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(54) **Waterproof footwear**

(57) A waterproof article of footwear, comprising an upper (1) consisted of one or more cut-shaped portions (101, 201) of a flexible waterproof material and a sole (2) coupled to said upper (1), characterized in that said upper (1) is assembled by stitches (3) applied between peripheral edges of said cut-shaped waterproof material portions (101, 201), said stitches (3) being covered with a waterproof coating (103) able to couple to said stitches (3) and said upper (1) according to a closeness relationship to each other; and a method of manufacture thereof.

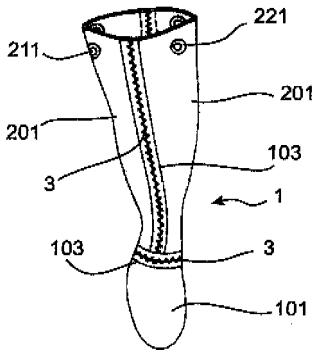

Fig. 1

EP 1 980 168 A1

Description

[0001] The present invention relates to an article of footwear and particularly a waterproof article of footwear, and a method of manufacture thereof.

[0002] Several types of articles of footwear are known in the art, which are made in different ways according to the intended use and the aesthetic features required by the manufacturer. There are different methods of manufacture also in the field of waterproof articles of footwear; they can consist of materials as leather or hide, cloth or the like, which are made waterproof by appropriate substances which are applied or impregnated. Furthermore, articles of footwear can be made directly by molding a waterproof material such as a plastic material.

[0003] A major problem relates to the effective waterproofing ability, that is the actual waterproofness of the article of footwear; while testing the waterproofing ability, the critical issue is substantially embodied by the stitches of the article of footwear, because they are mostly subject to infiltrations. It is apparent that the article of footwear could be assembled in different ways, that is by glueing or hot-welding, or they can even be made integrally; however, it is likely apparent that all these solutions lead to problems which are difficult to be solved. Glueing or hot-welding the parts causes the article of footwear to become weak, mainly against those stresses whose application directions are different from the connection face of the parts.

[0004] Instead, the integrally-formed article of footwear leads to problems of flexibility and adaptability to the feet of the user, since it can have a typically approximate morphology; however, in the case of articles of footwear which are high in height such as boots, ankle boots and the like, the damage is likely to occur in the region intended to the articulation of the ankle, where it is exposed to the greatest stress.

[0005] Thus, an aim of the present invention is to provide an article of footwear which can ensure a high waterproofness along with an improved comfortability and wearability, while still being very strong. Another feature required by the article of footwear of the present invention is flexibility, which is related both to comfortability and practicality.

[0006] Another aim of the invention is a method of manufacture of waterproof articles of footwear to obtain an article of footwear provided with the above mentioned features.

[0007] Therefore, an object of the present invention is a waterproof article of footwear comprising an upper consisted of one or more cut-shaped portions of a flexible waterproof material and a sole coupled to such upper, such upper being assembled by stitches applied between peripheral edges of said cut-shaped waterproof material portions, such stitches being covered with a waterproof coating able to couple to such stitches and to such upper near to the same stitches. In a preferred embodiment, such waterproof coating includes a strip of a waterproof film, preferably a thermoplastic or thermal adhesive film, which is applied to the whole length of the stitches.

[0008] In an alternative embodiment, such article of footwear is a boot made up of a flexible and waterproof material which is provided with a ribbon-like member at the end opposite to the foot portion of the article of footwear, such ribbon-like member being connected to such boot near the outlet edge thereof.

[0009] Preferably, such upper and such sole are made up of low specific weight plastic materials.

[0010] Another object of the present invention is a method of manufacture of waterproof articles of footwear comprising the steps of: assembling the cut-shaped waterproof material portions making up the upper by stitching; applying a waterproof coating layer to each stitch; coupling such waterproof coating layer to the upper; connecting the upper to the sole of the article of footwear.

[0011] Other advantages and features of the article of footwear and method of manufacture according to the present invention will become apparent from the following description of an embodiment thereof, which is provided by way of illustration, and not by way of limitation, with reference to the accompanying drawings wherein:

Fig. 1 is a front elevation view of an embodiment of the article of footwear according to the present invention;
Figure 2 is a side elevation view with exploded parts;
Figure 3 is a top plan view of cut-shaped material portions used in the method of manufacture according to the present invention;
Figure 4 illustrates an enlarged detail of a first step of the method of the invention;
Figure 5 illustrates an enlarged detail of a second step of the method of the invention;
Figures 6A to 6C illustrate a way to use the article of footwear of the invention; and
Figures 7A to 7D are four different views which illustrate another way to use the article of footwear of the invention.

[0012] Figure 1 shows an embodiment of the article of footwear according to the present invention, particularly a boot; reference numeral 1 denotes an upper comprising a front foot portion 101 and two rear leg portions 20; the three portions 101, 201 of the upper 1 are coupled to each other by means of stitches 3 which are covered with a strip 103 of a waterproof film. Holes 211 are formed on both the leg portions 201 at the open end of the boot, near the outlet edge thereof, and such holes are provided with reinforcement eyelet rings 221.

[0013] Figure 2 shows the boot as shown in Figure 1, in which like reference numerals refer to like parts; Figure 2 shows a sole 2 and a ribbon-like member 4 whose ends will be passed through the holes 211 and fixed in position.

[0014] Figure 3 shows cut-shaped waterproof material portions which are used in the process of manufacturing the article of footwear according to the present invention;

as already mentioned above, the upper 1 is made up of the cut-shaped foot portion 101 and the two cut-shaped leg portions 201 which will be assembled as described hereinbelow. Figure 4 shows the first stage of the method according to the invention; the two cut-shaped waterproof material portions 201 are coupled to each other by means of a zigzag stitch 3; Figure 5 shows the subsequent step, in which the stitch 3 is covered with the waterproof film strip 103. The film is attached to the waterproof material of the upper by hot-welding; alternatively, the film can be provided with a layer of a thermal adhesive material. The waterproof film strip 103 of the embodiment shown in the figure is about three times the stitch of choice in width; strips of different width can be used according to the type of stitch and the material of the upper, and generally the width is preferably at least twice the width of the stitch in order to ensure a more effective waterproofness.

[0015] Figures 6A to 6C show how the boot of Figure 1 can be easily folded by wrapping the leg portion 201 around the foot portion 101; in the figures, the ribbon-like member 4 is passed through the holes 211. As seen in Figures 7A to 7D, the ribbon-like member can be positioned around the boot wrapped in the manner shown in Figure 6C, resulting in a greatly decreased volume occupied by the boot, and a stability of such wrapping state.

[0016] Therefore, the so-designed article of footwear has several advantages compared to the prior art. Firstly, the manufacture of the article of footwear according to the method of the present invention ensures an increased durability of the stitches without using extremely complicated or expensive procedures. The waterproofing of the stitches allows the article of footwear to be made according to the usual and proven construction rules of the art without denaturalizing the morphological and aesthetic features of the shoe in order to make it waterproof. The upper of the article of footwear of the invention can consist of any number of pieces, starting from one piece and one stitch to connect it, and the adopted stitches can be zigzag, straight or internal pinch stitches. The only important thing is that each stitch is coated with a waterproof film which is applied to the outward face thereof.

[0017] Therefore, this method enables to use extremely light and flexible materials, resulting in a substantial reduction of the volume occupied by the article of footwear when it has to be put away. As it is apparent from Figures 6A to 7D, a boot made according to the present invention has a substantially reduced size once it is wrapped; the use of the ribbon-like member 4 connected to the free end of the leg portion of the boot as blocking means of the boot in the wrapped configuration of Figures 7A to 7D appears to be even more convenient.

Claims

1. A waterproof article of footwear, comprising an upper (1) consisted of one or more cut-shaped portions (101, 201) of a flexible waterproof material and a sole (2) coupled to said upper (1), **characterized in that** said upper (1) is assembled by stitches (3) applied between peripheral edges of said cut-shaped waterproof material portions (101, 201), said stitches (3) being covered with a waterproof coating (103) able to couple to said stitches (3) and to said upper (1) near to the same stitches (3).

2. A waterproof article of footwear according to Claim 1, wherein said waterproof coating comprises a strip (103) of a waterproof material film which is applied substantially to the whole length of each stitch (3).

3. A waterproof article of footwear according to Claim 2, wherein said strip (103) of waterproof material film is at least twice the corresponding stitch (3) in width

4. A waterproof article of footwear according to any one of Claims 1 to 3, wherein said waterproof coating is made up of a thermoplastic material.

5. A waterproof article of footwear according to any one of Claims 1 to 3, wherein said waterproof coating is made up of a thermal adhesive material.

6. A waterproof article of footwear according to any one of Claims 1 to 5, wherein said article of footwear is a boot made up of a flexible and waterproof material which is provided with a ribbon-like member (4) at the end opposite to the foot portion (101) of the article of footwear, said ribbon-like member (4) being connected to said boot near a outlet edge thereof.

7. A waterproof article of footwear according to Claim 6, wherein said ribbon-like member (4) is engaged in holes (211) provided at the open end of the leg portion (201) of said article of footwear.

8. A waterproof article of footwear according to any one of Claims 1 to 7, wherein said upper (1) and said sole (2) are made up of low specific weight plastic materials.

9. A method of manufacture of waterproof articles of footwear comprising the steps of: assembling cut-shaped waterproof material portions making up the upper by stitching; applying a waterproof coating to each stitch; coupling said waterproof coating to the upper; connecting the upper to the sole of the article of footwear.

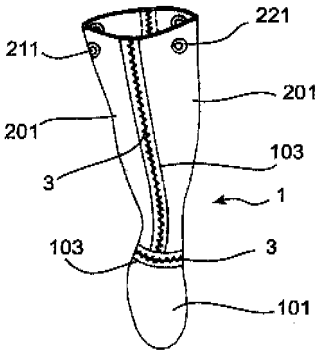

Fig. 1

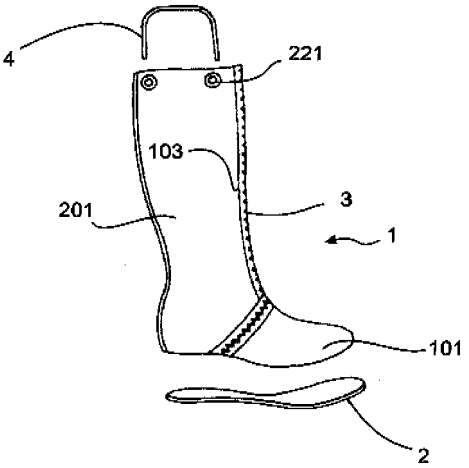

Fig. 2

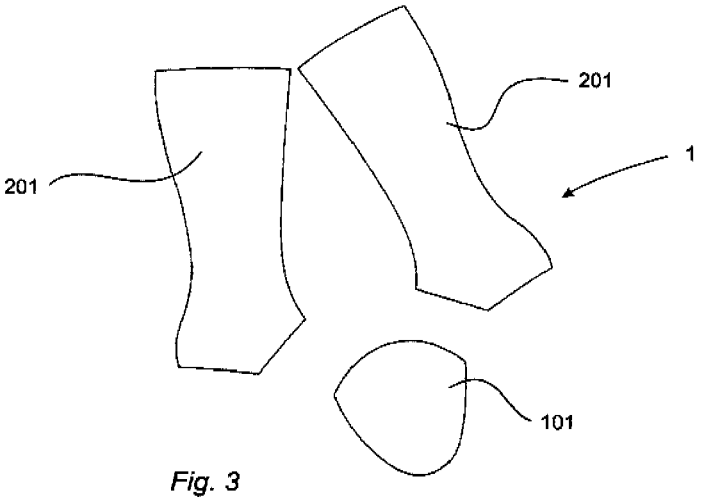

Fig. 3

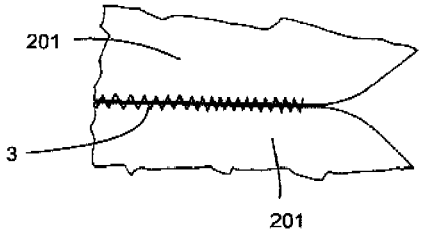

Fig. 4

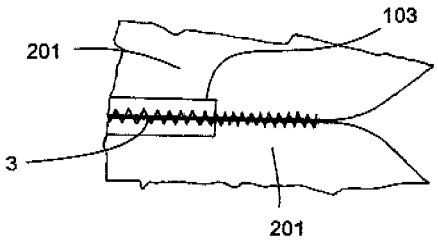

Fig. 5

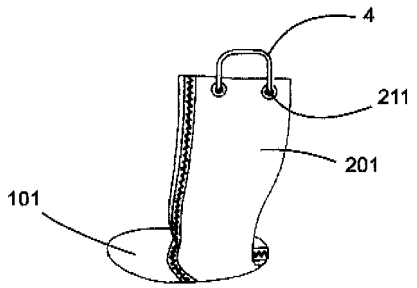

Fig. 6A

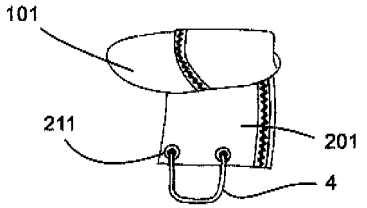

Fig. 6B

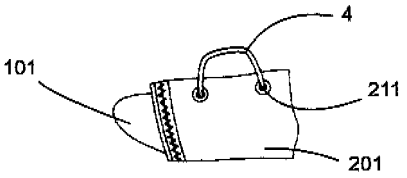

Fig. 6C

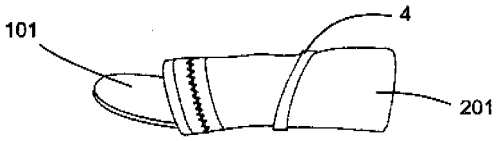

Fig. 7A

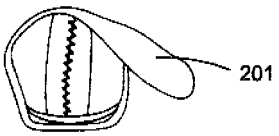

Fig. 7B

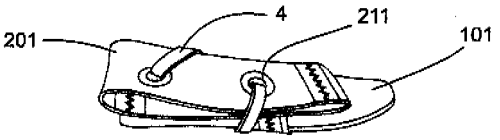

Fig. 7C

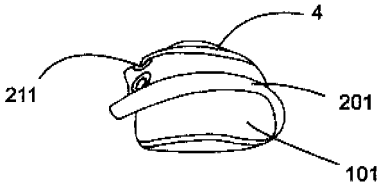

Fig. 7D

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EUROPEAN SEARCH REPORT

Application Number
EP 08 00 0166

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A43B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	8 September 2008	Vesin, Stéphane

CATEGORY OF CITED DOCUMENTS

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