred, for example, after a fall, slide or impact. In this way, the driver using the device according to the present invention, if the fall has not produced particular consequences, could remove the inflatable member 1, which otherwise in the inflated configuration would prevent him/her from driving, and continue the race.

**[0038]** According to a preferred embodiment, the connection means 3 allows to remove the containing means 2 and, together therewith, also the inflatable member 1, as the latter is fastened thereto.

**[0039]** In fact, it can be preferred to fasten the inflatable member 1 to the containing means 2 in a steady way, both to avoid that in case of fall the inflatable member detaches, thus wholly losing the effectiveness, and as the reversible connection means 3 requires a greater implementation complexity; in this case, then, it can be preferred to avoid that said reversible connection means 3 be directly connected to the inflatable member 1.

**[0040]** In other words, the inflatable member 1 is fastened to the containing means 2, which in turn can be connected, in reversible way, to the garment 4, by means of the abovementioned connection means 3.

**[0041]** In this way, the inflatable member could be positioned in the previously described way and removed, together with the containing means in case of need.

**[0042]** By referring to figure 1A, the reversible connection means is implemented by means of a first plurality of loops 32, fastened to the device at the containing means 2, and a respective second plurality of loops fastened to the garment 4; inside the loops 32, 33 an elongated member 31 is arranged, showing a filiform or band-like shape, apt to connect the first plurality of loops 32 to the second plurality of loops 33.

**[0043]** According to a preferred embodiment, the loops have the shape of small pipes, inside thereof a filiform member is inserted.

**[0044]** Furthermore, the loops 32 are positioned substantially along the device perimeter, whereas the loops 33 are placed onto the garment so that, by placing each pair of loops 32 and 33 alternated side by side and by inserting therein the elongated member 31, the device be arranged in the previously described way and the connection of the inflatable member 1 to the garment 4 be

implemented. Furthermore, the elongated member 31 can be pulled out of said loops so that, when it is pulled by the user, it can be removed, by consequently removing the device too, or at least the inflatable member 1, from the garment 4.

**[0045]** In this way, it will be possible to remove the inflatable member with a simple and quick operation, so as to allow the driver to continue the race without any inconvenience in case he/she has not suffered any consequence after the fall. However, it is clear that the reversible connection means 3 could be replaced by any equivalent means which allows the positioning of the inflatable member and the subsequent removal thereof.

**[0046]** Figures 5A to 7B show a second embodiment of an inflatable device for personal protection according to the present invention, comprising at least one inflatable member 101.

**[0047]** Similarly to what previously described, also in this case the inflatable member 101 in an inflated configuration has a rear portion 111, arranged onto the upper part of the user's back, portions 112 at part of the arms, portions 113 arranged between shoulder and neck and portions 114 apt to protect an upper area of the chest; this is illustrated according to different views in figures 5B and 6B.

**[0048]** Clearly, the inflatable member 101 can be implemented in several parts distinct therebetween or, in case, a higher number of inflatable members 101 can be provided, to protect different areas of the user body.

**[0049]** When usually worn by the user, the inflatable member 101 is placed into specific containing means 102, which are integral to a garment 104 and it comprises substantially a pocket 128 which extends from the region corresponding to the upper part of the user's back as far as the upper area of the chest, passing above the shoulders. In case that the inflatable members 101 are more than one, several pockets 128 can be provided to house the same.

**[0050]** Said pocket 128 has one or more edges 124 which can be opened and which, during the normal use of the garment 104, are kept closed by means of specific closing means 125, in particular implemented by means of seams 150 with threads having a calibrated breakdown tension. However, such closing means 125 could be implemented also by means of other systems, such as for example snap fasteners or by means of members made of Velcro®.

**[0051]** In the region of the upper part of the back, said pocket 128 defines, at least partially, an aerodynamic appendix 120 shaped like a "hump" usually existing in the suits used by the motorcycling drivers, thereat activation and inflation means (not shown) of said inflatable member and a structure supporting the same can be arranged.

**[0052]** The inflatable member 101 is connected to the containing means 102 by means of reversible connection means 103. In the present case said connection means 103 comprises members 160 made of Velcro® or prop-

erly arranged snap fasteners. Figures 7A and 7B show views of the inside of the containing means 102, i.e. of the pocket 128, wherein the inflatable member 101 is not present; in particular, figure 7A shows a portion at the chest's upper part, whereas figure 7B shows a portion 120 at the upper part of the back, at said aerodynamic appendix. The pocket 128 has one or more zippers 170, accessible from the inside of the garment 104, to allow the access to the pocket 128 itself in order to place the deflated inflatable member 101 inside the containing means 102.

**[0053]** During the normal use, for example during a race, the driver is not disturbed in any way by the presence of the inflatable member 101 since it is wholly contained inside the garment 104. In fact, the outer appearance of the garment 104 appears to be substantially equivalent to that of a garment of known art; apart from the use practicality, this is advantageous also from the point of view of the greater visibility of the sponsor logos applied onto the garment.

**[0054]** In case of fall, the activation of the inflation means involves in sequence the increase in volume of the inflatable member 101 inside the pocket 128, the rupture of said seams 150 with calibrated breakdown tension, the opening of the edges 124 and the outcoming of the inflated member 101 from the pocket 128; the member 101, however remaining bound in a correct position to the garment 104 thanks to the connection means 103, fully plays the protection function thereof with respect to the driver.

**[0055]** If the fall has not produced particular consequences, the driver can remove the inflatable member 101 by acting onto the reversible connection means 103 and therefore continue the race without being prevented in the driving by the member 101 itself.

**[0056]** In case, said edges 124 can comprise additional closing means 180, for example made of Velcro®, allowing to close again the pocket 128 once the inflatable member 101 has been removed. This results to be advantageous for the comfort and for the driver's aerodynamic behaviour, apart from the visibility of possible sponsor logos.

**[0057]** The present invention has been sofar described by referring to preferred embodiments. It is to be meant that other embodiments belonging to the same inventive core may exist, all comprised within the protection scope of the here below reported claims.

## Claims

1. Garment (4, 104) for personal protection comprising at least one inflatable member (1, 101) and containing means (2, 102) for housing said at least one inflatable member (1, 101), said at least one inflatable member (1, 101) cooperating with activation and inflation means for the inflation thereof in case of fall and/or slide and/or impact by a user or a vehicle car-

rying the same,

### characterized in that

said containing means (2, 102) is pocket-shaped, and that said garment (4, 104) further comprises reversible connection means (3, 103) of said at least one inflatable member (1, 101) for connecting said at least one inflatable member (1, 101) to a remaining portion of said garment (4, 104) in a reversible manner.

2. Garment (4) according to claim 1, wherein said reversible connection means (3) is interposed between said pocket-shaped containing means (2) and said remaining portion of said garment (4), so that said pocket-shaped containing means (2) is connected to said remaining portion of said garment (4) by means of said reversible connection means (3).
3. Garment (4) according to claim 2, wherein said reversible connection means (3) is arranged in a manner to allow the removal of said pocket-shaped containing means (2) from said remaining portion of said garment (4) together with said at least one inflatable member (1).
4. Garment (104) according to claim 1, wherein said reversible connection means (103) is interposed between said pocket-shaped containing means (102) and said at least one inflatable member (1), so that said at least one inflatable member (101) is connected to said containing means (102) by means of said reversible connection means (103), said pocket-shaped containing means (102) being integral to said remaining portion of said garment (104).
5. Garment (4, 104) according to any one of the preceding claims, wherein said pocket-shaped containing means (2, 102) comprises at least one edge (24, 124) which can be opened, and closing means (25, 125) of said at least one edge (24, 124), the arrangement being such that said at least one edge (24, 124) is released after the inflation of said at least one inflatable member (1, 101) and the latter outcomes from said pocket-shaped containing means (2, 102).
6. Garment (4, 104) according to any one of the preceding claims, wherein said at least one inflatable member (1, 101) in an inflated configuration has portions (11, 111; 12, 112; 13, 113; 14, 114) corresponding to the upper part of the user's back, and/or at part of the arms and/or between shoulders and neck, and/or in an upper area of the chest.
7. Garment (4, 104) according to any one of the preceding claims, wherein said at least one inflatable member (1, 101) has a bag-like shape.
8. Garment (4, 104) according to any one of the pre-

ceding claims, wherein said at least one inflatable member (1, 101) is a single body.

9. Garment (4, 104) according to any one of the preceding claims, wherein said pocket-shaped containing means (2, 102) are arranged at least partially at the upper part of the user's back.
10. Garment (4, 104) according to claim 9, wherein said pocket-shaped containing means (2, 102) comprises a portion (20, 120) corresponding to the upper part of a back defining an aerodynamic appendix.
11. Garment (4, 104) according to any one of the preceding claims, wherein said pocket-shaped containing means (2, 102) comprises portions (21, 22) corresponding to the shoulders and upper part of the chest of said user, respectively.
12. Garment (4) according to any one of the preceding claims, wherein said reversible connection means (3) comprises a plurality of loops (32) fastened to said pocket-shaped containing means (2, 102) and apt to be connected through an elongated member (31) to a respective second plurality of loops (33) fastened to said garment (4).
13. Garment (4, 104) according to claim 12, wherein said elongated member (31) is removably inserted in said pluralities of loops (32, 33) for implementing the connection of said inflatable member (1) to said remaining portion of said garment (4), and is pulled out from said pluralities of loops (32, 33) for allowing the removal of said inflatable member (1).
14. Garment (4, 104) according to claim 10, further comprising activation and inflation means of said at least one inflatable member (1, 101), wherein said activation and inflation means are arranged at said portion (20, 120) corresponding to the upper part of the back of the user.
15. Inflatable device for personal protection, comprising at least one inflatable member (1) and containing means (2) for housing said at least one inflatable member (1), said at least one inflatable member (1) cooperating with activation and inflation means for the inflation thereof in case of fall and/or slide and/or impact by a user or a vehicle carrying the same, **characterized in that** said containing means (2) is connected to said inflatable member (1), said inflatable device further comprising reversible connection means (3) for connecting said containing means (2) to a garment (4) in a reversible manner, so as to allow the removal of said containing means (2) from said garment (4) together with said at least one inflatable member (1), wherein said reversible connection means (3) is ar-

ranged on a perimeter of said containing means (2).

16. Inflatable device according to claim 15, wherein said containing means (2) comprises at least one edge (24) which can be opened, and closing means (25) of said at least one edge (24), the arrangement being such that said at least one edge (24) is released after the inflation of said at least one inflatable member (1) and the latter outcomes from said containing means (2).
17. Inflatable device according to claim 15 or 16, wherein said reversible connection means (3) comprises a plurality of loops (32) fastened to said containing means (2) and apt to be connected through an elongated member (31) to a respective second plurality of loops (33) fastened to said garment (4).
18. Inflatable device according to claim 17, wherein said elongated member (31) is removably inserted in said pluralities of loops (32, 33) for implementing the association of said containing means (2) to said garment (4), and is pulled out from said pluralities of loops (32, 33) for allowing the removal of said containing means (2).

#### Patentansprüche

1. Kleidungsstück (4, 104) zum Schutz des Körpers, das mindestens ein aufblasbares Element (1, 101) und ein Behältnis (2, 102) zur Unterbringung des mindestens einen aufblasbaren Elements (1, 101) aufweist, wobei das mindestens eine aufblasbare Element (1, 101) mit einem Aktivierungs- und Aufblasmittel zusammenwirkt, so dass es aufgeblasen wird, falls ein Nutzer oder ein Fahrzeug, das den Nutzer trägt, stürzt und/oder schlittert und/oder einen Aufprall erleidet, **dadurch gekennzeichnet, dass** das Behältnis (2, 102) wie eine Tasche geformt ist, und dass das Kleidungsstück (4, 104) ferner ein reversibles Verbindungsmittel (3, 103) an dem mindestens einen aufblasbaren Element (1, 101) aufweist, um das mindestens eine aufblasbare Element (1, 101) auf reversible Weise mit einem anderen Teil des Kleidungsstücks (4, 104) zu verbinden.
2. Kleidungsstück (4) nach Anspruch 1, wobei das reversible Verbindungsmittel (3) zwischen dem taschenförmigen Behältnis (2) und dem anderen Teil des Kleidungsstücks (4) angeordnet ist, so dass das taschenförmige Behältnis (2) mittels des reversiblen Verbindungsmittels (3) mit dem anderen Teil des Kleidungsstücks (4) verbunden wird.
3. Kleidungsstück (4) nach Anspruch 2, wobei das reversible Verbindungsmittel (3) derart angeordnet ist,

dass es die Abnahme des taschenförmigen Behältnisses (2) vom anderen Teil des Kleidungsstücks (4) zusammen mit dem mindestens einen aufblasbaren Element (1) ermöglicht.

4. Kleidungsstück (104) nach Anspruch 1, wobei das reversible Verbindungsmittel (103) so zwischen dem taschenförmigen Behältnis (102) und dem mindestens einen aufblasbaren Element (1) angeordnet ist, dass das mindestens eine aufblasbare Element (101) mittels des reversiblen Verbindungsmittels (103) mit dem Behältnis (102) verbunden wird, wobei das taschenförmige Behältnis (102) einstückig mit dem anderen Teil des Kleidungsstücks (104) ausgebildet ist.
5. Kleidungsstück (4, 104) nach einem der vorangehenden Ansprüche, wobei das taschenförmige Behältnis (2, 102) mindestens einen Rand (24, 124), der geöffnet werden kann, und ein Verschlussmittel (25, 125) für den mindestens einen Rand (24, 124) aufweist, wobei die Anordnung so ist, dass der mindestens eine Rand (24, 124) nach dem Aufblasen des mindestens einen aufblasbaren Elements (1, 101) freigegeben wird, und dass Letzteres aus dem taschenförmigen Behältnis (2, 102) herauskommt.
6. Kleidungsstück (4, 104) nach einem der vorangehenden Ansprüche, wobei das mindestens eine aufblasbare Element (1, 101) im aufgeblasenen Zustand Abschnitte (11, 111; 12, 112; 13, 113; 14, 114) aufweist, die dem oberen Rücken des Benutzers und/oder einem Teil der Arme und/oder dem Bereich zwischen Schultern und Hals und/oder einem oberen Bereich des Brustkorbs entsprechen.
7. Kleidungsstück (4, 104) nach einem der vorangehenden Ansprüche, wobei das mindestens eine aufblasbare Element (1, 101) wie ein Beutel geformt ist.
8. Kleidungsstück (4, 104) nach einem der vorangehenden Ansprüche, wobei das mindestens eine aufblasbare Element (1, 101) einstückig ist.
9. Kleidungsstück (4, 104) nach einem der vorangehenden Ansprüche, wobei die taschenförmigen Behältnisse (2, 102) mindestens teilweise am oberen Rücken des Benutzers angeordnet sind.
10. Kleidungsstück (4, 104) nach Anspruch 9, wobei das taschenförmige Behältnis (2, 102) einen Abschnitt (20, 120) aufweist, der dem oberen Rücken entspricht und der einen aerodynamischen Fortsatz definiert.
11. Kleidungsstück (4, 104) nach einem der vorangehenden Ansprüche, wobei das taschenförmige Behältnis (2, 102) Abschnitte (21, 22) aufweist, die den

Schultern bzw. dem oberen Teil des Brustkorbs des Benutzers entsprechen.

12. Kleidungsstück (4, 104) nach einem der vorangehenden Ansprüche, wobei das reversible Verbindungsmittel (3) eine Vielzahl von Ösen (32) aufweist, die an dem taschenförmigen Behältnis (2, 102) befestigt sind und dafür geeignet sind, durch ein längliches Element (31) mit einer entsprechenden zweiten Vielzahl von Ösen (33), die am Kleidungsstück (4) befestigt sind, verbunden zu werden.
13. Kleidungsstück (4, 104) nach Anspruch 12, wobei das längliche Element (31) lösbar in die Vielzahl von Ösen (32, 33) eingeführt wird, um die Verbindung des aufblasbaren Elements (1) mit dem anderen Teil des Kleidungsstücks (4) zu verwirklichen, und aus der Vielzahl von Ösen (32, 33) herausgezogen wird, um die Abnahme des aufblasbaren Elements (1) zu ermöglichen.
14. Kleidungsstück (4, 104) nach Anspruch 10, ferner ein Aktivierungs- und Aufblasmittel für das mindestens eine aufblasbare Element (1, 101) aufweisend, wobei die Aktivierungs- und Aufblasmittel an dem Abschnitt (20, 120) angeordnet sind, der dem oberen Rücken des Benutzers entspricht.
15. Aufblasbare Vorrichtung zum Schutz des Körpers, die mindestens ein aufblasbares Element (1) und ein Behältnis (2) zur Unterbringung des mindestens einen aufblasbaren Elements (1, 101) aufweist, wobei das mindestens eine aufblasbare Element (1, 101) mit einem Aktivierungs- und Aufblasmittel zusammenwirkt, so dass es aufgeblasen wird, falls ein Nutzer oder ein Fahrzeug, das den Nutzer trägt, stürzt und/oder schlittert und/oder einen Aufprall erleidet, **dadurch gekennzeichnet, dass** das Behältnis (2, 102) mit dem aufblasbaren Element (1) verbunden ist, wobei das aufblasbare Element ferner ein reversibles Verbindungsmittel (3) aufweist, welches das Behältnis (2) auf reversible Weise mit einem Kleidungsstück (4) verbindet, so dass das Behältnis (2) zusammen mit dem mindestens einen aufblasbaren Element (1) von dem Kleidungsstück (4) abgenommen werden kann, wobei das reversible Verbindungsmittel (3) an einem Außenrand des Behältnisses (2) angeordnet ist.
16. Aufblasbare Vorrichtung nach Anspruch 15, wobei das Behältnis (2) mindestens einen Rand (24), der geöffnet werden kann, und ein Verschlussmittel (25) für den mindestens einen Rand (24) aufweist, wobei die Anordnung so ist, dass der mindestens eine Rand (24) nach dem Aufblasen des mindestens einen aufblasbaren Elements (1) freigegeben wird, und dass Letzteres aus dem Behältnis (2) herauskommt.

17. Aufblasbare Vorrichtung nach Anspruch 15 oder 16, wobei das reversible Verbindungsmittel (3) eine Vielzahl von Ösen (32) aufweist, die an dem Behältnis (2) befestigt sind und die dafür geeignet sind, durch ein längliches Element (31) mit einer entsprechenden zweiten Vielzahl von Ösen (33), die an dem Kleidungsstück (4) befestigt sind, verbunden zu werden.
18. Aufblasbare Einrichtung nach Anspruch 17, wobei das längliche Element (31) lösbar in die Vielzahl von Ösen (32, 33) eingeführt wird, um die Verbindung des Behältnisses (2) mit dem Kleidungsstück (4) zu verwirklichen, und aus der Vielzahl von Ösen (32, 33) herausgezogen wird, um die Abnahme des Behältnisses (2) zu ermöglichen.

### Revendications

1. Vêtement (4, 104) pour la protection personnelle comprenant au moins un élément gonflable (1, 101) et des moyens de confinement (2, 102) pour loger ledit au moins un élément gonflable (1, 101), ledit au moins un élément gonflable (1, 101) coopérant avec des moyens d'activation et de gonflage pour son gonflage en cas de chute et/ou de glissement et/ou d'impact par un utilisateur ou un véhicule portant ce dernier,
- caractérisé en ce que :**
- lesdits moyens de confinement (2, 102) sont en forme de poche, et **en ce que** ledit vêtement (4, 104) comprend en outre des moyens de raccordement réversibles (3, 103) dudit au moins un élément gonflable (1, 101) pour raccorder ledit au moins un élément gonflable (1, 101) à une partie restante dudit vêtement (4, 104) d'une manière réversible.
2. Vêtement (4) selon la revendication 1, dans lequel lesdits moyens de raccordement réversibles (3) sont interposés entre lesdits moyens de confinement (2) en forme de poche et ladite partie restante dudit vêtement (4), de sorte que lesdits moyens de confinement (2) en forme de poche sont raccordés à ladite partie restante dudit vêtement (4) au moyen desdits moyens de raccordement réversibles (3).
3. Vêtement (4) selon la revendication 2, dans lequel lesdits moyens de raccordement réversibles (3) sont agencés d'une manière qui permet le retrait desdits moyens de confinement (2) en forme de poche de ladite partie restante dudit vêtement (4) conjointement audit au moins un élément gonflable (1).
4. Vêtement (104) selon la revendication 1, dans lequel lesdits moyens de raccordement réversibles (103)

sont intercalés entre lesdits moyens de confinement (102) en forme de poche et ledit au moins un élément gonflable (1), de sorte que ledit au moins un élément gonflable (101) est raccordé auxdits moyens de confinement (102) au moyen desdits moyens de raccordement réversibles (103), lesdits moyens de confinement (102) en forme de poche étant solidaires de ladite partie restante dudit vêtement (104).

5. Vêtement (4, 104) selon l'une quelconque des revendications précédentes, dans lequel lesdits moyens de confinement (2, 102) en forme de poche comprennent au moins un bord (24, 124) qui peut être ouvert et des moyens de fermeture (25, 125) dudit au moins un bord (24, 124), l'agencement étant tel que ledit au moins un bord (24, 124) est libéré après le gonflage dudit au moins un élément gonflable (1, 101) et que ce dernier sort desdits moyens de confinement (2, 102) en forme de poche.
6. Vêtement (4, 104) selon l'une quelconque des revendications précédentes, dans lequel ledit au moins un élément gonflable (1, 101) dans une configuration gonflée a des parties (11, 111 ; 12, 112 ; 13, 113 ; 14, 114) correspondant à la partie supérieure du dos de l'utilisateur, et/ou au niveau d'une partie des bras et/ou entre les épaules et le cou et/ou dans une zone supérieure de la poitrine.
7. Vêtement (4, 104) selon l'une quelconque des revendications précédentes, dans lequel ledit au moins un élément gonflable (1, 101) a une forme de sac.
8. Vêtement (4, 104) selon l'une quelconque des revendications précédentes, dans lequel ledit au moins un élément gonflable (1, 101) est un corps unique.
9. Vêtement (4, 104) selon l'une quelconque des revendications précédentes, dans lequel lesdits moyens de confinement (2, 102) en forme de poche sont agencés au moins partiellement au niveau de la partie supérieure du dos de l'utilisateur.
10. Vêtement (4, 104) selon la revendication 9, dans lequel lesdits moyens de confinement (2, 102) en forme de poche comprennent une partie (20, 120) correspondant à la partie supérieure d'un dos définissant un appendice aérodynamique.
11. Vêtement (4, 104) selon l'une quelconque des revendications précédentes, dans lequel lesdits moyens de confinement (2, 102) en forme de poche comprennent des parties (21, 22) correspondant aux épaules et à la partie supérieure de la poitrine dudit utilisateur, respectivement.

12. Vêtement (4) selon l'une quelconque des revendications précédentes, dans lequel lesdits moyens de raccordement réversibles (3) comprennent une pluralité de boucles (32) fixées sur lesdits moyens de confinement (2, 102) en forme de poche et appropriées pour être raccordées par le biais d'un élément allongé (31) à une seconde pluralité respective de boucles (33) fixées sur ledit vêtement (4). 5
13. Vêtement (4, 104) selon la revendication 12, dans lequel ledit élément allongé (31) est inséré de manière amovible dans lesdites pluralités de boucles (32, 33) pour la mise en oeuvre du raccordement dudit élément gonflable (1) sur ladite partie restante dudit vêtement (4) et est retiré desdites pluralités de boucles (32, 33) pour permettre le retrait dudit élément gonflable (1). 10 15
14. Vêtement (4, 104) selon la revendication 10, comprenant en outre des moyens d'activation et de gonflage dudit au moins un élément gonflable (1, 101), dans lequel lesdits moyens d'activation et de gonflage sont agencés au niveau de ladite partie (20, 120) correspondant à la partie supérieure du dos de l'utilisateur. 20 25
15. Dispositif gonflable pour la protection personnelle, comprenant au moins un élément gonflable (1) et des moyens de confinement (2) pour loger ledit au moins un élément gonflable (1), ledit au moins un élément gonflable (1) coopérant avec les moyens d'activation et de gonflage pour son gonflage en cas de chute et/ou de glissement et/ou de choc par un utilisateur ou un véhicule portant ce dernier, **caractérisé en ce que :** 30 35
- lesdits moyens de confinement (2) sont raccordés audit élément gonflable (1), ledit dispositif gonflable comprenant en outre des moyens de raccordement réversibles (3) pour raccorder lesdits moyens de confinement (2) à un vêtement (4) d'une manière réversible, afin de permettre le retrait desdits moyens de confinement (2) dudit vêtement (4) conjointement audit au moins un élément gonflable (1), dans lequel lesdits moyens de raccordement réversibles (3) sont agencés sur un périmètre desdits moyens de confinement (2). 40 45
16. Dispositif gonflable selon la revendication 15, dans lequel lesdits moyens de confinement (2) comprend au moins un bord (24) qui peut être ouvert et des moyens de fermeture (25) dudit au moins un bord (24), l'agencement étant tel que ledit au moins un bord (24) est libéré après le gonflage dudit au moins un élément gonflable (1) et que ce dernier sort desdits moyens de confinement (2). 50 55
17. Dispositif gonflable selon la revendication 15 ou 16, dans lequel lesdits moyens de raccordement réversibles (3) comprennent une pluralité de boucles (32) fixées sur lesdits moyens de confinement (2) et appropriées pour être raccordées par le biais d'un élément allongé (31) à une seconde pluralité respective de boucles (33) fixées sur ledit vêtement (4).
18. Dispositif gonflable selon la revendication 17, dans lequel ledit élément allongé (31) est inséré de manière amovible dans lesdites pluralités de boucles (32, 33) pour mettre en oeuvre l'association desdits moyens de confinement (2) sur ledit vêtement (4) et est tiré hors desdites pluralités de boucles (32, 33) pour permettre le retrait desdits moyens de confinement (2).

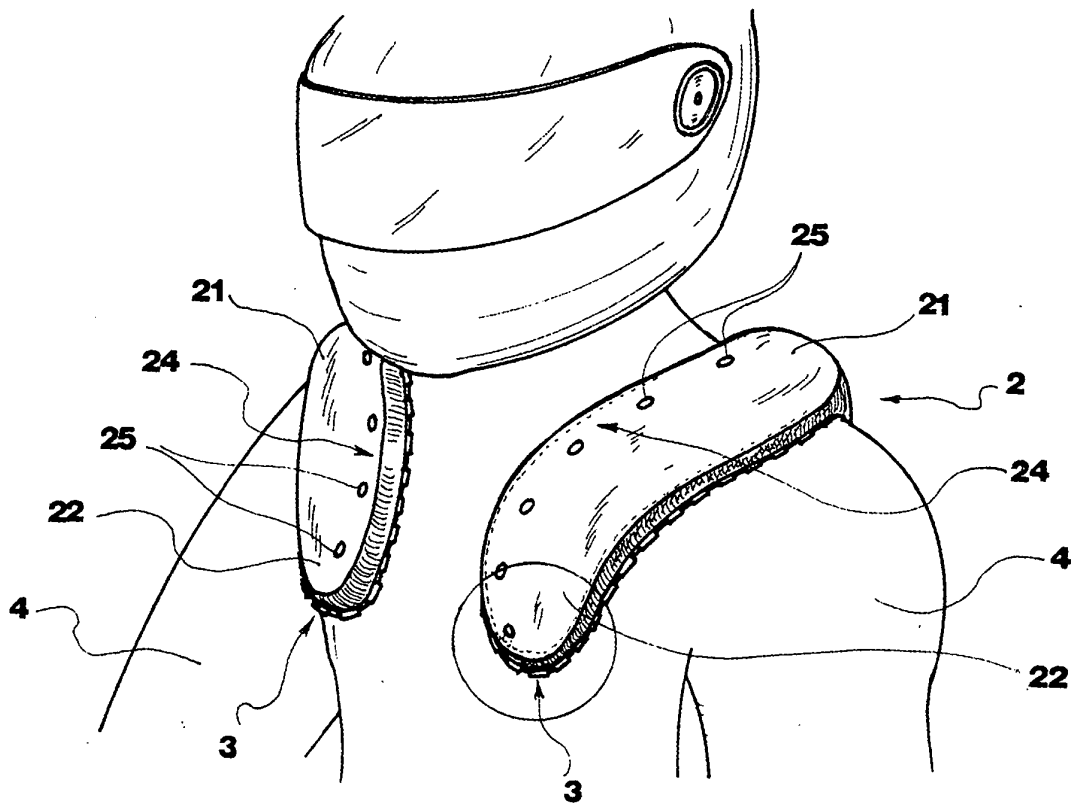


FIG. 1

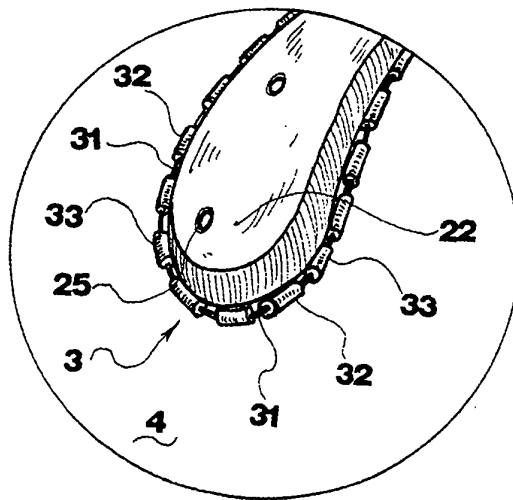
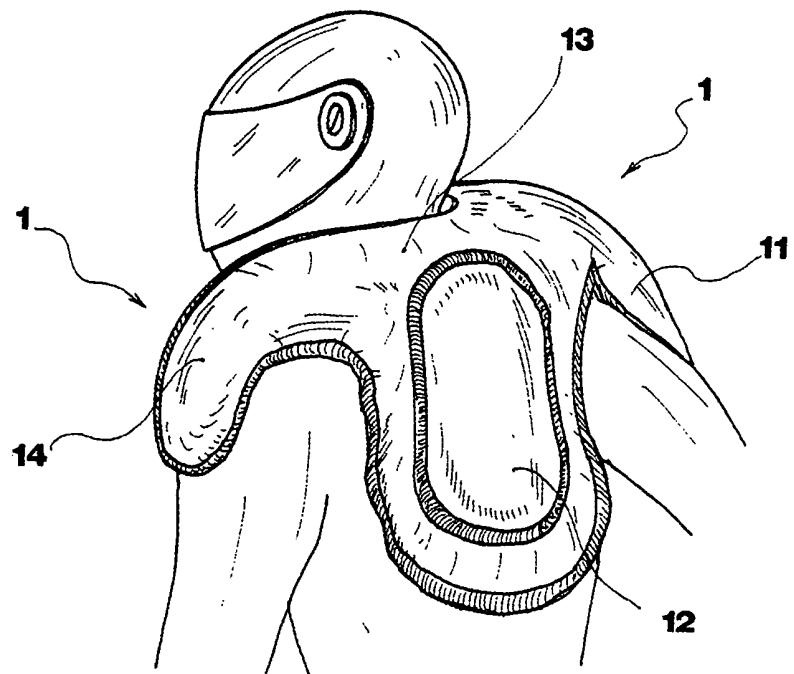
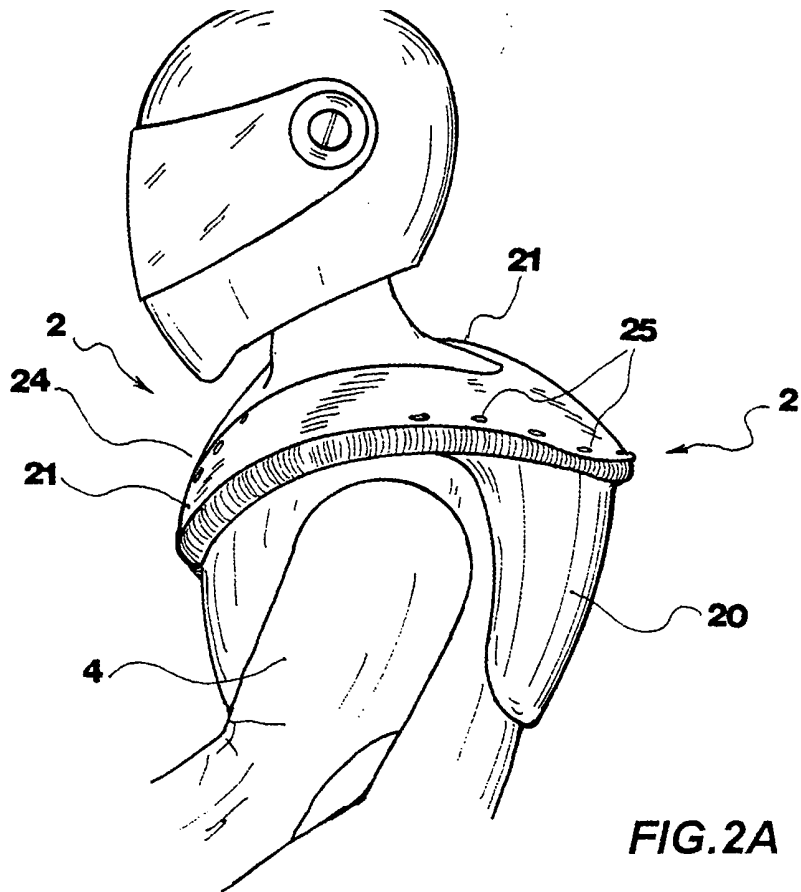
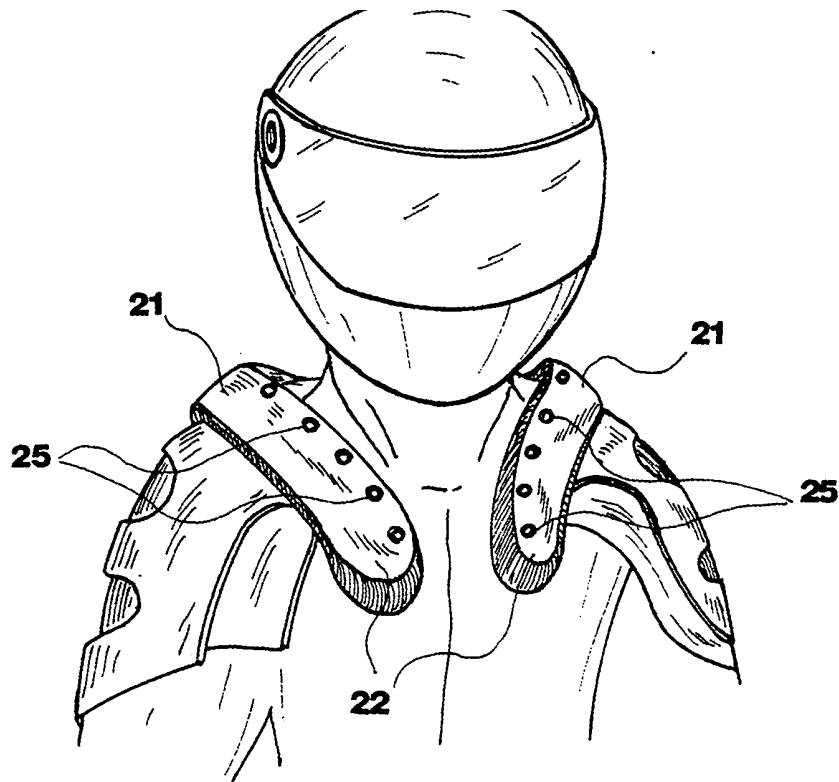
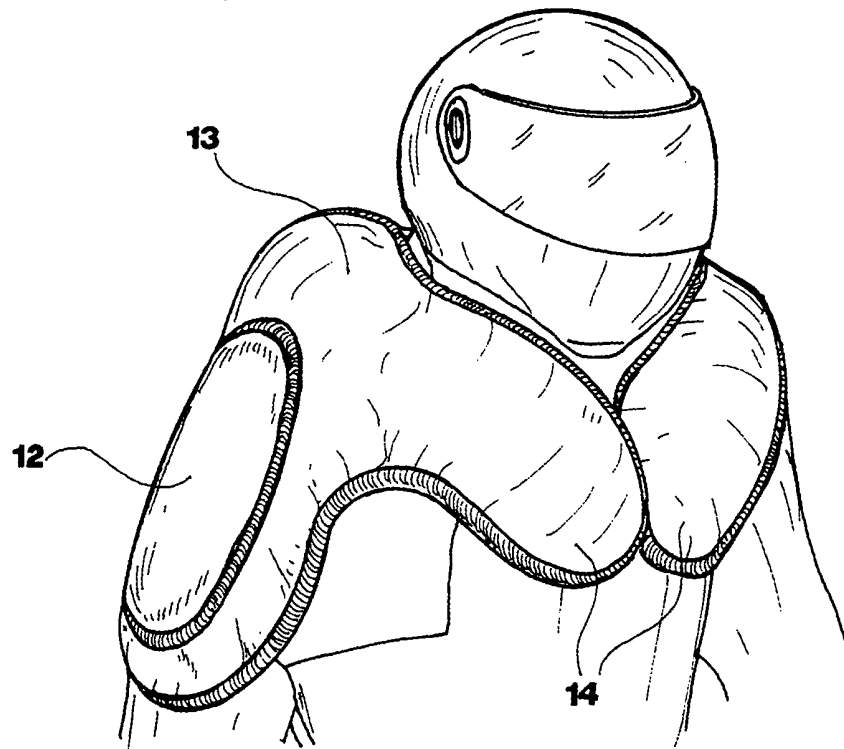


FIG. 1A





**FIG.3A**



**FIG.3B**

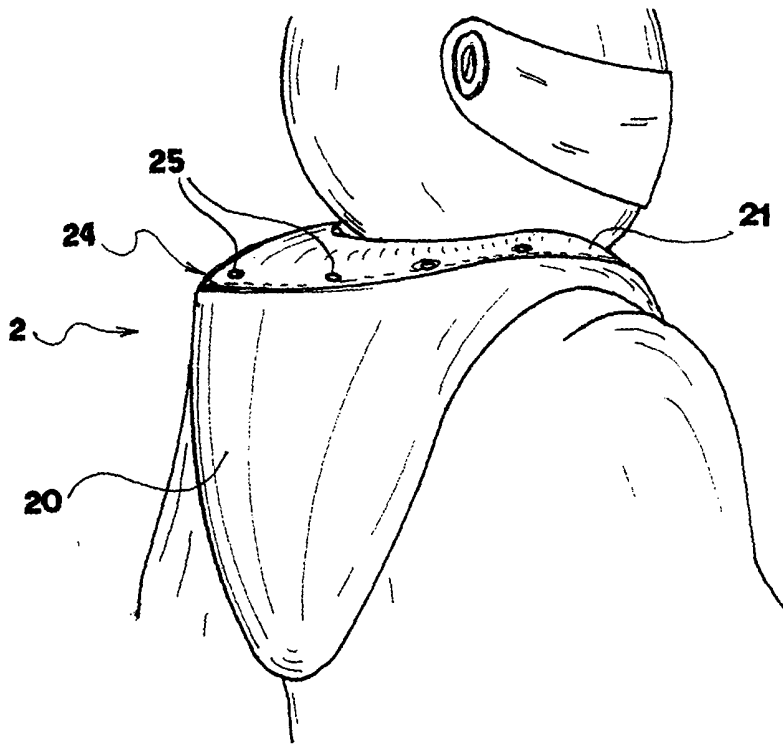


FIG. 4A

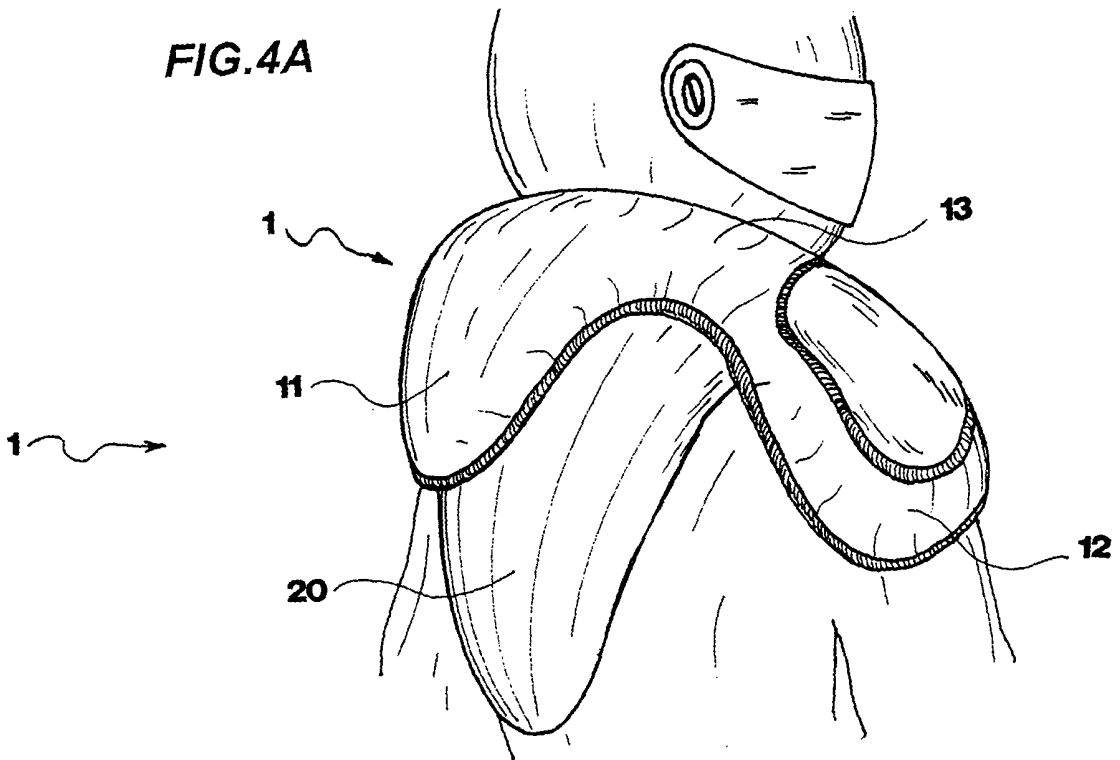
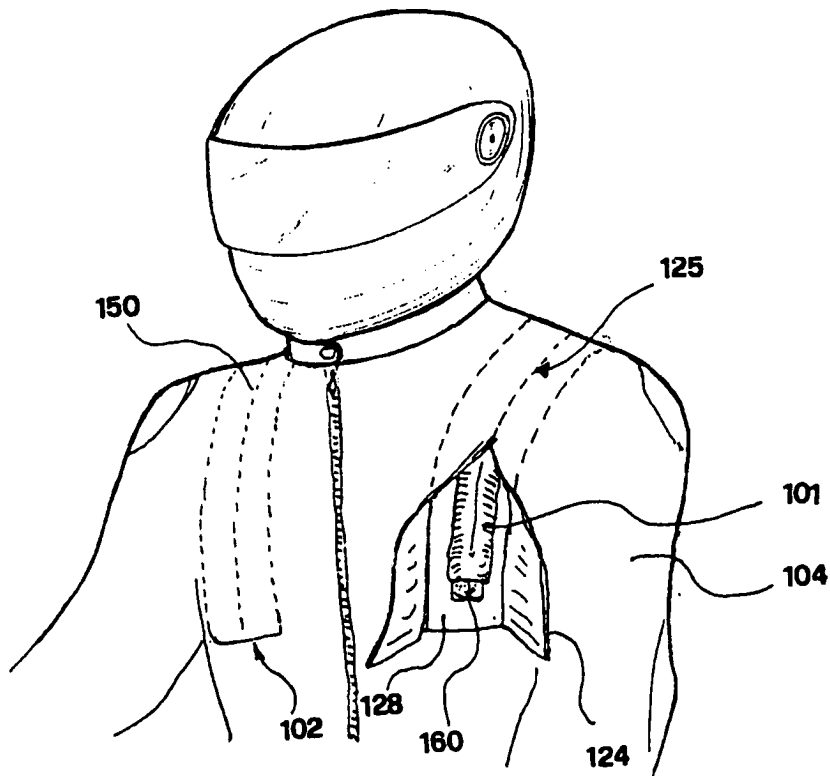
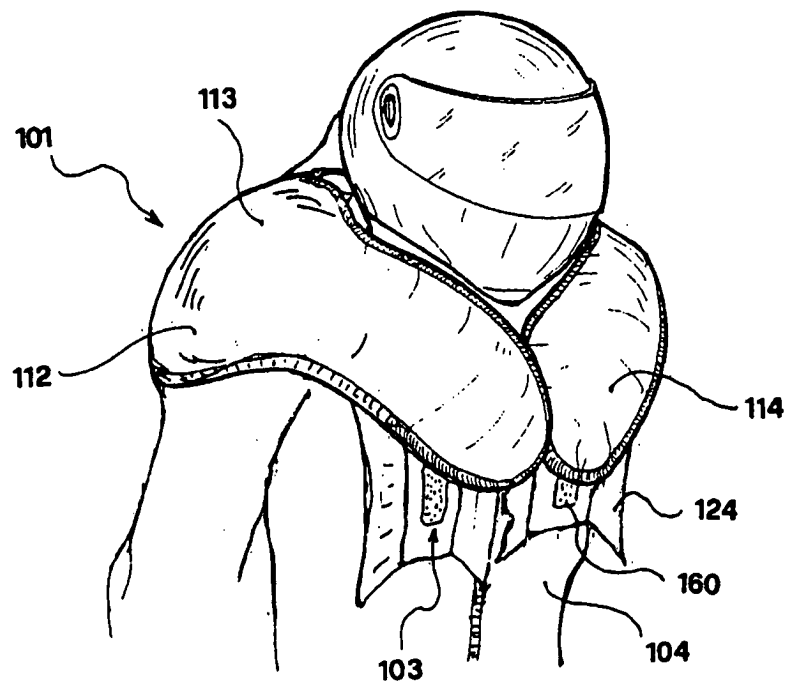


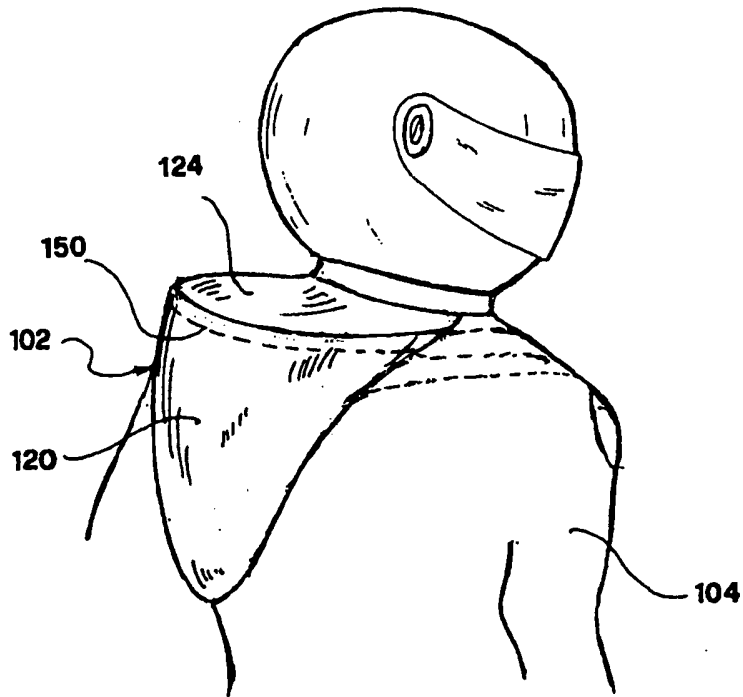
FIG. 4B



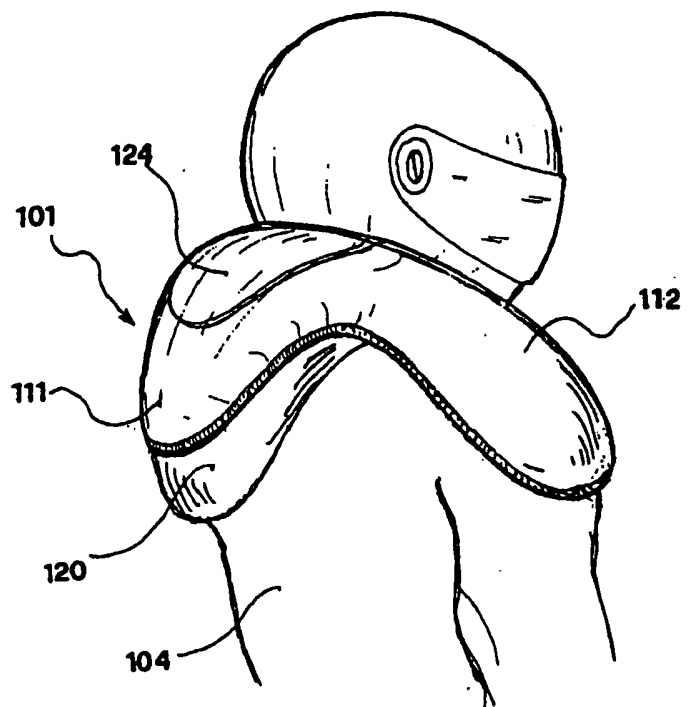
**FIG. 5A**



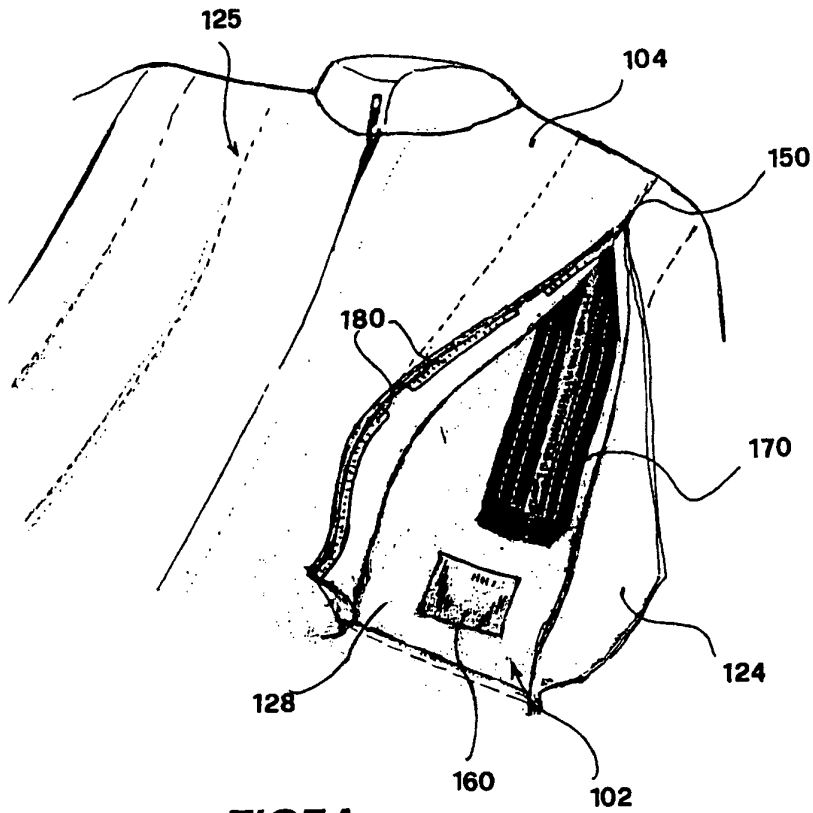
**FIG. 5B**



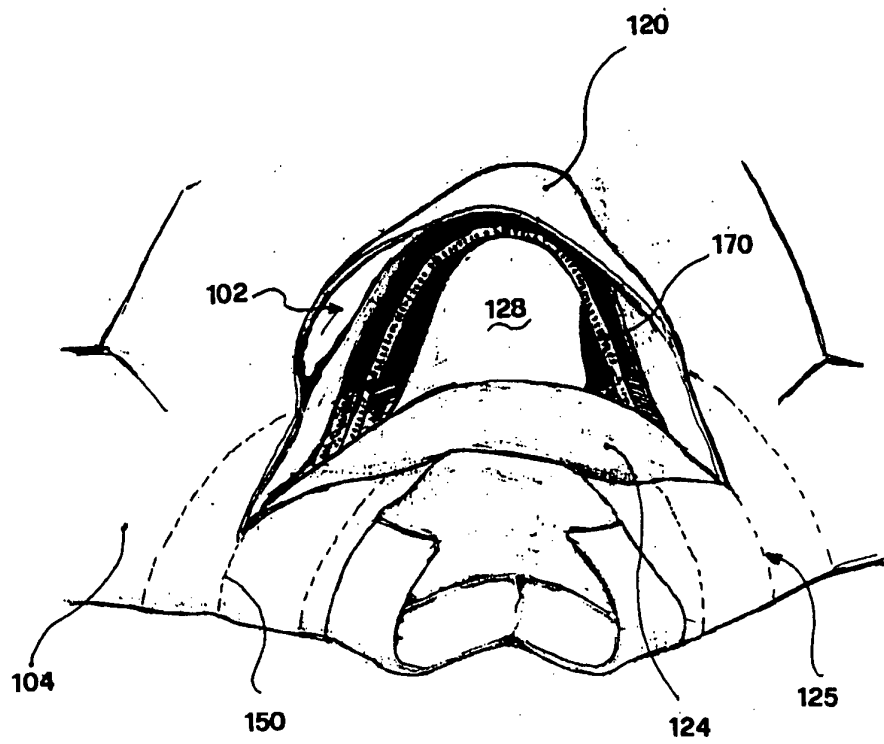
**FIG. 6A**



**FIG. 6B**



**FIG. 7A**



**FIG. 7B**

**REFERENCES CITED IN THE DESCRIPTION**

*This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.*

**Patent documents cited in the description**

- WO 2005013737 A [0011]
- US 2006212986 A [0011]
- DE 19754541 [0011]