US012022911B2

(12) **United States Patent**
Verpillot

(10) **Patent No.: US 12,022,911 B2**
(45) **Date of Patent: Jul. 2, 2024**

(54) **INSOLE**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 159 days.

(21) Appl. No.: **17/661,673**

(22) Filed: **May 2, 2022**

(65) **Prior Publication Data**

US 2022/0346498 A1 Nov. 3, 2022

Related U.S. Application Data

(60) Provisional application No. 63/182,343, filed on Apr. 30, 2021.

(51) **Int. Cl.**

A43B 7/14	(2022.01)
A43B 7/1405	(2022.01)
A43B 7/142	(2022.01)
A43B 7/1455	(2022.01)
A43B 17/00	(2006.01)
A43B 17/04	(2006.01)
A43B 17/14	(2006.01)

(52) **U.S. Cl.**

CPC ***A43B 17/006*** (2013.01); ***A43B 7/1405*** (2013.01); ***A43B 7/141*** (2013.01); ***A43B 7/142*** (2013.01); ***A43B 7/146*** (2013.01); ***A43B 17/04*** (2013.01); ***A43B 17/14*** (2013.01)

(58) **Field of Classification Search**

CPC A43B 17/006; A43B 7/1405; A43B 7/146
USPC 36/141
See application file for complete search history.

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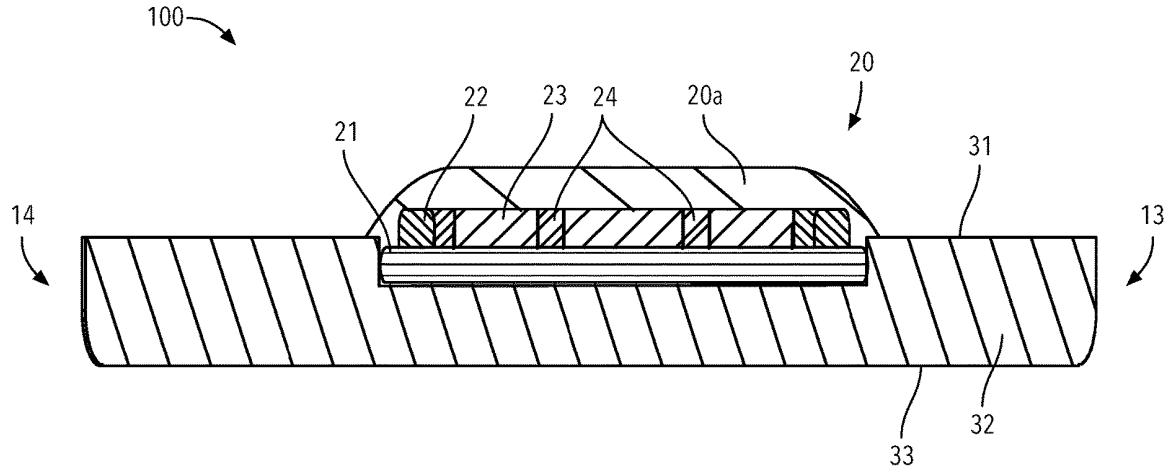
(57) **ABSTRACT**

An insole having, a base layer, a top layer fixedly secured to the base layer, a middle layer comprised of the base layer and the top layer positioned between the base layer and the top layer, a pressure projection extending upwardly from within the middle layer and extending past an upper surface of the upper layer, the projection including a disc fixedly secured within the middle layer, an annular ring fixedly secured atop the disc, a circular metal insert fixedly secured atop the disc within the annular ring, the circular metal insert having a horseshoe-shaped aperture therein. The insole may also include projections either positioned proximate an inside arch and/or positioned proximate an outside arch. The insole may also comprise a projection positioned proximate to a midfoot region.

5 Claims, 9 Drawing Sheets



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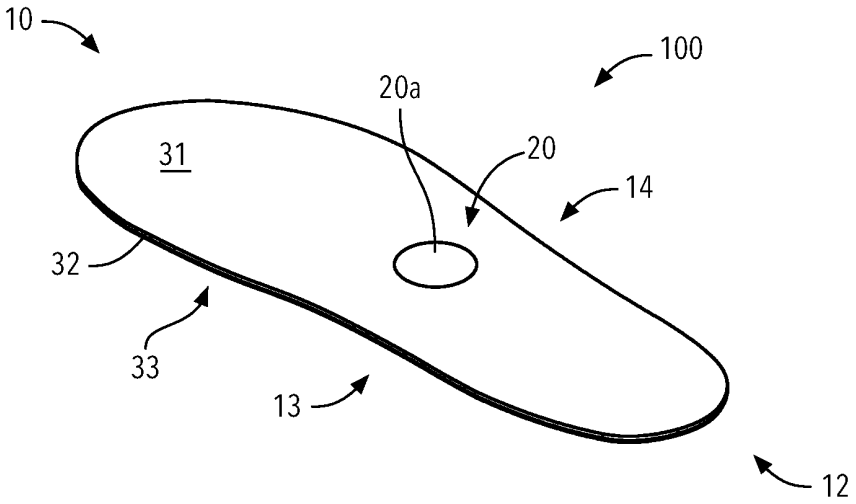


FIG. 1A

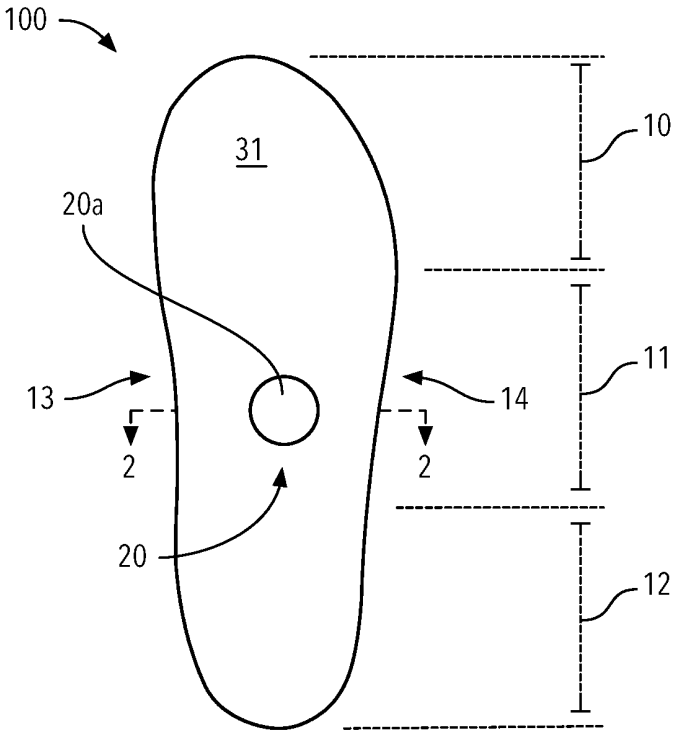


FIG. 1B

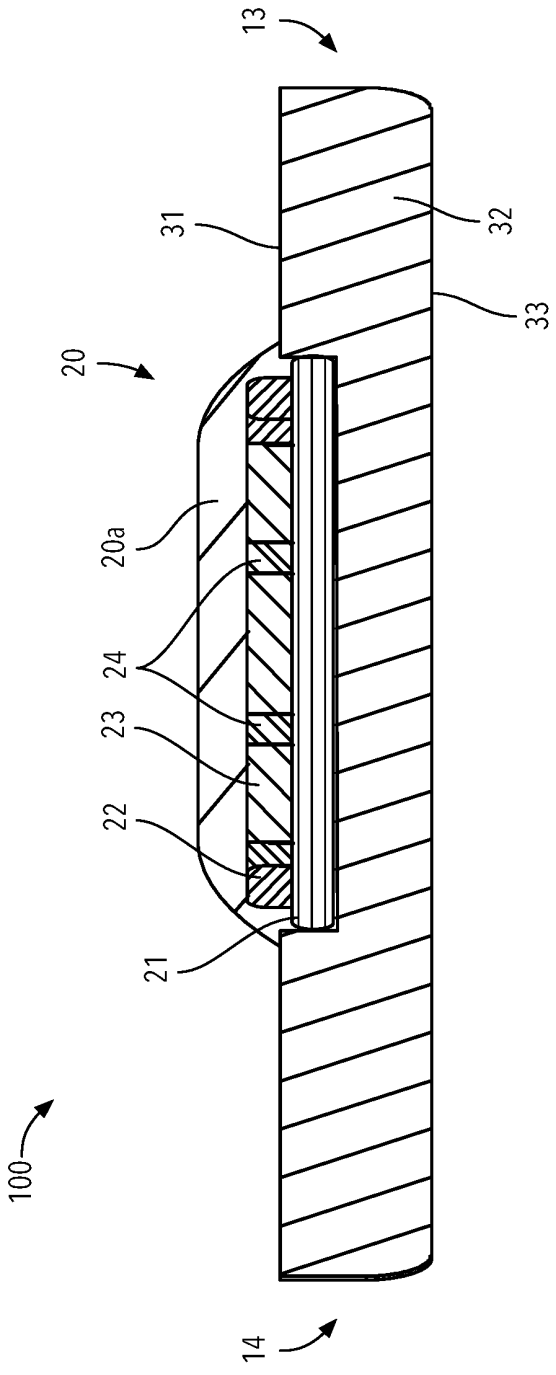


FIG. 2

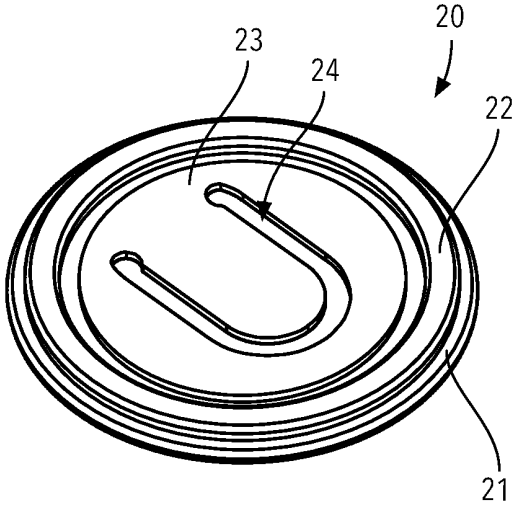


FIG. 3A

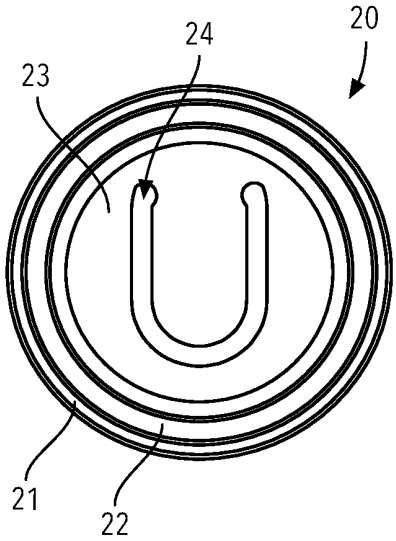


FIG. 3B

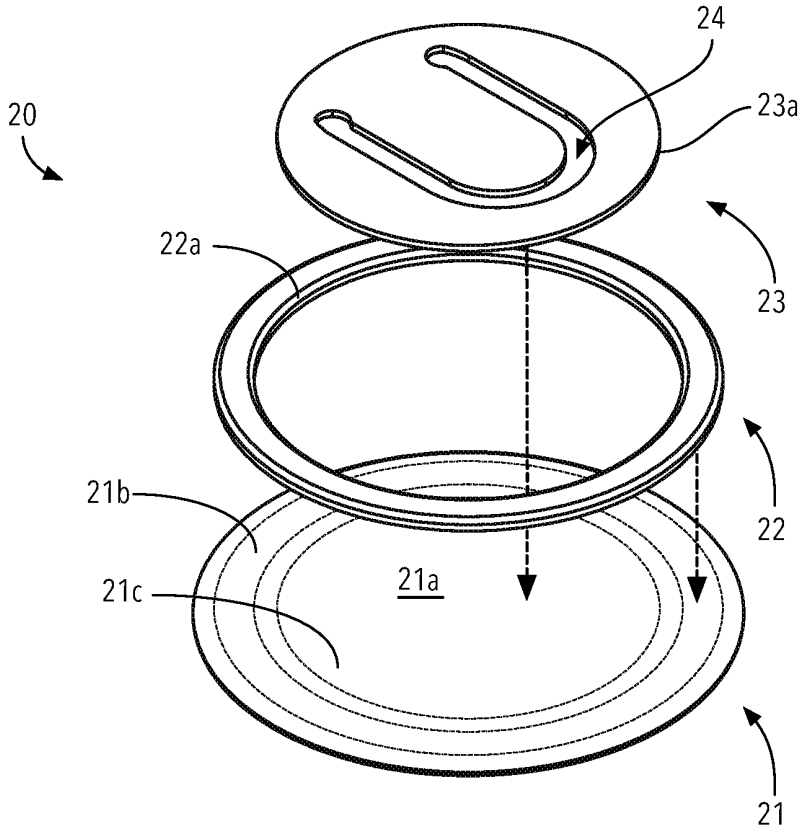
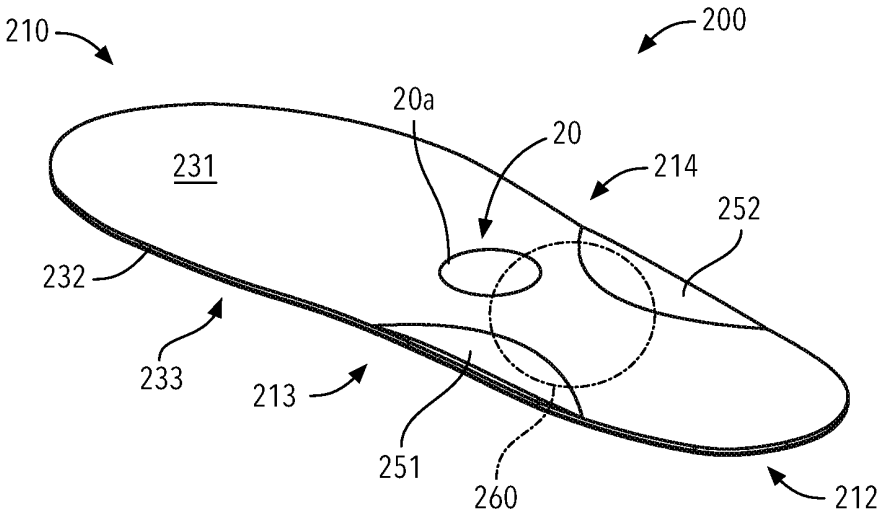


FIG. 3C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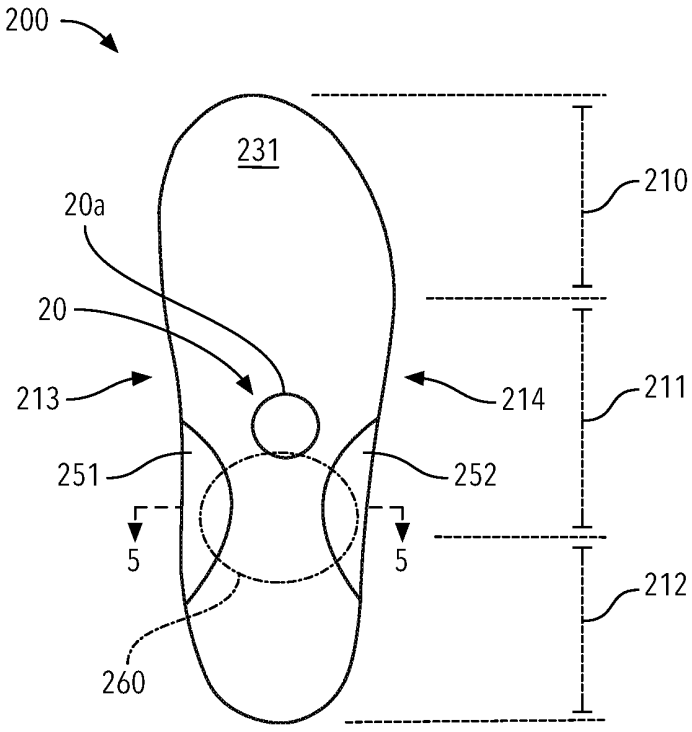
200
20a
20
231
214
252
232
233
213
251
260
212

FIG. 4A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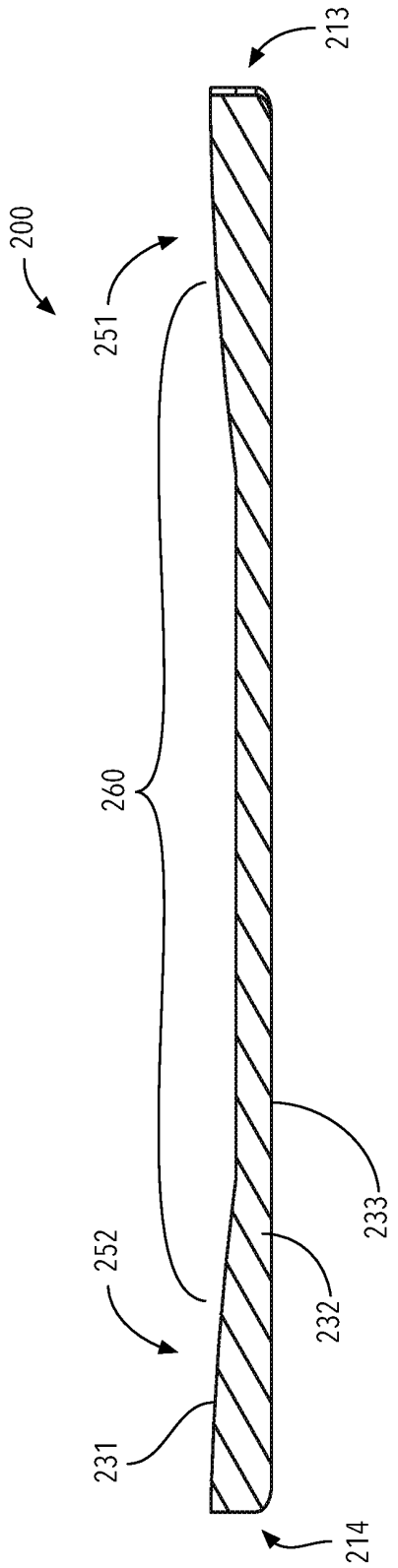
213
214
211
251
252
5
5
212
260

FIG. 4B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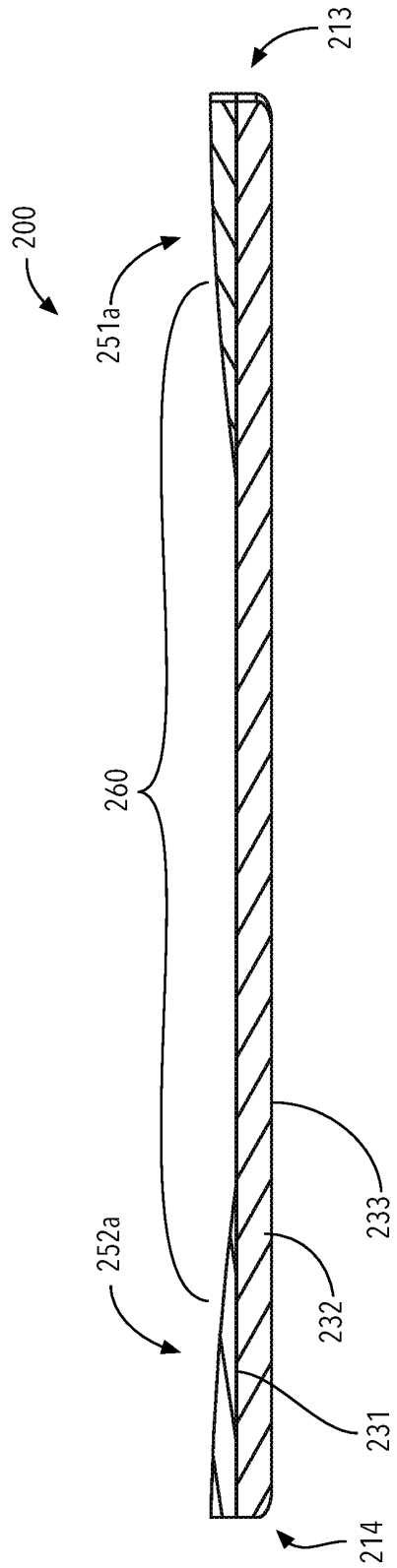
232
231
214

FIG. 5A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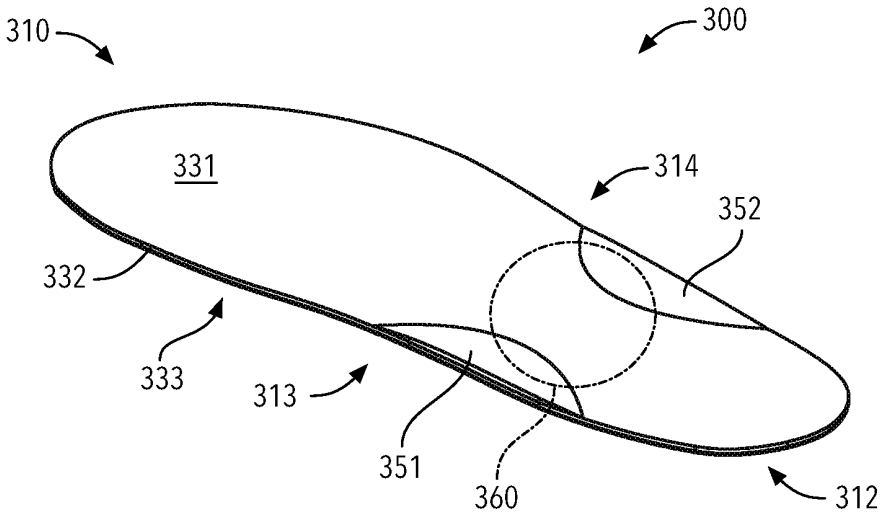
251a
260
252a
233
232
231
214

FIG. 5B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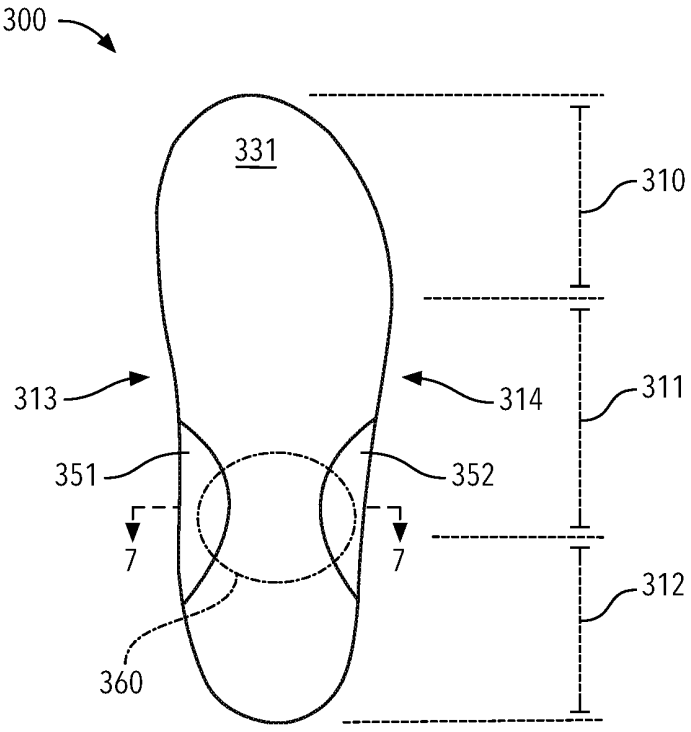
333
313
351
360
312

FIG. 6A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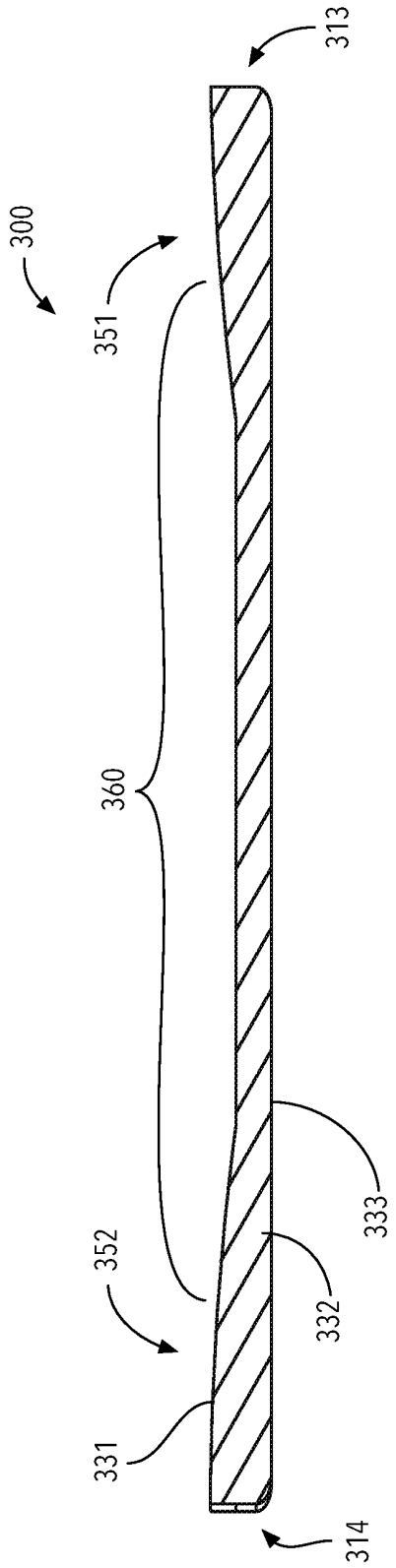
7
312
360

FIG. 6B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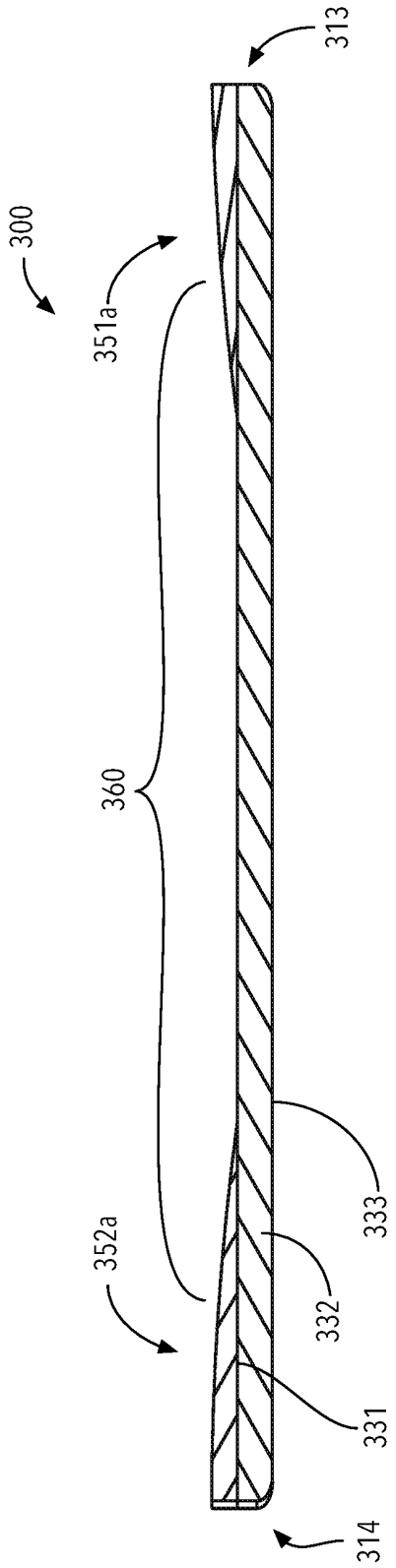
332
333
314

FIG. 7A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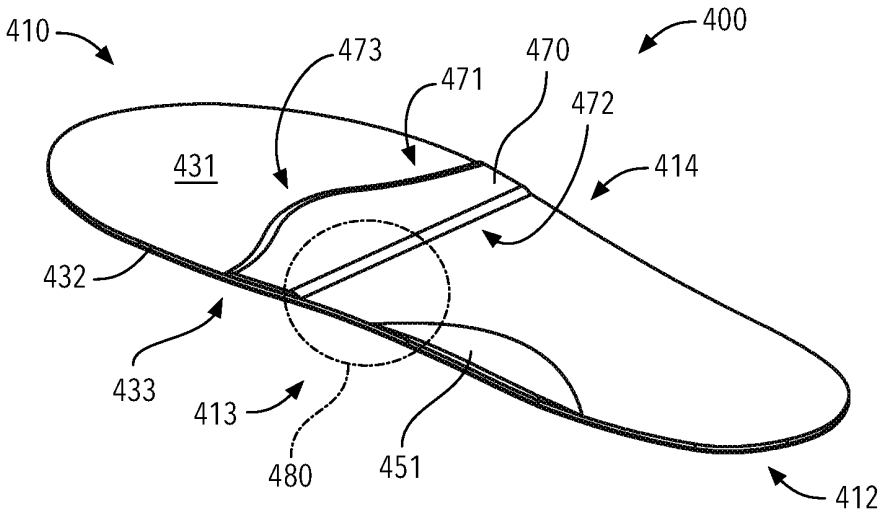
313
351a
360
352a
331
332
333
314

FIG. 7B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400
472
431
414
432
433
413
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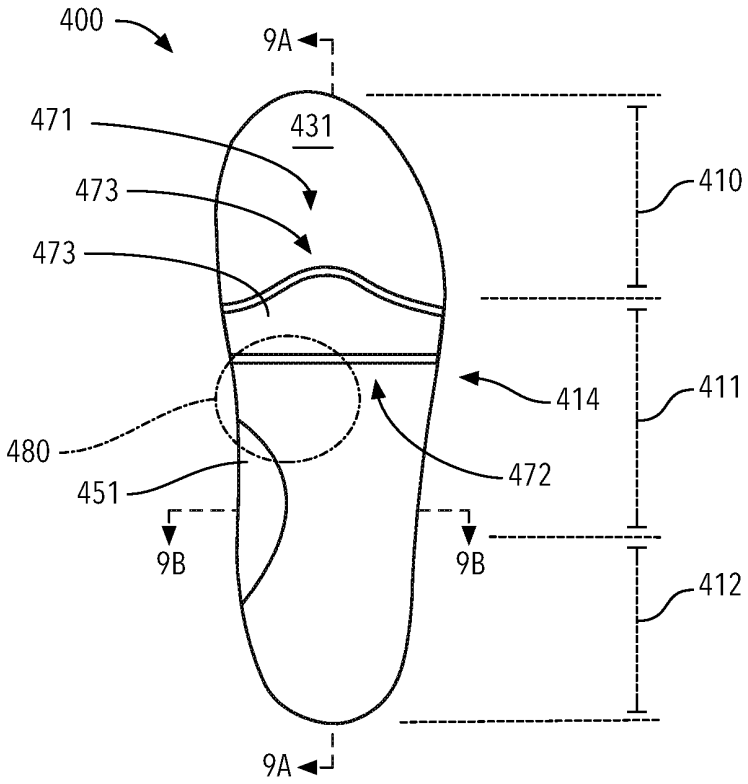
451
412

FIG. 8A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473
410
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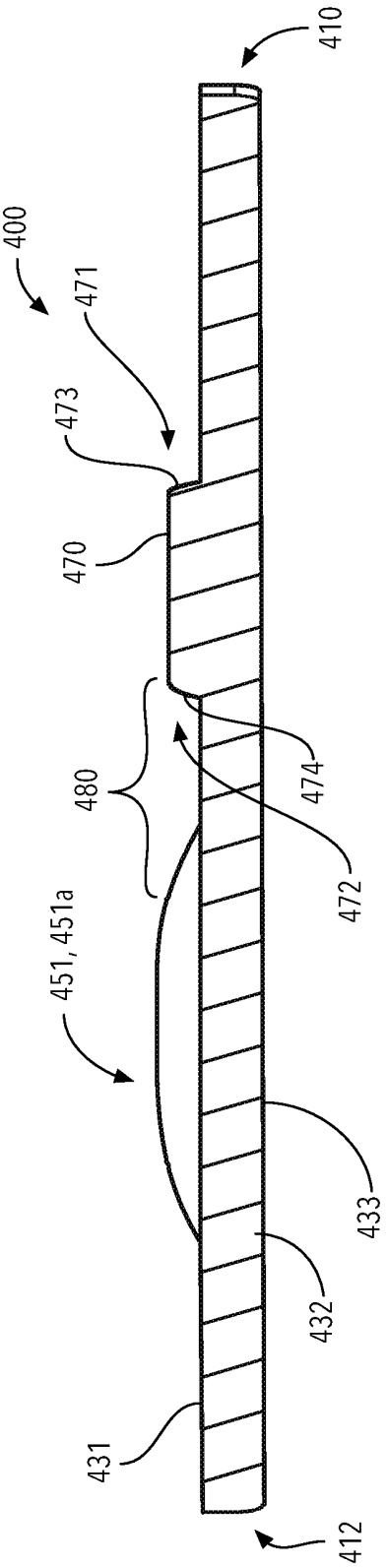
411
480
472
451
9B
9B
412
9A

FIG. 8B


410
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473
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474
472
451, 451a
433
432
431
412

FIG. 9A

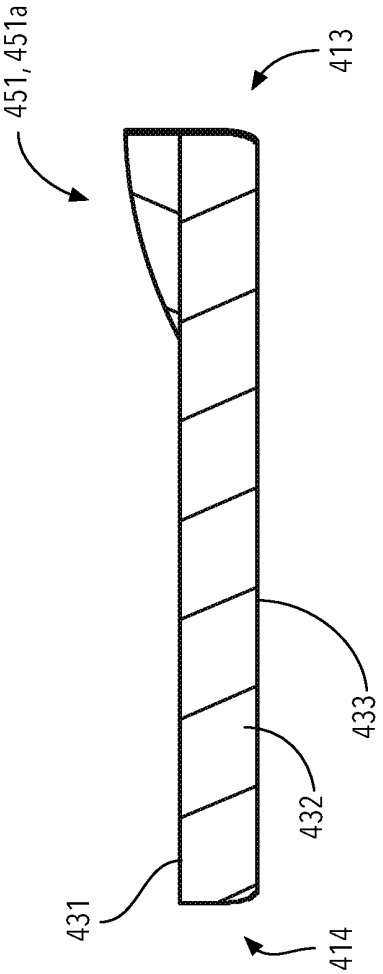
451, 451a
413
433
432
431
414

FIG. 9B

INSOLE

CROSS-REFERENCE TO RELATED APPLICATIONS

This application, under 35 U.S.C. § 119, claims the benefit of and priority to U.S. Provisional Application No. 63/182,343, filed on Apr. 30, 2021, entitled "Orthotic Insole", and is incorporated herein by reference in its entirety.

FIELD

The present invention relates generally to an insole, and more particularly to an insole that increases the surface area of the foot to provide comfort and support, thereby enabling a user to correct coordination and postural imbalances.

BACKGROUND

Poor postural and body alignment can have a negative impact on one's physical and mental health. Most of the population experiences postural imbalances because of lifestyle choices and unconscious slouching. Continuous poor posture can cause several diseases and disorders with debilitating effects.

Research has proven that sensory foot stimulation can combat postural imbalances. The feet play a major role in allowing one to have awareness of the position and movement of his or her body. This concept is known as proprioception. A classic example of proprioception is when the feet sense that they are on sand or hard cement, and in turn, adjust the position of the body to prevent one from falling. The signals the feet receive from external stimuli comes from the somatosensory system. The somatosensory system is part of the sensory system and allows one to consciously perceive touch, pressure, movement, vibration, position, etc. As the body perceives signals through the feet, sensory neurons transmit responses to the brain to change body alignment.

Most conventional support insoles provide cushioned arch support to the foot when the user moves. These devices provide comfort to the user, but do not continuously correct the user's coordination and postural imbalances while the user is both weight-bearing and non-weight-bearing.

Moreover, conventional sensory insoles stimulate foot receptors through electric currents, electromagnetic waves, or electromagnetic fields controlled by a device placed within the insole or an external device placed near the heel of a shoe. These conventional designs often incorporate wires, circuits, or batteries that create a thick insole that includes all the electronics needed to operate within, or a thin insole with an external housing unit for the electronic components. The art lacks a sensory insole that uses the physiological reflex zones of the foot to stimulate receptors.

Thus, there is a long-felt need for an insole that provides continuous support for the foot and stimulates the sensory receptors of the foot to correct postural imbalances to improve foot alignment and coordination.

SUMMARY

The present invention broadly comprises an insole having a base layer, a top layer fixedly secured to the base layer, a middle layer comprised of the base layer and the top layer positioned between the base layer and the top layer, a pressure projection extending upwardly from within the middle layer and extending past an upper surface of the upper layer, the projection including a disc fixedly secured within the middle layer, an annular ring fixedly secured atop the disc, a circular metal insert fixedly secured atop the disc within the annular ring, the circular metal insert having a horseshoe-shaped aperture therein.

The present invention may also broadly comprise an insole having a base layer, a top layer fixedly secured to the base layer, a middle layer comprised of the base layer and the top layer positioned between the base layer and the top layer, a pressure projection extending upwardly from within the middle layer and extending past an upper surface of the upper layer, the projection including a disc fixedly secured within the middle layer, an annular ring fixedly secured atop the disc, a circular metal insert fixedly secured atop the disc within the annular ring, the circular metal insert having a horseshoe-shaped aperture therein, and a pair of projections, one of said pair of projections positioned proximate an inside arch and one of the pair of projections positioned proximate an outside arch, the pair of projections proximate to a hindfoot region.

The present invention may further comprise a base layer, a top layer fixedly secured to the base layer, a middle layer comprised of the base layer and the top layer positioned between the base layer and the top layer and, a pair of projections, one of the pair of projections positioned proximate an inside arch and one of the pair of projections positioned proximate an outside arch, the pair of projections proximate a hindfoot region, where the inside projection and the outside projection form a wedge on the top layer.

The present invention may still further comprise a base layer, a top layer fixedly secured to the base layer, a middle layer comprised of the base layer and the top layer positioned in between the base layer and the top layer, a projection positioned proximate to an inside arch of a hindfoot region, the projection extending from the top layer and a projection positioned proximate to a midfoot region, the projection of the midfoot region extending from the top layer, where the inside projection and the projection of the midfoot region form a wedge proximate the midfoot region on the top layer.

An object of this insole is to improve the brain-body connection through sensory receptors. The activation of sensory receptors improves feet alignment and corrects postural imbalances. The frequency and vibration resonator in the center of the insole comprised of a disc, zinc annular ring and copper insert with a horseshoe-shaped aperture, stimulates the receptors within the feet as they respond to pressure, stretch, and frequency. The signal from the feet travels through ascending sensory pathways to the brain and arrives at the sensory cortex. The signal then transmits to the motor cortex where the brain adjusts the position of the body. The center projection increases the surface area on the foot to increase sensory feedback. This increased sensory feedback gives the body continuous awareness of its position in space to improve alignment of the feet to correct the position of the knee, hip, or back to improve posture.

This and other objects, features, and advantages of the present disclosure will become readily apparent upon a review of the following detailed description of the disclosure, in view of the drawings and appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

Various embodiments are disclosed, by way of example only, with reference to the accompanying schematic draw-

ings in which corresponding reference symbols indicate corresponding parts, in which:

FIG. **1**A is a top perspective view of a first embodiment of present invention;

FIG. **1**B is a top view of the invention shown in FIG. **1**;

FIG. **2** is a cross-sectional view taken generally along line **2**-**2** shown in FIG. **1**B;

FIG. **3**A is a top perspective view of pressure projection **20** of the present invention;

FIG. **3**B is a top view of pressure projection **20** shown in FIG. **3**A;

FIG. **3**C is an exploded view of pressure projection **20**;

FIG. **4**A is a top perspective view of a second embodiment of the present invention;

FIG. **4**B is a top view of the invention shown in FIG. **4**A;

FIG. **5**A is a cross-sectional view taken generally along line **5**-**5** shown in FIG. **4**B;

FIG. **5**B is a cross-sectional view taken generally along line **5**-**5** shown in FIG. **4**B specifically illustrating inside arch projection **251***a* and outside arch projection **252***a;*

FIG. **6**A is a top perspective view of a third embodiment of the present invention;

FIG. **6**B is a top view of the invention shown in FIG. **6**A;

FIG. **7**A is a cross-sectional view taken generally along line **7**-**7** shown in FIG. **6**B

FIG. **7**B is a cross-sectional view taken generally along line **7**-**7** shown in FIG. **6**B specifically illustrating inside arch projection **351***a* and outside arch projection **352***a;*

FIG. **8**A is a top perspective view of the fourth embodiment of the present invention;

FIG. **8**B is a top view of the invention shown in FIG. **8**A;

FIG. **9**A is a cross-sectional view taken generally along line **9**A-**9**A shown in FIG. **8**B; and,

FIG. **9**B is a cross-sectional view taken generally along line **9**B-**9**B shown in FIG. **8**B.

DETAILED DESCRIPTION

At the outset, it should be appreciated that like drawing numbers on different drawing views identify identical, or functionally similar, structural elements. It is to be understood that the claims are not limited to the disclosed aspects.

Furthermore, it is understood that this disclosure is not limited to the particular methodology, materials and modifications described and as such may, of course, vary. It is also understood that the terminology used herein is for the purpose of describing particular aspects only and is not intended to limit the scope of the claims.

Unless defined otherwise, all technical and scientific terms used herein have the same meaning as commonly understood to one of ordinary skill in the art to which this disclosure pertains. It should be understood that any methods, devices or materials similar or equivalent to those described herein can be used in the practice or testing of the example embodiments.

It should be appreciated that the term "substantially" is synonymous with terms such as "nearly," "very nearly," "about," "approximately," "around," "bordering on," "close to," "essentially," "in the neighborhood of," "in the vicinity of" etc., and such terms may be used interchangeably as appearing in the specification and claims. It should be appreciated that the term "proximate" is synonymous with terms such as "nearby," "close," "adjacent," "neighboring," "immediate," "adjoining," etc., and such terms may be used interchangeably as appearing in the specification and claims.

The insole of the present invention, described herein, includes four (4) different embodiments where each embodiment is geared to assist a user based on different physical ailments.

The first embodiment of the insole generally comprises a base layer, a pressure projection and a top layer. The base layer and top layer are preferably made using Polyurethane and Polyamide (Nylon 66). The pressure projection comprises a preferably plastic or polymer comprised disc fixedly secured to the base layer, a zinc annular ring fixed secured atop the disc, and a copper circular metal insert with a horseshoe-shaped aperture fixedly secured atop the disc within the annular ring. The pressure projection is embedded within the base layer and the top layer, i.e., a middle layer positioned between the top and bottom layers. The base layer and the top layer are adhered with double sided adhesive tape in a preferred embodiment, however, alternative fixation means may be contemplated.

The second embodiment of the insole generally comprises a base layer, a pressure projection and a top layer. The base layer and top layer are preferably made using Polyurethane and Polyamide (Nylon 66). The pressure projection has two components. The first component comprises a preferably plastic or polymer comprised disc fixedly secured to the base layer, a zinc annular ring fixed secured atop the disc, and a copper circular metal insert with a horseshoe-shaped aperture fixedly secured atop the disc within the annular ring. The second component comprises two upwardly facing projections positioned proximate to the inside arch and proximate to the outside arch of the hindfoot region. The pressure projection having the metal insert are preferably embedded within the base layer and the top layer, i.e., a middle layer positioned between the top and bottom layers. Alternatively, both projections located proximate the inside arch and the outside arch may extend upwardly from the top layer, fixedly secure thereto or may be integrally formed with the top layer and middle and arranged to extend upwardly. Alternatively, both projections located proximate the inside arch and the outside arch may be embedded within the middle layer and arranged to extend upwardly past the surface of the top layer. The base layer and the top layer are adhered with double sided adhesive tape in a preferred embodiment, however, alternative fixations means may be contemplated. Both of the projections located proximate the inside arch and the outside arch are further arranged to form a wedge positioned on the top layer. Alternatively, both projections may be separate material extending from the middle layer and covered by the top layer thereon.

The third embodiment of the insole generally comprises a base layer, a pressure projection and a top layer. The base layer and top layer are preferably made using Polyurethane and Polyamide (Nylon 66). The insole also comprises two upwardly facing projections positioned proximate to the inside arch and proximate to the outside arch of the hindfoot region. Both projections located proximate the inside arch and the outside arch may extend upwardly from the top layer, fixedly secure thereto or may be integrally formed with the top layer and middle and arranged to extend upwardly. Alternatively, both projections located proximate the inside arch and the outside arch may be embedded within the middle layer and arranged to extend upwardly past the surface of the top layer. The base layer and the top layer are adhered with double sided adhesive tape in a preferred embodiment, however, alternative fixations means may be contemplated. Both of the projections located proximate the inside arch and the outside arch are further arranged to form a wedge positioned on the top layer. Alternatively, both

projections may be separate material extending from the middle layer and covered by the top layer thereon.

The fourth embodiment of the insole generally comprises a base layer, a middle layer, and a top layer, where the middle layer positioned between the top and bottom layers. The base layer, projections and top layer are preferably made using Polyurethane and Polyamide (Nylon 66). Both projections may extend upwardly from the top layer, fixedly secure thereto or may be integrally formed with the top layer and middle and arranged to extend upwardly. Alternatively, both projections may be embedded within the middle layer and arranged to extend upwardly past the surface of the top layer. The base layer and the top layer are adhered with double sided adhesive tape in a preferred embodiment, however, alternative fixation means may be contemplated. Both of the projections located are further arranged to form a wedge positioned on the top layer, proximate the midfoot region. The projections may be embedded within the base layer and the top layer. Alternatively, both projections may extend upwardly from the top layer, fixedly secure thereto. Alternatively, both projections may be separate material extending from the middle layer and covered by the top layer thereon.

Adverting now to the figures, the following description should be taken in view of FIGS. **1**A and **1**B, specifically illustrating the first embodiment of the present invention. FIG. **1**A illustrates a top perspective of the first embodiment of insole **100** with pressure projection **20** embedded therein and FIG. **1**B illustrates a top view of the first embodiment of insole **100**. Pressure projection **20** is embedded within the respective layers of insole **100**, i.e., base layer **33** (shown in FIG. **2**), middle layer **32**, and top layer **31**. Base layer **33** is adhered to top layer **31** via double-sided adhesive tape, although it should be appreciated that various other methods of binding the base layer and the top layer may be employed, e.g., heat lamination, or other suitable means. Middle layer **32** is located between top layer **31** and bottom layer **33**. Top layer **31** includes bulge **20***a* which covers, or contains, pressure projection **20** within base layer **33** and middle layer **32**. It should be appreciated that middle layer **32** is illustrated to depict the material between base layer **33** and top layer **31** (shown in greater detail in view of FIG. **2**).

Insole **100** is defined by forefoot region **10**, midfoot region **11**, and hindfoot region **12**. Specifically, forefoot region **10** is defined by the toes of the foot of the user, that is, the area where the toes will rest thereon, midfoot region **11** is defined by the arch of the foot of the user and where pressure projection **20** is preferably located, and hindfoot region **12**, defined by the heal of the foot of a user, that is, the area where the heal will rest thereon. In a preferred embodiment, pressure projection **20** is embedded within midfoot region **11** and is further arranged to extend upwardly past the upper surface of top layer **31**. Insole **100** includes two sides, inside arch **13** and outside arch **14**, where inside arch **13** would be arranged proximate to the inside arch of a user's foot resting on insole **100** and where outside arch **14** would be arranged proximate to the outside arch of a user's foot resting on insole **100**.

The following description should be taken in view of FIGS. **2**-**3**C. FIG. **2** is a cross-sectional view of insole **100** taken generally along line **2**-**2** shown in FIG. **1**B. FIG. **3**A is a perspective view of pressure projection **20** removed from insole **100** and FIG. **3**B is a top view of the same. FIG. **3**C is an exploded view of pressure projection **20**. Bulge **20***a* will have deformable properties such that when a user contacts their foot to insole **100**, bugle **20***a* will collapse inwardly, that is, in the direction towards bottom layer **33**, such that the sole of a user's foot will indirectly contact pressure protrusion **20**. As shown in FIG. **2**, pressure projection **20** is embedded within insole **100**, specifically within middle layer **32** and preferably arranged proximate to top layer **31**. It should be appreciated that annular ring **22** and metal insert **23** have a top surface that extends past top layer **31**, that is, the respective top surfaces of annular ring **22** and metal insert **23** protrude past top layer **31** such that they are raised surfaces in relation to top surface **31**.

Pressure projection **20** includes base **21**, annular ring **22** and metal insert **23**. Metal insert **23** comprises horseshoe-shaped aperture **24** that is preferably configured in a substantially central location within metal insert **23**. When pressure projection **20** is fully assembled, annular ring **22** is fixedly secured to upper surface **21***a* of base **21**, specifically annular ring **22** is fixedly secured to attachment location **21***b* of upper surface **21***a*. Base **21** preferably has an outer diameter that is greater than the outer diameter of annular ring **22**, such that when annular ring **22** is fixed to base **21** an outer ledge is formed on upper surface **21***a* of base **21** that extends outwardly from the outer diameter of annular ring **22**. When pressure projection **20** is fully assembled, metal insert **23** is fixedly secured to upper surface **21***a* of base **21** within inner edge **22***a* of annular ring **22**, specifically metal insert **23** is fixedly secured to attachment location **21***c* of upper surface **21***a* where outer edge **23***a* of metal insert **23** is within inner edge **22***a* of annular ring **22**. Metal insert **23** includes a substantially central located aperture, horseshoe-shaped aperture **24**, where aperture **24** in a preferred embodiment comprises a U-like, or horseshoe-shaped, configuration. In a preferred embodiment, annular ring **22** is comprised of solid zinc. In a preferred embodiment, metal insert **23** is comprised of solid copper.

Adverting now to the second embodiment of the present invention, insole **200** is illustrated in FIGS. **4**A-**5**B. FIG. **4**A illustrates a perspective view of insole **200** and FIG. **4**B illustrates a top view of insole **200**. FIGS. **5**A and **5**B illustrate a cross-sectional view of insole **200** taken generally along line **5**-**5** in FIG. **4**B. Pressure projection **20** is embedded within the respective layers of insole **200**, i.e., base layer **233** (shown in FIGS. **5**A and **5**B), middle layer **232**, and top layer **231**. Base layer **233** and middle layer **232** are adhered to top layer **231** via a double-sided adhesive tape, although it should be appreciated that various other methods of binding the base layer and the top layer may be employed, e.g., heat lamination, or other suitable means. Top layer **231** includes bulge **20***a* which covers, or contains, pressure projection **20** within base layer **233** and middle layer **232**. It should be appreciated that middle layer **232** is illustrated to depict the material between base layer **233** and top layer **231** (shown in greater detail in view of FIGS. **5**A and **5**B). Pressure projection **20** and bulge **20***a* of insole **200** are of the same construction as that of insole **100**, as described supra, and shown in greater detail in view of FIGS. **3**A-**3**C.

Insole **200** is defined by forefoot region **210**, midfoot region **211**, and hindfoot region **212**. Specifically, forefoot region **210** is defined by the toes of the foot of the user, that is, the area where the toes will rest thereon, midfoot region **211** is defined by the arch of the foot of the user and where pressure projection **20** is preferably located, and hindfoot region **212**, defined by the heal of the foot of a user, that is, the area where the heal will rest thereon. In a preferred embodiment, pressure projection **20** is embedded within midfoot region **211**. Insole **200** includes two sides, inside arch **213** and outside arch **214**, where inside arch **213** would be arranged proximate to the inside arch of a user's foot

resting on insole **200** and where outside arch **214** would be arranged proximate to the outside arch of a user's foot resting on insole **200**.

Insole **200** also comprises inside arch projection **251** and outside arch projection **252**. Both arch projections **251** and **252** have a substantially semicircular configuration, a semi-domed configuration, or a combination thereof. Inside arch projection **251** and outside arch projection **252** are preferably located in insole **200** proximate to hindfoot region **212** and partially within midfoot region **211** of insole **200**.

Arch projections **251** and **252** could be integral with top layer **231** and middle layer **232**, as shown in FIG. **5**A. Alternatively, inside arch projection **251***a* and outside arch projection **252***a* could be separate components that are affixed to top layer **231**, as shown in FIG. **5**B.

The difference between insole **100** and insole **200** is the presence of inside arch projection **251** (or **251***a*) and outside arch projection **252** (or **252***a*), discussed supra. Inside arch projection **251** and outside arch projection **252** are preferably positioned in between the midfoot region **211** and hindfoot region **212**, where inside arch projection **251** is configured on inside arch **213** and outside arch projection **252** is specifically configured on outside arch **214**, thereby contacting the inside arch and outside arch of a user's foot that is resting on insole **200**. Inside arch projection **251** (or **251***a*) and outside arch projection **252** (or **252***a*) form wedge **260**, which is a combination of top layer **231**, inside arch projection **251** (or **251***a*) and outside arch projection **252** (or **252***a*). The benefits imparted by the configuration of wedge **260** are described in greater detail, infra.

Adverting now to the third embodiment of the present invention, insole **300**. The following description should be taken in view of FIGS. **6**A-**7**B. FIG. **6**A illustrates a perspective view of insole **300** and FIG. **6**B illustrates a top view of insole **300**. FIGS. **7**A and **7**B illustrate a cross-sectional view of insole **300** taken generally along line **7**-**7** in FIG. **6**B. Base layer **333** and middle layer **332**, are adhered to top layer **331** via a double-sided adhesive tape, although it should be appreciated that various other methods of binding the base layer and the top layer may be employed, e.g., heat lamination, or other suitable means. It should be appreciated that middle layer **332** is illustrated to depict the material between base layer **333** and top layer **331** (shown in greater detail in view of FIGS. **7**A and **7**B).

Insole **300** is defined by forefoot region **310**, midfoot region **311**, and hindfoot region **312**. Specifically, forefoot region **310** is defined by the toes of the foot of the user, that is, the area where the toes will rest thereon, midfoot region **311** is defined by the arch of the foot of the user and hindfoot region **312**, defined by the heal of the foot of a user, that is, the area where the heal will rest thereon. Insole **300** includes two sides, inside arch **313** and outside arch **314**, where inside arch **313** would be arranged proximate to the inside arch of a user's foot resting on insole **300** and where outside arch **314** would be arranged proximate to the outside arch of a user's foot resting on insole **300**.

Insole **300** also comprises inside arch projection **351** and outside arch projection **352**. Both arch projections **351** and **352** have a substantially semicircular configuration, a semi-domed configuration, or a combination thereof. Inside arch projection **351** and outside arch projection **352** are preferably located in insole **300** proximate to hindfoot region **312** and partially within midfoot region **311** of insole **300**.

Arch projections **351** and **352** could be integral with top layer **331** and middle layer **332**, as shown in FIG. **7**A. Alternatively, inside arch projection **351***a* and outside arch projection **352***a* could be separate components that are affixed to top layer **331**, as shown in FIG. **7**B.

The difference between insole **100** and insole **300** is the presence of inside arch projection **351** (or **351***a*) and outside arch projection **352** (or **352***a*), and the absence of pressure projection **20**, discussed supra. Inside arch projection **351** and outside arch projection **352** are preferably positioned in between the midfoot region **311** and hindfoot region **312**, where inside arch projection **351** is configured proximate to inside arch **313** and outside arch projection **352** is specifically configured proximate to outside arch **314**, thereby contacting the inside arch and outside arch of a user's foot that is resting on insole **300**. Inside arch projection **351** (or **351***a*) and outside arch projection **352** (or **352***a*) form wedge **360**, which is a combination of top layer **331**, inside arch projection **351** (or **351***a*) and outside arch projection **352** (or **352***a*). The benefits imparted by the configuration of wedge **360** are described in greater detail, infra.

Adverting now to the fourth embodiment of the present invention, insole **400**. The following description should be taken in view of FIGS. **8**A-**9**B. FIG. **8**A illustrates a perspective view of insole **400** and FIG. **6**B illustrates a top view of insole **400**. FIGS. **9**A and **9**B illustrate a cross-sectional view of insole **400** taken generally along lines **9**A-**9**A and **9**B-**9**B in FIG. **8**B, respectively. Base layer **433** and middle layer **432**, are adhered to top layer **431** via a double-sided adhesive tape, although it should be appreciated that various other methods of binding the base layer and the top layer may be employed, e.g., heat lamination, or other suitable means. It should be appreciated that middle layer **432** is illustrated to depict the material between base layer **433** and top layer **431** (shown in greater detail in view of FIGS. **9**A and **9**B).

Insole **400** is defined by forefoot region **410**, midfoot region **411**, and hindfoot region **412**. Specifically, forefoot region **410** is defined by the toes of the foot of the user, that is, the area where the toes will rest thereon, midfoot region **411** is defined by the arch of the foot of the user and hindfoot region **412**, defined by the heal of the foot of a user, that is, the area where the heal will rest thereon. Insole **400** includes two sides, inside arch **413** and outside arch **414**, where inside arch **413** would be arranged proximate to the inside arch of a user's foot resting on insole **400** and where outside arch **414** would be arranged proximate to the outside arch of a user's foot resting on insole **400**.

Insole **400** also comprises inside arch projection **451** and is arranged to have a substantially semicircular configuration, a semi-domed configuration, or a combination thereof. Inside arch projection **451** is preferably located in insole **400** proximate to hindfoot region **412** and partially within midfoot region **411** of insole **400**.

Arch projection **451** could be integral with top layer **431** and middle layer **432**. Alternatively, inside arch projection **451***a* could be a separate component that are affixed to top layer **431**, as shown in FIG. **9**B.

Insole **400** also includes midfoot projection **470**. Midfoot projection **470** has a quadrilateral-like shape and has toe end **471** and midfoot end **472**. Arranged proximate to midfoot end **472** is midfoot slope **474**. Midfoot slope **474** has a straight configuration such that it bifurcates insole **400** within midfoot region **411**. Arranged proximate to toe end **471** is toe slope **473**. Toe slope **473** has a curved arrangement, unlike midfoot slope **474**, where the curve juts outwardly in a substantially central position horizontally and the jut is proximate to forefoot region **410**. Midfoot projection may be arranged to extend upwardly from top layer **431**

or could be a protrusion extending from middle layer **432** that is covered by top layer **431**.

Arch projection **451**, midfoot projection **470**, and top layer **431** collectively create wedge **480**. Wedge **480** is preferably arranged proximate inside arch **413** and within midfoot region **411**. The benefits imparted by the configuration of wedge **480** are described in greater detail, infra.

The following description should be taken in view of all of the aforementioned figures. The first and second embodiments of the present invention, insoles **100** and **200** are configured to enhance physical and mental performance, via frequency imparted through the foot of user contacting either insole **100** or **200**. This frequency stimulates nerve centers to intensify muscle tone, stability, and mobility. A constant stimulation to the nervous system allows the human brain to create new neural pathways. Feedback from the skin of a person's foot is a primary source of sensory input. This sensory input is supplied to the brain from approximately 100,000 to 200,000 receptors in the sole of each human foot. Limiting the sensory inputs from human feet has been shown to introduce issues of maintaining stability and balance. Pressure projection **20** of insoles **100** and **200** are arranged to provide sensory feedback through a user's foot through constant contact with pressure projection—resolving the issue of losing sensory input that could hinder maintaining stability and balance.

Pressure projection **20** of insoles **100** and **200** provide constant sensory input to a user's nervous system. The constant stimulation of pressure projection allows a user's brain to create new neural networks to resolve poor postural habits that may be introduced from sensory input deprivation. Pressure projection **20** works by:

1. The signal, or sensory input, from the skin of a user's foot travels to their brain through channels known as the ascending sensory pathways;
2. The signal arrives in a user's sensory cortex of the brain, located in your parietal lobe;
3. The signal is then transmitted to the motor cortex located in the frontal lobe;
4. The frontal lobe is the center where a user's brain plans the execution of movement; and,
5. Pressure projection **20** has a configuration that optimizes the signal to provide for accurate movement and proper alignment.

In a study conducted on Mar. 10, 2022, force plate measurements were taken of a member of a law enforcement organization. The measurements were taken of both the right and left feet. The test was conducted with the person wearing insoles without pressure projection **20** and subsequently wearing insole **100**. The following chart illustrates the benefits imparted on the law enforcement personal via pressure projection **20** of insole **100**. Shown below are the differences measured by the force plate of the law enforcement personal without insole **100** and with insole **100**:

Blood Pressure & Grip Strength:

	Without Insole 100	With Insole 100
Blood Pressure	158/105	138/100
Grip Strength	151 lbs.	154 lbs.

Foot Posture (Weight Distribution %) without Insole **100**:

	Left Foot	Right Foot
Overall	52.3%	47.7%
Toes	27.7%	18.4%
Heel	24.6%	30.0%

It should be noted that a perfect foot posture will distribute the overall weight evenly across the left and right feet, i.e., 50% and 50%, and the respective distribution between the toes and heel of perfect foot posture will be distributed evenly across the toes and heel of the respective foot, i.e., 25% and 25%.

Foot Posture (Weight Distribution %) with Insole **100**:

	Left Foot	Right Foot
Overall	51.6%	48.4%
Toes	22.9%	23.3%
Heel	28.8%	24.4%

In the second, third, and fourth embodiments of the present invention, insoles **200** and **300**, and **400** all include inside arch projection **251** (or inside arch projection **251***a*), and outside arch projection **252** (or outside arch projection **252***a*). In the second and third embodiments of the present invention, insoles **200** and **300** include inside arch projections **251** and **351** and outside arch projections **252** and **352**, respectively. If a user of insoles **200** or **300** have his or her rear-foot (heel) poorly stimulated, the user's foot sole receptors are missing vital information from sensory inputs, as described supra, which could result in poor activation of the user's posterior chain. When a user has a rearfoot stimulation deprivation, a common indicator is a forward center of mass of the user. The forward center of mass leads to an array of compensations by the body and brain, thereby requiring the user to expend greater energy in order to stay upright against gravity.

It should be appreciated that inside arch projection **251** and outside arch projection **252**, referenced herebelow, should also be taken in consideration of inside arch projection **351** (or **351***a*) and outside arch projection **352** (or **352***a*) of insole **300**. Inside arch projection **251** (or inside arch projection **251***a*), and outside arch projection **252** (or outside arch projection **252***a*) of insoles **200** collectively form wedge **260** (or wedge **360** of insole **300**). Wedges **260** is arranged to stimulate the receptors in a user's rear-foot that is contacting insole **200** as wedge **260** imparts a deep pressure and stretch to the rear-foot of a user, as follows:

1. The signal, or sensory input received from the skin of a user's foot travels to the user's brain through ascending sensory pathways;
2. This signal arrives in the user's sensory cortex of their brain, located in their parietal lobe;
3. The signal is then transmitted to the motor cortex located in the frontal lobe.
4. The frontal lobe is the center where a user's brain plans the execution of movement; and,
5. The improved signal allows the user's brain to command proper tonicity of the user's posterior chain—encouraging a neutral center of mass and optimal joint mechanics of movement.

Insole **400** includes inside arch projection **451** and midfoot projection **470**, which collectively create wedge **480**. Common ailments such as rounded shoulders, tight traps, or

the occasional tension headache can be commonly addressed and resolved through engaging the sensory receptors in the foot, particularly the midfoot. When the arches of the foot are poorly stimulated, the individual's receptors are necessarily missing essential signaling information that should be communicated to the brain, which in turn means the brain cannot orchestrate proper alignment, specifically in the individual's lower extremities and pelvis. Other ailments include knocked knees and protruding abdomens, i.e., anterior tilt. Wedge **480** resolves these issues by:

1. The signal, received from the skin of a user's foot travels to the user's brain through ascending sensory pathways;
2. This signal arrives in the user's sensory cortex of their brain, located in their parietal lobe;
3. The signal is then transmitted to the motor cortex located in the frontal lobe;
4. The frontal lobe is the center where a user's brain plans the execution of movement; and,
5. The improved signal provided by wedge **480** allows the user's brain to optimize knee alignment while encouraging a neutral pelvis tilt—inducing a positive, less detrimental, impact on the user's joints.

It should be appreciated that the embodiments as shown are only one of a variety of possible embodiments of the claimed invention.

It will be appreciated that various aspects of the disclosure above and other features and functions, or alternatives thereof, may be desirably combined into many other different systems or applications. Various presently unforeseen or unanticipated alternatives, modifications, variations, or improvements therein may be subsequently made by those skilled in the art which are also intended to be encompassed by the following claims.

REFERENCES NUMERALS

10	Forefoot region
11	Midfoot region
12	Hindfoot region
13	Inside arch
14	Outside arch
20	Pressure projection of insole 100 and 200
20a	Bulge
21	Base of pressure projection 20
21a	Upper surface of base 21
21b	Attachment location of annular ring 22
21c	Attachment location of metal insert 23
22	Annular ring of pressure projection 20
22a	Inner edge of annular ring 22
23	Metal insert of pressure projection 20
23a	Outer edge of metal insert 23
24	Horseshoe-shaped aperture of metal insert 23
31	Top layer
32	Middle layer
33	Bottom layer
100	Insole (first embodiment)
200	Insole (second embodiment)
210	Forefoot region of insole 200
211	Midfoot region of insole 200
212	Hindfoot region of insole 200
213	Inside arch of insole 200

-continued

REFERENCES NUMERALS

214	Outside arch of insole 200
231	Top layer of insole 200
232	Middle layer of insole 200
233	Bottom layer of insole 200
251	Inside arch projection of insole 200
251a	Inside arch projection of insole 200
252	Outside arch projection of insole 200
252a	Outside arch projection of insole 200
260	Wedge
300	Insole (third embodiment)
310	Forefoot region of insole 300
311	Midfoot region of insole 300
312	Hindfoot region of insole 300
313	Inside arch of insole 300
314	Outside arch of insole 300
331	Top layer of insole 300
332	Middle layer of insole 300
333	Bottom layer of insole 300
351	Inside arch projection of insole 300
351a	Inside arch projection of insole 300
352	Outside arch projection of insole 300
352a	Outside arch projection of insole 300
360	Wedge of insole 300
400	Insole (fourth embodiment)
410	Forefoot region of insole 400
411	Midfoot region of insole 400
412	Hindfoot region of insole 400
413	Inside arch of insole 400
414	Outside arch of insole 400
431	Top layer of insole 400
432	Middle layer of insole 400
433	Bottom layer of insole 400
451	Inside arch projection of insole 400
451a	Inside arch projection of insole 400
470	Midfoot projection of insole 400
471	Toe end of projection 470
472	Midfoot end of projection 470
473	Toe slope of projection 470
474	Midfoot slope of projection 470
480	Wedge of insole 400

What is claimed is:

1. An insole, comprising:

a base layer;

a top layer fixedly secured to said base layer; and,

a pressure projection extending upwardly from within said base layer and forming a bulge in said upper layer, said projection comprising:

a disc fixedly secured to said base layer;

an annular ring fixedly secured atop said disc;

a circular metal insert fixedly secured atop said disc within said annular ring, said circular metal insert having a horseshoe-shaped aperture therein.

2. The insole recited in claim **1**, wherein said base layer is a combination of polyurethane and polyamide.

3. The insole recited in claim **2**, wherein said top layer is a combination of polyurethane and polyamide.

4. The insole recited in claim **1**, wherein said annular ring is comprised of zinc.

5. The insole recited in claim **1**, wherein said circular metal insert is comprised of copper.

* * * * *