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(54) **PROTECTION STRUCTURE FOR THE BACK AND THE CHEST**

SCHUTZSTRUKTUR FÜR RÜCKEN UND BRUST

STRUCTURE DE PROTECTION POUR LE DOS ET LE THORAX

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EP 1 763 307 B1

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Description

[0001] The present invention concerns a structure for protecting the back and the chest of a person against impacts, said structure being referred to below in short simply as "protection".

[0002] In particular, although not exclusively, the protection is intended to be used in the case of impacts due to falls during sports activities, such as downhill skiing, motorcycling, cycling or bobsleighbing, which involve movements at speeds which may also be very high and where the person practising the sport does not have external protective structures (cockpits, roofs and the like).

[0003] It is easy to understand the reasons for which many manufacturers have for some time been concentrating their attention on the development of sports garments provided with protections which are integral or added on.

[0004] The patent application WO-A-99 04661 deals with the risks which may arise during the abovementioned sports activities and describes a protection to be fixed by means of braces, belts or the like, comprising two supports which are aligned vertically and joined together by means of a hinging button which is perpendicular to the user's spinal cord. This protection is limited to the user's back alone.

[0005] The patent US-A-4,467,475 also discloses a structure in which the shields for protecting the back and chest, in particular of a motorcyclist, are held together by shoulder-pieces and are fixed along the sides by belts.

[0006] The patent application US-A-2003 0024035 describes a protection for baseball players in which the shield protecting the chest and the stomach is provided with ties which pass behind the shoulders while, for protection of the back, two flaps are envisaged, being fixed to the sides of said shield and covering only the lumbar zones of the user.

[0007] Worth mentioning are also the patent US-A-6,026,509 and the patent application US-A-2002/0069444 in which the mutual connection between the shields for protecting the back and chest is ensured by flexible straps placed over the shoulders and around the waist of the user, the straps being provided with hook and loop fastening means of the Velcro™ type at their ends.

[0008] Lastly, the patent GB-A-577 157 envisages the use of two straps placed over the shoulders and ending at the top of the shield for protecting the chest, as well as another two, the ENDS of which are connected together by a flexible strip, around the waist of the user. A pair of cords connect the front ends of the shoulder straps to said flexible strip by means of a detachable pull member.

[0009] In all these examples of the prior art the systems for fixing the protection to the user's body are complex and therefore the operations for arranging them in position and subsequently closing them cannot be easily performed or in any case require a lot of time.

[0010] It must also be noted that the protections de-

scribed are designed to be worn on top of another garment, generally the usual garment intended for the sport practised by the user.

[0011] It follows from the above comments that some of the disadvantages of the prior art are as follows:

- the impossibility of arranging in position, and hence also releasing, the systems for fixing the protection to the body in a rapid manner;
- the procedure for putting on and removing the protection is necessarily complex and awkward;
- the impossibility of removing the protection, in the case where, for various reasons, it is worn not on the outside (for example at sight) but on the inside of the garment which is normally worn for practising the sport.

[0012] The main object of the present invention is to provide a protection structure both for the chest and for the back of the user which eliminates said disadvantages.

[0013] These and other objects are achieved by the protection structure in accordance with the following claims.

[0014] The advantages and the characteristic features of the invention will emerge more clearly from the following description of a preferred, but not exclusive embodiment of the protection structure which refers to the accompanying drawing in which:

- Fig. 1 shows the chest part of the protection structure according to the invention when worn and fastened;
- Fig. 2 shows the back part of the protection structure according to Fig. 1 when worn and fastened;
- Fig. 3 shows a view of the side of the said protection structure when worn and fastened;
- Fig. 4 is a view similar to that of Fig. 1 and shows the protection structure when worn but unfastened;
- Fig. 5 shows a front view of the protection structure of the preceding figures alone when fastened;
- Fig. 6 shows a front view of the same protection structure when unfastened;
- Fig. 7 shows a view of three quarters of the same protection structure when fastened.

[0015] With reference to the abovementioned figures, the reference number 10 denotes overall a protection structure according to the invention, which is usually arranged on the user's body underneath the garment which is normally worn for practising the sport. The structure 10 comprises a chest shield 12 for protecting the chest and a back shield 14 for protecting the back and having at the bottom two side pieces 18 for covering the lumbar zones. For coupling together the shields 12 and 14 the invention envisages the use of four fastening elements or elastically extendable belts, two of which 20A and 20B have one end fixed to the top of the back shield 14, in the vicinity of the user's shoulders, while the other two 20C and 20D have one end fixed to each of the said side

pieces 18. The free ends of said four belts converge in front of the chest shield 12, approximately above the sternum, towards a snap-engaging/release mechanism which is denoted overall by the reference number 30 - see Figs. 1, 3, 5 and 7. The mechanism 30 consists of four parts, each of which is fixed to the free end of one of the belts 20, more precisely three keys or male elements 32 are fixed to the belts 20A, 20B, 20C and a block or female element 34 is fixed to the belt 20D as well as to the chest shield 12. Consequently, the two shields 12 and 14 forming the protection 10 are connected permanently together by means of said belt 20D. The three keys 32 are adapted to be snap-engaged inside the block 34 and, by means of a release button 36 provided in the block 34, are adapted to be released (see Figs. 4 and 6).

[0016] It is obvious how the invention achieves the predefined objects. In fact, the user may, by operating with one hand only the release button 36 provided on the block 34, release at the same time all the keys 32 in order to unfasten and remove the protection 10 from the user's body. Moreover, since the belt 20D alone is left connecting together the two shields 12 and 14, the protection 10 may be removed from the user's body without removing beforehand the garment which is normally worn in order to practise the sport. This is possible because said protection 10 can be extracted laterally, along the sides, from underneath said garment.

[0017] The belts in the region of the shoulders may be joined together as a single key instead of having two separate keys 32 and likewise, instead of two separate belts it is possible to use a single belt which passes around the neck and engages with the back shield 14, for example passing through an eyelet thereof. Similarly all this is applicable to the belts 20 passing around the waist.

[0018] Instead of belts, it is also possible to use cords, elastic strips or straps which may or may not be adjustable as means for connecting together the two shields.

[0019] The block 34 must not necessarily remain fixed to the chest shield 12: four non-permanent joining elements may be provided such that the two shields 12 and 14 may be completely separated or it is possible to fix permanently to said shield 12 any one of the four joining elements.

[0020] It is clear that all the comments concerning the joining elements of the chest shield 12 described and their constructional form are also applicable to the back shield 14, i.e. the case where the belts 20 could be engaged with said shield 14 or with both shields 12 and 14 at the same time.

[0021] These and further variants are included within the following claims.

Claims

1. Structure for protecting the chest and the back against impacts, in particular for a person engaged in sports activities, including high-speed sports ac-

tivities, comprising:

- shield means for the chest (12);
- shield means for the back (14);
- fastening elements (20A, 20B, 20C, 20D) which are placed over the shoulders and around the waist of the user and are made of flexible materials for connecting together said shield means (12, 14), at least two of said fastening elements converging towards a same point where they are joined to at least one of said shield means (12, 14) by means of at least one non-permanent engaging means (32),

characterized in that said non-permanent engaging means (32) are adapted to be released simultaneously.

2. Protection structure according to Claim 1, in which said fastening elements (20A, 20B, 20C, 20D) are elastically extendable.
3. Protection structure according to Claim 1, in which said non-permanent engaging means (32) are keys inserted into a block (34) which is provided with means (36) able to be operated manually by the user for simultaneous release of said keys.
4. Protection structure according to Claim 3, in which said block (34) is fixed to one of said shield means (12, 14).
5. Protection structure according to Claim 4, in which said block (34) is fixed to the shield means (12) for the chest.
6. Protection structure according to any one of the preceding claims, in which said fastening elements are four in number, two of which (20A, 20B) passing over the shoulders and two of which (20C, 20D) passing around the waist of the user.
7. Protection structure according to any one of the claims 1 to 5, in which a single fastening element is joined to both shield means (12, 14) passes over the shoulders and/or around the waist of the user.

Patentansprüche

1. Struktur zum Schützen von Brust und Rücken gegen Stöße, insbesondere für eine Person, die sich mit sportlichen Aktivitäten einschließlich Hochleistungssportaktivitäten beschäftigt, mit:

einer Schutzschildeinrichtung für die Brust (12);
einer Schutzschildeinrichtung für den Rücken (14);

Befestigungselementen (20A, 20B, 20C, 20D), die über den Schultern und um die Taille des Benutzers herum platziert sind und aus flexiblen Materialien zum Verbinden mit den Schutzschildeinrichtungen (12, 14) bestehen, wobei zumindest zwei der Befestigungselemente an dem selben Punkt zusammenlaufen, an dem sie an zumindest einer der Schutzschildeinrichtungen (12, 14) mittels zumindest einer nicht dauerhaften Eingriffseinrichtung (32) gefügt sind,

dadurch gekennzeichnet, dass die nicht dauerhaften Eingriffseinrichtungen (32) zum gleichzeitigen Lösen angepasst sind.

2. Schutzstruktur gemäß Anspruch 1, bei der die Befestigungselemente (20A, 20B, 20C, 20D) elastisch verlängerbar sind.
3. Schutzstruktur gemäß Anspruch 1, bei der die nicht dauerhaften Eingriffseinrichtungen (32) Schlüssel sind, die in einen Block (34) eingefügt werden, der mit einer Einrichtung (36) versehen ist, die durch den Benutzer manuell betätigt werden kann, um die Schlüssel gleichzeitig zu lösen.
4. Schutzvorrichtung gemäß Anspruch 3, bei der der Block (34) an einer der Schutzschildeinrichtungen (12, 14) befestigt ist.
5. Schutzstruktur gemäß Anspruch 4, bei der der Block (34) an der Schutzschildeinrichtung (12) für die Brust befestigt ist.
6. Schutzstruktur gemäß einem der vorangehenden Ansprüche, bei der die Anzahl der Befestigungselemente vier beträgt, von denen zwei (20A, 20B) über den Schultern verlaufen und von denen zwei (20C, 20D) um die Taille des Benutzers herum verlaufen.
7. Schutzstruktur gemäß einem der Ansprüche 1 bis 5, bei der ein einziges Befestigungselement an beiden Schutzschildeinrichtungen (12, 14) gefügt ist und über den Schultern und/oder die Taille des Benutzers herum verläuft.

sont disposés sur les épaules et autour de la taille de l'utilisateur et sont fabriqués en des matériaux flexibles, pour relier ensemble lesdits moyens de protection (12, 14), au moins deux de ces éléments d'attache convergeant vers un même point où ils sont réunis à au moins un desdits moyens de protection (12, 14) au moyen d'au moins un moyen d'accrochage (32) non permanent, **caractérisée en ce que** lesdits moyens d'accrochage (32) non permanents sont conçus pour être libérés simultanément.

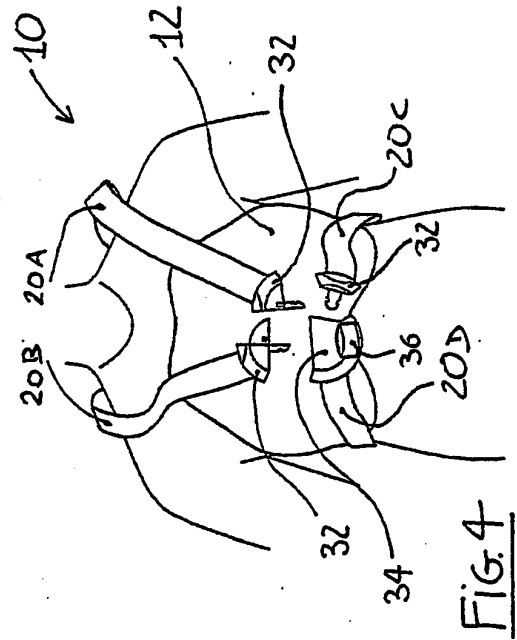
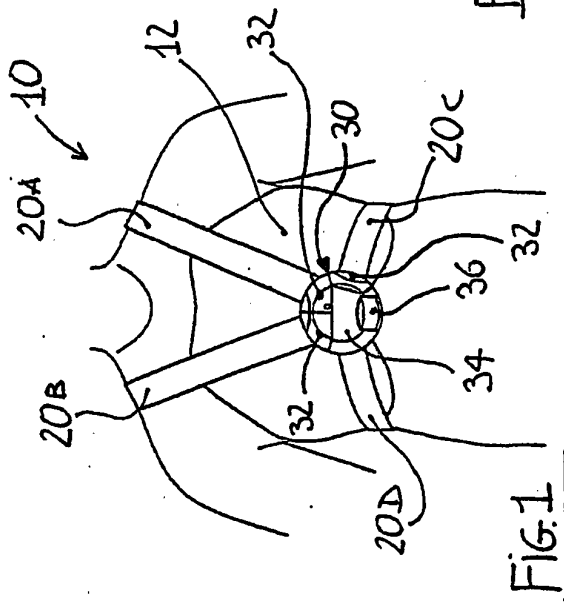
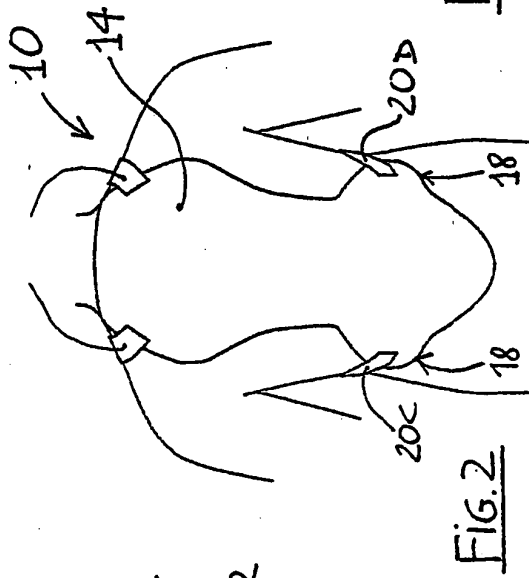
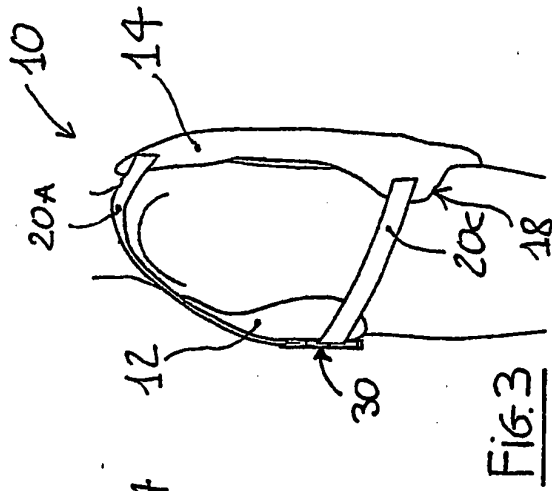
2. Structure de protection selon la revendication 1, dans laquelle lesdits éléments d'attache (20A, 20B, 20C, 20D) sont élastiquement extensibles.
3. Structure de protection selon la revendication 1, dans laquelle lesdits moyens d'accrochage (32) non permanents sont des pattes insérées dans un bloc (34) pourvu de moyens (36) pouvant être actionnés manuellement par l'utilisateur pour libérer simultanément toutes les pattes.
4. Structure de protection selon la revendication 3, dans laquelle ledit bloc (34) est solidaire de l'un desdits moyens de protection (12, 14).
5. Structure de protection selon la revendication 4, dans laquelle ledit bloc (34) est solidaire du moyen de protection (12) pour la poitrine.
6. Structure de protection selon l'une quelconque des revendications précédentes, dans laquelle lesdits éléments d'attache sont au nombre de quatre dont deux (20A, 20B) passent par dessus l'épaule et deux (20C, 20D) passent autour de la taille de l'utilisateur.
7. Structure de protection selon l'une quelconque des revendications 1 à 5, dans laquelle un seul élément d'attache est relié aux deux moyens de protection (12, 14).et passe par dessus les épaules et/ou autour de la taille de l'utilisateur.

Revendications

1. Structure de protection de la poitrine et du dos contre les heurts, en particulier pour une personne engagée dans des activités sportives incluant des activités sportive de haute vitesse comportant :

- des moyens de protection de la poitrine (12) ;
- des moyens de protection du dos ;

des éléments d'attache (20A, 20B, 20C, 20D), qui



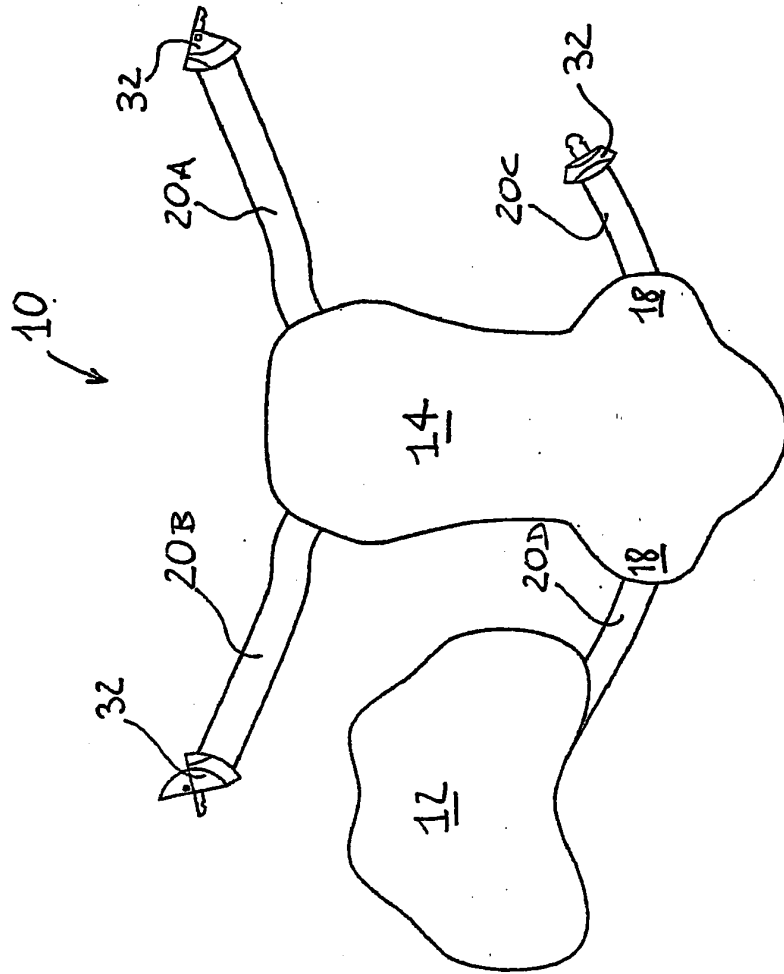


Fig. 6

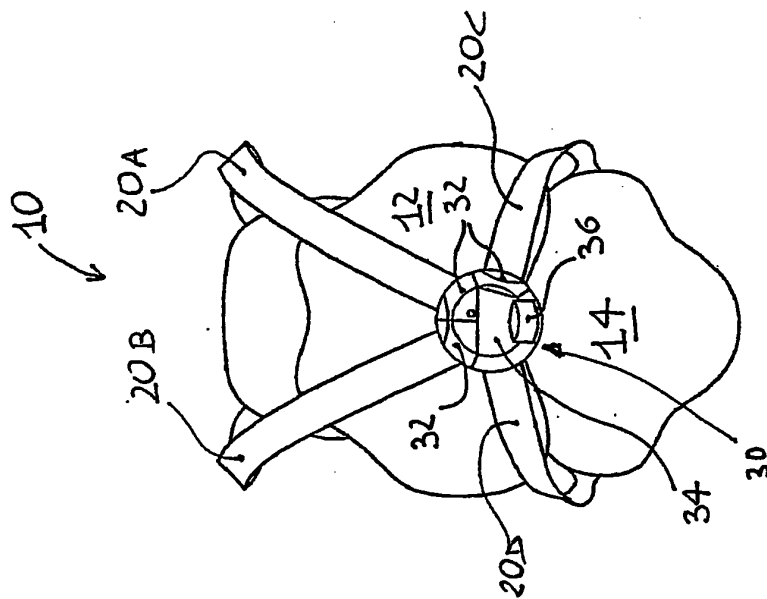


Fig. 5

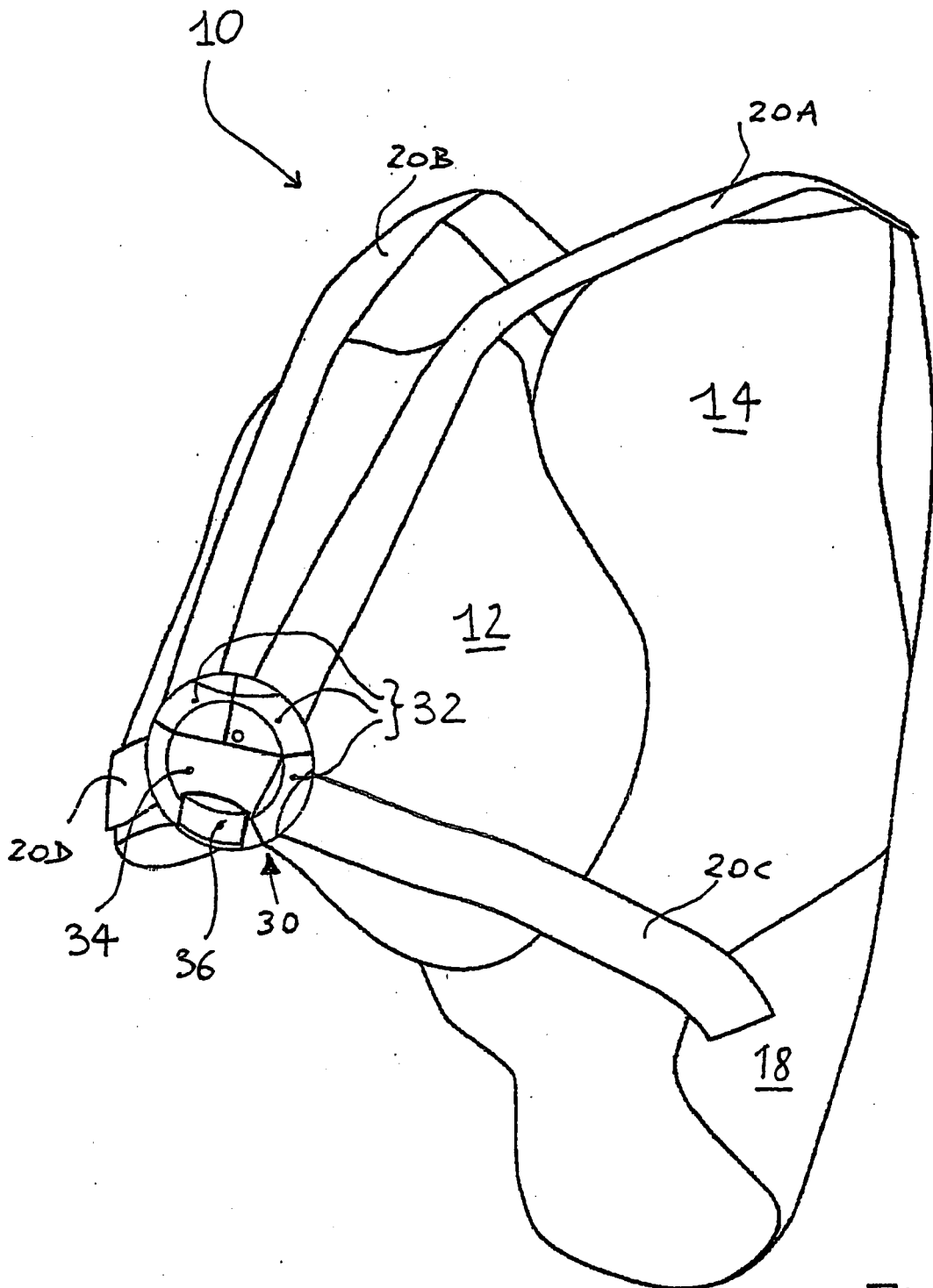


FIG. 7

REFERENCES CITED IN THE DESCRIPTION

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