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(54) AN ARTICLE OF A FOOTWEAR

(57) One or more embodiments illustrated herein disclose an article of a footwear. The article includes a sole. Further, the article includes a heel counter extending from the heel sole along a vertical axis of the article of the footwear, wherein the heel counter comprises an

internal surface and an external surface defining a plurality of protrusions. The internal surface is adapted to be in contact with a foot. The plurality of protrusions facilitates a substantial uniform dissipation of force originating from the foot.

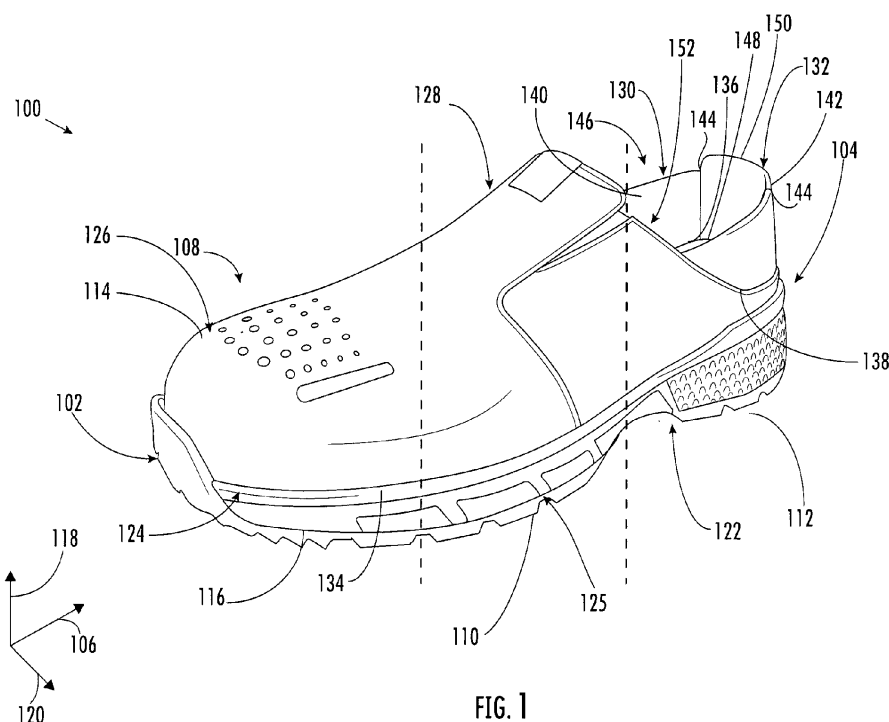


FIG. 1

Description

FIELD OF THE INVENTION

[0001] Exemplary embodiments of the present disclosure relate generally to an article of a footwear and, more particularly, to a heel counter for the article of the footwear.

BACKGROUND

[0002] A typical article of a footwear (hereinafter interchangeably referred to as a footwear) includes a forefoot portion, a midfoot portion, and a heel portion. In some embodiments, the forefoot portion and the midfoot portion of the footwear may receive the phalanges, metatarsals, and a portion of tarsals, of a foot of a person. Further, in some embodiments, the heel portion of the footwear is configured to receive the remaining portion of the tarsals and the heel of the person's foot.

[0003] When the person walks wearing the footwear, the foot of the person may exert various forces on various portions of the footwear. Non-uniform distribution of such forces in the footwear may lead to an injury to the person, particularly in instances of extended use.

BRIEF SUMMARY

[0004] Embodiments illustrated herein disclose an article of a footwear. The article includes a sole. Further, the article includes a heel counter extending from the heel sole along a vertical axis of the article of the footwear, wherein the heel counter comprises an internal surface and an external surface defining a plurality of protrusions, wherein the internal surface is adapted to be in contact with a foot, and wherein the plurality of protrusions facilitates a substantial uniform dissipation of force originating from the foot.

[0005] Embodiments illustrated herein disclose a footwear that further comprises a forefoot portion, a midfoot portion, and a heel portion, wherein the forefoot portion, the heel portion, and the midfoot portion are defined along a longitudinal axis of the article of the footwear.

[0006] Embodiments illustrated herein disclose an article of the footwear, wherein the midfoot portion is positioned between the heel portion and the forefoot portion.

[0007] Embodiments illustrated herein disclose an article of the footwear that further comprises an upper portion, wherein the upper portion is disposed on the sole along a vertical axis of the article of the footwear.

[0008] Embodiments illustrated herein disclose an article of the footwear, wherein the upper portion includes a toe box region, a waist region, a collar region, and the heel counter.

[0009] Embodiments illustrated herein disclose an article of the footwear, wherein collar region includes a first collar segment and a second collar segment, wherein the first collar segment and the second collar segment extend

tend from waist (waist) region along a first edge and a second edge of the sole, respectively, and wherein the first collar segment and the second collar segment are coupled to the heel counter.

[0010] Embodiments illustrated herein disclose an article of the footwear that further comprises a first periphery and a second periphery that are spaced apart from each other along a longitudinal axis of the article of the footwear, wherein the heel counter is positioned at the second periphery.

[0011] Embodiments illustrated herein disclose an article of the footwear, wherein the plurality of protrusions have a predefined shape, wherein the predefined shape of the plurality of protrusions changes upon application of the force originated from the foot of a person.

[0012] Embodiments illustrated herein disclose an article of the footwear, wherein the predefined shape comprises at least one of a cylindrical shape, a cube shape, a cuboid shape, a tetrahedron shape, a pyramid shape, and a spherical shape.

[0013] Embodiments illustrated herein disclose an article of the footwear, wherein the heel counter has a height, a width, and a thickness, wherein the width of the heel counter is in a range between 30mm and 50mm, wherein the height of the heel counter is in a range between 45mm and 65mm, and wherein the thickness of the heel counter is in a range between 0.5mm to 3mm.

[0014] Embodiments illustrated herein disclose an article of the footwear, wherein the plurality of protrusions have a diameter in a range between 4mm and 10mm, and wherein a height of the plurality of protrusions is in a range between 1mm and 6mm.

[0015] Embodiments illustrated herein disclose an article of the footwear, wherein the external surface of the heel counter defines the plurality of protrusions arranged in a predefined pattern, wherein the plurality of protrusions are arranged in one or more rows and one or more columns. Embodiments illustrated herein disclose a heel counter for an article of footwear. The heel counter includes a padded segment having an internal surface and an external surface. The external surface defining a plurality of protrusions. The internal surface of the padded segment is adapted to be in contact with a foot, and the plurality of protrusions facilitates a substantial uniform dissipation of force originating from the foot.

[0016] Embodiments illustrated herein disclose a heel counter, wherein the plurality of protrusions has a predefined shape, wherein the predefined shape of the plurality of protrusions changes upon application of the force originated from the foot of a person.

[0017] Embodiments illustrated herein disclose a heel counter, where the predefined shape comprises at least one of a cylindrical shape, a cube shape, a cuboid shape, a tetrahedron shape, a pyramid shape, and a spherical shape.

[0018] Embodiments illustrated herein disclose a heel counter, wherein the padded segment has a height, a width, and a thickness, wherein the width of the padded

segment is in a range between 30mm and 50mm, wherein the height of the padded segment is in a range between 45mm and 65mm, and wherein the thickness of the padded segment is in a range between 0.5mm to 3mm.

[0019] Embodiments illustrated herein disclose a heel counter, wherein the plurality of protrusions has a diameter in a range between 4mm and 10mm, and wherein a height of the plurality of protrusions is in a range between 1mm and 6mm.

[0020] Embodiments illustrated herein disclose a heel counter, wherein the external surface of the padded segment defines the plurality of protrusions arranged in a predefined pattern, wherein the plurality of protrusions is arranged in one or more rows and one or more columns.

[0021] Embodiments illustrated herein disclose a heel counter that includes a padded segment configured to be coupled to a sole of an article of footwear such that the padded segment extends from the sole of the footwear. The padded segment has an internal surface and an external surface. The external surface defines a plurality of protrusions, while the internal surface of the padded segment is adapted to be in contact with a foot. The plurality of protrusions facilitates a substantial uniform dissipation of force originating from the foot.

Embodiments illustrated herein disclose a heel counter, wherein the plurality of protrusions has a predefined shape, wherein the predefined shape of the plurality of protrusions changes upon application of the force originated from the foot of a person.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] The description of the illustrative embodiments can be read in conjunction with the accompanying figures. It will be appreciated that for simplicity and clarity of illustration, elements illustrated in the figures have not necessarily been drawn to scale. For example, the dimensions of some of the elements are exaggerated relative to other elements. Embodiments incorporating teachings of the present disclosure are shown and described with respect to the figures presented herein, in which:

FIG. 1 illustrates an article of a footwear, according to one or more embodiments described herein;

FIG. 2A and FIG. 2B illustrate a front view and a side view of a heel counter, respectively, according to one or more embodiments described herein;

FIG. 3 is a force distribution diagram illustrating an interaction between a foot and the footwear, according to one or more embodiments described herein; and

FIG. 4 is another force distribution diagram illustrating a distribution of a third force by the heel counter,

according to one or more embodiments described herein.

DETAILED DESCRIPTION OF THE INVENTION

[0023] Some embodiments of the present disclosure will now be described more fully hereinafter with reference to the accompanying drawings, in which some, but not all embodiments of the disclosure are shown. Indeed, these disclosures may be embodied in many different forms and should not be construed as limited to the embodiments set forth herein. Like numbers refer to like elements throughout. Terminology used in this patent is not meant to be limiting insofar as devices described herein, or portions thereof, may be attached or utilized in other orientations.

[0024] The term "comprising" means including, but not limited to, and should be interpreted in the manner it is typically used in the patent context. Use of broader terms such as "comprises," "includes," and "having" should be understood to provide support for narrower terms such as "consisting of," "consisting essentially of," and "comprised substantially of."

[0025] The phrases "in one embodiment," "according to one embodiment," and the like generally mean that the particular feature, structure, or characteristic following the phrase may be included in at least one embodiment of the present disclosure, or may be included in more than one embodiment of the present disclosure (importantly, such phrases do not necessarily refer to the same embodiment).

[0026] The word "exemplary" is used herein to mean "serving as an example, instance, or illustration." Any implementation described herein as "exemplary" is not necessarily to be construed as preferred or advantageous over other implementations.

[0027] If the specification states a component or feature "may," "can," "could," "should," "would," "preferably," "possibly," "typically," "optionally," "for example," "often," or "might" (or other such language) be included or have a characteristic, that particular component or feature is not required to be included or to have the characteristic. Such component or feature may be optionally included in some embodiments, or it may be excluded.

[0028] It is commonly understood that an article of a footwear (hereinafter referred to as the footwear) includes one or more portions such as a forefoot portion, a midfoot portion, a heel portion, and a sole. The sole may extend across the forefoot portion, the midfoot portion, and the heel portion, along a longitudinal axis of the footwear. In some embodiments, the sole corresponds to a platform on which a person's foot (hereinafter interchangeably referred to as foot) rests. Additionally or alternatively, the sole may further facilitate uniform distribution of the force exerted by the foot.

[0029] A person having ordinary skill in the art would understand that additional forces may act on the footwear when the person is performing an activity. For example,

when the person is walking or running, additional forces may originate from the foot and may act on the heel portion of the footwear. More specifically, the additional forces may act on a heel counter defined in the heel portion of the footwear. In some embodiments, the heel counter may correspond to a section of the footwear that may extend from the sole along a vertical axis, of the footwear, such that the heel counter is substantially orthogonal to the sole of the footwear. In some scenarios, if the heel counter non-uniformly distributes the additional forces (originating from the person's foot), the foot of the person may sustain an injury in a long run.

[0030] In accordance with one or more embodiments, the heel counter of the footwear may include a padded segment that has an internal surface and an external surface. In some embodiments, the padded segment is composed of soft foam material such as, but are not limited to, ethylene vinyl acetate (EVA) and Thermoplastic Polyurethane (TPU). Accordingly, the padded segment (composed of the soft foam material) allows the forces (such as the additional forces) to be transferred from the internal surface of the padded segment to the external surface of the padded segment.

[0031] In some embodiments, the internal surface of the padded segment abuts the person's foot, directly or indirectly, when the foot is received in the footwear. Further, in some example, the external surface of the padded segment may comprises a plurality of protrusions that may facilitate substantial uniform distribution of the additional forces originating from the foot while the person performs the activity (such as walking and running).

[0032] In some embodiments, the plurality of protrusions may have a predefined shape such as, but not limited to, a cylindrical shape. To this end, the shape of the plurality of protrusions may get modified based on the application of the additional forces originated from the foot (e.g., while the person performs an activity). For example, the cylindrical shape of the plurality of protrusions may modify to a dome shape upon application of the additional forces originated from the foot. Such modification of the shape of the plurality of protrusions facilitates substantial uniform distribution of the forces (originated from the foot). Accordingly, the probability of the foot sustaining an injury gets minimized.

[0033] FIG. 1 illustrates an article of a footwear 100, according to one or more embodiments described herein. The footwear 100 includes a first periphery 102 and a second periphery 104. The first periphery 102 and the second periphery 104 are spaced apart from each other along a longitudinal axis 106 of the footwear 100. Further, the footwear 100 may include a forefoot portion 108, a midfoot portion 110, and a heel portion 112, that are defined along a longitudinal axis 106. In some embodiments, the forefoot portion 108 is defined proximal to the first periphery 102 and distal from the second periphery 104. Further, the heel portion 112 is defined proximal to the second periphery 104 and distal from the first periphery 102. Additionally, the midfoot portion 110 extends

between the forefoot portion 108 and the heel portion 112.

[0034] Additionally or alternatively, the footwear 100 includes an upper portion 114 and a sole 116 that are positioned along a vertical axis 118. In an example embodiment, the vertical axis 118 and the longitudinal axis 106 are orthogonal to each other. Further, the footwear 100 has a predefined width along a lateral axis 120. The lateral axis 120 is orthogonal to the longitudinal axis 106 and the vertical axis 118.

[0035] In an example embodiment, the sole 116 extends along the longitudinal axis 106 and across the forefoot portion 108, the midfoot portion 110, and the heel portion 112. Additionally, the sole 116 extends along the lateral axis 120 to define the predefined width of the footwear 100. To this end, the sole 116 includes a first edge 134 and a second edge 136 that are spaced apart from each other along the lateral axis 120. In some embodiments, a shape and a composition of the sole 116 is defined based on the application of the footwear 100. For example, if the footwear 100 is to be utilized for running and walking, the sole 116 of the shoe may be composed of polyurethane (Pu), while if the footwear 100 is to be utilized for formal purposes, the sole 116 may be composed of leather. In some embodiments, the sole 116 has a bottom surface 122 and an upper surface 124. In an example embodiment, the bottom surface 122 of the sole 116 may define one or more indentations 125 that facilitates a grip with a ground surface when the person walks or runs wearing the footwear 100. In an example embodiment, the upper surface 124 defines an insole that corresponds a portion on which the person's foot rests.

[0036] In an example embodiment, the upper portion 114 is configured to be disposed on the upper surface 124 of the sole 116. Further, the upper portion 114 may be composed of a predefined material that is deterministic based on the application intended for the footwear 100. For example, the upper portion 114 is composed of breathable cloth if the footwear 100 is intended for walking or running. Similarly, in another example, if the footwear 100 is intended for formal usage, the upper portion 114 is composed of leather. In yet another example, if the footwear 100 is intended for work usage (for instance, shoes for a worker performing repairs), the upper portion 114 is composed of rubber. Additionally or alternatively, the upper portion 114 may be hollow and may be configured to receive a portion of the person's foot while the foot rests on the insole.

[0037] In some embodiments, the upper portion 114 of the footwear 100 includes a toe box region 126, a waist region 128, a collar region 130, and a heel counter 132. In some embodiments, the toe box region 126 is configured to support the toes and the joints connecting the metatarsals with the phalanges of the person's foot. Further, the toe box region 126 extends within the forefoot portion 108 of the footwear 100. In an example embodiment, the waist region 128 extends from the toe box region 126 of the footwear 100, along the longitudinal axis 106 towards

the collar region 130 of the footwear 100. Additionally, the waist region 128 extends within the midfoot portion 110 of the footwear 100. In some embodiments, the waist region 128 is configured to support and/or encompass an arch area of the person's foot (when the foot is received in the footwear 100). To this end, the waist region 128 may include one or more features (not shown) to receive laces (not shown) that may be configured to secure the foot within the footwear 100. In some embodiments, the scope of the disclosure is not limited to the waist region 128 comprising the laces (not shown). In an example embodiment, the waist region 128 may include other means such as, but not limited to, Velcro, buckles, straps, and resilient members, to facilitate securing of the foot within the footwear 100.

[0038] In an example embodiment the waist region 128 and the toe box region 126 of the footwear 100 define a first cavity 152 that extends along the longitudinal axis 106 of the footwear 100. The first cavity 152 extends from the waist region 128 to the first periphery of 102 of the footwear 100. Further, the first cavity 152 is configured to receive the toes, the joints connecting the metatarsals with the phalanges, and the arch area of the person's foot.

[0039] In some embodiments, the collar region 130 includes a first collar segment 138 and a second collar segment 140. The first collar segment 138 extends from the waist region 128, along the first edge 134, towards the second periphery 104. Further, the first collar segment 138 is coupled to a first edge 142 of the heel counter 132. The second collar segment 140 extends from the waist region 128, along the second edge 136, towards the second periphery 104. Further, the second collar segment 140 is coupled to a second edge 144 of the heel counter 132. Accordingly, the first collar segment 138, the second collar segment 140, and the heel counter 132 together form a second cavity 146. In some embodiments, the second cavity 146 open into the first cavity 152 such that the person's foot is received from the second cavity 146 into the first cavity 152.

[0040] In an example embodiment, the heel counter 132 is positioned at the second periphery 104 of the footwear 100. Further, the heel counter 132 has the first edge 142 and the second edge 144 that are spaced apart from each other along the lateral axis 120. Additionally or alternatively, the heel counter 132 extends from the sole 116 along the vertical axis 118 of the footwear 100. To this end, the heel counter 132 has a bottom edge 148 and a top edge 150. In an example embodiment, the bottom edge 148 is connected to the sole 116 of the footwear 100. The structure of the heel counter 132 is described in conjunction with FIG. 2A and FIG. 2B.

[0041] FIG. 2A and FIG. 2B illustrate the front view 200A and a side view 200B of the heel counter 132, respectively, according to one or more embodiments described herein. Referring to the front view 200A of the heel counter 132, the heel counter 132 is composed of a padded segment that has an external surface 202, the bottom edge 148, the top edge 150, the first edge 142,

and the second edge 144. As discussed, the first edge 142 and the second edge 144 are spaced apart from each other along the lateral axis 120, while the bottom edge 148 and the top edge 150 are spaced apart along the vertical axis 118. In an example embodiment, a distance between the first edge 142 and the second edge 144 define a width 204 of the heel counter 132, while the distance between the bottom edge 148 and the top edge 150 define a height 206 of the heel counter 132. In some embodiments, the width 204 of the heel counter 132 varies in a range between 30mm to 50mm. Further, the height 206 of the heel counter 132 varies in a range between 45mm to 65mm. In some embodiments, the scope of the disclosure is not limited to the width 204 of the heel counter 132 and the height 206 of the heel counter 132 varying in the range between 30mm to 50mm and 45 mm to 65mm respectively. In an alternate embodiment, the width 204 of the heel counter 132 may vary in one or more ranges between 40mm to 50mm, 30mm to 40mm, 35mm to 45mm, 35mm to 50mm, and/or the like. In yet another alternate embodiment, the height 206 of the heel counter 132 may vary in one or more ranges between 45mm to 55mm, 55mm to 65mm, 50mm to 65mm, and/or the like.

[0042] In an example embodiment, the external surface 202 of the heel counter 132 defines a plurality of protrusions 210a, 210b, ..., 210n (hereinafter interchangeably referred to as the protrusions 210). As depicted in the front view 200A, a count of the protrusions 210 is depicted to be 13. However, In some embodiments, the scope of the disclosure is not limited to the count of the protrusions 210 as 13. In an example embodiment, the count of the protrusions 210 may vary in a range between 4 and 25. In some embodiments, the scope of the disclosure is not limited to the range of the count of protrusions varying in the range between 4 and 25. In an alternate embodiment, the count of protrusions may vary in the one or more ranges between 6 and 20, 8 and 18, 10 and 25, 15 and 25, and/or the like.

[0043] In some embodiments, the external surface 202 may define the protrusions 210 in a predefined pattern. For example, the external surface 202 may define the protrusions 210 arranged in form of rows and columns. As depicted in the front view 200A, the protrusions 210 arranged in 5 rows, where a first row 212a includes 3 protrusions (e.g., the protrusion 210a, 210b, and 210c) and a second row 212b includes 2 protrusions (e.g., the protrusion 210d and 210e). Thereafter, the count of protrusions in the subsequent rows alternately follows the count of protrusions in the first row 212a and the second row 212b, respectively.

[0044] In some embodiments, the scope of the disclosure is not limited to the protrusions 210 arranged in the form of rows and columns. In an example embodiment, the external surface 202 may define the protrusions 210 to be arranged in a circular pattern, a spiral pattern, a triangular pattern, or any other pattern that may facilitate substantial uniform distribution of the forces originated

from the foot.

[0045] In an example embodiment, each of the protrusions 210 have a cylindrical shape having a predefined diameter (depicted by 216). For example, the predefined diameter 216 of the protrusions 210 may vary in a range between 4mm and 10mm. In some embodiment, the scope of the disclosure is not limited to the diameter of the protrusions 210 varying in the range between 4mm and 10mm. In some embodiments, the diameter of the protrusions may vary in one or more ranges between 5mm to 9mm, 6mm to 8mm, 4mm to 6mm, 4 mm to 9mm, and/or the like.

[0046] Referring to the side view 200B of the heel counter 132, the protrusions 210 have a predefined height (depicted by 218) along the longitudinal axis 106 of the footwear 100. For example, the predefined height 218 of the protrusions 210 may vary in a range between 1mm and 6mm. In some embodiment, the scope of the disclosure is not limited to the height of the protrusions 210 varying in the range between 4mm and 10mm. In some embodiments, the diameter of the protrusions may vary in one or more ranges between 5mm to 9mm, 6mm to 8mm, 4mm to 6mm, 4 mm to 9mm, and/or the like. In some embodiments, the scope of the disclosure is not limited to the protrusions 210 having the cylindrical shape. In an example embodiment, the protrusions 210 may have any other geometrical such as, but not limited to, a cube, a cuboid, a tetrahedron, a pyramid, a sphere, and/or any other 3D shape that may be utilized to dissipate forces originated from the person's foot.

[0047] In an example embodiment, the scope of the disclosure is not limited to each of the protrusions 210 having the cylindrical shape. In an example embodiment, a first set of protrusions in the protrusions 210 may have a cylindrical shape, while a second set of protrusions in the protrusions 210 may have a shape other than the cylindrical shape (e.g., a cube shape). In yet another embodiment, each of the protrusions 210 has a different shape. For example, a protrusion 210a may have a cylindrical shape, the protrusion 210b may have a pyramid shape, and the protrusion 210c may have a cube shape. For the purpose of ongoing description, the protrusions 210 are considered to have cylindrical shape, without departing from the disclosure.

[0048] Referring to the side view 200B, the heel counter 132 includes an internal surface 220. In some embodiments, the internal surface 220 of the heel counter 132, in conjunction with the first collar segment 138 and the second collar segment 140, define the second cavity 146. In an example embodiment, when the person's foot is received within the footwear 100, the heel and the Achilles region of the person's foot about the internal surface 220 of the heel counter 132.

[0049] In an example embodiment, the internal surface 220 of the heel counter 132 is spaced apart from the external surface 202 of the heel counter 132 along the longitudinal axis 106 of the footwear 100 to define a predefined thickness 222 of the heel counter 132. In

some embodiments, the predefined thickness 222 of the heel counter 132 may be defined to be in a range between 0.5 mm to 3mm. In some embodiments, the scope of the disclosure is not limited to the thickness of the heel counter having a range between 0.5mm to 3mm. In some embodiments, the thickness of the heel counter 132 may vary in one or more ranges between 0.5mm to 1mm, 0.5mm to 2mm, 1mm to 2mm, 1 mm to 3mm, 2mm to 3mm, and/or the like.

[0050] In some embodiments, a width of the internal surface 220 and a height of the internal surface 220 is less than the width of the external surface 202 and the height of the external surface 202, respectively. To this end, additionally or alternatively, the heel counter 132 includes a chamfered portion 214 that connects the internal surface 220 of the heel counter 132 with the external surface 202 of the heel counter 132. In some embodiments, a length of the chamfered portion 214 may correspond to the predefined thickness 222 of the heel counter 132. Further, the chamfered portion 214 is defined proximal to the bottom edge 148, the top edge 150, the first edge 142, and the second edge 144, of the heel counter 132. Therefore, the chamfered portion 214 defines a transition between the internal surface 220 and the external surface 202.

[0051] In an example embodiment, the heel counter 132 is composed of soft foam material such as, but not limited to ethylene vinyl acetate (EVA) and Thermoplastic Polyurethane (TPU). The soft foam material allows the forces, originated from the person's foot, to transfer from the internal surface 220 of the heel counter 132 to the external surface 202 of the heel counter 132. The distribution of the forces in the heel counter 132 is further described in conjunction with FIG. 3 and FIG. 4.

[0052] FIG. 3 is a force distribution diagram 300 illustrating the interaction between the foot and the footwear 100, according to one or more embodiments described herein.

[0053] The force distribution diagram 300 illustrates the foot 302 secured within the footwear 100 and a ground surface 304 on which the person walks. It can be observed that, when the person walks, a first force 306 acts on the ground surface 304 and an equal and opposite force (referred to as the second force 308) acts towards the leg (not shown) of the person. In some embodiments, the first force 306 corresponds to a gravitational force that is dependent on a mass of the person.

[0054] In an example embodiment, the footwear 100 experiences a third force 310 along the longitudinal axis 106 of the footwear 100. In some embodiments, the third force 310 acts towards the second periphery 104 of the footwear 100 and may correspond to the force applied by the person on the ground surface 304 for the purpose of walking. Since the third force 310 is applied in the direction of the second periphery 104 of the footwear 100, the third force 310 acts on the heel counter 132 of the footwear 100. The dissipation of the third force 310 is further described in conjunction with FIG. 4.

[0055] In an example embodiment, the footwear 100 additionally experiences a fourth force 312 that corresponds to the force applied by the ground surface 304 on the footwear 100. Further, the ground surface 304 applies the fourth force 312 in a direction towards the first periphery 102 of the footwear 100.

[0056] FIG. 4 is another force distribution diagram 400 illustrating the distribution of the third force 310 by the heel counter 132, according to one or more embodiments described herein.

[0057] The other force distribution diagram 400 illustrates that the third force 310 applies on the internal surface 220 of the heel counter 132. As discussed, since the heel counter 132 includes the padded segment that is composed of soft foam material, the heel counter 132 transfers the third force the internal surface 220 of the heel counter 132 to the external surface 202 of the heel counter 132. As the external surface 202 of the heel counter 132 defines the protrusions 210, the third force 310 is transferred to the protrusions 210. For example, the third force 310 is distributed amongst the protrusions 210. Accordingly, each of the protrusions 210 may experience a fifth force 402 that may be a portion of the third force (transferred to the external surface 202 of the heel counter 132). To this end, a magnitude of the fifth force acting on each of the protrusions 210 is dependent on one or more of the number of the protrusions 210, the dimensions of the protrusions 210, and the shape of the protrusions 210.

[0058] In an example embodiment, the shape of the protrusions 210 may change upon application of the third force 310 originated from the person's foot. In some embodiments, the change in the shape of the protrusions 210 may facilitate the dissipation of the third force 310. To this end, referring to FIG. 4, it can be observed that the cylindrical shape of the protrusion 210a may change to a dome shape upon application of the third force 310. In some embodiments, the scope of the disclosure is not limited to changing the cylindrical shape of the protrusion 210a to the dome shape. In an example embodiment, the shape of the protrusions 210 may change to any other shape without departing from the scope of the disclosure.

[0059] In some embodiments, the scope of the disclosure is not limited to each of the protrusions 210 changing shape based on the application of the third force 310. In an example embodiment, a set of protrusions (e.g., the protrusion 210a, the protrusion 210b and protrusion 210c) may change the cylindrical shape to the dome shape, while remaining protrusions (e.g., the protrusion 210n) may maintain the original cylindrical shape. To this end, the set of protrusions in the protrusions 210 is determined based on one or more of the magnitude of the third force 310, a shape of the person's foot, and a size of the person's foot.

[0060] Based on the proposed embodiment, the forces originating from the foot are dissipated/ distributed across one or more of the protrusions 210. Accordingly, the potential risk of injury to the person's foot is reduced.

[0061] In some embodiments, the scope of the disclosure is not limited to the heel counter 132 having a rectangular shape. In an example embodiment, the heel counter 132 may have another shape such as, but not limited to, a circular shape, an arch shape, or any other polygon shape. Further, In some embodiments, the scope of the disclosure is not limited to the heel counter 132 fixedly coupled to the footwear 100. In an example embodiment, the heel counter 132 may be retroactively coupled to the footwear 100. To this end, the first collar segment 138 and the second collar segment 140 may have a coupling means that may facilitate coupling of the first collar segment 138 and the second collar segment 140 with the heel counter 132. Some examples of the coupling means may include, but not limited to, Velcro, zipper, adhesive tape, and double tape.

[0062] In some example embodiments, certain ones of the operations herein may be modified or further amplified as described below. Moreover, in some embodiments additional optional operations may also be included. It should be appreciated that each of the modifications, optional additions or amplifications described herein may be included with the operations herein either alone or in combination with any others among the features described herein.

[0063] The foregoing method descriptions and the process flow diagrams are provided merely as illustrative examples and are not intended to require or imply that the steps of the various embodiments must be performed in the order presented. As will be appreciated by one of skill in the art the order of steps in the foregoing embodiments may be performed in any order. Words such as "thereafter," "then," "next," etc. are not intended to limit the order of the steps; these words are simply used to guide the reader through the description of the methods. Further, any reference to claim elements in the singular, for example, using the articles "a," "an" or "the" is not to be construed as limiting the element to the singular.

[0064] Many modifications and other embodiments of the inventions set forth herein will come to mind to one skilled in the art to which these inventions pertain having the benefit of teachings presented in the foregoing descriptions and the associated drawings. Although the figures only show certain components of the apparatus and systems described herein, it is understood that various other components may be used in conjunction with the supply management system. Therefore, it is to be understood that the inventions are not to be limited to the specific embodiments disclosed and that modifications and other embodiments are intended to be included within the scope of the appended claims. Moreover, the steps in the method described above may not necessarily occur in the order depicted in the accompanying diagrams, and in some cases one or more of the steps depicted may occur substantially simultaneously, or additional steps may be involved. Although specific terms are employed herein, they are used in a generic and descriptive sense only and not for purposes of limitation.

Claims

1. An article of a footwear, the article comprising:

a sole;

a heel counter extending from the sole along a vertical axis of the article of the footwear, wherein the heel counter comprises an internal surface and an external surface defining a plurality of protrusions, wherein the internal surface is adapted to be in contact with a foot, and wherein the plurality of protrusions facilitates a substantial uniform dissipation of force originating from the foot.

2. The article of the footwear of claim 1 further comprising a forefoot portion, a midfoot portion, and a heel portion, wherein the forefoot portion, the heel portion, and the midfoot portion are defined along a longitudinal axis of the article of the footwear, optionally wherein the midfoot portion is positioned between the heel portion and the forefoot portion.

3. The article of the footwear of any of the preceding claims further comprising an upper portion, wherein the upper portion is disposed on the sole along a vertical axis of the article of the footwear,

optionally wherein the upper portion includes a toe box region, a waist region, a collar region, and the heel counter,

optionally wherein collar region includes a first collar segment and a second collar segment, wherein the first collar segment and the second collar segment extend from waist region along a first edge and a second edge of the sole, respectively, and wherein the first collar segment and the second collar segment are coupled to the heel counter.

4. The article of the footwear of any of the preceding claims further comprising a first periphery and a second periphery that are spaced apart from each other along a longitudinal axis of the article of the footwear, wherein the heel counter is positioned at the second periphery.

5. The article of the footwear of any of the preceding claims, wherein the plurality of protrusions have a predefined shape, wherein the predefined shape of the plurality of protrusions changes upon application of the force originated from the foot of a person, optionally wherein the predefined shape comprises at least one of a cylindrical shape, a cube shape, a cuboid shape, a tetrahedron shape, a pyramid shape, and a spherical shape.

6. The article of the footwear of any of the preceding

claims, wherein the heel counter has a height, a width, and a thickness, wherein the width of the heel counter is in a range between 30mm and 50mm, wherein the height of the heel counter is in a range between 45mm and 65mm, and wherein the thickness of the heel counter is in a range between 0.5mm to 3mm.

7. The article of the footwear of any of the preceding claims, wherein the plurality of protrusions have a diameter in a range between 4mm and 10mm, and wherein a height of the plurality of protrusions is in a range between 1mm and 6mm.

8. The article of the footwear of any of the preceding claims, wherein the external surface of the heel counter defines the plurality of protrusions arranged in a predefined pattern, wherein the plurality of protrusions are arranged in one or more rows and one or more columns.

9. A heel counter for an article of footwear, the heel counter comprising:

a padded segment having an internal surface and an external surface, the external surface defining a plurality of protrusions, wherein the internal surface of the padded segment is adapted to be in contact with a foot, and wherein the plurality of protrusions facilitates a substantial uniform dissipation of force originating from the foot.

10. The heel counter of claim 9, wherein the plurality of protrusions has a predefined shape, wherein the predefined shape of the plurality of protrusions changes upon application of the force originated from the foot of a person.

11. The heel counter of claim 10, the predefined shape comprises at least one of a cylindrical shape, a cube shape, a cuboid shape, a tetrahedron shape, a pyramid shape, and a spherical shape.

12. The heel counter of any of claims 9 to 11, wherein:

the padded segment has a height, a width, and a thickness, wherein the width of the padded segment is in a range between 30mm and 50mm, wherein the height of the padded segment is in a range between 45mm and 65mm, and wherein the thickness of the padded segment is in a range between 0.5mm to 3mm; and/or the plurality of protrusions has a diameter in a range between 4mm and 10mm, and wherein a height of the plurality of protrusions is in a range between 1mm and 6mm.

13. The heel counter of any of claims 9 to 12, wherein the external surface of the padded segment defines the

plurality of protrusions arranged in a predefined pattern, wherein the plurality of protrusions is arranged in one or more rows and one or more columns.

14. A heel counter comprising:
a padded segment configured to be coupled to a heel portion of an article of footwear such that the padded segment extends from the heel portion of the footwear, the padded segment having an internal surface and an external surface, the external surface defining a plurality of protrusions, wherein the internal surface of the padded segment is adapted to be in contact with a foot, and wherein the plurality of protrusions facilitates a substantial uniform dissipation of force originating from the foot.
15. The heel counter of claim 14, wherein the plurality of protrusions has a predefined shape, wherein the predefined shape of the plurality of protrusions changes upon application of the force originated from the foot of a person.

Amended claims in accordance with Rule 137(2) EPC.

1. An article of a footwear (100), the article comprising:
a sole (116);
a heel counter (132) extending from the sole (116) along a vertical axis (118) of the article of the footwear (100), wherein the heel counter (132) comprises an internal surface (220) and an external surface (202) defining a plurality of protrusions (210), wherein the internal surface (220) is adapted to be in contact with a foot.
2. The article of the footwear (100) of claim 1 further comprising an upper portion (114), wherein the upper portion (114) is disposed on the sole (116) along a vertical axis (118) of the article of the footwear (100),
optionally wherein the upper portion (114) includes a toe box region (126), a waist region (128), a collar region (130), and the heel counter (132),
optionally wherein the collar region (130) includes a first collar segment (138) and a second collar segment (140), wherein the first collar segment (138) and the second collar segment (140) extend from the waist region (128) along a first edge and a second edge of the sole (116), respectively, and wherein the first collar segment (138) and the second collar segment (140) are coupled to the heel counter (132).
3. The article of the footwear (100) of any of the preceding claims, wherein the plurality of protrusions

(210) have a predefined shape, wherein the predefined shape of the plurality of protrusions (210) changes upon application of the force originated from the foot of a person,

optionally wherein the predefined shape comprises at least one of a cylindrical shape, a cube shape, a cuboid shape, a tetrahedron shape, a pyramid shape, and a spherical shape.

4. The article of the footwear of any of the preceding claims, wherein the heel counter (132) has a height, a width, and a thickness, wherein the width of the heel counter (132) is in a range between 30mm and 50mm, wherein the height of the heel counter (132) is in a range between 45mm and 65mm, and wherein the thickness of the heel counter (132) is in a range between 0.5mm to 3mm.
5. The article of the footwear of any of the preceding claims, wherein the plurality of protrusions (210) have a diameter in a range between 4mm and 10mm, and wherein a height of the plurality of protrusions (210) is in a range between 1mm and 6mm.
6. The article of the footwear of any of the preceding claims, wherein the external surface (202) of the heel counter (132) defines the plurality of protrusions (210) arranged in a predefined pattern, wherein the plurality of protrusions (210) are arranged in one or more rows and one or more columns.
7. A heel counter (132) for an article of footwear (100), the heel counter (132) comprising:
a padded segment having an internal surface (220) and an external surface (202), the external surface (202) defining a plurality of protrusions (210), wherein the internal surface (220) of the padded segment is adapted to be in contact with a foot.
8. The heel counter (132) of claim 7, wherein the plurality of protrusions (210) has a predefined shape, wherein the predefined shape of the plurality of protrusions (210) changes upon application of the force originated from the foot of a person.
9. The heel counter (132) of claim 8, the predefined shape comprises at least one of a cylindrical shape, a cube shape, a cuboid shape, a tetrahedron shape, a pyramid shape, and a spherical shape.
10. The heel counter (132) of any of claims 7 to 9, wherein:

the padded segment has a height, a width, and a thickness, wherein the width of the padded segment is in a range between 30mm and 50mm, wherein the height of the padded segment is in a range between 45mm and 65mm, and wherein

the thickness of the padded segment is in a range between 0.5mm to 3mm; and/or the plurality of protrusions (210) have a diameter in a range between 4mm and 10mm, and wherein a height of the plurality of protrusions (210) is in a range between 1mm and 6mm. 5

11. The heel counter (132) of any of claims 7 to 10, wherein the external surface (202) of the padded segment defines the plurality of protrusions (210) arranged in a predefined pattern, wherein the plurality of protrusions (210) are arranged in one or more rows and one or more columns. 10

12. The heel counter (132) of any of claims 7 to 11, wherein: the padded segment is configured to be coupled to a heel portion of an article of footwear such that the padded segment extends from the heel portion of the footwear. 15 20

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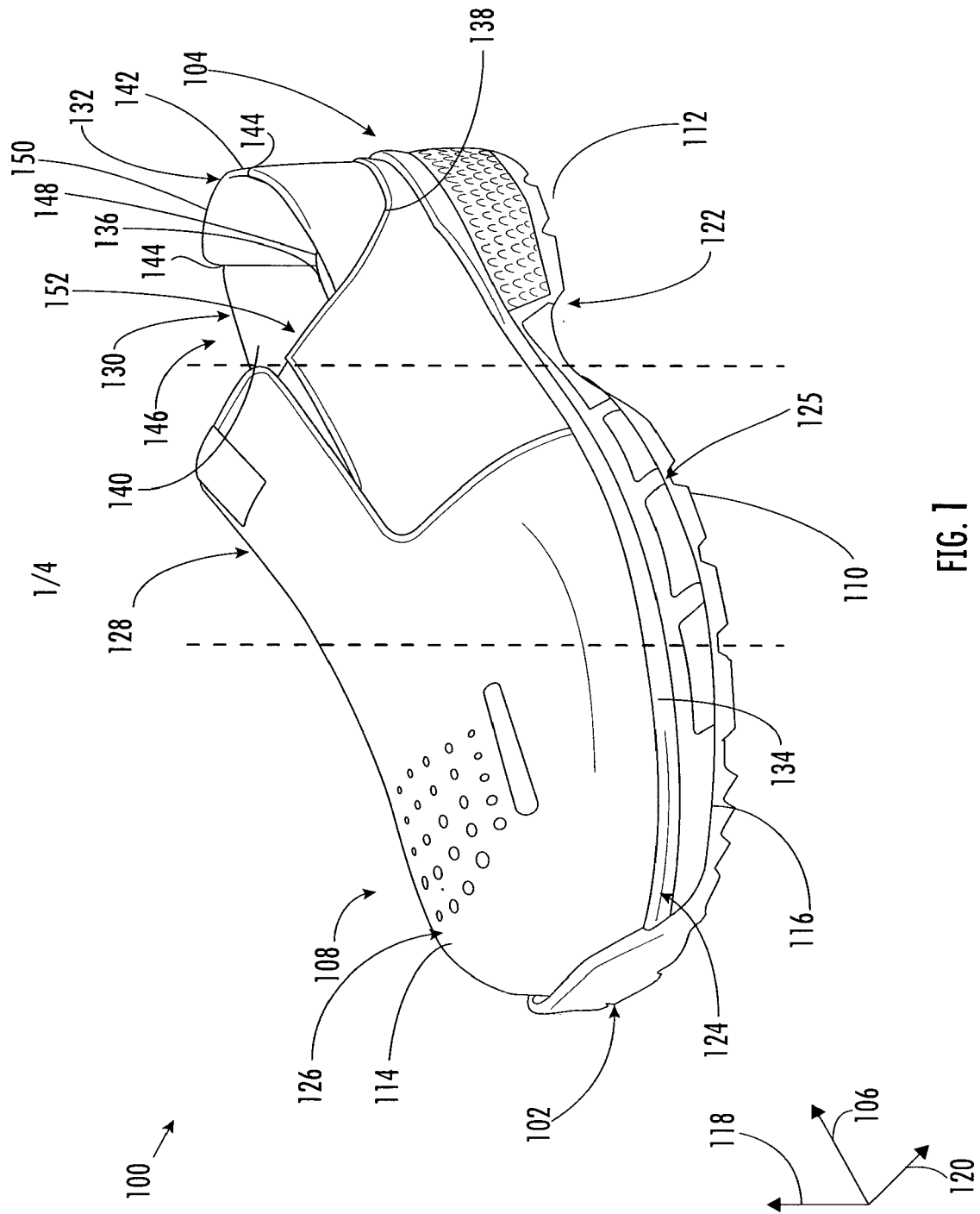


FIG. 1

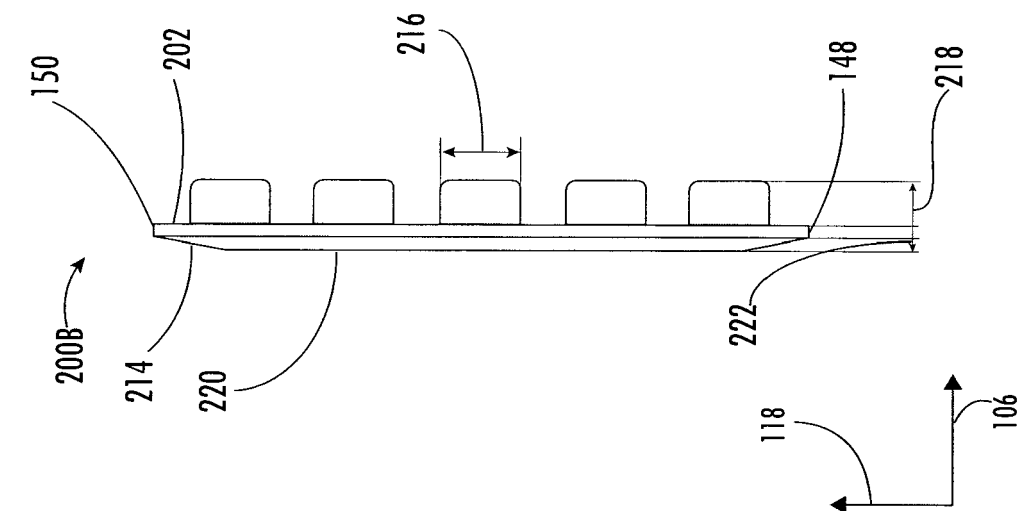


FIG. 2B

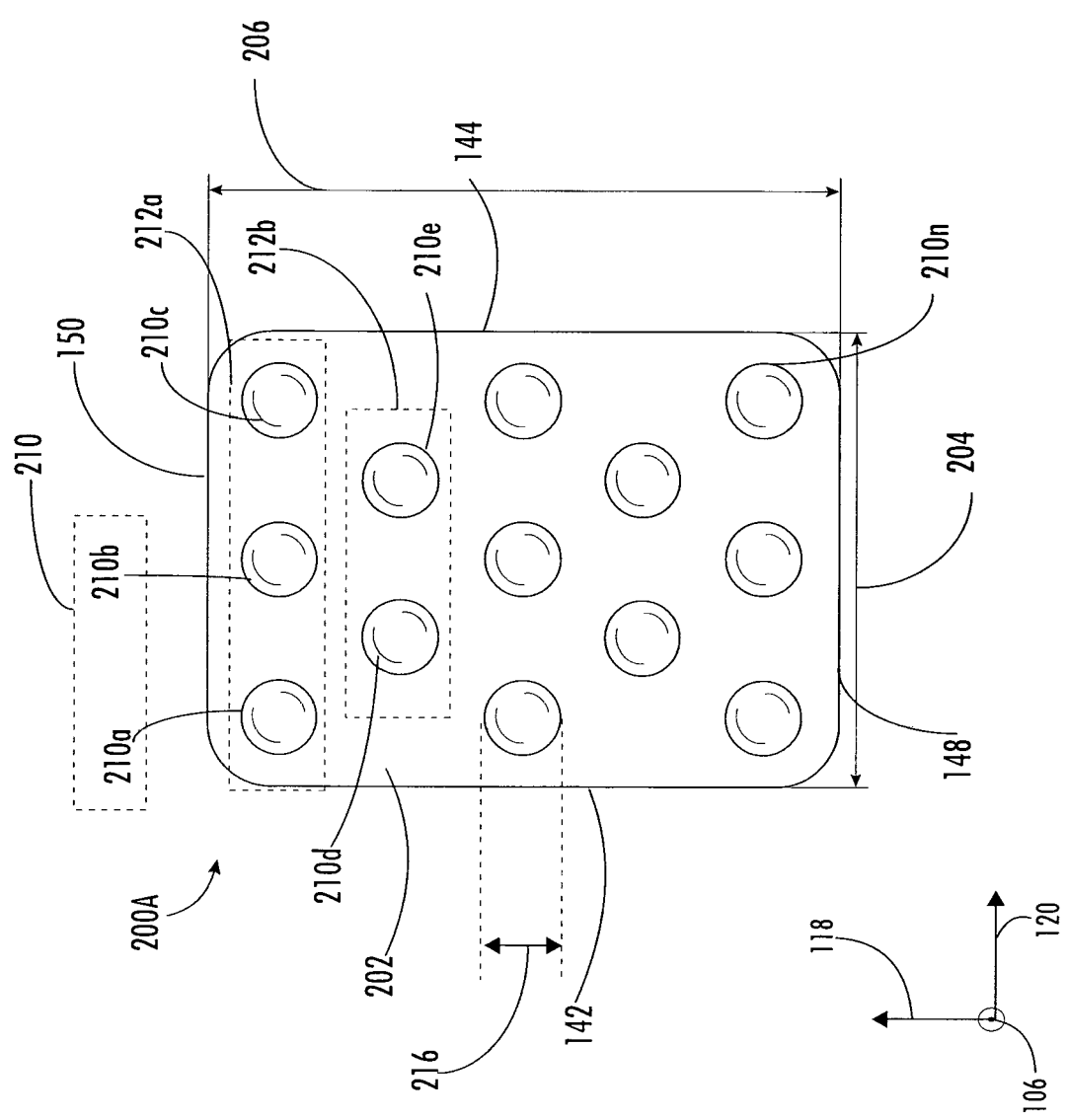


FIG. 2A

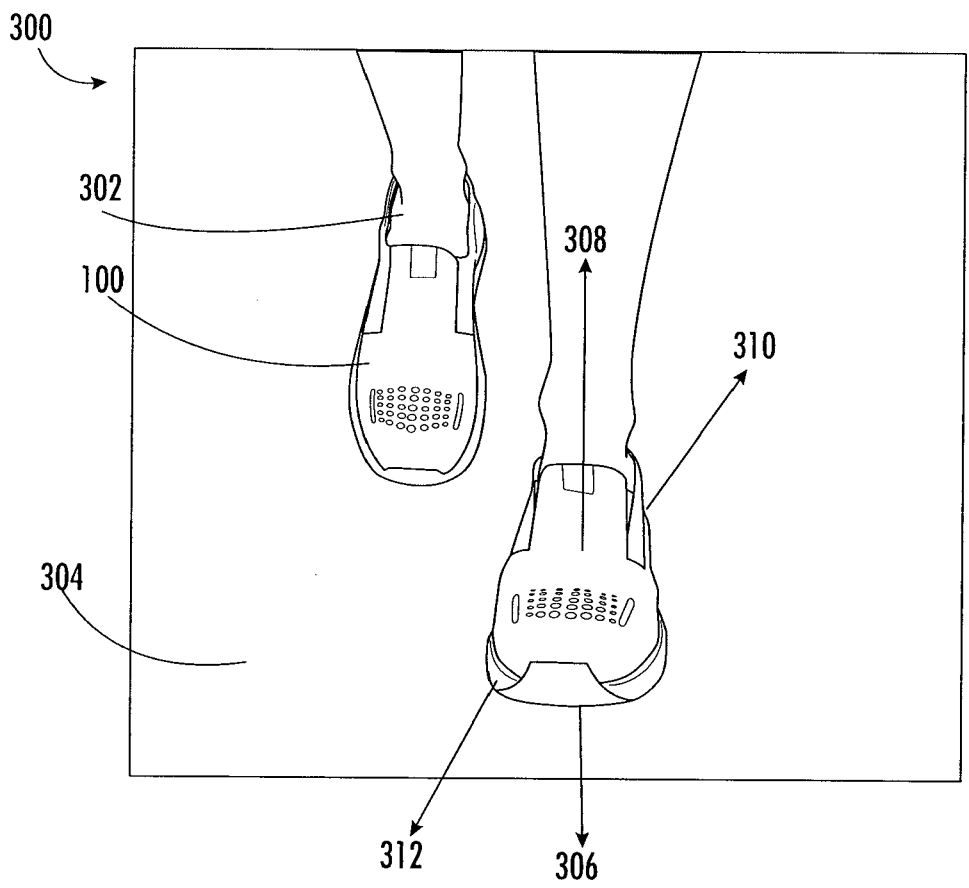
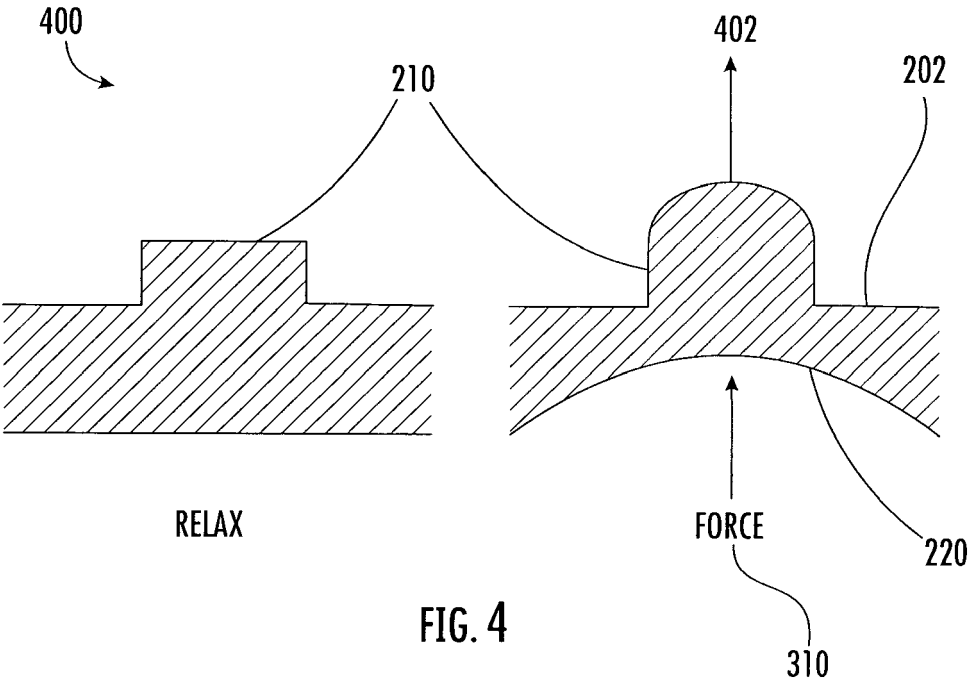


FIG. 3





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Application Number

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