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(54) **Arch support for open or closed shoes**

Fusswölbungsstütze für offenen oder geschlossenen Schuh

Support plantaire pour chaussure ouverte ou fermée

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Description

[0001] The present invention refers to an arch support for shoes, which can be inserted into shoes of the open or closed type, provided with transversal openings increasing flexibility and comfort.

[0002] Arch supports that can be inserted in shoes, including sports shoes, are already known, these arch supports being made of different materials, as for example those disclosed in US-A-4910882, and thus presenting different rigidity and different elastic characteristics, as well as different resistance to compression, torsion etc... of the shoe.

[0003] Being then the part where the foot rests uneven in its responses, people wearing the shoes can feel uncomfortable. Besides, the arch supports of the known type are compact, so that they prevent the foot from being properly aerated, or are areated with grooves very spaced apart, see BE-A-464619, so that they do not allow an uniform elastic response. An arch support having the features as set forth in the preamble of claim 1 is known from DE-U-18 72 338.

[0004] It is an object of the present invention to provide an arch support that yields uniformly, so that it can always be a uniform and elastic support to the foot.

[0005] It is an additional object of the present invention to provide an arch support that allows the foot to be properly aerated.

[0006] Said object is achieved by means of an arch support, for shoes of the open or closed type, presenting the characteristics set forth in claim 1.

[0007] Said additional object is achieved by means of an arch support, for shoes of the open or closed type, presenting the characteristics set forth in claim 5.

[0008] Additional characteristics and advantages will become clear from the following description which refers to the appended drawings provided as non-restrictive examples, in which:

figure 1 is a perspective view of the arch support according to the invention;
figure 2 is a view of a front-transversal section of a part of the shoe provided with the arch support in figure 1;
figure 3 is a side view of the arch support in figure 1 shaped according to the human foot, and
figure 4 is a superimposed perspective view of a shoe, both of the open and closed type, provided with the arch support of figure 1.

[0009] With reference to the appended figures, reference number 2 indicates an arch support for a shoe 3, the shoe being shown in figure 4 as a shoe of the open type (sandal) and at the same time of the closed sports type, but which could also be of the classic-elegant type. It consists of a single piece, realised by means of injection/extrusion moulding or by means of a thermal-compression process, the single piece being made of natural or synthetic rubber or of a different synthetic elastic material to which natural substances can be added.

[0010] The arch support according to the present invention consists of a single sheet the thickness of which can be homogeneous or can vary according to the points were the foot rests, and which presents a continuous series of through holes, basically coplanar to the faces of the sheet, transversal to its longer axis, and presenting different geometrical sections, according to the types of the shoes to which the arch support is to be associated and also according to the use and the sports discipline for which the shoes have been designed. Sections and dimensions can also be varied so that more comfort or better elasticity can be achieved.

[0011] For instance, a preferred embodiment of the arch support according to the invention, shown in the appended figures, implies the use of a sheet the thickness of which is homogeneous, and which is made of elastomer material, presenting a series of transversal through holes of circular section 5 alternating with a pair of through transversal holes of equilateral triangle section 7, placed with two vertexes facing the centre of the sheet constituting the arch support. The diameter of the circular section and the height of the triangular sections can be calculated in order to keep the thickness of the wall of the sheet surrounding the circular holes constant. This is to allow the whole arch support to produce a uniform elastic response. In another preferred embodiment of the arch support according to the invention, the upper part is provided with through holes 8 (figures 1 and 4) which make the circular holes 5 communicate with the upper part of the arch support, so that the foot is properly aerated during the walk, thanks to the compression/decompression effect determined by the pressure on the holes 5. In some cases the air will be sucked from outside through the holes made in the external upper while in other cases the air will enter through proper small tubes, the location and design of which are intended to allow communication with the outside.

[0012] It is to be intended that the shape of the holes here shown is not binding and that different shapes can be selected in order to achieve the same object without going beyond the scope of the present invention as defined by the appended claims.

[0013] Inside the sheet, of which the arch support consists, a small seat (not shown) can be made during the production process and inside said seat an element made of absorbing material, such as felt, can be introduced after having being soaked in an essence or perfume if desired.

[0014] The arch support thus designed allows to realise a support surface which is soft and homogeneous both during the walk or at rest. The embodiment with the holes on the upper part allows also the foot to be properly aerated.

[0015] It must be understood that the material used to produce the arch support can be chosen among those presenting the needed characteristics of elasticity and

resistance without going beyond the scope of the present invention as defined by the appended claims.

Claims

1. An arch support for a shoe of the open or closed type, made of elastic material and made of a single sheet presenting a continuous series of first through holes (5, 7) basically coplanar to the faces of the sheet, transversal to the longer axis of the arch support **characterised in that** said through-holes (5, 7) present sections which are geometrically different in shape and alternated along said longer axis .

2. An arch support as claimed in claim 1, **characterised in that** said first through holes present circular sections (5) and are alternated with a pair of holes the shape of their section being basically that of equilateral-triangles (7) placed with two vertexes facing the centre of the arch support.

3. An arch support as claimed in claim 1, **characterised in that** the sheet of elastic material of which the arch support consists is homogeneous in thickness.

4. An arch support as claimed in claim 1, **characterised in that** the sheet of elastic material of which the arch support consists presents different thickness according to the different points where the foot rests.

5. An arch support as claimed in claim 1, **characterised in that** it is provided with further through holes (8) which make the first through holes (5, 7) communicate with the upper part of the arch support.

6. An arch support as claimed in claim 1, **characterised in that** it is provided with a seat in which an element made of absorbing material, such as felt, can be introduced.

Patentansprüche

1. Senkfußeinlage für einen offenen oder geschlossenen Schuhtyp, die aus elastischem Material besteht und aus einem einzigen Blatt hergestellt ist, das eine durchgehende Reihe erster Durchgangslöcher (5, 7) aufweist, die zu den Blattseiten im Wesentlichen koplanar sind und quer zu der Längsachse der Senkfußeinlage verlaufen, **dadurch gekennzeichnet, dass** die Durchgangslöcher (5, 7) Querschnitte aufweisen, die eine unterschiedliche geometrische Form besitzen und in Längsachsenrichtung abwechselnd angeordnet sind.

2. Senkfußeinlage nach Anspruch 1, **dadurch gekennzeichnet, dass** die ersten Durchgangslöcher kreisförmige Querschnitte (5) aufweisen und sich mit einem Paar Löcher abwechseln, deren Querschnittsform im Wesentlichen die von gleichseitigen Dreiecken (7) ist, deren zwei Eckpunkte dem Mittelteil der Senkfußeinlage zugewandt angeordnet sind.

3. Senkfußanlage nach Anspruch 1, **dadurch gekennzeichnet, dass** das aus elastischem Material bestehende Blatt, aus dem die Senkfußeinlage besteht, eine homogene Dicke besitzt.

4. Senkfußeinlage nach Anspruch 1, **dadurch gekennzeichnet, dass** das aus elastischem Material bestehende Blatt, aus dem die Senkfußeinlage besteht, gemäß den verschiedenen Stellen, wo der Fuß aufliegt, unterschiedliche Dicken aufweist.

5. Senkfußeinlage nach Anspruch 1, **dadurch gekennzeichnet, dass** sie mit weiteren Durchgangslöchern (8) ausgestattet ist, die dafür sorgen, dass die ersten Durchgangslöcher (5, 7) mit der Oberseite der Senkfußeinlage in Verbindung treten.

6. Senkfußeinlage nach Anspruch 1, **dadurch gekennzeichnet, dass** sie mit einem Sitz ausgestattet ist, in den ein aus absorbierendem Material, wie beispielsweise Filz, bestehendes Element eingesetzt werden kann.

Revendications

1. Semelle orthopédique pour une chaussure de type ouvert ou fermé, composée de matériau élastique et composée d'une feuille unique présentant une série continue de premiers trous débouchants (5, 7) fondamentalement coplanaires par rapport aux faces de la feuille, transversaux par rapport à l'axe longitudinal de la semelle orthopédique, **caractérisée en ce que** lesdits trous débouchants (5, 7) présentent des sections qui sont géométriquement différentes dans leur forme et alternent le long dudit axe longitudinal.

2. Semelle orthopédique selon la revendication 1, **caractérisée en ce que** lesdits premiers trous débouchants présentent des sections circulaires (5) et alternent avec une paire de trous, la forme de leurs sections étant fondamentalement celle de triangles équilatéraux (7) placés avec deux sommets faisant face au centre de la semelle orthopédique.

3. Semelle orthopédique selon la revendication 1, **caractérisée en ce que** la feuille de matériau élastique à partir de laquelle la semelle orthopédique est

composée est homogène en épaisseur.

4. Semelle orthopédique selon la revendication 1, **caractérisée en ce que** la feuille de matériau élastique à partir de laquelle la semelle orthopédique est composée présente différentes épaisseurs selon les différents points où le pied repose.

5. Semelle orthopédique selon la revendication 1, **caractérisée en ce qu'**elle est munie d'autres trous débouchants (8) qui font que les premiers trous débouchants (5, 7) communiquent avec la partie supérieure de la semelle orthopédique.

6. Semelle orthopédique selon la revendication 1, **caractérisée en ce qu'**elle est munie d'un siège dans lequel un élément composé de matériau absorbant, tel que du feutre, peut être introduit.

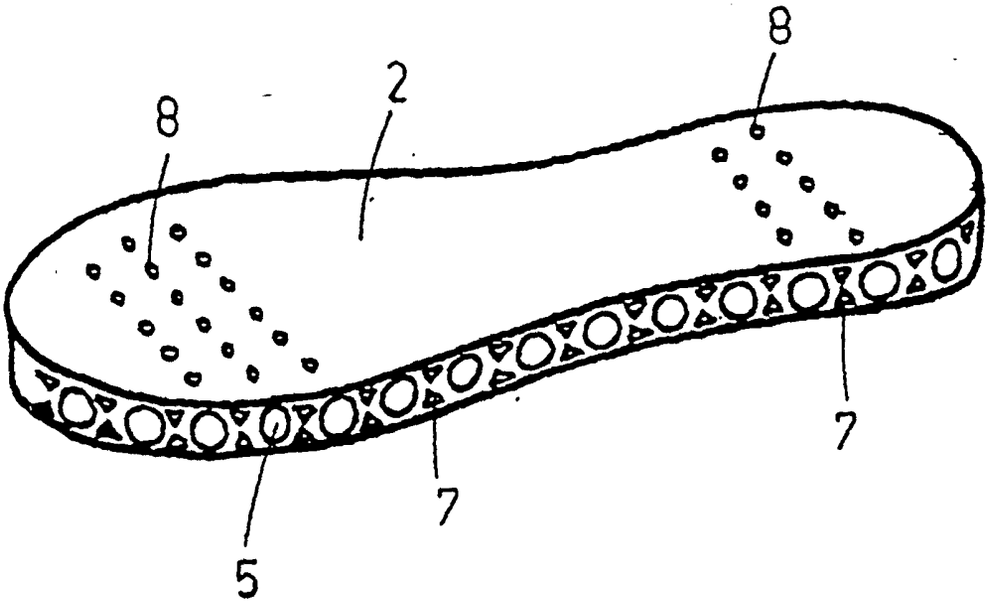


FIG.1

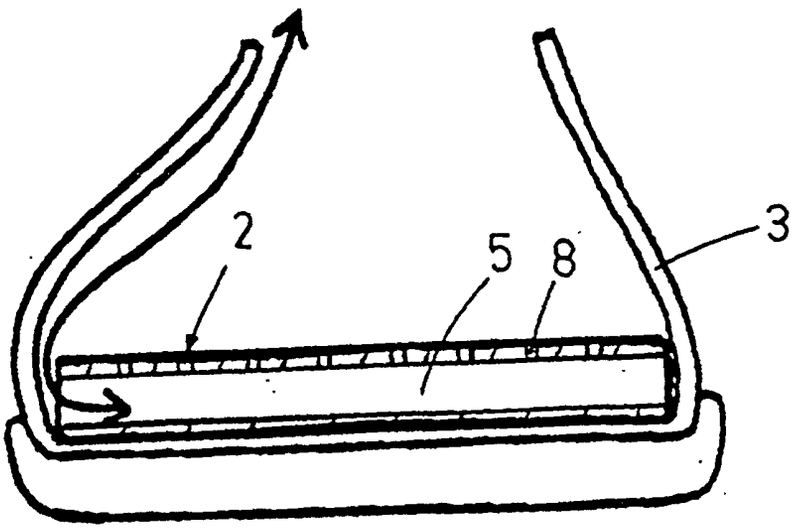


FIG.2

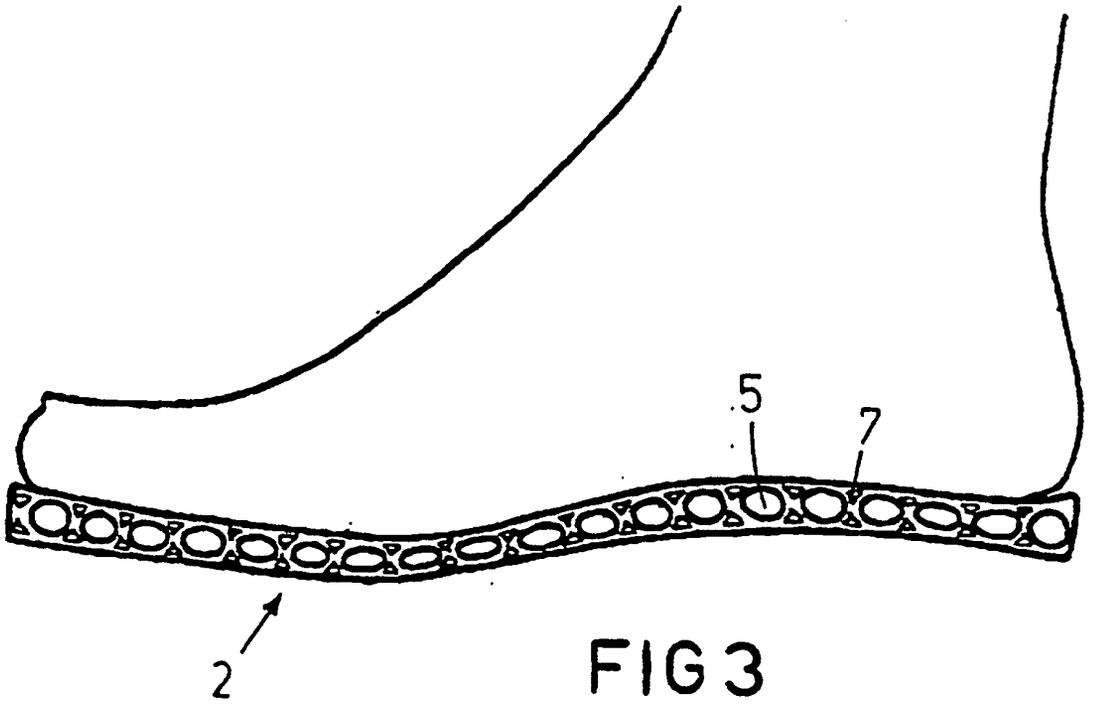


FIG 3

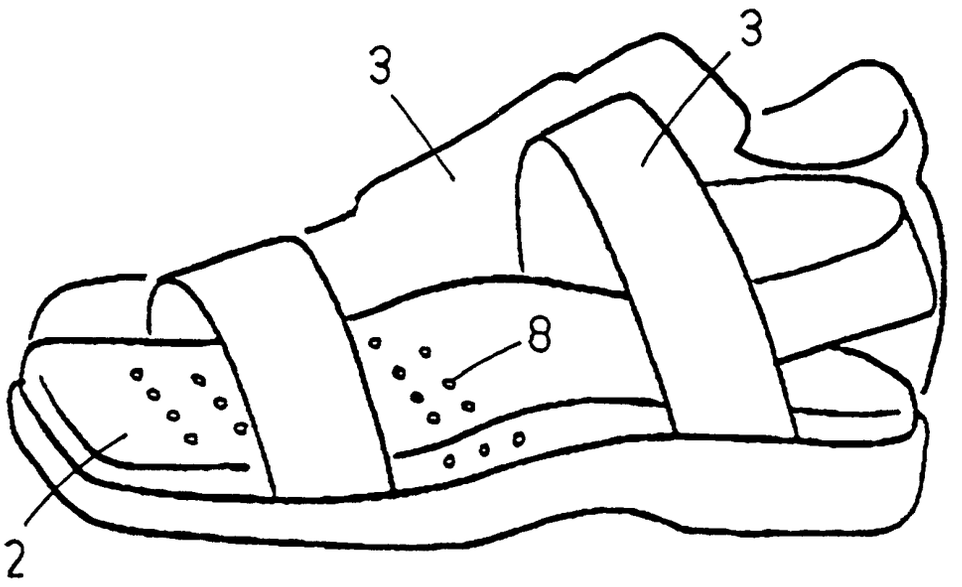


FIG 4