US 20130180131A1

(19) **United States**

(12) **Patent Application Publication**

Schwartz

(10) **Pub. No.: US 2013/0180131 A1**

(43) **Pub. Date: Jul. 18, 2013**

(54) **SHOE WITH CONFORMING UPPER**

(75) Inventor: **Evan Schwartz**, Teaneck, NJ (US)

(73) Assignee: **AETREX WORLDWIDE, INC.**, Teaneck, NJ (US)

(21) Appl. No.: **13/806,697**

(22) PCT Filed: **Jun. 24, 2011**

(86) PCT No.: **PCT/US2011/041837**

§ 371 (c)(1),
(2), (4) Date: **Mar. 29, 2013**

Related U.S. Application Data

(60) Provisional application No. 61/358,714, filed on Jun. 25, 2010.

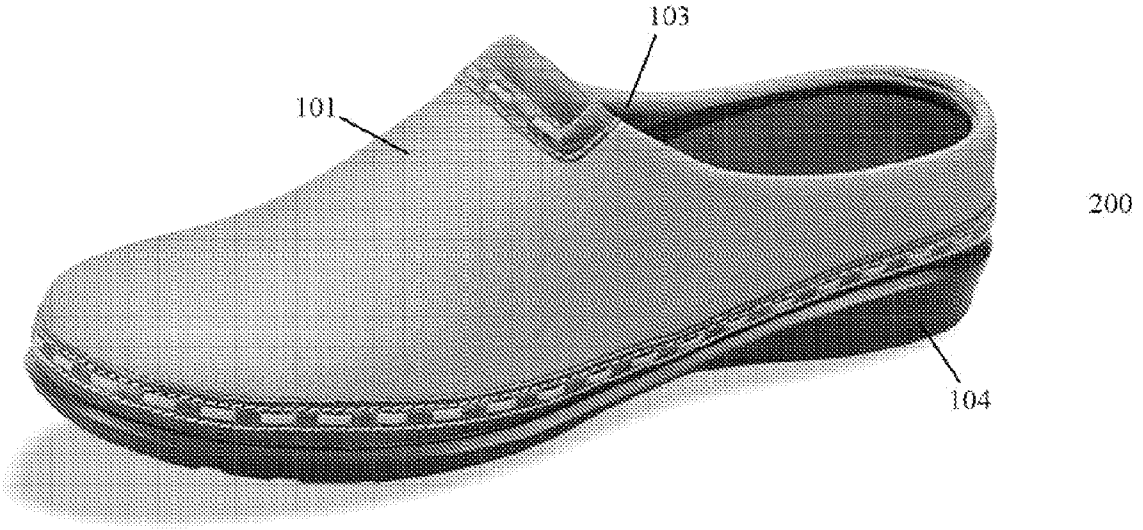
Publication Classification

(51) **Int. Cl.**
A43B 23/02 (2006.01)

(52) **U.S. Cl.**
CPC ***A43B 23/0205*** (2013.01)
USPC **36/88**; 36/45; 36/55

(57) **ABSTRACT**

The invention comprises articles of footwear that have a conforming upper to provide comfort and support to the wearer. The upper portion may comprise a cushioning layer of polyurethane foam or other materials having similar characteristics. In addition to the cushioning layer, the shoe upper is also composed of a fabric layer. In preferred embodiments, the stretch fabric is 4-way elastic fabric. 4-way stretch fabric may be comprised of e.g., nylon or other elastane or spandex material or a combination thereof.



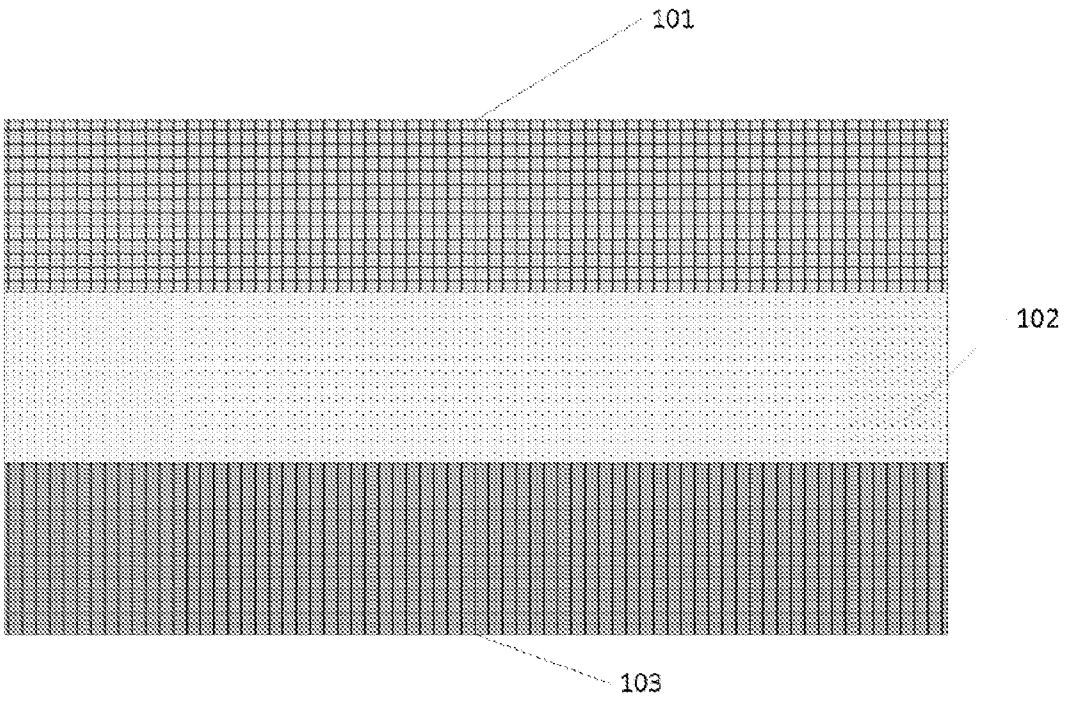


FIGURE 1

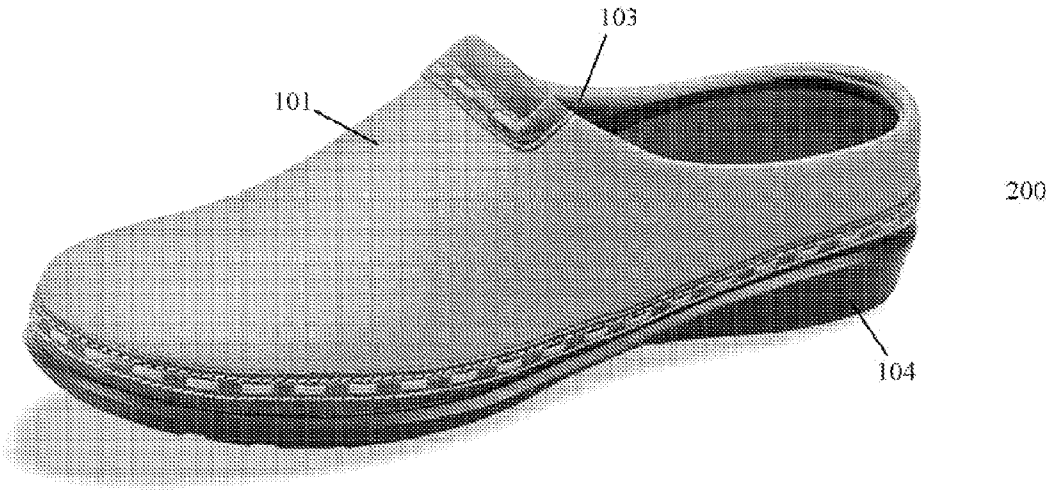


FIGURE 2

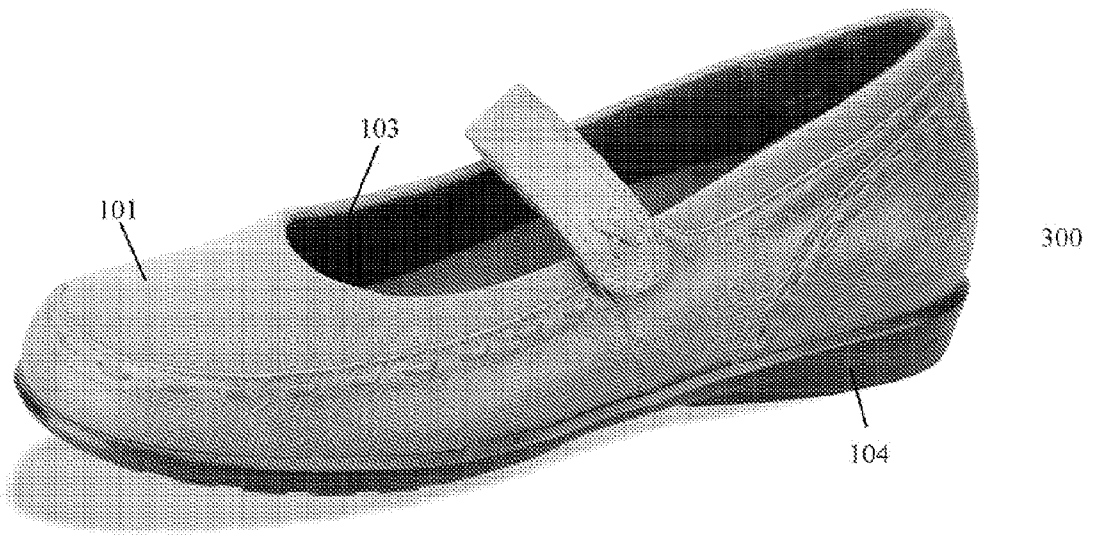


FIGURE 3

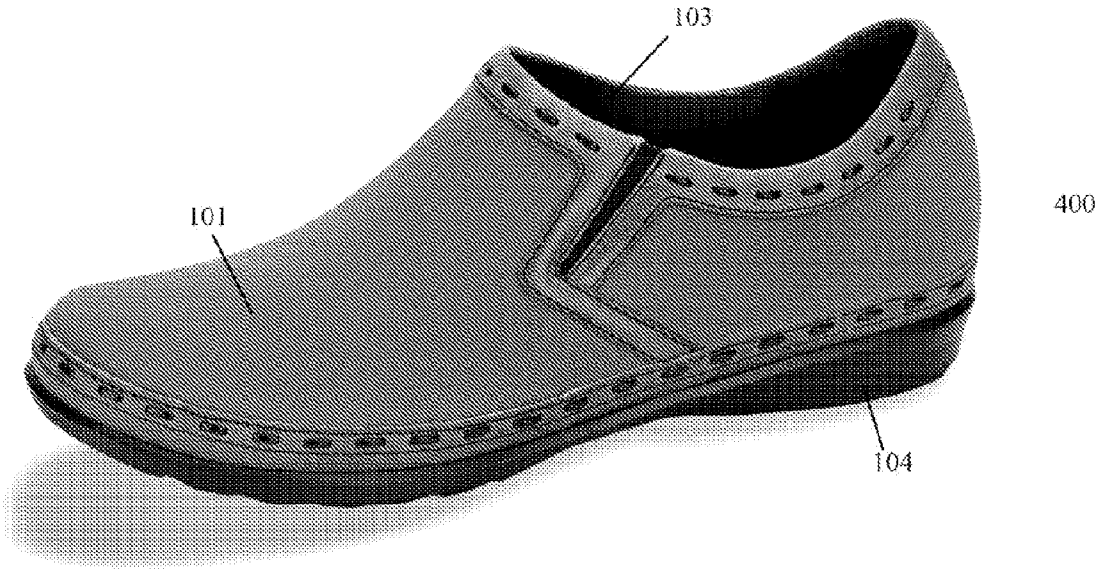


FIGURE 4

SHOE WITH CONFORMING UPPER

[0001] This application claims priority to U.S. Provisional Application No. 61/358,714, filed Jun. 25, 2010, the contents of which are hereby incorporated by reference in its entirety.

BACKGROUND OF THE INVENTION

[0002] Shoes typically consist of an upper portion and a sole. The upper portion of the shoe contours most of the sides, top, and back of the foot, while the sole contours the bottom of the foot. As the bottom of the foot is the portion of the foot which receives the most impact, most footwear manufacturers concentrate on providing a comfortable sole for their footwear.

[0003] However, the upper portion of the shoe is often overlooked in terms of comfort. Everyday wearing of some shoes may lead to discomfort for the wearer as a result of many factors such as friction, rigidness, tightness and non-conformity to the foot. Additionally, foot ailments such as bunions, calluses, hammertoes, corns and blisters can be extremely painful, as the friction caused by having the shoe upper rub against those sore spots may exacerbate the pain. Therefore, even with an extra cushioned and supportive sole, the upper portion may be the most uncomfortable portion of the shoe. This may be especially problematic not just for the normal wearer, but also if a wearer has foot ailments that affect the top or sides of the foot.

[0004] Moreover, the tightness of a shoe upper may even be the cause of such ailments. A narrow toe box can crowd the toes together, leaving them in a triangular shape. The combination of the narrow toe box along with an upper comprised of a non-stretchable material leaves the wearer's toes with insufficient room.

[0005] In addition, people's feet expand when they stand, reduce when they sit, and expand and reduce at different times of the day and month. The constant expansion and reduction of the size of the foot is not taken into consideration with typical shoes, as the uppers maintain in constant position, regardless of the change in the wearer's foot.

[0006] Stability and support can also be a problem. Many shoes, such as flip-flops, lack a supportive upper, which can lead to foot and back pain.

[0007] Therefore, there remains a need in the art to provide a shoe which incorporates an upper portion which addresses the issues of comfort, flexibility, and stability/support for the wearer.

SUMMARY OF THE INVENTION

[0008] It is therefore an object of the present invention to provide a shoe which has a conforming upper portion to assist in the comfort of the shoe and to provide support for the foot for the normal wearer with no foot ailments.

[0009] It is a further object of the present invention to provide a shoe which has a conforming upper portion to assist in the comfort of the shoe and to provide support for the foot for the normal wearer with foot ailments.

[0010] In certain embodiments, the present invention is directed to a shoe with a conforming upper portion, wherein the conforming upper portion surrounds at least a portion of the top, sides, and back of the wearer's foot.

[0011] In certain embodiments, the present invention is directed to a shoe comprising a sole and an upper comprising a cushioning layer. In preferred embodiments, the cushioning layer comprises polyurethane foam, or other material having similar characteristics to polyurethane foam.

[0012] In certain embodiments, the present invention is directed to an upper portion of a shoe, wherein the upper portion comprises a cushioning layer comprising polyurethane foam, or other material having similar characteristics to polyurethane foam.

[0013] In preferred embodiments, the present invention is directed to a shoe comprising a sole and an upper, wherein the upper comprises a lining layer, a cushioning layer, and a 4-way stretch fabric layer.

[0014] As used herein, the terms "memory foam" and "polyurethane foam" are used interchangeably.

[0015] As used herein, the terms "footwear" and "shoe" are used interchangeably, and are meant to encompass any style of footwear, including, but not limited to, boots, clogs, sandals, Mary-Jane, slip-ons, sneakers, etc.

BRIEF DESCRIPTION OF THE FIGURES

[0016] FIG. **1** depicts a detailed view of the layers of a shoe upper according to an embodiment of the present invention.

[0017] FIG. **2** depicts an embodiment of the present invention in which the style of the shoe is a clog.

[0018] FIG. **3** depicts an embodiment of the present invention in which the style of the shoe is a Mary Jane.

[0019] FIG. **4** depicts an embodiment of the present invention in which the style of the shoe is a slip-on.

[0020] The figures referred to above should be understood to solely provide representative embodiments of the present invention.

DETAILED DESCRIPTION

[0021] The shoes of the present invention allow the wearer to have stylish footwear without sacrificing comfort, particularly comfort on the top, sides, and back of the foot. The upper-foot comfort is achieved by providing a conforming upper which conforms to the wearer's foot upon insertion of the foot into the shoe. The conforming upper is beneficial to the wearers with normal feet, as it provides extra comfort, flexibility and support. Moreover, the conforming upper is particularly advantageous for the wearer who suffers from foot ailments such as bunions, calluses, hammertoes, corns and blisters. As the upper portion of the shoe has elastic-type properties, the upper can expand when the foot expands and return to its initial position when the foot reduces in size. Therefore, if the wearer has, e.g., a bunion, the upper will conform even to the portion of the foot which has the bunion.

[0022] Another advantage of the present invention is that the conforming upper also provides support by countering the wearer's foot upon insertion of the foot into the shoe. This provides stability which may help reduce foot and back pain.

[0023] For added all-around comfort, the conforming upper can be combined with shock absorbing insoles/soles (such as those described in U.S. Pat. No. 7,493,230, which is hereby incorporated by reference).

[0024] The cushioning layer of the upper of the present invention has conforming and countering characteristics , and requires a material which specifically exhibits these characteristics. Memory foam is therefore the preferred material used to create the cushioning layer of the conforming upper used in the present invention. Memory foam is a polyurethane material, often referred to as visco-elastic foam. Memory foam typically comes in two forms, a high-density foam

which conforms to objects in reaction to warm temperature, and a lower density foam which conforms to objects as a result of pressure sensitivity. The present invention contemplates the use of both high and low density memory foam. In preferred embodiments, the density of the foam used is such to allow for slow recovery. Preferably, the foam density is from about 10 kg/m^3 to about 200 kg/m^3, from about 25 kg/m^3 to about 175 kg/m^3, from about 50 kg/m^3 to about 150 kg/m^3, or from about 75 kg/m^3 to about 100 kg/m^3. The most preferred density range of the memory foam used in the present invention is from about 75 kg/m^3 to about 100 kg/m^3.

[0025] It is important to note that the present invention contemplates the use of any material having characteristics similar to those of memory foam for use in the cushioning layer. For example, in place of memory foam, any material which provides cushioning, support and flexibility, and having a density similar to that of memory foam can be used. Thus, materials having a density of from about 10 kg/m^3 to about 200 kg/m^3, from about 25 kg/m^3 to about 175 kg/m^3, from about 50 kg/m^3 to about 150 kg/m^3, or preferably from about 75 kg/m^3 to about 100 kg/m^3, while still providing cushioning, support and flexibility are contemplated for use in the uppers of the present invention. For example, neoprene can also be used as the cushioning layer.

[0026] In preferred embodiments, the cushioning layer makes up greater than 20% of the upper, greater than 40% of the upper, greater than 60% of the upper, or greater than 80% of the upper.

[0027] In addition to the cushioning layer, the shoe upper is also composed of a fabric layer. The fabric is preferably a stretchable fabric. In preferred embodiments, the stretch fabric is 4-way elastic fabric. 4-way stretch fabric may be comprised of, e.g., nylon or other elastane or spandex material or a combination thereof.

[0028] In certain embodiments, the shoe upper also has a lining layer. The lining can be composed of any thin material which allows for integrity of the memory foam to be maintained. Preferably, the lining is a knit fabric such as jersey, wool, rayon, cotton or a cotton-synthetic blend, or a combination thereof, although any thin fabric which maintains the integrity of the memory foam while still providing comfort to the wearer may be used.

[0029] Additionally, antimicrobial agents may be used in the shoe upper. In certain embodiments, antimicrobial agents are incorporated into a fabric used in the lining and/or the cushioning layer. In other embodiments, antimicrobial solution may be layered or sprayed onto the lining and/or cushioning layer. Examples of antimicrobial agents which may be used in the present invention include, but are not limited to, tricolsan, organofunctional saline (known as Aegis®), silver, trichlocarban, or other similar agents or a combination thereof.

[0030] In preferred embodiments of the present invention, the layers of the shoe upper are arranged as shown in FIG. **1**. In FIG. **1**, the top layer is the fabric layer **101**. The fabric layer **101** is the outermost layer which is exposed to the environment. The fabric layer can be any color and/or pattern and is preferably composed of a 4-way stretch fabric. In FIG. **1**, the cushioning layer **102** is the intermediate layer. However, in embodiments where there is no lining present (not shown) the cushioning layer will be the layer that is exposed to the wearer's foot. In embodiments wherein the lining is present, the lining **103** will be the inner-most layer, exposed to the wearer's foot and the cushioning layer **102** will be the intermediate layer.

[0031] In certain embodiments, the layers are attached to each other by way of an adhesive suitable for use with the materials, such as, e.g., hot melt adhesives, double component adhesives, volatile solvent adhesives, water based adhesives, etc. In other embodiments, the layers may be molded together by way of heat processing. In alternate embodiments, the layers may be attached to each other by any suitable means known in the art.

[0032] The upper portions of the shoes described herein may be used in any type of shoe, boot, etc., which would benefit from the support and comfort provided by the fabric and the memory foam and may be used for any suitable style, such as a clog, slip-on, Mary Jane, boot, etc.

[0033] For example, FIG. **2** depicts a shoe contemplated by the present invention in the form of a clog **200**. In such an embodiment, the fabric layer **101** of the upper surrounds the entire top and side portions of the foot and a portion of the heel, as does the lining **103**. The sole of the shoe **104** is connected to the upper by any means known in the art.

[0034] FIG. **3** depicts an embodiment of the present invention wherein the shoe is in the style of a Mary Jane **300**. As shown in FIG. **3**, the fabric layer **101** of the upper extends over only a portion of the top of the foot.

[0035] FIG. **4** depicts an embodiment of the present invention wherein the shoe is in the style of a slip-on **400**. In such an embodiment, the fabric layer **101** of the upper extends over the entire top and sides portions of the foot, as well as the entire heel.

[0036] In light of the foregoing disclosure of the invention and description of various embodiments, those skill in the art will readily understand that modifications and adaptations can be made without departing from the scope and spirit of the invention. All such modifications and adaptations are intended to be covered by the following claims.

1. An article of footwear comprising:

a sole; and

an upper comprising polyurethane foam.

2. The article of footwear of claim **1**, wherein the upper further comprises a fabric.

3. The article of footwear of claim **2**, wherein the fabric comprises nylon.

4. The article of footwear of claim **2**, wherein the upper further comprises a lining.

5. The article of footwear of claim **4**, wherein the lining comprises a knit fabric.

6. The article of footwear of claim **2**, wherein the fabric is layered on top of the polyurethane foam.

7. The article of footwear of claim **4**, wherein the polyurethane foam is layered on top of the lining and wherein the fabric is layered on top of the polyurethane foam.

8. The article of footwear of claim **1**, wherein the polyurethane foam has a density of between about 10 kg/m^3 to about 200 kg/m^3.

9. The article of footwear of claim **1**, wherein the polyurethane foam has a density of between about 25 kg/m^3 to about 175 kg/m^3.

10. The article of footwear of claim **1**, wherein the polyurethane foam has a density of between about 50 kg/m^3 to about 150 kg/m^3.

11. The article of footwear of claim **1**, wherein the polyurethane foam has a density of between about 75 kg/m^3 to about 100 kg/m^3.

12. The article of footwear of claim **1**, wherein the upper further comprises an antimicrobial.

13. The article of footwear of claim **12**, wherein the antimicrobial comprises triclosan, organofunctional saline, silver, trichlocarban or a combination thereof.

14. An upper for an article of footwear comprising polyurethane foam.

15. The upper of claim **14** further comprising a fabric.

16. The upper of claim **15**, wherein the fabric comprises nylon.

17. The upper of claim **15** further comprising a lining.

18-19. (canceled)

20. The upper of claim **17**, wherein the polyurethane foam is layered on top of the lining and wherein the fabric is layered on top of the polyurethane foam.

21-24. (canceled)

25. The upper of claim **14** further comprising an antimicrobial.

26. (canceled)

27. A method of alleviating foot ailments of a wearer comprising providing an article of footwear to the wearer, wherein the article of footwear comprises a sole; and an upper which conforms to the wearer's foot upon insertion of the foot into the article of footwear.

28-41. (canceled)

* * * * *