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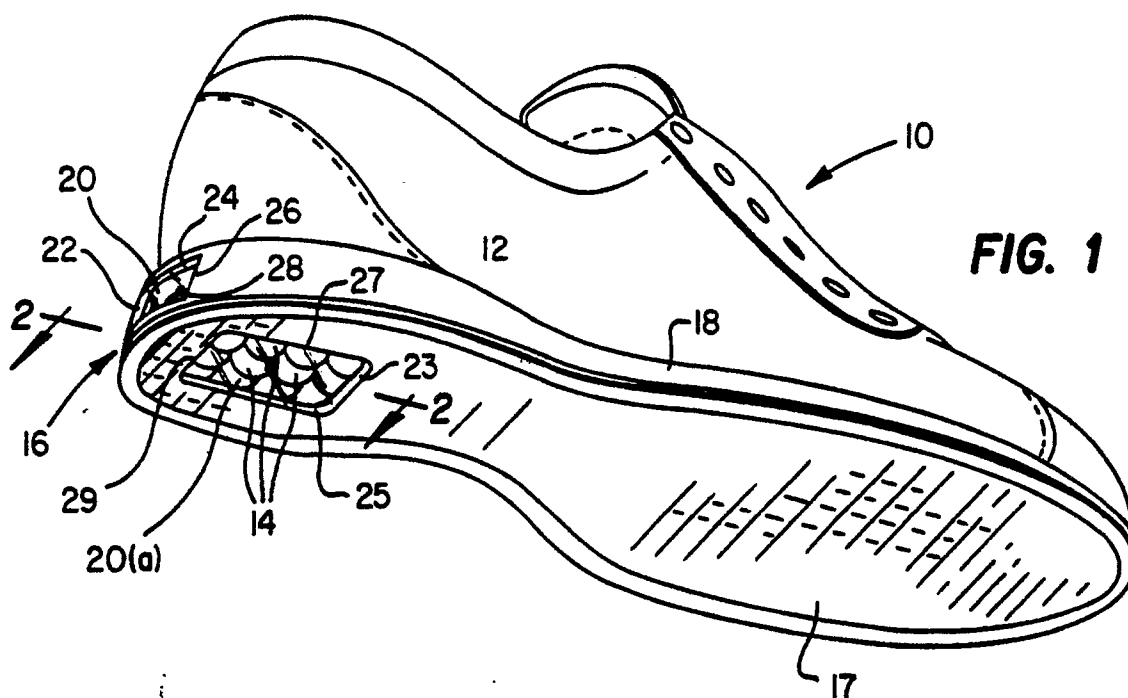
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⑤④ **Shoe having observation windows and method.**

⑤⑦ Windows (20) are formed through the outsole (16) of an athletic shoe to allow visual observation of internal structures such as cushioning means, from exterior the shoe. The outsole (16) of the shoe (10) comprises a bottom sole (17) and a midsole (18).

The windows (20) comprise a scuff-resistant material such as polyurethane or polyvinyl chloride. The windows (20) may be a hollow container at least partially filled with a fluid such as air or silicone.

EP 0 388 661 A1



IMPROVED SHOE HAVING OBSERVATION WINDOWS AND METHOD

RELATED APPLICATION

This application is a continuation-in-part of co-pending U.S. application Serial No. 245,758 filed September 16, 1988 which is a continuation-in-part of co-pending U.S. application Serial No. 153,222 filed February 8, 1988, which in turn is a continuation-in-part of U.S. Patent No. 4,733,483, March 29, 1988.

TECHNICAL FIELD OF THE INVENTION

This invention relates in general to athletic or other activewear shoes, and more particularly to shoes having an observation window through a portion thereof and method.

BACKGROUND OF THE INVENTION

Athletic or other activewear shoes of a conventional construction generally have three or four separate parts. First, such shoes are generally provided with an outsole made of a durable material and which extends across the lower surface of the shoe. A midsole is joined to the outsole to provide a cushioning layer to the wearer's foot. Usually, an upper formed of leather, synthetics or other materials is joined to the midsole. In many conventional structures, an insole is further positioned between the midsole and the wearer's foot for additional cushioning.

The midsoles of these conventional constructions have two undesirable characteristics. First, they have the property of deforming of a large area of surface when a downward force is impressed on them. Second, the midsoles are affixed to the shoes and therefore customers can make no choice in the midsole's cushionability without selecting another shoe. Thus, conventional midsoles do not offer independent suspension or deformation of various selected areas thereof, and further are suited to only a particular weight class or cushionability preference of wearers.

The need for a midsole having a plurality of cushioning elements, each demonstrating an individual suspension and deforming independently from the remaining elements has generally been met by the custom midsole as disclosed in U.S. Patent No. 4,733,483, March 29, 1988, to Lin, and assigned to the present assignee. However, a need has arisen for see-through windows, allowing observation of the midsole from exterior the shoe.

SUMMARY OF THE INVENTION

The present invention disclosed herein comprises a method and apparatus for an improved shoe which allows observation of the midsole from the exterior of the shoe. The present invention positions transparent windows in the bottom and side of an outsole of the shoe.

In accordance with one aspect of the invention, an outsole is formed with a bottom surface and a side surface. Windows are formed in the side and bottom surface of the outsole. The windows comprise a durable, generally transparent material that retards scuffing such as polyurethane or polyvinyl chloride.

In another aspect of the present invention, the windows comprise hollow see-through containers made from polyurethane, polyvinyl chloride or any other appropriate material and are at least partially filled with a fluid. The fluid comprises any appropriate material such as air or silicone.

A technical advantage of the present invention that a shoe having observation windows are formed. The windows allow observation of at least a portion of a structure formed above the outsole from the exterior of the shoe.

BRIEF DESCRIPTION OF THE DRAWINGS

Various aspects of the invention and their advantages will be more completely understood by reference to the following Detailed Description in conjunction with the appended Drawings in which:

FIGURE 1 is an isometric view of a shoe constructed in accordance with the preferred embodiment of the present invention;

FIGURE 2 is a cross-sectional view along the line 2-2 of FIGURE 1;

FIGURE 3 is a cross-sectional view of an alternative embodiment of the present invention; and

FIGURE 4 is a cross-sectional view of another alternative embodiment of the present invention.

DETAILED DESCRIPTION

Referring to FIGURE 1, an isometric view of a shoe constructed in accordance with the preferred embodiment of the present invention is generally identified by the reference numeral 10. The shoe 10 may include a custom midsole insert 12, which can be optionally selected for a desired firmness.

The insert 12 comprises a plurality of supporting elements 14 which comprise a generally cylindrical-shaped pillar with a rounded tip.

The shoe 10 has an outsole 16 comprising a bottom sole 17 and a midsole 18, which forms the wearing surface of the shoe. The bottom sole 17 is preferably constructed of a relatively durable, resilient material such as natural rubber. The bottom sole 17 has an exterior surface that may be provided with a suitable tread surface and an interior or upper surface. A peripheral area (not shown) of the upper surface presents a smooth surface for gluing or other means of attachment.

A peripheral midsole member 18 is formed to be glued or otherwise attached to the peripheral area of the bottom sole upper surface. Peripheral member 18 is more cushionable and yieldable than bottom sole 17, and can be conveniently molded of polyurethane foam or ethylene vinyl acetate copolymer (EVA). Peripheral member 18 extends around the periphery of bottom sole 17 and is interrupted by a see-through window 20 at the heel of the shoe. The see-through window 20 generally comprises a rectangular structure passing at least partially through peripheral midsole member 18. Similarly, window 20(a) passes at least partially through the bottom sole 17 at the heel of the shoe. The windows 20 and 20(a) may be formed from a clear, elastomeric material, such as polyurethane or polyvinyl chloride. The material from which windows 20 and 20(a) are constructed is preferably resistant to scuffing.

While the windows 20 and 20(a) may extend only partially through the outsole 16, it is preferable to form the windows 20 and 20(a) completely through the outsole 16 to allow observation of internal structures, such as the insert 12. Sidewalls 22, 24, 26, and 28 define an aperture formed through the outsole 16 to allow the insertion of rectangular window 20. Similarly, sidewalls 23, 25, 27 and 29 define an aperture formed through the outsole 16 to allow the insertion of rectangular window 20(a).

Referring to FIGURE 2, a cross-sectional view along line 2-2 of FIGURE 1 is illustrated. Windows 20 and 20(a) are fixed to outsole 16 by any appropriate method, such as glueing to form an integral sole. In the preferred embodiment, as shown in FIGURE 2, windows 20 and 20(a) pass completely through outsole 16 to allow observation of a structure therein. For example, windows 20 and 20(a) allow observation of the removable insert 12 and its depending support elements 14.

Referring to FIGURE 3, an alternative embodiment to the present invention is illustrated in cross-sectional view. Windows 36 and 36(a) are formed through an outsole 38 which comprises a bottom sole 40 and midsole 42. An insert 44 may be viewed through windows 36 and 36(a) from the

exterior of the shoe. Windows 36 and 36(a) comprise containers having hollow interiors 46 and 46(a). The hollow interiors 46 and 46(a) may be at least partially filled with a fluid, such as air or silicon.

Referring to FIGURE 4, a still further alternative embodiment of the present invention is illustrated in cross-section. Windows 48 and 48(a) are formed partially through an outsole 50, which is comprised of a bottom sole 52 and a midsole 54. Windows 48 and 48(a) are comprised of a scuff-resistant, elastomeric material, such as polyurethane or polyvinyl chloride. Windows 48 and 48(a) extend only partially through the outsole 50 only. Although not shown, windows 48 and 48(a) may also be at least partially hollow and contain a fluid.

Although the present invention has been described with respect to a specific, preferred embodiment thereof, various changes and modifications may be suggested to one skilled in the art, and it is intended that the present invention encompass such changes and modifications as fall within the scope of the appended claims.

Claims

1. In a shoe, a combination comprising:
an outsole for the shoe;
walls defining at least one aperture through said outsole; and a transparent elastomer filling the aperture such that said elastomer seals to make an integral shoe, said transparent elastomer allowing the ability to see through said outsole to observe at least a portion of a structure adjacent to said outsole.
2. The shoe of Claim 1, wherein an aperture is formed through a heel portion of the bottom of said outsole.
3. The shoe of Claim 1, wherein said outsole further includes an attached midsole, and where an aperture is formed through a heel portion of said midsole.
4. In a shoe having a removable insert, a combination comprising:
an outsole for the shoe;
walls defining at least one aperture through said outsole; and
a transparent elastomer filling the aperture such that said elastomer seals to make an integral shoe, said transparent elastomer allowing the ability to see through said outsole to observe at least a portion of the insert from exterior the shoe.
5. The shoe of Claim 4, wherein said aperture is formed through a heel portion of a bottom of said outsole.
6. The shoe of Claim 4, wherein said outsole further includes a midsole with an aperture formed

through a heel portion of said midsole.

7. A method for observing a structure adjacent to an outsole from exterior a shoe, comprising the steps of:

forming at least one aperture through the outsole; 5
and

filling said aperture with a transparent elastomer to integrally seal the outsole and allow observation of the structure from exterior the shoe.

8. The method of Claim 7, wherein the step of 10
forming comprises forming said aperture through a heel portion of a bottom of the outsole.

9. The method of Claim 7, wherein the step of 15
forming comprises bonding a midsole to said outsole and forming an aperture through a heel portion of said midsole.

10. A method for observing a removable insert from exterior a shoe, comprising the steps of:
forming at least one aperture through an outsole of the shoe; and 20
filling said aperture with a transparent elastomer to integrally seal said outsole and allow observation of the insert from exterior the shoe.

11. The method of Claim 10, wherein the step 25
of forming comprises forming said aperture through a heel portion of a bottom of said outsole.

12. The method of Claim 10, wherein the step 30
of forming comprises bonding a midsole to said outsole and forming an aperture through a heel portion of said midsole.

13. An improved shoe, comprising:
an outsole;
an insert fitting over said outsole; and
at least one window in said outsole for enabling visual inspection of at least a portion of said insert 35
from exterior the shoe.

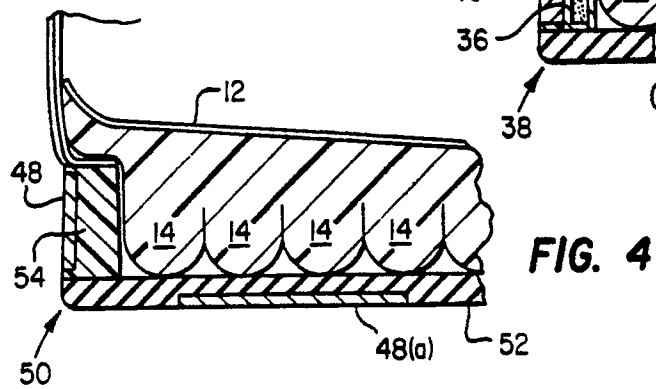
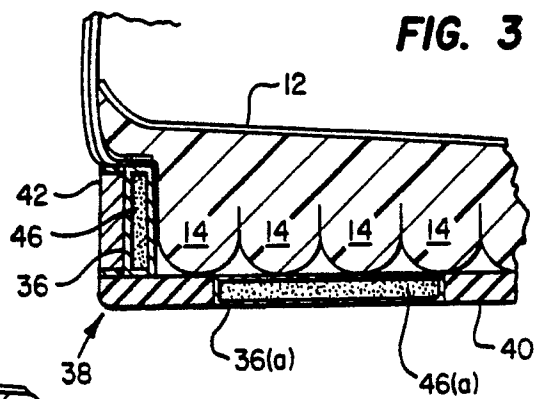
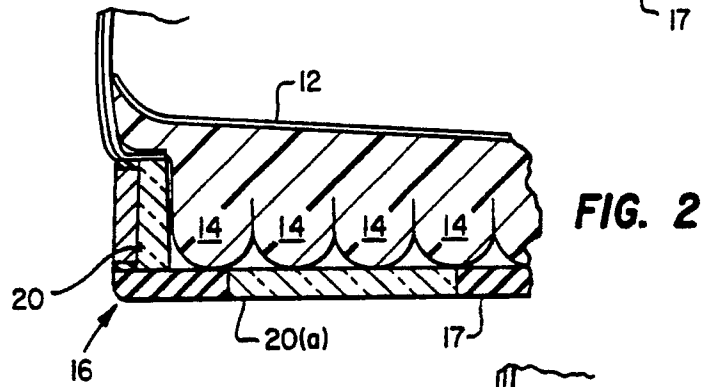
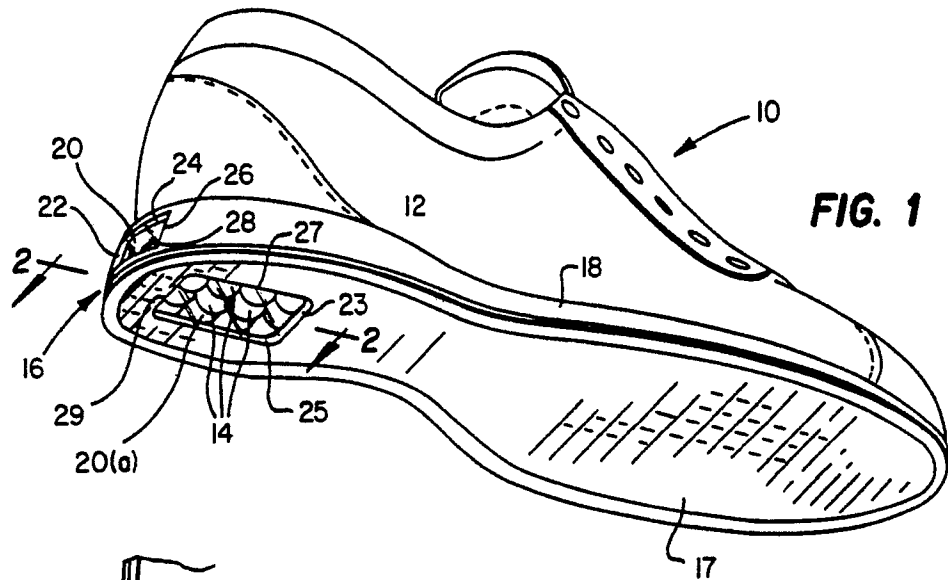
14. The shoe of Claim 13, wherein said window is formed in a heel portion of a bottom of said outsole.

15. The shoe of Claim 13, wherein said outsole 40
further includes a midsole, with a window being formed in a heel portion of said midsole.

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DOCUMENTS CONSIDERED TO BE RELEVANT			EP 90103609.5
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.')
A	<u>DE - U - 8 807 671</u> (KILLTEC SPORT UND FREIZEIT GMBH) * Totality * --	1-15	A 43 B 5/00
D, A	<u>US - A - 4 733 483</u> (LIN) * Fig. 1-5; claims 1-15 * --	1, 4, 10, 13	
A	<u>US - A - 4 712 314</u> (SIGOLOFF) * Fig. 1-4; claims 1-7 * ----	1-15	
			TECHNICAL FIELDS SEARCHED (Int. Cl.')
			A 43 B
The present search report has been drawn up for all claims			
Place of search VIENNA		Date of completion of the search 17-07-1990	Examiner CZASTKA
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	