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(54) INSOLE DEVICE WITH BALANCING, CORRECTING, CUSHIONING AND SUPPORTING FUNCTIONS

(57) The invention discloses an insole device with balancing, correcting, cushioning and supporting functions, and belongs to the technical field of daily necessities. The insole device with the balancing, correcting, cushioning and supporting functions includes an insole body, reinforced hard strips are disposed on a bottom surface of the insole body, the reinforced hard strips criss-cross around the bottom surface of the insole body, first through holes are evenly formed in the bottom surface of the insole body, the first through holes are located in gaps between the criss-crossed reinforced hard strips, and a second through hole is formed in a heel position of the insole body. The insole body is of a 3D stereoscopic arch structure, with an arch arc height of 15+/-10 mm. The insole body is formed by integrated injection of special nylon material, with a thickness of 2.5-10 mm, and a hardness of 30 D-100 D. By means of the insole device, the arch position can completely and effectively adapt to the foot shape based on the 3D stereoscopic arch design principle. At the same time, the insole device has good breathability, is not stuffy, and is more comfortable to wear.

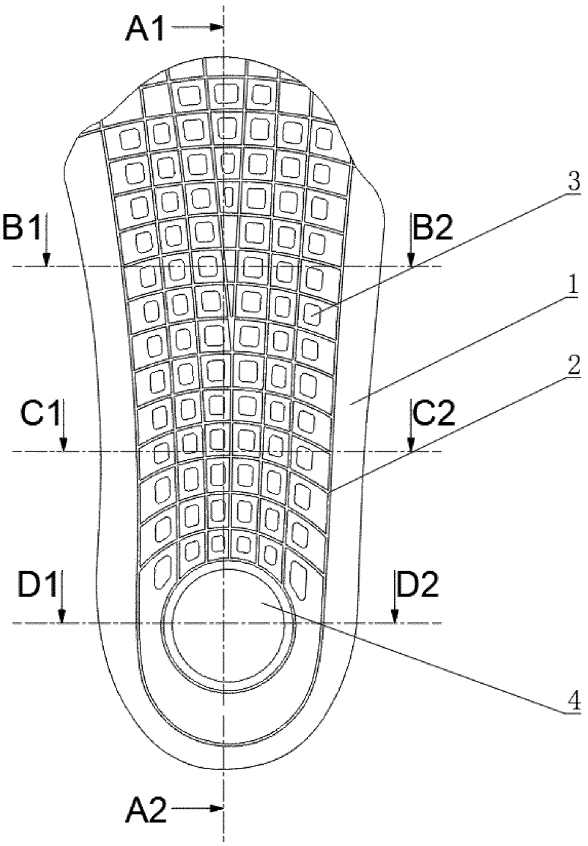

FIG. 1

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Description

Technical Field

[0001] The invention relates to the technical field of daily necessities, in particular to an insole device with balancing, correcting, cushioning and supporting functions.

Background Art

[0002] Insoles are widely used in the shoe industry, health care, and special functions, and are generally divided into two models: insoles for shoe-making industry, and insoles for market commodities. The insoles for shoe-making industry are mainly in line with the outsoles and midsoles of shoes in shape; and a size pattern and a corresponding shape are made according to a last bottom plate or panel.

[0003] However, existing insoles mainly adopt a universal style in use, thus having the defect that the arch position can not completely and effectively adapt to the foot shape. In addition, the insoles are poor in breathability and stuffy after being worn for a long time of period.

Summary of the Invention

1. The technical problems to be solved

[0004] In response to the problems in the prior art, the purpose of the invention is to provide an insole device with balancing, correcting, cushioning and supporting functions. By means of the insole device, the arch position can completely and effectively adapt to the foot shape based on the 3D stereoscopic arch design principle, and at the same time, the insole device has good breathability, is not stuffy, and is more comfortable to wear.

2. Technical solution

[0005] In order to solve the above problems, the invention adopts the following technical solution.

[0006] An insole device with balancing, correcting, cushioning and supporting functions includes an insole body, reinforced hard strips are disposed on a bottom surface of the insole body, the reinforced hard strips criss-cross around the bottom surface of the insole body, first through holes are evenly provided in the bottom surface of the insole body, the through holes are located in gaps between the criss-crossed reinforced hard strips, and a second through hole is provided in a heel position of the insole body.

[0007] Further, the insole body is of a 3D stereoscopic arch structure, with an arch arc height of 15+/-10 mm.

[0008] Further, the insole body and the reinforced hard strips are formed by integrated injection of special nylon material, with a thickness of 2.5-10 mm, and a hardness of 30 D-100 D.

[0009] Further, an arch arc height of a lateral side of the insole body is 19.5+/-10 mm.

[0010] Further, an arch arc height of a medial side of the insole body is 16.0+/-10 mm.

[0011] Further, the second through hole is in a flared shape, with a bottom surface wrapped with reinforced hard strips.

3. Beneficial effects

[0012] Compared with the prior art, the invention has the following advantages:

(1) Due to the 3D stereoscopic arch structure of the insole body, the height of the arch position is not high, and can be adjusted to adapt to the height of the arch of the foot under pressure, so as to fit the arch of the foot to a greater extent and increase the stressed area. At the same time, the reinforced hard strips are provided for cooperation, thus enhancing support, dispersing the distribution of force, realizing more uniform stress, and reducing the pressure on the sole of the foot.

(2) In this solution, by providing the lateral side and the medial side with the different arch heights, the overall wrapping property is increased, and better comfort is achieved. At the same time, by providing the first through holes in the gaps of the reinforced hard strips and providing the second through hole in the heel position, the air breathability of the device can be improved without reducing the support strength, and the insole device is not stuffy after being worn for a long period of time, and has higher comfort.

Brief Description of the Drawings

[0013]

FIG. 1 is a schematic structural diagram of a bottom side according to the invention;

FIG. 2 is a schematic structural diagram of a lateral side of the invention;

FIG. 3 is a schematic structural diagram of a medial side of the invention;

FIG. 4 is a schematic view of a cross-sectional structure in a direction A1-A2 according to the invention;

FIG. 5 is a schematic view of a cross-sectional structure in a direction B1-B2 according to the invention;

FIG. 6 is a schematic view of a cross-sectional structure in a direction C1-C2 according to the invention;

and

FIG. 7 is a schematic view of a cross-sectional structure in a direction D1-D2 according to the invention.

[0014] Description of reference numerals in the figures:
1-Insole body; 2-Reinforced hard strip; 3-First through hole; and 4-Second through hole.

Detailed Description of the Invention

[0015] The technical solutions in the embodiments of the invention will be described clearly and completely below with reference to the drawings in the embodiments of the invention. Apparently, the described embodiments are only a part of the embodiments of the invention, rather than all the embodiments. Based on the embodiments in the invention, all the other embodiments obtained by a person of ordinary skill in the art without involving any inventive effort fall within the scope of protection of the invention.

Example 1:

[0016] Referring to FIG. 1 to FIG. 7, an insole device with balancing, correcting, cushioning and supporting functions includes an insole body 1. Reinforced hard strips 2 are disposed on a bottom surface of the insole body 1. The reinforced hard strips 2 crisscross around the bottom surface of the insole body 1. First through holes 3 are evenly provided in the bottom surface of the insole body 1. The through holes 3 are located in gaps between the criss-crossed reinforced hard strips 2. A second through hole 4 is provided in a heel position of the insole body 1.

[0017] Referring to FIG. 1, the insole body 1 is set as a 3D stereoscopic arch structure with an arch arc height of 15+/-10 mm. As a result, the height of the arch position is not high, and can be adjusted to adapt to the height of the arch of the foot under pressure, so as to fit the arch of the foot to a great extent and increase the stressed area. Thus, support is enhanced, the distribution of force is dispersed, stress is more uniform, and the pressure on the sole of the foot is reduced.

[0018] Referring to FIG. 1, the insole body 1 and the reinforced hard strips 2 are formed by integrated injection of special nylon material, with a thickness of 2.5-10 mm, and a hardness of 30 D-100 D. Thus, the insole body 1 has higher structural strength and better support.

[0019] Referring to FIG. 2 and FIG. 3, an arch arc height of a lateral side of the insole body 1 is 19.5+/-10 mm, and an arch arc height of a medial side of the insole body 1 is 16.0+/-10 mm. By providing the lateral side and the medial side with the different arch heights, the overall wrapping property of the insole body 1 is increased, and better comfort is achieved.

[0020] Referring to FIG. 7, as the second through hole 4 is in a flared shape, it is convenient for the heel to be embedded inside it, making the sole of the foot better wrapped and increasing breathability at the same time. In addition, a bottom surface is wrapped with reinforced hard strips 2, thereby providing sufficient support.

[0021] In use, due to the 3D stereoscopic arch structure of the insole body 1, the height of the arch position is not high, and can be adjusted to adapt to the height of the arch of the foot under pressure, so as to fit the arch of the foot to a great extent and increase the stressed area. At the same time, the reinforced hard strips 2 are provided for cooperation, thus enhancing support, dispersing the distribution of force, realizing more uniform stress, and reducing the pressure on the sole of the foot. In addition, by providing the lateral side and the medial side with the different arch heights, the overall wrapping property is increased, and better comfort is achieved. At the same time, by providing the first through holes 3 in the gaps between the reinforced hard strips 2 and providing the second through hole 4 in the heel position, the air breathability of the device can be improved, and the insole device is not stuffy after being worn for a long period of time.

[0022] What is described above is only preferred embodiments of the invention and is not intended to limit the scope of protection of the invention. Equivalent substitutions or changes made by any person skilled in the art within the scope of the technical disclosure of the invention according to the technical solution of the invention and the concept of improvement of the invention should all fall within the scope of protection of the invention.

Claims

1. An insole device with balancing, correcting, cushioning and supporting functions, comprising an insole body (1), and being **characterized in that** reinforced hard strips (2) are disposed on a bottom surface of the insole body (1), the reinforced hard strips (2) crisscross around the bottom surface of the insole body (1), first through holes (3) are evenly provided in the bottom surface of the insole body (1), the through holes (3) are located in gaps between the criss-crossed reinforced hard strips (2), and a second through hole (4) is provided in a heel position of the insole body (1).

2. The insole device with balancing, correcting, cushioning and supporting functions according to claim 1, **characterized in that** the insole body (1) is of a 3D stereoscopic arch structure, with an arch arc height of 15+/-10 mm.

3. The insole device with balancing, correcting, cushioning and supporting functions according to claim 1, **characterized in that** the insole body (1) and the reinforced hard strips (2) are formed by integrated

injection of special nylon material, with a thickness of 2.5-10 mm, and a hardness of 30 D-100 D.

4. The insole device with balancing, correcting, cushioning and supporting functions according to claim 1, **characterized in that** an arch arc height of a lateral side of the insole body (1) is 19.5+/-10 mm.

5. The insole device with balancing, correcting, cushioning and supporting functions according to claim 1, **characterized in that** an arch arc height of a medial side of the insole body (1) is 16.0+/-10 mm.

6. The insole device with balancing, correcting, cushioning and supporting functions according to claim 1, **characterized in that** the second through hole (4) is in a flared shape, with a bottom surface wrapped with reinforced hard strips (2).

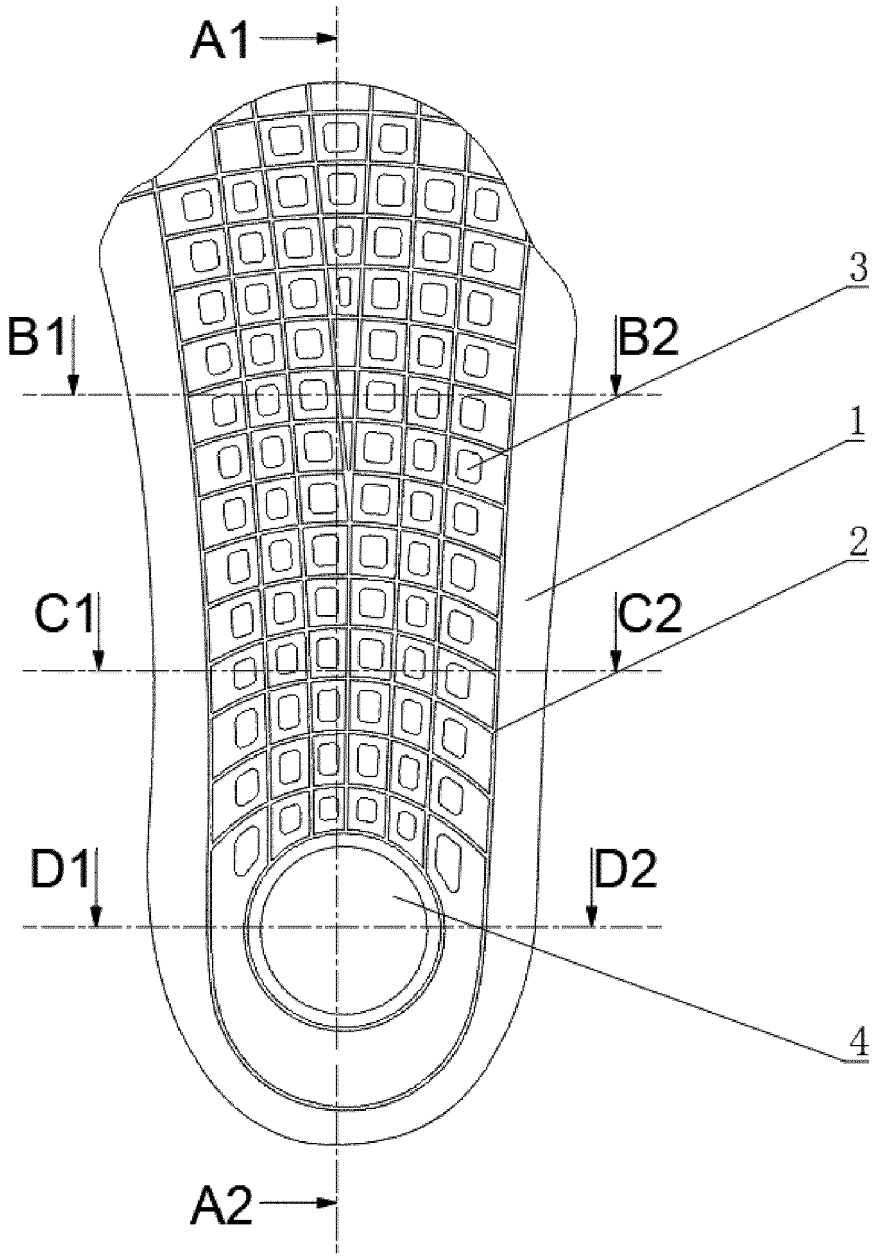


FIG. 1

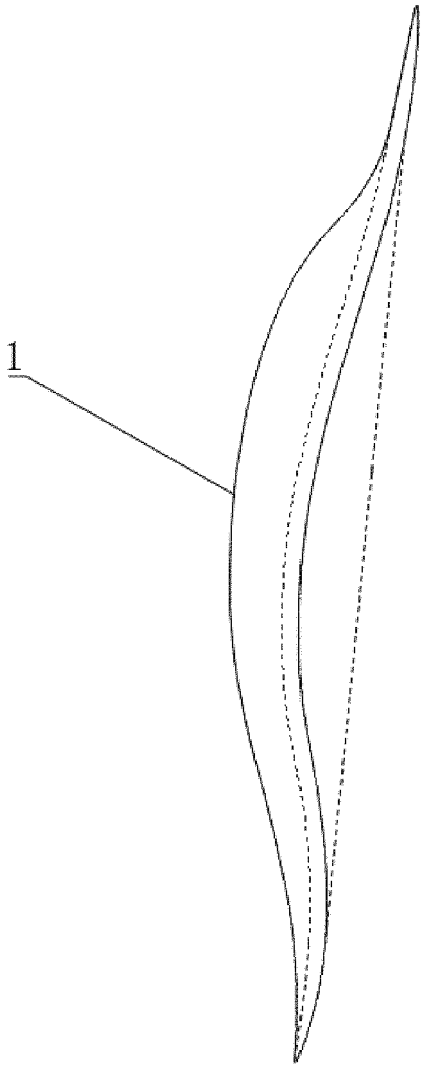


FIG. 2

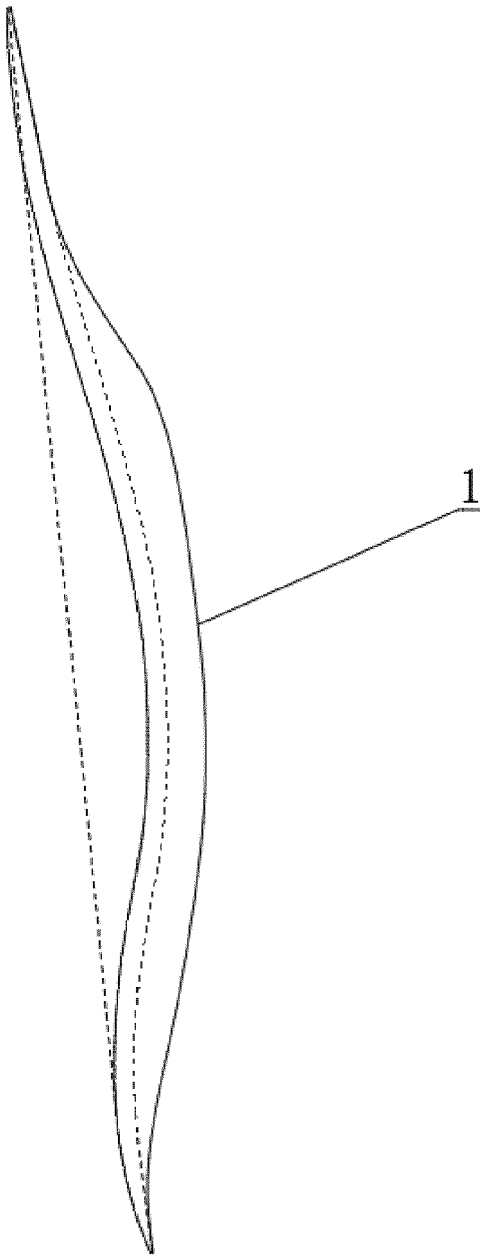
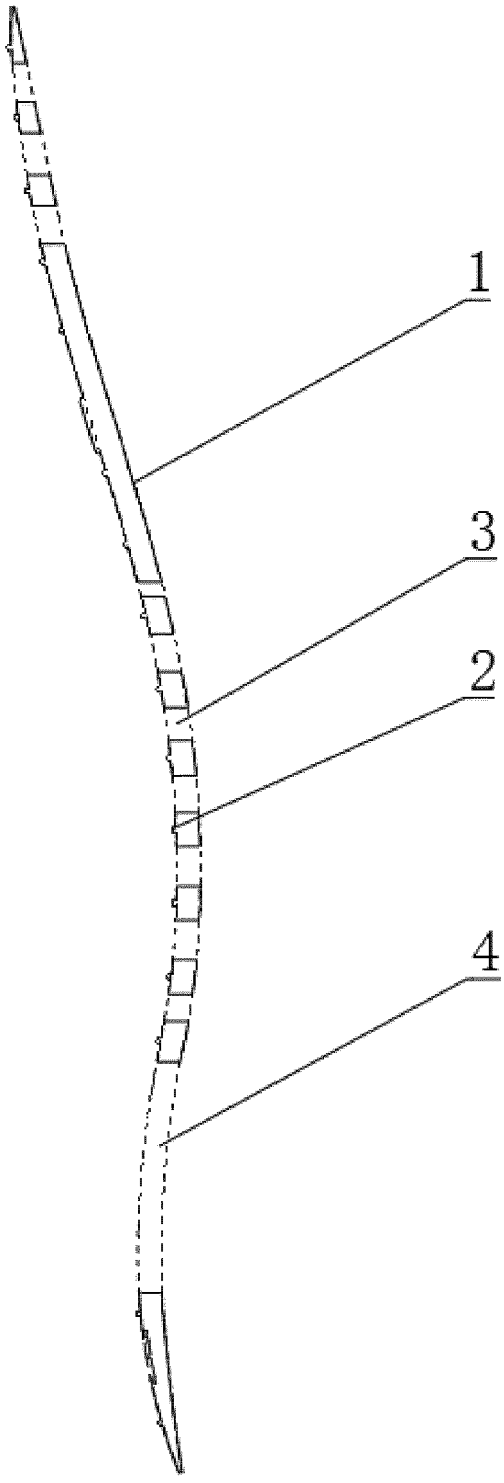
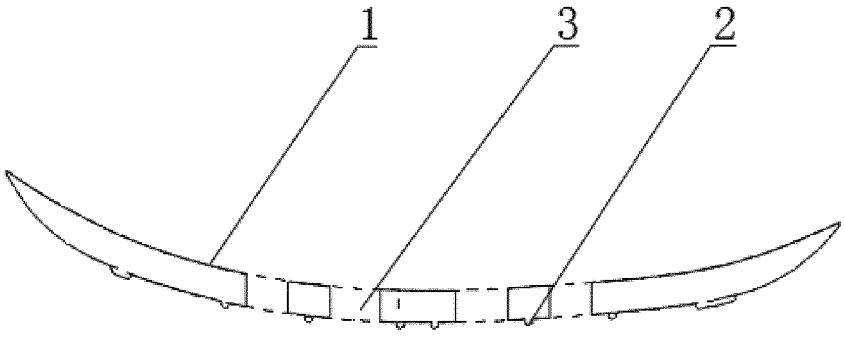


FIG. 3



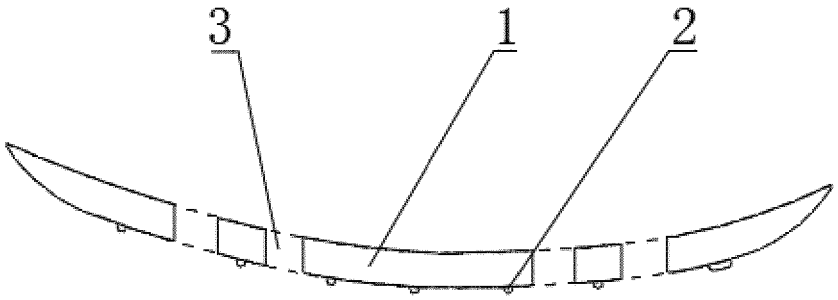
A1-A2

FIG. 4



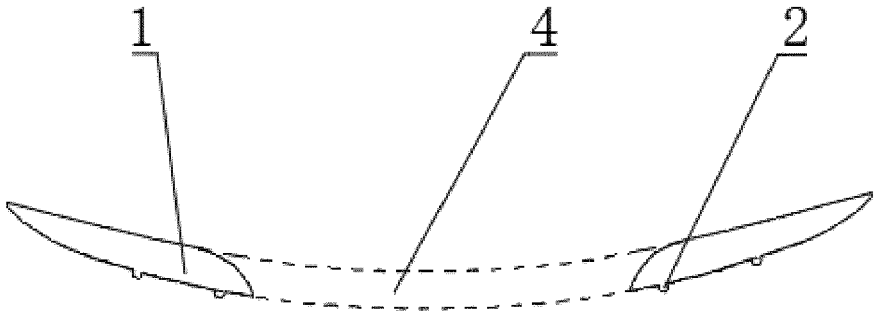
B1-B2

FIG. 5



C1-C2

FIG. 6



D1-D2

FIG. 7

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EUROPEAN SEARCH REPORT

Application Number
EP 22 21 2972

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			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
The Hague	21 April 2023	Ciubotariu, Adrian

CATEGORY OF CITED DOCUMENTS

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