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(54) **MULTIFUNCTIONAL GRAVITY BODY SHAPING SOLE AND SHOES**

(57) A multifunctional gravity body shaping sole, comprising a bottom wear-resisting non-slip layer, a sole body layer set on the bottom wear-resisting non-slip layer and a top connecting layer set on the sole body layer,

characterized in that the sole body layer has a transversely-set hole which can be selectively filled with a weight, and the hole is a through-hole of which the openings are set in the side part of the sole body layer. Also provided are shoes comprising said soles.

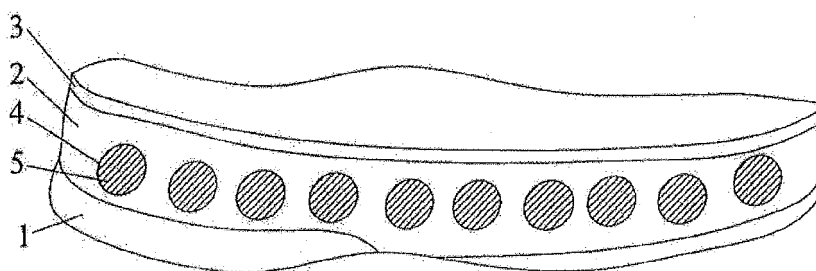


FIG. 1

Description

FIELD OF THE INVENTION

[0001] The present invention relates to a sole, more particularly to a multifunctional gravity body shaping sole and shoes which can make users shape their bodies by adding weight of the sole or shoes.

BACKGROUND OF THE INVENTION

[0002] The diet gets richer and people get abundant nutrition as living standard soars, causing fatness problem and making the body out of shape, which leads to the popularity of body shaping among people. Among numerous popular body shaping methods, people usually choose exercise to effectively burn off redundant calories and to improve the effect of body shaping. One simple and effective method which can improve the effect of exercise is attaching a weight to the leg or the ankle to carry out weight-bearing exercise, but this weight-bearing exercise can only be carried out in particular time and place in order not to affect normal work and life. Besides, people wishes to exercise and shape their bodies without drawing the attention of others, however, the weight attached to the leg or the ankle is easily to be found by people around, therefore this exercise manner is not aesthetic and is not good to protect exercisers' privacy regarding body shaping.

[0003] On that account, it is necessary to provide a multifunctional gravity body shaping sole and shoes.

SUMMARY OF THE INVENTION

[0004] In order to overcome the defects in related art, the present invention aims to provide an easy-to-use multifunctional gravity body shaping sole and shoes which will not draw people's attention and has attractive appearance.

[0005] The present invention provides a multifunctional gravity body shaping sole, comprising a bottom wear-resisting non-slip layer, a sole body layer set on said bottom wear-resisting non-slip layer and a top connecting layer set on said sole body layer, said sole body layer has a transversely-set hole which can be selectively filled with a weight, and an opening of said hole is set in the side part of said sole body layer.

[0006] The hole set in the sole body layer, which can be selectively filled with a weight, can allow users to adjust the weight of the sole according to their demands, thus a more effective plan for body shaping can be executed. Besides, "selectively filling" includes choosing to fill or not to fill the holes, choosing a filling depth, choosing the types and combination modes of weight to be filled, etc.

[0007] Preferably, said sole body layer has a plurality of said holes.

[0008] A plurality of holes can share the pressure on

holes during exercise, which is good for prolonging the sole's service life. Besides, modes for filling the holes increases with the increase of number of the holes, for example, some of the holes or all of the holes can be filled, the position and number of holes to be filled can be freely chosen, which further diversifies the modes to distribute and fill the holes, thus user can take planned body shaping exercise.

[0009] Preferably, said plurality of holes are arrayed in one layer or vertically arrayed in a plurality of layers.

[0010] Said plurality of holes can be distributed in many ways, when the holes are vertically arrayed in a plurality of layers, these holes can be uniformly arranged or arranged with certain regularity, in this way, the service life of sole will be prolonged due to the share of pressure on the sole owing to the distribution of holes. Furthermore, it's easy for users to choose which holes to be filled, which allows users to take planned body shaping exercise.

[0011] Preferably, said hole can be a through hole or a blind hole.

[0012] Through holes can increase available space to fill a weight, blind holes can make users decide which end of the hole to be opened according to their needs, thus the weight gaining of the sole can be realized without drawing the attention of others.

[0013] Preferably, said hole is round, triangular or pentacle-shaped in cross-section.

[0014] Diversity of the shapes in cross-section of the hole not only brings aesthetic value to the sole, but also makes a filler tightly clamped in the holes thereby preventing the filler from coming out of the holes.

[0015] Preferably, said plurality of holes are uniformly distributed in said sole body layer.

[0016] Uniformly distributed holes are good for evenly sharing pressure in the sole, which prevents the holes from being out of shape under pressure, improves the load-carrying ability of the sole body layer, and prolongs the sole's service life.

[0017] Preferably, said weight is a strip body, a granule body or a mixed flexible body which is integrated by mixing metal granules and flexible materials.

[0018] Diversity of the shape and material of the weight brings diversity of filling modes, which facilitates user in choosing a weight according to personal preference and makes user have more ways to shape their bodies.

[0019] Preferably, said hole has a matched sleeve therein, and said weight is sealed in said sleeve.

[0020] The weight sealed in the sleeve may have a diversity of shapes and materials, the weight can be strip bodies, granule bodies and mixed flexible bodies, or can be sand and beans commonly used in daily life, thereby improving versatility and convenience of the sole

[0021] Preferably, a luminous device used for lighting is sealed in said sleeve, light emitted from said luminous device can pass through a cover of said sleeve to be transmitted to the outside of said sole, wherein said cover is made of transparent materials.

[0022] The sole gets more aesthetic when the sole is

provided with a luminous device, in this way, the sole can not only be used in daily life but can also be used in a stage performance; as mentioned above, there are various types of fillers, which further adds options for filling the holes.

[0023] Preferably, the opening of said hole is provided with a plug, with the opening being set in the side part of said sole body layer, said weight is sealed in a hermetic space formed by said plug and said hole.

[0024] The plug can prevent the weight coming out of the holes, which is practical and can prevent holes from being noticed by others.

[0025] The present invention provides a multifunctional gravity body shaping shoe, it comprises a vamp and a multifunctional gravity body shaping sole comprising a bottom wear-resisting non-slip layer, a sole body layer set on said bottom wear-resisting non-slip layer and a top connecting layer set on said sole body layer, said vamp is connected with said top connecting layer, said sole body layer has a transversely-set hole which can be selectively filled with a weight, and an opening of said hole is set in the side part of said sole body layer. The hole set in sole body layer, which can be selectively filled with a weight, allows users to adjust the weight of the sole according to their demands, thus a more effective plan for body shaping can be executed.

[0026] Comparing with the prior art, the multifunctional gravity body shaping sole and shoes of the present invention have the following advantages.

[0027] By setting holes in the sole, user can choose to fill the holes with a weight to add the weight of shoes, thus users may take weight-bearing exercise in daily walking without drawing the attention of others; or user can choose not to fill holes, thus the sole becomes lightweight. Setting at least one hole in the sole and filling the hole with a weight can make user easily choose a filler with different weights according to their exercise needs. Moreover, holes with different shapes in cross-section can be designed. A luminous device set in the hole is preferable, which brings aesthetic effect to shoes, and user can adjust the shoes' weight according to their weight-bearing ability and needs owing to the diversity of the filler, thus targeted and well planned exercise can be taken. Exercise in daily life with this multifunctional gravity body shaping sole that adds the weight of shoes can increase training intensity while walking, increase heat consumption, improve blood circulation in periphery of feet so as to reshape thighs, calves and feet.

BRIEF DESCRIPTION OF THE DRAWINGS

[0028]

Figure 1 is a perspective view of a multifunctional gravity body shaping sole of the present invention; Figure 2 is a perspective view of holes indicated in Fig. 1, with the holes being uniformly arrayed in layers side by side;

Figure 3 is a perspective view of holes indicated in Fig. 1, with the holes being dislocatedly arrayed in layers;

Figure 4 is a perspective view of holes indicated in Fig. 1, with the holes being pentacle-shaped in cross-section;

Figure 5 is a perspective view of holes indicated in Fig. 1, with the holes being triangular in cross-section;

Figure 6 is a perspective view of holes indicated in Fig. 1, with the holes having different shapes;

Figure 7 is a perspective view of holes indicated in Fig. 1, with the holes having different sizes;

Figure 8 is a perspective view of holes indicated in Fig. 1, with the holes being irregularly distributed;

Figure 9 is a section view of holes indicated in Fig. 1, with the holes being filled in a way in one embodiment of the present invention;

Figure 10 is a section view of holes indicated in Fig. 1, with the holes being filled in a way in one embodiment of the present invention;

Figure 11 is a section view of holes indicated in Fig. 1, with the holes being filled in a way in one embodiment of the present invention;

Figure 12 is a section view of holes indicated in Fig. 1, with the holes being filled in a way in one embodiment of the present invention;

Figure 13 is a section view of a sleeve in the hole indicated in Fig. 1;

Figure 14 is a perspective view of a multifunctional gravity body shaping shoe of the present invention.

DETAILED DESCRIPTION OF ILLUSTRATED EMBODIMENTS

[0029] Further description will now be described below in conjunction with the figures.

[0030] Figure 1 is a perspective view of a multifunctional gravity body shaping sole of the present invention. As shown in Fig. 1, the multifunctional gravity body shaping sole of the present invention comprises a bottom wear-resisting non-slip layer 1, a sole body layer 2 set on the bottom wear-resisting non-slip layer 1 and a top connecting layer 3 set on the sole body layer 2, the sole body layer 2 has a transversely-set hole 4 which can be selectively filled with a weight 5, and an opening of the hole 4 is set in the side part of the sole body layer 2.

[0031] The above-mentioned "selectively filling" includes: choosing to fill the holes with weights or nothing; choosing a filling depth, choosing the types and combination modes of fillers, etc. The hole 4 set in the sole body layer 2 lightens the weight of sole when the hole 4 is filled with nothing, while the weight of shoes can be added when the hole 4 is filled with a weight 5, thus users can carry out weight-bearing exercise in daily walking. The filling depth of the hole 4 can also be chosen, for example, the hole 4 can be filled up to add the weight of the sole to the largest extent, thereby burdening users

and increasing the amount of exercise; moreover, users can choose a suitable filling depth according to their needs during weight or muscle exercise, in this aspect, users may control the added weight of the sole so as to do a well planned training.

[0032] The hole 4 is set in the transverse direction which is parallel to the plane of the sole, and the axis of the hole can extend along the width or the length of the sole. The sole will suffer from bending deformation in the length direction of the sole as the heel being lifted while walking, in this situation, the axis of the hole 4 will extend along the width direction of the sole, in this way, the influence of the sole's deformation over the hole 4 will be reduced to the minimum, which effectively prolongs the service life of the sole. Moreover, the hole 4 can be partially set in the length direction or obliquely horizontal direction of the sole. Holes 4 can be set in a plurality of directions in the heel part of sole due to the reason that the heel part usually suffer less from being bended, this kind of sole also achieves the purpose of body shaping by adding the weight of the sole without reducing the quality of the sole.

[0033] Preferably, as shown in Fig.2 and Fig.3, a plurality of holes 4 set in the sole body layer can share the pressure in the sole resulted from the weight of a human body, which prevents a single hole from being out of shape, improves the load-carrying ability of the sole, and prolongs the sole's service life. Moreover, modes for filling the holes increases with the increase of number of the holes, for example, some of the holes or all of the holes can be filled, which depends on users' need. When entirely filling all of the holes, the weight of sole will be added to the largest extent, which makes users take much more exercise; while filling some of the holes, users may consider the number and position of holes to be filled according to their needs, thus users can control the burden of the sole and take planned body shaping exercise.

[0034] The holes 4 are arrayed in one layer or vertically arrayed in a plurality of layers, vertical direction refers to a direction perpendicular to the plane of the sole. That is to say a plurality of holes 4 can be arrayed in one layer in the plane of the sole or be arrayed in a plurality of layers in the direction which is perpendicular to the plane of the sole. As shown in Fig.2, the holes 4 are arrayed in layers side by side in a sole, which makes the pressure in the sole averagely shared by each hole 4, thus the service life of the sole can be prolonged. As shown in Fig.3, more holes 4 are set in the heel part of sole, the reason for this setting of holes is as follows: the heel part of sole suffers from more pressure and thus it is not prone to blending, hence more holes 4 can be set in this heel part; however, the forefoot part of sole is prone to blending and breaking, hence less or no holes should be set in this forefoot part so as to prevent the sole from breaking.

[0035] The hole 4 can be a through hole or a blind hole. The through hole is transversely penetrates through the sole body layer 2, while one end of the blind hole opens

in the side part of the sole body layer 2, the other end is set in the interior of the sole body layer 2, that is to say, the blind hole does not penetrate through the sole body layer 2.

[0036] When the hole 4 is a through hole penetrating through both inward and outward side of the sole body layer 2, the weight of the sole can be added to the largest extent, and the filler can be easily unloaded. When the hole 4 is a blind hole, the opening can be designed in the inward side or outward side of said sole body layer 2 according to users' needs, which can meet users' handedness so that it is easy to fill the hole 4 with a weight. Especially when the opening is set in the inward side of said sole body layer 2, the hole cannot be easily noticed by others during walking so that users can keep their plans for body shaping as a privacy.

[0037] Preferably, as shown in figures 1 and 4-6, the hole 4 can be round, triangular or pentacle-shaped in cross-section, besides, it can also be square or rounded rectangular, etc. The holes 4 may have only one shape in cross-section, such as round, triangular, pentacle-shaped, square or rounded rectangular, they may also have combinations of different shapes, which brings aesthetic appearance to shoes. Moreover, when the hole 4 is triangular, pentacle-shaped, square or rounded rectangular in cross-section, the size of a circle connecting endpoints of the cross-section of the hole is the maximum radial size of the hole 4, an inner wall of the hole 4 protrudes towards the axial direction of hole 4 relative to this maximum radial size, thus the weight 5 filled in the hole 4 will be tightly clamped by the inner wall of the hole 4, making the weight 5 effectively and firmly filled in the hole 4.

[0038] Preferably, as shown in figures 1 and 7-8, the hole 4 may have a variety of radial sizes, and holes with different sizes can be irregularly distributed. As shown in Fig.1, the holes 4 are uniformly distributed in the sole body layer 2, thus the pressure in the sole can be averagely shared by each hole 4, which reduces the deformation of one single hole and prolongs the service life of the sole.

[0039] As shown in figures 7 and 8, different parts of the sole will suffer from bending deformation in different degrees while walking, thus there might be various radial sizes and distribution ways of the holes 4. The radial size can be adjusted according to the deformation degrees and pressure frequency in the sole. Large-sized holes 4 can be set in the heel part of sole due to the reason that the heel part usually suffer less from being bended; while no hole or small-sized holes 4 can be set in the forefoot part of sole which often suffers from bending deformation during walking. Unevenly distributing the hole 4 according to users' exercise habit after a force analysis on the sole is also acceptable, which makes the distribution of holes more scientific, thereby improving the quality of the sole and prolonging the service life of the sole.

[0040] Preferably, the weight 5 can be a strip body, a granule body or a mixed flexible body which is integrated

by mixing metal granules and flexible materials.

[0041] A strip body refers to an object with a bar shape, which can be a metal strip body, a sand strip body, a flexible material strip body, a wood strip body or other kinds of strip bodies that can perform a same function. The hole 4 can be selectively filled with one strip body or more than one strip body. In a preferred embodiment of the present invention, the flexible material strip body is put into the hole 4 followed by filling the hole 4 with the metal strip body, in this way, the moving of weight 5 in the hole 4 can thus be prevented due to a squeezing action towards the metal strip body given by the flexible material strip body. A light strip body, which also might be served as the weight 5, mainly plays a supporting role instead of a weight gaining role, which prevents the hole 4 from deforming due to users' weight so that the service life of the sole can be prolonged.

[0042] A granule body refers to an object with a granular shape, which can be a metal granule body, a flexible material granule body, a sand granule body, or other kinds of granule bodies that can perform a same function. The hole 4 can be selectively filled with one kind of said granule body or more than one kind of said granule body, and the combination mode of the granule body can be various, which allows user to select suitable kinds of granule bodies, combine them or mix them in a specific proportion according to their needs, so that users' can take effective body shaping exercise by using the sole having a desired weight. A light granule body, which also might be served as the weight 5, mainly plays a supporting role instead of a weight gaining role, which prevents the hole 4 from deforming due to users' weight so that the service life of the sole can be prolonged.

[0043] A mixed flexible body refers to an integrated mixture of metal granules and flexible materials, with the metal granules wrapped by the flexible materials. The mixed flexible body not only has a firm structure but also guarantees the flexibility of the sole. The metal granules will not move within the mixed flexible body during exercise, which makes users of the sole feel comfortable during walking and makes the users enjoy the weight-bearing exercise. User can fill the holes with one or more said mixed flexible bodies.

[0044] Figures 9-12 are section views of holes which are filled in four different ways. As shown in figures 9-12, in a preferred embodiment of the present invention, users can selectively fill the holes with a single weight selected from a group consisting of a strip body, a granule body and a mixed flexible body. Optionally, user can selectively fill the holes with a mixed weight selected from mixtures of a strip body, a granule body and a mixed flexible body according to their needs. User may fill some of the holes with the single weight and not fill other holes. Selectively, user may fill some of the holes with one kind of the single weight and fill other holes with another kind of the single weight. As a choice, user may fill some of the holes with one kind of the single weight and fill other holes with the mixed weight, or fill some of the holes with one kind of

the mixed weight and fill other holes with another kind of the mixed weight.

[0045] Fig.13 is a section view of a hole having a sleeve, as shown in Fig.13, the hole 4 has a matched sleeve 6 therein, the weight 5 is sealed in the sleeve 6, and the sleeve 6 is hermetically embedded in the hole 4. The sleeve 6 can not only be filled with the single weight or the mixed weight according to the above mentioned filling modes, but can also be filled with metal granules, sand, beans or mixtures thereof in any mixing ratio, these material are common in our daily life so as to improve versatility and convenience of the sole.

[0046] Preferably, a luminous device used for lighting is sealed in the sleeve 6, a cover at an end of the sleeve is made of transparent materials. Light emitted from the luminous device can pass through the cover and be transmitted to the outside of the sole. The cover can also be made of semitransparent materials.

[0047] When weight-bearing exercise is not needed, filling the hole 4 with the luminous device set in the sleeve 6 can make the sole become more aesthetic, thus the sole can not only be used in daily life but can also used in a stage performance.

[0048] A variety of weights 5 can be filled in the hole 4, which further increases the ways to fill the hole 4. Moreover, user can choose a filling depth, choose to fill the holes with a weight or nothing, choose to fill the holes entirely or partially, and choose the number and position of the holes to be filled. These filling ways are good for users to add the weight of the sole according to their needs to take planned body shaping exercise.

[0049] The opening of the hole 4 is provided with a plug, with the openings being set in the side part of the sole body layer 2, which is practical and will not draw the attention of others. The weight 5 is sealed in a hermetic space formed by the plug and the hole 4, which prevents the weight 5 from coming out of holes.

[0050] As shown in Fig.14, the present invention further provides a multifunctional gravity body shaping shoe, it comprises a vamp 7 and a multifunctional gravity body shaping sole comprising a bottom wear-resisting non-slip layer 1, a sole body layer 2 set on the bottom wear-resisting non-slip layer 1 and a top connecting layer 3 set on the sole body layer 2, wherein the sole body layer 2 has a transversely-set hole 4 which can be selectively filled with a weight 5, and an opening of the holes 4 are set in the side part of the sole body layer 2.

[0051] The hole set in the sole body layer, which can be selectively filled with a weight, can make users adjust the weight of the sole according to their needs, thus a more effective plan for body shaping can be executed.

[0052] All the above are the preferred embodiments of the present invention, and the invention is intended to cover various modifications and equivalent arrangements included within the scope of the invention.

Claims

1. A multifunctional gravity body shaping sole, comprising a bottom wear-resisting non-slip layer, a sole body layer set on said bottom wear-resisting non-slip layer and a top connecting layer set on said sole body layer, **characterized in that** said sole body layer has a transversely-set hole which can be selectively filled with a weight, and said hole is a through-hole of which the openings are set in the side part of said sole body layer. 5 10
2. The multifunctional gravity body shaping sole according to claim 1, **characterized in that**: said sole body layer has a plurality of said holes. 15
3. The multifunctional gravity body shaping sole according to claim 2, **characterized in that**: said plurality of holes are arrayed in one layer or vertically arrayed in a plurality of layers. 20
4. The multifunctional gravity body shaping sole according to claim 3, **characterized in that**: said hole is round, triangular or pentacle-shaped in cross-section. 25
5. The multifunctional gravity body shaping sole according to claim 2, **characterized in that**: said plurality of holes are uniformly distributed in said sole body layer. 30
6. The multifunctional gravity body shaping sole according to claim 1, **characterized in that**: said weight is a strip body, a granule body or a mixed flexible body which is integrated by mixing metal granules and flexible materials. 35
7. The multifunctional gravity body shaping sole according to claim 1, **characterized in that**: said hole has a matched sleeve therein, and said weight is sealed in said sleeve. 40
8. The multifunctional gravity body shaping sole according to claim 7, **characterized in that**: a luminous device used for lighting is sealed in said sleeve, light emitted from said luminous device can pass through a cover of said sleeve to be transmitted to the outside of said sole, wherein said cover is made of transparent materials. 45 50
9. The multifunctional gravity body shaping sole according to claim 1, **characterized in that**: the opening of said hole is provided with a plug, with the openings being set in the side part of said sole body layer, said weight is sealed in a hermetic space formed by said plug and said hole. 55
10. A multifunctional gravity body shaping shoe, **char-**

acterized in that: it comprises a vamp and a multifunctional gravity body shaping sole comprising a bottom wear-resisting non-slip layer, a sole body layer set on said bottom wear-resisting non-slip layer and a top connecting layer set on said sole body layer, said vamp is connected with said top connecting layer, said sole body layer has a transversely-set hole which can be selectively filled with a weight, and said hole is a through-hole of which the openings are set in the side part of said sole body layer.

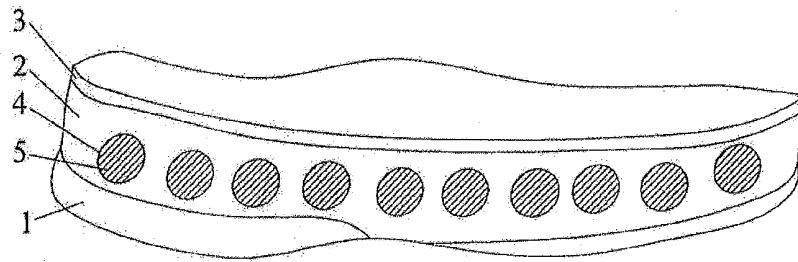


FIG. 1

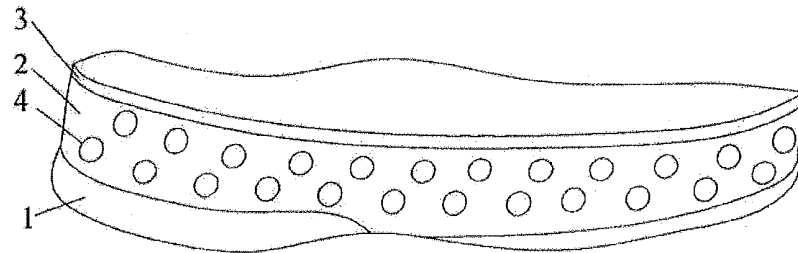


FIG. 2

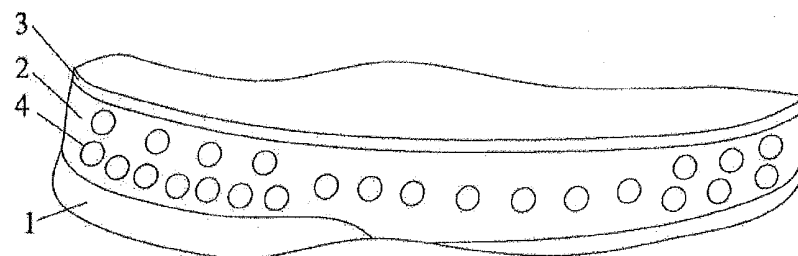


FIG. 3

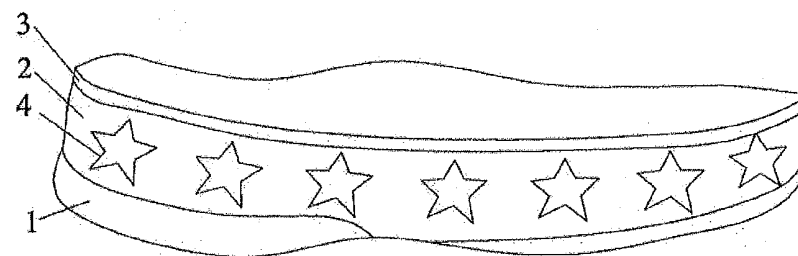


FIG. 4

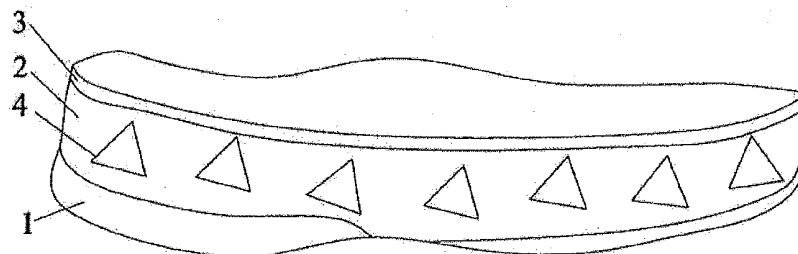
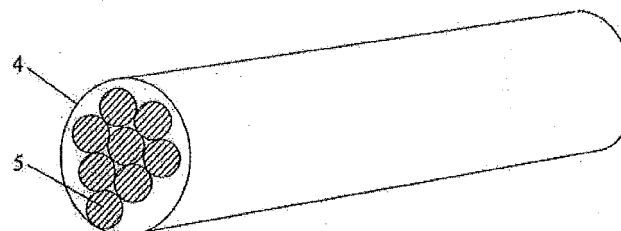
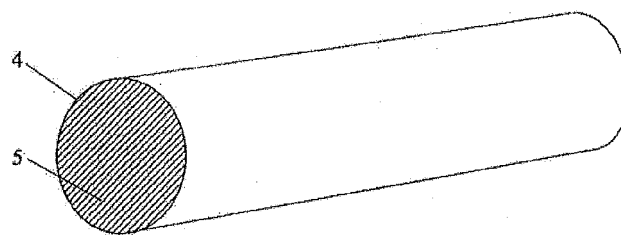
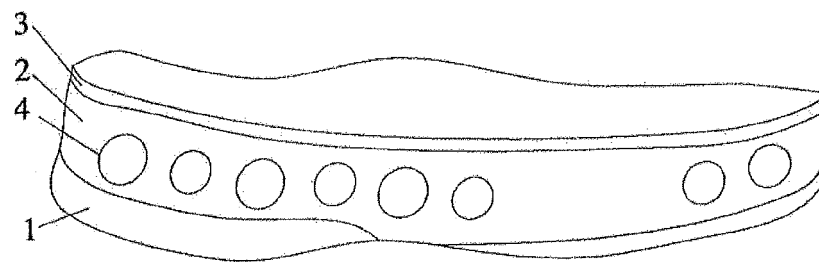
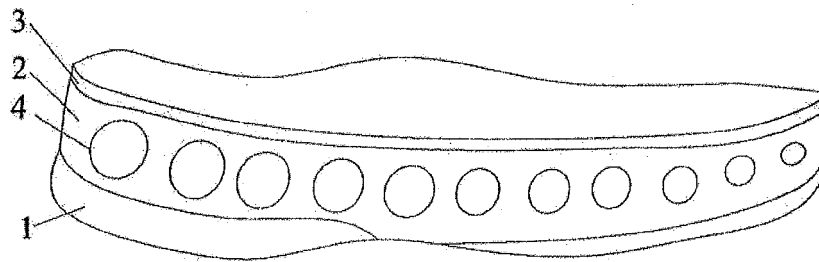
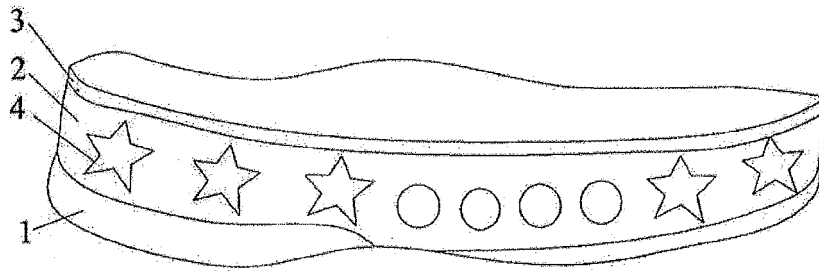


FIG. 5



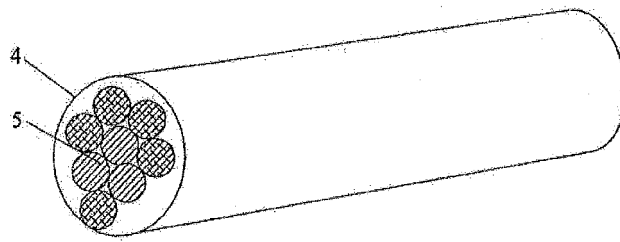


FIG. 11

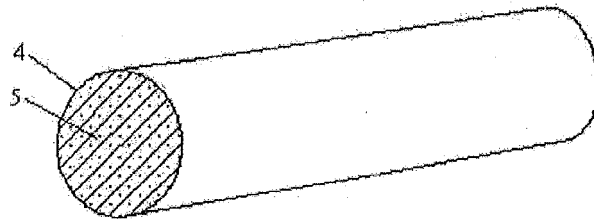


FIG. 12

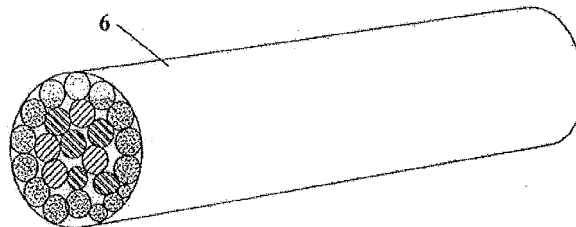


FIG. 13

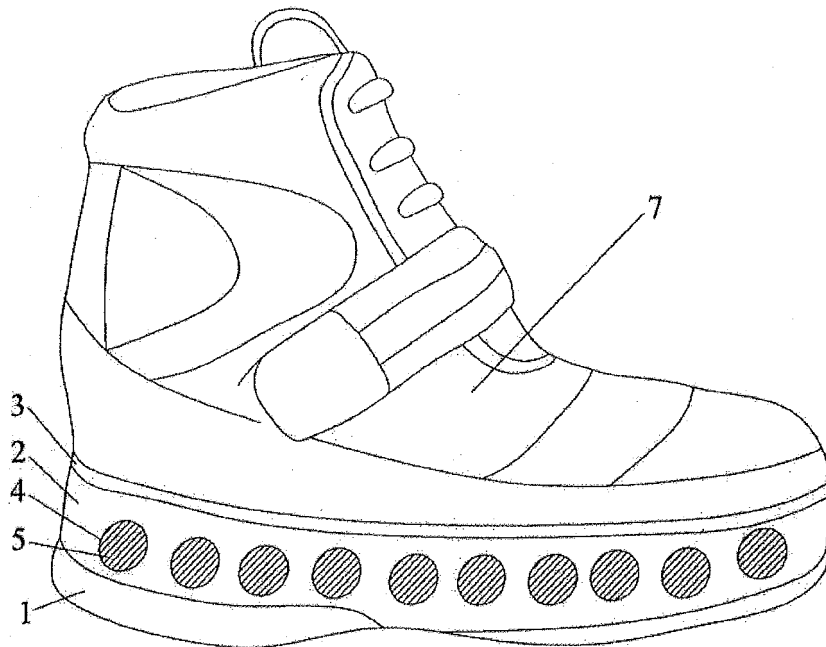


FIG. 14

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2012/074196

A. CLASSIFICATION OF SUBJECT MATTER

see the extra sheet

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: A43B13

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CPRSABS, VEN: hole or aperture or cavity or channel, fill+ or stuff+ or add+, heavy or weight

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN202154134U (WAN, Xianneng) 07 Mar. 2012 (07.03.2012) the whole document	1-10
PX	CN102144826A (WAN, Xianneng) 10 Aug. 2011 (10.08.2011) the whole document	1-10
X	CN201691172U (QUANZHOU MEIKE SPORTS PROD CO LTD) 05 Jan. 2011 (05.01.2011) claims & figures	1-5, 9, 10
X	CN101263944A (CHEN, Guangzhi) 17 Sept. 2008 (17.09.2008) claims & figures	1-5, 9, 10
X	CN201178714Y (XIE, Zhujiang) 14 Jan. 2009 (14.01.2009) claims & figures	1-5, 9, 10
X	JP10108705A (SOTO-I) 28 Apr. 1998 (28.04.1998) claims & figures	1-5, 9, 10
A	JP11285402A (NAKA-I) 19 Oct. 1999 (19.10.1999) the whole document	1-10

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

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"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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Information on patent family members

International application No.
PCT/CN2012/074196

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INTERNATIONAL SEARCH REPORT

International application No.

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A. CLASSIFICATION OF SUBJECT MATTER

A43B13/14 (2006.01) i

A63B21/065 (2006.01) n

A43B7/00 (2006.01) n

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