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(54) Shoe part with toe and heel portions and shoes employing the same

(57) A shoe part which has a one-piece molded shell (10) with upper and lower open ends (11) (12) is disclosed. The shell (10) includes a toe portion (13), a heel portion (14) and two opposing side portions (15) interconnecting the toe and heel portions (13) (14). The lower open end (12) has a flange (16) which extends continuously along and projects inwardly from the lower open end (12) and which has a looped edge (17) to define an opening (18) with a size smaller than the cross-section of the lower open end (12). The flange (16) reinforces the lower open end (12), and the opening (18) provides easy access to the inside of the shell (10) for tooling. A boot which uses the shoe part as a lower is also disclosed. The boot is watertight at the seam of its lower and upper.

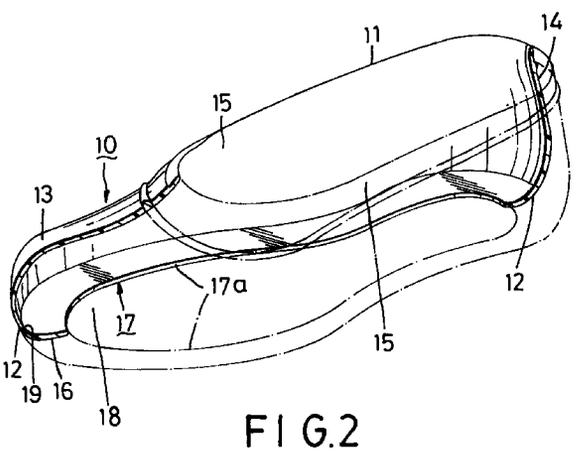

FIG.2

EP 0 894 447 A1

Description

[0001] This invention relates to shoes, more particularly to a shoe part having toe and heel portions and shoes which employ the shoe part.

[0002] As known in the art, uppers are made by utilizing leathers, plastics, fabrics, or a combination thereof. One of the prerequisites for the uppers is that these materials should possesses considerable softness. In most methods of making uppers, the materials are tailored into pieces to form different zones of uppers, which are then combined with each other by a stitching process. Although the so-made uppers can present an appropriate shape of the uppers, since the tailored pieces themselves are originally flat, the three-dimensional shape of the uppers are achieved by virtue of laborious conventional works to form toe, heel and metatarsal portions.

[0003] Molding processes, such as, injection-molding or other molding processes, have eliminated the above-described laborious problems of the stitching processes because the portions, such as, the toe, heel and metatarsal portions, of a shoe can be formed into a one-piece structure by a molding process. Generally, such one-piece molded shell structures are used as lowers for shoes having uppers and lowers and as uppers for shoes which have no lowers.

[0004] One-piece molded structures, which are molded together with insoles as unitary constructions, are more or less disadvantageous when they are used in making shoes or boots having uppers and lowers because the bottom ends of the structures are closed by the insoles. Due to the presence of a closed bottom which has no access to the interior of the molded structure, the process for binding the upper and lower, such as by stitching, cementing, etc., has to be conducted by inserting tools from the upper end of the upper, which is narrow and remote from the location where the upper and lower are to be bound, thereby resulting in inconveniences in making such boots. Especially, it is difficult to conduct a watertight sealing process by inserting tools into the lower through the upper end of the upper. Owing to this reason, the boots suggested heretofore were not provided with any watertight seal at the seams of the uppers and lowers thereof.

[0005] Figure 1 shows one of the boots which was suggested to use a one-piece molded lower 1 with an integral insole 2 in which a cut line 3 extends in a longitudinal direction from the toe portion to the heel portion. However, the boot is not provided with any watertight seal at the stitched seam of the upper and lower thereof. The cut line is normally in a closed position because the portions of the cut insole 2 on two sides of the cut line 3, which normally lay flat, act as an obstruction. It is necessary to flex these portions so as to remove the obstruction if the cut line is to be opened. Such a cut line is not suitable for use as an entrance for tooling in the stitching, cementing or sealing operation because the obstruction existing along the cut line must be removed with an additional tool which can in turn impede entrance through the cut line. Especially, it would be very difficult to perform a watertight sealing operation by tooling through the cut line. Since the boot as suggested is not watertight at the seam of the upper and the lower, it is believed that the cut line in the closed bottom or insole of the lower of this boot does not serve as access to the inside of the lower for tooling.

[0006] There are conventional shell structures or shoe parts including bottom open ends whose edges are not flanged or curved. The bottom open ends of such shell structures are prone to flex or deform upon storage in a stack or transportation. Conventionally, after forming the structure, the following cementing or stitching process is successively conducted to combine the bottom open end thereof with a sole, such as an insole or outsole, because inconveniences can be encountered in cementing or stitching if the bottom open end is deformed. For these and other reasons, the process of forming the shoe part and the subsequent sole cementing or stitching process have never been done separately in different working sites, factories or countries due to the transport requirement.

[0007] An object of the invention is to provide a reinforced one-piece molded hollow shoe part for use as a lower or an upper of a shoe, the shoe part having a lower open end with a reinforcing flange to obviate the deformation problem commonly encountered with the conventional shoe part or shell structures having bottom open ends.

[0008] Another object of the invention is to provide a one-piece molded hollow shoe part for use as a lower of a shoe or boot, the shoe part having a lower open end with an inwardly projecting flange to define an access opening which is normally or constantly open so as to facilitate tooling during stitching, cementing and sealing operations.

[0009] Still another object of the invention is to provide a shoe or boot which is watertight both at the seam of the upper and lower thereof and at the seam of the lower and the sole thereof.

[0010] Accordingly, a shoe part according to the present invention comprises a lower having a one-piece molded shell with an upper open end and a lower open end. The shell includes a toe portion, a heel portion and two opposing side portions, which interconnect the toe and heel portions between the upper and lower open ends. The lower open end has a flange which extends continuously along and projects inwardly from the lower open end. The flange has a looped edge which defines an opening with a size smaller than the cross-section of the lower open end. The looped edge has edge portions which are opposing one another in a direction transverse to a line extending from the toe portion to the heel portion and which are normally spaced apart from one another.

[0011] According to another aspect of the invention, a

watertight boot comprises an upper, a lower and a sole, wherein the shoe part of the present invention is used as the lower. The upper open end of the shoe part is connected to the upper, while the lower open end of the shoe part is connected to the sole. The seam between the upper and the lower is made watertight by providing a waterproof layer on the seam.

[0012] Other features and advantages of this invention will become apparent in the following detailed description of the preferred embodiments of this invention, with reference to the accompanying drawings, in which:

Figure 1 shows a shoe part in the prior art;
Figure 2 is a perspective view of a preferred embodiment of a shoe part according to the present invention;
Figure 3 is a side elevation view of a preferred embodiment of a boot according to the present invention; and
Figure 4 is a sectional view taken along line 4-4 of Figure 3.

[0013] Referring to Figure 2, a hollow shoe part embodying the present invention is shown to include a one-piece molded shell 10 with an upper open end 11 and a lower open end 12. The shell 10 include a toe portion 13, a heel portion 14, and two opposing side portions 15 which interconnect the toe and heel portions 13 and 14. The lower open end 12 has a flange 16 which extends continuously along, and projects inwardly from the lower open end 12. A looped edge 17 of the flange 16 confines an opening 18 which extends from the toe portion 13 to the heel portion 14. The size of the opening 18 is smaller than the cross-section of the lower open end 12. The edge portions 17a of the looped edge 17, which are opposite to one another in a transverse direction with respect to a line extending from the toe portion 13 to the heel portion 14, are normally spaced apart from each other so that the opening 18 is constantly or normally open. The shell 10 can be formed by injection molding or other known molding processes. Materials which are used conventionally in making lowers may be used to form the shell 10 of the invention.

[0014] Note that the flange 16 as formed strengthens the lower open end 12 of the shell 10 against deformation and that the opening 18 can provide easy access to the inside of the shell 10 for tooling during stitching, cementing and sealing operations. Advantageously, the flange 16 is arranged so that a rounded corner 19 is formed at the lower open end 12 to provide conformity with the foot of the user.

[0015] Figure 3 shows a boot 20 of a preferred embodiment according to the invention, wherein elements similar to those shown in Figure 2 are designated by similar reference numerals. The embodiment comprises an upper 21, a lower 22, a midsole 23 and an outsole 24. The lower 22 is made of a waterproof material, such as, polyurethane, polyvinylchloride or other rubbery material. The upper 21 is made from a relatively flexible waterproof leather or leather-like material. The midsole 23 is made by molding an ethylene vinyl acetate polymer. The outsole 24 is made from an abrasion-resistant rubber.

[0016] The upper 21 is fabricated in a conventional manner and includes an ankle area 21a and eyelets 21b for threading a shoe lace.

[0017] The lower 22 used in this embodiment is the one-piece molded shell 10 shown in Figure 2. The upper open end 11 of the lower 22 is connected to the lower end of the upper 21, and the lower open end 12 thereof is connected to the midsole 23. A seam 25 is formed where the lower end of the upper 21 and the upper open end 11 of the lower 22 is jointed by stitching. A waterproof layer 26 is formed on the seam 25 as shown in Figure 4.

[0018] In forming the shoe 20, the lower 22 is first connected to the upper 21 via a stitching process, thereby forming the seam 25 therebetween. The stitched seam 25 is then sealed by providing the waterproof layer 26 on the stitched seam 25. The waterproof layer 26 may be provided in a conventional manner, such as by applying a waterproof coating to the stitched seam 25, or by adhesively bonding a waterproof tape to the stitched seam 25. Due to the presence of the opening 18 at the bottom of the lower 22, it is convenient to insert tools via the opening 18 to proceed with a sealing operation at the seam 25. After the sealing operation, the bottom open end 12 of the lower 22 is connected to the midsole 23 and the outsole 24 in a conventional manner. Note that it is convenient to make the seam 25 of the shoe 20 watertight by using the shoe part of the present invention, which permits easy access to the inside of the seam 25 for tooling because it provides the lower 22 with a tool entrance that is not only larger but also closer to the seam 25 than the upper end of the upper 21, which is usually employed as a tool entrance in the conventional shoe making process.

[0019] Referring again to Figure 4, the lower open end 12 of the lower 22 is connected to an insole 28 by a stitching process and then cemented to the midsole 23 in a conventional manner. A waterproof layer 27 is formed by applying a waterproof coating or cementing a waterproof tape to the bottom surface of the insole 28 and to the adjoining surfaces of the midsole 23 and the lower 22 in a conventional manner. It is noted that, due to the presence of the flange 16, the lower open end 12 of the lower 22 has increased strength, as compared to the shell with a conventional bottom open end, while providing easy access to the inside of the seam 25 for tooling, that is impossible to achieve in the conventional shell with a closed bottom or without any bottom open end. Moreover, the flange 16 can provide more area for cementing with the midsole 23.

Claims

1. A shoe including an upper (21), a lower (22), and a sole, said lower having a one-piece molded shell (10) with an upper open end (11) and a lower open end (12), said upper open end (11) being connected to said upper (21), said shell (10) including a toe portion (13), a heel portion (14), and two opposing side portions (15) which interconnect said toe and heel portions (13) (14) between said upper and lower open ends (11) (12), the shoe being characterized in that

   said lower open end (12) has a flange (16) which extends continuously along and projects inwardly from said lower open end (12), said flange (16) having a looped edge (17) which defines an opening (18) with a size smaller than the cross-section of said lower open end (12), said looped edge (17) having edge portions (17a) which are opposing one another in a direction transverse to a line which extends from said toe portion (13) to said heel portion (14), said edge portions (17a) being normally spaced apart from one another, and said sole (23, 24) being connected to said lower (22) at said lower open end (12) and said flange (16).

2. A shoe according to Claim 1, further characterized in that said upper (21) and said lower (22) forms a seam (25) at said upper open end (11) of said lower (22), said seam (25) being provided with a waterproof layer (26).

3. A shoe according to Claim 1, further characterized in that said shell (10) has a rounded corner (19) formed at said lower open end (12).

4. A shoe part including a one-piece molded shell (10) with an upper open end (11) and a lower open end (12), said shell (10) including a toe portion (13), a heel portion (14) and two opposing side portions (15) which interconnect said toe and heel portions (13) (14) between said upper and lower open ends (11) (12), said shoe part being characterized in that

   said lower open end (12) has a flange (16) which extends continuously along and projects inwardly from said lower open end (12), said flange (16) having a looped edge (17) which defines an opening (18) with a size smaller than the cross-section of said lower open end (12), said looped edge (17) having edge portions (17a) which are opposing one another in a direction transverse to a line which extends from said toe portion (13) to said heel portion (14), said edge portions (17a) being normally spaced apart from one another.

5. A shoe part according to Claim 4, further characterized in that said shell (10) has a rounded corner (19) formed at said lower open end (12).

6. A shoe as substantially hereinbefore described with reference to the accompanying drawings.

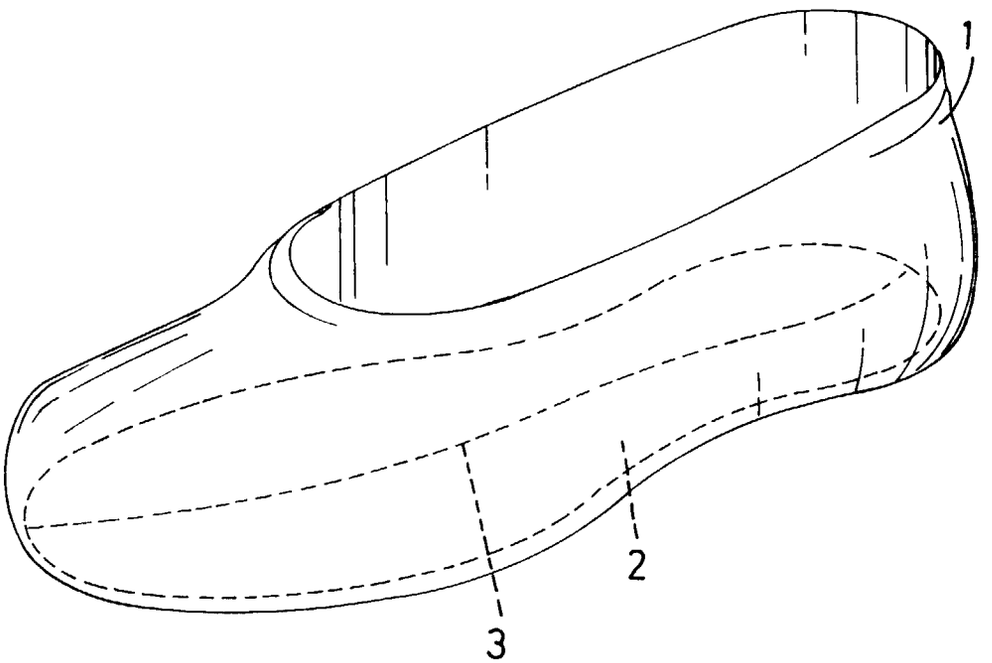

FIG.1
PRIOR ART

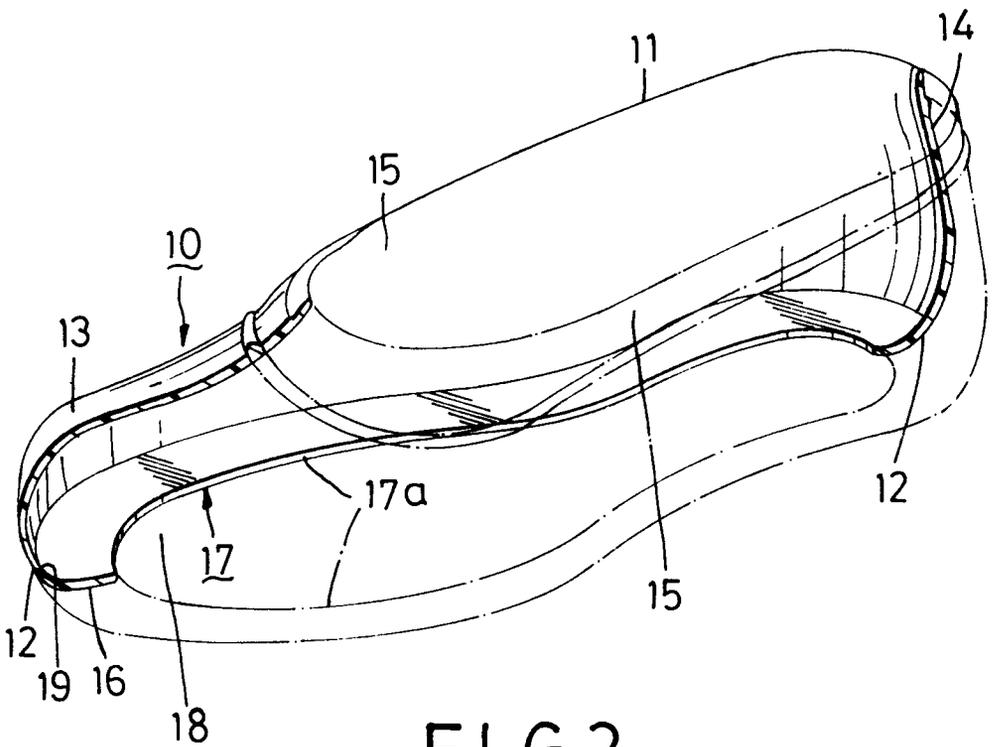

FIG.2

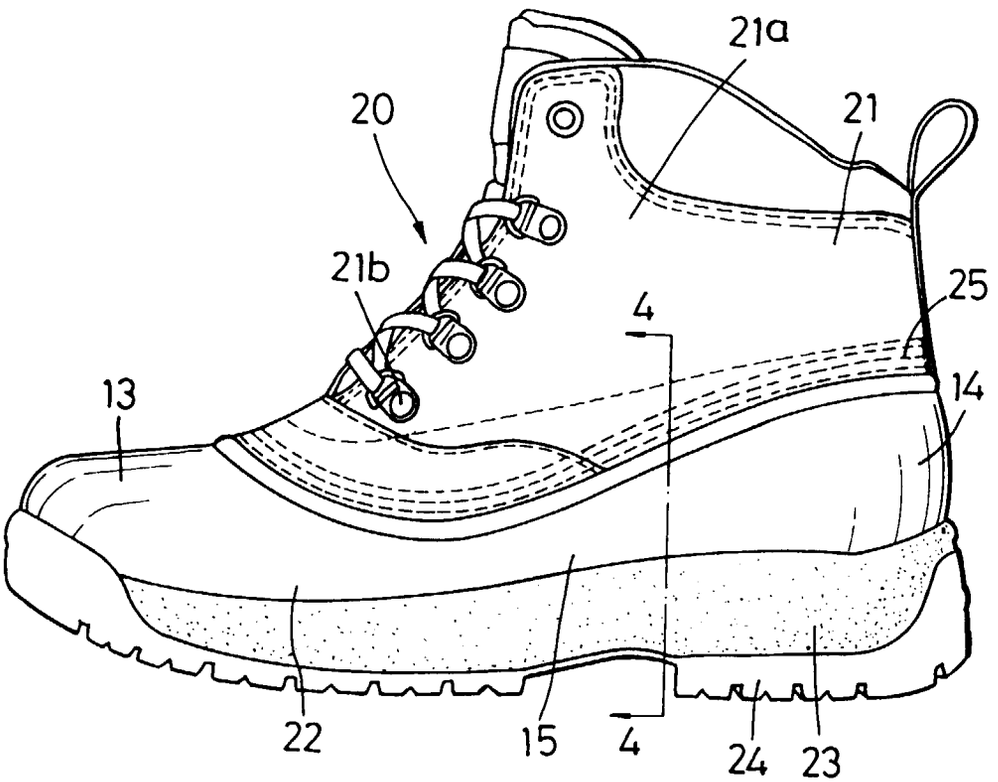

FIG.3

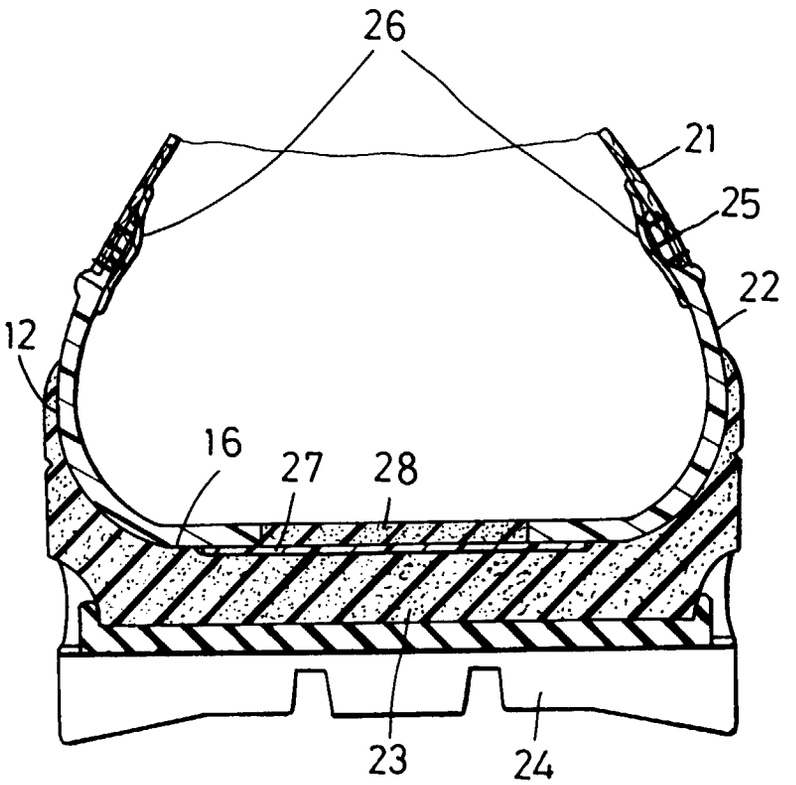

FIG.4

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EUROPEAN SEARCH REPORT

Application Number
EP 97 30 5638

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	FR 2 737 393 A (ROSSIGNOL SA) * page 9, line 6 - page 10, line 10; figures 8,9 *	1-6	A43B9/00 A43B7/12 A43B23/02
A	WO 90 06067 A (LEDERER GMBH ;WAGNER LOWA SCHUHFAB (DE)) * page 15, last paragraph - page 16, paragraph 3; figures 4,6,11 *	1-6	
A	WO 97 09893 A (SALOMON SA ;BOURDEAU JOEL (FR); SARTOR MARIANO (IT)) * abstract; figures *	1-6	
A	FR 1 466 731 A (ÉTABLISSEMENT MARQUET SA) * the whole document *	1,4	
A	US 5 189 814 A (BARMA TARACHAND S) * column 3, line 30 - line 68; figures *	1-6	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

A43B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	5 December 1997	Scholvinck, T

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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