(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 162 240 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
03.05.2017 Bulletin 2017/18

(21) Application number: **16195707.1**

(22) Date of filing: **26.10.2016**

(51) Int Cl.:
A43D 999/00 *(2006.01)* ***A43B 23/02*** *(2006.01)*
A43D 9/00 *(2006.01)* ***A43D 11/00*** *(2006.01)*
A43B 3/26 *(2006.01)* ***A43B 1/04*** *(2006.01)*

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
MA MD

(30) Priority: **26.10.2015 DE 102015220865**

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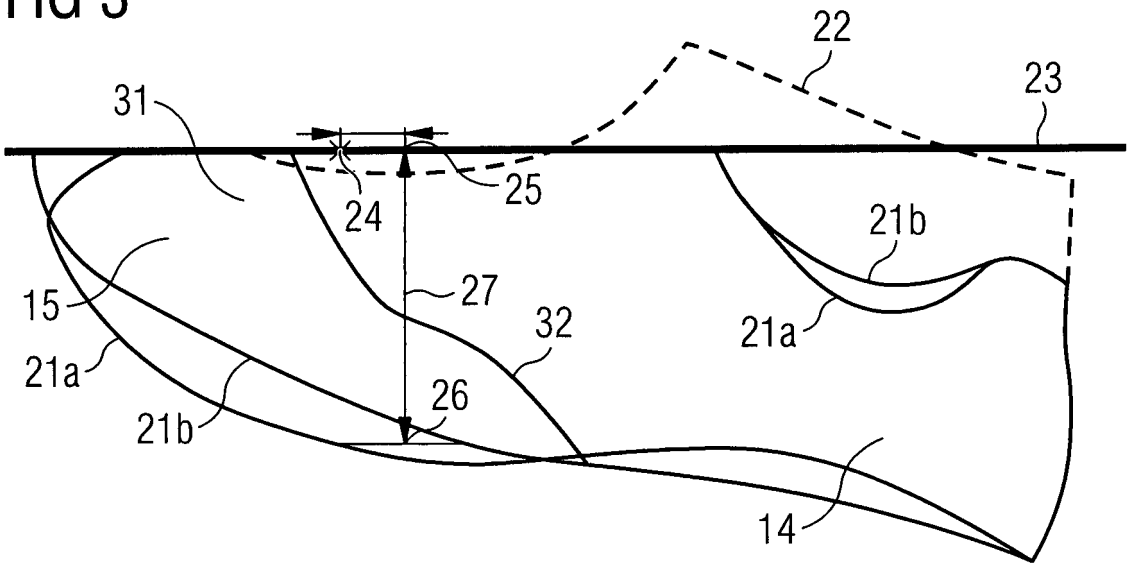
(54) **SHOE UPPER**

(57) The present invention relates to a shoe upper (11) for a shoe, in particular for a sports shoe, comprising a rear section (14) and a front section (15), wherein the front section (15) is smaller graded than the rear section (14), and wherein the front section (15) is more flexible than the rear section (14).

FIG 3



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Description

I. Technical field

[0001] The present invention relates to a shoe upper for a shoe, in particular a sports shoe, and a method for manufacturing a shoe upper for a shoe, in particular a sports shoe.

II. Prior art

[0002] Shoes should fit to their wearer most optimally and should be neither too big nor too small. A shoe that is too big does not optimally enclose the foot. The foot does not have sufficient stability and the danger exists that the wearer twists his ankle. A shoe that is too big will become in particular important for sports shoes, when sudden changes in direction, accelerations or stops occur. In case of such movements, a shoe that is too big cannot sufficiently transmit the occurring forces between foot and ground. Therefore, the risk of injury is substantial.

[0003] In team ball games such as soccer, rugby or football, a shoe that is too big is further disadvantageous with respect to ball control. Soccer players usually prefer shoes that provide a direct feeling for the ball in order to optimally control the ball, either during dribbling or shooting. A shoe that is too big cannot fulfil such requirements.

[0004] On the other hand, a shoe should not be too small. Too small shoes restrict the foot and impair blood circulation in the foot. Thereby, the foot tires faster or gives rise to numbness after some time of wearing. Further, too small shoes can result in bruises, blisters, and skin abrasions.

[0005] The above mentioned problems aggravate due to the fact that feet are usually not symmetrical. Usually one foot is slightly bigger than the other one and has a larger volume. Commonly, right-footers, i.e. those that preferably use the right foot, have a stronger right foot than left foot, and v*ice versa.* Moreover, the length and especially the width can vary between right and left foot.

[0006] Different prior-art approaches are known that shall improve the footing and fit of shoes.

[0007] For example, US 2014/0059889 A1 discloses a shoe of variable length and flexible form by using a flexible sectional sole and a flexible shoe upper that corresponds to the forefoot section of the wearer.

[0008] US 2014/0041256 A1 discloses a shoe design, which is expandable along its lengthwise axis by utilizing a sliding outsole configuration and/or a sliding insole configuration.

[0009] US 7,055,268 B2 discloses a length-adjustable shoe. The shoe includes an outsole, an insole attached to the outsole, an upper attached to the insole, means for adjusting the length of the insole, which is provided at the insole, an upper tension member provided at the upper, and means for fastening a front part and a rear part of the upper divided by the upper tension member to maintain a size of the shoe at a wearer's foot size.

[0010] US 8,938,890 B2 discloses an expandable shoe, which has a top portion, a pair of side portions, a back portion, a sole, a heel and a first elastic member. The first elastic member joins the top portion to the pair of side portions at a critical location, which is at the junction of the top portion and the side portions.

[0011] Further prior art is disclosed in US 2003/0097770 A1 and WO 2012/108921 A1.

[0012] However, the known solutions are very elaborate, expensive, and increase the weight of the shoe, because special mechanical devices are installed to adjust the length of the shoe. On the other hand, the length-adjustment of a shoe is often not sufficient, because rather the width is the critical parameter that determines the fit of the shoe to the foot.

[0013] Object of the present invention is to provide a shoe upper for a shoe, in particular a sports shoe, which overcomes the above mentioned disadvantages of prior art. Particularly, the object of the present invention is to provide a shoe upper that encloses the foot of the wearer tightly, that is cost-effective in production, and that is light-weighted.

[0014] This object is solved by a shoe upper according to claim 1, and a method for manufacturing a shoe upper according to claim 9. The dependent claims comprise preferred embodiments.

III. Summary of the invention

[0015] According to the invention, the shoe upper for a shoe, in particular a sports shoe, comprises a rear section and a front section, wherein the front section is smaller graded than the rear section and wherein the front section is more flexible than the rear section.

[0016] Grading refers to the manufacturing of further shoe sizes departing from a sample last, a sample shoe, or a sample shoe upper, i.e. the downsizing or upsizing of the sample. The sample last, the sample shoe, or the sample shoe upper (the sample) is scaled according to fixed standards in order to obtain samples of other shoe sizes. For example, a sample that corresponds to the men's shoe size 43 according to European size system may be graded to obtain a sample, e g. of shoe size 45. During grading, both the length and the width of the starting sample are enlarged by defined amounts. Usually, the starting sample corresponds to a representative population average.

[0017] The inventor has found that a shoe upper that provides a very good footing and is in particular suitable for sport activities may be obtained by grading a front section such that it is smaller graded than a rear section on the basis of a starting sample. The smaller grading of the front section provides for a tight fit of the shoe upper, because the front section encloses the forefoot area tightly. This is in particular advantageous for team ball games, when a direct contact to the ball is indispensable. Further, the tight fit of the front section prevents loose-fitting of

the shoe and reduces the danger of ankle twisting. Nevertheless, the shoe is not too small, because the rear section corresponds to the shoe size that results from usual grading. For example, the front section of the shoe upper for a men's shoe may correspond to a shoe size of 44 according to European size system and the rear section may correspond to a shoe size of 45.

[0018] Moreover, the front section is more flexible than the rear section. Thus, the front section may adapt to the foot and enclose it tightly. Simultaneously, the flexibility prevents the development of bruises and the impairment of the blood circulation. The flexibility of the front section in combination with the front section's smaller grading further allows that the show upper adapts optimally to different foot volumes, which might differ e.g. between the right and the left foot.

[0019] According to the invention, the transition from the front section to the rear section of the shoe upper may be localized in the mid foot area. For example, such transition may be arranged in about the middle of the longitudinal axis of the shoe upper. Alternatively, such transition may divide the longitudinal axis in a ratio of 2 to 1, wherein the smaller part is arranged in the front portion of the shoe upper.

[0020] The front section may be graded by at least one shoe size smaller than the rear section. Hereby, the front section may enclose the forefoot area tightly and ensure a good fit of the shoe upper to the foot. The advantage to grade the front section one shoe size smaller than the rear section has been demonstrated in particular for soccer shoes, because it improves the feeling for the ball.

[0021] The front section may be at least smaller graded than the rear section with respect to the width. The length of the shoe upper may correspond to the length of a commonly graded shoe upper. However, the width of the front section is smaller compared to a common shoe upper, by which the foot may be enclosed particularly well without restricting the toes in the longitudinal direction.

[0022] The front section may be more flexible in one direction than in another direction. Thereby, the flexibility of the front section may be oriented according to the requirements.

[0023] The front section may be more flexible in one direction being perpendicular to the longitudinal axis of the shoe upper than in one direction being parallel to the longitudinal axis of the shoe upper. In this way, the front section of the shoe upper may adapt to the foot width. Simultaneously, it is prevented that the shoe upper slackens with respect to the longitudinal axis and that the foot is not supported optimally, and, e.g., slips forward during rolling movements.

[0024] The rear section may be more flexible in at least two directions than in a third direction being different thereof. For example, the rear section may be more flexible in directions perpendicular and parallel to the longitudinal axis of the shoe upper than in a third direction being different thereof (e.g. a diagonal direction). In this way, the rear section of the shoe upper may adapt to the foot shape by length and width.

[0025] The rear and the front section may be sewn together. For example, the front and the rear section may be sewn together by means of a fully automated sewing machine, thereby reducing the manufacturing costs of the shoe upper.

[0026] The rear and the front section may be manufactured from synthetic polyurethane material. The polyurethane material may be applied onto a carrier material. The carrier material may be a layer of textile material. The textile material may be based on microfibers. Alternatively, the carrier material may also be based on a woven fabric, a warp-knitted fabric, a weft-knitted fabric or a combination thereof. Polyurethane may be easily processed and applied onto textiles, e.g. in liquid form. Alternatively, the rear section and the front section may be produced from natural leather or synthetic leather. Preferably, the applied carrier material determines the flexibility of the rear and the front section. Preferably, the flexibility of the rear and front section are adjustable via the carrier material. In general, different carrier materials may be used for the front and the rear section.

[0027] A layer reducing the flexibility may be applied onto the front section in at least one portion of the front section. Thereby, the flexibility of the front section may be adjusted selectively. For example, a first portion of the front section is not coated with the layer reducing the flexibility. In consequence, this portion is flexible and allows the front section to adapt to the foot. A second portion may be coated with the layer reducing the flexibility. Therefore, this second portion contributes to the stability of the shoe upper. For example, the second portion may be the toe section, which often is subjected to higher mechanical stresses.

[0028] The layer may be a film of thermoplastic polyurethane. Thermoplastic polyurethane is easy to process and has a low flexibility. Alternatively, non-flexible rubber may be used.

[0029] The film may be applied onto the front section by means of welding. Welding is a relatively fast process step to be performed and may be automated. For example, high frequency welding, ultrasonic welding, infrared welding or laser welding may be used. The front section may be adapted to cover a front portion of a foot during wearing and the rear section may be adapted to cover a rear portion of a foot during wearing. This division between front section and rear section of the shoe upper allows a proper fitting to the foot shape and stabilizes the foot.

[0030] A further aspect of the present invention is a shoe, comprising a sole and a shoe upper as described above.

[0031] According to the invention, the sole may be graded continuously as the rear section of the shoe upper. Thereby, the sole has a length and a width corresponding to a commonly graded shoe sole.

[0032] A further aspect of the present invention relates to a method for manufacturing a shoe upper for a shoe,

in particular a sports shoe, comprising the steps of providing a rear section of the shoe upper, providing a front section of the shoe upper, wherein the front section is smaller graded than the rear section, and connecting the rear section and the front section.

[0033] According to the invention-related method, the front section may be at least smaller graded by a full shoe size than the rear section. Thereby, the front section encloses the forefoot area tightly and allows a proper fitting of the shoe upper around the foot. In particular with respect to soccer shoes, it has been proven advantageous to grade the front section smaller than the rear section, because this improves the feeling for the ball.

[0034] The step of providing the rear section may comprise punching out the rear section from a first material layer. The step of providing the front section may comprise punching out the front section from a second material layer. Punching-out is a fast process step to be performed and may be automated.

[0035] The first material layer may be different from the second material layer. Thereby, a different material may be provided for the front section compared to the rear section. The materials may differ with respect to their properties. For example, the second material layer may be more flexible than the first material layer. Thereby, the front section may adapt to the foot and enclose the foot tightly. However, the flexibility prevents the development of bruises and the impairment of blood circulation. Due to the flexibility of the front section in combination with its smaller grading, the manufactured shoe upper allows for optimal fitting of different foot volumes, e.g. of right and left shoe, according to the present invention.

[0036] The second material layer may be more flexible in one direction than in another direction. Thereby, the flexibility of the front section may be oriented according to the requirements.

[0037] The first material layer may be more flexible in at least two directions than in a third direction being different thereof. For example, the rear section may be more flexible in one direction being perpendicular and parallel to the longitudinal axis of the shoe upper than in a third direction being different thereof (e.g. a diagonal direction). In this way, the rear section of the shoe upper may adapt to the foot shape by length and width.

[0038] The step of connecting the rear section and the front section may comprise sewing the rear section with the front section. For example, the front and the rear section may be sewed together by means of a fully-automated sewing machine, thereby the manufacturing costs for the shoe upper may be reduced.

[0039] The invention-related method may further comprise the step of applying a layer reducing the flexibility in at least one portion of the front section. Thereby, the flexibility of the front section may be selectively adjusted. For example, a first portion of the front section may be not coated with the layer reducing the flexibility. In consequence, this portion is flexible and allows the front section to adapt to the foot. A second portion of the front section may be coated with the layer reducing the flexibility. Therefore, this second portion contributes to the stability of the shoe upper. For example, the second portion may be the toe section, which is often subjected to higher mechanical stresses.

[0040] The step of applying may comprise welding of the layer. Welding is a relatively fast process step to be performed and may be automated. For example, high frequency welding, ultrasonic welding, infrared welding or laser welding may be used.

[0041] The steps of providing the rear section and the front section may comprise applying the synthetic polyurethane material onto a carrier material. The textile carrier material may be based on microfibers. Alternatively, the carrier material may also be based on a woven fabric, a warp-knitted fabric, a weft-knitted fabric, or a combination thereof. Synthetic polyurethane may be easily processed and has a smaller flexibility. Alternatively, non-flexible rubber may be also used. Preferably, the applied carrier material determines the flexibility of the rear and the front section. In general, different carrier materials may be used for the front and the rear section.

[0042] A shoe upper according to the present invention may be manufactured with a method according to the invention as mentioned above.

IV. Brief description of the drawings

[0043] Possible embodiments of the present invention are further described in the following detailed description, with reference to the following figures:

- Fig. 1A Lateral view of an embodiment of a shoe with a shoe upper according to the invention;
- Fig. 1B Medial view of the embodiment of Fig. 1A;
- Fig. 1C Front view of the embodiment of Fig. 1A;
- Fig. 2 Schematic illustration of the grading process of a shoe upper; and
- Fig. 3 Schematic illustration of the grading process of a shoe upper according to the invention.

V. Detailed description of preferred embodiments

[0044] Hereafter, embodiments and examples of the present invention are described in detail.

[0045] Figures 1A, 1B, and 1C illustrate an embodiment of a shoe 10, which comprises a shoe upper 11 according to the invention. Fig. 1A illustrates a lateral view, Fig. 1B illustrates a medial view and Fig. 1C illustrates a front view. The shoe 10 comprises a shoe upper 11 according to the invention and a sole 12. The shoe illustrated in Figures 1A, 1B, and 1C is a soccer shoe. In consequence, sole 12 comprises studs, whereof two studs are exemplarily labeled as 13 in Fig. 1A, 1B, and 1C. The invention is not limited to soccer shoes, but may also be applied for shoes in other sport disciplines, such as rugby, football, basketball, volleyball and golf. The invention may be further applied for shoes that are no

sports shoes, but, e.g., casual shoes.

[0046] As illustrated in figures 1A, 1B and 1C, the shoe upper 11 comprises a rear section 14 and a front section 15. The rear section 14 and the front section 15 may be sewed together along the seam 16. This may be done on a suitable sewing machine. Alternatively, the rear section 14 and the front section 15 may be welded together (e.g. by means of high frequency welding, ultrasonic welding, infrared welding or laser welding).

[0047] In the embodiment of the figures 1A, 1B and 1C, the seam 16 extends between the rear section 14 and the front section 15 in an S-shape from a front portion of the instep to a portion in the transition of the tarsal to the metatarsal. In general, a different arrangement of the seam is possible, e.g. in the middle of the shoe upper 11 or further to the front in the toe portion.

[0048] In the embodiment of the figures 1A, 1B and 1C, the front section 15 and the rear section 14 are manufactured from synthetic polyurethane material. To this end, the polyurethane material was applied onto a layer of textile carrier material (not shown in the figures). The textile carrier material is based on microfibers. In general, and according to the invention, a different carrier material and a different coating may be also used. Further, it is possible to manufacture the rear section 14 and/or the front section 15 from e.g. leather, synthetic leather, mesh, warp-knitted fabric, weft-knitted fabric, or a combination thereof. Also then it is possible to coat the rear section 14 and/or the front section 15.

[0049] In general, both the rear section 14 and the front section 15 may be punched out from a material layer. The material layer for the rear section 14 may be different than the material layer for the front section 15. For example, the material layer for the front section 15 may be more flexible. Alternatively, the rear section 14 and the front section 15 may be also punched out from the same material layer. Further, it is possible to e.g. warp-knit or weft-knit the sections 14 and 15 into the preferred shape.

[0050] According to the present invention, the front section 15 is smaller graded than the rear section 14. Grading refers the manufacturing of further shoe sizes departing from a sample last, a sample shoe, or a sample shoe upper, i.e. the downsizing or upsizing of the sample. The sample last, the sample shoe, or the sample shoe upper (the sample) is scaled according to fixed standards in order to obtain samples of other shoe sizes. For example, a sample that corresponds to the men's shoe size 43 according to European size system may be graded to obtain a shoe size 45. During grading, both the length and the width of the starting sample are enlarged by defined amounts. Usually, the starting sample corresponds to a representative population average.

[0051] With respect to Fig. 2, the process of grading is described hereafter as required for the comprehension of the present invention. Fig. 2 illustrates schematically a sample shoe upper 21. The sizes of such sample shoe upper 21 corresponds to a representative population size and a specific shoe size, e.g. the men's shoe size 43 according to European size system. In order to provide sample shoe uppers for other shoe sizes on the basis of the shoe upper 21, said shoe upper 21 needs to be graded. Essentially, grading means that the sample shoe upper 21 is scaled such that sample shoe uppers for other shoe sizes may be obtained, which are suitable for a population share as large as possible. For example, during grading of the sample shoe upper 21 corresponding to a men's shoe size 43 a sample shoe upper corresponding to a men's shoe size 45 shall be obtained. Such shoe upper shall fit to a population share as large as possible wearing shoe size 45.

[0052] The sample shoe upper 21 of Fig. 2 is folded, i.e. the lateral side and the medial side overlap partially. The boundary of the lateral side is labelled with 21a; the boundary of the medial side is labelled with 21b. Furthermore, a sample last 22 (dashed line) is shown in Fig. 2.

[0053] During grading, usually first a middle line 23 of the sample shoe upper 21 is defined. Then, a point 24 is defined which is localized on the middle line 23. Said point 24 is called grading center and presents the starting point for the grading process. Point 24 may be chosen such that it divides the middle line 23 into a ratio of 1 to 2, but also other ratios are possible. During grading the width and the length of the sample shoe upper 21 are scaled independently from each other. For example, starting from point 24 another point 25 of a certain distance (e.g. 20 mm) to point 24 may be defined for scaling of the width. Another point 26 defines the center of the lateral boundary 21a and the medial boundary 21b. The width 27 of the sample shoe upper 21 may be measured between point 25 and point 26 perpendicular to the middle line 23.

[0054] During grading, the width 27 may be altered according to defined fixed values. For example, the width may be increased or reduced by 1 mm per half shoe size in British size system (UK). If the sample shoe upper 21 has a defined width of x mm, the sample shoe upper for the next bigger half shoe size in British size system would have a width of x+1 mm. *Vice versa,* the next smaller half shoe size would have the width of x-1 mm. In French size system (F), the width could be increased or reduced, e.g. by 2 mm per full shoe size.

[0055] During grading, also the length of the sample shoe upper 21 is altered. However, this alteration is not based on the same values as the width 27, because a bigger foot usually has a disproportionate bigger length than width, when compared to a smaller foot. For example, the length could be increased or reduced by 4.23 mm per half shoe size in British size system (UK). If the sample shoe upper 21 has a defined length of y mm, the sample shoe upper for the next bigger half shoe size in British size system would have a length of y+4.23 mm. *Vice versa,* the next smaller half shoe size would have the length of y-4.23 mm. In French size system (F), the length could be increased or reduced, e.g. by 6.66 mm per full shoe size.

[0056] According to the invention, the shoe upper 11

comprises a front section 15 which is smaller graded than the rear section 14. Hereafter, this aspect is described in detail with respect to Fig. 3. Fig. 3 illustrates a sample shoe upper 31 with a rear section 14 and a front section 15 and a boundary line 32 between both sections 14 and 15. The boundary line 32 corresponds later in the process to the seam 16 that connects both sections 14 and 15 of the manufactured shoe upper 11.

[0057] According to the invention, the sections 14 and 15 are graded separately according to the grading rules as described exemplarily above with reference to Fig. 2, whereat the front section 15 is smaller graded than the rear section 14. For example, if the sample shoe upper 31 corresponds to the shoe size 9 in British size system (UK), the rear section 14 and the front section 15 are graded to obtain an exemplary sample shoe upper according to the invention for the shoe size 10 ½ (UK) as follows: The width of the sample shoe upper 31 (size 9 UK) is increased by 3 mm (1 mm per half size) and the length of the sample shoe upper 31 is increased by 12.69 mm (4.23 per half size), in order to obtain the rear section 14. Opposed to common grading, as described in Fig. 2, the front section 15 is smaller graded. For example, the front section 15 may correspond to a sample shoe upper which is half a shoe size smaller graded than graded for the rear section 14. Accordingly, the width of the sample shoe upper 31 (size 9 UK) is increased by 2 mm (1 mm per half size) and the length of the sample shoe upper 31 is increased by 8.46 mm (4.23 mm per half size), in order to obtain the front section 15.

[0058] The front section 15 may also be smaller graded than the rear section 14 by more than half a shoe size, e.g. a full shoe size. The choice of the difference in size depends on the size system, in which grading is performed, because different size systems are differently precisely subdivided. For example, in British size system the difference between two full, adjacent shoe sizes (e.g. 9 UK compared to 10 UK) is larger than in European size system (e.g. 43 EUR compared to 44 EUR).

[0059] According to the invention, it is further possible to only grade the width or the length of the front section 15 smaller than the rear section 14. For example, the width of the front section 15 of the shoe upper 11 may be smaller graded than the width of the rear section 14 by one shoe size, but the lengths of both sections 14 and 15 may be graded by the same value.

[0060] Sole 12 of the shoe 10 as illustrated in figures 1A, 1B, and 1C is graded continuously, i.e. the sole 10 is graded equally to the rear section 14 of the shoe upper. For example, if the rear section corresponds to shoe size 45, the sole 10 equally corresponds to shoe size 45. In general, it is however also possible to grade e.g. the front portion of the sole 10 smaller.

[0061] According to the embodiment of figures 1, 1B, and 1C, the front section 15 is more flexible than the rear section 14. This may be achieved by using a more flexible material for the front section than for the rear section. For example, the front section 15 and the rear section 14 may comprise a carrier material with respective different flexibilities. For example, the carrier material may be a layer of textile material, e.g. based on microfibers. Alternatively, the carrier material may also be based on a woven fabric, a warp-knitted fabric, a weft-knitted fabric or a combination thereof. Different carrier materials may be used for the front section 15 and the rear section 14.

[0062] The front section 15 does not need to have the same flexibility in all directions. For example, the front section 15 may be more flexible in a direction perpendicular to the longitudinal axis of the shoe upper 11 than in a direction parallel to the longitudinal axis of the shoe upper 11. This may be achieved by using an appropriate textile material. For example, specific weft-knitted fabrics or warp-knitted fabrics have anisotropic flexibilities due to a specific loop structure.

[0063] The rear section 14 may also have an anisotropic flexibility. For example, the rear section may be more flexible in a direction perpendicular and in a direction parallel to the longitudinal axis of the shoe upper than in a third direction being different thereof (e.g. a diagonal direction). Materials of such anisotropic properties are known as 4-way-stretch materials. Further, certain weft-knitted fabrics or warp-knitted fabrics have also such properties due to a specific loop structure.

[0064] In the embodiment of Fig. 1A, 1B, and 1C, a film 17 of thermoplastic polyurethane is applied to specific regions of the front section 15. The film 17 reduces the flexibility of the front section 15 at those regions, where the film is applied to. The film 17 may be applied to the front section 15 by means of welding (e.g. infrared welding, highfrequency welding, laser welding). Instead of thermoplastic polyurethane, also a different material may be applied which reduces the flexibility, such as non-flexible rubber. In the embodiment of Fig. 1A, 1B, and 1C, the film 17 is arranged in the front toe portion and in the portion of the transition region of the metatarsal to the toe bones. In general, however, another arrangement is also possible.

[0065] In the embodiment of Fig. 1A, 1B, and 1C, the shoe upper 11 further comprises an inner lining 18, which extends below the rear section 14 and the front section 15 of the shoe upper 11. The flexibility of the material of the inner lining is at least as high as the flexibility of the material of the front section 15, in order to not restrict the flexibility of the front section 15. For example, polyurethane-coated inner lining may be used as material for the inner lining 18.

[0066] In the following, further embodiments are described to facilitate the understanding of the invention:

1. Shoe upper (11) for a shoe, in particular a sports shoe, comprising:

   a rear section (14); and
   a front section (15), wherein the front section (15) is smaller graded than the rear section (14) and wherein the front section (15) is more flex-

ible than the rear section (14).

2. Shoe upper according to the preceding embodiment, wherein the front section is at least smaller graded by a full shoe size than the rear section.

3. Shoe upper according to one of the preceding embodiments, wherein the front section is at least smaller graded with respect to the width than the rear section.

4. Shoe upper according to one of the preceding embodiments, wherein the front section is more flexible in one direction than in another direction.

5. Shoe upper according to the preceding embodiment, wherein the front section is more flexible in one direction being perpendicular to the longitudinal axis of the shoe upper than in one direction being parallel to the longitudinal axis of the shoe upper.

6. Shoe upper according to one of the preceding embodiments, wherein the rear section is more flexible in at least two directions than in a third direction being different thereof.

7. Shoe upper according to the preceding embodiment, wherein the rear section is more flexible in one direction being perpendicular and parallel to the longitudinal axis of the shoe upper than in a third direction being different thereof.

8. Shoe upper according to one of the preceding embodiments, wherein the rear section and the front section are sewn together.

9. Shoe upper according to one of the preceding embodiments, wherein the rear section and the front section comprise synthetic polyurethane material.

10. Shoe upper according to the preceding embodiment, wherein the polyurethane material is applied onto a carrier material.

11. Shoe upper according to one of the preceding embodiments, wherein a layer reducing the flexibility is applied onto the front section in at least one portion of the front section.

12. Shoe upper according to the preceding embodiment, wherein the layer is a film of thermoplastic polyurethane.

13. Shoe upper according to the preceding embodiment, wherein the film is applied onto the front section by means of welding.

14. Shoe upper according to one of the proceedings embodiments, wherein the front section is adapted to cover a front portion of a foot during wearing and the rear section is adapted to cover a rear portion of the foot during wearing.

15. Shoe (10) comprising:

a. a sole (12); and
b. a shoe upper (11) according to one of the preceding embodiments.

16. Shoe according to the preceding embodiment, wherein the sole is graded continuously as the rear section of the shoe upper.

17. Method for manufacturing a shoe upper (11) for a shoe, in particular a sports shoe, comprising the steps of:

providing a rear section (14) of the shoe upper (11);
providing a front section (15) of the shoe upper (11), wherein the front section (15) is smaller graded than the rear section (14) and wherein the front section (15) is more flexible than the rear section (14); and
connecting the rear section (14) and the front section (15).

18. Method according to the preceding embodiment, wherein the front section is at least smaller graded by a full shoe size than the rear section.

19. Method according to one of embodiments 17 or 18, wherein the step of providing the rear section comprises punching out the rear section from a first material layer.

20. Method according to one of the embodiments 17 to 19, when the step of providing the front section comprises punching out the front section from a second material layer.

21. Method according to embodiment 19 and 20, wherein the first material layer is different from the second material layer.

22. Method according to the preceding embodiment, wherein the second material layer is more flexible than the first material layer.

23. Method according to one of embodiments 19 to 22, wherein the second material layer is more flexible in one direction than in another direction.

24. Method according to one of embodiments 19 to 23, wherein the first material layer is more flexible in at least two directions than in a third direction being

different thereof.

25. Method according to one of embodiments 17 to 24, wherein the step of connecting the rear section and the front section comprises sewing the rear section with the front section.

26. Method according to one of embodiments 17 to 25, further comprising the step of applying a layer reducing the flexibility in at least one portion of the front section.

27. Method according to the preceding embodiment, wherein the step of applying comprises welding of the layer.

28. Method according to one of embodiments 17 to 27, wherein the steps of providing the rear and the front section comprise applying thermoplastic polyurethane onto a carrier material.

29. Method according to one of embodiments 17 to 28, wherein the shoe upper is a shoe upper according to one of embodiments 1 to 14.

Claims

1. Shoe upper (11) for a shoe, in particular a sports shoe, comprising:

a rear section (14); and
a front section (15), wherein the front section (15) is smaller graded than the rear section (14) and wherein the front section (15) is more flexible than the rear section (14).

2. Shoe upper according to the preceding claim, wherein the front section is at least smaller graded by a full shoe size than the rear section.

3. Shoe upper according to one of the preceding claims, wherein the front section is at least smaller graded with respect to the width than the rear section.

4. Shoe upper according to one of the preceding claims, wherein the front section is more flexible in one direction than in another direction.

5. Shoe upper according to the preceding claim, wherein the front section is more flexible in one direction being perpendicular to the longitudinal axis of the shoe upper than in one direction being parallel to the longitudinal axis of the shoe upper.

6. Shoe upper according to one of the preceding claims, wherein the rear section is more flexible in at least two directions than in a third direction being different thereof.

7. Shoe upper according to the preceding claim, wherein the rear section is more flexible in one direction being perpendicular and parallel to the longitudinal axis of the shoe upper than in a third direction being different thereof.

8. Shoe (10) comprising:

a. a sole (12); and
b. a shoe upper (11) according to one of the preceding claims.

9. Method for manufacturing a shoe upper (11) for a shoe, in particular a sports shoe, comprising the steps of:

providing a rear section (14) of the shoe upper (11);
providing a front section (15) of the shoe upper (11), wherein the front section (15) is smaller graded than the rear section (14) and wherein the front section (15) is more flexible than the rear section (14); and
connecting the rear section (14) and the front section (15).

10. Method according to the preceding claim, wherein the front section is at least smaller graded by a full shoe size than the rear section.

11. Method according to one of claims 9 or 10, wherein the step of providing the rear section comprises punching out the rear section from a first material layer.

12. Method according to one of the claims 9 to 11, when the step of providing the front section comprises punching out the front section from a second material layer.

13. Method according to claim 11 and 12, wherein the first material layer is different from the second material layer.

14. Method according to the preceding claim, wherein the second material layer is more flexible than the first material layer.

15. Method according to one of claims 11 to 14, wherein the second material layer is more flexible in one direction than in another direction.

FIG 1A

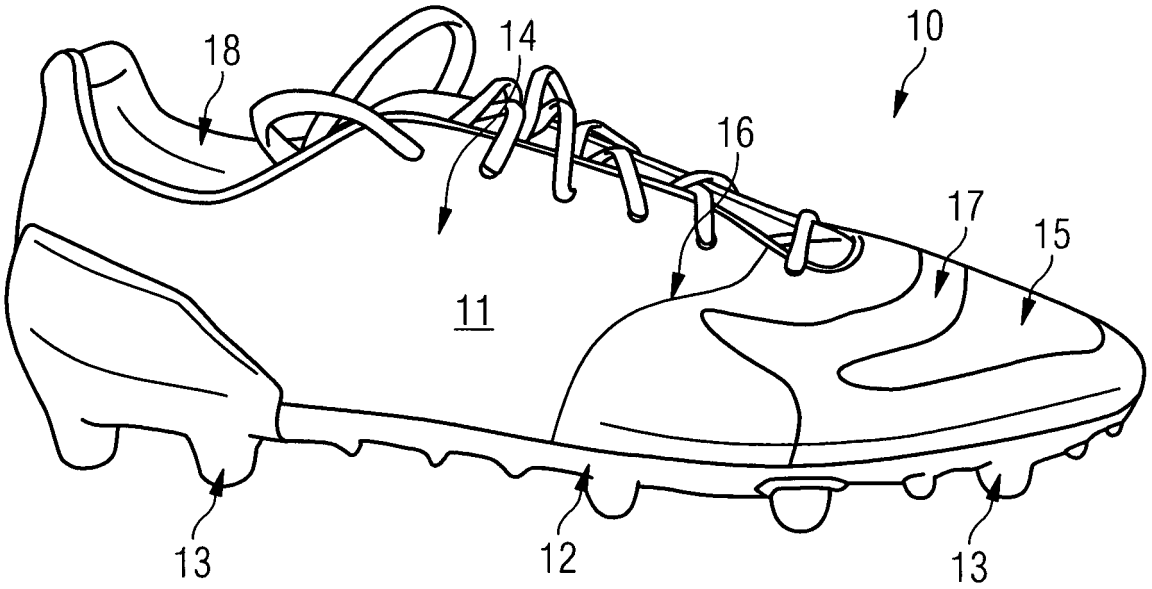

FIG 1B

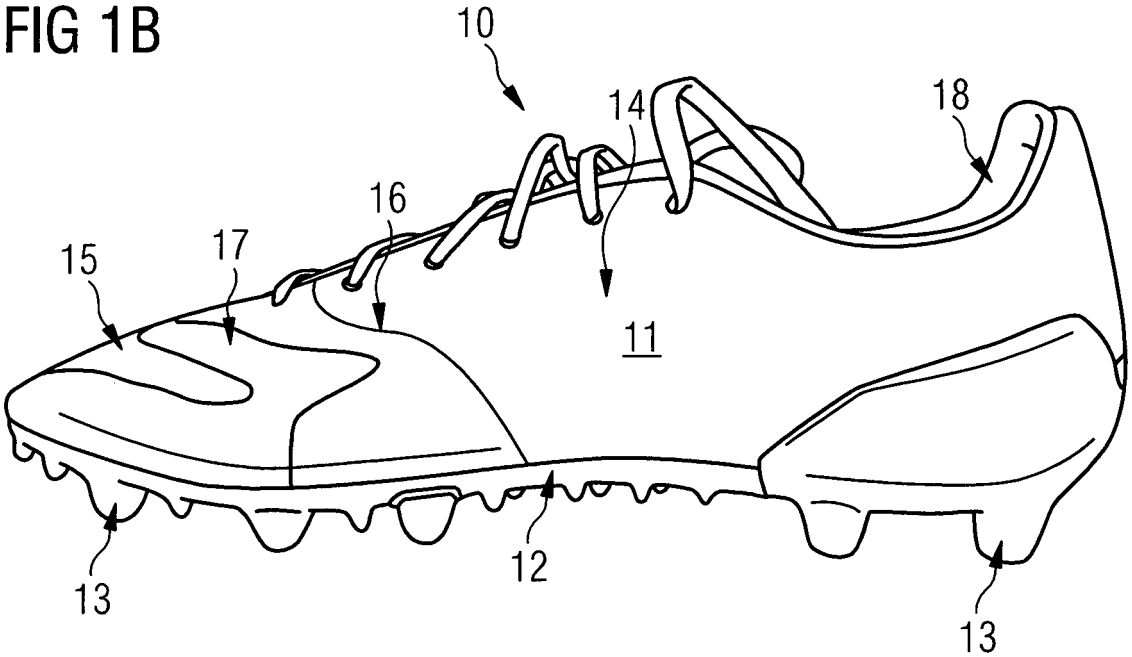

FIG 1C

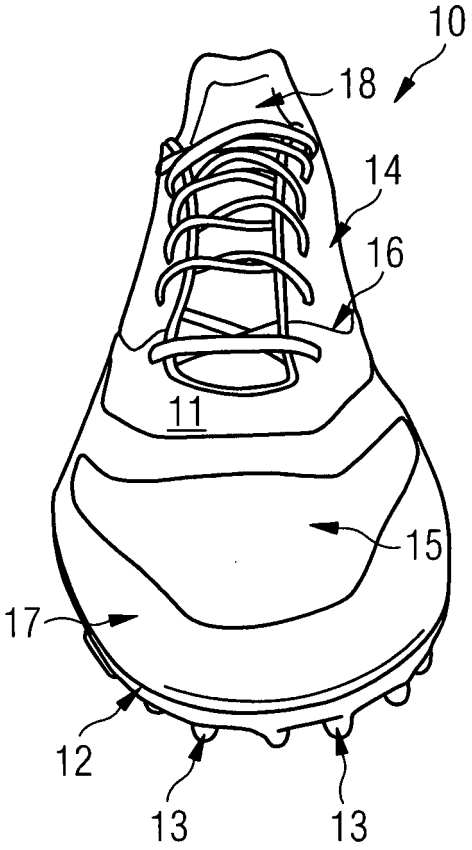

FIG 2

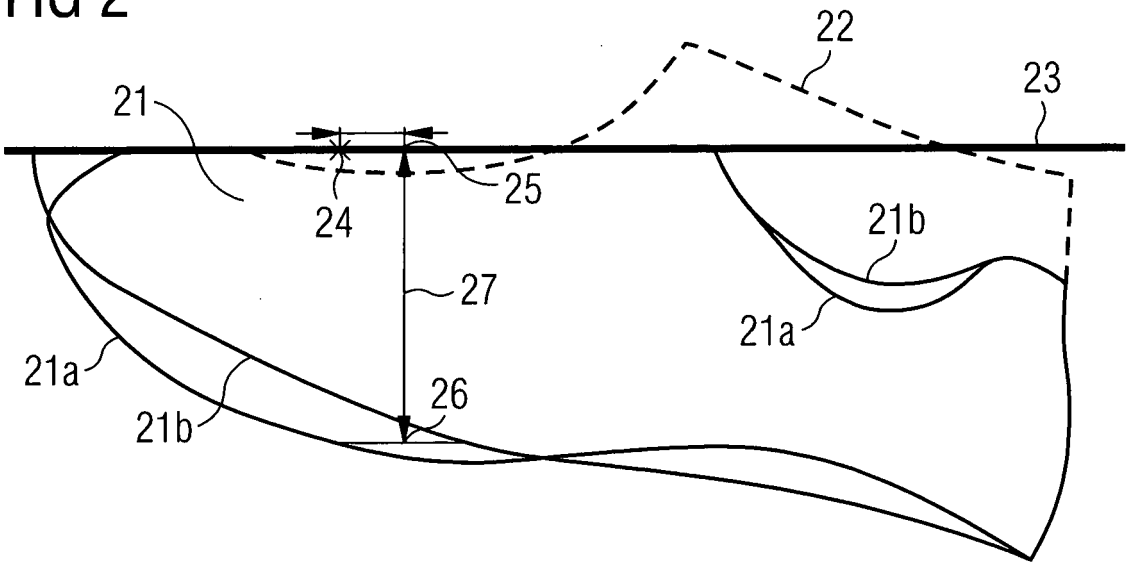
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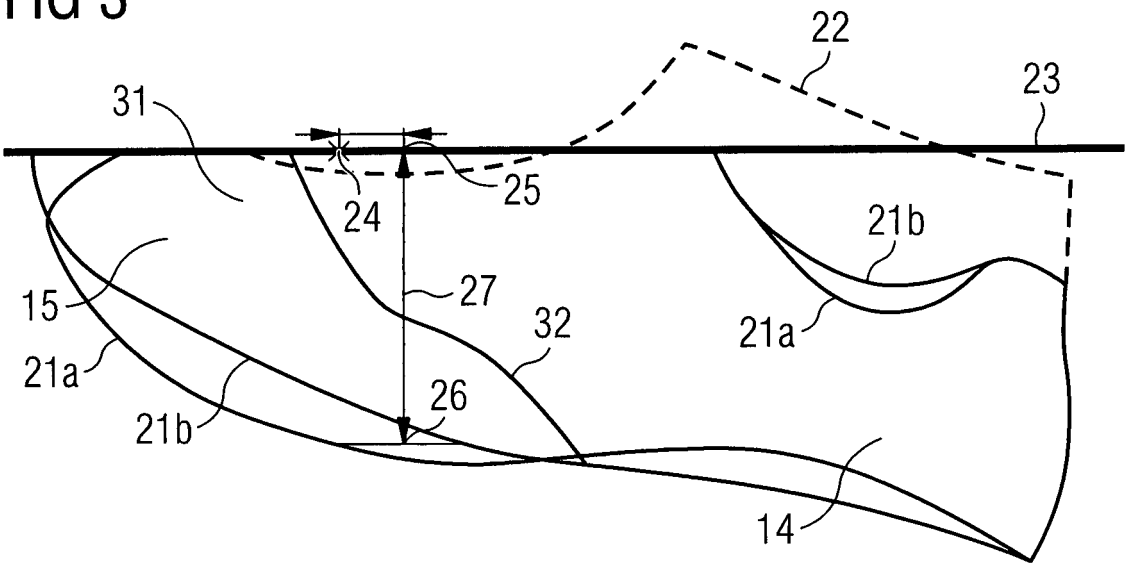
FIG 3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EUROPEAN SEARCH REPORT

Application Number
EP 16 19 5707

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Place of search	Date of completion of the search	Examiner
The Hague	1 March 2017	Duquénoy, Alain

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