



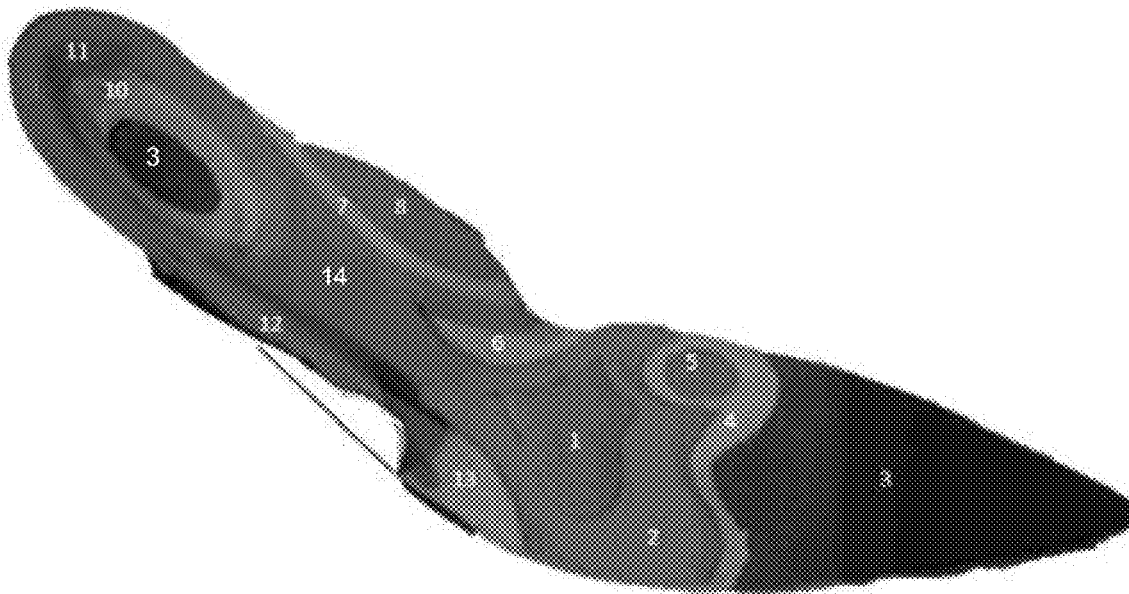
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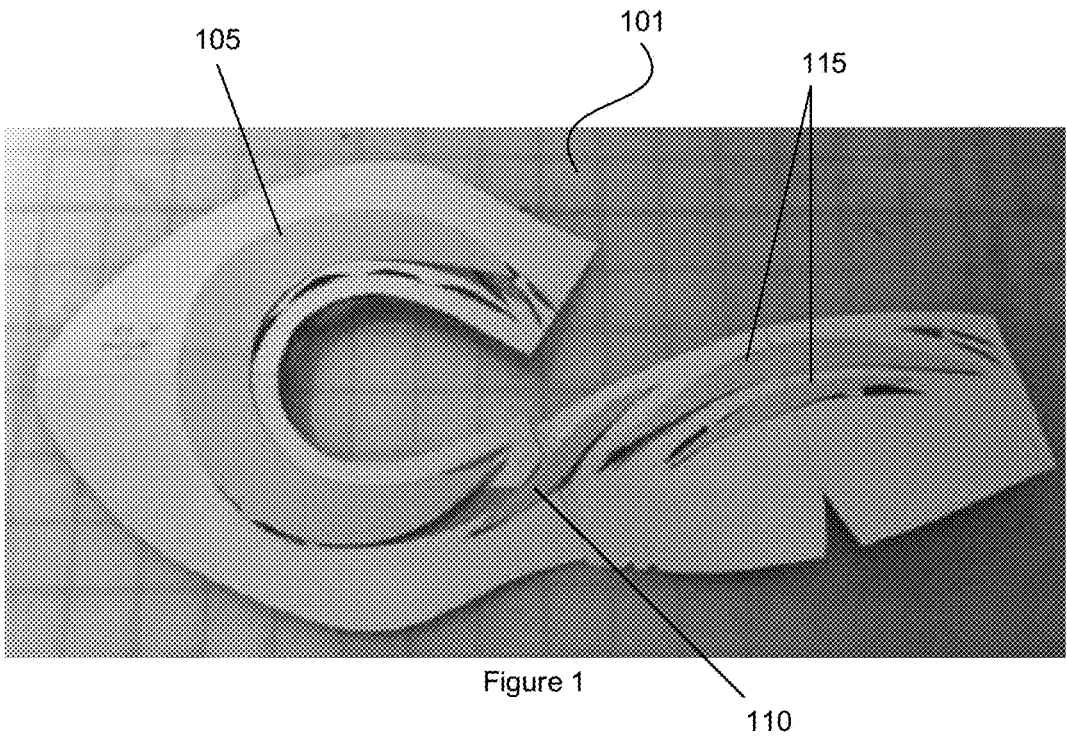
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Saint Dunbar et al.(10) **Pub. No.: US 2018/0168278 A1**(43) **Pub. Date: Jun. 21, 2018**(54) **FOOTWARE SYSTEM****Publication Classification**(71) Applicants: **Antonia Saint Dunbar**, Astoria, NY
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(US); **Keiko Hirosue**, Brooklyn, NY
(US); **Suzanne Levine**, New York, NY
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7/149 (2013.01); *A43B 7/144* (2013.01); *A43B*
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7/24 (2013.01); *A43B 7/1425* (2013.01); *A43B*
17/02 (2013.01)(21) Appl. No.: **15/702,581**(22) Filed: **Sep. 12, 2017****Related U.S. Application Data**(60) Provisional application No. 62/361,442, filed on Jul.
12, 2016, provisional application No. 62/361,445,
filed on Jul. 12, 2016.

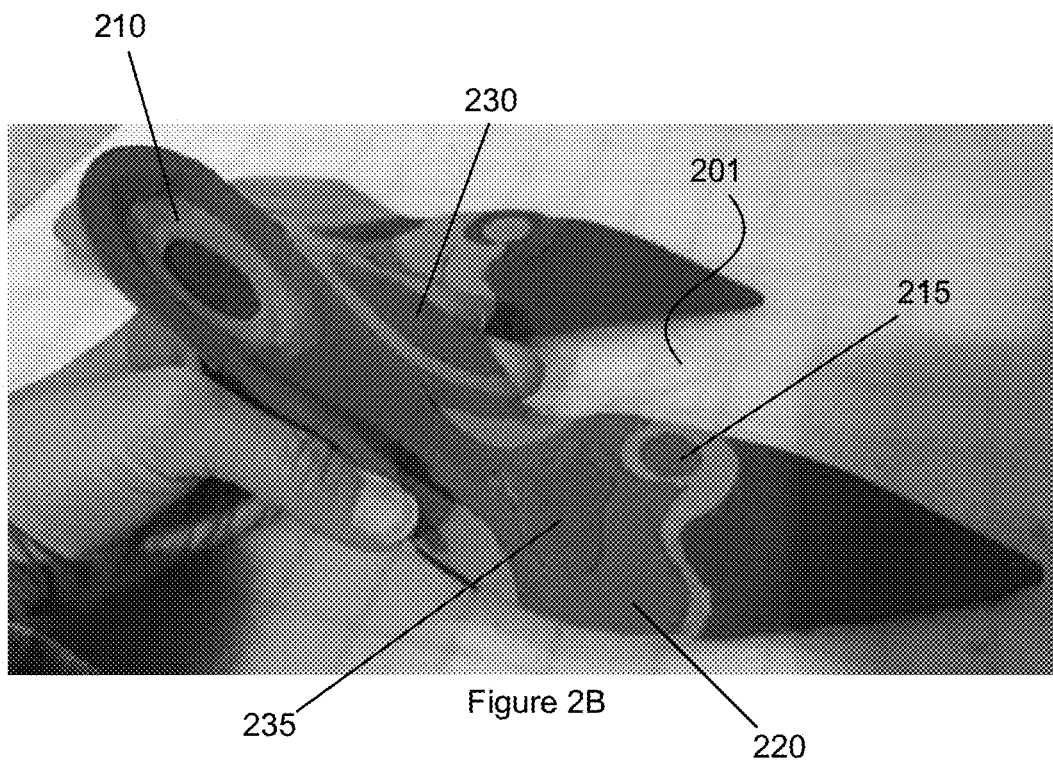
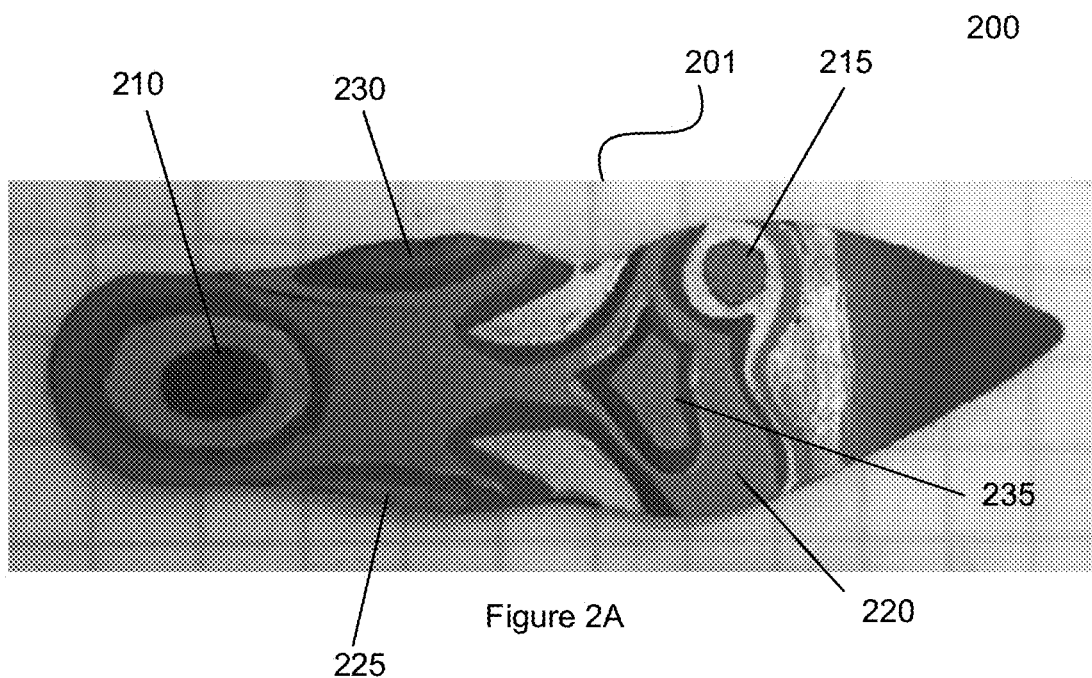
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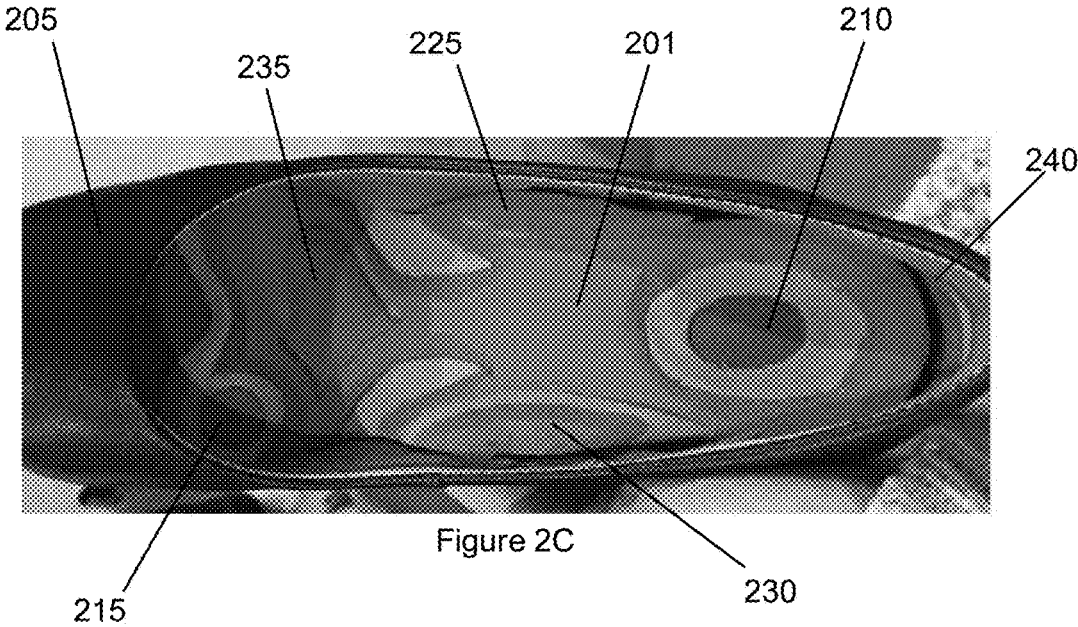
ABSTRACT

A device and method is provided for an insert and shoe systems that includes systems where a custom insert attaches to a high heel shoe comprising a material having various densities arranged in an aesthetically pleasing manner providing support to multiple areas of the foot. The insert and shoe may include an auxiliary support area covered by a thin material and located around the back heel portion and above the toe area.









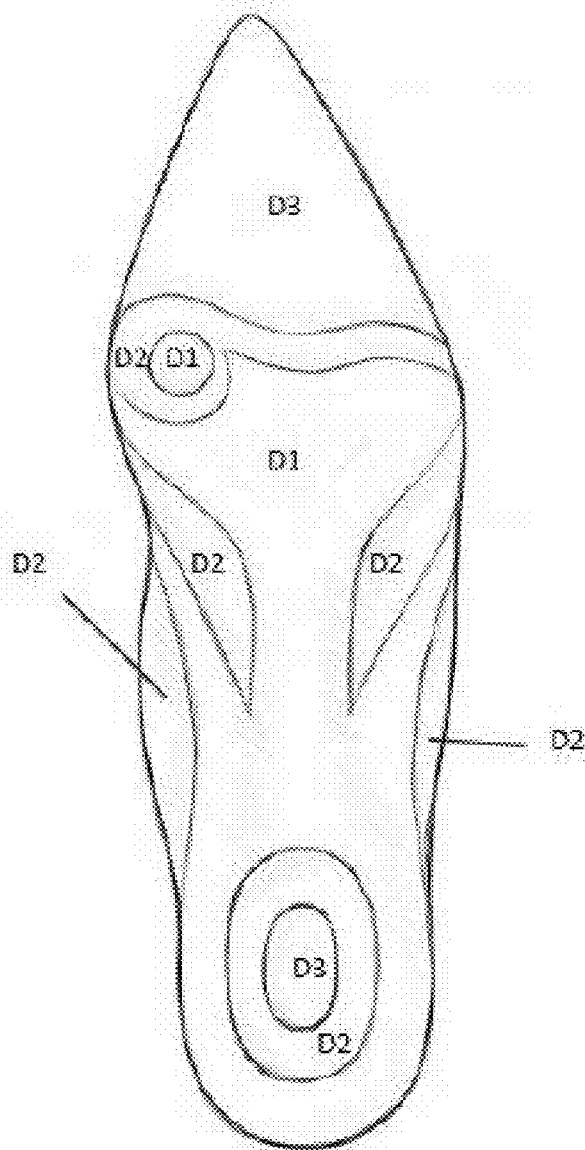


Figure 3

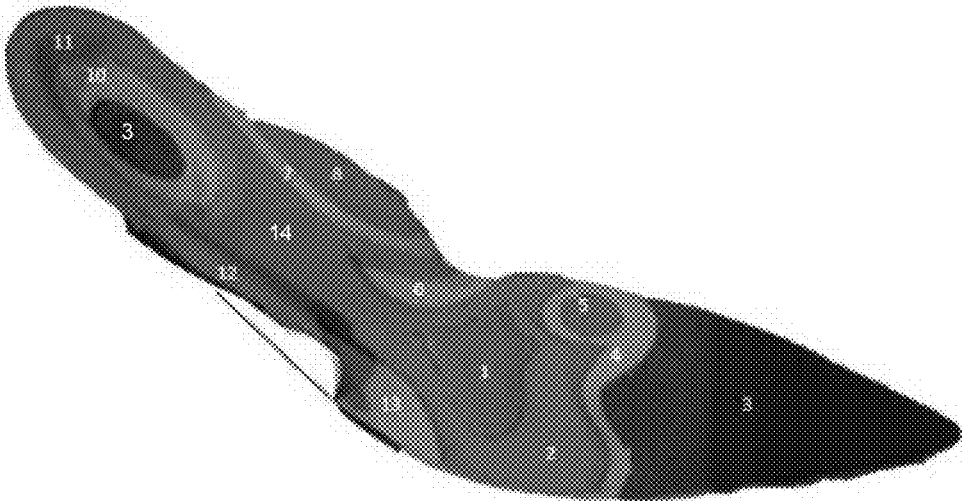


Figure 4

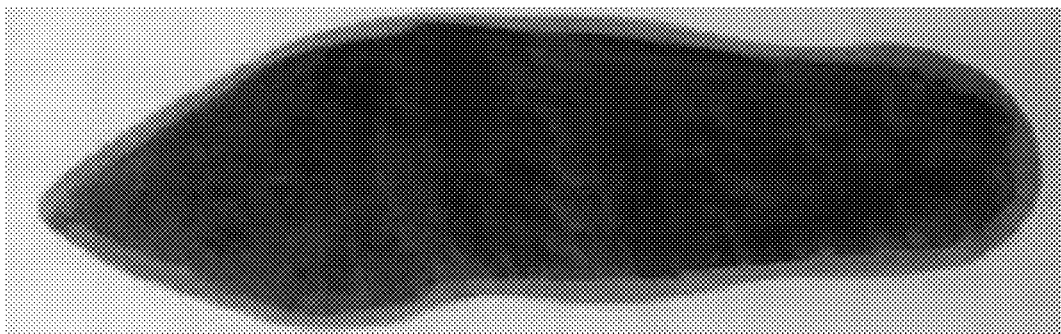


Figure 5A

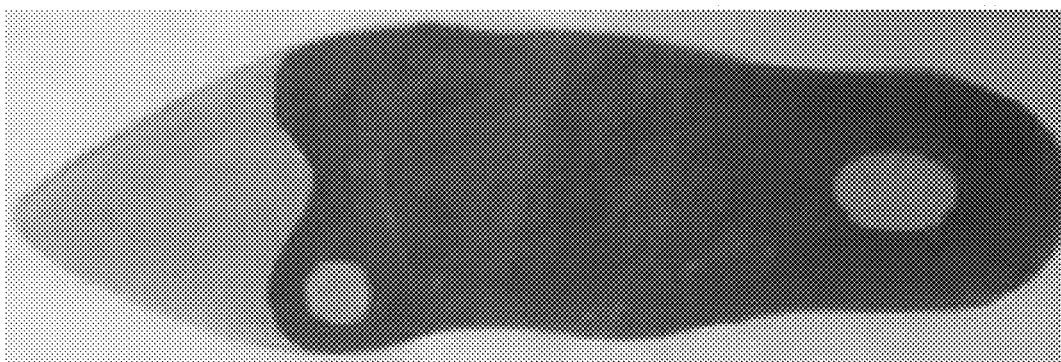


Figure 5B

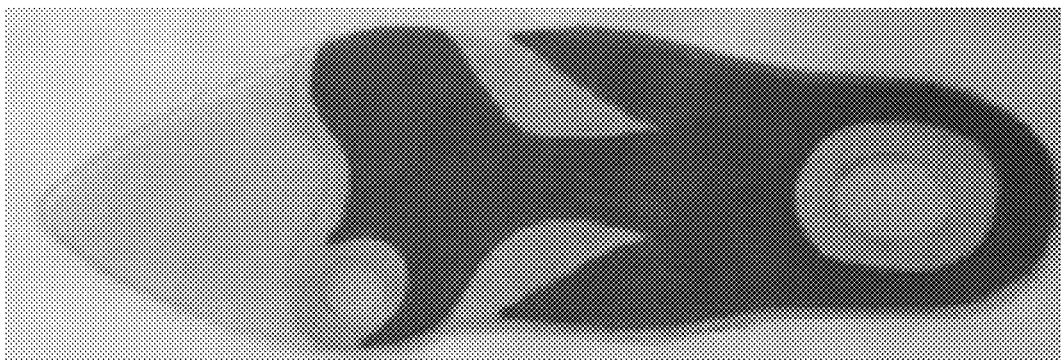


Figure 5C

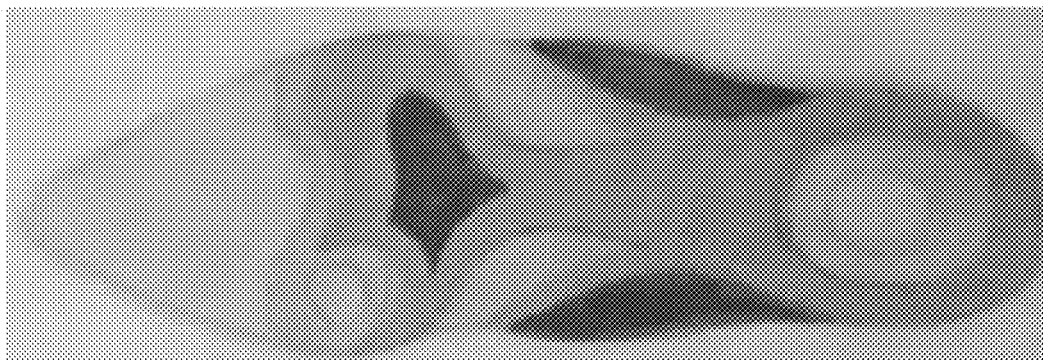


Figure 5D

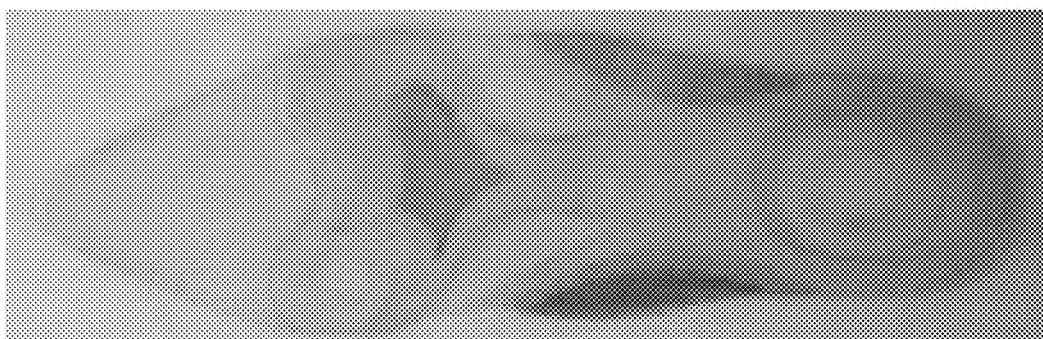


Figure 5E

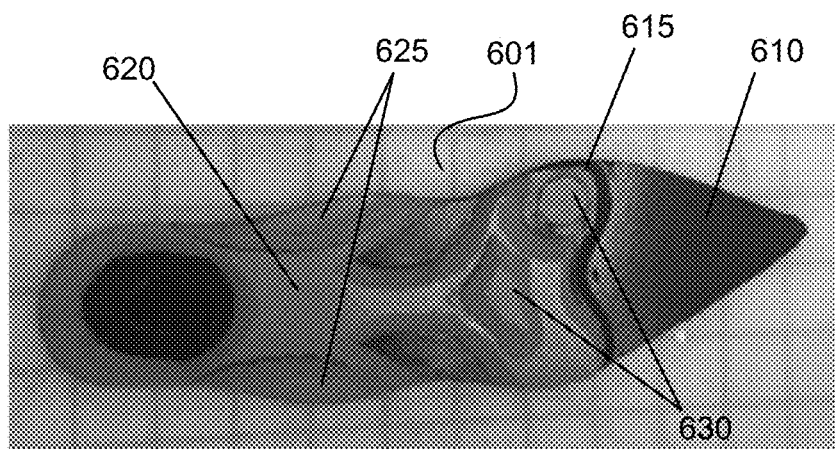


Figure 6A

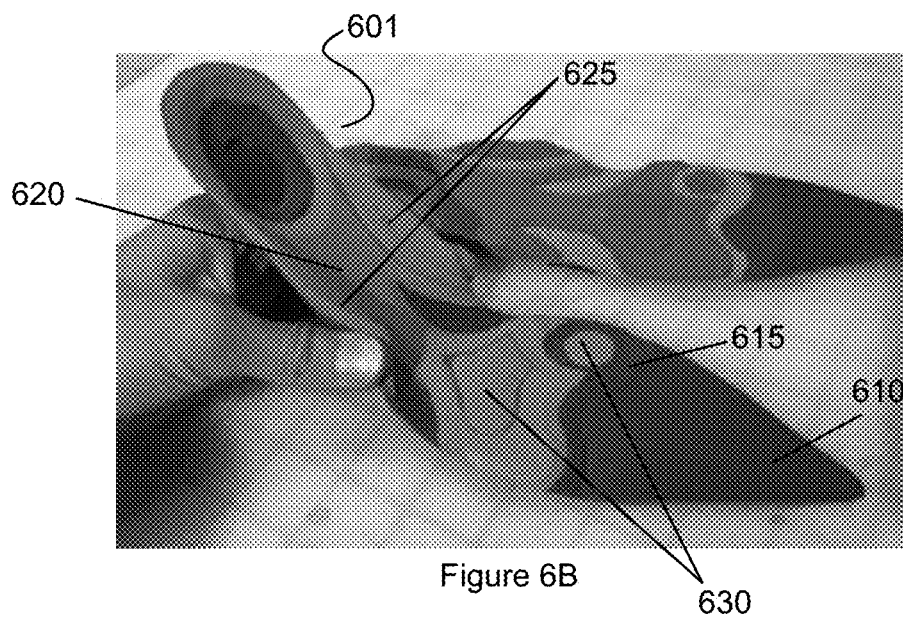


Figure 6B

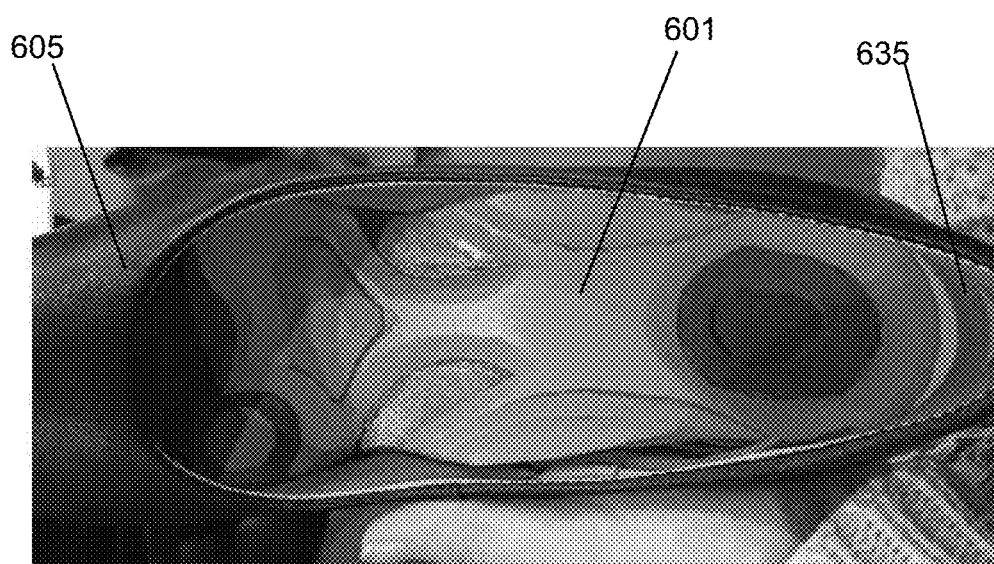


Figure 6C

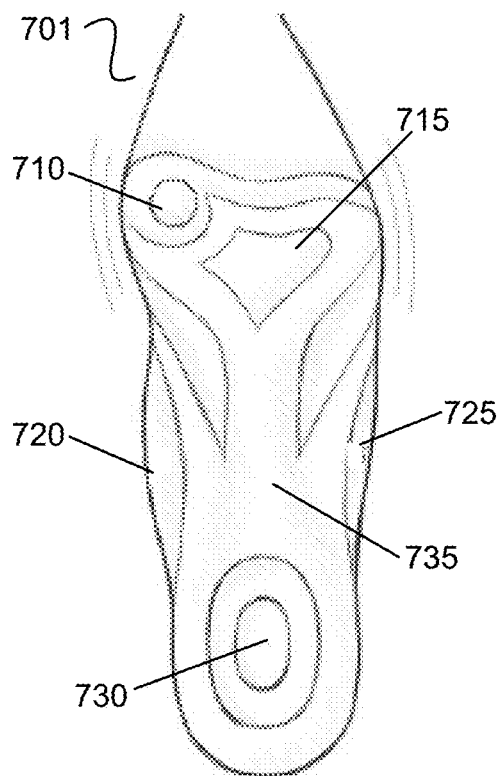


Figure 7A

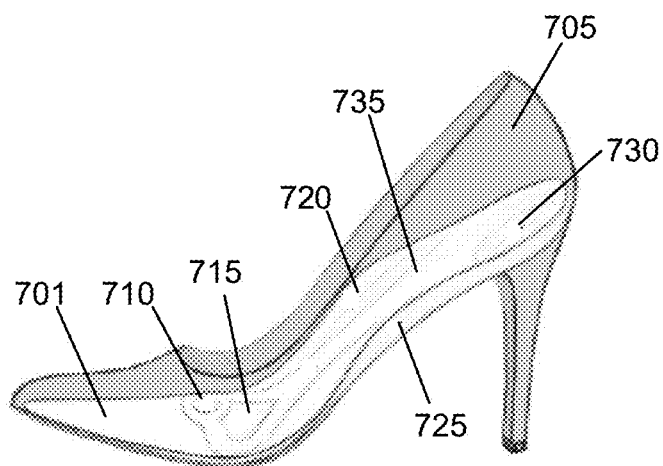
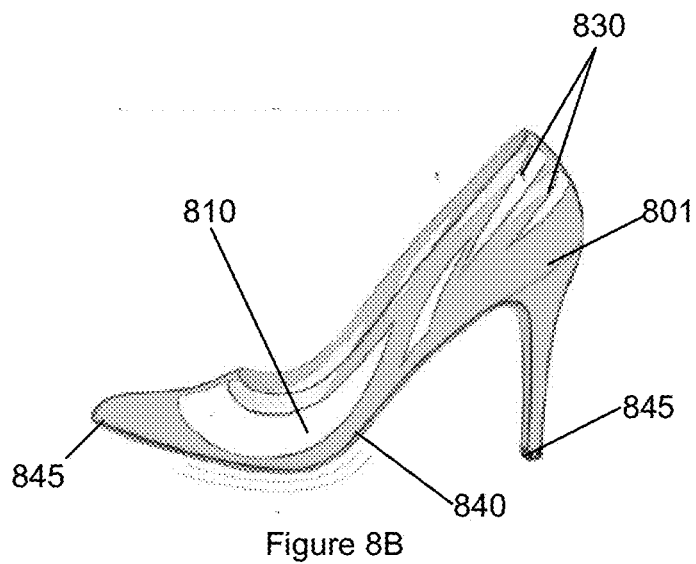
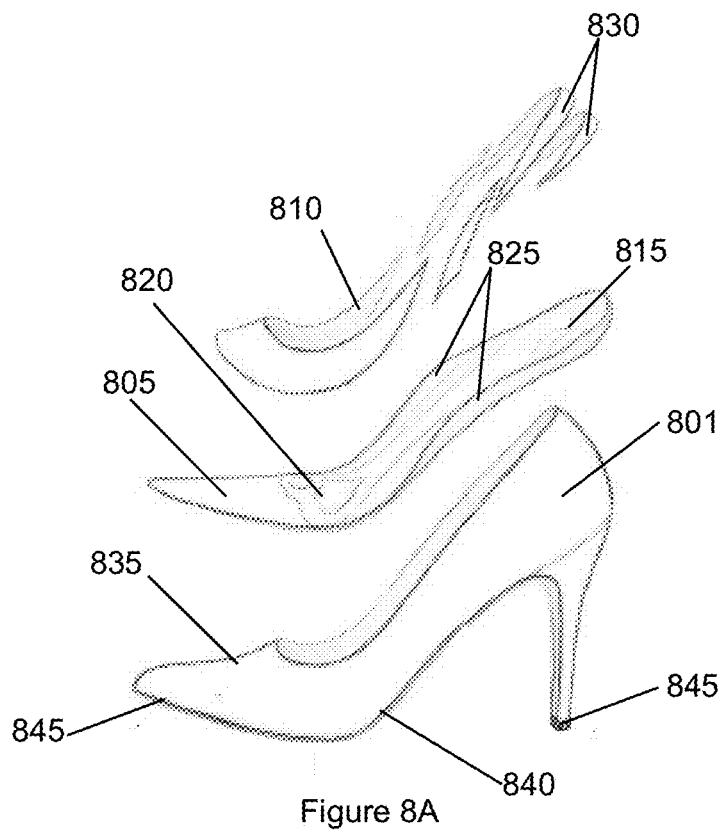


Figure 7B



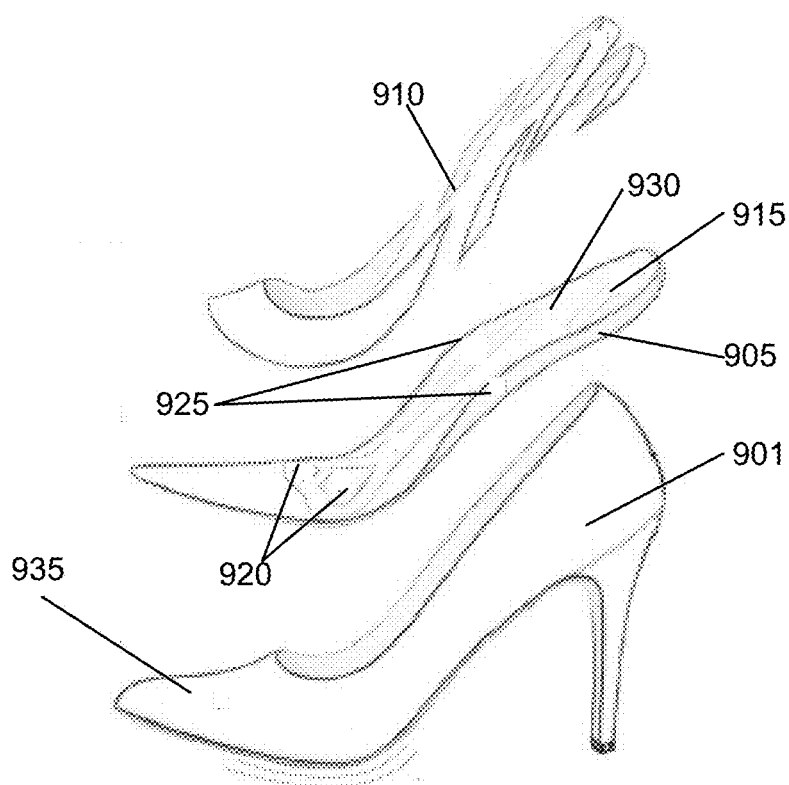
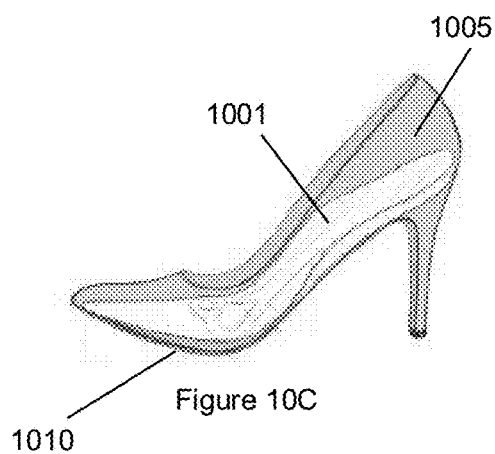
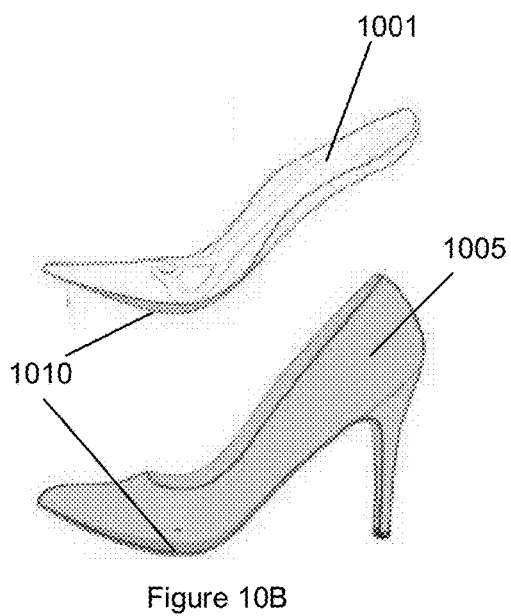
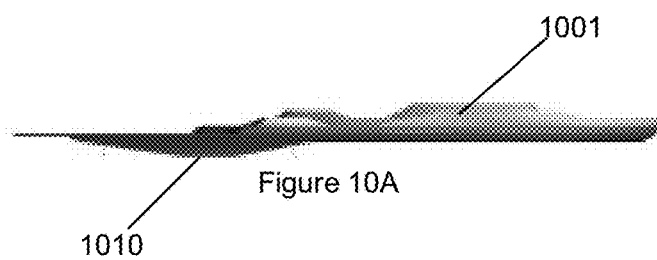


Figure 9



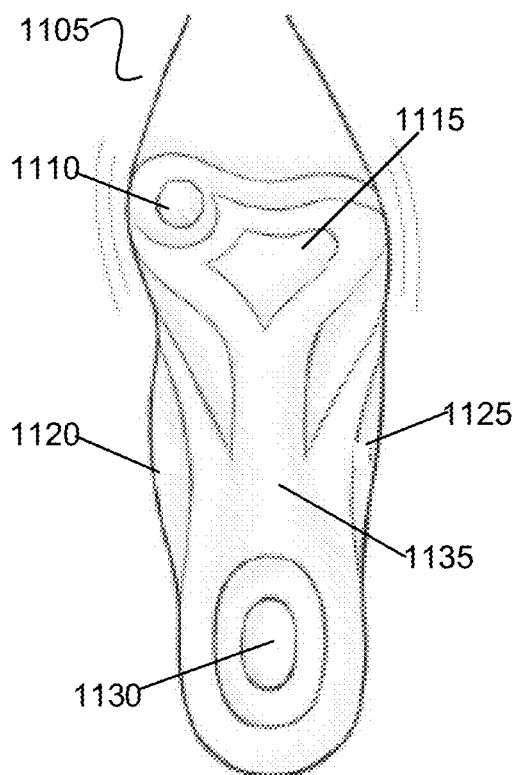


Figure 11A

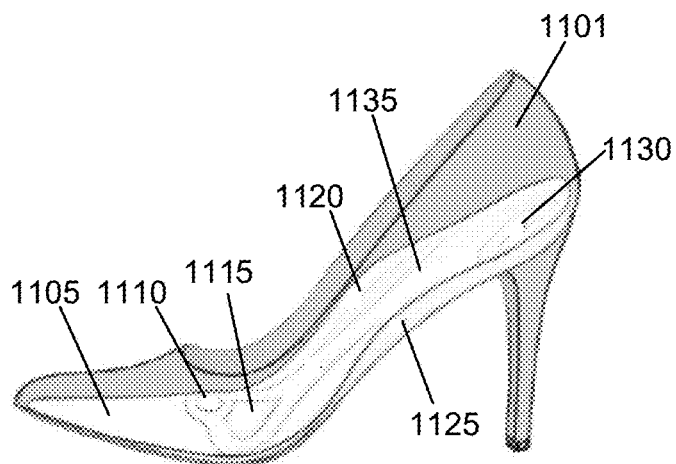
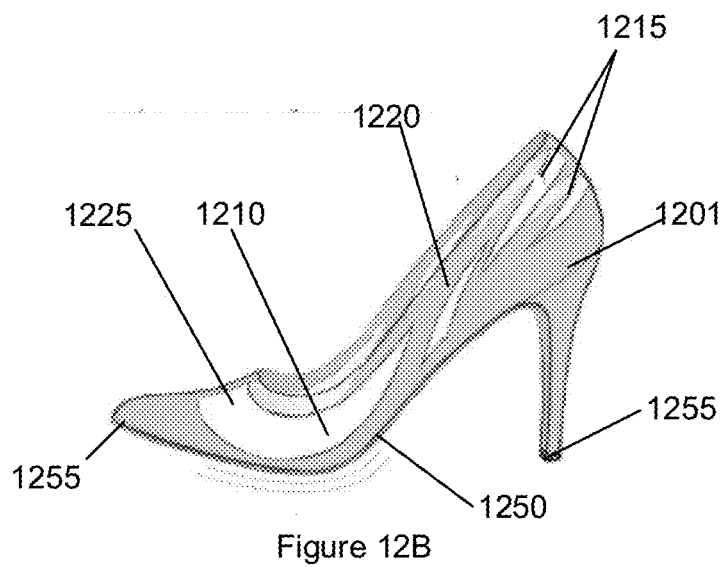
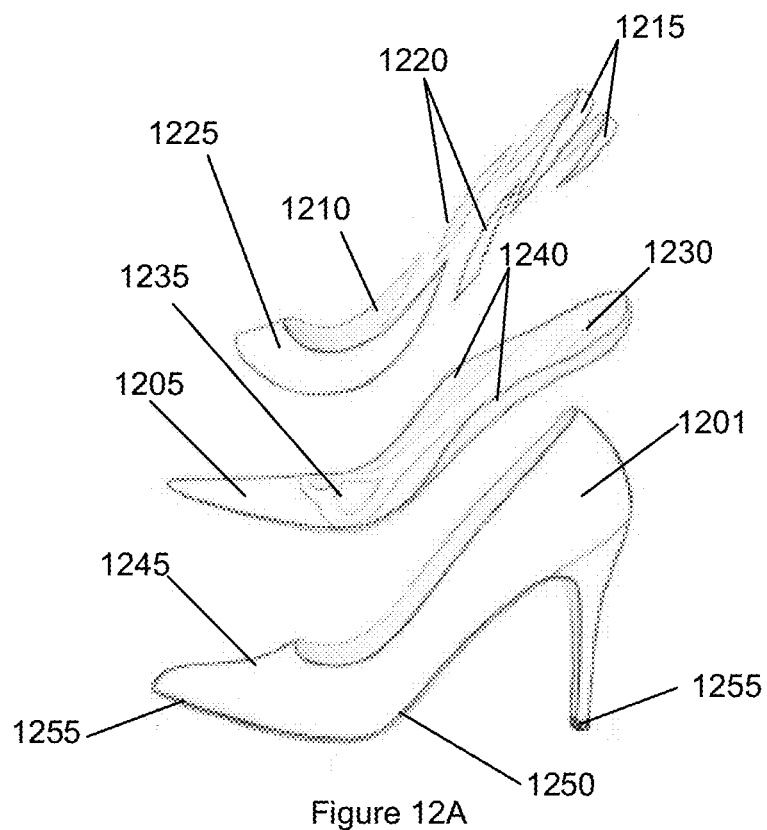


Figure 11B



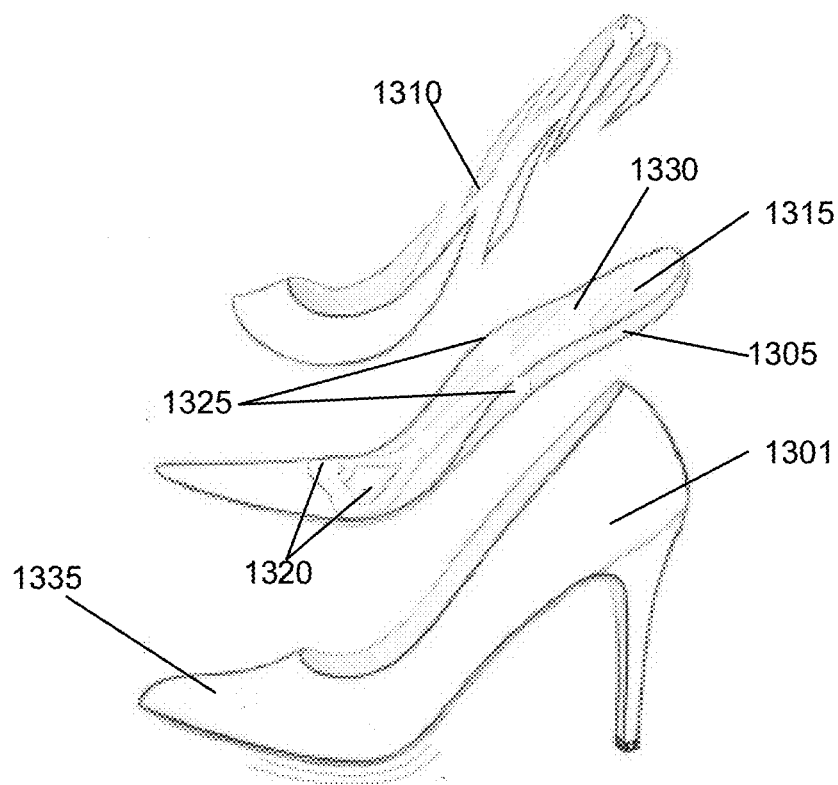


Figure 13

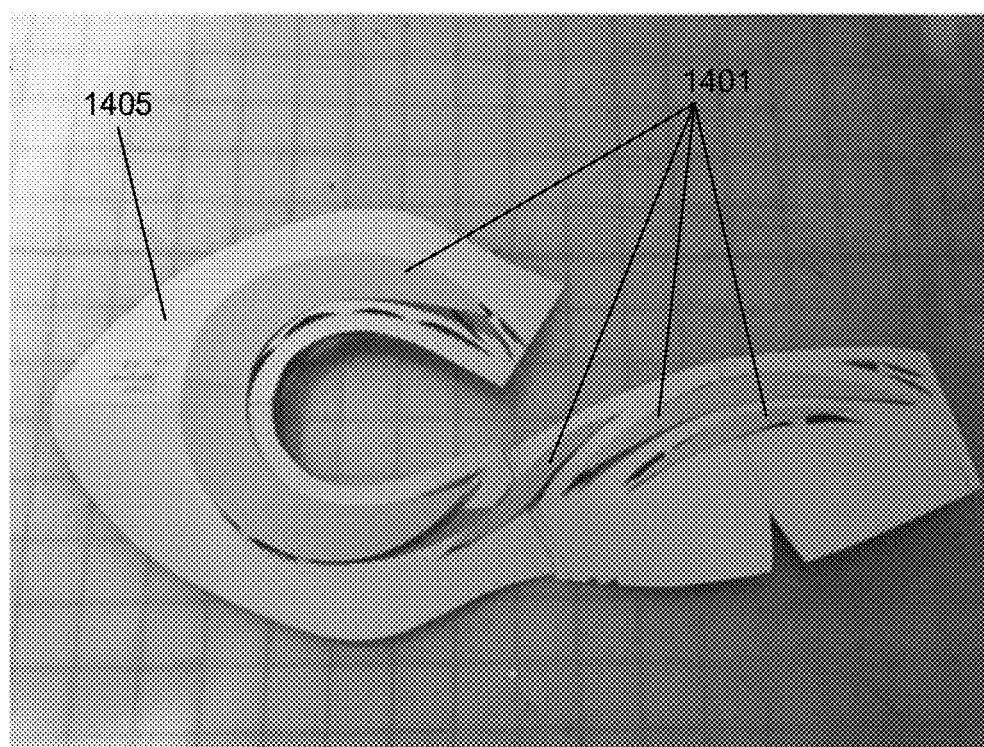
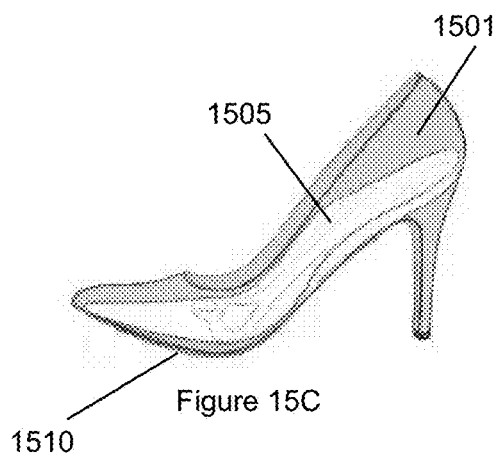
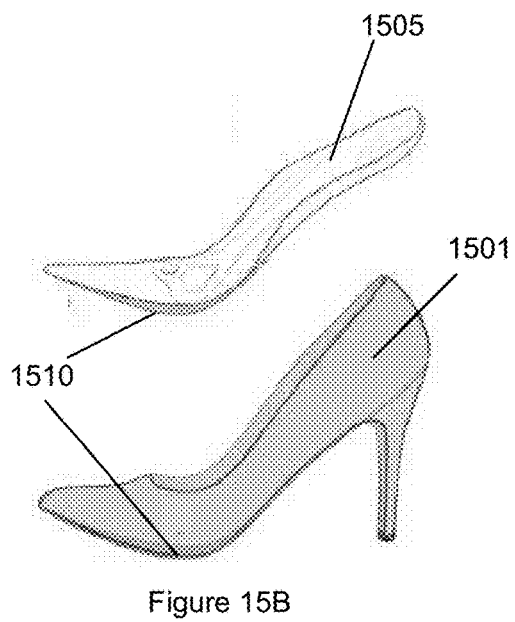
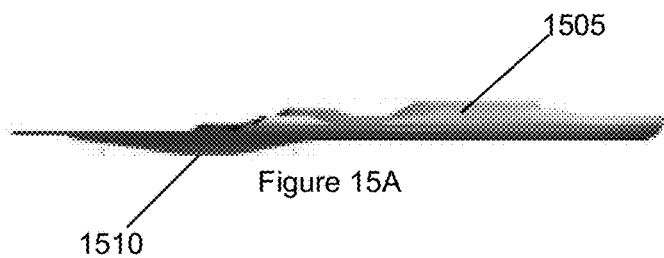


Figure 14



FOOTWEAR SYSTEM**CROSS-REFERENCE TO RELATED APPLICATIONS**

[0001] The present Utility patent application claims priority benefit of the U.S. provisional application for patent Ser. No. 62/361,442 entitled “Specialized Women’s Shoe Insert”, filed on Jul. 12, 2016 and provisional application for patent Ser. No. 62/361,445 entitled “Specialized Women’s Shoe Insert, System” filed on Jul. 12, 2016 under 35 U.S.C. 119(e). The contents of these related provisional applications are incorporated herein by reference for all purposes to the extent that such subject matter is not inconsistent herewith or limiting hereof.

RELATED CO-PENDING U.S. PATENT APPLICATIONS

[0002] Not applicable.

INCORPORATION BY REFERENCE OF SEQUENCE LISTING PROVIDED AS A TEXT FILE

[0003] Not applicable

FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0004] Not applicable.

REFERENCE TO SEQUENCE LISTING, A TABLE, OR A COMPUTER LISTING APPENDIX

[0005] Not applicable.

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BACKGROUND OF THE RELEVANT PRIOR ART

[0007] One or more embodiments of the invention generally relate to footwear. More particularly, certain embodiments of the invention relate to a footwear system that may provide a shoe comprising a specialized insert and upper support areas arranged at specific positions in the shoe.

[0008] The following background information may present examples of specific aspects of the prior art (e.g., without limitation, approaches, facts, or common wisdom) that, while expected to be helpful to further educate the reader as to additional aspects of the prior art, is not to be construed as limiting the present invention, or any embodiments thereof, to anything stated or implied therein or inferred thereupon. It is believed that it may be difficult in the retail space to find a comfortable off-the-shelf or custom-fit shoe made of quality construction that remains stylish and desirable aesthetically. For example, orthopedic shoes may provide support yet are typically not stylish or attractive, while

stylish shoes are often uncomfortable and less advanced in providing support. Additionally, the mass production process typically creates shoes that are exactly the same size for each foot although the left and right feet of many people may not be symmetrical. One may expect that due to the desire to keep costs low in the production process, many mass produced shoes may not include comfort modifications.

[0009] By way of educational background, an aspect of the prior art generally useful to be aware of is that there are some currently available products that may enable users to add comfort modifications to shoes. Some such products may include inserts, insoles, pads, cushions, arch supports, heel cups, etc. It is believed that some current products may provide support to the medial and/or the lateral arch of the foot yet typically do not provide support for the transverse arch, also known as the vault of the foot, or the ball of the foot formed by the heads of the metatarsal bones. In addition, currently available orthopedic shoe inserts that may offer lateral, medial and transverse arch supports along with heel cups for stability typically cannot fit into high heel shoes.

[0010] In view of the foregoing, it is clear that these traditional techniques are not perfect and leave room for more optimal approaches.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] The present invention is illustrated by way of example, and not by way of limitation, in the figures of the accompanying drawings and in which like reference numerals refer to similar elements and in which:

[0012] FIG. 1 is a diagrammatic top view of an exemplary pattern piece for an upper cushion system, in accordance with an embodiment of the present invention;

[0013] FIGS. 2A, 2B, and 2C illustrate an exemplary shoe insert comprising one or more materials of different densities arranged to provide support and comfort to specific areas of the foot, in accordance with an embodiment of the present invention. FIG. 2A is a diagrammatic top view. FIG. 2B is a side perspective view, and FIG. 2C is a diagrammatic top view of the insert in place in a shoe;

[0014] FIG. 3 is a diagrammatic top view of an exemplary shoe insert comprising one or more materials of different densities, in accordance with an embodiment of the present invention;

[0015] FIG. 4 is a perspective side view of an exemplary shoe insert comprising one or more materials of different densities, in accordance with an embodiment of the present invention;

[0016] FIGS. 5A, 5B, 5C, 5D, and 5E illustrate exemplary layers of material of different densities that may be layered together to form a shoe insert, in accordance with an embodiment of the present invention. FIG. 5A is a diagrammatic top view of a base layer. FIG. 5B is a diagrammatic top view of a second layer. FIG. 5C is a diagrammatic top view of a medial layer. FIG. 5D is a multi-piece layer forming the highly cushioned areas of support under the ball and arches of the foot, and FIG. 5E is an additional layer of cushioning for the medial arch region;

[0017] FIGS. 6A, 6B, and 6C illustrate an exemplary shoe insert comprising one or more materials of different densities arranged to provide support and comfort to specific areas of the foot, in accordance with an embodiment of the present invention. FIG. 6A is a diagrammatic top view. FIG.

6B is a side perspective view, and FIG. 6C is a diagrammatic top view of the insert in place in a shoe;

[0018] FIGS. 7A and 7B illustrate an exemplary shoe insert comprising one or more materials of different densities arranged to provide support and comfort to specific areas of the foot, in accordance with an embodiment of the present invention. FIG. 7A is a diagrammatic top view of the insert, and FIG. 7B is a partially transparent, perspective side view of the insert in place in a high heel shoe;

[0019] FIGS. 8A and 8B illustrate an exemplary high heel shoe comprising various comfort and support modifications, in accordance with an embodiment of the present invention. FIG. 8A is an exploded, perspective side view of the shoe, an insert comprising one or more materials of different densities arranged to provide support and comfort to specific areas of the foot, and an upper cushion system, and FIG. 8B is a partially transparent, perspective side view of the high heel shoe;

[0020] FIG. 9 is an exploded, perspective side view of an exemplary high heel shoe with comfort modifications, an insert comprising one or more materials of different densities arranged to provide support and comfort to specific areas of the foot, and an upper cushion system, in accordance with an embodiment of the present invention;

[0021] FIGS. 10A, 10B, and 10C illustrate an exemplary shoe insert comprising one or more materials of different densities arranged to provide support and comfort to specific areas of the foot, in accordance with an embodiment of the present invention. FIG. 10A is a diagrammatic side view of the insert. FIG. 10B is an exploded, perspective side view of the insert to be placed within a high heel shoe, and FIG. 10C is a partially transparent, perspective side view of the insert in place in the high heel shoe;

[0022] FIGS. 11A and 11B illustrate an exemplary footwear system comprising a shoe and a specialized insert, in accordance with an embodiment of the present invention. FIG. 11A is a diagrammatic top view of the insert, and FIG. 11B is a partially transparent, perspective side view of the footwear system;

[0023] FIGS. 12A and 12B illustrate an exemplary footwear system comprising a shoe, a specialized insert, and upper support areas arranged at specific positions in the shoe, in accordance with an embodiment of the present invention. FIG. 12A is an exploded, perspective side view of the footwear system, and FIG. 12B is a partially transparent, perspective side view of the footwear system;

[0024] FIG. 13 is an exploded, perspective side view of an exemplary footwear system comprising a shoe, a specialized insert, and upper support areas arranged at specific positions in the shoe, in accordance with an embodiment of the present invention;

[0025] FIG. 14 is a diagrammatic top view of an exemplary pattern piece for comfort modification pieces that may form upper support areas in a shoe, in accordance with an embodiment of the present invention; and

[0026] FIGS. 15A, 15B, and 15C illustrate an exemplary footwear system comprising a shoe and a specialized insert, in accordance with an embodiment of the present invention. FIG. 15A is a diagrammatic side view of the insert. FIG. 15B is an exploded, perspective side view of the footwear system, and FIG. 15C is a partially transparent, perspective side view of the footwear system.

[0027] Unless otherwise indicated illustrations in the figures are not necessarily drawn to scale.

DETAILED DESCRIPTION OF SOME EMBODIMENTS

[0028] The present invention is best understood by reference to the detailed figures and description set forth herein.

[0029] Embodiments of the invention are discussed below with reference to the Figures. However, those skilled in the art will readily appreciate that the detailed description given herein with respect to these figures is for explanatory purposes as the invention extends beyond these limited embodiments. For example, it should be appreciated that those skilled in the art will, in light of the teachings of the present invention, recognize a multiplicity of alternate and suitable approaches, depending upon the needs of the particular application, to implement the functionality of any given detail described herein, beyond the particular implementation choices in the following embodiments described and shown. That is, there are modifications and variations of the invention that are too numerous to be listed but that all fit within the scope of the invention. Also, singular words should be read as plural and vice versa and masculine as feminine and vice versa, where appropriate, and alternative embodiments do not necessarily imply that the two are mutually exclusive.

[0030] It is to be further understood that the present invention is not limited to the particular methodology, compounds, materials, manufacturing techniques, uses, and applications, described herein, as these may vary. It is also to be understood that the terminology used herein is used for the purpose of describing particular embodiments only, and is not intended to limit the scope of the present invention. It must be noted that as used herein and in the appended claims, the singular forms “a,” “an,” and “the” include the plural reference unless the context clearly dictates otherwise. Thus, for example, a reference to “an element” is a reference to one or more elements and includes equivalents thereof known to those skilled in the art. Similarly, for another example, a reference to “a step” or “a means” is a reference to one or more steps or means and may include sub-steps and subservient means. All conjunctions used are to be understood in the most inclusive sense possible. Thus, the word “or” should be understood as having the definition of a logical “or” rather than that of a logical “exclusive or” unless the context clearly necessitates otherwise. Structures described herein are to be understood also to refer to functional equivalents of such structures. Language that may be construed to express approximation should be so understood unless the context clearly dictates otherwise.

[0031] All words of approximation as used in the present disclosure and claims should be construed to mean “approximate,” rather than “perfect,” and may accordingly be employed as a meaningful modifier to any other word, specified parameter, quantity, quality, or concept. Words of approximation, include, yet are not limited to terms such as “substantial”, “nearly”, “almost”, “about”, “generally”, “largely”, “essentially”, “closely approximate”, etc.

[0032] As will be established in some detail below, it is well settled law, as early as 1939, that words of approximation are not indefinite in the claims even when such limits are not defined or specified in the specification.

[0033] For example, see *Ex parte Mallory*, 52 USPQ 297, 297 (Pat. Off. Bd. App. 1941) where the court said “The examiner has held that most of the claims are inaccurate because apparently the laminar film will not be entirely eliminated. The claims specify that the film is “substan-

tially” eliminated and for the intended purpose, it is believed that the slight portion of the film which may remain is negligible. We are of the view, therefore, that the claims may be regarded as sufficiently accurate.”

[0034] Note that claims need only “reasonably apprise those skilled in the art” as to their scope to satisfy the definiteness requirement. See *Energy Absorption Sys., Inc. v. Roadway Safety Servs., Inc.*, Civ. App. 96-1264, slip op. at 10 (Fed. Cir. Jul. 3, 1997) (unpublished) *Hybridtech v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1385, 231 USPQ 81, 94 (Fed. Cir. 1986), cert. denied, 480 U.S. 947 (1987). In addition, the use of modifiers in the claim, like “generally” and “substantial,” does not by itself render the claims indefinite. See *Seattle Box Co. v. Industrial Crating & Packing, Inc.*, 731 F.2d 818, 828-29, 221 USPQ 568, 575-76 (Fed. Cir. 1984).

[0035] Moreover, the ordinary and customary meaning of terms like “substantially” includes “reasonably close to: nearly, almost, about”, connoting a term of approximation. See *In re Frye*, Appeal No. 2009-006013, 94 USPQ2d 1072, 1077, 2010 WL 889747 (B.P.A.I. 2010) Depending on its usage, the word “substantially” can denote either language of approximation or language of magnitude. *Deering Precision Instruments, L.L.C. v. Vector Distribution Sys., Inc.*, 347 F.3d 1314, 1323 (Fed. Cir. 2003) (recognizing the “dual ordinary meaning of th[e] term [“substantially”] as connoting a term of approximation or a term of magnitude”). Here, when referring to the “substantially halfway” limitation, the Specification uses the word “approximately” as a substitute for the word “substantially” (Fact 4). (Fact 4). The ordinary meaning of “substantially halfway” is thus reasonably close to or nearly at the midpoint between the forwardmost point of the upper or outsole and the rearwardmost point of the upper or outsole.

[0036] Similarly, the term ‘substantially’ is well recognized in case law to have the dual ordinary meaning of connoting a term of approximation or a term of magnitude. See *Dana Corp. v. American Axle & Manufacturing, Inc.*, Civ. App. 04-1116, 2004 U.S. App. LEXIS 18265, *13-14 (Fed. Cir. Aug. 27, 2004) (unpublished). The term “substantially” is commonly used by claim drafters to indicate approximation. See *Cordis Corp. v. Medtronic AVE Inc.*, 339 F.3d 1352, 1360 (Fed. Cir. 2003) (“The patents do not set out any numerical standard by which to determine whether the thickness of the wall surface is ‘substantially uniform.’ The term ‘substantially,’ as used in this context, denotes approximation. Thus, the walls must be of largely or approximately uniform thickness.”); see also *Deering Precision Instruments, LLC v. Vector Distribution Sys., Inc.*, 347 F.3d 1314, 1322 (Fed. Cir. 2003); *Epcon Gas Sys., Inc. v. Bauer Compressors, Inc.*, 279 F.3d 1022, 1031 (Fed. Cir. 2002). We find that the term “substantially” was used in just such a manner in the claims of the patents-in-suit: “substantially uniform wall thickness” denotes a wall thickness with approximate uniformity.

[0037] It should also be noted that such words of approximation as contemplated in the foregoing clearly limits the scope of claims such as saying ‘generally parallel’ such that the adverb ‘generally’ does not broaden the meaning of parallel. Accordingly, it is well settled that such words of approximation as contemplated in the foregoing (e.g., like the phrase ‘generally parallel’) envisions some amount of deviation from perfection (e.g., not exactly parallel), and that such words of approximation as contemplated in the

foregoing are descriptive terms commonly used in patent claims to avoid a strict numerical boundary to the specified parameter. To the extent that the plain language of the claims relying on such words of approximation as contemplated in the foregoing are clear and uncontradicted by anything in the written description herein or the figures thereof, it is improper to rely upon the present written description, the figures, or the prosecution history to add limitations to any of the claim of the present invention with respect to such words of approximation as contemplated in the foregoing. That is, under such circumstances, relying on the written description and prosecution history to reject the ordinary and customary meanings of the words themselves is impermissible. See, for example, *Liquid Dynamics Corp. v. Vaughan Co.*, 355 F.3d 1361, 69 USPQ2d 1595, 1600-01 (Fed. Cir. 2004). The plain language of phrase 2 requires a “substantial helical flow.” The term “substantial” is a meaningful modifier implying “approximate,” rather than “perfect.” In *Cordis Corp. v. Medtronic AVE, Inc.*, 339 F.3d 1352, 1361 (Fed. Cir. 2003), the district court imposed a precise numeric constraint on the term “substantially uniform thickness.” We noted that the proper interpretation of this term was “of largely or approximately uniform thickness” unless something in the prosecution history imposed the “clear and unmistakable disclaimer” needed for narrowing beyond this simple-language interpretation. *Id.* In *Anchor Wall Systems v. Rockwood Retaining Walls, Inc.*, 340 F.3d 1298, 1311 (Fed. Cir. 2003)” *Id.* at 1311. Similarly, the plain language of claim 1 requires neither a perfectly helical flow nor a flow that returns precisely to the center after one rotation (a limitation that arises only as a logical consequence of requiring a perfectly helical flow).

[0038] The reader should appreciate that case law generally recognizes a dual ordinary meaning of such words of approximation, as contemplated in the foregoing, as connoting a term of approximation or a term of magnitude; e.g., see *Deering Precision Instruments, L.L.C. v. Vector Distrib. Sys., Inc.*, 347 F.3d 1314, 68 USPQ2d 1716, 1721 (Fed. Cir. 2003), cert. denied, 124 S. Ct. 1426 (2004) where the court was asked to construe the meaning of the term “substantially” in a patent claim. Also see *Epcon*, 279 F.3d at 1031 (“The phrase ‘substantially constant’ denotes language of approximation, while the phrase ‘substantially below’ signifies language of magnitude, i.e., not insubstantial.”). Also, see, e.g., *Epcon Gas Sys., Inc. v. Bauer Compressors, Inc.*, 279 F.3d 1022 (Fed. Cir. 2002) (construing the terms “substantially constant” and “substantially below”); *Zodiac Pool Care, Inc. v. Hoffinger Indus., Inc.*, 206 F.3d 1408 (Fed. Cir. 2000) (construing the term “substantially inward”); *York Prods., Inc. v. Cent. Tractor Farm & Family Ctr.*, 99 F.3d 1568 (Fed. Cir. 1996) (construing the term “substantially the entire height thereof”); *Tex. Instruments Inc. v. Cypress Semiconductor Corp.*, 90 F.3d 1558 (Fed. Cir. 1996) (construing the term “substantially in the common plane”). In conducting their analysis, the court instructed to begin with the ordinary meaning of the claim terms to one of ordinary skill in the art. *Prima Tek*, 318 F.3d at 1148. Reference to dictionaries and our cases indicates that the term “substantially” has numerous ordinary meanings. As the district court stated, “substantially” can mean “significantly” or “considerably.” The term “substantially” can also mean “largely” or “essentially.” Webster’s New 20th Century Dictionary 1817 (1983).

[0039] Words of approximation, as contemplated in the foregoing, may also be used in phrases establishing approximate ranges or limits, where the end points are inclusive and approximate, not perfect; e.g., see *AK Steel Corp. v. Sollac*, 344 F.3d 1234, 68 USPQ2d 1280, 1285 (Fed. Cir. 2003) where it where the court said [W]e conclude that the ordinary meaning of the phrase “up to about 10%” includes the “about 10%” endpoint. As pointed out by *AK Steel*, when an object of the preposition “up to” is nonnumeric, the most natural meaning is to exclude the object (e.g., painting the wall up to the door). On the other hand, as pointed out by *Sollac*, when the object is a numerical limit, the normal meaning is to include that upper numerical limit (e.g., counting up to ten, seating capacity for up to seven passengers). Because we have here a numerical limit—“about 10%”—the ordinary meaning is that that endpoint is included.

[0040] In the present specification and claims, a goal of employment of such words of approximation, as contemplated in the foregoing, is to avoid a strict numerical boundary to the modified specified parameter, as sanctioned by *Pall Corp. v. Micron Separations, Inc.*, 66 F.3d 1211, 1217, 36 USPQ2d 1225, 1229 (Fed. Cir. 1995) where it states “It is well established that when the term “substantially” serves reasonably to describe the subject matter so that its scope would be understood by persons in the field of the invention, and to distinguish the claimed subject matter from the prior art, it is not indefinite.” Likewise see *Verve LLC v. Crane Cams Inc.*, 311 F.3d 1116, 65 USPQ2d 1051, 1054 (Fed. Cir. 2002). Expressions such as “substantially” are used in patent documents when warranted by the nature of the invention, in order to accommodate the minor variations that may be appropriate to secure the invention. Such usage may well satisfy the charge to “particularly point out and distinctly claim” the invention, 35 U.S.C. § 112, and indeed may be necessary in order to provide the inventor with the benefit of his invention. In *Andrew Corp. v. Gabriel Elecs. Inc.*, 847 F.2d 819, 821-22, 6 USPQ2d 2010, 2013 (Fed. Cir. 1988) the court explained that usages such as “substantially equal” and “closely approximate” may serve to describe the invention with precision appropriate to the technology and without intruding on the prior art. The court again explained in *Ecolab Inc. v. Envirochem, Inc.*, 264 F.3d 1358, 1367, 60 USPQ2d 1173, 1179 (Fed. Cir. 2001) that “like the term ‘about,’ the term ‘substantially’ is a descriptive term commonly used in patent claims to avoid a strict numerical boundary to the specified parameter.” see *Ecolab Inc. v. Envirochem Inc.*, 264 F.3d 1358, 60 USPQ2d 1173, 1179 (Fed. Cir. 2001) where the court found that the use of the term “substantially” to modify the term “uniform” does not render this phrase so unclear such that there is no means by which to ascertain the claim scope.

[0041] Similarly, other courts have noted that like the term “about,” the term “substantially” is a descriptive term commonly used in patent claims to “avoid a strict numerical boundary to the specified parameter.”; e.g., see *Pall Corp. v. Micron Seps.*, 66 F.3d 1211, 1217, 36 USPQ2d 1225, 1229 (Fed. Cir. 1995); see, e.g., *Andrew Corp. v. Gabriel Elecs. Inc.*, 847 F.2d 819, 821-22, 6 USPQ2d 2010, 2013 (Fed. Cir. 1988) (noting that terms such as “approach each other,” “close to,” “substantially equal,” and “closely approximate” are ubiquitously used in patent claims and that such usages, when serving reasonably to describe the claimed subject matter to those of skill in the field of the invention, and to

distinguish the claimed subject matter from the prior art, have been accepted in patent examination and upheld by the courts). In this case, “substantially” avoids the strict 100% nonuniformity boundary.

[0042] Indeed, the foregoing sanctioning of such words of approximation, as contemplated in the foregoing, has been established as early as 1939, see *Ex parte Mallory*, 52 USPQ 297, 297 (Pat. Off. Bd. App. 1941) where, for example, the court said “the claims specify that the film is “substantially” eliminated and for the intended purpose, it is believed that the slight portion of the film which may remain is negligible. We are of the view, therefore, that the claims may be regarded as sufficiently accurate.” Similarly, in *re Hutchison*, 104 F.2d 829, 42 USPQ 90, 93 (C.C.P.A. 1939) the court said “It is realized that “substantial distance” is a relative and somewhat indefinite term, or phrase, but terms and phrases of this character are not uncommon in patents in cases where, according to the art involved, the meaning can be determined with reasonable clearness.”

[0043] Hence, for at least the foregoing reason, Applicants submit that it is improper for any examiner to hold as indefinite any claims of the present patent that employ any words of approximation.

[0044] Unless defined otherwise, all technical and scientific terms used herein have the same meanings as commonly understood by one of ordinary skill in the art to which this invention belongs. Preferred methods, techniques, devices, and materials are described, although any methods, techniques, devices, or materials similar or equivalent to those described herein may be used in the practice or testing of the present invention. Structures described herein are to be understood also to refer to functional equivalents of such structures. The present invention will be described in detail below with reference to embodiments thereof as illustrated in the accompanying drawings.

[0045] References to a “device,” an “apparatus,” a “system,” etc., in the preamble of a claim should be construed broadly to mean “any structure meeting the claim terms” exempt for any specific structure(s)/type(s) that has/(have) been explicitly disavowed or excluded or admitted/implied as prior art in the present specification or incapable of enabling an object/aspect/goal of the invention. Furthermore, where the present specification discloses an object, aspect, function, goal, result, or advantage of the invention that a specific prior art structure and/or method step is similarly capable of performing yet in a very different way, the present invention disclosure is intended to and shall also implicitly include and cover additional corresponding alternative embodiments that are otherwise identical to that explicitly disclosed except that they exclude such prior art structure(s)/step(s), and shall accordingly be deemed as providing sufficient disclosure to support a corresponding negative limitation in a claim claiming such alternative embodiment(s), which exclude such very different prior art structure(s)/step(s) way(s).

[0046] From reading the present disclosure, other variations and modifications will be apparent to persons skilled in the art. Such variations and modifications may involve equivalent and other features which are already known in the art, and which may be used instead of or in addition to features already described herein.

[0047] Although Claims have been formulated in this Application to particular combinations of features, it should be understood that the scope of the disclosure of the present

invention also includes any novel feature or any novel combination of features disclosed herein either explicitly or implicitly or any generalization thereof, whether or not it relates to the same invention as presently claimed in any Claim and whether or not it mitigates any or all of the same technical problems as does the present invention.

[0048] Features which are described in the context of separate embodiments may also be provided in combination in a single embodiment. Conversely, various features which are, for brevity, described in the context of a single embodiment, may also be provided separately or in any suitable subcombination. The Applicants hereby give notice that new Claims may be formulated to such features and/or combinations of such features during the prosecution of the present Application or of any further Application derived therefrom.

[0049] References to “one embodiment,” “an embodiment,” “example embodiment,” “various embodiments,” “some embodiments,” “embodiments of the invention,” etc., may indicate that the embodiment(s) of the invention so described may include a particular feature, structure, or characteristic, but not every possible embodiment of the invention necessarily includes the particular feature, structure, or characteristic. Further, repeated use of the phrase “in one embodiment,” or “in an exemplary embodiment,” “an embodiment,” do not necessarily refer to the same embodiment, although they may. Moreover, any use of phrases like “embodiments” in connection with “the invention” are never meant to characterize that all embodiments of the invention must include the particular feature, structure, or characteristic, and should instead be understood to mean “at least some embodiments of the invention” includes the stated particular feature, structure, or characteristic.

[0050] References to “user”, or any similar term, as used herein, may mean a human or non-human user thereof. Moreover, “user”, or any similar term, as used herein, unless expressly stipulated otherwise, is contemplated to mean users at any stage of the usage process, to include, without limitation, direct user(s), intermediate user(s), indirect user(s), and end user(s). The meaning of “user”, or any similar term, as used herein, should not be otherwise inferred or induced by any pattern(s) of description, embodiments, examples, or referenced prior-art that may (or may not) be provided in the present patent.

[0051] References to “end user”, or any similar term, as used herein, is generally intended to mean late stage user(s) as opposed to early stage user(s). Hence, it is contemplated that there may be a multiplicity of different types of “end user” near the end stage of the usage process. Where applicable, especially with respect to distribution channels of embodiments of the invention comprising consumed retail products/services thereof (as opposed to sellers/vendors or Original Equipment Manufacturers), examples of an “end user” may include, without limitation, a “consumer”, “buyer”, “customer”, “purchaser”, “shopper”, “enjoyer”, “viewer”, or individual person or non-human thing benefiting in any way, directly or indirectly, from use of, or interaction with, some aspect of the present invention.

[0052] In some situations, some embodiments of the present invention may provide beneficial usage to more than one stage or type of usage in the foregoing usage process. In such cases where multiple embodiments targeting various stages of the usage process are described, references to “end user”, or any similar term, as used therein, are generally intended to not include the user that is the furthest removed, in the

foregoing usage process, from the final user therein of an embodiment of the present invention.

[0053] Where applicable, especially with respect to retail distribution channels of embodiments of the invention, intermediate user(s) may include, without limitation, any individual person or non-human thing benefiting in any way, directly or indirectly, from use of, or interaction with, some aspect of the present invention with respect to selling, vending, Original Equipment Manufacturing, marketing, merchandising, distributing, service providing, and the like thereof.

[0054] References to “person”, “individual”, “human”, “a party”, “animal”, “creature”, or any similar term, as used herein, even if the context or particular embodiment implies living user, maker, or participant, it should be understood that such characterizations are sole by way of example, and not limitation, in that it is contemplated that any such usage, making, or participation by a living entity in connection with making, using, and/or participating, in any way, with embodiments of the present invention may be substituted by such similar performed by a suitably configured non-living entity, to include, without limitation, automated machines, robots, humanoids, computational systems, information processing systems, artificially intelligent systems, and the like. It is further contemplated that those skilled in the art will readily recognize the practical situations where such living makers, users, and/or participants with embodiments of the present invention may be in whole, or in part, replaced with such non-living makers, users, and/or participants with embodiments of the present invention. Likewise, when those skilled in the art identify such practical situations where such living makers, users, and/or participants with embodiments of the present invention may be in whole, or in part, replaced with such non-living makers, it will be readily apparent in light of the teachings of the present invention how to adapt the described embodiments to be suitable for such non-living makers, users, and/or participants with embodiments of the present invention. Thus, the invention is thus to also cover all such modifications, equivalents, and alternatives falling within the spirit and scope of such adaptations and modifications, at least in part, for such non-living entities.

[0055] Headings provided herein are for convenience and are not to be taken as limiting the disclosure in any way.

[0056] The enumerated listing of items does not imply that any or all of the items are mutually exclusive, unless expressly specified otherwise.

[0057] It is understood that the use of specific component, device and/or parameter names are for example only and not meant to imply any limitations on the invention. The invention may thus be implemented with different nomenclature/terminology utilized to describe the mechanisms/units/structures/components/devices/parameters herein, without limitation. Each term utilized herein is to be given its broadest interpretation given the context in which that term is utilized.

[0058] Terminology. The following paragraphs provide definitions and/or context for terms found in this disclosure (including the appended claims):

[0059] “Comprising.” This term is open-ended. As used in the appended claims, this term does not foreclose additional structure or steps. Consider a claim that recites: “A memory controller comprising a system cache . . .” Such a claim

does not foreclose the memory controller from including additional components (e.g., a memory channel unit, a switch).

[0060] “Configured To.” Various units, circuits, or other components may be described or claimed as “configured to” perform a task or tasks. In such contexts, “configured to” or “operable for” is used to connote structure by indicating that the mechanisms/units/circuits/components include structure (e.g., circuitry and/or mechanisms) that performs the task or tasks during operation. As such, the mechanisms/unit/circuit/component can be said to be configured to (or be operable) for perform(ing) the task even when the specified mechanisms/unit/circuit/component is not currently operational (e.g., is not on). The mechanisms/units/circuits/components used with the “configured to” or “operable for” language include hardware—for example, mechanisms, structures, electronics, circuits, memory storing program instructions executable to implement the operation, etc. Reciting that a mechanism/unit/circuit/component is “configured to” or “operable for” perform(ing) one or more tasks is expressly intended not to invoke 35 U.S.C. sectn.112, sixth paragraph, for that mechanism/unit/circuit/component. “Configured to” may also include adapting a manufacturing process to fabricate devices or components that are adapted to implement or perform one or more tasks.

[0061] “Based On.” As used herein, this term is used to describe one or more factors that affect a determination. This term does not foreclose additional factors that may affect a determination. That is, a determination may be solely based on those factors or based, at least in part, on those factors. Consider the phrase “determine A based on B.” While B may be a factor that affects the determination of A, such a phrase does not foreclose the determination of A from also being based on C. In other instances, A may be determined based solely on B.

[0062] The terms “a”, “an” and “the” mean “one or more”, unless expressly specified otherwise.

[0063] Unless otherwise indicated, all numbers expressing conditions, concentrations, dimensions, and so forth used in the specification and claims are to be understood as being modified in all instances by the term “about.” Accordingly, unless indicated to the contrary, the numerical parameters set forth in the following specification and attached claims are approximations that may vary depending at least upon a specific analytical technique.

[0064] The term “comprising,” which is synonymous with “including,” “containing,” or “characterized by” is inclusive or open-ended and does not exclude additional, unrecited elements or method steps. “Comprising” is a term of art used in claim language which means that the named claim elements are essential, but other claim elements may be added and still form a construct within the scope of the claim.

[0065] As used herein, the phrase “consisting of” excludes any element, step, or ingredient not specified in the claim. When the phrase “consists of” (or variations thereof) appears in a clause of the body of a claim, rather than immediately following the preamble, it limits only the element set forth in that clause; other elements are not excluded from the claim as a whole. As used herein, the phrase “consisting essentially of” and “consisting of” limits the scope of a claim to the specified elements or method steps, plus those that do not materially affect the basis and novel characteristic(s) of the claimed subject matter (see

Norian Corp. v Stryker Corp., 363 F.3d 1321, 1331-32, 70 USPQ2d 1508, Fed. Cir. 2004). Moreover, for any claim of the present invention which claims an embodiment “consisting essentially of” or “consisting of” a certain set of elements of any herein described embodiment it shall be understood as obvious by those skilled in the art that the present invention also covers all possible varying scope variants of any described embodiment(s) that are each exclusively (i.e., “consisting essentially of”) functional subsets or functional combination thereof such that each of these plurality of exclusive varying scope variants each consists essentially of any functional subset(s) and/or functional combination(s) of any set of elements of any described embodiment(s) to the exclusion of any others not set forth therein. That is, it is contemplated that it will be obvious to those skilled how to create a multiplicity of alternate embodiments of the present invention that simply consisting essentially of a certain functional combination of elements of any described embodiment(s) to the exclusion of any others not set forth therein, and the invention thus covers all such exclusive embodiments as if they were each described herein.

[0066] With respect to the terms “comprising,” “consisting of,” and “consisting essentially of” where one of these three terms is used herein, the presently disclosed and claimed subject matter may include the use of either of the other two terms. Thus in some embodiments not otherwise explicitly recited, any instance of “comprising” may be replaced by “consisting of” or, alternatively, by “consisting essentially of”, and thus, for the purposes of claim support and construction for “consisting of” format claims, such replacements operate to create yet other alternative embodiments “consisting essentially of” only the elements recited in the original “comprising” embodiment to the exclusion of all other elements.

[0067] Devices or system modules that are in at least general communication with each other need not be in continuous communication with each other, unless expressly specified otherwise. In addition, devices or system modules that are in at least general communication with each other may communicate directly or indirectly through one or more intermediaries.

[0068] A description of an embodiment with several components in communication with each other does not imply that all such components are required. On the contrary a variety of optional components are described to illustrate the wide variety of possible embodiments of the present invention.

[0069] As is well known to those skilled in the art many careful considerations and compromises typically must be made when designing for the optimal manufacture of a commercial implementation any system, and in particular, the embodiments of the present invention. A commercial implementation in accordance with the spirit and teachings of the present invention may be configured according to the needs of the particular application, whereby any aspect(s), feature(s), function(s), result(s), component(s), approach(es), or step(s) of the teachings related to any described embodiment of the present invention may be suitably omitted, included, adapted, mixed and matched, or improved and/or optimized by those skilled in the art, using their average skills and known techniques, to achieve the desired implementation that addresses the needs of the particular application.

[0070] It is to be understood that any exact measurements/dimensions or particular construction materials indicated herein are solely provided as examples of suitable configurations and are not intended to be limiting in any way. Depending on the needs of the particular application, those skilled in the art will readily recognize, in light of the following teachings, a multiplicity of suitable alternative implementation details.

[0071] One embodiment of the present invention may provide a shoe insert comprising one or more different materials of specific densities arranged to provide support and comfort to specific areas of the foot. Some embodiments may be configured for use in stylish women's shoes such as, but not limited to, high heeled shoes. Some embodiments may comprise an insert utilized underneath the foot for as well as an upper cushion system along the inner surfaces of the shoe, such as, but not limited to, behind the heel, along each side of the foot, and above the toes as these are the areas that frequently deal with friction or pressure that may result in blisters, pain, or other issues. In some embodiments the insert may be created from a cut-out or injection molded design that is layered and/or folded in a specific manner to fit within a shoe to create a specific pattern of support areas. In other embodiments, the insert may be skived down from a single piece of foam. Some embodiments may be able to be custom fit to an individual's foot or feet.

[0072] FIG. 1 is a diagrammatic top view of an exemplary pattern piece 101 for an upper cushion system, in accordance with an embodiment of the present invention. In the present embodiment, the upper cushion system may comprise multiple strips of a cushioning material such as, but not limited to, high-density, open-cell foam or closed cell foam (example: EVA (Ethylene-vinyl Acetate), Latex or other rubbers, gel material, moleskin, or plush fabrics that may be placed in specific areas of a shoe to softly surround various parts of the foot. For example, without limitation, a toe strip 105 may be placed around the front portion of the opening of the shoe to cushion the tops of the toes and substantially inhibit blisters and friction between the foot and the shoe. Toe strip 105 may also help to push back the foot of a user when coming forward onto the toes to give more stability in the shoe. A side strip 110 may be placed on the side of the shoe to help hold the shoe in place on the foot and also to provide room for the foot to expand if the foot swells during day. Pattern piece 101 is shown with one side strip 110; however, some embodiments may be implemented with two or more side strips to be placed on one or both sides of the shoe. In the present embodiment, two heel strips 115 may be placed at the back of the heel to substantially inhibit blisters, gapping between the foot and the back of the shoe, and friction. Those skilled in the art will readily recognize, in light of and in accordance with the teachings of the present invention, that alternate embodiments may comprise various different configurations of strips to form the cushion system. For example, without limitation, some embodiments may comprise only one heel strip or multiple toe strips, and other embodiments may be implemented without side strips. The upper cushion system may be connected to the shoe using various different means. For example, without limitation, in some embodiments, the upper cushion system may be attached to a backer that may be folded into a three dimensional structure in to fit appropriately in the shoe. This backer may comprise an adhesive to hold the upper cushion system in place in the shoe. Alternately, each strip of the

cushion system may be attached to the shoe separately with adhesive. In other embodiments the cushion system may be embedded into the upper portion of the shoe.

[0073] FIGS. 2A, 2B, and 2C illustrate an exemplary shoe insert 201 comprising one or more materials of different densities arranged to provide support and comfort to specific areas of the foot, in accordance with an embodiment of the present invention. FIG. 2A is a diagrammatic top view. FIG. 2B is a side perspective view, and FIG. 2C is a diagrammatic top view of insert 201 in place in a shoe 205. In the present embodiment, the different colors shown illustrate various materials of different densities that may form different support regions for the foot. For example, without limitation, the material may be scooped out under the heel to provide a heel cup 210 comprising rings of materials of differing densities to typically provide balance, support, comfort, and stability. In addition, insert 201 may comprise a disc shaped area 215 of a soft density material behind the big toe which may enable the first metatarsal to be lifted as this area may be a common source of pain for many individuals. The material may be skived off or injection molded near a fifth metatarsal portion 220 to help ease pain in this area. Material may be layered on each side of insert 201 to form a lateral arch support 225 and a medial arch support 230. Medial arch support 230 may be raised more than lateral arch support 225 to help provide arch support and control pronation and supination of the foot. Additionally, insert 201 may comprise a raised portion 235 under the ball of the foot which may help cushion the impact of walking. In the drawings the densities of the various materials are indicated by the color wherein blue is the densest material at approximately 15 to 25 lbs. per cubic foot, red is the least dense material at approximately 5 to 15 lbs. per cubic foot, and the density of the pink material falls in between the blue and the red at approximately 10 to 20 lbs. per cubic foot. In the present embodiment, these materials may be open cell or closed cell urethane foam, such as, but not limited to Poron® urethane foam. However other embodiments may utilize virtually any microcellular urethanes or other comparable materials including, without limitation, other types of foam (example: EVA (Ethylene-vinyl Acetate), Latex or other rubbers, gel materials, various plastics, leather, cork, or a combination of such materials. Moreover, the specific densities disclosed represent one particular embodiment and those skilled in the art will recognize, in light of and in accordance with the teachings of the present invention, that a number of other densities may be utilized. For example, without limitation, some embodiments may comprise materials with densities between 5 lb/ft³ and 25 lb/ft³, specific gravity between 0.14 and 0.40; Shore "0" Scores of 10 durometer up to 32 durometer; and Resilience ASTM D 2632 vertical rebound tests of 4 up to 45. However it is contemplated that across many embodiments the relationship between the densities within the support design will remain fairly consistent as it applies to the areas with the densest material, least dense material, and medium density material. It is further contemplated that some embodiments may utilize more or fewer materials of different densities. For example, without limitation, the embodiment illustrated in FIGS. 6A, 6B, and 6C comprises two materials of different densities rather than three materials.

[0074] Those skilled in the art will readily recognize, in light of and in accordance with the teachings of the present

invention, that various different methods may be used to produce insert **201** and other such embodiments. For example, without limitation, a layering of different cutouts of the various density materials may be utilized, as illustrated by way of example, in FIGS. **5A** through **5E**. Additionally, a pattern cut out method may be utilized whereby the materials may be combined into a single cut out piece that is folded and arranged in such a way as to create the final design of the insert. The insert may also be skived down from a single piece of material or multiple pieces of material. Furthermore, the insert may be formed by an injection molding method. Combinations of such methods may also be utilized. In some embodiments, pieces of the insert or the entire surface of the insert may be covered with a fabric or other such thin material to visually hide the insert material and/or to provide a different surface texture. In many embodiments wherein the insert material is visible, the layout of the different types of material may be deliberately consistent with the overall aesthetic design of the shoe.

[0075] Referring to FIG. **2C**, in typical use of the present embodiment, insert **201** may be placed inside a shoe **205** against the existing insole. Insert **201** may be sized and shaped appropriately to fit snugly within shoe **205**. In some embodiments the back surface of the insert may comprise an adhesive layer or non-slip surface to further secure the insert in place. It is believed that insert **201** may provide support and comfort to various areas of the foot, many of which are not typically supported in a stylish shoe or by currently available aftermarket inserts. By comprising different layers and areas of material thickness and/or density, insert **201** may typically provide a substantially high level of cushioning and support. An upper cushion system **240** may optionally be installed within shoe **205** to provide additional support and cushioning to various areas of the foot. It is contemplated that in some embodiments, inserts may be custom fit and that some inserts may be specifically designed for the right foot and the left foot individually. Some embodiments may also be available in numerous different widths and sizes.

[0076] FIG. **3** is a diagrammatic top view of an exemplary shoe insert comprising one or more materials of different densities, in accordance with an embodiment of the present invention. An approximate breakdown of the different density areas of the material for one embodiment is shown. In this drawing **D1** refers to the lowest density material of up to 15 lb/ft³, **D2** refers to the medium density material of up to 20 lb/ft³, and **D3** refers to the highest density material up to 25 lb/ft³. The ratio of the different densities in the different zones of the insert may remain approximately consistent across many embodiments, and the density values relative to each other within the layout and design of the insert are typically tied together in many embodiments. That is a lower density material may be softer as compared to a higher density material, and the range between the densities may be roughly consistent with this disclosure. In other words, the value of the density of **D1** is a percentage value of **D2**, and likewise for **D3**. As previously described, some embodiments may use materials with the following properties: densities between 5 lb/ft³ and 25 lb/ft³, specific gravities between 0.14 and 0.40; Shore "O" Score of 10 durometer up to 32 durometer; and Resilience ASTM D 2632 vertical rebound tests of 4 up to 45. By doing so the support for each part of the foot may be maintained while the overall hardness or softness of the insert can be customized or adjusted,

normally without causing overly hard spots, unevenness, or the sensation of lumps within the insert. As previously mentioned, other embodiments may provide an insert with only one or two materials of different densities, and yet other embodiments may comprise more than three materials of different densities.

[0077] FIG. **4** is a perspective side view of an exemplary shoe insert comprising one or more materials of different densities, in accordance with an embodiment of the present invention. The drawing illustrates some of the various functional areas of the specialized insert. For example, without limitation, a base layer **3** of the highest density material surrounded by rings **10** and **11** of lower density materials near the back of the insert may form a heel cup that may substantially inhibit slipping as well as provide cushioning for downward momentum of a user's weight. When wearing high heels the weight of the user typically falls on the ball of the foot, and, when walking, a force of 2.5 times the weight of the user may impact the ball of the foot. Thus, the insert may provide for specialized support in this region by way of an area of stepped layered material under the ball of the foot formed by base layer **3** topped by a larger heart shaped portion **2** of the lowest density material and a smaller heart shaped portion **1** of the lowest density material. Heart shape portions **1** and **2** may typically provide support for the third and fourth metatarsals of the foot. A ridge may be located between heart shaped portions **1** and **2**. The insert may also comprise a circle **5** of the lowest density material placed directly under the Sesamoid bone of the big toe. Circle **5** may be placed on top of a layer **4** of the medium density material and base layer **3** of the highest density material to help protect the Sesamoid bone from the forces placed on this bone when walking. A medial arch support region **8** may be comprised of the lowest density material on top of a layer **7** of the medium density material. A lateral arch support region **12** made of the lowest density material may also be provided, which is not common in currently available inserts for shoes. Overall dual-layer support for the foot may be provided by a medial layer **14** of the lowest density material on top of base layer **3**. It is believed that the various layers of different support regions may provide support for the foot in a manner not previously accomplished in a stylish high heel shoe to give the high heel wearer comfort that may enable the high heel to be worn all day long.

[0078] FIGS. **5A**, **5B**, **5C**, **5D**, and **5E** illustrate exemplary layers of material of different densities that may be layered together to form a shoe insert, in accordance with an embodiment of the present invention. FIG. **5A** is a diagrammatic top view of a base layer. FIG. **5B** is a diagrammatic top view of a second layer. FIG. **5C** is a diagrammatic top view of a medial layer. FIG. **5D** is a multi-piece layer forming the highly cushioned areas of support under the ball and arches of the foot, and FIG. **5E** is an additional layer of cushioning for the medial arch region. In the present embodiment, the insert may be formed by the composite structure comprised of these various layers and folded into a three dimensional structure shown and described by way of example in the foregoing. In other embodiments, the insert may be skived down or injection molded from one full piece of material.

[0079] FIGS. **6A**, **6B**, and **6C** illustrate an exemplary shoe insert **601** comprising one or more materials of different densities arranged to provide support and comfort to specific areas of the foot, in accordance with an embodiment of the

present invention. FIG. 6A is a diagrammatic top view. FIG. 6B is a side perspective view, and FIG. 6C is a diagrammatic top view of insert 601 in place in a shoe 605. In the present embodiment, insert 601 is similar in structure to insert 201 illustrated by way of example in FIGS. 2A through 2C; however insert 601 comprises two materials of different densities rather than three materials of different densities. Insert 601 comprises a base layer 610 and a second layer 615 both made of a higher density material while the upper layers including a medial layer 620, arch supports 625, and ball supports 630 may be made of a lower density material. In other embodiments comprising two materials, the base layer may be of a higher density while all of the medial and upper layers are of a lower density. Referring to FIG. 6C, optionally, an upper cushion system 635 may be used in conjunction with insert 601.

[0080] FIGS. 7A and 7B illustrate an exemplary shoe insert 701 comprising one or more materials of different densities arranged to provide support and comfort to specific areas of the foot, in accordance with an embodiment of the present invention. FIG. 7A is a diagrammatic top view of insert 701, and FIG. 7B is a partially transparent, perspective side view of insert 701 in place in a high heel shoe 705. In the present embodiment, insert 701 may comprise various areas of support and cushioning similar to those described in the foregoing including, without limitation, a Sesamoid bone support 710, a ball of the foot support 715, a medial arch support 720, a lateral arch support 725, a heel cup 730, and an overall dual-layer support 735. Referring to FIG. 7B, it can be seen how insert 701 may fit snugly into shoe 705 and where the specific support areas are positioned within shoe 705.

[0081] FIGS. 8A and 8B illustrate an exemplary high heel shoe 801 comprising various comfort and support modifications, in accordance with an embodiment of the present invention. FIG. 8A is an exploded, perspective side view of shoe 801, an insert 805 comprising one or more materials of different densities arranged to provide support and comfort to specific areas of the foot, and an upper cushion system 810, and FIG. 8B is a partially transparent, perspective side view of high heel shoe 801. In the present embodiment, insert 805 may comprise various areas of support and cushioning similar to those described in the foregoing including, without limitation a cushioned heel cup 815 for support and stability, cushioning 820 under the ball of the foot, and arch supports 825. In addition upper cushion system 810 may comprise strips of high-density, open-cell or closed cell foam embedded into the upper part of shoe 801 to softly surround various parts of the top of the foot. In some alternate embodiments a multiplicity of suitable other materials may be used for the upper cushion system such as, but not limited to, gel material, moleskin, or cork. In the present embodiment, since upper cushion system 810 is typically embedded into the upper layer of shoe 801, it is possible that upper cushion system 810 may be visible through the outside upper layer of shoe 801, particularly if this outside upper layer is made of a thin and/or flexible material. Therefore, some embodiments may comprise a thin exoskeleton that is hidden between the outside upper layer of shoe 801 and the inside upper layer of shoe 801 to substantially inhibit upper cushion system 810 from being visible from the outside of shoe 801. It is contemplated that this exoskeleton may be made from a multiplicity of suitable materials including, without limitation, thermo-plastic mate-

rials, other types of plastic, fiberglass, rubber, or metal. Two heel strips 830 of upper cushion system 810 may be embedded into the heel portion of the upper part of shoe 801 to cover the potentially hard edge of the heel counter of shoe 801 and substantially inhibit the exoskeleton from rubbing into the foot. Shoe 801 may comprise additional comfort modifications such as, but not limited to, a deeper toe area 835 for less tightness around toes and a rubber outsole 840 for flexibility and shock absorption. Furthermore, multiple widths may be offered per size for a better fit. Reinforced toe and heel tips 845 may allow for longer wear.

[0082] FIG. 9 is an exploded, perspective side view of an exemplary high heel shoe 901 with comfort modifications, an insert 905 comprising one or more materials of different densities arranged to provide support and comfort to specific areas of the foot, and an upper cushion system 910, in accordance with an embodiment of the present invention. In the present embodiment, insert 905 may comprise various areas of support and cushioning similar to those described in the foregoing including, without limitation a cushioned heel cup 915 for support and stability, cushioning 920 under the ball of the foot and big toe, medial and lateral arch supports 925, and overall dual layered support 930. In addition upper cushion system 910 may comprise strips of cushioning material embedded into the upper part of shoe 901 to softly surround various parts of the top of the foot. Some embodiments may be implemented with an exoskeleton between the outside upper layer of shoe 901 and upper cushion system 910 to substantially inhibit upper cushion system 910 from being visible from the outside of shoe 901. Shoe 901 may also comprise a deeper toe area 935, and may be available in multiple widths per size.

[0083] FIGS. 10A, 10B, and 10C illustrate an exemplary shoe insert 1001 comprising one or more materials of different densities arranged to provide support and comfort to specific areas of the foot, in accordance with an embodiment of the present invention. FIG. 10A is a diagrammatic side view of insert 1001. FIG. 10B is an exploded, perspective side view of insert 1001 to be placed within a high heel shoe 1005, and FIG. 10C is a partially transparent, perspective side view of insert 1001 in place in high heel shoe 1005. In the present embodiment, extra cushioning 1010 may be added to insert 1001 if desired. Approximately six additional millimeters of the densest material may be added to the area of insert 1001 under the ball of the foot. The additional thickness may be achieved with one thick layer of the material or multiple thinner layers of the material. Extra cushioning 1010 may be skived toward the toe and heel of shoe 1005 to minimize the volume taken up by extra cushioning 1010. Shoe 1005 may be modified by removing a similarly sized and shaped portion from the last of shoe 1005 to help preserve the fit of shoe 1005.

[0084] One or more embodiments of the present invention may be implemented as a footwear system comprising a specialized insert and upper support areas arranged at specific positions in the shoe. Such systems may provide cushioning and support to a wearer's foot. It is contemplated that the specialized insert may be removable or permanently secured to the inside of the shoe. In some embodiments the upper support areas such as, but not limited to, those around the upper heel area or above the toes may be permanent as well as covered with a thin material to provide a certain

texture and or visual aesthetic to the shoe. In some embodiments the footwear system may be implemented without upper support areas.

[0085] FIGS. 11A and 11B illustrate an exemplary footwear system comprising a shoe 1101 and a specialized insert 1105, in accordance with an embodiment of the present invention. FIG. 11A is a diagrammatic top view of insert 1105, and FIG. 11B is a partially transparent, perspective side view of the footwear system. In the present embodiment, insert 1105 may be implemented as an insert for a stylish women's shoe such as, but not limited to a high heel shoe 1101. Insert 1105 may comprise one or more materials of different densities arranged to provide specific areas of support and comfort to the foot including, without limitation, a Sesamoid bone support 1110, a ball of the foot support 1115, a medial arch support 1120, a lateral arch support 1125, a heel cup 1130, and an overall dual-layer support 1135. It is believed that some of these areas of support and cushioning are not typically found in currently available stylish shoes or aftermarket inserts. Insert 1105 may be offered as a removable insert or may be permanently secured to the inside of shoe 1101.

[0086] In the present embodiment, insert 1105 may be made of open cell or closed cell urethane foam. However other embodiments may utilize virtually any microcellular urethanes or other comparable materials such as, but not limited to, other types of foam, gel materials, silicone, various plastics, leather, cork, or a combination of such materials as will be recognized by those skilled in the art in light of and in accordance with the teachings of the present invention. Insert 1105 may be created from a cut-out or injection molded design that may be folded in a specific manner to create the desired shape and specific pattern of support areas. In some embodiments the insert may be skived down from a single piece of material. By working with different layers of material thickness and/or density, insert 1105 may be able to provide substantially enhanced cushioning and support for the foot. In the present embodiment, three materials of different densities may be used with densest material having a density of between 15 lb/ft³ and 25 lb/ft³, the least dense material having a density between 5 lb/ft³ and 15 lb/ft³, and the medium density material having a density between 10 lb/ft³ and 20 lb/ft³. The specific densities disclosed represent one particular embodiment and those skilled in the art will recognize, in light of and in accordance with the teachings of the present invention, that a number of other densities may be utilized in other embodiments. Although, it is contemplated that across most embodiments, the relationship between the densities within the support design may remain fairly consistent as it applies to the areas with the densest material, least dense material, and medium density material. In some embodiments the insert may comprise materials of one or two different densities rather than three, and other embodiments may comprise more than three materials of different densities. Because of the process utilized to form the present embodiment, inserts 1105 may be custom fit to an individual's feet with a separate insert specifically designed for the right foot and the left foot. In other applications, inserts 1105 may be made in a range of standard dimensions with numerous different widths and sizes available. In the present embodiment, insert 1105 may comprise a unique look and layering that may create a stylish and pleasing aesthetic design as well as a functional support system. In some embodiments,

pieces of insert 1105 or the entire insert 1105 may be covered with a material to visually hide the insert material and/or to provide a different surface texture such as, but not limited to, a thin fabric or leather. In many embodiments whereby the material of insert 1105 is visible, the layout of the different types of material may be deliberately consistent with the overall aesthetic design of shoe 1101.

[0087] In the present embodiment, various areas of cushioning and support may be provided by insert 1105 and may provide the following functions. Heel cup 1130 may serve to substantially inhibit slipping as well as provide cushioning for downward momentum of a user's weight. Heel cup 1130 may also provide stability to a wearer to substantially inhibit "wobbling" as they walk. For most individuals wearing high heels, the user's weight typically falls on the ball of the foot. Therefore insert 1105 may provide specialized support in this region by way of ball of the foot support 1115 and Sesamoid bone support 1110. The heart shaped portion of ball of the foot support 1115 may provide support for the third and fourth metatarsals and may comprise material of the softest density. Medial arch support 1120 may comprise a soft density material. Lateral arch support 1125 may also be provided, which is not common with currently available shoes and inserts. It is contemplated that the various layers of different support regions of differing densities offered by the footwear system of the present embodiment may provide support for the foot in a manner not previously accomplished in a stylish high heel shoe.

[0088] FIGS. 12A and 12B illustrate an exemplary footwear system comprising a shoe 1201, a specialized insert 1205, and upper support areas 1210 arranged at specific positions in shoe 1201, in accordance with an embodiment of the present invention. FIG. 12A is an exploded, perspective side view of the footwear system, and FIG. 12B is a partially transparent, perspective side view of the footwear system. In the present embodiment, the footwear system may comprise three components. The first is shoe 1201, which may be a high-heeled shoe. The second is specialized insert 1205 comprising one or more materials of different densities arranged to provide support and comfort to specific areas of the foot similar to insert 1105 shown by way of example in FIGS. 11A and 11B. The third is upper support areas 1210, which may comprise a back heel portion 1215, lateral and medial side portions 1220, and an upper toe area 1225. Those skilled in the art will readily recognize, in light of and in accordance with the teachings of the present invention, that some embodiments may comprise upper support areas in additional or alternate areas of the shoe such as, but not limited to, near the tips of the toes, and other embodiments may comprise fewer upper support areas. For example, without limitation, some embodiments may be implemented without upper support areas in the side portions of the shoe, and other embodiments may comprise upper support areas only in the heel portion. In the present embodiment, similar materials may be utilized both for insert 1205 and upper support areas 1210, which may include, without limitation, virtually any microcellular urethanes, other types of foam, gel materials, silicone, various plastics, leather, cork, or a combination of such materials. Upper support areas 1210 may be made of a material of a softer density placed between the sock-lining and the outer layer of shoe 1201 to help provide comfort around the foot within shoe 1201. Upper support areas 1210 may typically be placed along the inner surfaces of shoe 1201, such as, but

not limited to, behind the heel, along each side of the foot, and above the toes as these may be areas that deal with a substantial amount of friction or pressure that can create blisters, pain, or other issues. In the present embodiment, upper support areas **1210** may be covered with a thin material such as, but not limited to, fabric or leather to provide a certain texture to the inside surface of shoe **1201** and/or hide the material of support areas **1210** to provide a certain aesthetic appearance consistent with the style of shoe **1201**. A similar material may be used to cover insert **1205** in some embodiments. Upper support areas **1210** may be permanently attached to shoe **1201** in the present embodiment. In some alternate embodiments the upper support areas may be removable and secured to the shoe with attachment means such as, but not limited to, with hook and loop material, snaps, or adhesives.

[0089] In the present embodiment, insert **1205** may comprise various areas of support and cushioning including, without limitation a cushioned heel cup **1230** for support and stability, cushioning **1235** under the ball of the foot, and arch supports **1240**. Insert **1205** may be permanently secured within shoe **1201** or may be implemented as a removable insert. In the present embodiment, since upper support areas **1210** are typically embedded into the interior of shoe **1201**, it may be possible that upper support areas **1210** may be visible through the outside upper layer of shoe **1201**, particularly if this outside upper layer is made of a thin and/or flexible material. Therefore, some embodiments may comprise a thin exoskeleton that is hidden between the outside upper layer of shoe **1201** and upper support areas **1210** to substantially inhibit upper support areas **1210** from being visible from the outside of shoe **1201**. It is contemplated that this exoskeleton may be made from a multiplicity of suitable materials including, without limitation, thermo-plastic materials, other types of plastic, fiberglass, rubber, or metal. Shoe **1201** may comprise additional comfort modifications such as, but not limited to, a deeper toe area **1245** for less tightness around toes and a rubber outsole **1250** for flexibility and shock absorption. Furthermore, multiple widths may be offered per size for a better fit. Reinforced toe and heel tips **1255** may allow for longer wear.

[0090] FIG. 13 is an exploded, perspective side view of an exemplary footwear system comprising a shoe **1301**, a specialized insert **1305**, and upper support areas **1310** arranged at specific positions in shoe **1301**, in accordance with an embodiment of the present invention. In the present embodiment, insert **1305** may comprise various areas of support and cushioning similar to those described in the foregoing including, without limitation a cushioned heel cup **1315** for support and stability, cushioning **1320** under the ball of the foot and big toe, medial and lateral arch supports **1325**, and overall dual layered support **1330**. In addition upper cushion system **1310** may comprise strips of cushioning material embedded into the upper part of shoe **1301** to softly surround various parts of the top of the foot including, without limitation, above the toe area and in the upper heel area around the foot. Some embodiments may be implemented with an exoskeleton between the outside upper layer of shoe **1301** and upper support areas **1310** to substantially inhibit upper support areas **1310** from being visible from the outside of shoe **1301**. Shoe **1301** may also comprise a deeper toe area **1335**, and may be available in multiple widths per size.

[0091] FIG. 14 is a diagrammatic top view of an exemplary pattern piece for comfort modification pieces that may form upper support areas in a shoe, in accordance with an embodiment of the present invention. In the present embodiment, the pattern piece may be folded into a three dimensional structure in a specific manner to create the desired cushioning design with the shoe. Support areas **1401** may be made of layers of foam or a similar material and may be of a softer density to provide comfort around the foot within the shoe. An exoskeleton **1405** may substantially inhibit support areas **1401** from being visible from the outside of the shoe once the comfort modification pieces are put in place between the sock-lining of the shoe and the support areas.

[0092] FIGS. 15A, 15B, and 15C illustrate an exemplary footwear system comprising a shoe **1501** and a specialized insert **1505**, in accordance with an embodiment of the present invention. FIG. 15A is a diagrammatic side view of insert **1501**. FIG. 15B is an exploded, perspective side view of the footwear system, and FIG. 15C is a partially transparent, perspective side view of the footwear system. It is contemplated that some embodiments may allow for extra cushioning **1510** to be added to insert **1501** if desired. In the present embodiment, approximately six additional millimeters of extra cushioning **1510** may be added to the area of insert **1501** under the ball of the foot. The additional thickness may be achieved with one thick layer of cushioning material or multiple thinner layers of the material. Extra cushioning **1510** may be skived toward the toe and heel of shoe **1501** to minimize the volume taken up by extra cushioning **1510** within shoe **1501**. Shoe **1501** may be modified by removing a similarly sized and shaped portion from the last of shoe **1501** to help preserve the fit of shoe **1501**.

[0093] Those skilled in the art will readily recognize, in light of and in accordance with the teachings of the present invention, that footwear systems in alternate embodiments may be implemented in a multiplicity of suitable configurations. For example, without limitation, some embodiments may comprise upper support areas without a specialized insert. In other embodiments the specialized insert may be a partial insole for cushioning primarily the ball of the foot. In such embodiments additional heel support and arch support may be provided in the upper support areas.

[0094] All the features disclosed in this specification, including any accompanying abstract and drawings, may be replaced by alternative features serving the same, equivalent or similar purpose, unless expressly stated otherwise. Thus, unless expressly stated otherwise, each feature disclosed is one example only of a generic series of equivalent or similar features.

[0095] It is noted that according to USA law 35 USC § 112 (1), all claims must be supported by sufficient disclosure in the present patent specification, and any material known to those skilled in the art need not be explicitly disclosed. However, 35 USC § 112 (6) requires that structures corresponding to functional limitations interpreted under 35 USC § 112 (6) must be explicitly disclosed in the patent specification. Moreover, the USPTO's Examination policy of initially treating and searching prior art under the broadest interpretation of a "mean for" claim limitation implies that the broadest initial search on 112(6) functional limitation would have to be conducted to support a legally valid Examination on that USPTO policy for broadest interpretation of "mean for" claims. Accordingly, the USPTO will

have discovered a multiplicity of prior art documents including disclosure of specific structures and elements which are suitable to act as corresponding structures to satisfy all functional limitations in the below claims that are interpreted under 35 USC § 112 (6) when such corresponding structures are not explicitly disclosed in the foregoing patent specification. Therefore, for any invention element(s)/structure(s) corresponding to functional claim limitation(s), in the below claims interpreted under 35 USC § 112 (6), which is/are not explicitly disclosed in the foregoing patent specification, yet do exist in the patent and/or non-patent documents found during the course of USPTO searching, Applicant(s) incorporate all such functionally corresponding structures and related enabling material herein by reference for the purpose of providing explicit structures that implement the functional means claimed. Applicant(s) request(s) that fact finders during any claims construction proceedings and/or examination of patent allowability properly identify and incorporate only the portions of each of these documents discovered during the broadest interpretation search of 35 USC § 112 (6) limitation, which exist in at least one of the patent and/or non-patent documents found during the course of normal USPTO searching and or supplied to the USPTO during prosecution. Applicant(s) also incorporate by reference the bibliographic citation information to identify all such documents comprising functionally corresponding structures and related enabling material as listed in any PTO Form-892 or likewise any information disclosure statements (IDS) entered into the present patent application by the USPTO or Applicant(s) or any 3rd parties. Applicant(s) also reserve its right to later amend the present application to explicitly include citations to such documents and/or explicitly include the functionally corresponding structures which were incorporate by reference above.

[0096] Thus, for any invention element(s)/structure(s) corresponding to functional claim limitation(s), in the below claims, that are interpreted under 35 USC § 112 (6), which is/are not explicitly disclosed in the foregoing patent specification, Applicant(s) have explicitly prescribed which documents and material to include the otherwise missing disclosure, and have prescribed exactly which portions of such patent and/or non-patent documents should be incorporated by such reference for the purpose of satisfying the disclosure requirements of 35 USC § 112 (6). Applicant(s) note that all the identified documents above which are incorporated by reference to satisfy 35 USC § 112 (6) necessarily have a filing and/or publication date prior to that of the instant application, and thus are valid prior documents to incorporated by reference in the instant application.

[0097] Having fully described at least one embodiment of the present invention, other equivalent or alternative methods of implementing footwear system that may provide a shoe comprising a specialized insert and upper support areas arranged at specific positions in the shoe according to the present invention will be apparent to those skilled in the art. Various aspects of the invention have been described above by way of illustration, and the specific embodiments disclosed are not intended to limit the invention to the particular forms disclosed. The particular implementation of the footwear system may vary depending upon the particular context or application. By way of example, and not limitation, the

footwear systems described in the foregoing were principally directed to implementations to be used with high heel shoes; however, similar techniques may instead be applied to a multiplicity of suitable shoe types including, without limitation, platform shoes, boots, flats, and men's shoes, which implementations of the present invention are contemplated as within the scope of the present invention. The invention is thus to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the following claims. It is to be further understood that not all of the disclosed embodiments in the foregoing specification will necessarily satisfy or achieve each of the objects, advantages, or improvements described in the foregoing specification.

[0098] Claim elements and steps herein may have been numbered and/or lettered solely as an aid in readability and understanding. Any such numbering and lettering in itself is not intended to and should not be taken to indicate the ordering of elements and/or steps in the claims.

[0099] The corresponding structures, materials, acts, and equivalents of all means or step plus function elements in the claims below are intended to include any structure, material, or act for performing the function in combination with other claimed elements as specifically claimed.

[0100] The corresponding structures, materials, acts, and equivalents of all means or step plus function elements in the claims below are intended to include any structure, material, or act for performing the function in combination with other claimed elements as specifically claimed. The description of the present invention has been presented for purposes of illustration and description, but is not intended to be exhaustive or limited to the invention in the form disclosed. Many modifications and variations will be apparent to those of ordinary skill in the art without departing from the scope and spirit of the invention. The embodiment was chosen and described in order to best explain the principles of the invention and the practical application, and to enable others of ordinary skill in the art to understand the invention for various embodiments with various modifications as are suited to the particular use contemplated.

[0101] The Abstract is provided to comply with 37 C.F.R. Section 1.72(b) requiring an abstract that will allow the reader to ascertain the nature and gist of the technical disclosure. That is, the Abstract is provided merely to introduce certain concepts and not to identify any key or essential features of the claimed subject matter. It is submitted with the understanding that it will not be used to limit or interpret the scope or meaning of the claims.

[0102] The following claims are hereby incorporated into the detailed description, with each claim standing on its own as a separate embodiment.

What is claimed is:

1. An apparatus comprising:

Means for an insert that cushions a shoe;

Means for engaging said insert means with said shoe to provide an aesthetically pleasing support to multiple areas of the foot; and,

Means for providing auxiliary support areas in said insert means.

* * * * *