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(54) **FOOT ORTHOTIC**

FUSSORTHESE

SEMELLE ORTHOPÉDIQUE

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EP 1 903 899 B1

Description

[0001] This invention relates to a foot orthotic and, in particular, a foot orthotic for use as an insole in footwear.

[0002] Insoles for footwear are well known. In fact, practically all footwear has an insole provided as part of the footwear, for example, this being provided as a cushioned layer between a person's foot and the inner portion of the sole of the footwear. It is also well known to provide additional insoles to provide further cushioning and/or to replace worn insoles.

[0003] The element copper is known to be useful in alleviating joint and arthritic pain. Whilst it is not intended to be bound by theory, it is believed that the properties/minerals contained within the copper provide an effect which can alleviate joint and arthritic pain. Further, sufferers from this type of pain often employ the use of a copper bracelet, which it is asserted aids pain relief.

[0004] Some insoles have been produced which include amounts of copper as under layers, most of which under layer is not directly contactable by a foot or sock of a foot. These insoles are, typically, elastically deformable, as they are made of relatively soft material, such that, when a person's foot presses on the insole, it deforms to the shape of the foot under weight and returns (substantially) to its normal shape after use. Incorporation of copper into these soft materials is often complex and numerous production steps are needed to provide the finished article.

[0005] JP51051525 discloses safety shoes for workers in the food industry wherein the bottom of the safety shoes can be covered with copper plates. GB2066048 discloses a shoe sock for alleviating rheumatism, which is made from complete soft copper.

Summary of a First Aspect of the Invention

[0006] According to a first aspect of the invention, there is provided a foot orthotic (100), for use as an insole in footwear, said foot orthotic being anatomically-shaped to the plantar region of a foot, wherein the foot orthotic (100)

- (i) is made solely from a copper-containing material which is an alloy of copper or pure copper;
- (ii) is a three-quarter length orthotic extending from a heel of the foot to end before the metatarsal heads of a foot;
- (iii) comprises a cup-shaped heel portion (i) to receive the heel; and
- (iv) a peripheral edge of the foot orthotic is bevelled.

Preferred or Optional Features

[0007] An edge of the foot orthotic is up-turned relative to an underside of the foot orthotic. Advantageously, this may provide the foot orthotic with increased resilience and/or reduce undesired bending.

[0008] The foot orthotic is of uniform thickness.

[0009] The foot orthotic is made from a material of thickness from 0.5mm to 1.5mm, from 1.0mm to 1.2mm or, even further preferably, the thickness is 1.0mm or 1.2mm.

[0010] The copper-containing material is being an alloy of copper or pure copper contains from 30% to around 100% copper, preferably for 50% or 80% to around 100% copper, or, most preferably, 99.9% copper.

[0011] The foot orthotic is made by a process of stamping and pressing a blank of copper-containing material to achieve the desired anatomical shape.

[0012] The blank of copper-containing material may be rolled or passed through a machine press after stamping to cut out the approximate shape.

[0013] The foot orthotic comprises an adhesive pad on an underside thereof, so as to reduce movement of the foot orthotic within a piece of footwear.

[0014] Two adhesive pads are provided.

Summary of a Second Aspect of the invention

[0015] According to a second aspect of the invention, there is provided a method of making a foot orthotic comprising providing a blank of copper-containing material by stamping out the blank from a sheet of copper-containing material and pressing the blank to achieve the desired anatomical shape.

[0016] Pressing of the blank of copper-containing material is achieved using rolling or a machine press. An edge of the foot orthotic is polished, to aid comfort of a wearer.

Brief Description of the Drawings

[0017] In order that the invention may be fully disclosed, embodiments will now be described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a plan view of a foot orthotic according to the present invention;

Figure 2 is a side view of the foot orthotic of Figure 1, showing variations in depth of the shaped orthotic; Figure 3 is an end view of the foot orthotic of Figure 1; Figure 4 is an opposite end view of the foot orthotic of Figure 1;

Figure 5 is a further plan view of the foot orthotic of Figure 1;

Figure 6 is a cross-sectional view of the foot orthotic of Figure 1, shown along the line XX of Figure 5; and Figure 7 is a cross-sectional view along the line YY of Figure 5.

Detailed Description of the Drawings

[0018] An insole (foot orthotic) is, generally, indicated in the Figures by reference 100. The insole 100 is pro-

vided with a rear, heel portion 1 and a forward portion 2, and can be placed in an item of footwear, in or around the region of the heel or back of the footwear.

[0019] The heel portion 1 is located to the rear of the insole 100, as indicated by reference 4, and is provided with a heel cup 5. The heel cup 5 is shaped to receive the heel of a wearer of a piece of footwear. The heel cup 5 is provided as an indent in the insole 100. The heel cup 5 is, as its name suggests, cup-shaped, having a lowest point in or around the region of reference 5. The lines shown by reference 6 are intended to indicate that those portions surrounding the heel cup are downwardly sloped towards reference 5. Figure 7 shows, in particular, the insole 100 through a cross-section along the line YY. In this cross-section, the cup-shaped nature of the heel cup 5 is shown. The heel cup 5 is provided to make the insole 100 comfortable for a wearer of footwear.

[0020] Ideally, the insoles are not foot specific and there is no specific left or right insole. A continual gradient is provided from the heel cup 5, as shown initially by lines at reference 6, and further shown by lines referenced by number 8 in Figure 5. The highest point of the arched portion 2 is shown in the region of reference number 9. The arched portion 2, in the region of reference 9, extends upwardly and into an arch of the foot of a wearer of footwear. A front 3 of the insole 100 is provided at a lower level than the arched portion 2. Lines numbered 10 in the Figures are intended to show a downward gradient from the region of the arched portion 2 towards the front 3.

[0021] As shown in Figure 5, apart from at the front 3, the insole 100 is provided with an up-turned edge 11, relative to an underside 12 of the insole 100. Equally, the up-turned edge 11 may be seen as a downward-turned edge 11, relative to the upper surface 13 of the insole 100. The up-turned edge 11 runs along both sides and the rear portion of the insole 100, but not at the very front 3. The up-turned edge is provided both for comfort to a user of the insole and aids resilience of the insole under stress, when a user is wearing footwear in which the insole is placed.

[0022] The peripheral edge of the insole 100 is bevelled and/or polished to remove sharp edges, and make the insole more comfortable to a wearer.

[0023] In accordance with the invention, the insole 100 is made solely from a copper-containing material. Therefore, although the material must contain copper, it may contain other elements in varying proportions. Preferably, the copper-containing material is pure copper or, substantially, pure copper. Most preferably, the copper-containing material is 99.9% copper.

[0024] Most preferably, the insole 100 is formed entirely from one piece of copper-containing material.

[0025] The insole 100 is a three-quarter length orthotic, as is known in the art. This three-quarter length orthotic extends from the heel of a wearer to end before the metatarsal heads.

[0026] In a further embodiment, the insole 100 is provided with adhesive pads on the underside 12, such that

the insole 100 may be affixed to the inside of a piece of footwear. Preferably, the insole 100 will be located towards a rear of the footwear, in the region of the heel, and is held in that position by the adhesive pads.

[0027] In use, the insole 100 is placed in an item of footwear, towards the back, so that a wearer's heel will contact the heel cup 5 and the wearers sole will be contacted by the portion 2 extending forwardly from the heel CUP 5.

[0028] The insole can be made by many different methods and one example is as follows. The insole is manufactured by stamping and then pressing. Firstly, the insole is stamped to size and approximate shape from a sheet of copper-containing material. Following stamping, the blank produced from the stamping process is pressed - using appropriate tooling - to provide the contoured shape that can be seen in the figures. A third stage includes bevelling the edge and subsequent polishing to produce a smooth edge that will be comfortable for a wearer and not damage the inside of a piece of footwear or a wearer's foot.

[0029] Most preferably, the insole is produced in four sizes, which cover ladies' and gentlemen's footwear in all sizes.

[0030] Advantageously, the described invention has shown utility in providing an effect which can alleviate joint and arthritic pain.

Claims

1. A foot orthotic (100), for use as an insole in footwear, said foot orthotic being anatomically-shaped to the plantar region of a foot, wherein the foot orthotic (100)
 - (i) is made solely from a copper-contained material which is an alloy of copper or pure copper;
 - (ii) is a three-quarter length orthotic extending from a heel of the foot to end before the metatarsal heads of a foot;
 - (iii) comprises a cup-shaped heel portion (1) to receive the heel; and
 - (iv) a peripheral edge of the foot orthotic is bevelled.
2. A foot orthotic (100), as claimed in claim 1, wherein an edge (11) of the foot orthotic is up-turned relative to an underside of the foot orthotic, to provide increased resilience.
3. A foot orthotic (100), as claimed in any one of the preceding claims, wherein the foot orthotic is of uniform thickness.
4. A foot orthotic (100), as claimed in any one of the preceding claims, wherein the foot orthotic is made from a material of thickness from 0.5mm to 1.5mm.

5. A foot orthotic (100), as claimed in claim 4, wherein the thickness is 1.0mm or 1.2mm.
6. A foot orthotic (100), as claimed in any one of the preceding claims, wherein the foot orthotic is made by a process of stamping and pressing a blank of copper-containing material to achieve the desired anatomical shape.
7. A foot orthotic (100), as claimed in claim 6, wherein the blank of copper-containing material has been rolled.
8. A foot orthotic (100), as claimed in claim 6, wherein the blank of copper-containing material has been passed through a machine press.
9. A foot orthotic (100), as claimed in any one of the preceding claims, comprising an adhesive pad on an underside thereof, so as to reduce movement of the foot orthotic within a piece of footwear.
10. A foot orthotic (100), as claimed in any preceding claim, wherein the copper-containing material is an alloy of copper and/or contains from 30% to around 100% copper, preferably from 50% to 80% to around 100% copper, or, most preferably, 99.9% copper.
11. A method of making a foot orthotic (100), as defined in claim 1, and any claim appended thereto comprising providing a blank of copper-containing material by stamping and pressing the so-produced blank to achieve the shape and configuration defined in claim 1.
12. A method of making a foot orthotic (100), as claimed in claim 11, wherein pressing of the blank or copper-containing material is achieved using rolling or a machine press.
13. A method of making a foot orthotic (100), as claimed in either of claims 11 or 12, wherein the foot orthotic is polished to provide smoother edges.

Patentansprüche

1. Eine Fussorthese (100) zur Verwendung als eine Brandsohle in einem Schuh, die Fussorthese anatomisch geformt zu dem plantaren Bereich des Fusses ist, wobei die Fussorthese (100):
 - (i) ausschliesslich aus einem kupferhaltigen Material, das Material eine Legierung von Kupfer oder echtem Kupfer ist, hergestellt ist;
 - (ii) eine Drei-viertel-Länge-orthese ist, die sich von einem Absatz des Fusses zum Ende vor den metatarsalen Köpfen des Fusses er-

streckt;

- (iii) einen schalenförmigen Absatzteil(1) umfasst, um den Absatz zu erhalten; und
- (iv) eine Peripherschrägkante umfasst.

2. Eine Fussorthese (100) nach Anspruch 1, wobei die Kante (11) der Fussorthese nach oben gewandt ist, relativ zu einer Unterseite der Fussorthese, um eine Aufelastizität vorzusehen.
3. Eine Fussorthese (100) nach einem der vorhergehenden Ansprüche, wobei die Fussorthese eine gleichmässige Dicke aufweist.
4. Eine Fussorthese (100) nach einem der vorhergehenden Ansprüche, wobei die Fussorthese aus einem Material mit einer Dicke von 0,5 mm bis 1,5 mm hergestellt ist.
5. Eine Fussorthese (100) nach Anspruch 4, wobei die Dicke 1,0 mm oder 1,2 mm ist.
6. Eine Fussorthese (100) nach einem der vorhergehenden Ansprüche, wobei die Fussorthese mit einem Prozess von Stanzen und Pressen des Rohlings aus Kupfer-enthaltendem Material hergestellt ist, um die gewünschte anatomische Form zu erhalten.
7. Eine Fussorthese (100) nach Anspruch 6, wobei der Rohling aus Kupfer-erhaltendem Material gerollt worden ist.
8. Eine Fussorthese (100) nach Anspruch 6, wobei der Rohling aus Kupfer-erhaltendem Material durch eine Maschine-pressen durchgeleitet worden ist.
9. Eine Fussorthese (100) nach einem der vorhergehenden Ansprüche, umfassend eine Klebefläche an ihrer Unterseite, um die Bewegung der Fussorthese in dem Schuh zu vermindern.
10. Eine Fussorthese (100) nach einem der vorhergehenden Ansprüche, wobei das Kupfer-erhaltende Material eine Legierung von Kupfer ist und/or von 30% bis etwa 100% Kupfer, vorzugsweise von 50% bis 80% bis etwa 100% Kupfer, oder, am meisten bevorzugt, 99.9% Kupfer umfasst.
11. Verfahren zur Herstellung eine Fussorthese (100) als im Anspruch 1 und einem der angehängten Ansprüche definiert ist, umfassend das Bereitstellen eines Rohlings des Kupfer-erhaltenden Materials durch Stanzen und Pressen des so hergestellten Rohlings, um die Form und Konfiguration als im Anspruch 1 definiert sind, zu erhalten.
12. Verfahren zur Herstellung eine Fussorthese (100)

nach Anspruch 11, wobei das Pressen des Rohlings des Kupfer-enthaltenden Materials mit Rollen oder mit einem Maschine-press ausgeführt wird.

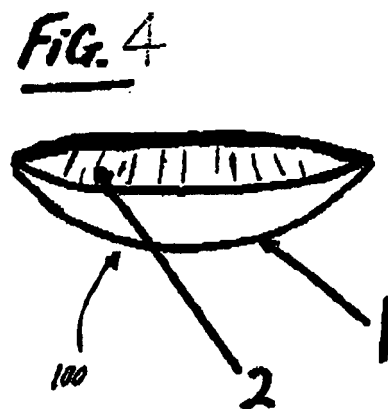
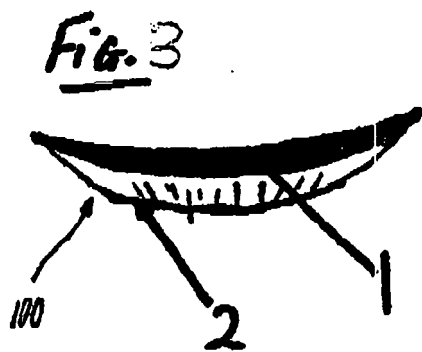
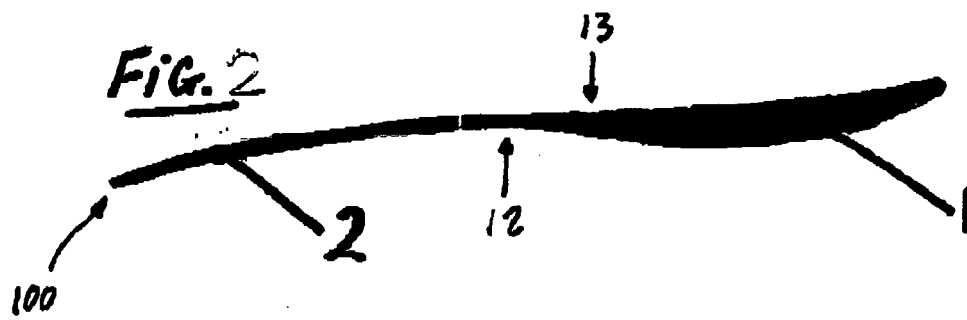
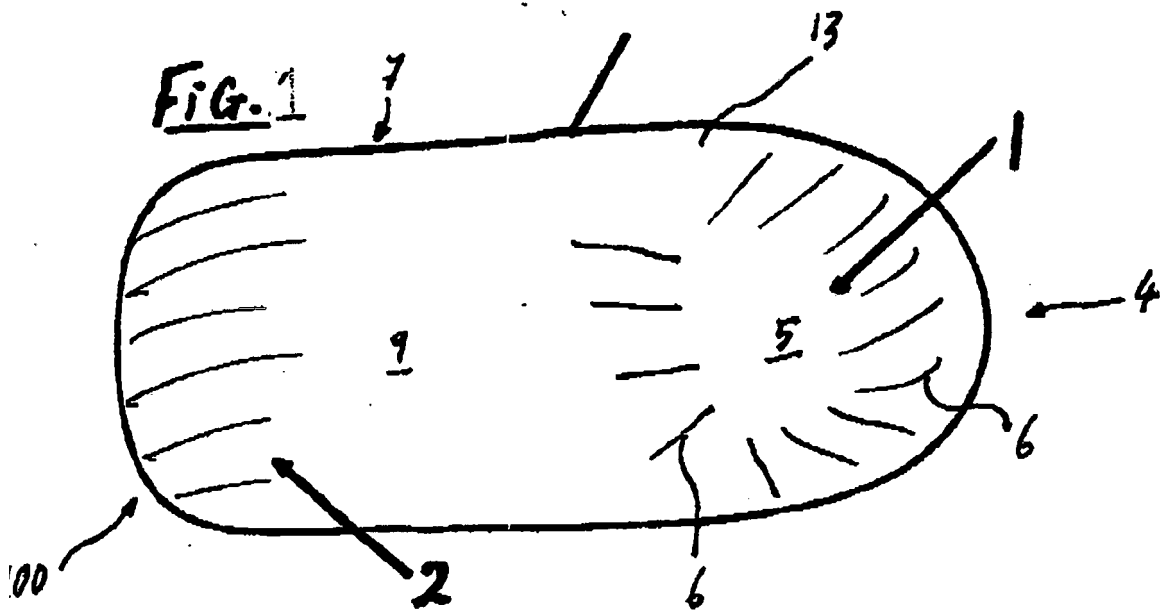
13. Verfahren zur Herstellung eine Fussorthese (100) nach einem der Ansprüche 11-12, wobei die Fussorthese geglättet wird, um glattere Kanten zu vorsehen.

Revendications

1. Orthèse podiatrique (100) à usage de semelle intérieure de chaussure, ladite orthèse podiatrique étant anatomiquement formée selon la région plantaire d'un pied, dans laquelle l'orthèse podiatrique (100)
 - (i) est réalisée uniquement à partir d'un matériau à composition de cuivre, qui est un alliage de cuivre ou de cuivre pur;
 - (ii) est une orthèse de trois quarts de longueur, s'étendant depuis un talon du pied et s'arrêtant avant la tête des métatarsiens d'un pied;
 - (iii) comprend une portion de talon en forme de coupe (1) pour recevoir le talon; et
 - (iv) un bord périphérique de l'orthèse podiatrique est biseauté.
2. Orthèse podiatrique (100) selon la revendication 1, dans laquelle un bord (11) de l'orthèse podiatrique est retournée par rapport à un dessous de l'orthèse podiatrique, pour fournir une résilience accrue.
3. Orthèse podiatrique (100) selon l'une des revendications précédentes, dans laquelle l'orthèse podiatrique possède une épaisseur uniforme.
4. Orthèse podiatrique (100) selon l'une des revendications précédentes, dans laquelle l'orthèse podiatrique est réalisée dans un matériau dont l'épaisseur est de 0,5 mm à 1,5 mm.
5. Orthèse podiatrique (100) selon la revendication 4, dans laquelle l'épaisseur est 1,0 mm ou 1,2 mm.
6. Orthèse podiatrique (100) selon l'une des revendications précédentes, dans laquelle l'orthèse podiatrique est réalisée par un procédé de poinçonnage et pressage d'une ébauche de matériau à composition de cuivre pour obtenir la forme anatomique souhaitée.
7. Orthèse podiatrique (100) selon la revendication 6, dans laquelle l'ébauche de matériau à composition de cuivre a été laminée.
8. Orthèse podiatrique (100) selon la revendication 6, dans laquelle l'ébauche de matériau à composition

de cuivre est passée au travers d'une presse industrielle.

9. Orthèse podiatrique (100) selon l'une des revendications précédentes, dont un dessous de l'orthèse comprend un tampon adhésif, de sorte à réduire un mouvement de l'orthèse podiatrique à l'intérieur d'une chaussure.
10. Orthèse podiatrique (100) selon l'une des revendications précédentes, dans laquelle le matériau à composition de cuivre est un alliage de cuivre et/ou contient de 30% à 100% de cuivre, préférablement de 50% à 80% à environ 100% de cuivre ou, le plus préférablement, 99.9% de cuivre.
11. Procédé de fabrication d'une orthèse podiatrique (100) telle que définie à la revendication 1 et toute revendication en dépendant, comprenant la provision d'une ébauche de matériau à composition de cuivre par poinçonnage et pressage de l'ébauche ainsi obtenue pour obtenir la forme et configuration définie à la revendication 1.
12. Procédé de fabrication d'une orthèse podiatrique (100) selon la revendication 11, dans lequel le pressage de l'ébauche de matériau à composition de cuivre est accompli par laminage ou pressage industriel.
13. Procédé de fabrication d'une orthèse podiatrique (100) selon l'une des revendications 11 à 12, dans lequel l'orthèse podiatrique est polie pour fournir des bords plus lisses.



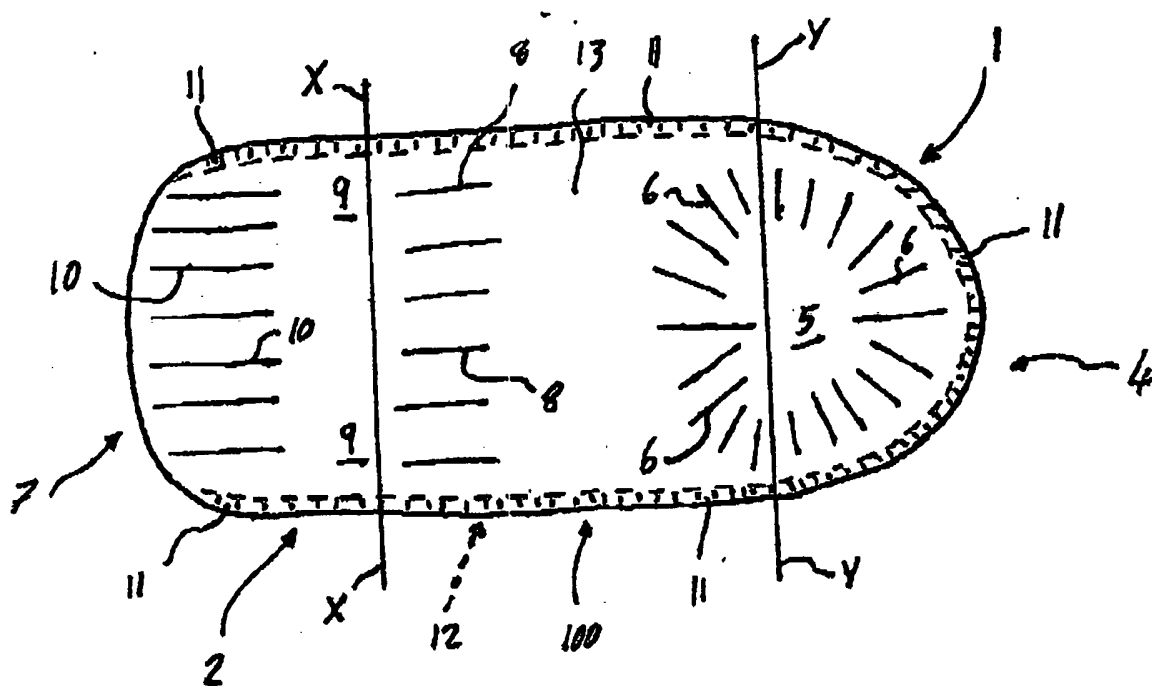


Fig. 5

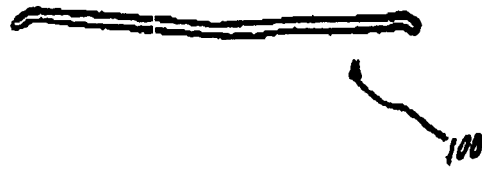


Fig. 6

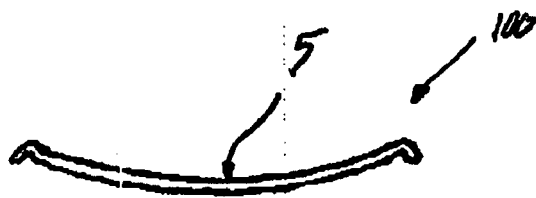


Fig. 7

REFERENCES CITED IN THE DESCRIPTION

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