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Foot balance device

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Related Art
US 2004/0000076 A1
US 4,852,553 A
CN 201042501 Y
CN 2245361 Y
JP 2003-135557 A

ABSTRACT OF THE DISCLOSURE

A foot balance device includes at least one adjustment element arranged at a position between a front sole and a rear heel. The adjustment element forms a support point having a bottom surface that is provided with a coupling
5 section. The coupling section functions to couple to a corresponding position in a shoe or on a shoe pad. As such, the distribution of force between the heel and the sole is changed to realize proper distribution of body weight on the foot and make force uniformly acting along a circumference of the adjustment element to thereby protect the foot from being hurt and improve
10 the sense of comfortableness.

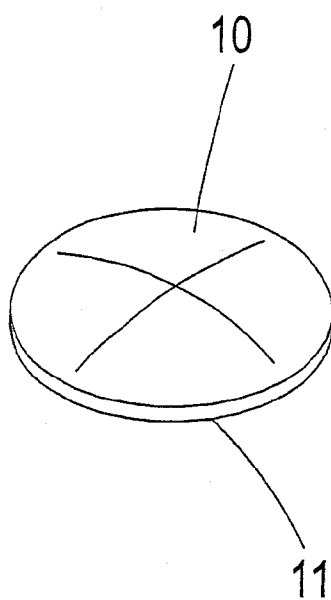
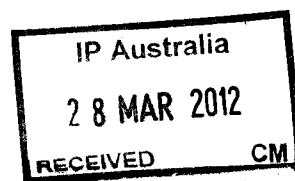


FIG.3

2012201805 28 Mar 2012



AUSTRALIA

Patents Act 1990

COMPLETE SPECIFICATION

STANDARD PATENT

FOOT BALANCE DEVICE

The following statement is a full description of this invention, including the best method of performing it known to me:

TITLE: FOOT BALANCE DEVICE

(a) Technical Field of the Invention

The present invention generally relates to a foot balance device that adjusts force distribution on human foot and is particularly applicable to
5 leather shoes, sports shoes, loafers, high-heal shoes, and the likes.

(b) Description of the Prior Art

The economic development and progress makes the opportunity of taking physical activity remarkably reduced in the modern living and the consequence is insufficiency of physiological loading for modern people.
10 This leads to the emergence of disease of civilization, including metabolic syndrome, obesity, hypertension, hyperlipidemia, and deterioration of cardiopulmonary function.

In addition to the diseases of civilization, chronic pains are also very common in the modern society. The general causes for the chronic pains are
15 basically improper motions and gestures that make bones and muscles losing balance. In view of creature evolution, in the evolution course of human beings, humans changed from an animal walking with four legs to an animal walking with two legs. To maintain balance for standing with two legs and walking in an upright posture with the two legs, bones and muscles are forced
20 to coordinate with each other to induce an effect of compensation, so that the

human body does not get falling in an upright posture in standing with two legs and also can move forward in the upright, two leg standing posture.

Such a compensation effect is an interaction induced between bones and muscles and such an interaction between bones and muscles may easily lead to improper motions and gestures when humans are standing and walking. Such improper motions and gestures may make bones and muscles losing balance and as a consequence, the chronic pains discussed above, as well as other sours and pains, may occur.

The chronic pains and other sours and pains are generally brought by the general effect of compensation of human body and techniques of the related medical field or science may not be possible to solve these problems. In other words, the current medical or scientific techniques and knowledge cannot provide a simple and effective solution to constantly maintain the bones and muscles of human body in a balanced condition in the every living and is also incapable of avoidance of sours and chronic pains that were mentioned above caused by improper motion and gestures.

When a human body is standing or walking, the perfect condition is that the force that the heel and the sole take is uniformly distributed and the support to the total body weight is substantially at a center of the sole, as shown in FIG 1, whereby the bone and muscle systems may be kept at a neutral and

balanced position when a person is standing or walking. However, under a natural condition, the sole is subjected to influence of the design of shoes.

When the heel unduly applies a force, the heel may be hurt and the shoe heel get damaged. On the other hand, when an undue force is applied by the sole,

5 a rush may occur in walking forward, or as shown in FIG 2, pigeon toeing may occur in walking, where the body weight is not uniformly distributed, making one of heel, sole, or heel and either an inside portion or an outside portion of sole bearing a great pressure. This is adverse to body balance and may change the way of standing or walking to cause improper motion and
10 gesture.

To resolve the above discussed problems, a conventional solution that a podiatrist or a shoe manufacturer may take is to add a post in the shoe, or place an elastic material in a cavity formed in the shoe heel, or adopt a design of heel cup. However, such solutions may sometimes cause an increase of force
15 applied to the heel or sole, making it impossible to resolve the problems.

This is because that those known solutions including post, elastic material, and heel cup, although changing the improper gesture caused by non-uniform distribution of force on the heel and sole, cannot be effectively decrease the pressure acting on the heel and sole.

In view of these problems, the present invention aims to overcome the drawbacks of the conventional solution for adjusting pressure acting on foot by providing a foot balance device of which a detailed description of a preferred embodiment will be given as follows.

SUMMARY OF THE INVENTION

The primary objective of the present invention is to provide a foot balance device that makes force applied to the heel and sole of a foot distributed uniformly.

5 Another objective of the present invention is to provide a foot balance device that is readily combinable with various types of shoes.

A further objective of the present invention is to provide a foot balance device that helps protecting a foot from being hurt and improving the sense of comfortableness.

10 To achieve the above objectives, the present invention provides a foot balance device that comprises at least one adjustment element arranged at a position between a front sole and a rear heel. The adjustment element comprises a support point having a bottom surface that is provided with a coupling section. The coupling section functions to couple to a
15 corresponding position in a shoe or on a shoe pad. As such, the distribution of force between the heel and the sole is changed to realize proper distribution of body weight on the foot and make force uniformly acting along a circumference of the adjustment element to thereby protect the foot from being hurt and improve the sense of comfortableness.

To achieve the above objectives, the present invention provides a foot balance device, comprising: a shoe pad and at least one adjustment element. The adjustment element forms a support point having a bottom surface that is provided with a coupling section. The coupling section is coupleable to a top
5 surface of the shoe pad between a front sole and a rear heel, whereby force is made uniformly acting along a circumference of the adjustment element to protect the foot from being hurt and improve the sense of comfortableness.

To achieve the above objectives, the present invention provides a foot balance device, comprising: a shoe pad and at least one adjustment element.
10 The adjustment element forms a support point having a bottom surface that is provided with a coupling section. The coupling section is coupleable to a bottom surface of the shoe pad between a front sole and a rear heel, whereby force is made uniformly acting along a circumference of the adjustment element to protect the foot from being hurt and improve the sense of
15 comfortableness.

In the foot balance device described above, the at least one adjustment element is of a shape of one of a circle, an ellipse, and a rectangle.

In the foot balance device described above, the at least one adjustment element is of one of a raised surface, a circular-curved surface, a
20 semi-circular-curved surface, and an irregular surface.

In the foot balance device described above, the at least one adjustment element has one side that is provided with adhesive or double-sided adhesive tape.

5 In the foot balance device described above, the at least one adjustment element is coupled inside a shoe and is covered by a shoe pad °

Compared to the known techniques, the present invention provides the following advantages:

(1) With the use of the adjustment element, the force applied to a foot is effectively made uniform, so that a user may stand or walk under an ideal
10 condition.

(2) Through arrangement and adjustment of the adjustment element, the balance between bones and muscles of a user can be improved to avoid the occurrence of chronic pains and various other sores and pains.

(3) The adjustment element can be used with various styles and models
15 of shoes without any limitation and is thus of excellent market competition power.

The foregoing objectives and summary provide only a brief introduction to the present invention. To fully appreciate these and other objects of the present invention as well as the invention itself, all of which will become
20 apparent to those skilled in the art, the following detailed description of the

invention and the claims should be read in conjunction with the accompanying drawings. Throughout the specification and drawings identical reference numerals refer to identical or similar parts.

Many other advantages and features of the present invention will become
5 manifest to those versed in the art upon making reference to the detailed description and the accompanying sheets of drawings in which a preferred structural embodiment incorporating the principles of the present invention is shown by way of illustrative example.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG 1 is a schematic view illustrating uniform force distribution on a foot.

5 FIG 2 is a schematic view illustrating non-uniform force distribution on a foot.

FIG 3 is a perspective view showing a first example of use of an embodiment according to the present invention.

FIG 4 is a perspective view showing a second example of use of the embodiment according to the present invention.

10 FIG 5 is an exploded view showing the second example of use of the embodiment according to the present invention.

FIG 6 is a schematic view illustrating a use condition of the second example of the embodiment according to the present invention.

15 FIG 7 is a schematic view illustrating a different use condition of the second example of the embodiment according to the present invention.

FIG 8 is a schematic view illustrating force acting on a foot with the use of the present invention.

FIG 9 is a perspective view illustrating the use of the first or second example of the embodiment according to the present invention.

FIG 10 is an exploded view showing a third example of use of the embodiment according to the present invention.

FIG 11 is a perspective view showing a fourth example of use of the embodiment according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The following descriptions are exemplary embodiments only, and are not intended to limit the scope, applicability or configuration of the invention in any way. Rather, the following description provides a convenient illustration
5 for implementing exemplary embodiments of the invention. Various changes to the described embodiments may be made in the function and arrangement of the elements described without departing from the scope of the invention as set forth in the appended claims.

As shown in FIG 3, the present invention comprises at least one
10 adjustment element 10, and the adjustment element 10 forms a support point. The adjustment element 10 has a bottom surface that is provided with a coupling section 11 for coupling purposes. The support point is of a shape of any of a circle, an ellipse, and a rectangle. Further, the support point has a top surface that is any one of a raised surface, a circular-curved surface, a
15 semi-circular-curved surface, and an irregular surface. The coupling section 11 can be any one of adhesive, double-sided adhesive tape, and hook-and-loop fastener. In the instant embodiment, an example having a circular shape, a raised surface, and double-sided adhesive tape is described for illustration purposes. To use, the adjustment element 10 is placed in a shoe at a location
20 corresponding to a middle portion of a foot between inside arch and outside

arch between the front sole and the rear heel. A user may take trials of putting on the shoe to adjust the final position of the adjustment element 10. After the position adjustment, the adjustment element 10 can be fixed in position inside the shoe by the double-sided adhesive tape.

- 5 As shown in FIGS. 4, 5, and 9, a second example of use of the embodiment according to the present invention is illustrated, which comprises a shoe pad 20 and at least one adjustment element 10. The shoe pad 20 is divided into and composed of a sole section, a heel section, and an arch section 21. The adjustment element 10 forms a support point. The
- 10 adjustment element 10 has a bottom surface that is provided with a coupling section 11, which is in the example, a piece of double-sided adhesive tape, for coupling purposes. Also referring to FIGS. 6 and 7, the adjustment element 10 is arranged on four circumferential portions of front side, rear side, left side, and right side of the arch section 21 of the surface of the shoe pad 20
- 15 according to the preference and convenience of a user, whereby adjustment element 10, when used by a user, serves as a fulcrum of leverage, allowing of frontward, rearward, leftward, and/or rightward movement according to the height of shoe heel to induce a seesaw effect between the foot heel and sole and thereby uniformly distributing pressure on the foot, as shown in FIG 8.
- 20 Further, referring to FIG 11, the adjustment element 10 can also be coupled by

the coupling section 11 to a proper frontward, rearward, leftward, or rightward location on the back surface of the arch section 21 of the shoe pad 20 to achieve the same effect.

As shown in the drawings, an embodiment of the present invention may
5 comprise a shoe pad and at least one adjustment element. The shoe pad is divided into and composed of a sole section, a heel section, and an arch section. The adjustment element serves as a support point for the front sole section in order to make balance of the sole between left and right sides. The adjustment element serves as a balance support point of the sole section and
10 the heel section. The adjustment element serves as a horizontal support point of the foot. The adjustment element serves as a support point of the inside arch. The adjustment element serves as a support point of the outside arch. The adjustment element is the preferred embodiment of shoe pad. The shoe pad is divided into a sole section, a fulcrum of leverage, and a heel section.
15 By using the adjustment element to form a foot sole seesaw effect, the pressure can be uniformly distributed on the foot sole. When a user is standing or walking, the gravity center of the body does not shift frontward or rearward, so that the user may naturally take a chin-up and chest-out posture thereby achieving the best result of the present invention.

Further, as shown in FIG. 10, the adjustment element 10 can also be coupled inside a shoe 30 by the coupling section 11 at a location corresponding to the foot arch (by first lifting up the shoe pad 20 received in the shoe 30). The shoe pad 20 is then put back into the shoe 30 to cover the
5 adjustment element 10.

It will be understood that each of the elements described above, or two or more together may also find a useful application in other types of methods differing from the type described above.

While certain novel features of this invention have been shown and
10 described and are pointed out in the annexed claim, it is not intended to be limited to the details above, since it will be understood that various omissions, modifications, substitutions and changes in the forms and details of the device illustrated and in its operation can be made by those skilled in the art without departing in any way from the spirit of the present invention.

I CLAIM:

- 5 1. A foot balance device comprising at least one adjustment element arranged at a position between a front sole and a rear heel, the adjustment element comprising a support point having a bottom surface that is provided with a coupling section, the coupling section being useful for position adjustment between the front foot sole and rear foot heel, whereby force is made uniformly acting along a circumference of the adjustment element to protect the foot from being hurt and improve the sense of comfortableness.
- 10 2. A foot balance device comprising:
a shoe pad; and
at least one adjustment element, which forms a support point having a bottom surface that is provided with a coupling section, the coupling section being coupleable to a top surface of the shoe pad
15 between a front sole and a rear heel, whereby force is made uniformly acting along a circumference of the adjustment element to protect the foot from being hurt and improve the sense of comfortableness.
- 20 3. A foot balance device comprising:
a shoe pad; and

at least one adjustment element, which forms a support point having a bottom surface that is provided with a coupling section, the coupling section being coupleable to a bottom surface of the shoe pad between a front sole and a rear heel, whereby force is made uniformly acting along a circumference of the adjustment element to protect the foot from being hurt and improve the sense of comfortableness.

5

10

4. The foot balance device according to claim 1, wherein the at least one adjustment element is of a shape of one of a circle, an ellipse, and a rectangle.

5. The foot balance device according to claim 1, wherein the at least one adjustment element is of one of a raised surface, a circular-curved surface, a semi-circular-curved surface, and an irregular surface.

15

6. The foot balance device according to claim 1, wherein the coupling section of the at least one adjustment element is of one of adhesive, double-sided adhesive tape, and hook-and-loop fastener.

20

7. The foot balance device according to claim 2, wherein the at least one adjustment element is of a shape of one of a circle, an ellipse, and a rectangle.

8. The foot balance device according to claim 2, wherein the at least one adjustment element is of one of a raised surface, a circular-curved surface, a semi-circular-curved surface, and an irregular surface.
- 5 9. The foot balance device according to claim 2, wherein the coupling section of the at least one adjustment element is of one of adhesive, double-sided adhesive tape, and hook-and-loop fastener.
- 10 10. The foot balance device according to claim 3, wherein the at least one adjustment element is of a shape of one of a circle, an ellipse, and a rectangle.
11. The foot balance device according to claim 3, wherein the at least one adjustment element is of one of a raised surface, a circular-curved surface, a semi-circular-curved surface, and an irregular surface.
- 15 12. The foot balance device according to claim 3, wherein the coupling section of the at least one adjustment element is of one of adhesive, double-sided adhesive tape, and hook-and-loop fastener.
- 20 13. The foot balance device according to claim 1, wherein the at least one adjustment element is coupled inside a shoe and is covered by a shoe pad.

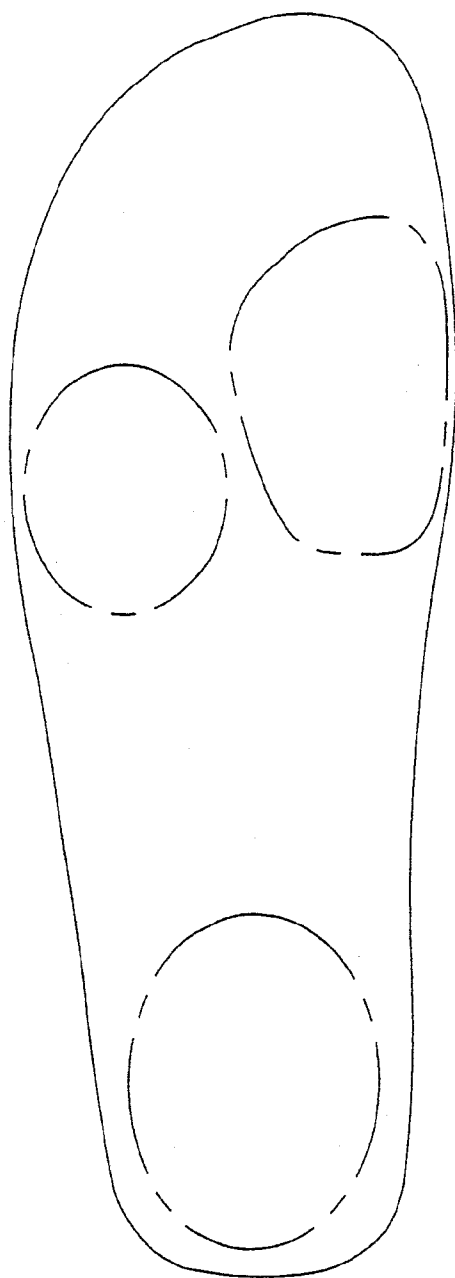


FIG.1

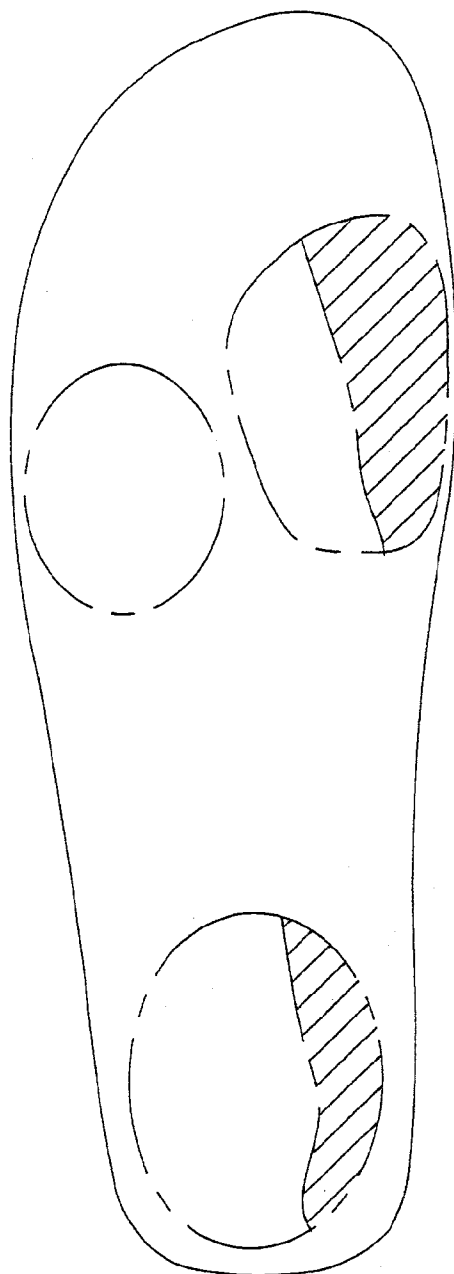


FIG.2

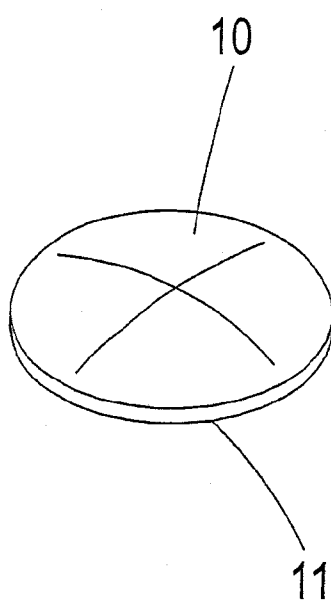


FIG.3

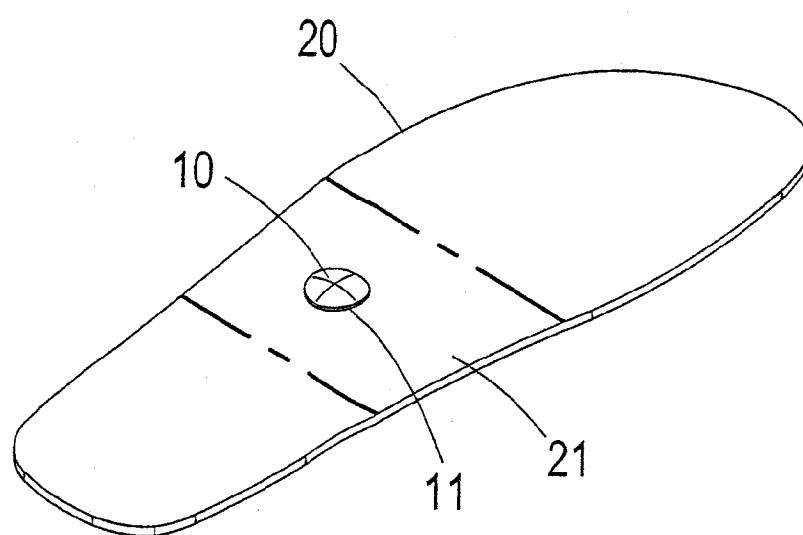


FIG.4

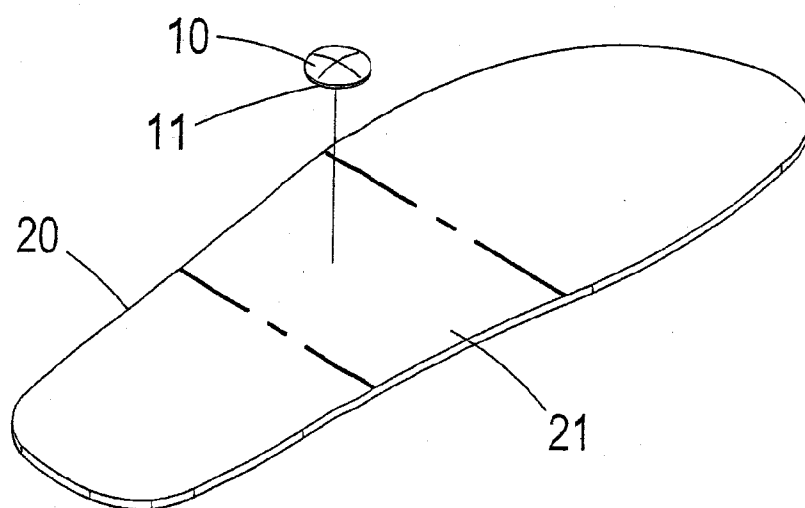


FIG.5

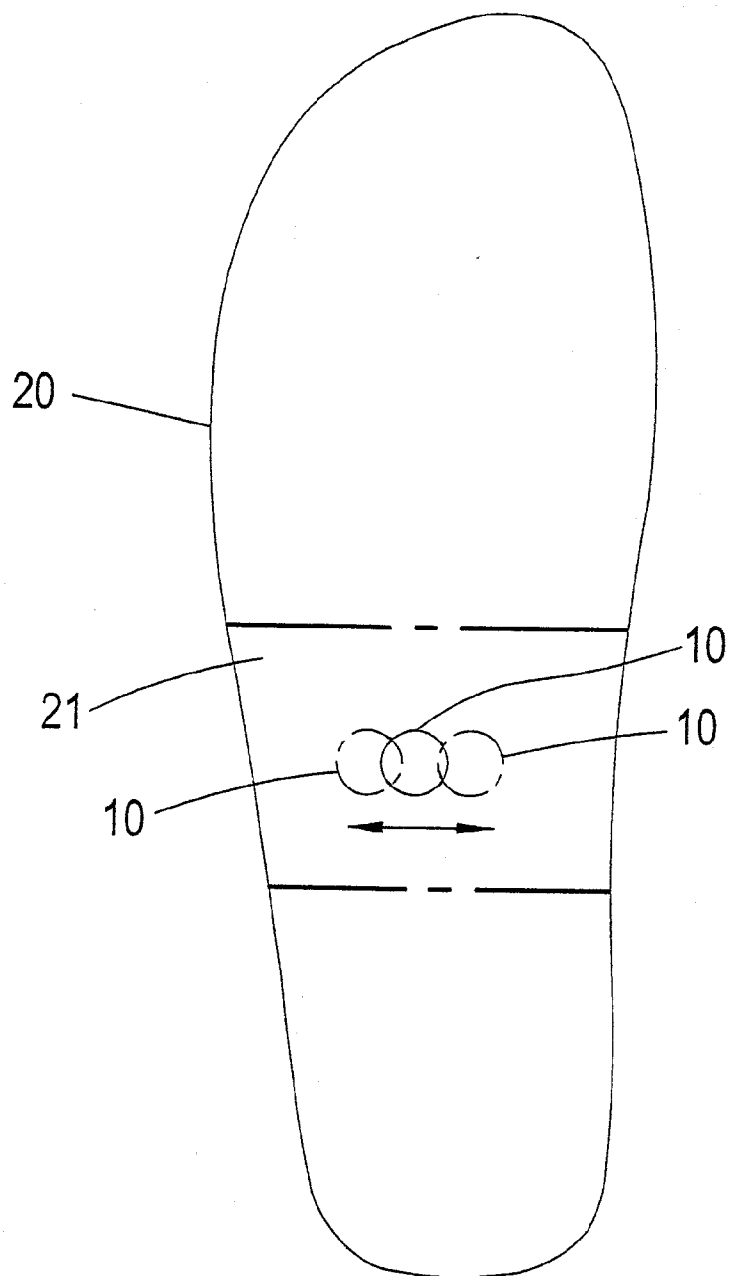


FIG.6

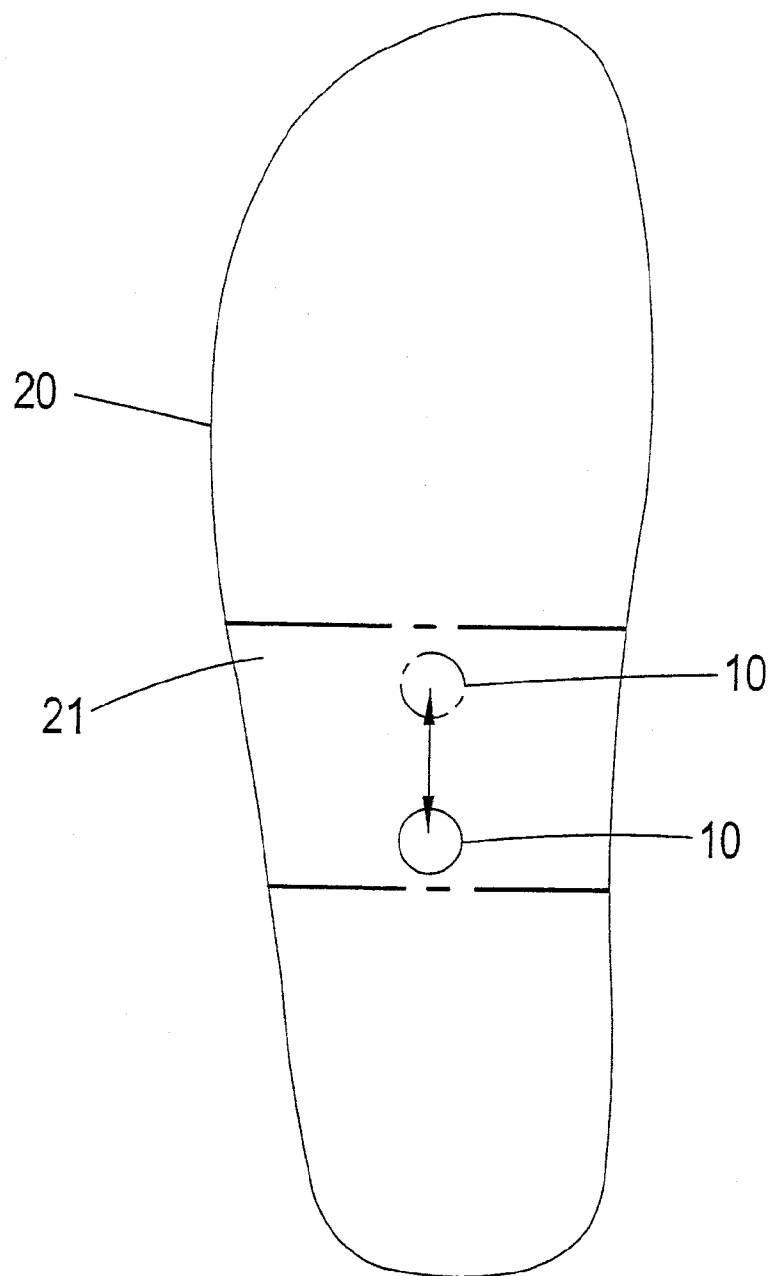


FIG.7

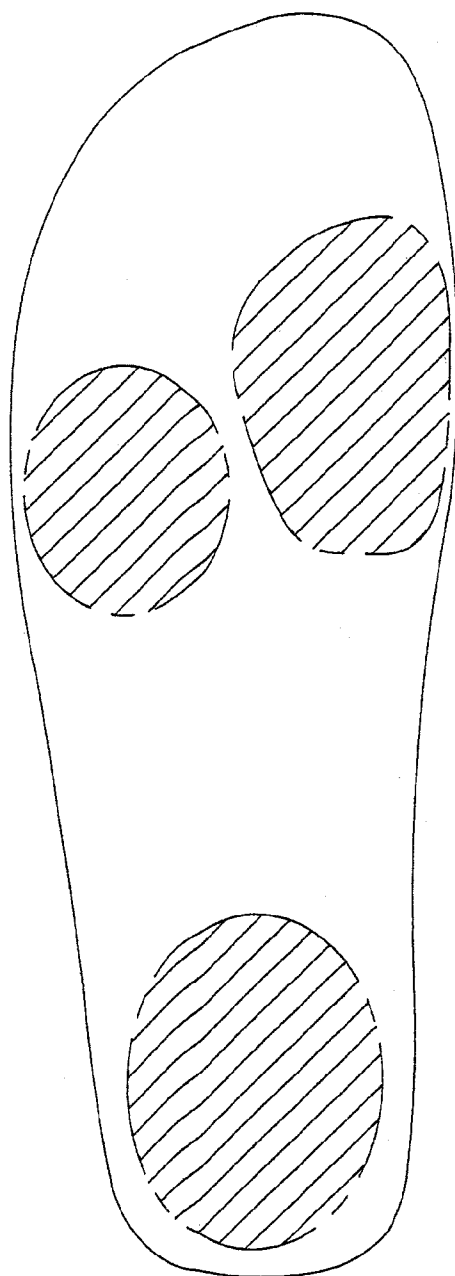


FIG.8

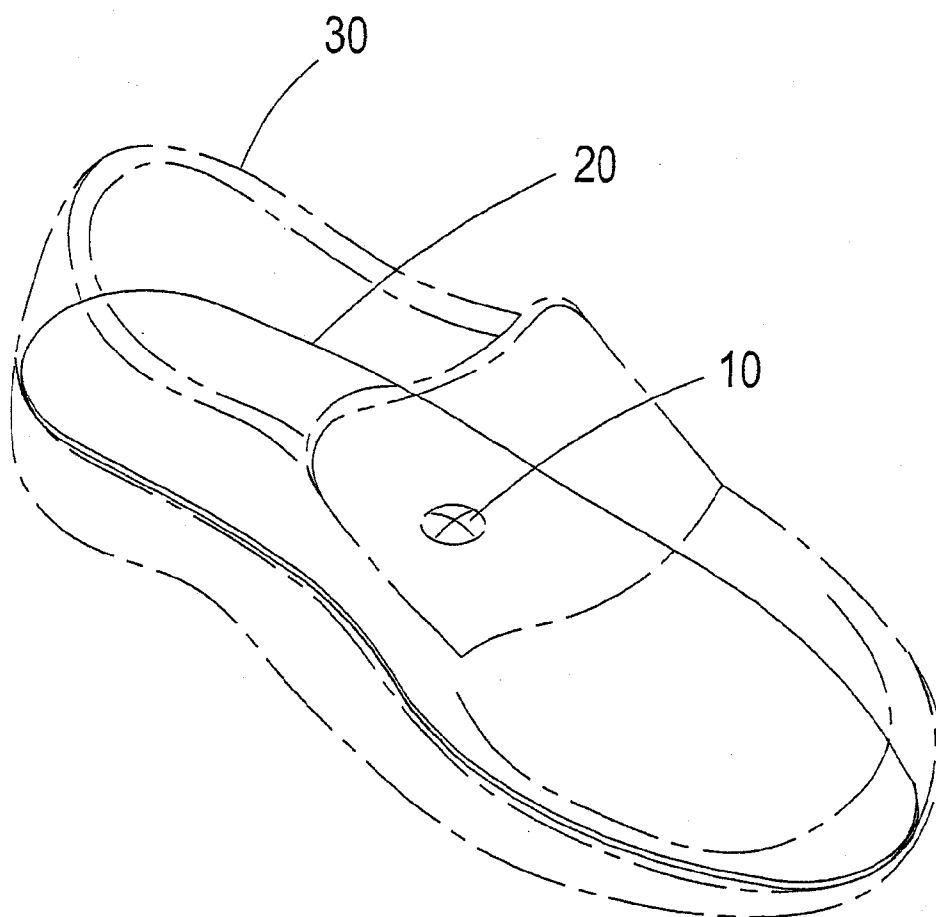


FIG.9

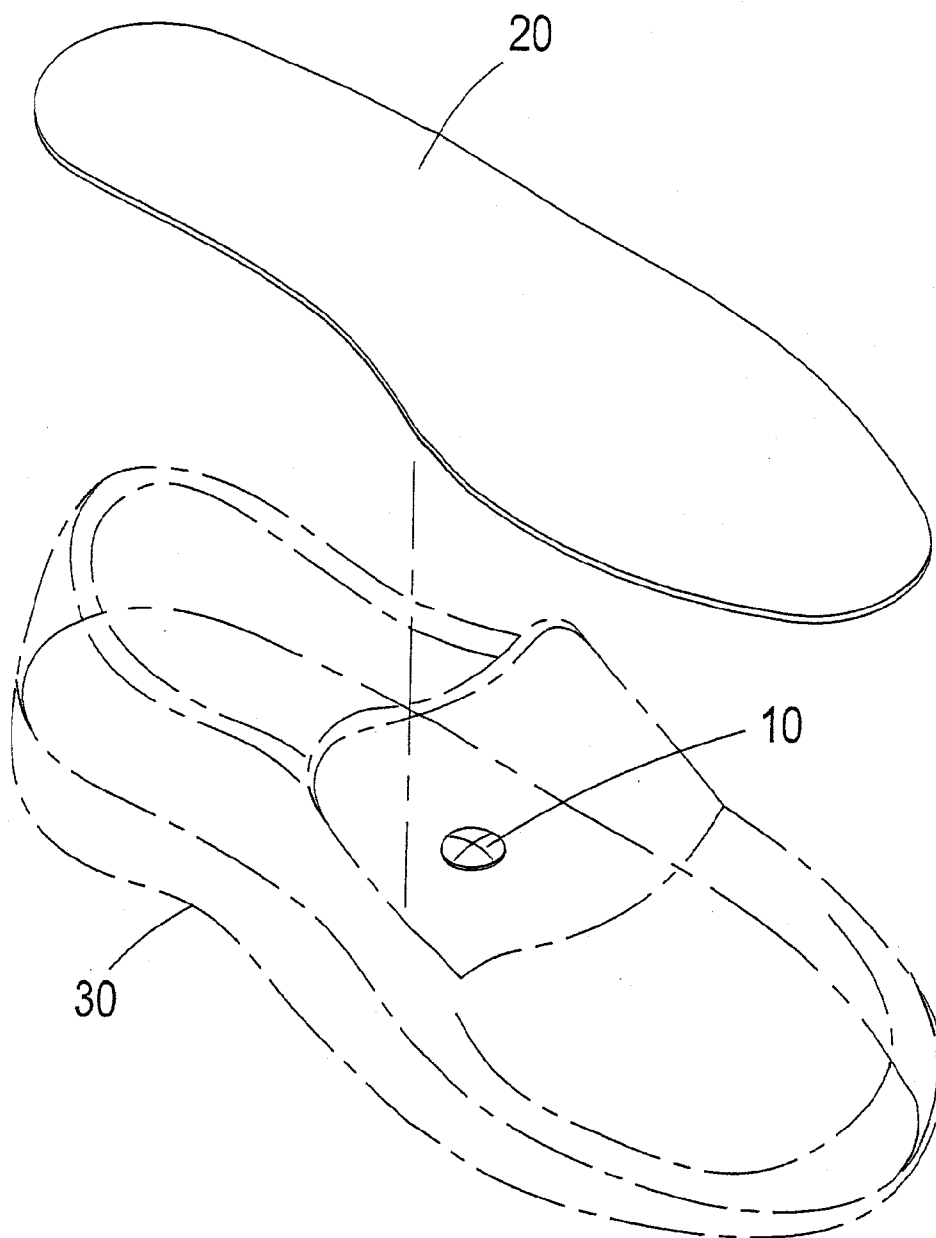


FIG.10

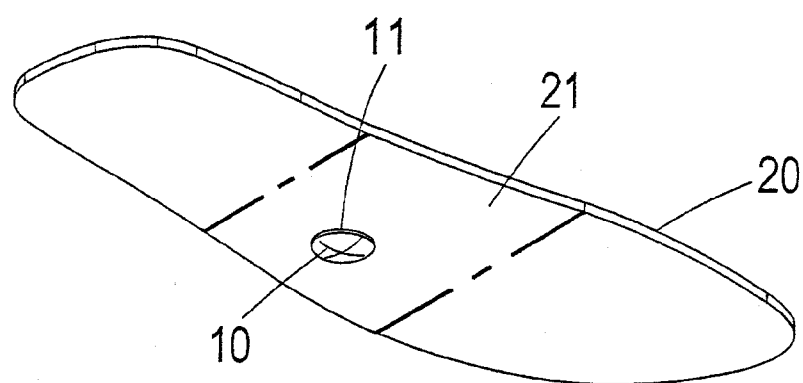


FIG.11