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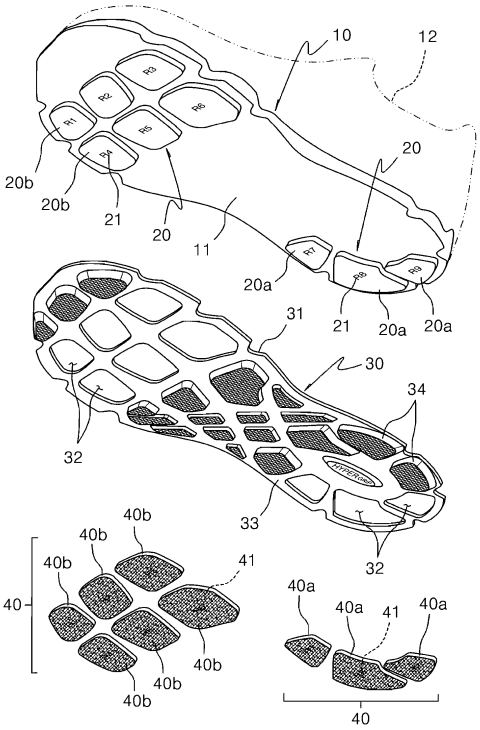
(54) Shoe sole and method for manufacturing the same

(57) Disclosed are a shoe sole and a manufacturing method for the same. In order to enhance flexibility and softness of a shoe sole, there are provided a midsole (10) that is disposed beneath an upper (12) of a shoe; one or multiple protrusions (20) that protrude in a downward direction from a lower surface (11) of the midsole; an outsole (30) that includes an upper surface (31) attached to a lower surface (11) of the midsole and includes one or multiple holes (32) that are disposed in an inner side, the protrusion passing through the outsole (30); and one or multiple outsole pieces (40) that are attached to beneath each protrusion. With the above configuration, it is possible to effectively absorb the impact due to prompt deformation of the sole when a user walks along an uneven, protruded ground.

Fig.1



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Description

Technical Field

[0001] The present invention relates to a shoe sole and a method for manufacturing the same, and in particular to a shoe sole and a method for manufacturing the same that make it possible to provide a sole with more flexibility and smoothness in such a way that part of a slip prevention protrusion disposed on a bottom surface of a shoe is supported by a midsole, not integrated with an outsole.

Background Art

[0002] Shoes such as sneakers, leisure shoes, mountain shoes, safety shoes, etc. are necessary items in modern human life. Such shoes are manufactured in various forms on the basis of the purpose of use. A typical shoe comprises a sole that disposed on a bottom of a shoe and supports a foot bottom, and an upper layer that covers a foot from above the sole and protects it.

[0003] The sole consists of an outsole that directly contacts with the ground, and a midsole that is attached to the upper surface of the outsole and supports a foot bottom. The outsole is generally made from a material a little hard enough to decrease abrasion due to friction against the ground, and the midsole is generally made from a material a little smooth enough to effectively absorb impact and to enhance a wearing feeling. Some of the shoes are equipped with a slip prevention function by providing protrusions on the bottom surface of the outsole.

[0004] Since the outsole of typical shoes is generally integrated with a hard material, flexibility and smoothness are bad.

[0005] More specifically, when a user walks along a uneven, protruded ground like along an unpaved road or a walkway in mountain, only part of the bottom surface of the outsole comes into contact with the protruded portion, so the sole may be unbalanced or twisted. Since the outsole disposed beneath the sole is made from a hard material, the entire sole may be promptly unbalanced or twisted in reaction to the contact with the protruded ground, which results in prompt deformation. The impact due to the prompt deformation is directly transferred to the ankle of the user, so the ankle becomes fatigue fast, and the ankle may be sprained and injured, causing dangerous situation.

Disclosure of Invention

[0006] Accordingly, the present invention is made so as to improve the above mentioned problems. It is an object of the present invention to provide a shoe sole and a method for manufacturing the same that make it possible to enhance flexibility and smoothness of a shoe sole.

[0007] To achieve the above object, there is provided a shoe sole, comprising a mid sole 10 that is disposed beneath an upper layer 12 of a shoe; one or multiple protrusions 20 that protrudes in a downward direction from a lower surface 11 of the midsole; an outsole 30 that includes an upper surface 31 attached to a lower surface 11 of the midsole and includes one or multiple holes 32 that is disposed in an inner side, the protrusion passing through the outsole piece 40; and one or multiple outsole pieces 40 that are attached to beneath each protrusion.

[0008] More preferably, the midsole is smooth, and the outsole and the outsole piece are hard, and the outsole piece is attached to the soft midsole and is flexible without any help from the outsole.

[0009] The protrusions are provided on a heel portion of a midsole where most frequently contacts with the ground or are provided on a front portion of the midsole, so it is possible to exchange when the outsole piece is worn out or damaged.

[0010] There is further provided one or multiple outsole protrusions 34 that protrudes in a downward direction from the bottom surface 33 of the outsole.

[0011] In addition, in order to enhance the flexibility and smoothness, the height of the protrusion is made higher than the height of the hole, so when the midsole and the outsole are attached to each other, the protrusions can protrude in a downward direction from the bottom surface of the outsole.

[0012] In addition, when the protrusion and the outsole price are provided in multiple numbers, different marks 21 are marked on a lower surface of each protrusion, and different marks 41 are marked on an upper surface of each outsole piece for thereby differentiating the position of each protrusions.

[0013] To achieve the above objects, there is provided a method for manufacturing shoes of the present invention which comprises inserting and passing a protrusion protruding in a downward direction from a lower surface of a midsole, through a hole formed in an inner portion of the outsole; butting and attaching a lower surface of the midsole and an upper surface of the outsole; and attaching an outsole piece to beneath the protrusion that has passed through the hole.

Advantageous Effects

[0014] In the present invention, part of protrusions formed on a bottom surface of a shoe is attached to a midsole, not

integrated with a hard outsole, so it can be flexible without any rotation with an outsole, thus enhancing flexibility and smoothness of a shoe sole.

[0015] When a user walks along an uneven, protruded ground, the sole can become flexible, so it is possible to absorb any impact due to prompt deformation of a sole, thus protecting ankles from being sprained and injured. The product of the present invention can reduce fatigue in the course of intense exercise or tracking or mounting climbing along with enhanced safety.

Brief Description of Drawings

[0016]

Figure 1 is a disassembled perspective view illustrating a shoe sole according to an embodiment of the present invention.

Figure 2 is a perspective view illustrating an assembling procedure of a shoe sole according to an embodiment of the present invention.

Figure 3 is a perspective view illustrating a state that an assembling of a shoe sole is completed according to a preferred embodiment of the present invention.

Figure 4 is a cross sectional view illustrating a state that a shoe sole is disassembled, which is shown for better understanding.

Figure 5 is a cross sectional view illustrating a state that a shoe sole is assembled, which is shown for better understanding.

Best modes for carrying out the invention

[0017] The present invention may be implemented with various modifications. The preferred embodiments of the present invention will be described hereinafter, which are not limited thereto. It is obvious that the concepts and technical ranges of the present invention embrace common modifications or equivalents or substitutions.

[0018] Figure 1 is a disassembled perspective view illustrating a shoe sole according to an embodiment of the present invention. Figure 2 is a perspective view illustrating an assembling procedure of a shoe sole according to an embodiment of the present invention. Figure 3 is a perspective view illustrating a state that an assembling of a shoe sole is completed according to a preferred embodiment of the present invention.

[0019] As shown in Figure 1, the shoe sole according to the present invention comprises a midsole 10, a protrusion 20, an outsole 30 and an outsole piece 40.

[0020] The midsole 10 is arranged beneath an upper layer 12 of a shoe and is generally made from a smoother material such as a foamed synthetic resin, etc. as compared with the outsole 10, so it has flexibility and smoothness and a function of effectively absorbing impacts.

[0021] One or multiple protrusions 20 protrude in a downward direction from a bottom surface 11 of the midsole 10. It is preferred that the protrusions 20 are molded in the course of the formation of the midsole 10, so the protrusions 20 can be integrated with the midsole 10.

[0022] The outsole 30 includes an upper surface 31 that is attached to a lower surface 11 of the midsole 10 and is made from a harder synthetic resin as compared with the midsole 10. The outsole 30 is made from a material that has a strong abrasion prevention function because it directly contacts with the ground and that has a slip prevention property.

[0023] A hole 32 is formed in a portion where matches with the protrusion 20 in the midsole 10. As shown in Figure 2, a protrusion 20 comes to pass through the hole 32 when the midsole 10 and the outsole 20 are engaged each other.

[0024] The outsole piece 40 is attached to beneath the protrusions 20 and may be provided in one or multiple pieces. The outsole piece 40 is made from a material that has a strong abrasion prevention function and a slip prevention function in consideration of its direct contact with the ground. The outsole piece 40 may be contoured in a lattice-shaped mesh shape or a small protrusion shape on the bottom of the outsole piece 40.

[0025] The midsole 10 with the protrusions 20, the outsole 30 and the outsole piece 40 are assembled in the following procedure.

[0026] As shown in Figure 1, the midsole 10, the outsole 30 and the outsole piece 40 are prepared. In a state of Figure 2, the protrusions 20 protruding in a downward direction from the lower surface 11 of the midsole 10 is inserted in the hole 32 formed in the inner portion of the outsole 30. At this time, when the exterior of the protrusion 20 and the surrounding shape of the hole 32 are identically matched, the protrusion 20 come to fit the hole 32 like the puzzles fit. The lower surface 11 of the mid sole 10 and the upper surface 21 of the outsole 30 are butted and attached. The lower surface 11 and the upper surface 21 are attached using an adhesive or are attached in a heating and melting way. A typical attaching way of attaching the midsole and the outsole may be used; however such way is not limited thereto.

[0027] Next, the outsole piece 40 is attached to beneath the protrusion 20 which is exposed from its bottom after it

has passed through the hole as shown in Figure 3. When the exterior of the outsole piece 40 and the exterior of the protrusion 20 are identically matched, the bottom of the protrusion 20 is not exposed to the outside, and the outsole piece 40 can fit the protrusion 20, thus enhancing attaching force and support force.

[0028] When the exterior of the protrusion 20 is atypical, and the protrusion 20 is provided in multiple numbers, there may be a confusion in attaching the outsole pieces 40 to each corresponding protrusion 20, so the protrusion with a different exterior may be attached to the outsole piece, which leads to producing defective products or retarding manufactures, thus deteriorating productivity.

[0029] On the lower surface of each protrusion 20, for example, an identification mark 21 such as R1 to R9 may be marked by marking a mark "R" which means a right foot shoe, or a predetermined number for each protrusion 20. In addition, on the upper surface of each outsole piece 40, for example, an identification mark 41 which is the same as the identification mark 21 indicated on each protrusion 21 or which matches with such mark 21 may be marked.

[0030] In such a way, even when the outsole pieces 40 are scattered, a user can locate the protrusion 20 with the matching identification mark 21 while confirming the identification mark 41 of the outsole piece 40 which is randomly selected, which consequently entails easier work.

[0031] In case that the protrusion 20 is provided in multiple numbers, they can be installed at a heel portion of the midsole where most frequently contacts with the ground when the user walks or at a front portion of the midsole.

[0032] When a person walk, the heel portion first comes into contact with the ground after the person lifts up his one foot from the ground, and then the entre portions of the foot bottom come into contact with the ground and then the front portion comes into contact with the ground. When the person lifts up his foot from the ground, the heel portion of the foot comes to lift up from the ground, and then the front portion of the foot strongly kicks the ground, thus obtaining a forward walking force.

[0033] In consideration of the above mentioned walking types, since the contacting force against the ground is highest at the heel portion and the front portion of the foot, so the protrusions may be sectioned into heel portion protrusions 20a and front portion protrusions 20b, for which the outsole pieces 40 may be sectioned into heel portion pieces 40a and front portion pieces 40b.

[0034] In the present invention, the installation positions and number of the protrusions 20 are not limited. They may be evenly formed over the entire portions of the lower surface 11 of the midsole 10 or they may be selectively formed on either the heel portions or the front portion.

[0035] According to the present invention, since the outsole pieces 40 are attached to the protrusions 20, when the outsole pieces 40 are damaged or worn out, the damaged outsole pieces 40 may be exchanged with new ones on the bass of after sale services.

[0036] In addition, when the outsole pieces 40 are partly installed on the bottom surface 33 of the outsole 30, there may be further provided one or more outsole protrusions 34 which protrude in a downward direction from the bottom surface 33 of the outsole 30 where the outsole pieces 40 are not installed. In this case, the outsole pieces 34 and the outsole pieces 40 come to be evenly formed over the entire portions of the bottom surface 33 of the outsole 30.

[0037] Figure 4 is a cross sectional view schematically illustrating a state that a shoe sole is disassembled, which is shown for better understanding of the present invention. Figure 5 is a cross sectional view illustrating a state that a shoe sole is assembled, which is shown for better understanding of the present invention, wherein different from the actual shape, each component is drawn with a straight line.

[0038] As shown in Figure 4, in a state that the midsole 10, the outsole 30 and the outsole pieces 40a and 40b are separate, the protrusion 20 of the mid sole 10 is inserted in the hole 32 of the outsole 30, and the outsole piece 40 is attached to beneath the protrusion 20. The above described procedures are based on the earlier described manufacture method for a shoe sole.

[0039] In this case, as shown in Figure 5, the outsole pieces 40a and 40b are attached to the smooth protrusion 20 and are supported by the same, so each outsole piece 40a, 40b remains separated from the hard outsole 30 and has an independent cushioning function. For example, in case that the heel portion piece 40a comes into contact with a protruded portion of the ground, the heel portion piece 40a absorbs and attenuates the impacts independently without any help from the outsole 30, and on the contrary, when the front portion piece 40b comes into contact with a protruded portion of the ground, the front portion piece 40b absorbs and attenuates the impacts independently without any help from the outsole 30, as a result of which the flexibility and smoothness of the shoe sole can be greatly enhanced.

[0040] When the height of the protrusion 20 is lower than the height of the hole 32, the side surface of the outsole piece 40 comes into contact with an inner wall surface of the hole 32, so there may occur interference between the materials of the outsole (more specifically, between the outsole and the outsole piece), and the flexibility of the outsole piece 40 is restricted, which makes undesired results.

[0041] Therefore, as shown in the drawings, in order to enhance the flexibility and smoothness of the shoe sole, in the present invention, the height of the protrusion 20 is made higher than the height of the hole 32. When the mid sole 10 and the outsole 30 are attached to each other. When the protrusion 20 protrudes in a downward direction from the bottom surface 33 of the outsole 30, the outsole piece 40 becomes completely separated from the outsole 30, so the

flexibility is not restricted.

[0042] As the present invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, it should also be understood that the above-described examples are not limited by any of the details of the foregoing description, unless otherwise specified, but rather should be construed broadly within its spirit and scope as defined in the appended claims, and therefore all changes and modifications that fall within the meets and bounds of the claims, or equivalences of such meets and bounds are therefore intended to be embraced by the appended claims.

Legend of Reference Numbers

10: mid sole	11: bottom surface	12: upper layer
20: protrusion	20a: heel portion protrusion	
20b: front portion protrusion		21: mark
30: outsole	31: upper surface	32: hole
33: bottom surface	34: outsole protrusion	
40: outsole piece	40a: heel portion piece	
40b: front portion piece	41: mark	

Claims

1. A shoe sole, comprising:

a mid sole 10 that is disposed beneath an upper layer 12 of a shoe;
one or multiple protrusions 20 that protrudes in a downward direction from a lower surface 11 of the midsole;
an outsole 30 that includes an upper surface 31 attached to a lower surface 11 of the midsole and includes one or multiple holes 32 that is disposed in an inner side, the protrusion passing through the outsole piece 40; and
one or multiple outsole pieces 40 that are attached to beneath each protrusion,
wherein the height of the protrusion 20 is higher than the height of the hole 32, and when the midsole 10 and the outsole 30 are attached to each other, the protrusion 20 protrudes in a downward direction from a bottom surface of the outsole 30, and
wherein the midsole is smooth, and the outsole and the outsole piece are hard, and the outsole piece is attached to the soft midsole and is flexible without any help from the outsole.

2. The sole of claim 1, wherein the protrusion is formed at a heel portion of the midsole to support the heel portion of the foot bottom.

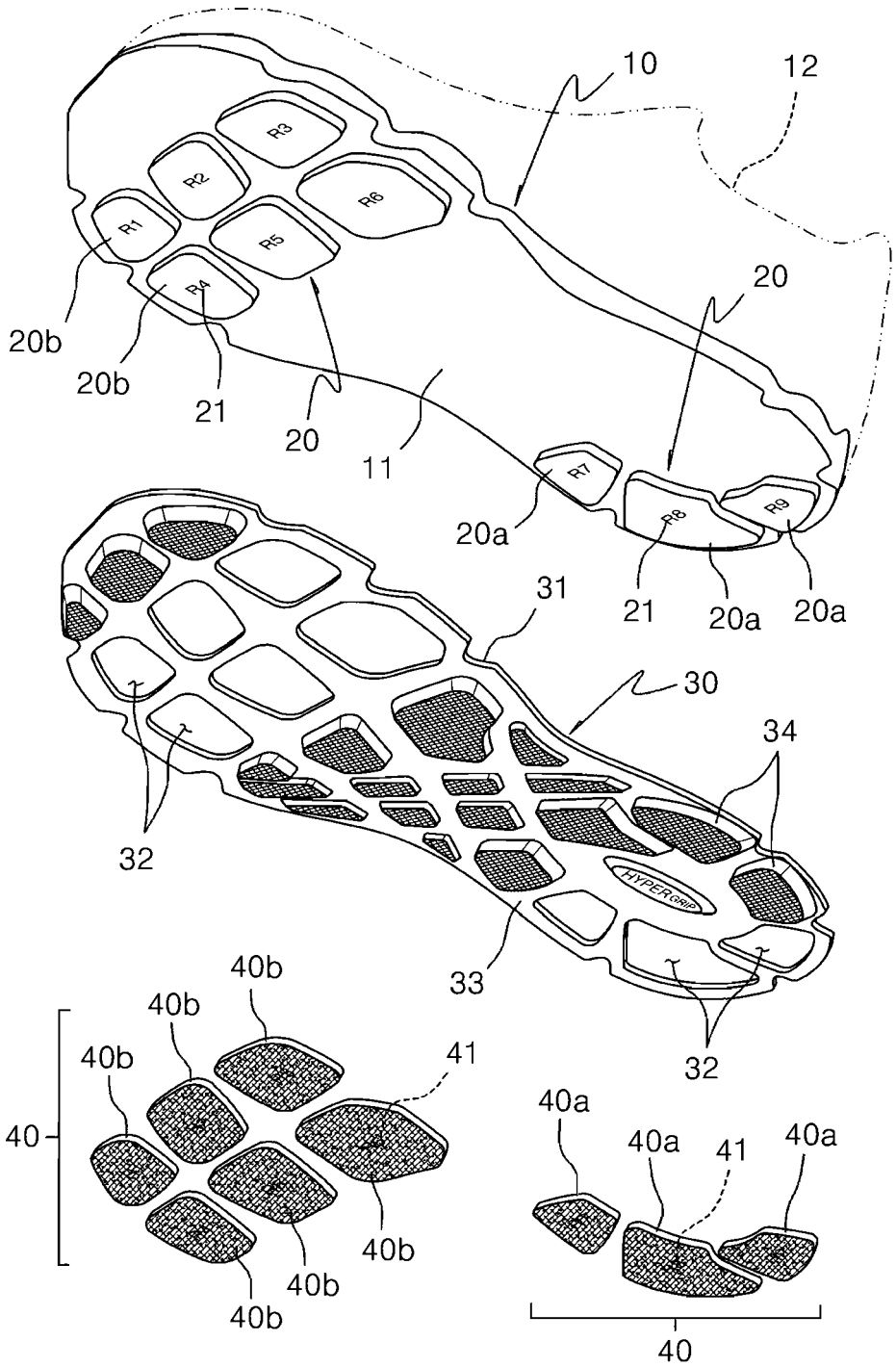
3. The sole of claim 1, wherein the protrusion is formed at a front portion of the midsole to support a front portion of the foot bottom.

4. The sole of claim 1, further comprising:

one or multiple outsole protrusions 34 that protrudes in a downward direction from the bottom surface 33 of the outsole.

5. The sole of claim 1, wherein when the protrusion and the outsole price are provided in multiple numbers, different marks 21 are marked on a lower surface of each protrusion, and different marks 41 are marked on an upper surface of each outsole piece for thereby differentiating the position of each protrusions.

Fig.1


10
12
R3
R2
R6
R1
R5
R4
20b
20b
21
20
11
20
R7
R8
R9
20a
21
20a
20a
31
30
34
32
HYPERGRIP
33
32
40b
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40b
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40
40b
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40b
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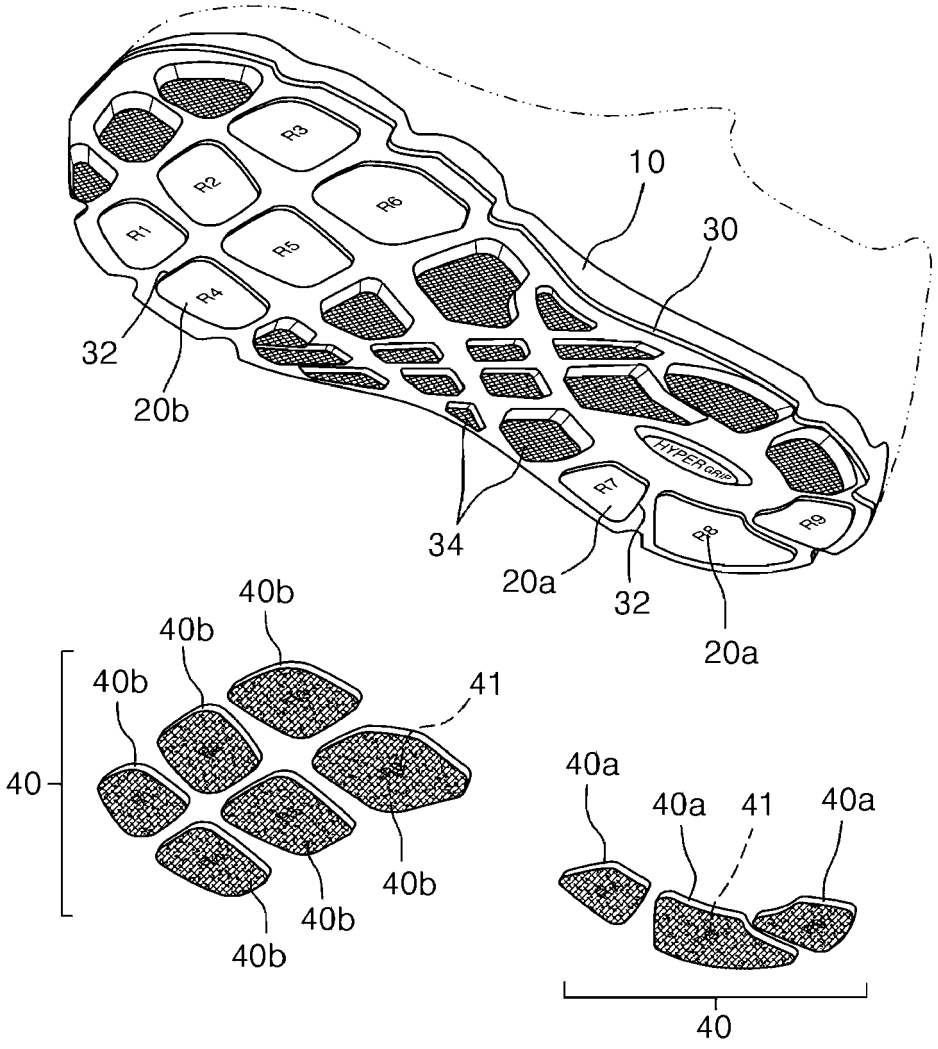
40a
41
40a
40

Fig.2


10
30
32
20b
34
20a
32
20a
R1
R2
R3
R4
R5
R6
R7
R8
R9
HYPERgrip
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40b
40b
41
40
40b
40b
40b
40a
40a
41
40a
40

Fig.3

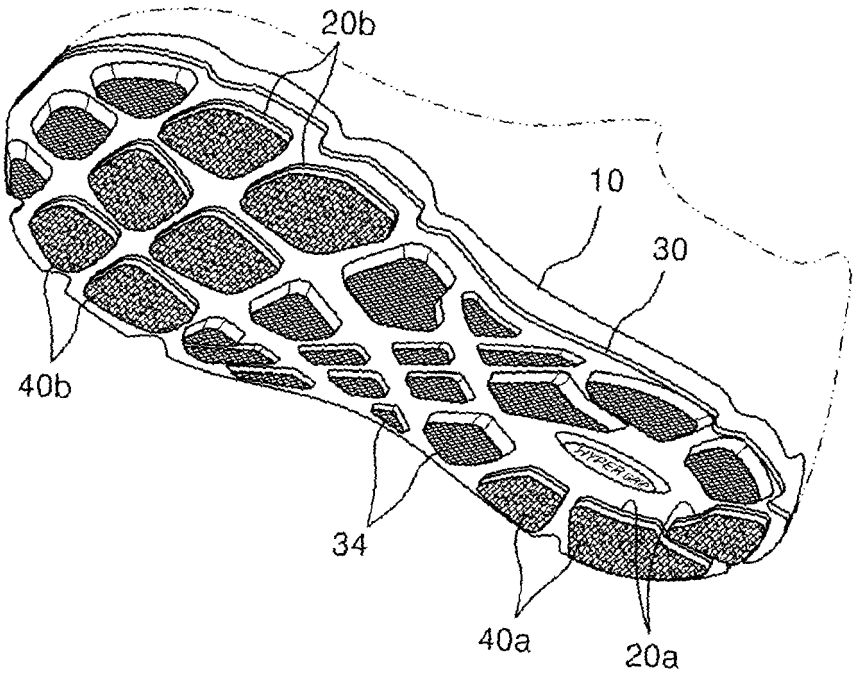


Fig.4

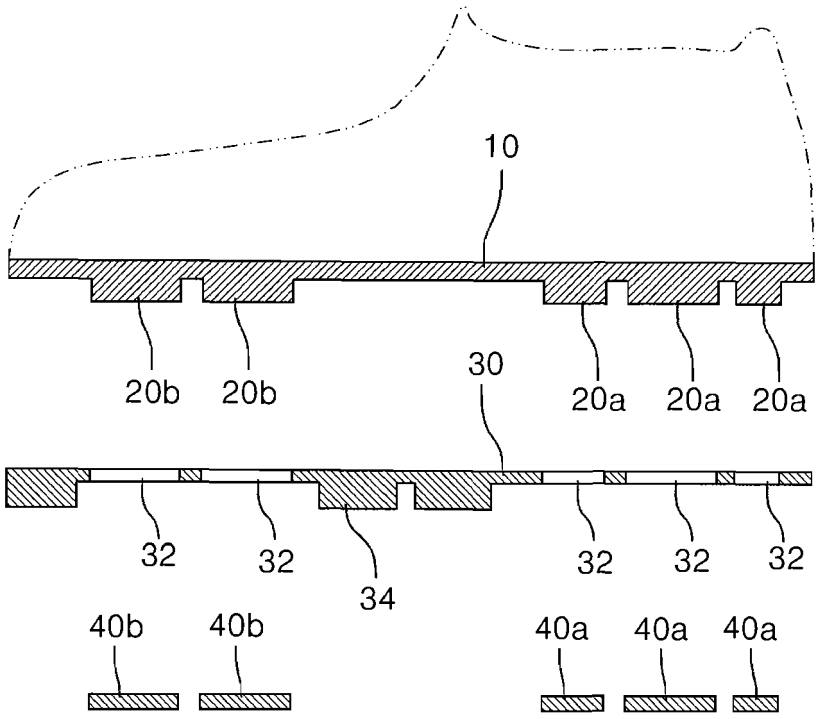
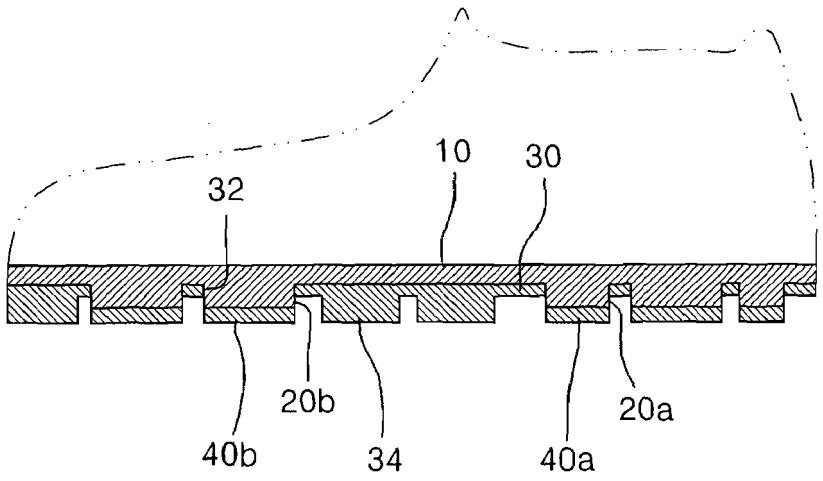


Fig.5



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EUROPEAN SEARCH REPORT

Application Number
EP 14 16 5685

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 5 367 791 A (GROSS ALEXANDER L [US] ET AL) 29 November 1994 (1994-11-29) * abstract; figures * * column 5, lines 16-23; 55-63 *	1-5	INV. A43B13/26 A43B13/12 A43B13/16
X	US 2011/277346 A1 (PEYTON LEE D [US] ET AL) 17 November 2011 (2011-11-17) * paragraphs [0039], [0047] - [0048]; figures 10-12 *	1-5	
X	US 2009/126230 A1 (MCDONALD STEVEN C [US] ET AL) 21 May 2009 (2009-05-21) * paragraphs [0030] - [0031]; figures *	1-5	
X	US 2011/277349 A1 (KIM DANIEL [KR]) 17 November 2011 (2011-11-17) * paragraphs [0202] - [0223]; figures 20-35 *	1-5	

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	10 October 2014	Jones, Mark

CATEGORY OF CITED DOCUMENTS

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