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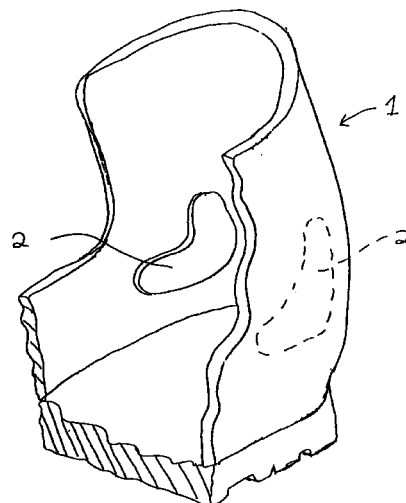
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(54) **Snowboard boot ankle/heel support member**

(57) A support member 2 having an L-shape or a C-shape is configured to engage a portion of the foot just below the ankle bone and a portion of the foot just behind the ankle bone for supporting the foot within a snowboard boot 1. The support member is formed with a male Velcro™ material on one side for engagement with material on an inner side of a snowboard boot thereby providing removable engagement with the boot. In one embodiment, the support member may be filled with a paraffin wax that is pliable at room temperature to conform to the shape of a riders foot, but is rigid in colder temperatures such as on a snow filled mountain side, such that the support member is generally rigid when used. The support member engages the foot to insure that the foot may not undergo any significant movement within the snowboard boot while the rider is snowboarding. Alternatively, two support members may be employed, one support member on each side of the foot within the boot.

Fig. 7



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Description

[0001] The present invention relates to a support member which is mountable on the interior of snowboard boots to help provide a more secure fit of the boot onto the foot of a snowboard rider.

[0002] Snowboarding is a sport that involves balance and control of movement. When steering on a downhill slope, the snowboard rider leans in various directions in order to control the direction of the movement of the snowboard. Specifically, as the rider leans, his or her movements must be transmitted from the boots worn by the rider to the snowboard in order to maintain control of the snowboard. For example, when a rider leans backward, the movement causes the snowboard to tilt accordingly turning in the direction of the lean. Similarly, leaning forward causes the board to tilt in a corresponding manner, causing the snowboard to turn in that direction.

[0003] Snowboard boots must therefore be relatively rigid when being used on a snowboard in order to adequately transmit movement of the rider to the snowboard to effect steering and braking. However, a problem sometimes arises in that the heel of the foot within the boot may not always be securely held within the boot. If the heel can undergo even a small amount of upward movement within the boot during a forward lean and other control movements, a slight loss of control is experienced by the rider. Custom boots molded to an individual's foot may solve this problem, but such boots are expensive and take time to manufacture. Even the most well fitting off the shelf snowboard boots may be such that some movement of the heel and ankle within the snowboard boot is experienced by a rider. Such movement is not desirable in a demanding sport such as snowboarding.

[0004] One object of the present invention is to provide a means for minimizing movement of the ankle and heel portion of a foot within a snowboarding boot.

[0005] In accordance with one aspect of the present invention, a support for an article of footwear includes a support body. The support body is formed with a first surface having an adhering material formed thereon. The adhering material is configured to position the support body within an article of footwear and the support body is configured to engage an ankle bone portion of a foot within the article of footwear.

[0006] Preferably, the adhering material comprises a plurality of male hooks that are configured to engage an interior surface of the article of footwear, where the interior surface of the article of footwear defines a plurality of female portions configured to receive the male hooks.

[0007] Preferably, the support body is at least partially filled with a material that is generally pliable at room temperature and generally rigid in temperatures near or below freezing.

[0008] Preferably, the material is paraffin wax.

[0009] Preferably, the support body is configured to

engage an upper portion of an heel bone of the foot within the article of footwear thus limiting upward movement of the foot.

[0010] Preferably, the support body is formed of a sponge material.

[0011] Preferably, an upper portion of the sponge material is generally rigid and a lower portion of the sponge material is generally soft. The upper portion is configured for engagement with an ankle bone portion of a foot and the lower portion is configured for engagement with an upper portion of an heel portion of the foot.

[0012] Preferably, the support body has a generally C-shape.

[0013] Alternatively, the support body has a generally L-shape.

[0014] In an alternative aspect of the present invention, a support system for an article of footwear includes a pair of support bodies. Each of the support body is formed with a first surface having an adhering material formed thereon. The adhering material is configured to position the pair of the support bodies within an article of footwear. One of the support bodies is configured to engage a right side of an ankle bone portion of a foot within the article of footwear and the other of the support bodies being configured to engage a left side of an ankle bone portion of a foot within the article of footwear.

[0015] Preferably, the adhering material includes a plurality of male hooks that are configured to engage an interior surface of the article of footwear, where the interior surface of the article of footwear defines a plurality of female portions configured to receive the male hooks.

[0016] Preferably, at least one of the support bodies is at least partially filled with a material that is generally pliable at room temperature and generally rigid in temperatures near or below freezing

[0017] Preferably, the material is paraffin wax.

[0018] Preferably, each of the support bodies is configured to engage an upper portion of an heel bone of the foot within the article of footwear thus limiting upward movement of the foot.

[0019] Preferably, each of the support bodies is formed of a sponge material.

[0020] Preferably, an upper portion of the sponge material is generally rigid and a lower portion of the sponge material is generally soft. The upper portion is configured for engagement with an ankle bone portion of a foot and the lower portion is configured for engagement with an upper portion of an heel portion of the foot.

Fig. 1 is a side view of a snowboard boot which utilizes a support member in accordance with the present invention;

Fig. 2 is a perspective, cutaway view of the snowboard boot depicted in Fig. 1, showing the support member within the snowboard boot;

- Fig. 3 is a perspective view of the support member shown removed from the snowboard boot;
- Fig. 4 is a cross-section view of the support member in accordance with a first embodiment;
- Fig. 5 is a cross-section view of the support member in accordance with a second embodiment;
- Fig. 6 is a cross-section view of the support member showing installation of the support member into a snowboard boot; and
- Fig. 7 is a perspective, cutaway view of the snowboard boot, similar to Fig. 2, showing two support members within the snowboard boot.

[0021] A snowboard boot 1 is shown in Fig. 1. The snowboard boot 1 includes a support member 2 in accordance with the present invention. The support member 2 is a separate element that may be provided with a new pair of boots, may be permanently fixed inside a snowboard boot, or may be sold or provided separately and later inserted into a snowboard boot. The support member 2 is therefore not necessarily a part of the snowboard boot 1 per se, but rather is an element that may be added to an existing snowboard boot.

[0022] The support member 2 is preferably adhered to an inner surface of the snowboard boot 1, as is shown in Fig. 2, and may be positioned in an optimal location by a snowboard rider prior to inserting his or her foot into the snowboard boot 1.

[0023] The support member 2 has an L-shaped or C-shaped contour as is shown in Fig. 3. Preferably, the support member 2 includes hooks 3 which are part of an adhesion system commonly known as Velcro™.

[0024] Referring to Fig. 6, the hooks 3 are engagable with the textile material 5 that typically lines the inner surface of snowboard boots such as the snowboard boot 1. In other words, the textile material 5 within the snowboard boot 1 serves as the female portion of Velcro™.

[0025] The support member 2 may have a variety of shapes and sizes. However, in a preferred embodiment an L- or C-shape is desired such that the support member 2 can engage the foot of a snowboard rider at a portion of the foot proximate the ankle. Specifically, as identified in Fig. 3, the portion 2a of the support member extends into the hollow portion of the foot between the ankle and heel. Thus, the upper side of the portion 2a engages the underside of the ankle bone of the foot and the lower side of the portion 2a can engage the upper portions of the heel bone of the foot. The portion 2b of the support member 2 extends upward around the backside of the ankle bone to engage the hollow portion of the foot immediately behind the ankle bone. There-

fore, the support member 2 wraps at least partially around the protruding ankle bone of the foot, below and behind the protruding portion of the ankle bone.

[0026] It should be understood that the support member 2 is not limited to the exact shape depicted in Figs. 1, 2 and 3. The support member 2 may be elongated in either of the portions 2a or 2b or may be shorter in length in either of the portions 2a or 2b. Further, the support member 2 may merely be one or the other of the portions 2a or 2b in order to suit the needs of the snowboard rider.

[0027] In a first embodiment, as shown in Fig. 4, the support member 2 is filled with a material 10 that is generally pliable at room temperature and generally rigid in temperatures near or below freezing. For example, the material 10 may be paraffin wax or other material with such properties.

[0028] When a snowboard rider uses the support member 2 filled with a material, such as the material 10, the support member 2 may be inserted into the boot 1 in a warm place where the material 10 may be relatively soft. Upon tightening the boot 1 on the foot, the material 10 in the support member 2 is pliable and can shape itself to conform to the shape of the rider's foot proximate the ankle bone. When the rider walks out into the cold snow, the material 10 hardens in an optimal shape to provide support to the foot proximate the ankle and heel.

[0029] In a second embodiment depicted in Fig. 5, the support member 2' is filled with a first material 12 which is generally a rigid material, and a second material 13 which is soft. The first material 12 may be similar to the above mentioned material 10, or may be a more permanently rigid material such as a stiff sponge material, or a resin material. Any of a variety of generally rigid materials may be used for the first material 12. The second material 13 is a soft, compressible material which is easily compressed, such as a soft sponge material or foam material. In order to provide the desired support, the support member 2' must firmly engage the foot beneath the protruding portion of the ankle bone but should not cause discomfort when engaging the upper portions of the heel bone. Therefore, a soft material such as the material 13 aids in avoiding discomfort to the rider. It should be understood that the material 13 is provided on a lower side of the support member 2' corresponding to the portion 2a (Fig. 3).

[0030] In another embodiment of the present invention, the boot 1 is provided with two support members 2, as shown in Fig. 7. Some riders may prefer to have both sides of the foot engaged with support members 2 within the boot 1. It should be understood that the support members 2 could be either the support member 2 depicted in Fig. 4 or the support member 2' depicted in Fig. 5. Thus in the embodiment depicted in Fig. 7, the support members 2 engage opposite sides of the foot proximate the ankle. Since the support members 2 are securely fixed to the inside of the snowboard boot 1, the

support members 2 cannot easily move up or down within the boot 1. Further, since the foot is confined between the support members 2, the foot cannot easily move upward within the boot 1 with the boot lightly laced to the foot.

[0031] The engagement of the support members 2 with the foot strengthens the hold the boot 1 has on the foot. Specifically, the portion 2a of the support member 2 extends into a hollow portion of the foot just below the ankle. Since, in most persons, the heel bone (and hence the foot) tapers and gets thinner moving upward until a point just below the ankle bone, a hollow is defined thereby. The support member 2 can extend into this hollow portion thus more firmly holding the foot in the boot. If the foot begins to move upward within the boot 1, the support member 2 acts like a wedge preventing upward movement of the foot. Thus, when a rider leans forward over his toes, the support members 2 prevent the foot from sliding upward within the boot 1 and the rider's movements are more reliably transmitted to the snowboard.

[0032] Another hollow portion is defined on the foot between the back of the lower leg (just above the heel) and the ankle bone. The portion 2b of the support member 2 is configured to extend into this hollow portion of the foot to further restrain movement of the foot within the boot. Thus, whether the support member 2 includes only one of the portions 2a and 2b or both portions 2a and 2b, the foot may be more firmly engaged within the boot 1 to provide greater control for a rider on a snowboard.

[0033] It should be appreciated, that the support member 2 of the present invention is an easily removed element due to the Velcro™ that can be left out of the boot 1 or may be repositioned for greater support or in the event that a second person is to use the boot 1. The present invention therefore provides great flexibility of usage.

[0034] Summarized, a support member is provided, having an L-shape or a C-shape and being configured to engage a portion of the foot just below the ankle bone and a portion of the foot just behind the ankle bone for supporting the foot within a snowboard boot. The support member is formed with a male Velcro™ material on one side for engagement with material on an inner side of a snowboard boot thereby providing removable engagement with the boot. In one embodiment, the support member may be filled with a paraffin wax that is pliable at room temperature to conform to the shape of a rider's foot but is rigid in colder temperatures such as on a snow filled mountain side, such that the support member is generally rigid when used. The support member engages the foot to insure that the foot may not undergo any significant movement within the snowboard boot while the rider is snowboarding. Alternatively, two support members may be employed, one support member on each side of the foot within the boot.

[0035] Various details of the invention may be

changed without departing from its spirit nor its scope. Furthermore, the foregoing description of the embodiments according to the present invention is provided for the purpose of illustration only, and not for the purpose of limiting the invention as defined by the appended claims and their equivalents.

Claims

1. A support for an article of footwear (1), said support comprising:

at least one support body (2), said support body (2) being formed with a first surface having an adhering material (3) formed thereon, said adhering material (3) being configured to position said support body (2) within an article of footwear (1), said support body (2) being configured to engage an ankle bone portion of a foot within the article of footwear (1).

2. The support as set forth in claim 1, characterized in that said adhering material comprises a plurality of male hooks (3) that are configured to engage an interior surface of the article of footwear (1), where the interior surface of the article of footwear (1) defines a plurality of female portions (5) configured to receive said male hooks (3).

3. The support as set forth in claim 1 or 2, characterized in that said support body (2) is at least partially filled with a material (10) that is generally pliable at room temperature and generally rigid in temperatures near or below freezing.

4. The support as set forth in claim 3, characterized in that said material (10) is paraffin wax.

5. The support as set forth in claim 1 or 2, characterized in that said support body (2) is formed of a sponge material.

6. The support as set forth in claim 5, characterized in that an upper portion of said sponge material is generally rigid and a lower portion of said sponge material is generally soft, said upper portion being configured for engagement with an ankle bone portion of a foot and said lower portion is configured for engagement with an upper portion of an heel portion of the foot.

7. The support as set forth in one of claims 1 to 6, characterized in that said support body (2) has a generally C-shape.

8. The support as set forth in one of claims 1 to 6, characterized in that said support body has a generally L-shape.

9. The support as set forth in one of claims 1 to 8, characterized in that said support body (2) is configured to engage an upper portion of an heel bone of the foot within the article of footwear (1) thus limiting upward movement of the foot.

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10. The support as set forth in one of claims 1 to 9, characterized in that a pair of support bodies (2) is provided, one of said support bodies (2) being configured to engage a right side of an ankle bone portion of a foot within the article of footwear and the other of said support bodies (2) being configured to engage a left side of an ankle bone portion of a foot within the article of footwear.

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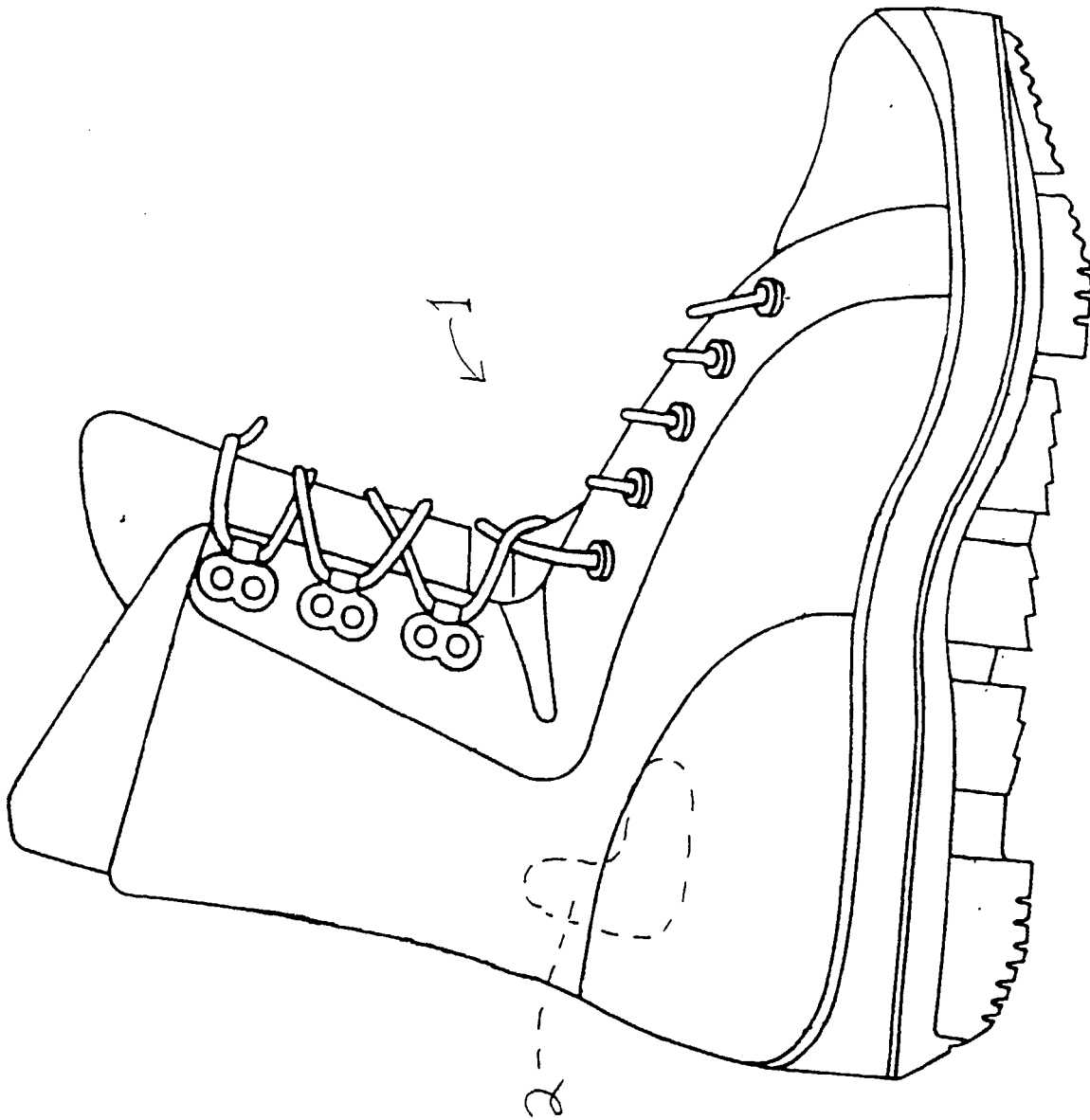


Fig. 1

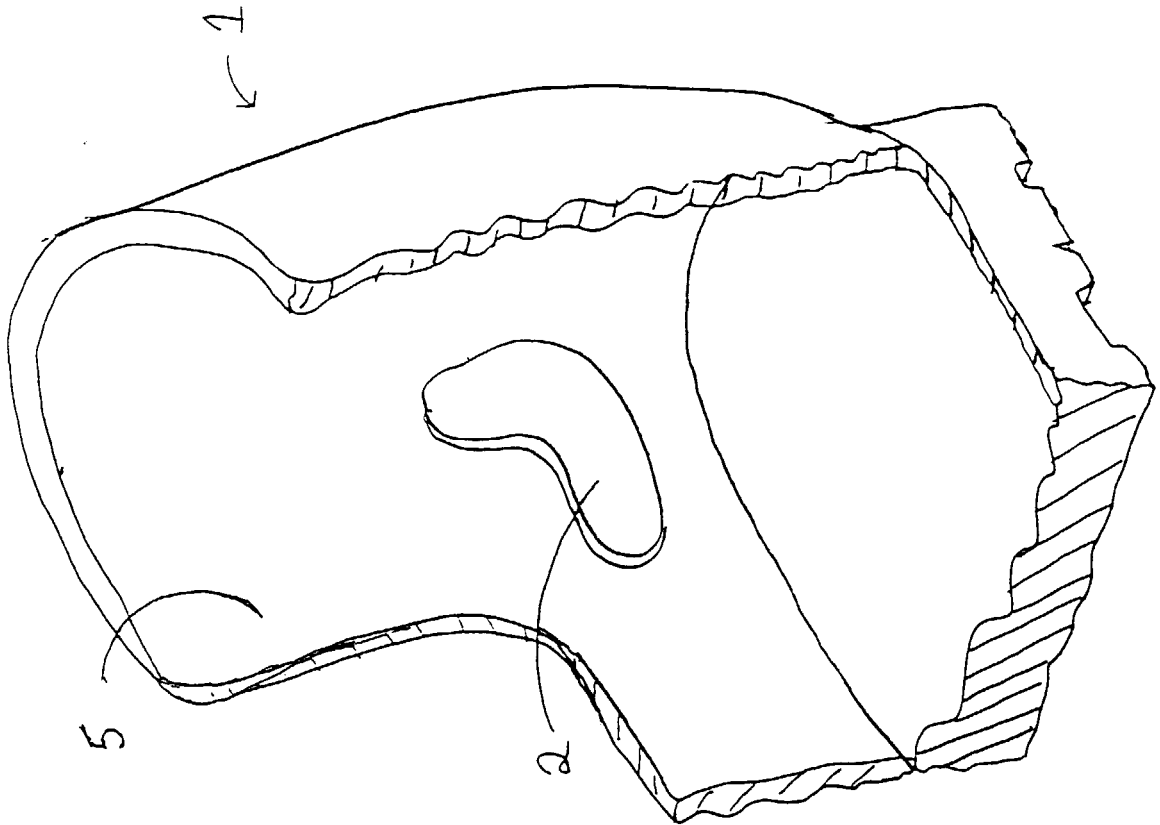


Fig. 2

Fig. 3

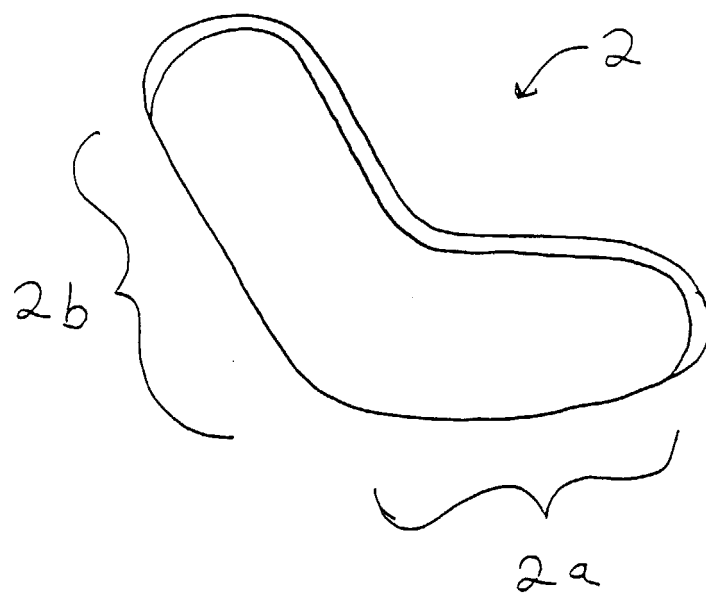


Fig. 4

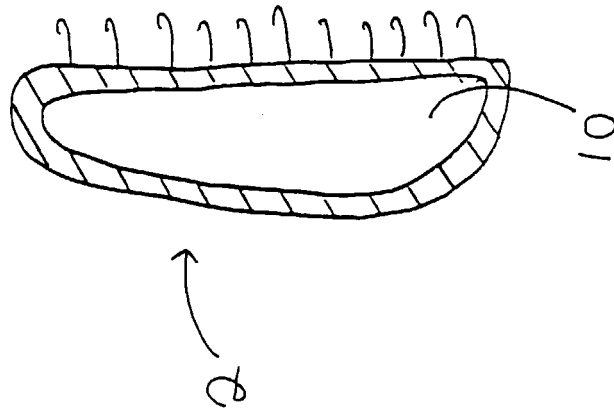


Fig. 5

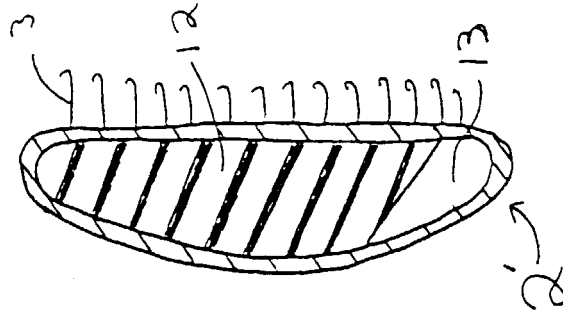
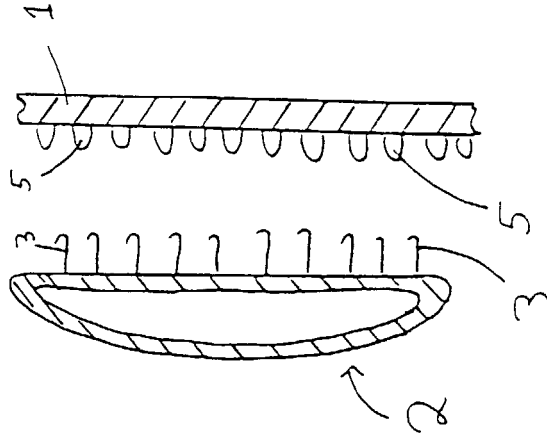


Fig. 6



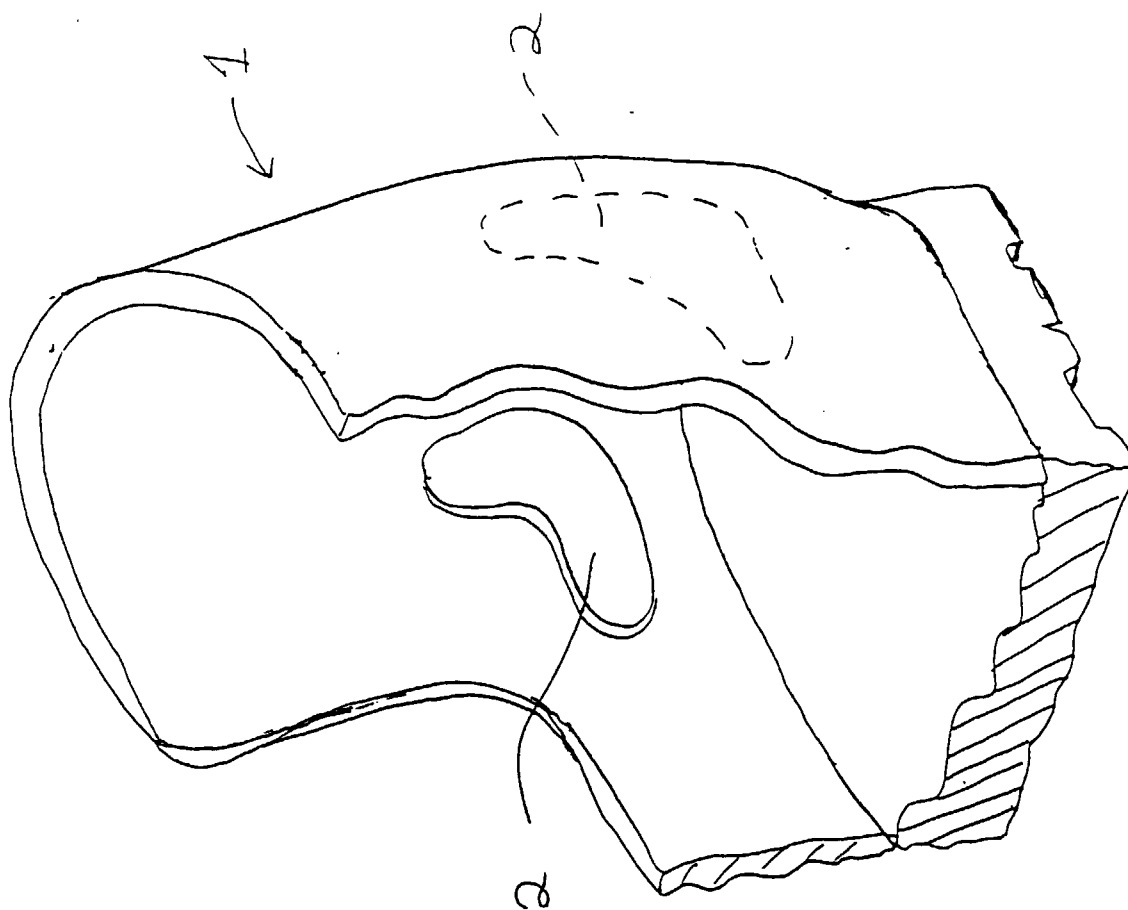


Fig. 7



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 99 10 0571

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 22 December 1999	Examiner DECLERCK, J
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 99 10 0571

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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