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(54) **A rucksack shoulder pad**

Schulterpolster für einen Rucksack

Coussinet d'épaule pour sac à dos

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Description

This invention relates to a shoulder pad for a rucksack harness.

Modern large capacity rucksacks have shoulder pads which in use extend from the scapular region at the back of a wearer to the chest region at the front, where they link to straps connectable to lower location points on the fabric sack or its supportive frame. Commonly the respective pads for right and left are connected by webbing, or by being mounted on a relatively stiff plate, in the scapular region, and these conjoined regions may be adjustably mounted onto the substantially rigid supportive frame of the sack.

Such shoulder pads have conventionally been formed of flat pieces of foamed plastics which are cut out of large sheets of such material so as to have a curving, somewhat tapering shape and covered by a fabric envelope. This is known as the "cut and stitch" method of producing shoulder pads.

More recently, the applicants have proposed the production of a shoulder pad by using a moulded foamed plastics core, which may have in-built curvature in two directions, from front to rear, i.e. in the direction extending over the shoulder of a wearer, as well as sideways, as disclosed in their earlier specification WO 91/05495.

Product testing has shown that with shoulder pads of either of the aforesaid types, which consist essentially only of relatively soft padding material and any associated envelope material, the majority of force transmitted from a loaded rucksack to the shoulders of user is transmitted to each shoulder via a narrow region located centrally of the width of the respective shoulder pad, i.e. approximately mid way between the longitudinal side edges of the elongate pad at the position where it curves over the top of the shoulder of the user.

The present invention aims preferably to spread the area of load transmission across substantially the entire width of each pad, so as to increase the comfort of the user and/or allow carrying of heavier loads with increased comfort, and generally to strengthen the pad so that it can be less bulky. At the same time, however, it is desired to retain some capability of the pad for variable flexure over the top of the shoulder of a user and/or for variable flexure transversely of the pad so that adjustment to differing statures of user is possible (while retaining maximum comfort in use). This reduces the need to produce a wide range of different sizes of shoulder pad and/or to produce pairs of shoulder pads with a range of different relative dispositions to suit users of different shoulder slope or shoulder breadth.

In order to spread the area of load transmission, and strengthen the pad a web of relatively stiff plastics material may be mounted onto the surface of each pad remote from contact with the user's body so as to extend across substantially the entire width thereof. However, this alone does not allow for sufficient flexure of the pad.

A further strap configuration is known from FR-E-7960 (which is a patent of addition to FR 377314). This document discloses the use of a plurality of metal springs mounted on a fabric shoulder pad. The springs serve to spread the load away from the shoulder area.

According to a first aspect of the present invention a rucksack shoulder pad is provided which includes an elongate foamed plastics element having one or more webs of relatively stiff plastics material mounted onto one surface thereof, which surface is in use remote from the user's body, characterised in that the pad includes in at least one region of said one surface intermediate the ends of said element a plurality of elongate strips of relatively stiff plastics material arranged side by side longitudinally of the foamed plastics element, with a gap or respective gaps therebetween.

When such a shoulder pad is used on a rucksack the area of load transmission is increased, thus permitting increased comfort of the user and/or increased load capacity. The provision of the plurality of elongate strips helps to spread the load and additionally allows for flexibility of the shoulder pads.

The elongate strips with intervening gap(s) may be provided in a region of the shoulder pad which is intended to be bent over the top of the shoulder of a user.

Additionally or alternatively the elongate strips with intervening gap(s) may be provided in a region of the shoulder pad which is intended to overlie the upper scapular region of a user, where a capability of transverse flexure of the pad is useful to suit users of different breadth of back.

In preferred embodiments of the shoulder pad of the invention, a single web of relatively stiff plastics material is mounted onto the surface of the foamed plastics element remote from the user's body and elongate strips with intervening gaps are provided as an integral part of the web at both the region where the pad is to be bent over the top of the shoulder and the region where a capability for transverse flexure is desired. In this respect, the gaps may be formed by elongate longitudinal slots in the web. This helps to spread the load and cuts down the weight of the pad.

In other embodiments, the elongate strips may consist of separate members extending between and connected to respective webs and they need not necessarily be formed of the same material as the webs. Alternatively they may consist of fingers integrally formed at the end region of one web and connecting at their free ends to a further web.

Furthermore, in such other embodiments the strips may be provided only in the region where the pad is to be bent over the top of the shoulder. If a region having a capability for transverse flexure is to be included it may be provided simply as a region where there is no overlying stiffening web, for example a gap between the ends of respective webs.

In embodiments where elongate strips of relatively stiff plastics material are provided in a region where a

capability for transverse flexure is required, these strips are advantageously narrower than the intervening gap or gaps in order to permit sufficient flexure but are also strengthened by standing proud of the plane of the web or webs. Where such strips are integral with the web, if the web is formed by stamping out, the said strips can be twisted upon application of heat so as to stand proud at an inclination to the plane of the web. Alternatively, if the web is injection moulded such strips can be formed with strengthening ribs disposed substantially perpendicular to the plane of the web.

A preferred embodiment, where a shoulder pad is to be provided with elongate strips with intervening gaps as an integral part of the web both a first region where the pad is to be bent over the top of the shoulder and a second region where a capability for the transverse flexure is desired, the elongate strips in the first region are formed by providing slots in the web, and the elongate strips in the second region are formed by having elongate strips of the plastics material which stand proud of the plane of the web as described above. Such a shoulder pad has the capability to provide the necessary transverse flexure in the second region whilst also spreading the load in the first region.

Advantageously the web or webs and the strips, howsoever formed, are mounted in a recess in the said one surface of the foamed plastics element. This reduces inadvertent detachment of an edge region of the web or one of the webs, and also leaves the pad with soft outer edges of foamed plastics material.

The shoulder pad may preferably be made by an injection moulding process, and in that case provision, such as protrusions, may be made for the attachment of various secondary webs or buckles etc.

The preferred manner of attachment of the web or webs and strips is by adhesive, but any suitable alternative or additional use of fasteners is possible.

The foamed plastics element will usually have a fabric cover applied thereto, as is conventional, and references heretofore to such an element include an element when so covered.

In a second aspect, the present invention provides a harness for a rucksack, the harness including a pair of shoulder pads each according to the first aspect of the present invention.

Specific embodiments in accordance with the invention will now be described, by way of example, with reference to the accompanying drawings, it being understood that the description thereof is illustrative and not limitative of the scope of the invention.

In the drawings:

Fig. 1 is a plan view of a preferred embodiment of a left shoulder pad in accordance with the invention;

Figs. 2 and 3 are schematic drawings illustrating how adjustment to different angles of slope of users' shoulders is achieved with a pad of the type shown in Fig. 1;

Figs. 4 and 5 are similar schematic drawings illustrating how adjustment to different breadth of users' shoulders is achieved with a pad of the type shown in Fig. 1;

Fig. 6 is a highly schematic plan view of an alternative embodiment of shoulder pad in accordance with the invention; and

Fig. 7 is a schematic view of a harness including a pair of shoulder pads.

The preferred embodiment of rucksack shoulder pad, as illustrated in Fig. 1, comprises an elongate moulded foamed plastics element 10 of somewhat curving configuration to one surface of which a relatively stiff, or semi-rigid, web 12 of plastics material is mounted. The web 12 is mounted onto that surface of the element 10 which in use is remote from the users' body. The web 12 is mounted, preferably by means of hot-melt adhesive, into a shallow recess in the said surface of the element 10 so that an edge margin of foamed material about 1cm wide surrounds the periphery of the web 12.

The foamed plastics material of the element 10 is preferably of closed cell type and may be polyethylene or EVA. It may be enclosed within a fabric envelope. The material of the web may be polypropylene or nylon of a suitable stiffness, and may be formed by injection moulding.

Two series of substantially parallel, longitudinally oriented slots 14, 16 are provided in the web 12, as shown. The first series of slots 14, in a first region 15 of the pad, are three in number in the illustrated embodiments, thereby defining four remaining portions of web material which constitute substantially parallel strips 18.

These longitudinal slots and strips 14, 18 allow flexure of the pad over the top of the shoulder of the user, as illustrated in Figs. 2 and 3 and help spread the load across the width of the pad. Furthermore, they permit adjustment of the relative angle between the portion of the pad which overlies the rear of the user's shoulder and the portion which overlies the front so as to adapt automatically to the slope of the shoulders of any particular user. In this respect, in use, the regions of the strips 18 which lie over the top of the shoulder and adapt thereto by longitudinal flexure may take up positions which are successively lower, by a millimetre or so in each case, from the strip 18 adjacent the neck of the user to the strip 18 furthest therefrom. Fig. 2 shows two extreme positions which may be adopted by the pad in adapting to different slopes in the shoulders of users, while Fig. 3 shows the difference shoulder shapes more clearly.

The second series of slots 16, in a second region 19 of the pad, may be five or six in number, as shown in Figs. 1, 4 and 5, thereby defining six or seven remaining portions of web material which constitute substantially parallel strips 20. These strips 20 are twisted relative to

the plane of the web 10 so as to provide a series of broad vanes which are arranged substantially parallel to each other and inclined, preferably at an angle of about 60°, relative to the plane of the web in its unflexed condition. These strips or vanes 20 also effectively constitute a succession of parallelograms which stand proud from the plane of the web and are capable of swivelling to some extent at each end so as to permit a degree of flexure of the web in a direction transversely of the longitudinal extent of the pad. This flexure is best appreciated by reference to Figs. 4 and 5 where the pad is shown in each case in two extreme positions of minimum and maximum transverse flexure, which permits adjustment of the pads to users of different breadth of shoulders (Fig. 5)

The twisting of the strips 20 to form vanes produces wide gaps therebetween while retaining the strength of said strips. If the web is produced by moulding (instead of being stamped out as in the case of the illustrated example) the strips 20 need not be twisted or inclined and can be formed during moulding with integral upstanding ridges or ribs for purposes of strengthening.

With this preferred embodiment the automatic conformation of the shoulder pads to the contour of the user's body is so good in practice that it may no longer be necessary to provide a chest strap to pull the front of the shoulder pads together to optimise their position.

Fig. 6 shows an alternative embodiment where flexure over the shoulder and/or automatic adjustment to different shoulder slope is achieved by having separate strip members 22 (at least two in number, as in the illustrated example) extending longitudinally of the pad between respective smaller webs 24, 26 of semi rigid plastics, which may be mounted in a shallow recess in a foamed plastics element 28, as in the previous embodiment. The ends of the strips 22 may be connected to the webs 24, 26 by fasteners 30 in such a manner as to allow pivoting thereof. However, relative pivoting at the points or regions of connection is not essential.

The other region permitting transverse flexure may be similarly constructed. Alternatively, as in Fig. 6, that region may be left without any overlying web, with a further web 32 adjacent the broader end of the foamed plastics element 28.

Fig. 7 shows a pair of shoulder pads according to the first embodiment of the present invention connected together via a connection member 40, such as a support plate, to form a harness for a rucksack. The shoulder pads are formed by an injection moulding process and connection points 42, 44 are provided for connection to buckles 46, 48. The buckles 46, 48 may snap fit into connections 42, 44, thus providing connection points to straps or other fastening devices of the rucksack.

Claims

1. A rucksack shoulder pad including an elongate foamed plastics element (10) having one or more

webs (12) of relatively stiff plastics material mounted onto one surface thereof, which surface is in use remote from the user's body, characterised in that the pad includes, in at least one region of said one surface intermediate the ends of said element, a plurality of elongate strips (18) of relatively stiff plastics material arranged side by side longitudinally in relation to the foamed plastics element, the plurality of strips having a gap or respective gaps (14,16) therebetween.

2. A rucksack shoulder pad according to claim 1 wherein the elongate strips are provided in a region (15) of the shoulder pad which is intended to be bent over the top of the shoulder of a user when in use.
3. A rucksack shoulder pad according to claim 1 or claim 2 wherein the elongate strips are provided in a region (19) of the shoulder pad which is intended to overlie the upper scapular region of a user, when in use.
4. A rucksack shoulder pad according to any of the above claims in which the elongate strips with intervening gaps are an integral part of the one or more webs of relatively stiff plastics material and are formed by elongate longitudinal slots in the web(s).
5. A rucksack shoulder pad according to any one of claims 1 to 3 wherein the elongate strips are separate members extending between and connected to respective webs.
6. A rucksack shoulder pad according to any of the above claims wherein the elongate strips are narrower than the intervening gap or gaps.
7. A rucksack shoulder pad according to any of the above claims wherein the elongate strips stand proud of the plane of the web or webs.
8. A rucksack shoulder pad according to any one of the above claims in which the web or webs and the strips are mounted in a recess in the said one surface of the foamed plastics element.
9. A harness for a rucksack, the harness including a pair of shoulder pads according to any of the above claims.
10. A rucksack including a shoulder pad or harness according to any of the above claims.

55 Patentansprüche

1. Rucksack-Schulterpolster mit einem länglichen geschäumten Kunststoffelement (10), das einen oder mehrere Gurte (12) aus relativ steifem Kunst-

- stoffmaterial aufweist, das bzw. die an einer Oberfläche davon montiert ist bzw. sind, welche Oberfläche bei der Verwendung vom Trägerkörper entfernt ist, dadurch gekennzeichnet, daß der Polster zumindest in einem Bereich der Oberfläche zwischen den Enden des Elements eine Vielzahl an länglichen Streifen (18) aus relativ steifem Kunststoffmaterial enthält, die Seite an Seite in Längsrichtung in bezug auf das geschäumte Kunststoffelement angeordnet sind, wobei die Vielzahl an Streifen einen oder jeweilige bzw. respektive Zwischenräume (14, 16) dazwischen aufweisen.
2. Rucksack-Schulterpolster nach Anspruch 1, worin die länglichen Streifen in einem Bereich (15) des Schulterpolsters angeordnet sind, der bei der Verwendung über die Schulter Spitze eines Benützers gebogen werden soll.
 3. Rucksack-Schulterpolster nach Anspruch 1 oder 2, worin die länglichen Streifen in einem Bereich (19) des Schulterpolsters angeordnet sind, der bei der Verwendung über der oberen Schulterblattpartie eines Benützers liegen soll.
 4. Rucksack-Schulterpolster nach einem der vorhergehenden Ansprüche, worin die Längsriemen mit dazwischenliegenden Zwischenräumen ein integraler Bestandteil des einen oder der Vielzahl an Gurten aus relativ steifem Kunststoffmaterial sind und durch Längsschlitze im oder in den Gurten gebildet werden.
 5. Rucksack-Schulterpolster nach einem der Ansprüche 1 bis 3, worin die länglichen Streifen getrennte Elemente sind, die sich zwischen jeweiligen Gurten erstrecken und mit diesen verbunden sind.
 6. Rucksack-Schulterpolster nach einem der vorhergehenden Ansprüche, worin die Längsstreifen schmaler sind als der oder die dazwischenliegenden Zwischenräume.
 7. Rucksack-Schulterpolster nach einem der vorhergehenden Ansprüche, worin die länglichen Streifen aus der Ebene des oder der Gurte(s) ragen.
 8. Rucksack-Schulterpolster nach einem der vorhergehenden Ansprüche, worin der oder die Gurt(e) und die Streifen in einer Ausnehmung in der einen Oberfläche des geschäumten Kunststoffelements angebracht sind.
 9. Gestell bzw. Geschirr für einen Rucksack, das ein Paar Schulterpölster nach einem der vorhergehenden Ansprüche enthält.
 10. Rucksack mit einem Schulterpolster oder Gestell
- bzw. Geschirr nach einem der vorhergehenden Ansprüche.
- ### Revendications
1. Coussinet d'épaule pour sac à dos comprenant un élément allongé en mousse plastique (10) ayant une ou plusieurs âmes (12) en matériau plastique relativement rigide montées sur une surface de celui-ci, laquelle surface est en usage éloignée du corps de l'utilisateur, caractérisé en ce que le coussinet comprend, dans au moins une zone de ladite surface entre les extrémités dudit élément, une pluralité de bandes allongées (18) en matériau plastique relativement rigide agencées côte à côte et longitudinalement par rapport à l'élément en mousse plastique, la pluralité de bandes ayant un espace ou des espaces respectifs (14, 16) entre elles.
 2. Coussinet d'épaule pour sac à dos selon la revendication 1, caractérisé en ce que les bandes allongées sont prévues dans une zone (15) du coussinet d'épaule qui est destinée à être courbée au-dessus du sommet de l'épaule d'un utilisateur en utilisation.
 3. Coussinet d'épaule pour sac à dos selon la revendication 1 ou 2, caractérisé en ce que les bandes allongées sont prévues dans une zone (19) du coussinet d'épaule qui est destinée à recouvrir la région scapulaire supérieure d'un utilisateur, en utilisation.
 4. Coussinet d'épaule pour sac à dos selon l'une des revendications précédentes, caractérisé en ce que les bandes allongées avec les espaces interposés sont une partie intégrante de ladite une ou plusieurs âmes en matériau plastique relativement rigide et sont formées par des fentes longitudinalement allongées dans la ou les âmes.
 5. Coussinet d'épaule pour sac à dos selon l'une des revendications 1 à 3, caractérisé en ce que les bandes allongées sont des éléments séparés s'étendant entre les âmes respectives et connectées à celles-ci.
 6. Coussinet d'épaule pour sac à dos selon l'une des revendications précédentes, caractérisé en ce que les bandes allongées sont plus étroites que l'espace ou les espaces interposés.
 7. Coussinet d'épaule pour sac à dos selon l'une des revendications précédentes, caractérisé en ce que les bandes allongées font saillie du plan de l'âme ou des âmes.
 8. Coussinet d'épaule pour sac à dos selon l'une des revendications précédentes, caractérisé en ce que

l'âme ou les âmes et les bandes sont montées dans un creux dans ladite surface de l'élément en mousse plastique.

9. Harnais pour sac à dos, cet harnais comprenant une paire de coussinets d'épaule selon l'une des revendications précédentes. 5
10. Sac à dos comprenant un coussinet d'épaule ou un harnais selon l'une des revendications précédentes. 10

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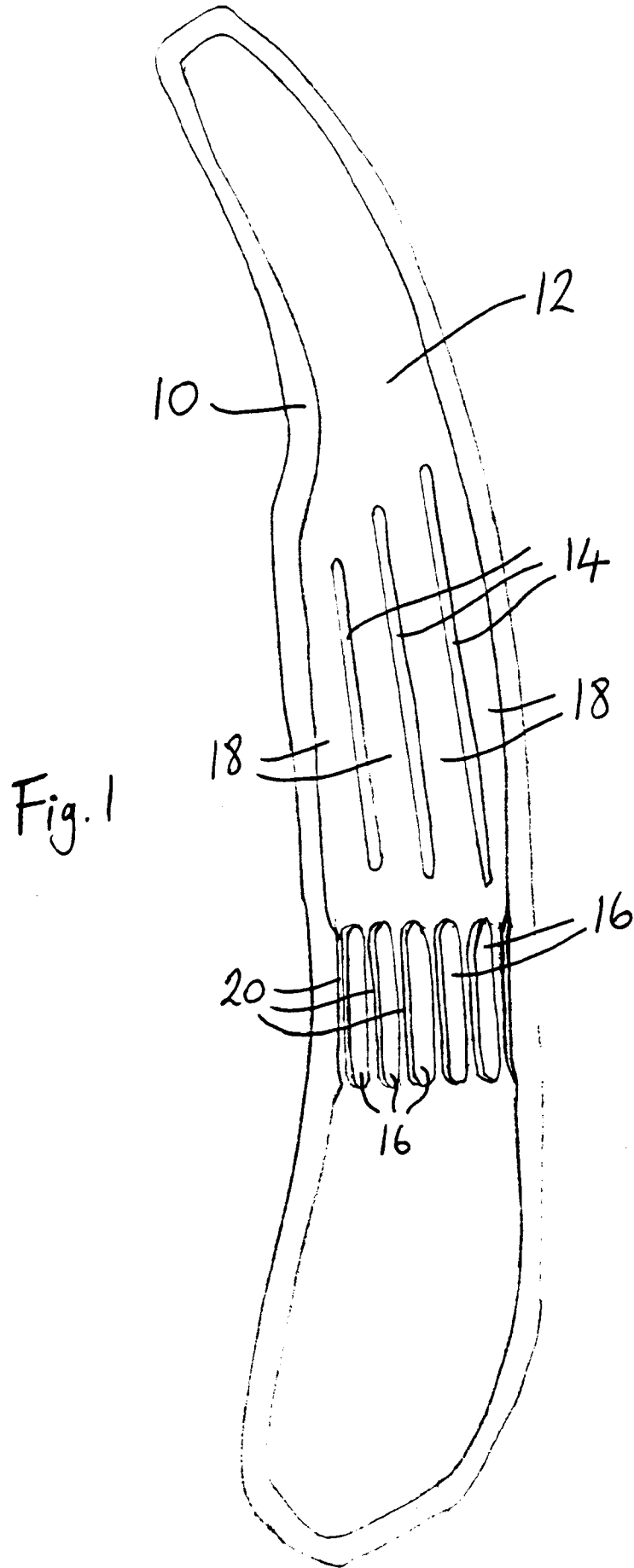


Fig. 1

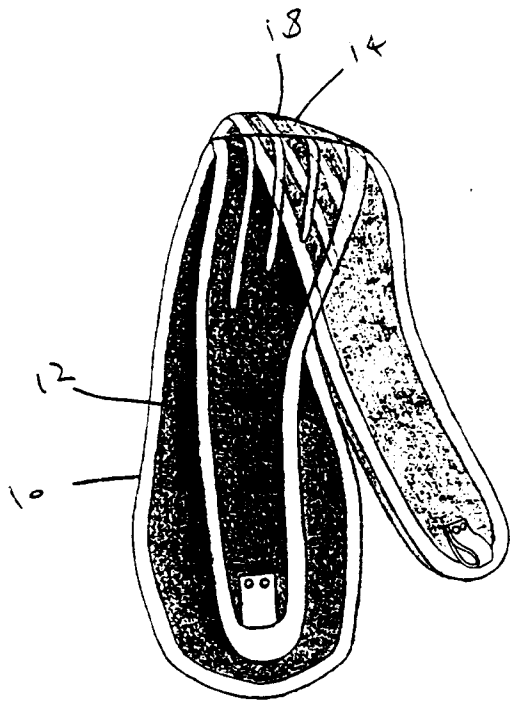


Fig. 2

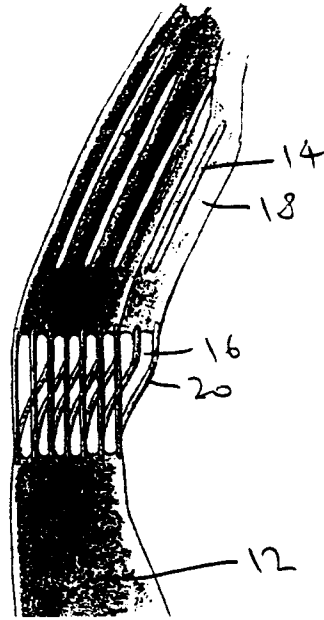


Fig. 4

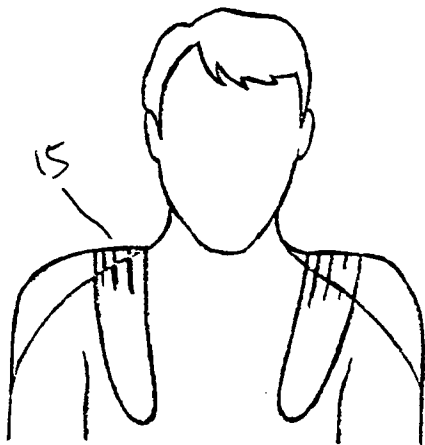


Fig. 3

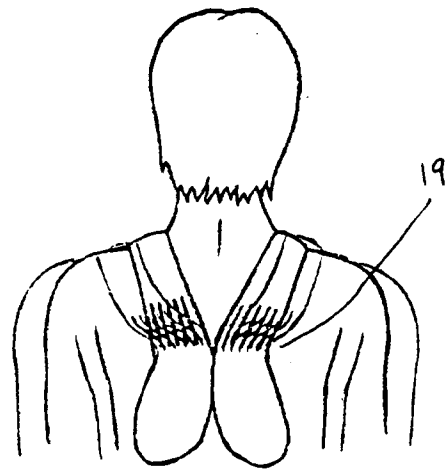
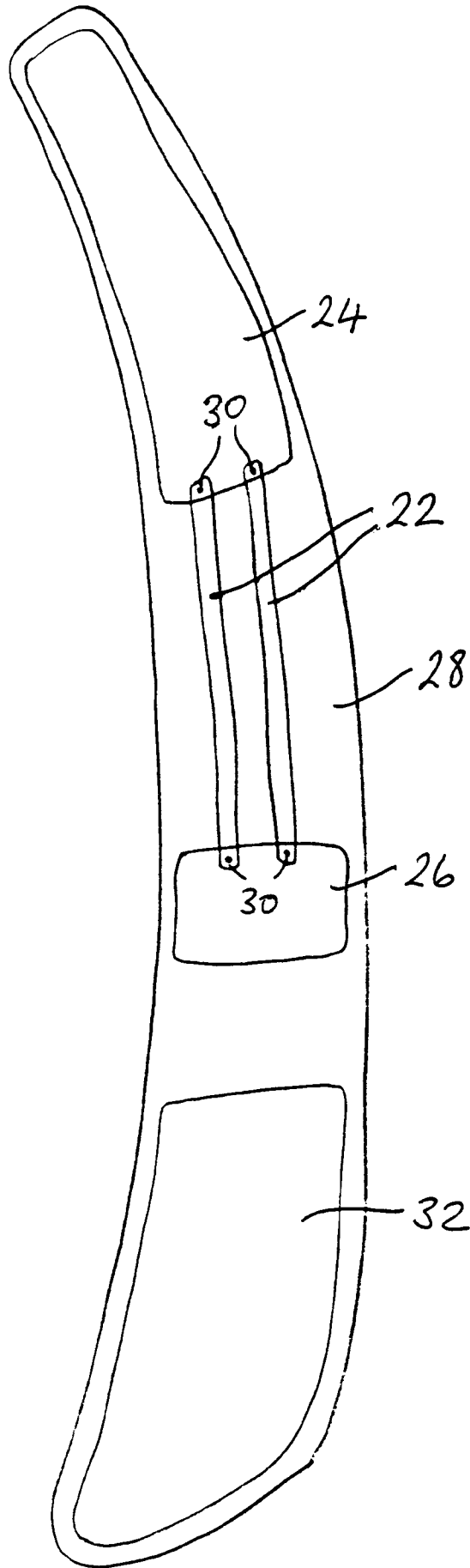


Fig. 5

Fig. 6



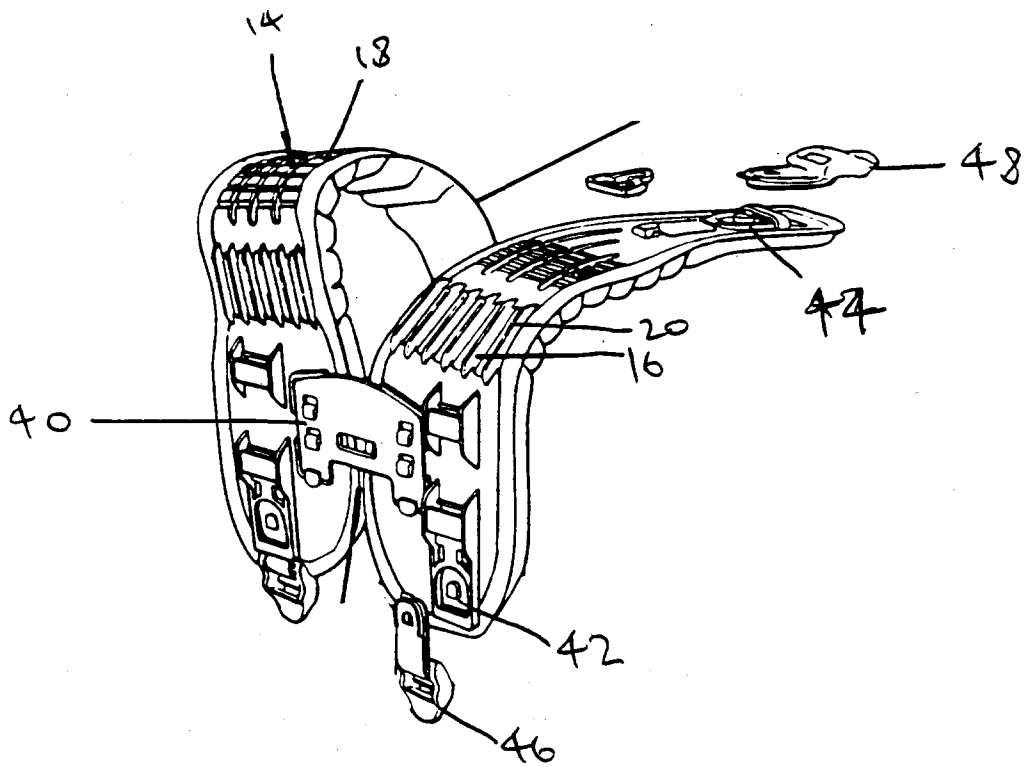


FIG 7