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(54) Insole or footbed for footwear

(57) The present invention refers to a insole or footbed for footwear, particularly suitable to favour blood circulation or for the plantar reflexology therapy, which includes a first portion (1) on which are made a plurality of holes or openings (4) distributed according to predefined mapping patterns for introducing insertion-type elements (5), one part of which is suitable to protrude from the first portion (1), and a second portion (2) electrically conductive that can be associated with the first portion (1) through removable connecting means (3A, 3B) to hold the insertion elements (5) in position; the second portion (2) includes a support (9) and an electrically conductive material in the form of a yarn applied by embroidery (8) directly on the support (9).

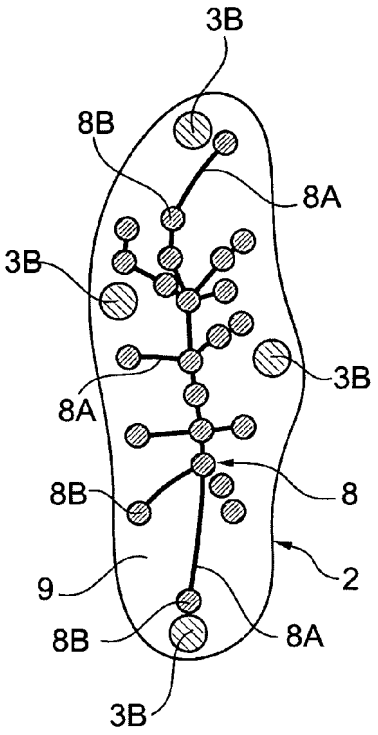

Fig. 3

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Description

TECHNICAL FIELD OF THE INVENTION

[0001] The present invention refers to an insole or footbed for footwear, particularly suitable to favour blood circulation or for the therapy of plantar reflexology. In fact, the insole provides the possibility of selectively positioning one or more inserts that make it possible to lend to the insole itself characteristics that are suitable to stimulate blood circulation in the foot or to carry out a plantar reflexology treatment on the user.

STATE OF THE ART

[0002] It is currently well known that plantar reflexology is a particular type of treatment that is carried out through the stimulation, by excitation of the nerve endings, of specific internal organs of the human body through the application of a slight pressure on suitable points or sensitive areas of the sole of the foot, definite therapeutic points, to each of which corresponds, by reflex, an internal organ.

[0003] One of the manners of carrying out said treatment consists of using particular insoles, that may be inserted inside the footwear, which on the surface that faces the sole of the foot are provided with one of more areas in relief corresponding to the point or points on which pressure is to be exerted.

[0004] Patent application IT VR2007A000129 concerns an insole or footbed provided with means for reflexology and consisting of a lower part and an upper part than can be detachably associated with each other; on the upper part are provided, with a predefined mapping arrangement, a plurality of holes or openings to allow the insertion of suitable copper inserts or lugs, which remain locked in resting position on the lower part, which is made of an electrically conductive material such as carbon.

[0005] In the practical embodiment of the insole described in the above-mentioned patent application, the lower part consists of a layer of conductive fabric of carbon fibre and a support layer of cotton fabric, or similar materials, glued to each other.

[0006] A drawback of such known solution consists of the fact that the repeated flexures of the insole when the user is walking weaken the lower part of the insole to the point of causing the breaking of the carbon fibre fabric; this shortcoming is particularly dangerous for the user because the breakage of the carbon fibre fabric leads to the formation of sharp parts that could cause accidental injuries in the user, especially during the handling of the insoles to replace the inserts or to vary their position.

[0007] Another drawback lies in the fact that it has been experimentally found that the exposure of the insole to relatively high temperatures, in the order of 40°C / 50°C, tends to cause the carbon fibre fabric to become detached from the support cotton fabric, with the consequent leakage of bonding agent, thus making the insole unusable. The above temperature values can be reached more frequently than commonly thought, for example during the storage of the insoles, or of the footwear containing them, in containers exposed out of doors in sunlight, or when the user dries the footwear near heat sources.

[0008] A further drawback results from the presence, inside the footwear containing the insole, of harmful vapours emitted by the bonding agent joining the two fabrics due to the heat developed by the foot inside the shoe. These vapours can be absorbed by the user's skin, with consequences such as for example skin or allergic reactions, considerably harmful for the user's health.

SUMMARY OF THE INVENTION

[0009] The main objective of the subject matter of the present invention is therefore to devise an insole or footbed for footwear capable of resolving the drawbacks of the known art.

[0010] In the scope of the above objective, one purpose of the present invention is to devise an insole or footbed for footwear, particularly suitable to favour blood circulation in the foot or for the plantar reflexology therapy, capable of guaranteeing greater flexural resistance to fatigue to eliminate, or at any rate considerably reduce, the risk of breakage of the conductive fabric due to repeated flexures.

[0011] Another purpose is to devise an insole in which the components are capable of also standing up to high temperatures without the risk of irreparably compromising the integrity and the use of the same insole.

[0012] Yet another purpose is to devise an insole that is free of potentially harmful substances for the health of the user.

[0013] An equally important purpose is to devise an insole or footbed for footwear that achieves the above-mentioned task and objectives at competitive costs and that can be made with the usual known systems, machines and equipment.

[0014] The above purposes and objectives, and others that will become more evident later, are achieved with an insole or footbed as defined in claim 1.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] Further characteristics and advantages of an insole or footbed for footwear according to the present invention, particularly suitable to favour blood circulation or for the plantar reflexology therapy, will become more evident from the following description of a particular, but not exclusive, embodiment illustrated purely by way of non-limiting example with reference to the following figures, in which:

Figure 1 shows, in a schematic top view, one face of a first portion of an insole according to the present invention;

Figure 2 shows, in a view similar to the previous one, the opposite face of the first portion of the insole of Figure 1;

Figure 3 schematically illustrates, in a top view, a second portion of the insole according to the present invention;

Figure 4 shows schematically an element that can be inserted between the two portions of the insole of the previous figures;

Figure 5 is a schematic view of an insole according to the present invention before the assembling.

DETAILED DESCRIPTION OF THE INVENTION

[0016] With reference to the enclosed figures, the insole or footbed according to the present invention includes substantially a first portion 1, on which the user's foot rests when in use, and a second portion 2 facing the internal sole, when the insole is placed inside the footwear; the first portion 1 and the second portion 2 can be associated with each other by means of removable connecting means, such as for example a plurality of hook-and-loop adhesive tape elements commercially known with the trademark Velcro®, each formed by a part 3A applied on the first portion 1 and, correspondingly, another part 3B applied on the second portion 2.

[0017] On the first portion 1 of the insole there is a plurality of holes or openings 4 distributed according to predefined mapping patters based on the arrangement of the points of the foot that need to be stimulated to favour blood circulation or of the therapeutic points inherent in plantar reflexology. The plurality of holes or openings 4 allows the introduction of one or more insertion elements 5, preferably made of metal, advantageously copper, due to its therapeutic and electrical conductivity properties, which elements protrude from the first portion 1 toward the user's foot and are held in position by the second portion 2 once it has been removably connected to the first portion 1 through the detachable connecting means 3A, 3B.

[0018] One part of the insertion elements 5 is advantageously made in the form of lugs comprising a base 6 from which extends a dome-like projection 7, which can be inserted in a hole of the plurality of holes 4 and protrudes from the first portion 1, while another part (not shown in the enclosed drawings) is made in the form of a small plug, and therefore with a short section that extends from the base but remains at the level of the first portion 1, to close the unused holes 4 and still maintain the characteristic of electrical conductivity of the insole, as will be better explained later.

[0019] The second portion 2 must have characteristics of electrical conductivity in order to discharge the electrostatic energy accumulated by the user's body, and for this purpose it includes a conductive material which, advantageously, consists of carbon applied to a support fabric. In order to overcome the drawbacks of the known art indicated in the preamble of the present description, the carbon is used in the form of yarn applied by embroidery 8 directly on the support fabric 9 of cotton or similar material.

[0020] The shape and dimensions of the embroidery pattern 8 on the support 9 can be the most suitable based on the result to be achieved. For example, as shown in Figure 3, the embroidery 8 includes a plurality of lines 8A joining a plurality of nodes 8B located substantially in correspondence of the plurality of holes 4, and therefore in correspondence of the therapeutic points of the sole of the foot, where the part of the insertion elements 5 protruding from the first portion is to be inserted. In this manner, the insole is made electrically conductive in an optimum manner, and therefore is capable of discharging the electrostatic energy of the user's body, through the contact between the insertion elements 5, preferably made of copper, and the nodes 8B of the conductive material, preferably carbon. The electrical conductivity is also guaranteed in the holes 4 not used for the particular therapy desired, thanks to the plugging of the same holes 4 by the part of the insertion elements 5 that do not protrude from the first portion 1.

[0021] From the above, it is thus evident how the present invention achieves the objectives and advantages initially preset: in fact, an insole or footbed for footwear has been devised, that is particularly suitable to favour the circulation of the blood in the foot or for the plantar reflexology therapy, capable of guaranteeing greater flexural resistance to fatigue to eliminate, or at any rate considerably reduce, the risk of breakage of the conductive fabric due to repeated flexures, thanks to the conductive part being made of carbon yard rather than carbon fibre. The elasticity of the embroidery enables the insole to withstand a considerably higher and practically infinite number of flexural cycles (apart from the wearing down of the fabrics), compared to the currently known insoles used for reflexology.

[0022] In addition, the application of a carbon yarn by embroidery directly on the support fabric makes it possible to join these parts without the need of using bonding agents. The absence of adhesive makes it possible to achieve a two-fold advantage: in the first place, the resistance of the insole to relatively high temperatures, or to variations in temperature, is considerably improved, as there is no occurrence of separations of the components, thus making it possible to maintain the integrity of the insole unaffected. In addition, the use of the insole is not in any way harmful for the health of the user, thanks to the complete absence of potentially harmful chemical substances, such as the bonding agent.

[0023] Naturally, the present invention is open to many applications, modifications or variants without departing from the scope of patent protection as defined by claim 1.

[0024] In addition, the materials and equipment used to realize the present invention, as well as the shapes and dimensions of the individual components, can be the most suitable for the specific requirements.

Claims

1. Insole or footbed for footwear comprising a first portion (1) on which are made a plurality of holes or openings (4) distributed according to predefined mapping patterns for the introduction of insertion elements (5), one part of which is suitable for protruding from said first portion (1), and a second, electrically conductive, portion (2) that can be associated with said first portion (1) by means of removable connecting means (3A, 3B) to hold said insertion elements (5) in position, **characterized in that** said second portion (2) includes a support (9) and an electrically conductive material in the form of a yarn applied by embroidery (8) directly on said support (9).

2. Insole or footbed as in claim 1, wherein said embroidery (8) includes a plurality of lines (8A) joining a plurality of nodes (8B) substantially corresponding to said plurality of holes or openings (4) on said first portion (1).

3. Insole or footbed as in claim 1, wherein said insertion elements (5) are made of metal.

4. Insole or footbed as in claim 3, wherein said insertion elements (5) are made of copper.

5. Insole or footbed as in any of the previous claims, wherein one part of said insertion elements (5) includes a base (6) from which extends a dome-like projection (7) which can be inserted in a hole or opening of said plurality of holes or openings (4) and suitable to protrude, when in use, from said first portion (1), and another part of said insertion elements is made in the shape of a small plug which includes a section that extends from a base but that does not protrude from said first portion (1).

6. Insole or footbed as in claim 5, wherein said insertion elements (5) are held in position on said first portion (1) by said second portion (2) in correspondence of said base (7).

7. Insole or footbed as in any one of the previous claims, wherein said removable connecting means include a plurality of hook-and-loop adhesive tape elements formed by a part (3A) applied on said first portion (1) and, correspondingly, another part (3B) applied on said second portion (2).

8. Insole or footbed as in any one of the previous claims, wherein said support (9) is made of cotton fabric.

9. Insole or footbed as in any one of the previous claims, wherein said electrically conductive material consists of a carbon yarn.

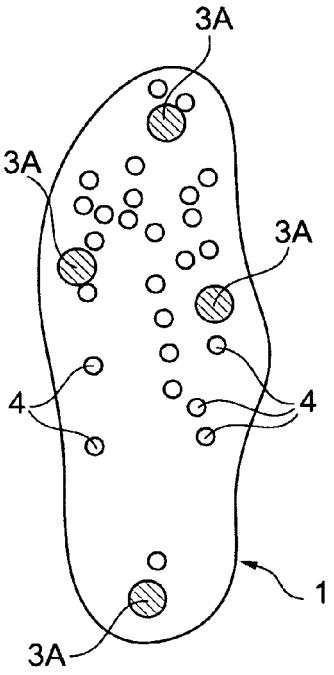

Fig. 1

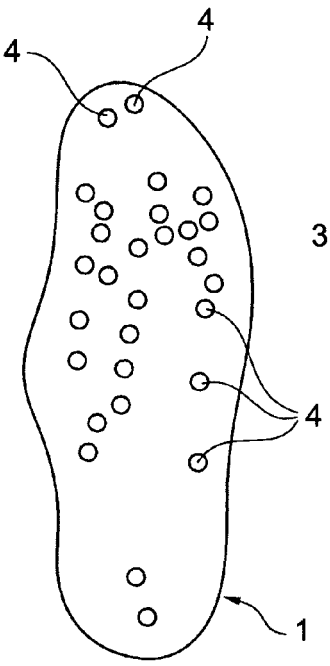

Fig. 2

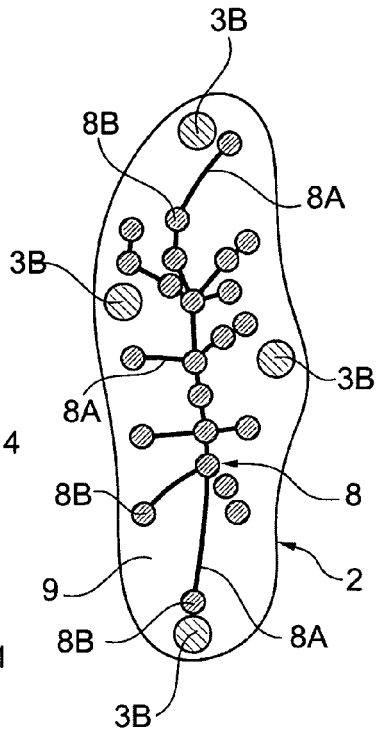

Fig. 3

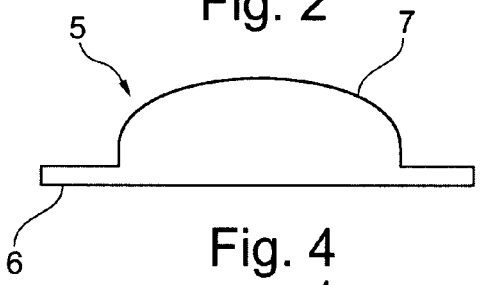

Fig. 4

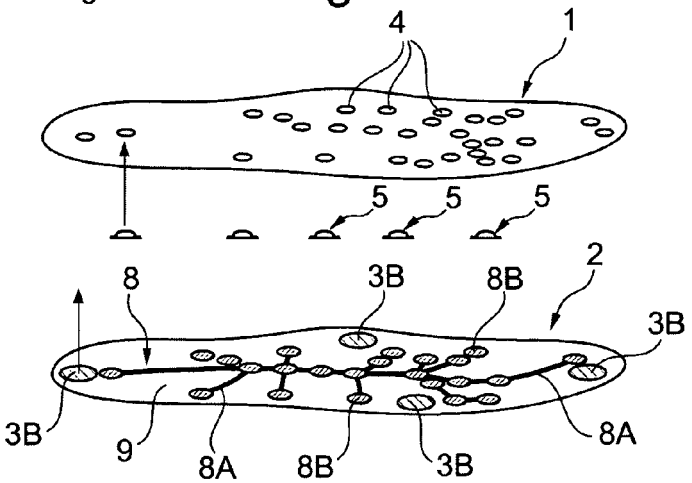

Fig. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 10 42 5086

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	DE 44 06 063 A1 (PRODOMO SA [LU]) 31 August 1995 (1995-08-31) * column 3; figures *	1-9	INV. A43B7/36 A43B17/04
A	DE 90 01 492 U1 (DIMITROV PENTCHO) 23 May 1990 (1990-05-23) * page 5 - page 8; figures 1, 3 *	1-9	
A	DE 34 32 629 A1 (PIETSCH INGO) 13 March 1986 (1986-03-13) * page 5 - page 6; figures *	1	
A	EP 0 300 225 A2 (LOHMANN GMBH & CO KG [DE]) 25 January 1989 (1989-01-25) * claims; figures *	1	

TECHNICAL FIELDS SEARCHED (IPC)

A43B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	7 September 2010	Herry, Manuel

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 10 42 5086

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07-09-2010

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 4406063 A1	31-08-1995	AT 152329 T	15-05-1997
		BR 9506854 A	23-09-1997
		CA 2184095 A1	31-08-1995
		CN 1141584 A	29-01-1997
		CZ 9602487 A3	13-11-1996
		DK 744908 T3	08-12-1997
		WO 9522916 A1	31-08-1995
		EP 0744908 A1	04-12-1996
		ES 2103629 T3	16-09-1997
		GR 3023332 T3	29-08-1997
		HK 1007671 A1	23-04-1999
		JP 3100399 B2	16-10-2000
		JP 9506537 T	30-06-1997
		LV 11723 A	20-04-1997
		PL 316038 A1	23-12-1996
		RU 2124303 C1	10-01-1999
		US 5860229 A	19-01-1999
DE 9001492 U1	23-05-1990	NONE	
DE 3432629 A1	13-03-1986	NONE	
EP 0300225 A2	25-01-1989	DE 3724327 A1	09-02-1989
		ES 2046998 T3	16-02-1994
		HU 52357 A2	28-07-1990
		US 4926570 A	22-05-1990
		YU 138388 A1	30-06-1990

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- IT VR20070129 A **[0004]**