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(54) BOOT WITH INCREASED STABILITY

(57) A boot (100) includes an outsole (10) having a bottom surface (12) configured to contact the ground, and a baseboard (40) configured to support a wearer's foot and having an upper surface (41) defined by a forefoot portion (44), an arch portion (46), and a heel portion (48), the upper surface (41) of the baseboard (40) defining an outer perimeter (43). When the boot (100) is at rest on a flat surface, a maximum height (48H) of the heel portion (48) of the baseboard (40) above the flat surface is smaller than a maximum height (46H) of the arch portion (46) of the baseboard (40) above the flat surface. The boot (100) can include an upper (50) secured to the baseboard (40) at or below the outer perimeter (43) of the upper surface (41) of the baseboard (40), and a footbed (60) having an upper surface (61) configured to contact a wearer's foot and a lower surface (62) that substantially matches the upper surface (41) of the baseboard (40).

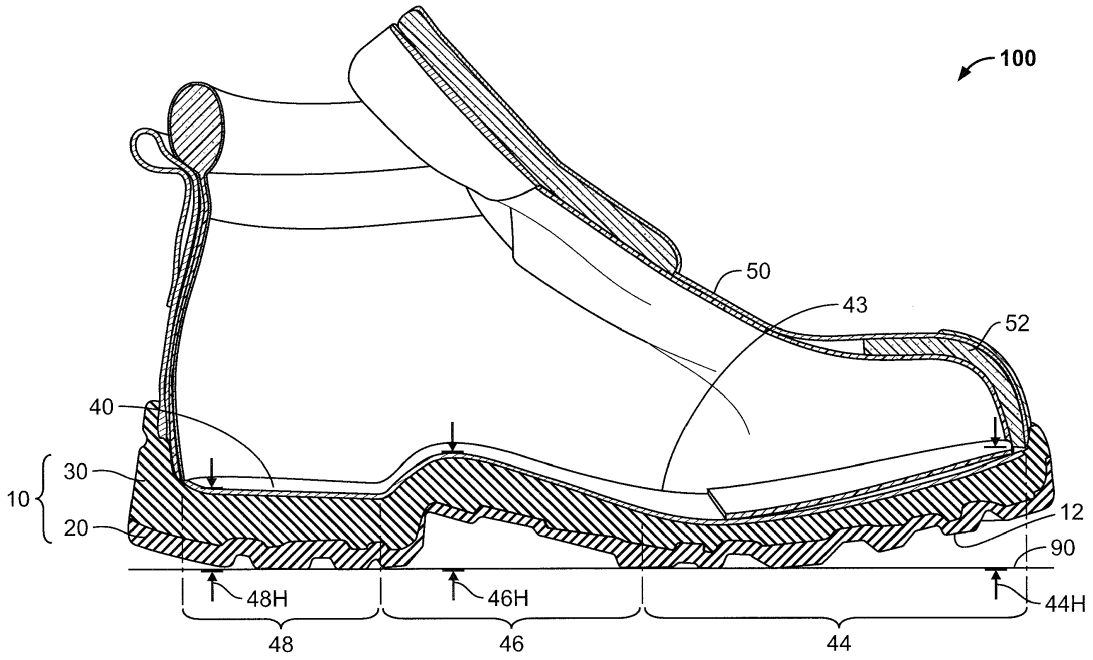

FIG. 1

EP 3 590 377 A1

Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application claims the benefit of the filing date of U.S. Patent Application No. 16/027,802 filed July 5, 2018, the disclosure of which is hereby incorporated herein by reference.

BACKGROUND OF THE INVENTION

[0002] The present inventions relate to footwear, and boots in particular, having improved performance. More particularly, the present inventions relate to boots having a contoured baseboard with a recessed heel portion and a lower connection between the upper and the baseboard to lower the center of gravity of the boot for increased stability and durability.

[0003] Conventional boot designs typically include thick, sturdy outsoles to match the rugged style and use of the boot. While this increases durability, it can negatively impact flexibility and stability of the boot due to the location and height of the dense outsole material at which the upper of the boot is attached. Attempts have been made to replace cavities of material of the outsole with softer or lighter material. However, these designs suffer from uneven support across the width of the shoe due to the variable nature of the profile of the outsole, with outer portions having greater thickness and inner, central portions having lesser thickness. These designs also leave the connection between the upper and the outsole at a relatively high location around the boot, minimizing the effect to which the upper can provide additional stability to the user.

[0004] Further improvement in boot design is needed to overcome these deficiencies. In particular, there is a need for a boot having a lower center of gravity while maintaining a high level of support and comfort with enhanced stability.

BRIEF SUMMARY OF THE INVENTION

[0005] A first aspect of the present invention is a boot including an outsole having a bottom surface configured to contact the ground, and a baseboard configured to support a wearer's foot and having an upper surface defined by a forefoot portion, an arch portion, and a heel portion, the upper surface of the baseboard defining an outer perimeter, wherein when the boot is at rest on a flat surface, a maximum height of the heel portion of the baseboard above the flat surface is smaller than a maximum height of the arch portion of the baseboard above the flat surface.

[0006] A second aspect of the present invention is a boot including an outsole having a bottom surface configured to contact the ground, and a baseboard configured to support a wearer's foot and having an upper surface defined by a forefoot portion, an arch portion, and a heel portion, the upper surface of the baseboard defining an outer perimeter, wherein when the boot is at rest on a flat surface, a height of the entire heel portion of the baseboard above the flat surface is smaller than a height of the entire arch portion of the baseboard above the flat surface.

[0007] A third aspect of the present invention is a boot including an outsole having a bottom surface configured to contact the ground, and a baseboard configured to support a wearer's foot and having an upper surface defined by a forefoot portion, an arch portion, and a heel portion, the upper surface of the baseboard defining an outer perimeter, wherein when the boot is at rest on a flat surface, a height of the outer perimeter at the heel portion of the baseboard above the flat surface is smaller than a height of the outer perimeter at the arch portion of the baseboard above the flat surface.

[0008] In accordance with other embodiments of the first, second, and third aspects, the boot may further include an upper secured to the baseboard at or below the outer perimeter of the upper surface of the baseboard. The boot may further include an upper secured to the outer perimeter of the upper surface of the baseboard at the arch portion and at the heel portion.

[0009] The boot may further include a footbed having an upper surface configured to contact a wearer's foot and a lower surface that substantially matches the upper surface of the baseboard. A side surface of the footbed extending between the upper and lower surfaces thereof may substantially match an adjacent surface of the upper.

[0010] The outsole may be comprised of a treadsole configured to contact the ground and a midsole configured to contact the baseboard. The treadsole and the midsole may be comprised of different materials. The baseboard may be more rigid than the treadsole, and the treadsole may be more rigid than the midsole. The baseboard may be comprised of a polymer, which may be nylon. The entire baseboard may have a substantially constant thickness. The upper surface of the baseboard and a lower surface of the baseboard may have substantially identical shapes. The baseboard may include puncture protection in accordance with ASTM, CSA, Nom 113, and ISO safety standards.

[0011] A fourth aspect of the present invention is a boot including an outsole having a bottom surface configured to contact the ground, a baseboard configured to support a wearer's foot and having an upper surface defining a forefoot portion, an arch portion, and a heel portion, the upper surface of the baseboard defining an outer perimeter, and an upper secured to the outer perimeter of the baseboard at the arch portion and the heel portion along a continuous seam, wherein when the boot is at rest on a flat surface, a maximum height of the seam above the flat surface at the heel portion is smaller than a maximum height of the seam above the flat surface at the arch portion. In another embodiment, when the boot is at rest on a flat surface, a maximum height of the seam above

the flat surface at the forefoot portion is smaller than the maximum height of the seam above the flat surface at the arch portion.

[0012] A fifth aspect of the present invention is a boot including an outsole having a bottom surface configured to contact the ground, a baseboard configured to support a wearer's foot and having an upper surface defining a forefoot portion, an arch portion, and a heel portion, the upper surface of the baseboard defining an outer perimeter, and an upper secured to the outer perimeter the baseboard at the arch portion and the heel portion, wherein when the boot is at rest on a flat surface, a maximum distance between the upper and the flat surface at the heel portion is smaller than a maximum distance between the upper and the flat surface at the arch portion. In another embodiment, when the boot is at rest on a flat surface, a maximum distance between the upper and the flat surface at the forefoot portion is smaller than the maximum distance between the upper and the flat surface at the arch portion.

[0013] A sixth aspect of the present invention is a boot including an outsole having a bottom surface configured to contact the ground, a baseboard configured to support a wearer's foot and having an upper surface defined by a forefoot portion, an arch portion, and a heel portion, wherein the upper surface consists of first and second continuous surfaces, the first continuous surface defined by a concave surface at the forefoot portion and a convex surface at the arch portion, and the second continuous surface defined by a substantially flat surface at the heel portion, the first and second continuous surfaces joined at a linear edge of the upper surface that separates the arch portion from the heel portion, wherein when the boot is at rest on a flat surface, a highest point of the convex surface at the arch portion above the flat surface is higher than all of the substantially flat surface at the heel portion above the flat surface.

[0014] Other variations of the embodiments of the fourth, fifth, and sixth aspects may be as described above in connection with the first, second, and third aspects.

[0015] A seventh aspect of the present invention is a footbed for use in a boot including an upper surface configured to contact a wearer's foot, and a lower surface defining a forefoot portion, an arch portion, and a heel portion, wherein when the footbed is at rest on a flat surface, the heel portion and the forefoot portion contact the flat surface and the arch portion is raised above the flat surface. In accordance with other embodiments of the seventh aspect, a thickness between the upper surface and the lower surface at the heel portion may be greater than both a thickness between the upper surface and the lower surface at the arch portion and a thickness between the upper surface and the lower surface at the forefoot portion. The thickness between the upper surface and the lower surface at the arch portion may be greater than the thickness between the upper surface and the lower surface at the forefoot portion.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016]

FIG. 1 is a side elevational sectional view of a boot in accordance with one embodiment of the present invention.

FIG. 2 is an enlarged portion of the view shown in FIG. 1.

FIG. 3 is a top perspective sectional view of the boot shown in FIG. 1.

FIG. 4 is a side elevational sectional view of the boot shown in FIG. 1 including a footbed.

FIG. 5 is a side elevational view of the boot shown in FIG. 1.

FIG. 6 is a top perspective view of the footbed boot shown in FIG. 4.

FIG. 7 is a bottom perspective view of the footbed boot shown in FIG. 4.

DETAILED DESCRIPTION

[0017] In describing the preferred embodiments of the subject illustrated and to be described with respect to the drawings, specific terminology will be used for the sake of clarity. However, the invention is not intended to be limited to any specific terms used herein, and it is to be understood that each specific term includes all technical equivalents that operate in a similar manner to accomplish similar purpose.

[0018] A first embodiment of a boot 100 is depicted in FIGS. 1-7. Among other aspects, boot 100 includes an outsole 10, a baseboard 40, an upper 50, and a footbed 60.

[0019] Outsole 10 is the lowermost portion of the boot 100 and has a bottom surface 12 configured to contact the ground, represented by a flat surface 90 in FIG. 1. The outsole 10 is made up of a treadsole 20 and a midsole 30. Treadsole 20 includes bottom surface 12, which contacts the ground and is constructed of durable polymer material in order to maintain flexibility and endure normal wear and usage without wearing away. Materials of which treadsole 20 can be made include EVA, polyurethane, thermal plastic urethane, thermal plastic rubber, blown rubber, expanded thermal plastic urethane, polyolefin, and the like. Midsole 30 is positioned above the treadsole 20 to provide cushioning for boot 100 between treadsole 20 and baseboard 40. Midsole 30 is preferably comprised of a different, less rigid material than that of treadsole 20, and is configured to balance its purposes of providing stability to the sole of the boot and to absorb and dissipate impact to the wearer's foot when the boot strikes the ground or another object. Midsole 30 can be constructed of various materials, including EVA, polyurethane, thermal plastic urethane, thermal plastic rubber, blown rubber, expanded thermal plastic urethane, polyolefin, and the like. Preferably, the material of treadsole 20 makes it more rigid than midsole 30.

[0020] Baseboard 40 is disposed above outsole 10 so that it is configured to support a wearer's foot. As shown in FIGS. 1 and 3, baseboard 40 includes a contoured upper surface 41 outlined by an outer perimeter 43 and defined by a forefoot portion 44, an arch portion 46, and a heel portion 48, which three portions form the entire upper surface 41. In other words, upper surface 41 of baseboard 40 consists of only first and second continuous surfaces 45, 47 that are joined at a linear edge 49. First continuous surface 45 consists of forefoot portion 44 as a concave surface and arch portion 46 as a convex surface, these references being made from the perspective of looking at boot 100 from above. Second continuous surface 47 is separated from the first continuous surface by linear edge 49 and consists of a substantially flat surface coinciding with heel portion 48. That is, the first and second continuous surfaces 45, 47 are separated by linear edge 49, which delineates arch portion 46 from heel portion 48. Each of first and second continuous surfaces 45, 47 is generally smooth and uninterrupted without any abrupt edges or creases. Linear edge 49 represents and abrupt edge or crease that separates first and second continuous surfaces 45, 47.

[0021] A lower surface 42 of baseboard 40 is shaped substantially identically to upper surface 41 such that the entire baseboard 40 has a substantially constant thickness from edge to edge and throughout. Baseboard 40 is a formed insole preferably comprised of a resin impregnated nonwoven, cellulose resin impregnated substrate, polymeric material, which can be nylon as well as a combination of the materials, so that it is relatively rigid and provides support to the wearer's foot. The material of baseboard 40 makes it more rigid than both treadsole 20 and midsole 30. Baseboard 40 can include puncture protection in accordance with ASTM, CSA, Nom 113, and ISO safety standards.

[0022] The upper 50 is secured to baseboard 40 at or below outer perimeter 43 of upper surface 41 of baseboard 40 along a continuous seam 51. This occurs at least at arch portion 46 and heel portion 48 of baseboard 40, as in some instances the upper 50 is not connected to the entire outer perimeter 43 of baseboard 40 at forefoot portion 44 due to the presence of a reinforced toe cap 52, for example. In line with the discussion above concerning the contouring of baseboard 40, when boot 100 is at rest on flat surface 90, a maximum height of seam 51 above flat surface 90 at heel portion 48 is smaller than a maximum height of seam 51 above flat surface 90 at arch portion 46. In other words, when boot 100 is at rest on flat surface 90, a maximum distance between upper 50 and flat surface 90 at heel portion 48 is smaller than a maximum distance between upper 50 and flat surface 90 at arch portion 46.

[0023] Seam 51 therefore tracks the contoured path of outer perimeter 43 of baseboard 40, which allows upper 50 to be anchored to baseboard 40 and the other portions of outsole 10 at a lower point in the various areas of boot 100. This provides increased stability when horizontal forces are applied to the boot by providing a resistive force lower to the ground (*i.e.* flat surface 90). The fact that these resistive forces act on boot 100 at a much lower location relative to prior art boots greatly enhances the strength and responsiveness of boot 100 to the user. Together with the lower center of gravity due to the construction of outsole 10 and baseboard 40, boot 100 provides the user with a firmer and more stable grip on the ground while maintaining a high level of cushioning and comfort.

[0024] Upper surface 41 of baseboard 40 extends from edge to edge within the construction of upper 50. In this way, the contouring of upper surface 41 is consistent and continuous across the width of boot 100 at all places so that it provides consistent support all along the width of boot 100. Baseboard 40 is devoid of any recesses or openings within its otherwise continuous upper surface 41. Rather, heel portion 48 of baseboard 40 is recessed in its entirety within boot 100 to a height that is lower than that of arch portion 46. This is the whole heel portion 48 and not just a portion thereof, so that heel portion 48 also has consistent and continuous contouring across the width of the boot 100 from edge to edge.

[0025] That is, when boot 100 is at rest on flat surface 90 such as the ground, a maximum height 48H of heel portion 48 of baseboard 40 above flat surface 90 is smaller than a maximum height 46H of arch portion 46 of baseboard 40 above flat surface 90. In other words, a height of the entire heel portion 48 above flat surface 90 is smaller than a height of the entire arch portion 46 above flat surface 90. A further way to state this is that a height of outer perimeter 43 at heel portion 48 above flat surface 90 is smaller than a height of outer perimeter 43 at arch portion 46 above flat surface 90. A highest point of the convex surface of the first continuous surface 45 at arch portion 46 above flat surface 90 is higher than all of the substantially flat surface at heel portion 48 above flat surface 90.

[0026] When boot 100 is at rest on flat surface 90, a maximum height of the majority of forefoot portion 44 of baseboard 40 above flat surface 90 is also smaller than maximum height 46H of arch portion 46 of baseboard 40 above flat surface 90. The majority of forefoot portion 44 here is the rear aspect that is adjacent arch portion 46. This contouring of forefoot portion 44 is noted with the caveat that the forward most aspect of forefoot portion 44 where the user's toes will be located is subject to toe spring so that it can be naturally curled upward to heights higher than arch portion 46, though the substantial majority of forefoot portion 44 is located beneath the maximum height of arch portion 46. Since seam 51 does not always extend around the entire forefoot portion 44 due to the presence of toe cap 52, a maximum height of seam 51 above flat surface 90 at forefoot portion 44 is smaller than the maximum height of seam 51 above flat surface 90 at arch portion 46 despite any curl of the toe area.

[0027] While upper 50 is secured to baseboard 40 at seam 51 that follows the contour of outer perimeter 43

of baseboard 40, midsole 30 may be shaped to extend above outer perimeter 43 of baseboard 40 along the exterior surface of upper 50, as shown in FIG. 5. This allows midsole 30 to be molded and contoured on the exterior of boot 100 for aesthetic purposes, and also to enhance the connection of outsole 10 to upper 50. Midsole 30 may have an upper edge or periphery that is above or higher than seam 51, though the fact that upper 50 extends beneath this upper edge of midsole 30 and down to outer perimeter 43 of baseboard 40 so that it connects at seam 51 provides stability and support to boot 100 as described above.

[0028] As shown in FIGS. 4, 6, and 7, a footbed 60 is included with boot 100 and has a lower surface 62 substantially matching the contouring of upper surface 41 of baseboard 40. An upper surface 61 of footbed 60 is configured to contact a wearer's foot within boot 100 when it is worn. Thus, footbed 60 is much thicker (or taller) above heel portion 48 of baseboard than it is above arch portion 46 and forefoot portion 44. The resulting construction of boot 100 replaces a portion of the denser, heavier material of outsole 10 that would otherwise be much thicker (or taller) at heel portion 48 with the softer foam material of footbed 60 to enhance cushioning and comfort for the wearer. The aggregately layered construction of boot 100 at heel portion 48 is of a thickness that is similar to prior art boots, but the profile of this thickness as described above locates the heavier, denser material (of outsole 10) closer to the ground to lower the overall center of gravity of boot 100, particularly at heel portion 48, by placing more of its weight near the ground, resulting in increased stability and grip and resulting in less fatigue to the user during normal wear of boot 100 as compared with other boots having thicker (taller) outsoles.

[0029] A side surface 63 of the footbed extending between upper and lower surfaces 61, 62 thereof substantially matches an adjacent surface of upper 50 (and where applicable, toe cap 52) since it is seated within boot 100 to follow the contouring of upper 50 around and just above baseboard 40. Footbed 60 can also have recessed areas 64 extending upward from lower surface 62, particularly above heel portion 48, to remove some of the foam material to further increase cushioning and comfort by allowing the remaining material of footbed 60 adjacent recessed areas to flex horizontally in addition to compressing vertically. Similarly, grooves 65 in both the width and length directions of boot 100 can be provided for similar enhanced comfort. Grooves 65 at forefoot portion 46 are formed in a grid arrangement, which results in pillars 66 extending up from lower surface 62. Materials of which footbed 60 can be made include EVA, polyurethane, thermal plastic urethane, expanded thermal plastic urethane, polyolefin, and the like.

[0030] Although the invention herein has been described with reference to particular embodiments, it is to be understood that these embodiments are merely illustrative of the principles and applications of the present invention. It is therefore to be understood that numerous modifications may be made to the illustrative embodiments and that other arrangements may be devised without departing from the spirit and scope of the present invention as defined by the appended claims.

Claims

1. A boot comprising:

an outsole having a bottom surface configured to contact the ground; and

a baseboard configured to support a wearer's foot and having an upper surface defined by a forefoot portion, an arch portion, and a heel portion, the upper surface of the baseboard defining an outer perimeter,

wherein when the boot is at rest on a flat surface, a maximum height of the heel portion of the baseboard above the flat surface is smaller than a maximum height of the arch portion of the baseboard above the flat surface.

2. The boot of claim 1, further comprising an upper secured to the baseboard at or below the outer perimeter of the upper surface of the baseboard.

3. The boot of claim 1, further comprising an upper secured to the outer perimeter of the upper surface of the baseboard at the arch portion and at the heel portion.

4. The boot of any of claims 1-3, further comprising a footbed having an upper surface configured to contact a wearer's foot and a lower surface that substantially matches the upper surface of the baseboard.

5. The boot of claim 4, wherein a side surface of the footbed extending between the upper and lower surfaces thereof substantially matches an adjacent surface of the upper.

6. The boot of any of claims 1-5, wherein the outsole is comprised of a treadsole configured to contact the ground and a midsole configured to contact the baseboard.

7. The boot of claim 6, wherein the treadsole and the midsole are comprised of different materials.

8. The boot of any of claims 6-7, wherein the baseboard is more rigid than the treadsole, and the treadsole is more rigid than the midsole.

9. The boot of any of claims 1-8, wherein the baseboard is comprised of a polymer.

10. The boot of claim 9, wherein the polymer is nylon.

11. The boot of any of claims 1-10, wherein the entire baseboard has a substantially constant thickness.

12. The boot of any of claims 1-11, wherein the upper surface of the baseboard and a lower surface of the baseboard have substantially identical shapes.

13. The boot of any of claims 1-12, wherein the baseboard includes puncture protection in accordance with ASTM, CSA, Nom 113, and ISO safety standards.

14. The boot of claim 1, further comprising an upper secured to the outer perimeter of the baseboard at the arch portion and the heel portion along a continuous seam, wherein when the boot is at rest on a flat surface, a maximum height of the seam above the flat surface at the heel portion is smaller than a maximum height of the seam above the flat surface at the arch portion.

15. The boot of claim 14, wherein when the boot is at rest on a flat surface, a maximum height of the seam above the flat surface at the forefoot portion is smaller than the maximum height of the seam above the flat surface at the arch portion.

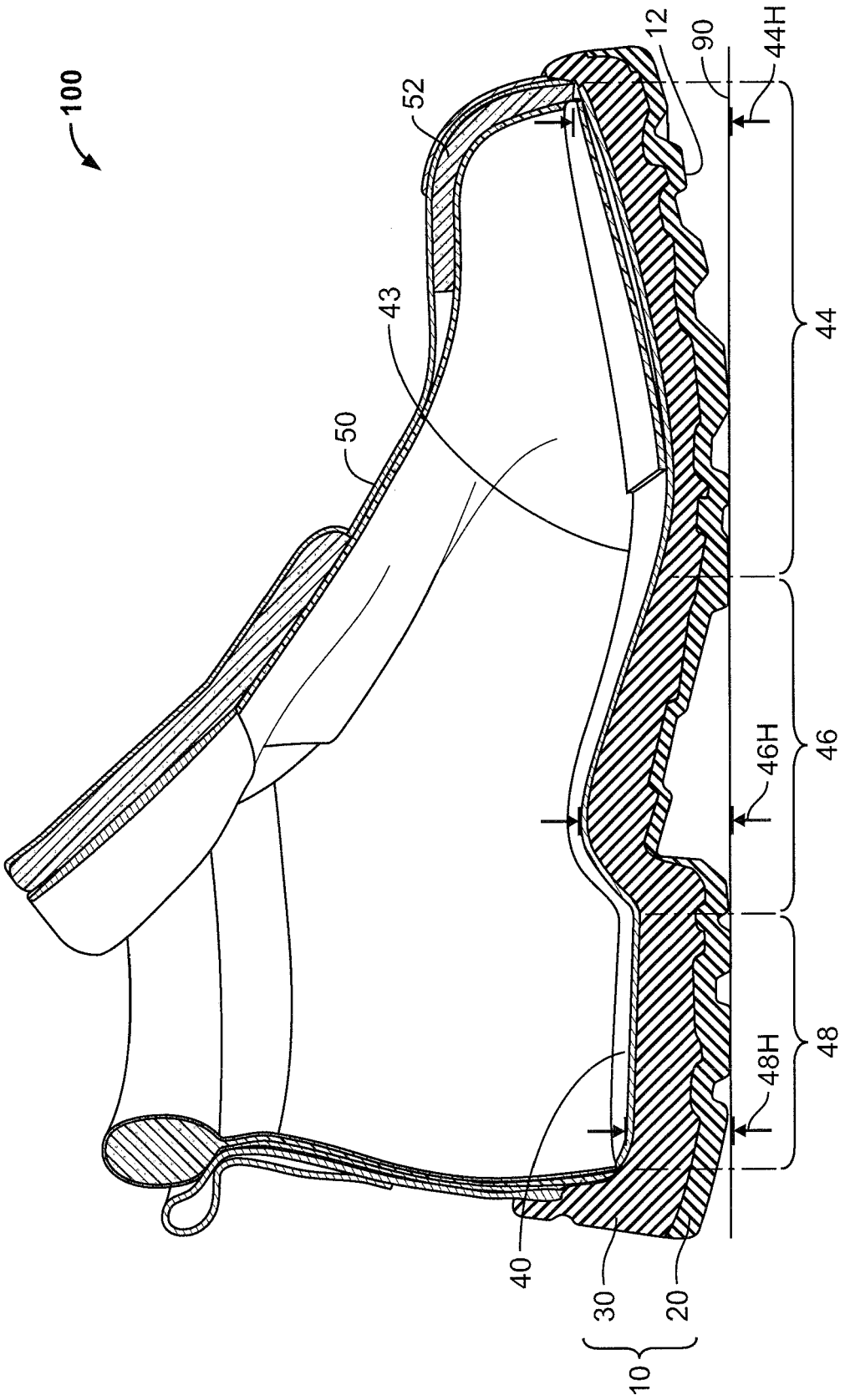

FIG. 1

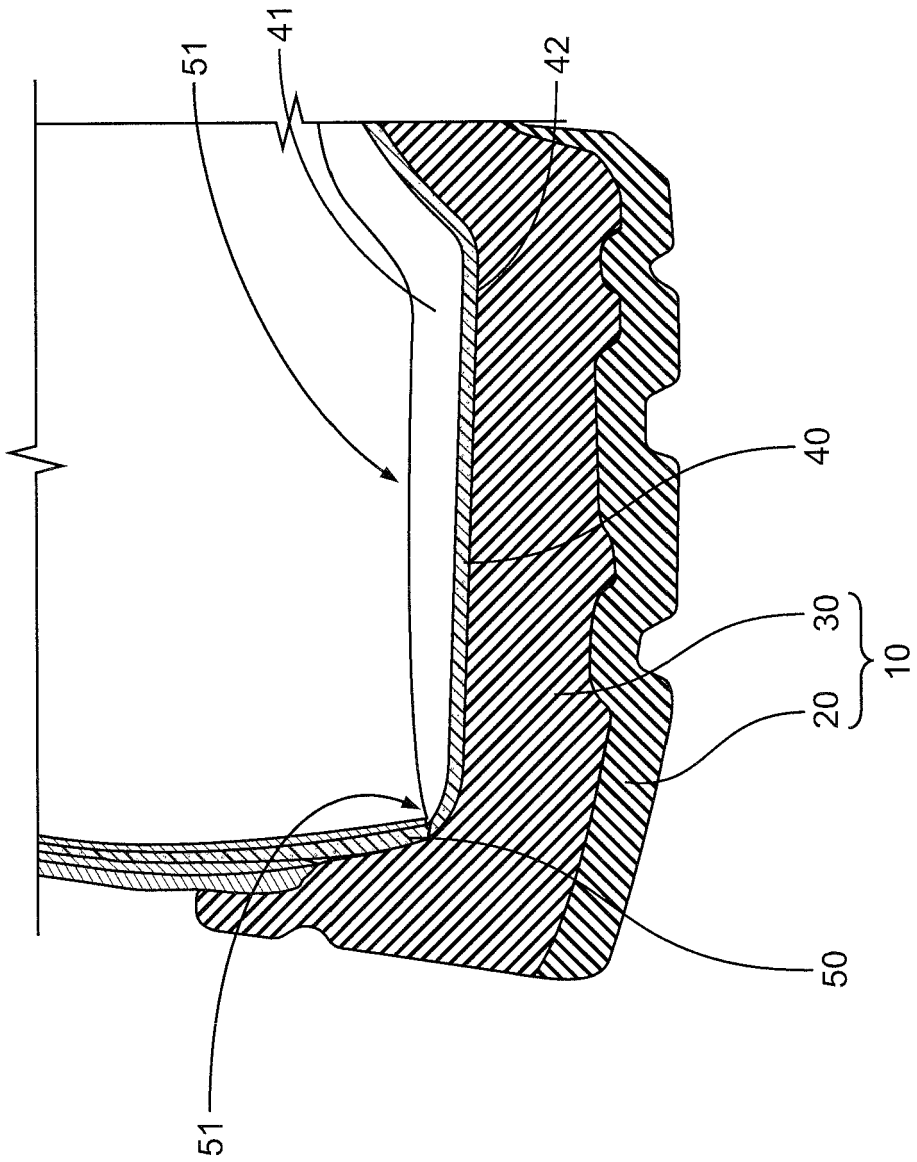

FIG. 2

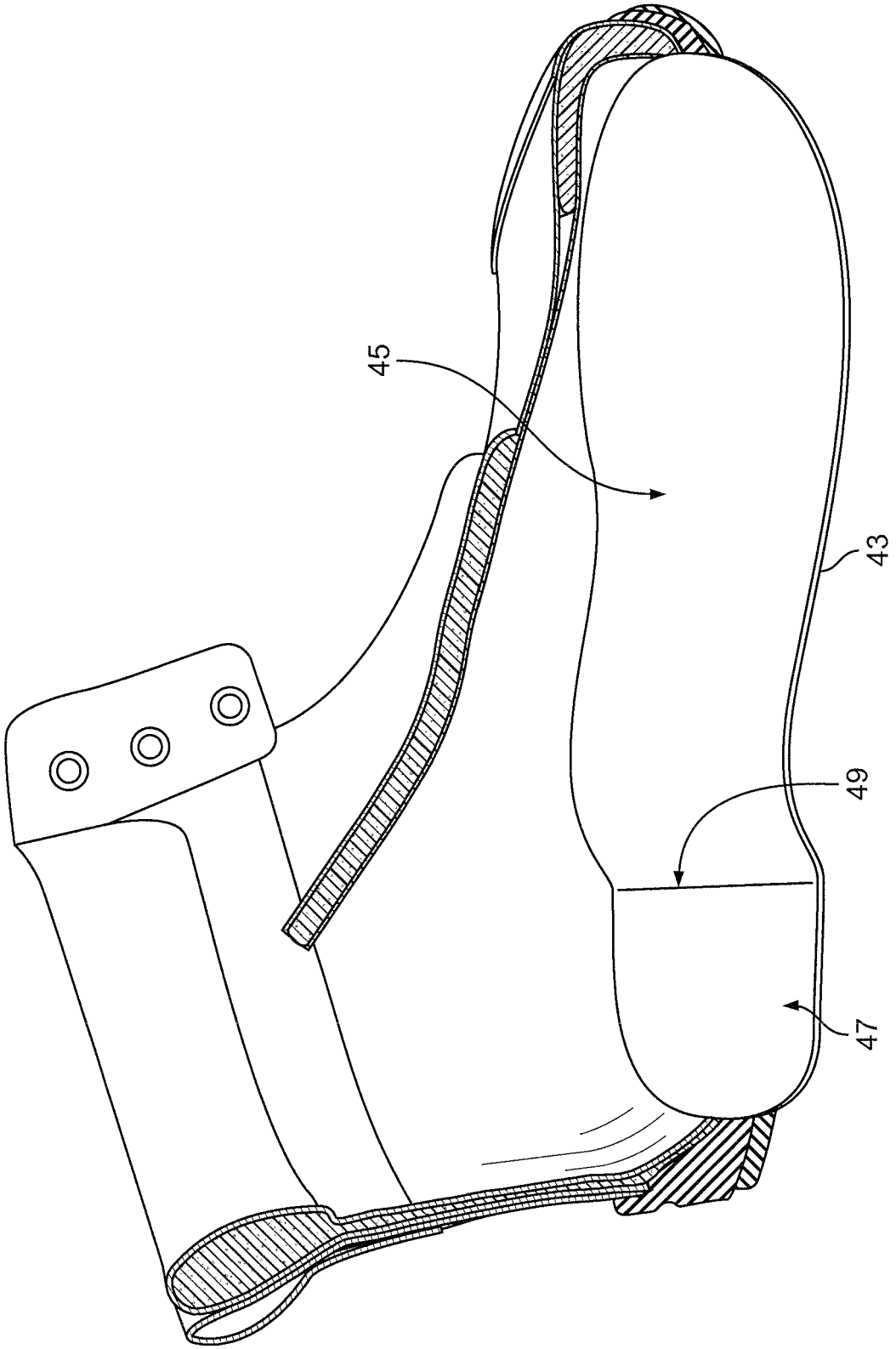

FIG. 3

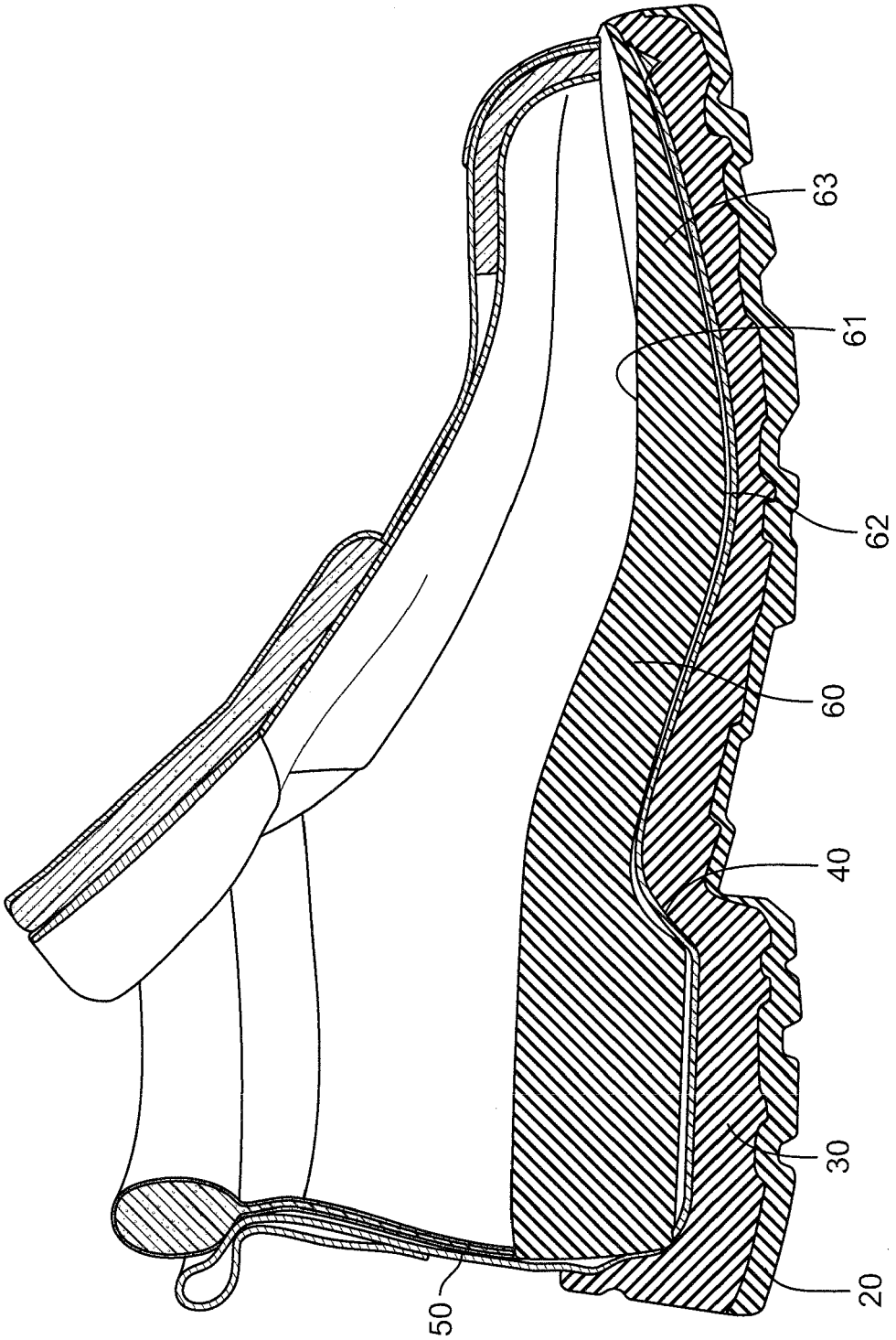

FIG. 4

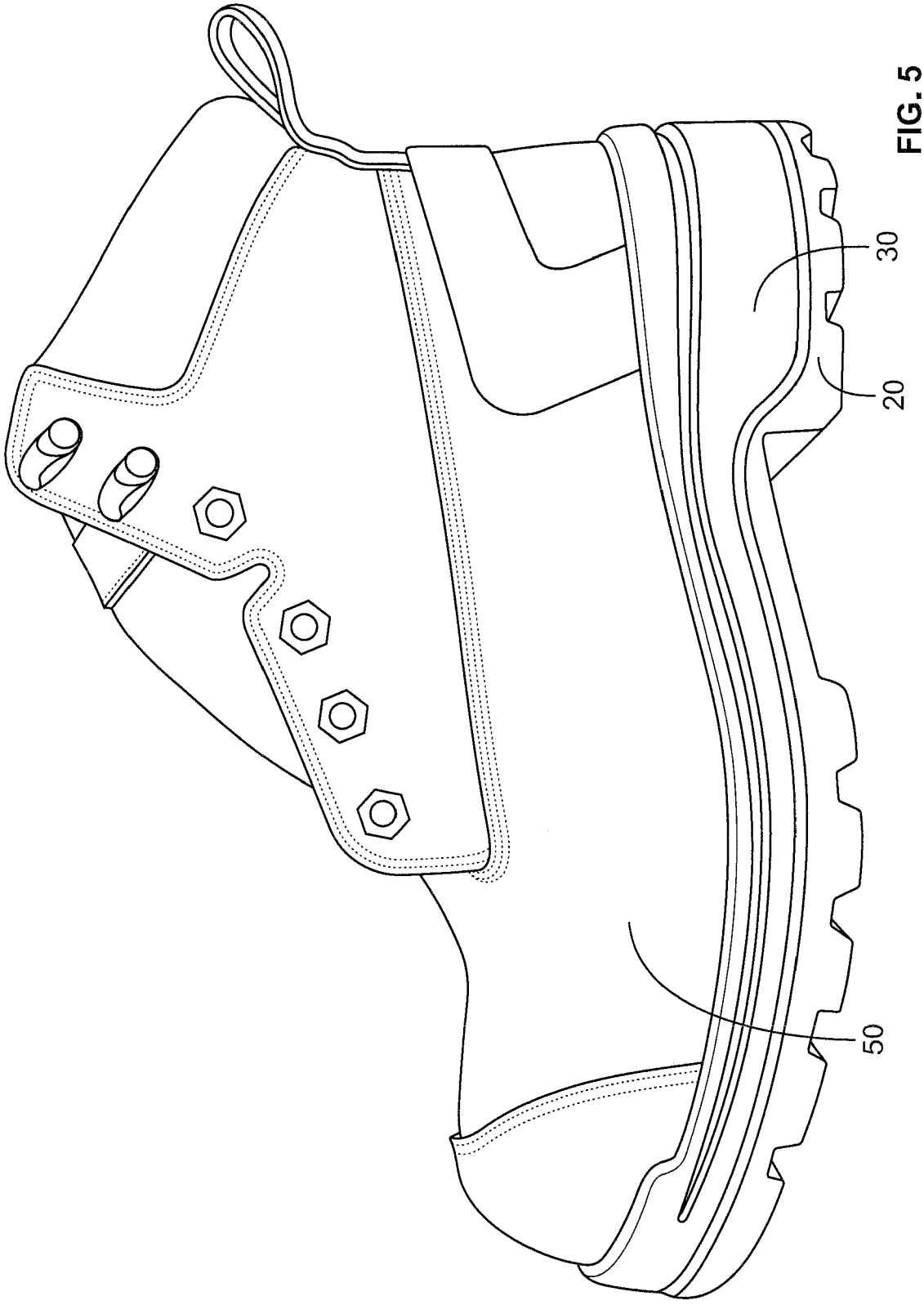

FIG. 5

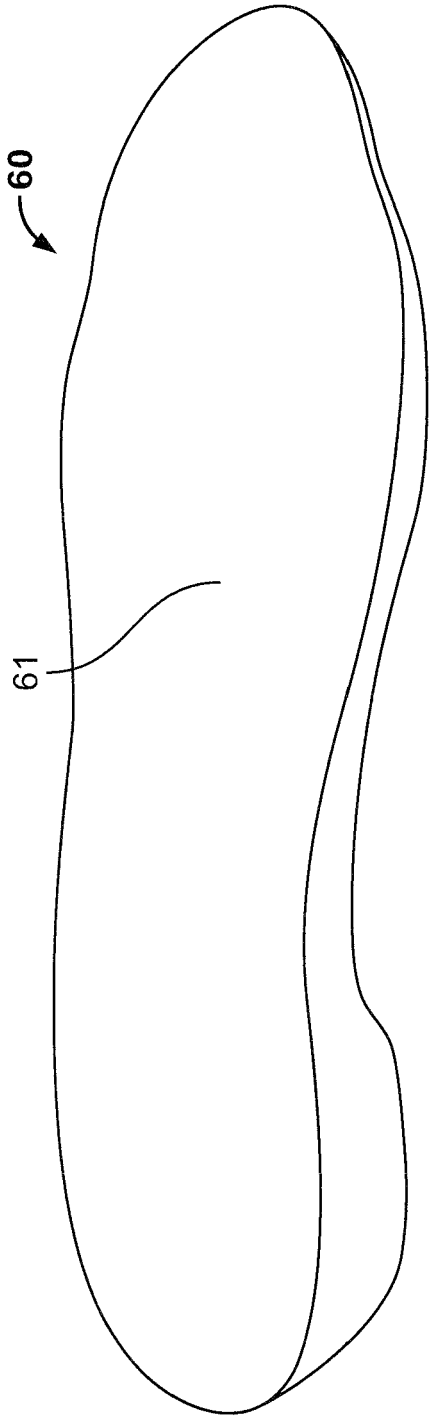

FIG. 6

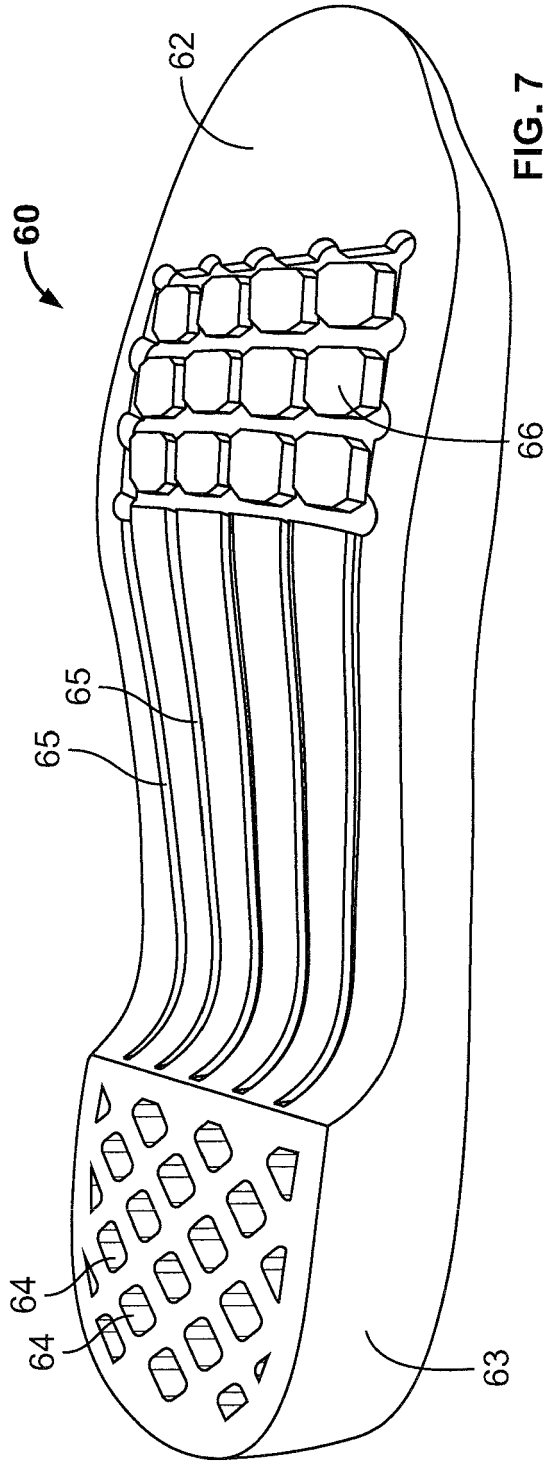

FIG. 7

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EUROPEAN SEARCH REPORT

Application Number
EP 19 18 4465

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 Y	US 6 519 876 B1 (GEER ET AL.) 18 February 2003 (2003-02-18) * column 8, line 61 - column 24, line 10 * * column 26, line 50 - column 28, line 9; figures 1-38, 50-61 * -----	1-8,11, 12,14,15 9,10,13	INV. A43B13/14 A43B13/38 A43B7/32 ADD.
Y	US 2008/222919 A1 (FENZI) 18 September 2008 (2008-09-18) * paragraphs [0012] - [0014], [0022] - [0087]; claims 13, 21; figures 1-4 * -----	9,10,13	A43B13/18
X	US 1 148 604 A (MCBREARTY) 3 August 1915 (1915-08-03) * the whole document * -----	1-5,11, 12,14,15	

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	20 November 2019	Williams, Mark

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 19 18 4465

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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20-11-2019

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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