SHOE STRUCTURE AND FABRICATING METHOD OF THE SAME

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ABSTRACT

A method for fabricating a shoe which comprises at least an upper, an insole and an outsole. The lower edge of the upper is formed with a plurality of teeth-like extensions, and the insole has a plurality of slits for allowing the teeth-like extensions passing downward therethrough and to be glued and bonded with the outsole. The shoe structure may further include a peripheral shielding band stitched around the lower portion to avoid the rain, liquid or water running along the teeth-like extensions and penetrate through the slits.
BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates generally to a shoe structure. More particularly, the present invention relates to a shoe structure which has an upper portion formed with a plurality of teeth-like extensions that penetrated the edge slits of an insole and covered by a peripheral shielding band.

[0003] 2. Description of the Related Art

[0004] There are varieties of shoe structure that provides different function and fulfills specific purpose as being designed. Generally, the shoe structure includes an upper portion and a sole, wherein the upper portion covers the upper and sides of a foot, and the sole is connected to the lower end of the upper portion for supporting the foot of a shoe wearer.

[0005] Typically, the shape of the upper portion is determined by a last. While the sole is connected with the upper portion, a last is fitted therebetween for fixing the shape that will make the upper portion to be shaped according to the last so as to improve wearing comfortability.

[0006] A shoe structure and method as disclosed in U.S. Pat. No. 6,757,990 issued to Smith, includes an upper portion encapsulated the outer edge of insole and connected to an outsole. Another shoe structure disclosed in U.S. Pat. No. 2,434,024 issued to Vlasak discloses an insole having teeth-like extensions for penetrating the upper portion and round over the out edges of the insole and the midsole before it is connected with an outsole.

[0007] The upper portion of Vlasak is formed with a plurality of slits for permitting the teeth-like extensions of the insole passing therethrough, therefore the rain, water and some liquids may flow into the underside of the insole via the slits; this always cause the shoe become mildewed and shorten the durability of the shoe. Further, the Vlasak shoe structure needs more cost to apply the glue for bonding the insole, midsole and out sole in its due assembly process.

SUMMARY OF THE INVENTION

[0008] The present invention provides a new and improved shoe structure comprising: at least an upper, an insole and an outsole. The lower edge of the upper is formed with a plurality of teeth-like extensions, and the insole has a plurality of slits for allowing the teeth-like extensions to pass therethrough thereby to be glued and bonded with the outsole. The shoe structure further includes a peripheral shielding band which can be bonded and/or stitched at the lower end of the upper portion to avoid rain, liquid or water flowing into the underside of the sole via the slits and the teeth-like extensions.

[0009] The present invention also provides a method for fabrication of such a shoe. One embodiment of the method according to the present invention, includes the following steps:

[0010] 1. forming a plurality of edge slits along the edge of an insole of a shoe;

[0011] 2. forming a plurality of teeth-like extensions at the lower end of an upper portion of the shoe;

[0012] 3. preparing a peripheral shielding band with a width;

[0013] 4. leading the teeth-like extensions to pass through the edge slits;

[0014] 5. bonding the teeth-like extensions beneath the underside of the insole; and

[0015] 6. bonding the teeth-like extensions and the insole to an outsole; and

[0016] 7. connecting the peripheral shielding band to the lower end of the upper portion to cover teeth-like extensions 21 and the edge slits 110. The shoe structure of the present invention does not include a midsole, this may improve the softness and comfortability of the shoe; further, due to the peripheral shielding band is covered on the edge slits, this would prevent the rain or water from penetrating into the sole via the edge slits. Accordingly, the method and the shoe structure can eliminate the drawbacks of the above-mentioned traditional shoes.

[0017] Additional features and advantages of the invention will be set forth in the description to follow, and in part will be apparent from the description, or may be learned by practice of the invention. The objectives and other advantages of the invention will be realized and attained by the structure particularly pointed out in the written description and claims as well as the appended drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] Reference will now be made in detail to the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings.

[0019] FIG. 1 is an exploded perspective view of a shoe structure embodiment according to the present invention.

[0020] FIG. 2 is a perspective view of the shoe structure embodiment.

[0021] FIG. 3 is a partially cross-sectional view showing the cross-section cutting along the line A-A indicated in the FIG. 2.

[0022] FIG. 4 is a partially cross-sectional view showing the cross-section cutting along the line B-B indicated in the FIG. 2.

[0023] FIG. 5 is a schematic view showing teeth-like extensions of the upper portion of the shoe.

[0024] FIG. 6 is a schematic view showing an alternative embodiment of the teeth-like extensions of the upper portion of the shoe.

[0025] FIG. 7 is a partially cross-sectional view showing an alternative embodiment of the shoe structure according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0026] Referring to FIGS. 1 to 4, a shoe structure embodiment according to the present invention includes a sole 10 and an upper 20. The sole 10 includes at least an insole 11 and an outsole 12. The sole 10 maybe made of leather, plastic foaming material, such as EVA or the like.

[0027] The lower edge of the upper 20 is formed with a plurality of teeth-like extensions 21, and the peripheral edge 111 of the insole 11 is formed with a plurality of edge slits 110 for allowing the teeth-like extensions 21 to pass through thereby to be glued and bonded on the underside of the insole 11.

[0028] The shoe structure may further include a peripheral shielding band 22 which has a width W for connecting to the lower end of the upper portion 20 and the upper side of the peripheral edge 111 of the insole 11 by glue, adhesive and/or
stitches 30 and 220 to cover the edge slits 110, so as to avoid rain, water, liquid or the like flowing into the sole 10 via the teeth-like extensions 21 and the edge slits 110.

[0030] The present invention also provides a method for fabrication of a shoe, including the steps of:

1. preparing an insole 11 and an outsole 12 of a shoe;
2. forming a plurality of edge slits 110 along the edge of the insole 11;
3. preparing an upper portion 20 of the shoe;
4. forming a plurality of teeth-like extensions 21 at the lower end of the upper portion 20 of the shoe;
5. preparing a peripheral shielding band 22 to connect the lower end of the upper portion 20 and the peripheral edge 111 of the insole 11;
6. leading the teeth-like extensions through the edge slits 110;
7. bonding the teeth-like extensions 21 beneath the underside of the insole 11;
8. bonding the insole 11 to the outsole 12, and
9. connecting the peripheral shielding band 22 to the lower end of the upper portion 20, so as to cover the lower end of the upper portion 20 and the upper side of the peripheral edge 111 of the insole 11 thereby to prevent rain or water flowing into the sole 10 via the teeth-like extensions 21 and the slits 110.

[0040] Referring back to FIGS. 3 and 4, the peripheral shielding band 22 can be connected to the lower end of the upper portion 20 by a side stitch 220, and connected to the sole 10 by a relative larger vertical stitch 30.

[0041] Referring to FIGS. 5 and 6, each of the teeth-like extensions 21 can be formed in the shape of triangle, trapezoid, semicircle (not shown), semicircular arch (not shown) or the like. In order to prevent the problem of stress concentration which always occurred at a sharp corner, each teeth-like extension 21 may keep a predetermined or optimal distance from its neighbors.

[0042] The peripheral shielding band 22 can be glued on the lower end of the upper portion 20 and the upper side of the peripheral edge 111 of the insole 11 before being connected by the stitches 220 and 30. Preferably, a cutting or grinding step is applied on the peripheral outer edge of the peripheral shielding band 22 and the sole 10, so as to make a neat edge shape integrally.

[0043] Referring to FIG. 7, a midsole 13 can also be connected between the insole 11 and the outsole 12. The midsole 13 and the outsole 12 may be made of resilient material, such as a foaming material, for absorbing the impact forces which may be yielded by the body weight of the shoe wearer and rebounded from the ground.

[0044] However, the shoe structure according to the present invention may not need to include such a midsole 13, to improve the softness and comfortability of the shoe; further, due to the peripheral shielding band 22 is covered on the edge slits 110, this prevents rain or water penetrating into the sole 10.

[0045] Further, since the connection between the sole 10 and the upper portion 20 can be made without the help of an upper shaping machine and a counter which used in traditional manufacture process, that enables the overall cost for building the production line reduced.

[0046] It will be apparent to those skilled in the art that various modifications and variations of the shoe structure and method of the present invention without departing from the spirit or scope of the invention. Thus, it is intended that the present invention cover the modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents.

What is claimed is:

1. A shoe structure, comprising:
   a. a sole, including an insole and an outsole, wherein the insole is formed with a plurality of edge slits;
   b. a peripheral portion having a lower end formed with a plurality of teeth-like extensions passed through the edge slits and connected on the underside of the insole; and
   c. a peripheral shielding band, connecting with the lower end of the upper portion and the insole.
2. The shoe structure of claim 1, wherein each of the teeth-like extensions is formed in a shape of triangular.
3. The shoe structure of claim 1, wherein each of the teeth-like extensions is formed in a shape of trapezoid.
4. The shoe structure of claim 1, wherein each of the teeth-like extensions is formed in a shape of semicircle.
5. The shoe structure of claim 1, wherein each of the teeth-like extensions is formed in a shape of semicircular arch.
6. The shoe structure of claim 1, wherein each of the teeth-like extensions has a distance to the neighbors thereof.
7. The shoe structure of claim 1, wherein each peripheral shielding band is connected to the lower end of the upper portion by an adhesive or glue.
8. The shoe structure of claim 1, wherein each peripheral shielding band is connected to the lower end of the upper portion by a stitch.
9. The shoe structure of claim 1, wherein the peripheral shielding band is connected to an upper side of an edge of the insole by an adhesive or glue.
10. The shoe structure of claim 1, wherein the peripheral shielding band is connected to an upper side of an edge of the insole by a stitch.
11. The shoe structure of claim 1, wherein the teeth-like extensions are passed through the edge slits and glued on the underside the insole.
12. The shoe structure of claim 1, wherein a midsole is connected between the insole and the outsole.
13. The shoe structure of claim 1, wherein the insole is made of plastic.
14. The shoe structure of claim 1, wherein the insole is made of leather.
15. The shoe structure of claim 1, wherein the insole is made of plastic foaming material.
16. A fabricating method of a shoe includes the steps of preparing an insole and an outsole of a shoe; forming a plurality of edge slits along the edge of the insole; preparing an upper portion of the shoe; forming a plurality of teeth-like extensions along the lower end of the upper portion of the shoe; preparing a peripheral shielding band to cover the lower end of the upper portion and the peripheral edge of the insole;
leading the teeth-like extensions through the edge slits; bonding the teeth-like extensions beneath the underside of the insole; bonding the insole to the outsole; and connecting the peripheral shielding band to the lower end of the upper portion the insole.

17. The fabricating method of claim 16 further includes a step of cutting for shaping the peripheral outer edge of the peripheral shielding band and the sole.

18. The fabricating method of claim 16 further includes a step of grinding for shaping the peripheral outer edge of the peripheral shielding band and the sole.

19. The fabricating method of claim 16 further includes a step of connecting a midsole between the insole and the outsole.

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