(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 013 260 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
22.01.2025 Bulletin 2025/04

(21) Application number: **20853308.3**

(22) Date of filing: **10.08.2020**

(51) International Patent Classification (IPC):
A43C 15/04 *(2006.01)* ***A43C 15/08*** *(2006.01)*
A43C 15/14 *(2006.01)* ***A43B 13/22*** *(2006.01)*
A43B 13/24 *(2006.01)*

(52) Cooperative Patent Classification (CPC):
A43B 13/22; A43B 13/24; A43C 15/04; A43C 15/08; A43C 15/14

(86) International application number:
PCT/CA2020/000100

(87) International publication number:
WO 2021/026631 (18.02.2021 Gazette 2021/07)

(54) NON-SLIP OUTSOLE FOR WINTER SHOES

RUTSCHFESTE LAUFSOHLE FÜR WINTERSCHUHE

SEMELLE D'USURE ANTIDÉRAPANTE POUR CHAUSSURES D'HIVER

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **15.08.2019 US 201962887006 P**

(43) Date of publication of application:
22.06.2022 Bulletin 2022/25

(73) Proprietor: **9271 8956 Quebec Inc-Les Agences Alain Knapp**
Blainville, QC J7B 1S8 (CA)

(72) Inventor: **KNAPP, Alain**
Québec J7B 1S8 (CA)

(74) Representative: **Ipsilon**
Le Centralis
63, avenue du Général Leclerc
92340 Bourg-la-Reine (FR)

(56) References cited:
KR-U- 880 021 188
KR-Y1- 200 381 269
RU-U1- 187 897
US-A- 4 745 692
US-B1- 6 360 455
US-B1- 6 675 504
US-B2- 7 269 916
US-B2- 7 836 610
US-B2- 8 256 144

- **ANONYMOUS: "Rubber Sole 'Sticks' To Ice: Vibram Arctic Grip Explained", GEAR JUNKIE, 7 March 2016 (2016-03-07), XP055792094, Retrieved from the Internet <URL:https://gearjunkie.com/footwear/vibram-arctic-grip-sole-for-ice> [retrieved on 20210331]**
- **ANONYMOUS: "Rubber Sole 'Sticks' To Ice: Vibram Arctic Grip Explained", GEAR JUNKIE, 7 March 2016 (2016-03-07), XP055792094, Retrieved from the Internet <URL:https://gearjunkie.com/footwear/vibram-arctic-grip-sole-for-ice> [retrieved on 20201014]**

EP 4 013 260 B1

Description

FIELD

[0001] The present disclosure generally relates to winter shoes. More specifically, the present disclosure concerns a non-slip outsole for winter shoes.

BACKGROUND

[0002] It is conventionally known to add spikes to boots or other winter shoes to improve the grip of the shoes on the icy ground. For long a time, the spikes were provided on a harness or another similar attach which is then attached to the boots or shoes. Nowadays, it is known to install a cleat system directly on a sole. Some of these systems, such as the one described in Korean Patent No. 200 381 269 Y1, issued to Seungho Kim on April 14, 2005, are movable between a deployed and a retracted position for the cleats. Such systems are found to be effective to provide a good traction on icy ground. A drawback is that they add non-negligible costs to the shoes. Moreover, if the cleat system is damage, they are difficult to change and/or costly to repair.

[0003] More recently, boots are come up on the market that integrates non-slip elements on the sole. Such elements are made of a polymer blend material, such as Vibram Arctic Grip™, that increases adherence to wet and dry ice compared to conventional rubber material.

[0004] Such non-slip elements are less costly than spikes to integrate to a sole but have been find less effective in preventing a user from losing their footing on a slippery road.

SUMMARY

[0005] According to the invention, there is provided outsole (10) for a shoe comprising:

a main tread to be secured to a shoe; the main tread having a sole portion and a heel portion;

characterized in that the main thread having both:

a) at least one granular non-slip element integrated to the main tread and being positioned within one of the sole and heel portions; and

b) a retractable crampon, including at least one spike (38), that is mounted to the other one of the sole and heel portions of the main tread; the retractable crampon being movable between a deployed position, wherein the at least one spike extends from the main tread, and a retracted position, wherein the at least one spike is prevented from contacting the ground by the main tread. According to another embodiment, there is provided a shoe equipped with such an outsole.

[0006] It is to be noted that the expression "non-slip element" is to be construed in the description and in the claims as including a granular or sufficiently small element that is integrated to another rubber or polymeric material during the molding thereof and that reacts with a snowy or icy ground to yield more adherence than the material it is integrated to.

[0007] Other objects, advantages, and features of the non-slip outsole for winter shoes will become more apparent upon reading the following non-restrictive description of preferred embodiments thereof, given by way of example only with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] In the appended drawings:

Figure 1 is a top plan view of the ground contacting side of the non-slip outsole for winter shoes according to a first illustrative embodiment;

Figure 2A is a cross-section taken along lines 2A,2B-2A,2B on Figure 1; the outsole being shown with the retractable crampon retracted; and

Figure 2B is a cross-section taken along lines 2A,2B-2A,2B on Figure 1; the outsole being shown with the retractable crampon deployed.

DETAILED DESCRIPTION

[0009] In the following description, similar features in the drawings have been given similar reference numerals, and in order not to weigh down the figures, some elements are not referred to in some figures if they were already identified in a precedent figure. Herein, it shall further be noted that, for avoiding unnecessary details obscuring the invention, only device structures and/or processing steps closely relevant to schemes according to the invention are shown in the accompanying drawings while omitting other details less relevant to the invention.

[0010] The use of the word "a" or "an" when used in conjunction with the term "comprising" in the claims and/or the specification may mean "one", but it is also consistent with the meaning of "one or more", "at least one", and "one or more than one". Similarly, the word "another" may mean at least a second or more.

[0011] As used in this specification and claim(s), the words "comprising" (and any form of comprising, such as "comprise" and "comprises"), "having" (and any form of having, such as "have" and "has"), "including" (and any form of including, such as "include" and "includes") or "containing" (and any form of containing, such as "contain" and "contains"), are inclusive or openended and do not exclude additional, un-recited elements.

[0012] A first illustrative embodiment of a non-slip outsole 10 for winter shoes will now be described with reference first to Figures 1 and 2A.

[0013] The outsole 10 comprises a main tread 12, a retractable cleat system 14 and a plurality of non-slip elements 16.

[0014] The main tread 12 is a generally arc shaped one-piece body that is made of a rubber material. According to another illustrative embodiment, the main tread 12 can have another shape than illustrated and made of two or more pieces. It is to be noted that the expression "rubber material" is to be construed in the description and in the claim as including rubber, any resilient material including rubber and a polymeric material having substantially the same properties with regards to resiliency and durability.

[0015] The main tread 12 includes a sole portion 18, a heel portion 20 and a shank portion 22 therebetween. The sole and shank portions 18 and 22 have a thickness that is less than the thickness of the heel portion 20 so as to be flexible.

[0016] The main tread 12 is further shaped to define a central portion 24 that extends through the sole, shank and heel portions 18, 22 and 20 and a peripheral portion 26 that surrounds the central portion 24.

[0017] The sole and heel portions 18 and 20 comprise respective lugs 28 and 30. The lugs 28 on the sole portion 18 has a same first height and the lugs 30 on the heel portion 20 have a same second height, which is greater than the first height. According to another embodiment, the lugs 28 and 30 are differently shaped and define another pattern than illustrated.

[0018] The non-slip elements 16 are in the central portion 24 of the sole portion 18. They are made of a polymer blend material, such as Vibram Arctic Grip™, that increases adherence to wet and dry ice compared to conventional rubber material. The non-slip elements 16 are integrally integrated to the main tread 12 during the molding thereof. According to another embodiment, the non-slip material is made of another material which promotes additional adherence to wet and/or dry ice compared to rubber.

[0019] The non-slip elements 16 are not limited to being in the central portion 24 of the main thread 12, some or all of the non-slip elements 16 can also be located on the peripheral portion 26.

[0020] The cleat system 14 is configured and sized to fit within the central portion 24 of the heel portion 20. According to another embodiment (not shown), the cleat system 14 is at least partially located on the peripheral portion 26 of the heel portion 20.

[0021] The cleat system 14 comprises a generally rectangular bracket 32 removably mounted to the heel portion 20 via four (4) screws 33 and a crampon 34 that is pivotably mounted to the bracket 32 for pivotal movement between a retracted position (see Figure 2A) and a deployed position (see Figure 2B).

[0022] More specifically, the crampon 34 includes a semi-circular portion 36 having spikes 38 on a first side face 40 thereof and a connecting portion 42 that extends from the semi-circular portion 36. The connecting portion 42 includes a pin 44 that is pivotably received at its longitudinal ends in respective lodgings 46 defined, with the heel portion 20, by small U-shaped deformations in the bracket 32.

[0023] The heel portion 20 includes a first arcuate recess (not shown) on a side thereof that is opposite the sole portion 18 and a second arcuate recess (not shown) on the opposite side thereof.

[0024] The first arcuate recess is positioned and shaped to receive the semi-circular portion 36 in its deployed position, while the second arcuate recess is positioned and shaped to receive the portion 36 in its retracted position.

[0025] As it can be seen in Figures 2B and 2A respectively, in the deployed position the spikes 38 extends beyond the lugs 30, while the whole cleat system 16 is located deeper than the lugs 30 when the crampon 34 is in its retracted position so as to be selectively protected from the ground.

[0026] The semi-circular portion 36 of the crampon 34 further includes a tab 47 that is provided to help moving the crampon 34 between the retracted and deployed positions thereof.

[0027] The cleat system 16 is made of stainless steel. According to other embodiments, the cleat system 16 or parts thereof can be made of another material such as Kevlar™ and aluminum.

[0028] The cleat system 16 is not limited to the illustrated embodiment. For example, the configuration and sized of the crampon 34 can be different than illustrated. Also, another mechanism than the pivotably mounting of the crampon 34 to the bracket 32 can be provided to move the crampon between retracted and deployed position. The configuration and size of the bracket 32 may also be different than illustrated.

[0029] While the cleat system 16 has been described as removably mounted to the heel portion 20 of the outsole 10, it can also be fixedly mounted thereto, for example during molding of the main tread 12.

[0030] The non-slip elements 16 are advantageously positioned on the portion of the outsole 10 that receives most of the pressure from the foot towards the ground (not shown) during the flexing and pushing thereof while walking. The non-slip elements 16 are believed to be more efficient than similar elements made of rubber to promote adherence of the outsole on icy ground and less costly and simpler than metal spikes.

[0031] On the other hand, the cleat system 14 is advantageously positioned on the heel portion 20 of the outsole 10, which is the part of a shoe (not shown) that receives most of the pressure towards the ground when a walker (not shown) slips and loses its footing. The additional grip provided by the spikes 38 of the cleat system 14 compared to a traditional rubber heel, or even non-slip elements 16, has been found to be sufficient to prevent

slipping on most icy ground for most users.

[0032] The outsole 10 can be generally configured and size so as to be mounted to any type, configuration and size of shoes, including without limitation, winter boots, winter shoes, running shoes, etc.

[0033] Shoes equipped with the outsole 10 may of course also include an insole and an outsole.

[0034] It is to be noted that many modifications could be made to the outsole 10 described hereinabove and illustrated in the appended drawings. For example:

- while the heel portion 20 has been illustrated as being thicker than the sole portion 18, it can be of the same or lesser thickness;
- the shank portion of the main tread can be omitted;
- the number and/or configuration of the non-slip elements 16 may be different than illustrated;
- the positions of the cleat system 14 and non-slip elements 16 can be reversed.

[0035] Although a non-slip sole for winter shoes has been described hereinabove by way of illustrated embodiments thereof, it can be modified. It is therefore to be understood that numerous modifications may be made to the illustrative embodiments and that the scope of the claims should not be limited by the preferred embodiment but should be given the broadest interpretation consistent with the description as a whole.

Claims

1. An outsole (10) for a shoe comprising:

a main tread (12) to be secured to a shoe; the main tread having a sole portion (18) and a heel portion (20);
characterized in that the main tread having both:

a) at least one granular non-slip element (16) integrated to the main tread and being positioned within one of the sole and heel portions; and
b) a retractable crampon (34), including at least one spike (38), that is mounted to the other one of the sole and heel portions of the main tread; the retractable crampon being movable between a deployed position, wherein the at least one spike extends from the main tread, and a retracted position, wherein the at least one spike is prevented from contacting the ground by the main tread.

2. The outsole of claim 1, wherein the at least one granular non-slip element is positioned within the sole portion and the retractable crampon is mounted to the heel portion.

3. The outsole of claim 1, wherein the at least one granular non-slip element includes a plurality of non-slip-elements (16).

4. The outsole of claim 1, wherein the at least one granular non-slip element is made of a polymer blend material.

5. The outsole of claim 4, wherein the polymer blend material is Vibram Arctic Grip™.

6. The outsole of claim 1, wherein the retractable crampon is mounted to the other one of the sole and heel portions of the main tread via a bracket (32).

7. The outsole of claim 6, wherein the bracket is removably secured to the other one of the sole and heel portions of the main tread via fasteners (33).

8. The outsole of claim 6, wherein the main tread further having a central portion (24) that extends along both the sole and heel portions and a peripheral portion (26) that surrounds the central portion; the bracket being positioned on the central portion of the heel portion.

9. The outsole of claim 6, wherein the retractable crampon is pivotally secured to the bracket so as to be movable between the retracted and deployed positions.

10. The outsole of claim 9, wherein the retractable crampon includes a spiked portion (38)
having two side faces (40) and including the at least one spike on one of the two side faces, and a connecting portion (42) that extends from the spiked portion and that pivotally connects the spiked portion to the bracket.

11. The outsole of claim 10, wherein the spiked portion further includes a tab (47) to help moving the retractable crampon between the retracted and deployed positions.

12. The outsole of claim 1, wherein the main tread includes a recess for receiving the retractable crampon in its retracted position.

13. The outsole of claim 1, wherein the main tread further having a central portion that extends along both the sole and heel portions and a peripheral portion that surrounds the central portion; the at least one granular non-slip element being positioned within the

central portion of the one of the sole and heel portions thereof.

14. The outsole of claim 1, wherein the main tread is made of a rubber material.

15. The outsole of claim 1, wherein the main tread further includes a shank portion (22) between the sole and heel portions.

16. The outsole of claim 1, wherein at least one of the sole and heel portions comprises lugs (28, 30).

17. A shoe equipped with the outsole of claim 1.

Patentansprüche

1. Laufsohle (10) für einen Schuh, umfassend:

eine Hauptlauffläche (12), die an einem Schuh zu befestigen ist, wobei die Hauptlauffläche einen Sohlenabschnitt (18) und einen Absatzabschnitt (20) aufweist,
dadurch gekennzeichnet, dass die Hauptlauffläche sowohl:

a) mindestens ein körniges rutschfestes Element (16), das in die Hauptlauffläche integriert und in dem Sohlen- und/oder Absatzabschnitt positioniert ist, als auch
b) ein einziehbares Steigeisen (34) aufweist, das mindestens einen Spike (38) aufweist, der an dem jeweils anderen des Sohlen- und des Absatzabschnitts der Hauptlauffläche montiert ist, wobei das einziehbare Steigeisen zwischen einer ausgebrachten Position, in der sich der mindestens eine Spike aus der Hauptlauffläche erstreckt, und einer eingezogenen Position, in der verhindert wird, dass der mindestens eine Spike den Boden über die Hauptlauffläche berührt, beweglich ist.

2. Laufsohle nach Anspruch 1, wobei das mindestens eine körnige rutschfeste Element in dem Sohlenabschnitt positioniert ist und das einziehbare Steigeisen an dem Absatzabschnitt montiert ist.

3. Laufsohle nach Anspruch 1, wobei das mindestens eine körnige rutschfeste Element eine Vielzahl von rutschfesten Elementen (16) aufweist.

4. Laufsohle nach Anspruch 1, wobei das mindestens eine körnige rutschfeste Element aus einem Polymergemischmaterial hergestellt ist.

5. Laufsohle nach Anspruch 4, wobei das Polymergemischmaterial Vibram Arctic Grip™ ist.

6. Laufsohle nach Anspruch 1, wobei das einziehbare Steigeisen über eine Halterung (32) an dem jeweils anderen des Sohlen- und des Absatzabschnitts der Hauptlauffläche montiert ist.

7. Laufsohle nach Anspruch 6, wobei die Halterung über Befestigungselemente (33) entfernbar an dem jeweils anderen des Sohlen- und des Absatzabschnitts der Hauptlauffläche befestigt ist.

8. Laufsohle nach Anspruch 6, wobei die Hauptlauffläche ferner einen mittleren Abschnitt (24), der sich entlang sowohl des Sohlen- als auch des Absatzabschnitts erstreckt, und einen den mittleren Abschnitt umgebenden Umfangsabschnitt (26) aufweist, wobei die Halterung auf dem mittleren Abschnitt des Absatzabschnitts positioniert ist.

9. Laufsohle nach Anspruch 6, wobei das einziehbare Steigeisen schwenkbar an der Halterung befestigt ist, um zwischen der eingezogenen und der ausgebrachten Position beweglich zu sein.

10. Laufsohle nach Anspruch 9, wobei das einziehbare Steigeisen einen Spike-Abschnitt (38) aufweist, der zwei Seitenflächen (40) und den mindestens einen Spike an einer der zwei Seitenflächen aufweist, sowie einen Verbindungsabschnitt (42), der sich von dem Spike-Abschnitt erstreckt und der den Spike-Abschnitt schwenkbar mit der Halterung verbindet.

11. Laufsohle nach Anspruch 10, wobei der Spike-Abschnitt ferner eine Lasche (47) aufweist, um das Bewegen des einziehbaren Steigeisens zwischen der eingezogenen und der ausgebrachten Position zu unterstützen.

12. Laufsohle nach Anspruch 1, wobei die Hauptlauffläche eine Aussparung zur Aufnahme des einziehbaren Steigeisens in seiner eingezogenen Position aufweist.

13. Laufsohle nach Anspruch 1, wobei die Hauptlauffläche ferner einen mittleren Abschnitt, der sich sowohl entlang des Sohlen- als auch des Absatzabschnitts erstreckt, und einen den mittleren Abschnitt umgebenden Umfangsabschnitt aufweist, wobei das mindestens eine körnige rutschfeste Element in dem mittleren Abschnitt des Sohlen- oder des Absatzabschnitts davon positioniert ist.

14. Laufsohle nach Anspruch 1, wobei die Hauptlauffläche aus einem Kautschukmaterial hergestellt ist.

15. Laufsohle nach Anspruch 1, wobei die Hauptlauffläche ferner einen Gelenkabschnitt (22) zwischen

dem Sohlen- und dem Absatzabschnitt aufweist.

16. Laufsohle nach Anspruch 1, wobei der Sohlen- und/oder der Absatzabschnitt Laschen (28, 30) umfassen.

17. Schuh, der mit der Laufsohle nach Anspruch 1 ausgestattet ist.

Revendications

1. Semelle d'usure (10) pour une chaussure comprenant :

une semelle principale (12) destinée à être fixée à une chaussure ; la semelle principale comportant une partie semelle (18) et une partie talon (20) ;
caractérisée en ce que la semelle principale comporte à la fois :

a) au moins un élément antidérapant granulaire (16) intégré à la semelle principale et placé dans l'une des parties semelle et talon ; et
b) un crampon rétractable (34), comprenant au moins une pointe (38), qui est adapté sur l'autre des parties semelle et talon de la semelle principale ; le crampon rétractable étant déplaçable entre une position déployée, dans laquelle l'au moins une pointe s'étend à partir de la semelle principale, et une position rétractée, dans laquelle la semelle principale empêche l'au moins une pointe d'entrer en contact avec le sol.

2. Semelle d'usure selon la revendication 1, dans laquelle l'au moins un élément antidérapant granulaire est placé dans la partie semelle et le crampon rétractable est adapté sur la partie talon.

3. Semelle d'usure selon la revendication 1, dans laquelle l'au moins un élément antidérapant granulaire comprend une pluralité d'éléments antidérapants (16).

4. Semelle d'usure selon la revendication 1, dans laquelle l'au moins un élément antidérapant granulaire est fait d'un matériau composé d'un mélange de polymères.

5. Semelle d'usure selon la revendication 4, dans laquelle le matériau composé d'un mélange de polymères est Vibram Arctic Grip™.

6. Semelle d'usure selon la revendication 1, dans laquelle le crampon rétractable est adapté sur l'autre des parties semelle et talon de la semelle principale au moyen d'un support (32).

7. Semelle d'usure selon la revendication 6, dans laquelle le support est fixé de manière amovible à l'autre des parties semelle et talon de la semelle principale au moyen d'attaches (33).

8. Semelle d'usure selon la revendication 6, dans laquelle la semelle principale comporte, en outre, une partie centrale (24) qui s'étend le long à la fois de la partie semelle et de la partie talon et une partie périphérique (26) qui entoure la partie centrale ; le support étant placé sur la partie centrale de la partie talon.

9. Semelle d'usure selon la revendication 6, dans laquelle le crampon rétractable est fixé de manière pivotante au support de façon à être déplaçable entre les positions rétractée et déployée.

10. Semelle d'usure selon la revendication 9, dans laquelle le crampon rétractable comprend une partie à pointe (38) comportant deux faces latérales (40) et comprenant l'au moins une pointe sur l'une des deux faces latérales, et une partie de raccordement (42) qui s'étend à partir de la partie à pointe et raccorde de manière pivotante la partie à pointe au support.

11. Semelle d'usure selon la revendication 10, dans laquelle la partie à pointe comprend, en outre, une languette (47) aidant à déplacer le crampon rétractable entre les positions rétractée et déployée.

12. Semelle d'usure selon la revendication 1, dans laquelle la semelle principale comprend un renfoncement destiné à recevoir le crampon rétractable dans sa position rétractée.

13. Semelle d'usure selon la revendication 1, dans laquelle la semelle principale comporte, en outre, une partie centrale qui s'étend le long à la fois de la partie semelle et de la partie talon et une partie périphérique qui entoure la partie centrale ; l'au moins un élément antidérapant granulaire est placé dans la partie centrale de ladite une des parties semelle et talon de celle-ci.

14. Semelle d'usure selon la revendication 1, dans laquelle la semelle principale est faite d'un matériau composé de caoutchouc.

15. Semelle d'usure selon la revendication 1, dans laquelle la semelle principale comprend, en outre, une partie cambrure (22) entre les parties semelle et talon.

16. Semelle d'usure selon la revendication 1, dans la-

quelle au moins une des parties semelle et talon comprend des proéminences (28, 30).

17. Chaussure équipée de la semelle d'usure selon la revendication 1.

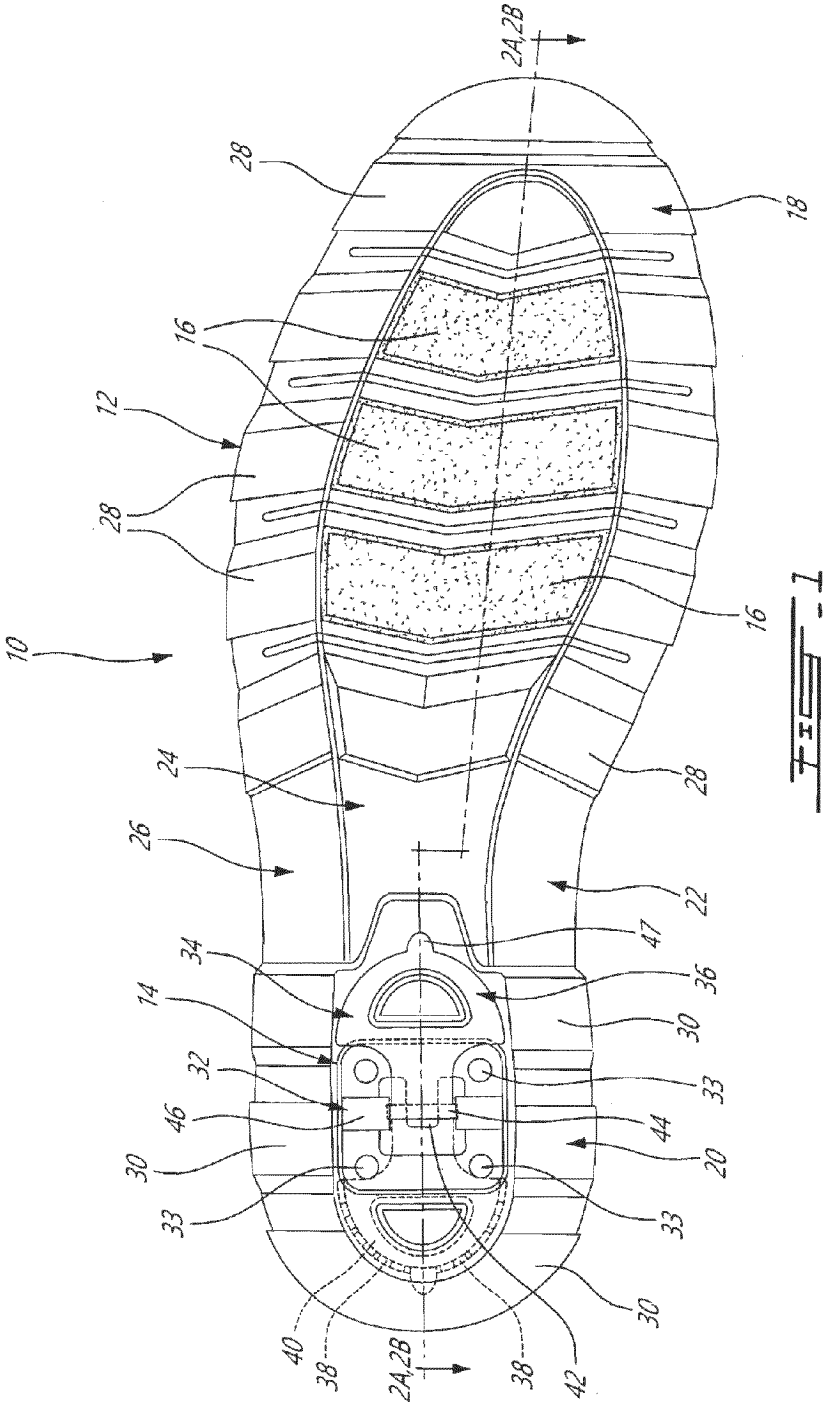
24,28
28
18
16
12
28
16
10
24
28
26
22
47
34
36
14
30
32
33
46
44
30
20
33
33
30
40
38
24,28
38
42

Fig - 1

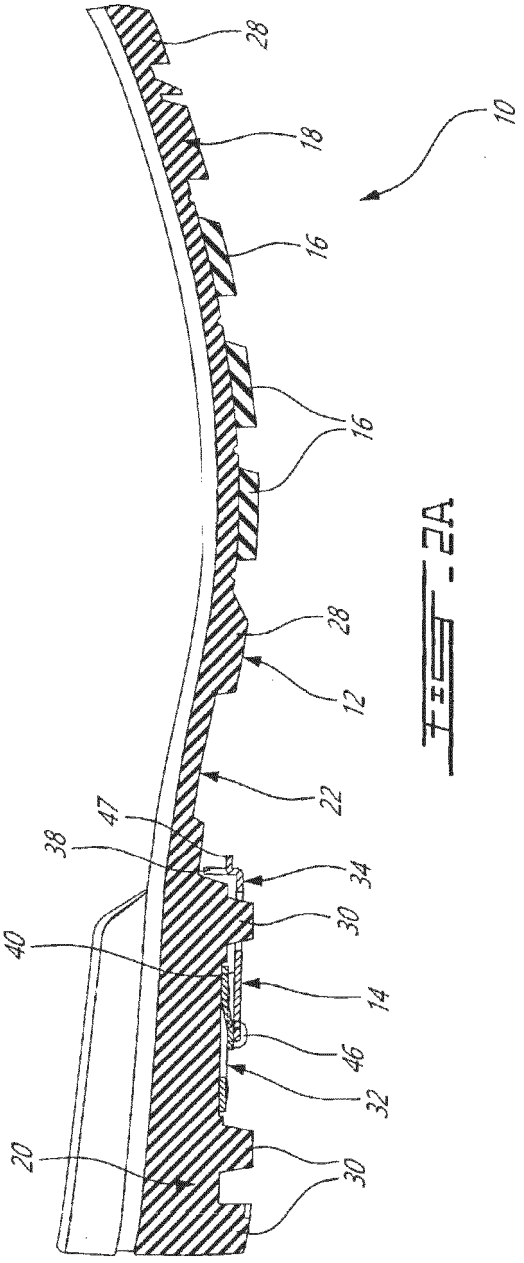

FIG - 2A

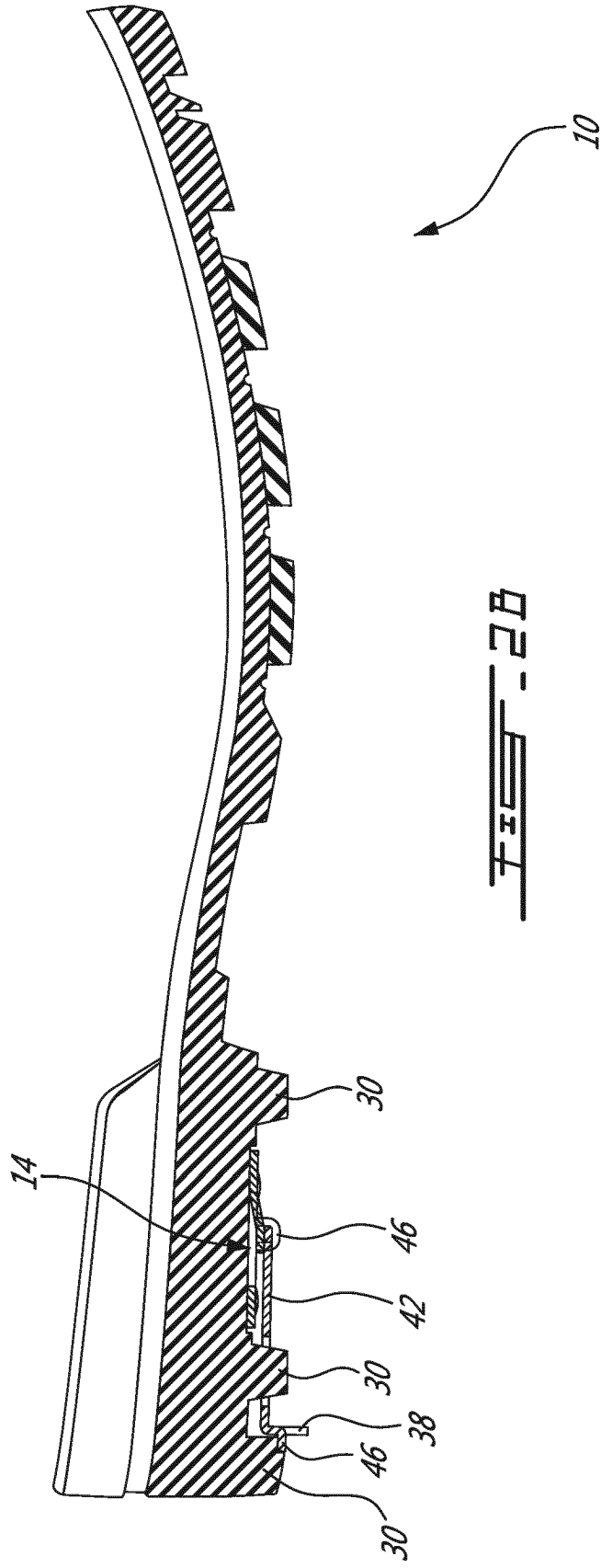

FIG. 2B

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- KR 200381269 Y1, Seungho Kim **[0002]**