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54 A RUCKSACK HARNESS SHOULDER PAD

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EP 0 495 871 B1

Description

TECHNICAL FIELD

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 merge into 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.

BACKGROUND ART

Hitherto such shoulder pads have been formed of flat pieces of foamed plastics cut out of large sheets of such material and covered by a fabric envelope. Thus, the foamed plastics core has been shaped in two dimensions only (generally a curving, somewhat tapering shape) and has been of even thickness throughout. In some cases a relatively stiff plate of polypropylene or similar may have been included in the envelope. In some cases there may have been an arrangement of through stitching, providing a quilted effect, which resulted in lines or regions where the foamed plastics core was compressed.

The aforesaid cut and stitch method of producing shoulder pads is relatively labour intensive and difficult to fully automate. Also these prior pads often cause wearer discomfort owing to wrinkling of the foamed plastics as the flat material is bent over the shoulder region.

It is an object of the present invention to provide a more ergonomically effective design of shoulder pad, i.e. which is better adapted to the shape of the wearer and is more comfortable in use, yet which is also relatively easy to manufacture.

DISCLOSURE OF THE INVENTION

According to the present invention a rucksack harness shoulder pad is provided which comprises an elongate moulded foam plastics core in the form of a strip and characterised in that the core is formed by moulding so as to have inherent moulded-in curvature in a sideways direction with respect to a user's body and so as to have a plurality of transverse grooves in at least that surface which in use is directed towards the user's body.

The moulding of the foamed plastics allows integral formation of grooves at the appropriate places, at the requisite spacings, and of appropriate depth and width, so that in use the pad can extend over the shoulder of a wearer without any discomfort owing to wrinkling on the inside of the curve. In this respect the grooves constitute areas where material has been removed to allow for curvature over the shoulder without wrinkling. The grooves also generally improve the flexibility of the shoulder pad, allowing it all the better to adapt to the body contours of the user.

Advantageously, the aforesaid grooves extend across the side edges of the core, and thus enhance its flexibility in a side to side direction.

Production of the foamed plastics core by moulding means that it is no longer constrained to a strictly planar shape. Advantageously the moulded core is profiled in three dimensions. More specifically, when viewed in plan, it can have a front to rear curvature in addition to the sideways curvature.

In a particularly advantageous development the foam plastics shoulder pad core may be provided with an insert of lower density foam in that surface which in use is directed towards the user's body. Such insert should be positioned so as to overlie the sensitive front shoulder area of the user, and reduce pressure transmission where tendons connect the deltoid muscle to the clavicle and where major nerves and blood vessels pass close to the skin, so as to minimise discomfort here.

In general, for commercial use on a rucksack, the foam core will be covered by fabric, which may be stitched thereon or adhered thereto as a close-fitting envelope. However, the fabric is not essential in all cases.

A practical embodiment of the shoulder pad of the invention may advantageously comprise four regions, as follows:-

- (i) a broad end region which is relatively straight, and relatively stiff and is intended to be joined symmetrically to a corresponding region of another pad for mounting on a rucksack frame;
- (ii) continuing therefrom, a region of slight sideways curvature provided with a plurality of transverse grooves in one or both surfaces, which grooves may also extend across the side edges, so that it is flexible both sideways and front to rearwards;
- (iii) continuing therefrom, a region of more pronounced sideways curvature provided with an insert of lower density foam in its front surface, and also with further transverse grooves; and
- (iv) a narrow end region of reduced thickness for attachment of a strap connector or buckle or the like. (Indeed, the latter may have the foamed plastics directly moulded thereto)

Alternatively, an equally favourable practical embodiment may have similar regions, but be moulded so that regions (ii) and (iii) additionally have inherent front to rear curvature. This means that the entire pad is U-shaped as well as curving sidewards.

The aforesaid preferred embodiments may suitably be made of closed cell polyethylene foam, although the insert may be open cell.

It will be appreciated that a range of different standards of shoulder pads can be produced, all conforming to the invention, but comprising different foamed plastics materials, or different densities, different shapes, (and with or without front to rear curvature), different groove positioning, varying softness and size of insert, or optional additional stiff inserts (e.g. of polypropylene), for example to suit male or female users, or users of different body size, or different rucksack capacities and intended purposes.

Overall, by suitable choice of such parameters a balance is maintained between the strength and stability of the shoulder pads, for adequate grasp by the user and the desired flexibility and comfort.

As stated previously, in use, two such pads may be joined symmetrically and mounted onto a rucksack. Accordingly, a further aspect of the present invention is a rucksack comprising a fabric sack, a supportive frame comprising at least one substantially rigid vertical member mounted at the rear of the sack, a harness comprising shoulder pads mounted on said frame and associated straps, a lumbar pad, and a hip belt, wherein each of the shoulder pads comprises an elongate foamed plastics core, characterised in that the shoulder pads are joined to each other symmetrically, other than via the frame, in the scapular region and in that the core of each shoulder pad is formed by moulding so as to have inherent moulded-in curvature in a respective sidewards direction with respect to a user's body and a plurality of transverse grooves moulded-in at least on that surface which in use is directed towards the user's body.

In preferred embodiments the conjoined scapular region of the shoulder pads are slidably adjustable up and down the frame, which conveniently comprises two vertical bars, so as to accommodate varying user torso lengths. Respective top straps connect each of the shoulder pads to attachment points at the top of the frame members or the top of the sack. The purpose of these top straps is to impart upward and backward tension to the pads so as to reduce transmission of load from the sack to the sensitive front shoulder regions of the user, as mentioned above. Obviously, the length of these straps needs to be adjusted whenever the vertical position of shoulder pad mounting is changed. This

has previously been accomplished by providing a length adjustment buckle at the attachment points on the frame or sack.

It is now proposed in accordance with a development of the invention that top strap length adjustment buckles are provided not on the frame or sack, but on the respective shoulder pads, which buckles are themselves adjustable in position along the respective shoulder pads. In this way, in addition to being able to change the length of the top straps, their take-off position from the shoulder pad can be varied. In this respect the precise take-off point is important to achieving the desired pressure relief in the sensitive front shoulder region and it is dependent upon chest depth as well as torso length of user. Previously, where only top strap length adjustment was possible variations in chest depth could not be adequately catered for, leading to some user discomfort.

The positional adjustment of the top strap buckle may conveniently be achieved by sliding along a floating region of the webbing which is stitched longitudinally of each shoulder pad and extends to provide the strap for connection to the lower end of the frame or sack. However, since the foam core of the pad is, in accordance with the invention, produced by moulding it may be advantageous to mould this directly onto the webbing.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be described further by reference to the specific examples shown in the accompanying drawings, in which :

Fig. 1 is a rear view of a rucksack incorporating two conjoined shoulder pads in accordance with the invention, the hip belt being broken away for clarity;

Fig. 2 is an enlarged view of one embodiment of the shoulder pad of the invention, specifically showing the surface thereof which in use contacts a user's body;

Fig. 3 is a side view of the same shoulder pad in the direction of the arrow III in Fig. 2;

Fig. 4 is a cross-section of the same shoulder pad along the line IV-IV in Fig. 2;

Fig. 5 is a view corresponding to Fig. 2 of the opposite surface of the shoulder pad which in use is remote from the user's body;

Fig. 6 is a reduced scale perspective view of a modified embodiment of the shoulder pad of the invention;

Fig. 7 a, b and c are sketches illustrating three modes of use of pairs of pads in accordance with the invention.

BEST MODES OF CARRYING OUT INVENTIONS

Referring firstly to Figs. 2 to 5, this exemplary embodiment of shoulder pad 10 is moulded of foamed plastics, preferably closed cell polyethylene, and includes, intermediate its ends, an insert 12 of lower density (i.e. softer), possibly open cell foamed plastics. The overall shape of the pad 10 is elongate, approximately flat, slightly curving, and also tapering so that there is a narrow end region D and a broader end region A. Between these two end regions, two other distinct regions B and C can be identified.

The broad end region A is relatively straight, and relatively stiff and is intended to be joined symmetrically to a corresponding region of another pad and mounted on a rucksack frame (see Fig. 1).

Linked to this is region B which is a slightly curving region provided with a plurality of transverse grooves 13 (in this case four such grooves are shown) which extend across the side edges of the pad 10 and both surfaces. These grooves 13 render region B flexible both sideways and front to rearwards.

Following on is region C which is of more pronounced curvature and is where the insert 12 is located. The insert 12 fits into a recess in the front surface of the pad 10, i.e. the surface shown in Fig. 2, which in use will contact a user's body, but at the inner edge margin (as in use) it extends through to the rear surface also (see Figs.4 & 5). At both sides the insert surface matches the contours of the pad, i.e. is flush with the adjacent surface. At the front surface, the insert 12 itself is formed with further more widely spaced transverse grooves 14.

The adjoining narrow end region D is of reduced thickness and is intended for attachment of a strap connector or buckle or the like.

The pad 10 is produced by moulding, with all its above-described three dimensional contouring, and both the insert 12 and any strap connector in region D may be integrally formed or connected, respectively, in the moulding process. Otherwise they may be separately fixed after moulding of the main part e.g. by gluing.

Turning now to Fig. 1 it will be noted that in use two such pads 10, 20 are joined together symmetrically. Firstly, however, they are covered by fabric, which may be adhered therearound.

The broad end regions A of the pads 10, 20 are joined by central webbing 15 (alternatively by a transverse plate on which they may be mounted) and mounted by sliders (not shown) on respective vertical frame bars 21, which constitute a supportive frame for the fabric sack 22. As shown, the surfaces of the pads 10, 20 which carry the inserts 12 face rearwards, towards the back of a user.

Webbing 18 is attached longitudinally of the pads 10, 20, (indeed it may also be integrally connected in the moulding process) to complete the harness. In this respect the webbing 18 provides shoulder straps 23, extending from buckles 24 fixed to the end region D, top straps 25 and height adjustment straps 26 for use in sliding the scapular pad regions A down the bars 21 when the sack is "in situ" in a users back to the position of greatest comfort.

The rucksack also includes a central lumbar pad 27, hip pads 28 and a hip belt 29.

In use, the flexible grooved region B bends over and contacts the rear shoulder region of the user, and is able to adapt comfortably thereto without wrinkling. The insert 12 which is of softer material contacts the front shoulder and chest region of the user and reduces pressure loading, improves comfort, in this area.

The top straps 25 are adjustable in the position of their take-off points from the respective pads 10, 20 by virtue of buckles 16, which are slidably adjustable in position along floating portions 17 of the webbing 18. The top straps 25 are also adjustable in length.

Fig. 6 shows an alternative embodiment of pad 30, which along with a corresponding symmetrically formed pad (not shown) could be used in place of pads 10 or 20 in the rucksack of Fig. 1. This pad is also moulded of closed cell foamed plastics material, such as polyethylene, but is formed in the moulding process with inherent front to rear curvature so as to be better adapted to fit over the shoulder of a user. Of course, some additional curvature in use to fit precisely to the shoulder is to be expected. Thus, this pad 30 consists of only three regions E, F and G. Region E is a broad end region corresponding to region A of the first embodiment, and region G is a narrow end region corresponding to region D of the first embodiment. Region F extends between the two (E & G) and is curved in three dimensions - i.e. sideways and front to rear as well as having grooves 34 in its surface facing inwards of the front to rear curvature. In this illustrated case, the grooves 34 do not extend across the side edges of the pad or over the other surface - but those features could be provided in other embodiments where additional flexibility is desirable. Moreover a softer/lower density insert is not shown, but could advantageously be provided.

The pads of the invention, irrespective of precise configuration, will almost always be used in symmetrical pairs, but they are not limited to being conjoined and mounted for adjustment as in Fig. 1. Fig. 7 shows some variations : 7 a as in Fig. 1 where the pads are joined and are vertically adjustable, 7 b where the pads are independently moun-

ted for vertical adjustment, and 7 c where the pads are independently mounted for horizontal and angular adjustment (for fitting different user shoulder widths and allowing for harness angle adjustment). Although not shown, the pads could also be fixed in permanent positions on the rear of rucksacks, or removably attached in adjustable or non-adjustable manner.

The foregoing is to be understood as being illustrative and not limitative of the scope of the invention. Many variations are possible as to the precise configuration of the shoulder pads and whether other rucksack components are connected in the moulding procedure for production of such pads.

Claims

1. A rucksack harness shoulder pad comprising an elongate foam plastics core (10, 20, 30) in the form of a strip, characterised in that the core is formed by moulding so as to have inherent moulded-in curvature in a sideways direction with respect to a user's body and so as to have a plurality of transverse grooves (13, 34) in at least that surface which in use is directed towards the user's body. 20
2. A pad according to claim 1 wherein the grooves (13) extend across the side edges of the core. 30
3. A pad according to claim 1 or 2 which is profiled in three dimensions so as to have inherent moulded-in front to rear curvature as well as the said sideways curvature. 35
4. A pad according to claim 1, 2 or 3 wherein the core is provided with an insert (12) of lower density foam in that surface which in use is directed towards the user's body. 40
5. A pad according to any preceding claim wherein the core is provided with a fabric cover. 45
6. A pad according to claim 1 wherein the core (10) has four regions:
 - (i) a broad end region (A) which is relatively straight and relatively stiff and is intended to be attached to a rucksack; 50
 - (ii) continuing therefrom, a region (B) of slight sideways curvature provided with a plurality of transverse grooves (13) in one or both surfaces; 55
 - (iii) continuing therefrom, a region (C) of more pronounced sideways curvature provided with an insert (12) of lower density in its front surface and with further transverse grooves (14) at least in its front surface;
 - (iv) a narrow end region (D) of reduced thickness for attachment of a strap connector or buckle.
7. A pad according to claim 1 wherein the core (3) is profiled in three dimensions and has three regions, namely a broad end region which is relatively straight and relatively stiff, a central region which is curved sideways and also front to rear in a U-shape, and is provided with the grooves (34), and a narrow end region. 10
8. A pad according to claim 7 wherein an insert of lower density foam is provided in the central region in the concave surface which in use is directed towards the user's body. 15
9. A rucksack comprising a fabric sack (22), a supportive frame comprising at least one substantially rigid vertical member (21) mounted at the rear of the sack, a harness comprising shoulder pads (10, 20) mounted on said frame and associated straps (23, 25), a lumbar pad (27), and a hip belt (28, 29), wherein each of said shoulder pads (10,20) comprises an elongate foamed plastics core, characterised in that the shoulder pads (10, 20) are joined to each other symmetrically, other than via the frame, in the scapular region (15) and in that the core of each shoulder pad is formed by moulding so as to have inherent moulded-in curvature in a respective sideways direction with respect to a user's body and a plurality of transverse grooves moulded-in at least on that surface which in use is directed towards the user's body. 25
10. A rucksack as claimed in claim 9 and incorporating a pair of said shoulder pads, each of which is a pad as claimed in any one of claims 2 to 8. 40

Patentansprüche

1. Schulterpolster für einen Rucksackträger, umfassend einen länglichen Kunststoffschäumkern (10,20,30) in Form eines Streifens, dadurch gekennzeichnet, daß der Kern derart durch Formen gebildet ist, daß er eine inhärent eingeformte Biegung in eine Seitwärtsrichtung bezogen auf den Körper des Benutzers aufweist und zumindest auf der Oberfläche, die bei der Verwendung dem Körper des Benutzers zugewandt ist, eine Vielzahl von Querrillen (13,34) aufweist. 50

2. Polster nach Anspruch 1, worin die Rillen (13) sich quer über die Seitenränder des Kerns erstrecken.
3. Polster nach Anspruch 1 oder 2, der dreidimensional profiliert ist, sodaß er neben der Seitwärtsbiegung auch eine inhärent eingeformte von vorne nach hinten gehende Biegung aufweist. 5
4. Polster nach Anspruch 1, 2 oder 3, worin der Kern mit einem Einsatz (12) aus Schaum mit geringerer Dichte in jener Oberfläche versehen ist, die bei der Verwendung dem Körper des Benutzers zugewandt ist. 10
5. Polster nach einem der vorhergehenden Ansprüche, worin der Kern mit einem Gewebeüberzug versehen ist. 15
6. Polster nach Anspruch 1, worin der Kern (10) vier Bereiche aufweist: 20
- (i) einen breiten Endbereich (A), der relativ gerade und relativ steif ist und zur Befestigung am Rucksack bestimmt ist;
- (ii) daran anschließend einen Bereich (B) mit leichter Seitwärtsbiegung, der mit einer Vielzahl von Querrillen (13) in einer oder beiden Oberflächen versehen ist;
- (iii) daran anschließend einen Bereich (C) mit ausgeprägterer Seitwärtsbiegung, der mit einem Einsatz (12) mit geringerer Dichte in seiner Vorderfläche und mit weiteren Querrillen (14) zumindest in seiner Vorderfläche versehen ist; 30
- (iv) einen schmalen Endbereich (D) mit geringerer Dicke zum Befestigen eines Gurtverbinders oder einer Schnalle. 35
7. Polster nach Anspruch 1, worin der Kern (3) dreidimensional profiliert ist und drei Bereiche aufweist, nämlich einen breiten Endbereich, der relativ gerade und relativ steif ist, einen mittleren Bereich, der seitwärts gebogen und auch von vorne nach hinten in U-Form ausgebildet ist und mit Rillen (34) versehen ist, sowie einen schmalen Endbereich. 40
8. Polster nach Anspruch 7, worin ein Einsatz aus Schaum mit geringerer Dichte im mittleren Bereich in der konkaven Oberfläche vorgesehen ist, die bei der Verwendung dem Körper des Benutzers zugewandt ist. 45
9. Rucksack, umfassend einen Gewebesack (22), einen Stützrahmen, der zumindest ein im wesentlichen starres vertikales Element (21) umfaßt, das an der Rückseite des Sacks befestigt 55

ist, einen Träger, der auf dem Rahmen montierte Schulterpolster (10,20) und zugehörige Gurte (23,25), einen Lendenpolster (27) und einen Hüftgurt (28,29) umfaßt, worin jeder der Schulterpolster (10,20) einen länglichen Kunststoffschäumkern umfaßt, dadurch gekennzeichnet, daß die Schulterpolster (10,20) anders als über den Rahmen im Bereich (15) der Schulterblätter symmetrisch aneinandergesetzt sind und daß der Kern eines jeden Schulterpolsters so durch Formen gebildet ist, daß er eine inhärent eingeformte Biegung in eine jeweilige Seitwärtsrichtung bezogen auf den Körper des Benutzers und eine Vielzahl von Querrillen aufweist, die zumindest auf jener Oberfläche eingeformt sind, die bei der Verwendung dem Körper des Benutzers zugewandt ist.

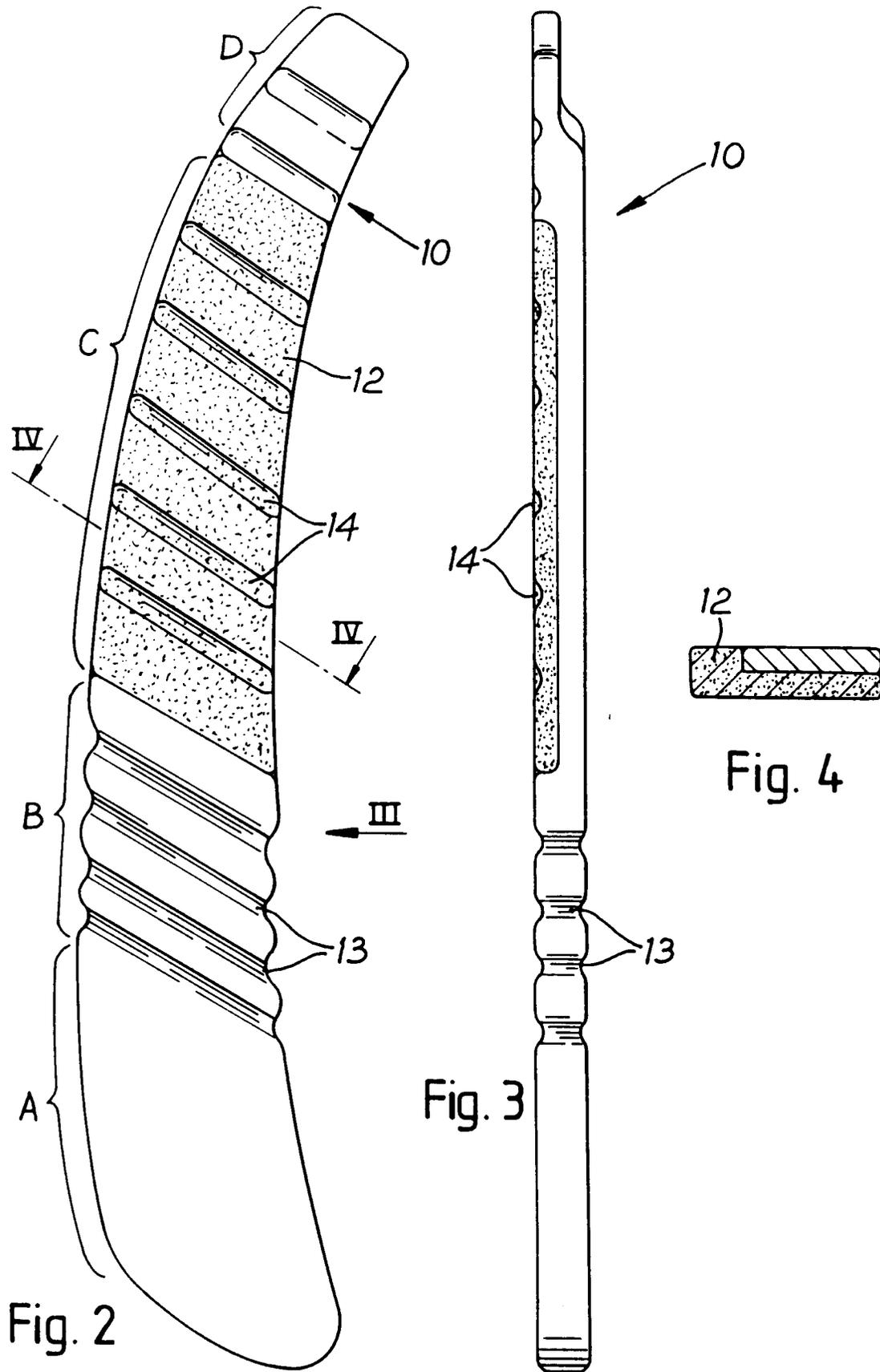
10. Rucksack nach Anspruch 9, der ein Paar der Schulterpolster umfaßt, von denen jeder ein Polster nach einem der Ansprüche 2 bis 8 ist. 20

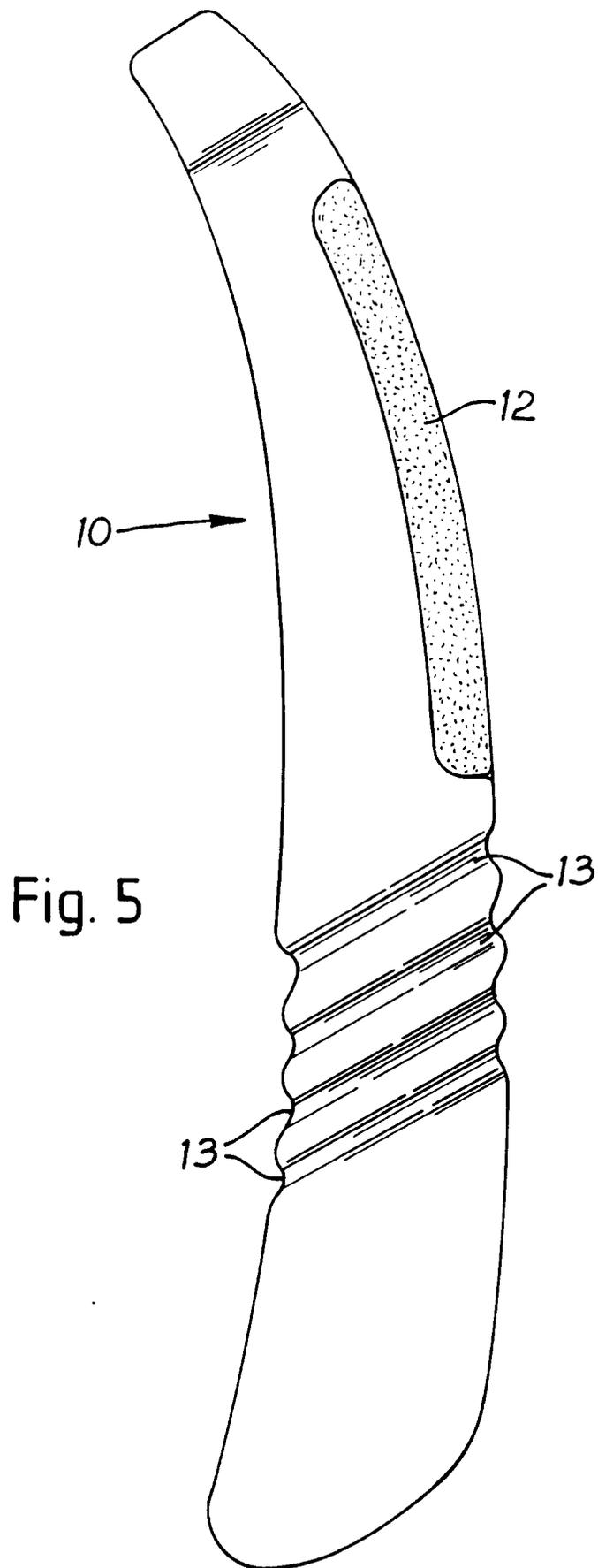
Revendications

1. Epaulette destinée au harnais d'un sac à dos comprenant un noyau allongé en plastique alvéolaire (10, 20, 30) sous la forme d'une bande, caractérisée en ce que le noyau est réalisé par moulage de façon à avoir une courbure moulée inhérente dans une direction vers le côté relativement à un corps d'utilisateur et de façon à avoir plusieurs rainures transversales (13, 34) dans au moins la surface qui, en cours d'utilisation, est orientée vers le corps de l'utilisateur. 25
2. Epaulette selon la revendication 1, dans laquelle les rainures (13) s'étendent à travers les bords latéraux du noyau. 30
3. Epaulette selon la revendication 1 ou 2, qui est profilée dans trois dimensions de façon à avoir une courbure inhérente moulée s'étendant de l'avant vers l'arrière ainsi que ladite courbure vers le côté. 35
4. Epaulette selon la revendication 1, 2 ou 3, dans laquelle le noyau est pourvu d'un insert (12) en une mousse de densité inférieure dans la surface qui, en cours d'utilisation, est dirigée vers le corps de l'utilisateur. 40
5. Epaulette selon l'une des revendications précédentes, dans laquelle le noyau est pourvu d'un recouvrement en tissu. 45
6. Epaulette selon la revendication 1, dans laquelle le noyau (10) comporte quatre régions : 50

- (i) une large région d'extrémité (A) qui est relativement rectiligne et relativement rigide et qui est prévue pour être attachée à un sac à dos ;
- (ii) en continuant de celle-ci, une région (B) d'une légère courbure vers le côté présentant plusieurs rainures transversales (13) dans une ou les deux surfaces ;
- (iii) en continuant de celle-ci, une région (C) d'une courbure latérale plus prononcée pourvue d'un insert (12) d'une densité inférieure dans sa surface avant et avec des rainures transversales supplémentaires (14) au moins dans sa surface avant ;
- (iv) une région d'extrémité étroite (D) d'épaisseur réduite pour l'attachement d'un connecteur ou d'une boucle de bande.
7. Epaulette selon la revendication 1, dans laquelle le noyau (3) est profilé dans trois dimensions et présente trois régions, à savoir une large région d'extrémité qui est relativement rectiligne et relativement rigide, une région centrale qui est courbée vers le côté et également de l'avant vers l'arrière en une forme en U et qui est pourvue de rainures (34) et une région d'extrémité étroite.
8. Epaulette selon la revendication 7, dans laquelle un insert en mousse de densité inférieure est prévu dans la région centrale de la surface concave qui, en cours d'utilisation, est dirigée vers le corps de l'utilisateur.
9. Sac à dos comprenant un sac en tissu (22), un châssis de support comportant au moins un élément vertical sensiblement rigide (21) monté à l'arrière du sac, un harnais comprenant des épaulettes (10, 20) montés sur ledit châssis et des bandes associées (23, 25), un coussin lombaire (27), et un coussin de hanche (28, 29), dans lequel chacune desdites épaulettes (10, 20) comprend un noyau allongé en plastique alvéolaire, caractérisé en ce que les épaulements (10, 20) sont reliés l'une à l'autre symétriquement, autre que via le châssis, dans la région scapulaire (15), et en ce que le noyau de chaque épaulette est formé par moulage de façon à avoir une courbure moulée inhérente dans une direction latérale respective relativement à un corps d'utilisateur et plusieurs rainures transversales moulées au moins dans la surface qui, en cours d'utilisation, est orientée vers le corps de l'utilisateur.
10. Sac à dos selon la revendication 9 et incorporant une paire desdites épaulettes, dont chacune est une épaulette telle que revendiquée

dans l'une des revendications 2 à 8.





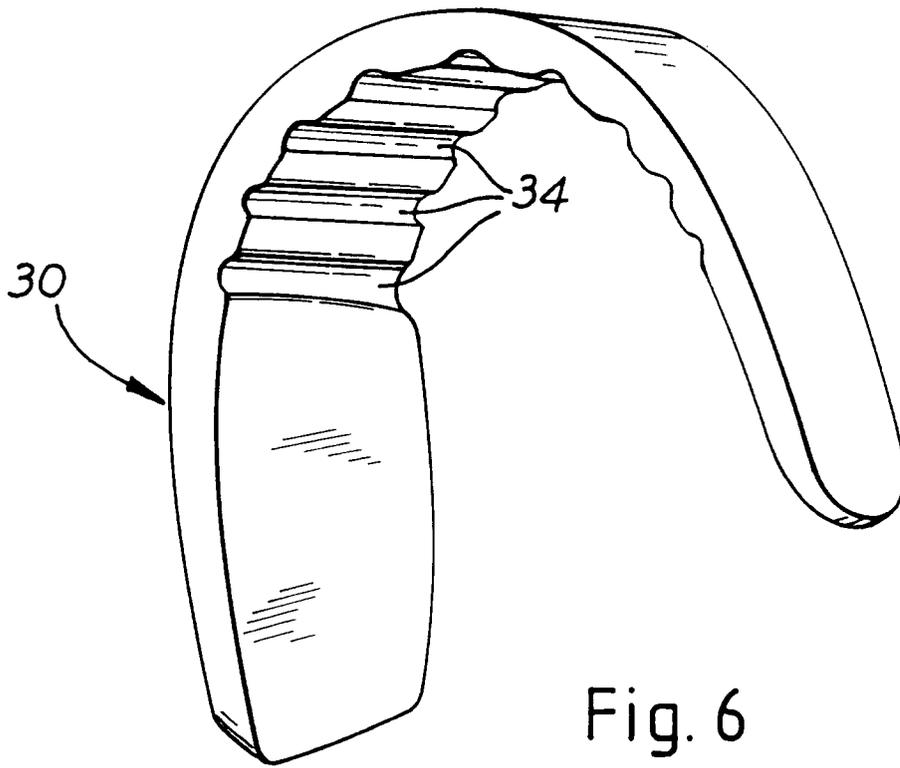


Fig. 6

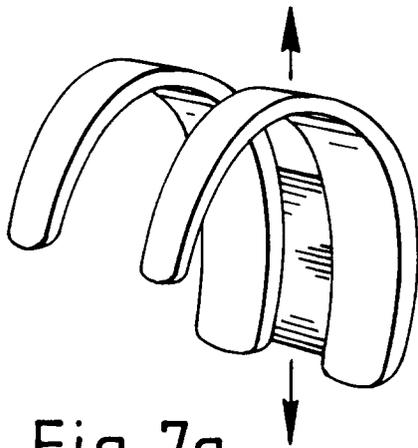


Fig. 7a

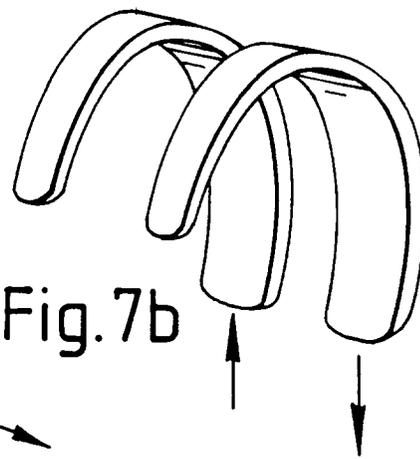


Fig. 7b

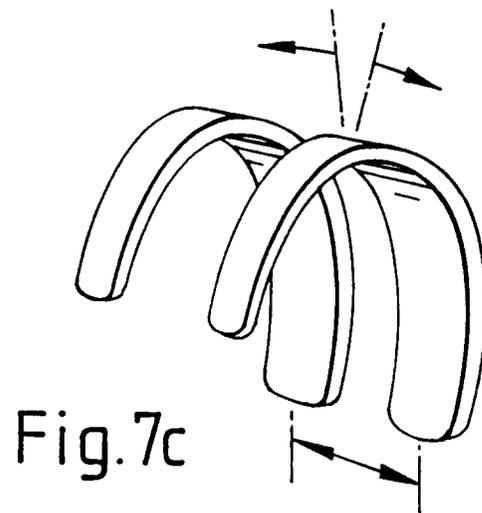


Fig. 7c