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WHISTLING FOOTWEAR AND METHOD FOR MAKING THE SAME

The invention relates to a method for making an article of footwear, more particularly to a method for making whistling footwear. This invention also relates to an article of footwear produced by the method.

A conventional method for making whistling footwear is shown in Figures 1 and 2 to comprise the steps of: mounting an upper 1 on a last 2; mounting the last 2 together with the upper 1 on a mold 3; providing the bottom face of the last 2 with a flange 201 extending downward from the bottom face of the last 2; providing the mold 3 with an insert body 301, which abuts against the flange 201 when the last 2 is mounted on the mold 3; injection molding a molding material in the mold 3 so as to form an outsole 4 integral with the upper 1; cooling the molding material and removing the mold 3 so as to form a recess 401 corresponding to the shape of the flange 201 on the top face of the outsole 4, and a hole 402 corresponding to the shape of the insert body 301 and communicating the recess 401 with the exterior of the outsole 4; installing a whistle 5 inside the hole 402; and mounting an insole 6 on the outsole 4. The insole 6 includes a bottom layer 601, a top layer 602 sealed to the bottom layer 601 along the peripheral edge thereof, and a foam layer 603 interposed between the top layer 602 and the bottom layer 601. The bottom layer 601 of the insole 6 is provided with an opening 601'

corresponding to the recess 401 and is connected to the outsole 4 by means of an adhesive.

The foam layer 603 is compressed and expanded when the wearer of the article of footwear walks so as to intake air and expel air through the opening 601', the recess 401, the hole 402 and the whistle 5 and to create a whistling sound.

Although the article of footwear produced by the aforesaid conventional method possesses the whistling function, it has the following shortcomings:

(1) The insole 6 is first made of a laminate of three layers, is provided with an opening 601', and is then adhered to the outsole 4 after the upper 1 is integrated with the injection molded outsole 4. Therefore, the conventional method for making the whistling footwear is complicated.

(2) The airtight effect of the conventional whistling footwear is obtained by connecting the insole 6 to the outsole 4 using a layer of adhesive. The conventional whistling footwear is susceptible to leakage if the insole 6 is not well adhered to the outsole 4 in an airtight manner, thereby resulting in an adverse affect on the whistling function. Furthermore, the thickness of the foam layer 603 disposed between the bottom layer 601 and the top layer 602 of the insole 6 is limited. Therefore, the compressible volume for creating the whistling effect

is limited.

(3) The airtight effect between the insole 6 and the outsole 4 will be destroyed if the adhesive layer used for adhering the insole 6 to the outsole 4 is degraded by water.

Therefore, the object of the present invention is to provide a relatively simple method for making an article of whistling footwear. Another object of this invention is to provide an article of whistling footwear produced by the method.

Accordingly, the method for making an article of footwear includes the steps of: attaching an upper to an insole; attaching a flexible foam member to a heel part of the insole opposite to the upper; mounting the upper on a last together with the insole and the foam member; mounting the last together with the upper, the insole and the foam member on a mold having a mold cavity; injection molding a molding material in the mold cavity so as to form an outsole integral with the insole and enclosing the foam member; forming a hole in the foam member through the outsole; and installing a whistle inside the hole.

The article of footwear produce by the above method includes an upper, an insole, a flexible foam member, and a whistle. The insole has a marginal end connected to the upper, and a heel part. The flexible foam member is attached to a bottom side of the heel part of the

insole and has a hole. The outsole is connected to the insole and surrounds the foam member. The outsole further has a cavity aligned with the hole in the foam member. The whistle is disposed inside the hole. The foam member is compressible and expandable to intake air and to expel air through the hole and the cavity.

Other features and advantages of the present invention will become apparent in the following detailed description of the preferred embodiment with reference to the accompanying drawings, of which:

Figures 1 and 2 are sectional views to illustrate a conventional method for making an article of whistling footwear;

Figure 3 is a flow diagram showing the preferred embodiment of the method for making an article of footwear according to this invention;

Figures 4 to 7 illustrate how an article of footwear is made according to the preferred embodiment of the method shown in Figure 3; and

Figure 8 is a sectional view of the article of footwear produced according to the preferred embodiment of the method shown in Figure 3.

Referring to Figures 3 and 4, the preferred embodiment of the process for making an article of footwear according to this invention is shown to comprise the steps of:

(1) Attaching an upper 12 to an insole 11:

In this embodiment, the upper 12 is illustrated in the form of a sandal. It is noted that the upper 12 can also be formed in other suitable shapes. The insole 11 is formed in a shape of a plate, and includes a top surface 111 and an opposite bottom surface 112. The upper 12 is attached to the top surface 111 of the insole 11 by any suitable manner, such as sewing.

(2) Attaching a flexible foam member 13 to a heel part of the insole 11 opposite to the upper 12:

The flexible foam member 13 includes a bottom surface 131, a side surface 132 extending upward from a peripheral edge of the bottom surface 131, and a top surface 133 opposite to the bottom surface 131 of the foam member 13. The foam member 13 is applied with an adhesive layer 134 on the top surface 133 thereof, and is then adhered to the heel part of the bottom surface 112 of the insole 11.

(3) Mounting the upper 12 on a last 100 together with the insole 11 and the foam member 13:

Referred to Figures 5 and 6, the last 100 is provided with a bottom face 110 which includes a recess 120 at a position corresponding to the foam member 13, and a peripheral recess 130 along a corner extending around the bottom face 110. An annular flange 140 is formed between the recess 120 and the peripheral recess 130. A marginal end of the insole 11 is extended immediately below the peripheral recess 130 when the

insole 11 is mounted on the last 100.

(4) Mounting the last 100 together with the upper 12, the insole 11 and the foam member 13 on a mold 200 having a mold cavity 210:

The foam member 13 and the insole 11 are located within the mold cavity 210 when the last 100 together with the upper 12, the insole 11 and the foam member 13 is mounted on the mold 200. The mold 200 is further provided with an insert body 220 between a side wall of the mold cavity 210 and the foam member 13.

(5) Injection molding a molding material in the mold cavity 210:

Referred to Figures 6 and 7, a molding material, such as PVC, is injection molded in the mold cavity 210 of the mold 200 so as to form an outsole 20 integral with the insole 11 and enclosing the foam member 13. The insole 11 and the foam member 13 are extended into the recess 120 during injection molding. Moreover, the molding material flows into the peripheral recess 130 of the last 100 and around the marginal end of the insole 11 during injection molding. Additionally, the outsole 20 is formed with a cavity 221 corresponding to the shape of the insert body 220 after injection molding.

(6) Providing a hole 222 in the foam member 13 through the outsole 20:

Referring to Figure 8, the hole 222 is formed in the foam member 13 through the outsole 20 by any

appropriate manner, such as punching or drilling.

(7) Installing a whistle 30 inside the hole 222:

Referring to Figure 8, a whistle 30 is installed inside the hole 222 so as to produce the preferred embodiment of the article of whistling footwear of this invention.

Referring to Figure 8, the article of footwear (I) produced by method described above includes the upper 12, the insole 11, the flexible foam member 13, the outsole 20, and the whistle 30. The insole 11 has a marginal end connected to the upper 12, and a heel part. The heel part of the insole 11 projects upward to a level higher than the marginal end of the insole 11. The flexible foam member 13 is attached to a bottom side of the heel part of the insole 11 and has a hole 222. The outsole 20 is connected to the insole 11 and surrounds the foam member 13. The outsole 20 has a peripheral top end 22 overlying and extending around the marginal end of the insole 11, and a cavity 221 aligned with the hole 222. The whistle 30 is disposed inside the hole 222. The foam member 13 is compressible and expandable to intake air and to expel air through the hole 222 and the cavity 221.

The article of footwear produced by the method according to this invention has the following advantages:

(1) The upper 12 together with the insole 11 and the

foam member 13 is directly mounted on the mold 200 for injection molding of the outsole 20. Therefore, the method according to this invention is relatively simple as compared to the prior art, and involves a lower manufacturing cost.

(2) Since the peripheral top end 22 of the outsole 20 is adhered to the marginal end of the insole 11 in an airtight manner, the foam member 13 located between the outsole 20 and the insole 11 is communicated with the exterior of the outsole 20 solely through the hole 222. Therefore, the leakage problem encountered in the prior art can be avoided, and the whistling function can be ensured.

(3) The flexible foam member 13 is attached to the bottom side of the heel part of the insole 11 which projects upward to a level higher than the marginal end of the insole 11. Therefore, the compressible volume for creating the whistling effect is increased, and the whistling effect is improved.

(4) Since the peripheral top end 22 of the outsole 20 overlays and extends around the marginal end of the insole 11, the leakage problem of the prior art resulting from the fact that the adhesive layer is degraded by water can be avoided.

I CLAIM:

1. A method for making an article of footwear, comprising the steps of:

attaching an upper to an insole;

attaching a flexible foam member to a heel part of said insole opposite to said upper;

mounting said upper on a last together with said insole and said foam member;

mounting said last together with said upper, said insole and said foam member on a mold having a mold cavity;

injection molding a molding material in said mold cavity so as to form an outsole integral with said insole and enclosing said foam member;

forming a hole in said foam member through said outsole; and

installing a whistle inside said hole.

2. The method as claimed in Claim 1, further comprising the steps of providing said last with a bottom face which includes a recess at a position corresponding to said foam member, and allowing said insole and said foam member to extend into said recess during injection molding.

3. The method as claimed in Claim 2, further comprising the steps of providing said last with a peripheral recess along a corner extending around said bottom face, allowing a marginal end of said insole to extend

immediately below said peripheral recess when mounting said insole on said last, and allowing said molding material to flow into said peripheral recess and around said marginal end of said insole.

4. The method as claimed in Claim 1, further comprising the step of placing an insert body in said mold cavity between a side wall of said mold cavity and said foam member so as to provide a cavity in said outsole after injection molding, wherein said hole is formed in said foam member through said cavity.

5.An article of footwear produced according to the method of Claim 1, comprising:

an upper;

an insole having a marginal end connected to said upper, and a heel part;

a flexible foam member attached to a bottom side of said heel part of said insole and having a hole;

an outsole connected to said insole and surrounding said foam member, said outsole having a cavity aligned with said hole; and

a whistle disposed inside said hole;

wherein said foam member is compressible and expandable to intake air and to expel air through said hole and said cavity.

6. The article of footwear as claimed in Claim 5, wherein said outsole has a peripheral top end overlying and extending around said marginal end of said insole, said

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heel part of said insole projecting upward to a level higher than said marginal end.

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