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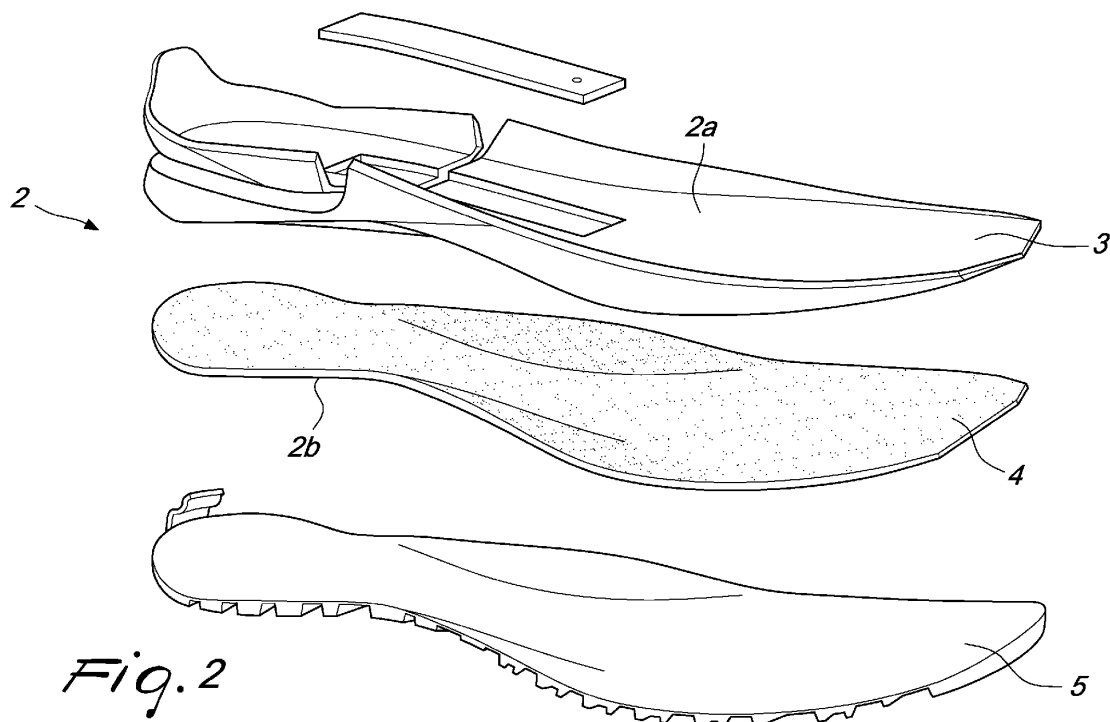
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KH MA MD TN(71) Applicant: **La Sportiva S.P.A.****38030 Ziano di Fiemme (TN) (IT)**(72) Inventor: **DELLADIO, Lorenzo****38030 ZIANO DI FIEMME TN (IT)**(74) Representative: **Modiano, Micaela Nadia****Modiano & Partners****Via Meravigli, 16****20123 Milano (IT)**(30) Priority: **13.05.2021 IT 202100012302**(54) **METHOD FOR RESOLING A SHOE, AND SHOE**

(57) A method for resoling a shoe (10) manufactured by means of a method for the manufacture of shoes (10) which comprises a step of manufacture of a midsole (2) by co-molding a main body (3) made of expanded EVA which has an Asker C hardness comprised between 40 and 80 or a Shore A hardness comprised between 40 and 80 on a sheet-like body (4) made of compact EVA which has an Asker A hardness comprised between 75 and 100 or a Shore A hardness comprised between 60 and 100, a step of stable mating of the midsole (2) to a

sole (5) at the face (2b) formed by the sheet-like body (4) and to an upper (6) at the face (2a) formed by the main body (3). The step of resoling the shoe (10) manufactured according to the method for the manufacture of shoes (10) comprises a step of heating the sole (5) until the sheet-like body reaches a temperature comprised between 65°C and 85°C, a step of separating the sheet-like body (4) from the main body (3), and a step of stable application of at least one new sole (5a) to the main body (3).

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Description

[0001] The present invention relates to a method for resoling a shoe and to a shoe.

[0002] With reference to shoes, such as trekking or climbing boots, it is noted that it is rather usual to consider their resoling during their useful life.

[0003] In fact, if one observes that despite the wear of the sole that compromises its use, the upper is still intact and well maintained, one can consider resoling, which can provide for the replacement of the entire sole (therefore both of the tread and of the so-called midsole) or of the tread alone.

[0004] In any case, the removal and replacement of the tread alone can be performed effectively only if the shoe has a midsole made of compact material, such as for example a PU (plastic polyurethane) or a so-called "microporous" one, a material of the type of EVA manufactured in sheets and having greater hardness.

[0005] Patent FR2957496 describes a method for resoling a shoe, particularly with a sole made of elastomer, which comprises the following successive steps, which consist in: a) heating the sole to a temperature comprised between approximately 40°C and 140°C, depending on the nature of the adhesive material that bonds the superimposed sole layers, so as to soften the bonding agent, b) after the softening of the adhesive material that bonds the sole layers, detaching the lower layer from the upper layer, which corresponds to the worn tread, c) brushing and cleaning with a solvent the lower part of the upper layer of the sole, d) applying a new layer of adhesive material at least on the lower side of the upper layer and/or on the upper face of a new tread, e) reactivating the adhesive material applied in step d) by heating, preferably between 35 and 90°C, depending on the nature of the adhesive material, f) positioning the new tread on the lower side of the upper sole layer, g) pressing together the two sole layers.

[0006] If instead the midsole is made of low-density expanded EVA (ethylene vinyl acetate), it is practically impossible to remove the tread (which is bonded with adhesive, during manufacture, to the downward-facing surface of the midsole), since any removal causes the breakage and shattering of the EVA midsole.

[0007] While this drawback, in certain types of shoes, such as trekking or climbing boots, is solved by providing for the replacement of the sole in its entirety, i.e., of both the tread and the midsole, in shoes with less structure, such as trekking shoes, approach shoes, hiking shoes or mountain running shoes it is in practice impossible to perform resoling according to the best manufacturing practice.

[0008] Moreover, the shoes that more often use expanded EVA as material for providing the midsole are indeed shoes of this type.

[0009] Solutions are also known in which the midsole is provided in multiple layers, possibly of different hardness.

[0010] In this regard, patent application US2020/390188 describes a shoe in which the midsole is constituted by two platforms: a first platform made of closed-cell foam having different hardness, for example between 50 and 60 Asker C, and a second platform with closed cells having hardness comprised between 35 and 45 Asker C.

[0011] Actually, however, these solutions provide for manufacturing the various layers with different hardness in order to obtain synergy during use, furthermore combining hardness with optional recesses in order to obtain a correct shock absorption.

[0012] The aim of the present invention is to provide a method for resoling a shoe and a shoe which are capable of improving the background art in one or more of the aspects indicated above.

[0013] Within this aim, an object of the invention is to provide a method for resoling a shoe that allows to perform a resoling that is effective and according to best practices also on any shoe with a midsole made of expanded EVA.

[0014] Another object of the invention is to provide a shoe that can be resoled easily.

[0015] A further object of the invention is to reduce the number of components to be replaced during the resoling process, consequently reducing costs and waste material.

[0016] Not least object of the invention is to provide a method for resoling a shoe and a shoe that are highly reliable, relatively easy to provide and at competitive costs.

[0017] This aim, these objects and others which will become better apparent hereinafter are achieved by a method for resoling a shoe and by a shoe according to the independent claims, optionally having one or more of the characteristics of the dependent claims.

[0018] Further characteristics and advantages will become better apparent from the description of some preferred but not exclusive embodiments of the method for resoling a shoe and of a shoe according to the invention, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a perspective view of a shoe according to the invention;

Figure 2 is an exploded view of the midsole and the sole;

Figure 3 is an exploded view of the sole used for resoling.

[0019] With reference to the figures, the present invention relates first of all to a method for resoling a shoe, generally designated by the reference numeral 10, manufactured by means of a manufacturing method which comprises a step of manufacture of a midsole 2 by co-molding a main body 3 made of expanded EVA which has an Asker C hardness comprised between 40 and 80 on a sheet-like body 4 made of compact EVA which has

an Asker A hardness comprised between 70 and 100 and more preferably between 75 and 100.

[0020] According to a further aspect, a main body 3 made of expanded EVA has a Shore A hardness comprised between 40 and 80, while the sheet-like body 4 made of compact EVA has a Shore A hardness comprised between 60 and 100.

[0021] More generally, the midsole 2 is obtained by co-molding a main body 3 made of expanded material on a sheet-like body 4 made of compact material. More generally, the midsole 2 is obtained by co-molding a main body 3 made of expanded material which has an Asker C hardness comprised between 40 and 80 on a sheet-like body 4 made of compact material which has an Asker A hardness comprised between 70 and 100 and more preferably comprised between 75 and 100.

[0022] The step of manufacture of the midsole 2 comprises a step of application, on the face of the sheet-like body 4 made of compact EVA, of a hot-melt bonding agent adapted to facilitate the adhesion of the main body 3 made of expanded EVA.

[0023] Preferably, a main body 3 made of expanded EVA has an Asker C hardness comprised between 50 and 60 and the sheet-like body 4 made of EVA which has an Asker A hardness comprised between 80 and 85.

[0024] Preferably, a main body 3 made of expanded EVA has a Shore A hardness comprised between 50 and 65, while the sheet-like body 4 made of compact EVA has a Shore A hardness comprised between 70 and 80.

[0025] The step of co-molding of the main body 3 on the sheet-like body 4, both made of EVA albeit with different hardness (and therefore densities), allows to obtain a monolithic midsole 2 in which the adhesion between the main body 3 and the sheet-like body 4 is increased further by the chemical compatibility between the materials.

[0026] The method then provides for a step of stable mating of the midsole 2, at the face 2b formed by the sheet-like body 4, to a sole 5 and then a step of stable mating of the midsole 2, at its face 2a formed by the main body 3, to an upper 6.

[0027] Advantageously, the step of stable mating of the midsole 2 to the sole 5 at the face 2b formed by the sheet-like body 4 comprises an adhesive bonding step.

[0028] Preferably, the sheet-like body 4 has a thickness comprised between 0.1 mm and 2 mm and preferably between 0.7 mm and 1.5 mm.

[0029] According to an important aspect, the present invention relates to a method for resoling a shoe 10 manufactured by means of the manufacturing method described above.

[0030] The resoling method comprises a step of heating the sole 5, so as to bring the sheet-like body 4 to a temperature comprised between 65°C and 85°C, and a step of separation of the sheet-like body 4 from the main body 3.

[0031] This heating step for providing the resoling method is performed when the sole 5 is worn or its use

is compromised.

[0032] A step of stable application of at least one new sole 5a to the main body 3 is then provided.

[0033] Preferably, there is a step of stable association of the new sole 5a with a new sheet-like body 4a.

[0034] The step of stable application of at least one new sole 5a to the main body 3 comprises an adhesive bonding step.

[0035] Advantageously, the step of stable association of the new sole 5a with a new sheet-like body 4a comprises an adhesive bonding step.

[0036] According to a further aspect, the present invention relates to a shoe 10 comprising a midsole 2 stably mated on opposite sides to an upper 6 and to a sole 5.

[0037] The midsole 2 comprises a main body 3 made of expanded EVA which has an Asker C hardness comprised between 40 and 80 and a sheet-like body 4 made of compact EVA which has an Asker A hardness comprised between 75 and 100.

[0038] According to a further aspect, the main body 3 made of expanded EVA has a Shore A hardness comprised between 40 and 80, while the sheet-like body 4 made of compact EVA has a Shore A hardness comprised between 60 and 100.

[0039] More generally, the midsole 2 is obtained by co-molding a main body 3 made of expanded material on a sheet-like body 4 made of compact material.

[0040] The midsole 2 is mated to the upper 6, at the face 2a formed by the main body 3, and to the sole 5 at the face 2b formed by the sheet-like body 4.

[0041] In particular, the main body 3 and the sheet-like body 4 are obtained by co-molding.

[0042] In greater detail, the midsole 2 is configured so as to allow the separation of the sheet-like body 4 from the main body 3 following the heating of the sheet-like body 4 to a temperature comprised between 65°C and 85°C.

[0043] The present invention provides a shoe which, despite having the midsole made of expanded EVA, can be resoled by removing the sole.

[0044] Specifically, by providing the midsole 2 by co-molding a main body 3 made of expanded EVA and a sheet-like body made of compact EVA (which is then stably associated with the sole 5 for example by adhesive bonding) one obtains a solution that allows, if it is necessary to resole the shoe, to remove easily from the main body 3, by heating, the sheet-like body 4 so as to then allow the stable application of a new sole 5a (optionally associated with a new sheet-like element 4a).

[0045] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the accompanying claims; all the details may furthermore be replaced with other technically equivalent elements.

[0046] Thus, for example, it is possible to provide for the possibility to resole the shoe further, by providing for example the possibility to apply stably the new sole 5a (by means of particular adhesives and/or thermal proc-

esses) so as to facilitate its subsequent removal.

[0047] In practice, the materials used, so long as they are compatible with the specific use, as well as the contingent shapes and dimensions, may be any according to the requirements and the state of the art.

[0048] The disclosures in Italian Patent Application no. 102021000012302, from which this application claims priority, are incorporated herein by reference.

[0049] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A method for resoling shoes (10) manufactured by means of a method comprising a step for the manufacture of a midsole (2) by co-molding a main body (3) made of expanded EVA which has an Asker C hardness comprised between 40 and 80 or a Shore A hardness comprised between 40 and 80 on a sheet-like body (4) made of compact EVA which has an Asker A hardness comprised between 70 and 100 or a Shore A hardness comprised between 60 and 100, a step of stable mating of said midsole (2) to a sole (5) at the face (2b) formed by said sheet-like body (4), and to an upper (6) at the face (2a) formed by said main body (3), a step of resoling said shoe (10) manufactured according to said method for the manufacture of shoes (10) being provided which comprises a step of heating said sole (5) until said sheet-like body reaches a temperature comprised between 65°C and 85°C, a step of separating said sheet-like body (4) from said main body (3), and a step of stable application of at least one new sole (5a) to said main body (3).
2. The method according to claim 1, **characterized in that** said sheet-like body (4) made of compact EVA has an Asker A hardness comprised between 70 and 100.
3. A method for resoling shoes (10) manufactured by means of a method for the manufacture of shoes (10) comprising a step for the manufacture of a midsole (2) by co-molding a main body (3) made of expanded material which has an Asker C hardness comprised between 40 and 80 or a Shore A hardness comprised between 40 and 80 on a sheet-like body (4) made of compact material which has an Asker A hardness comprised between 70 and 100 or a Shore A hardness comprised between 60 and 100, a step of stable mating of said midsole (2) to a sole (5) at the face (2b) formed by said sheet-like body (4), and to an upper (6) at the face (2a) formed by said main body (3), a step of resoling said shoe (10) manufactured according to said method for the manufacture of shoes (10) being provided which comprises a step of heating said sole (5) until said sheet-like body reaches a temperature comprised between 65°C and 85°C, a step of separating said sheet-like body (4) from said main body (3), and a step of stable application of at least one new sole (5a) to said main body (3).
4. The method according to one or more of the preceding claims, **characterized in that** said step of stable mating of said midsole (2) to said sole (5) at said face (2b) formed by said sheet-like body (4) comprises an adhesive bonding step.
5. The method according to one or more of the preceding claims, **characterized in that** said sheet-like body (4) has a thickness comprised between 0.1 mm and 2 mm.
6. The method according to one or more of the preceding claims, **characterized in that** it comprises a step of stable association of said new sole (5a) with a new sheet-like body (4a).
7. The method according to one or more of the preceding claims, **characterized in that** said step of stable application of at least one new sole (5a) to said main body (3) comprises an adhesive bonding step.
8. The method according to one or more of the preceding claims, **characterized in that** said step of stable association of said new sole (5a) with a new sheet-like body (4a) comprises an adhesive bonding step.
9. A shoe (10) comprising a midsole (2) stably mated on opposite sides to an upper (6) and a sole (5), **characterized in that** said midsole comprises a main body (3) made of expanded EVA which has an Asker C hardness comprised between 40 and 80 or a Shore A hardness comprised between 40 and 80 and a sheet-like body (4) made of compact EVA which has an Asker A hardness comprised between 70 and 100 or a Shore A hardness comprised between 60 and 100, said midsole (2) being mated to said upper (6), at the face (2a) formed by said main body (3), and to said sole (5) at the face (2b) formed by said sheet-like body (4), said midsole (2) being configured so as to allow the separation of said sheet-like body (4) from said main body (3) as a consequence of the heating of said sheet-like body (4) to a temperature comprised between 65°C and 85°C.
10. The shoe (10) according to claim 9, **characterized in that** said main body (3) and said sheet-like body

(4) are obtained by co-molding.

11. The shoe (10) according to claim 9, **characterized in that** said sheet-like body (4) made of EVA has an Asker A hardness comprised between 75 and 100. 5
12. A shoe (10), comprising a midsole (2) stably mated on opposite sides to an upper (6) and to a sole (5), **characterized in that** said midsole (2) comprises a main body (3) made of expanded material which has an Asker C hardness comprised between 40 and 80 or a Shore A hardness comprised between 40 and 80 and a sheet-like body (4) made of compact material which has an Asker A hardness comprised between 70 and 100 or a Shore A hardness comprised between 60 and 100, said midsole (2) being mated to said upper (6), at the face (2a) formed by said main body (3), and to said sole (5) at the face (2b) formed by said sheet-like body (4), said midsole (2) being configured so as to allow the separation of said sheet-like body (4) from said main body (3) as a consequence of the heating of said sheet-like body (4) to a temperature comprised between 65°C and 85°C. 10 15 20 25

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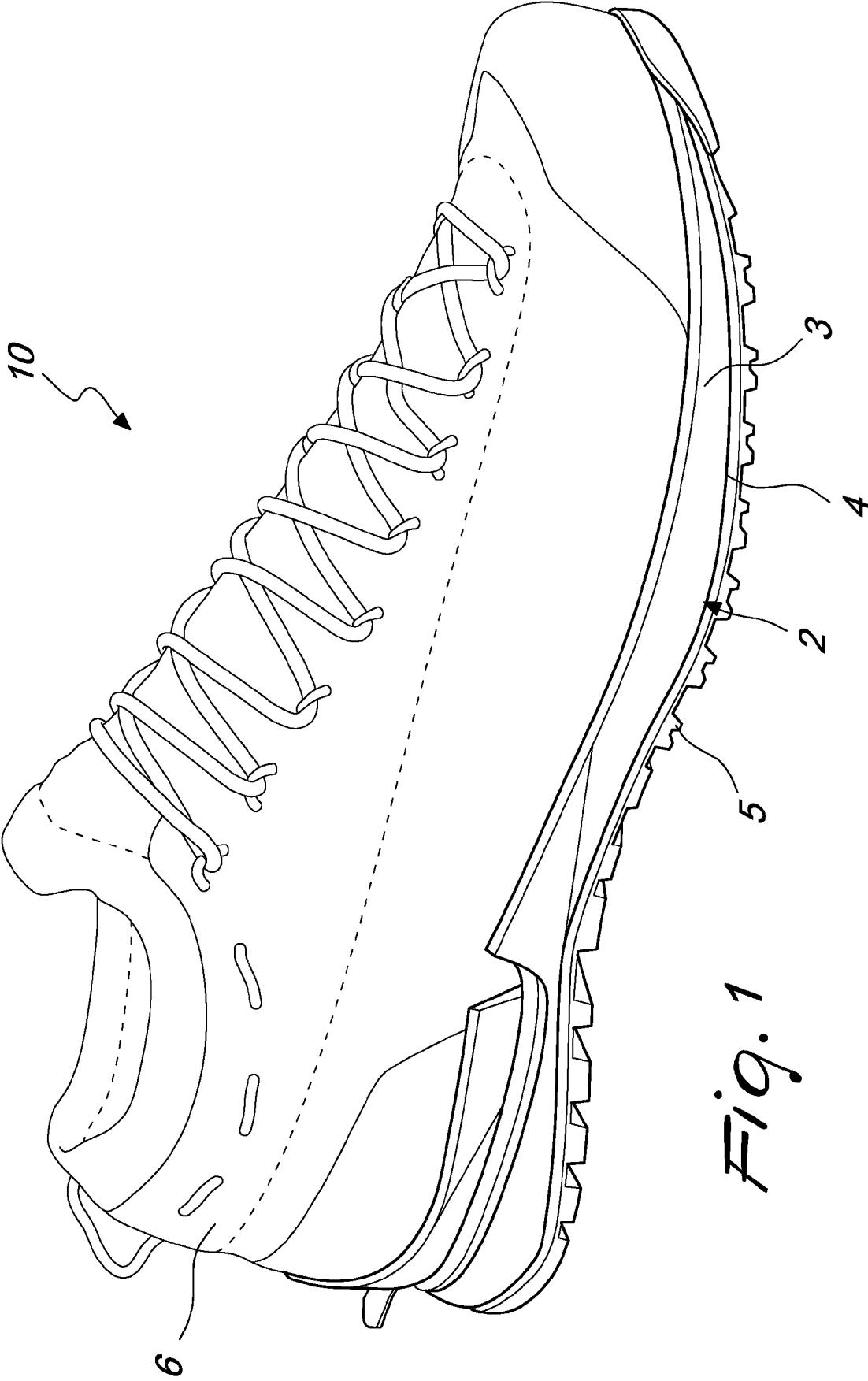
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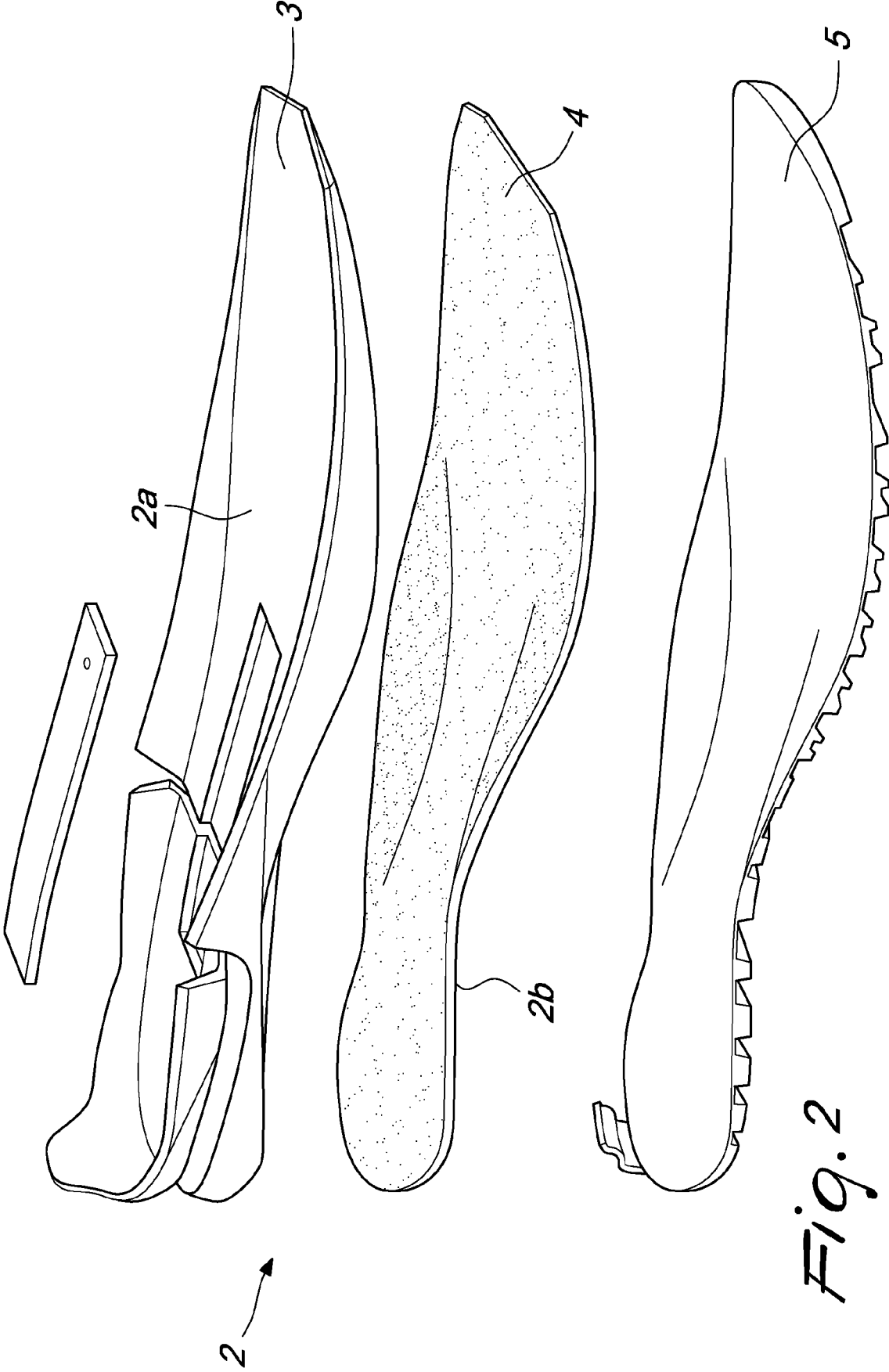


Fig. 2

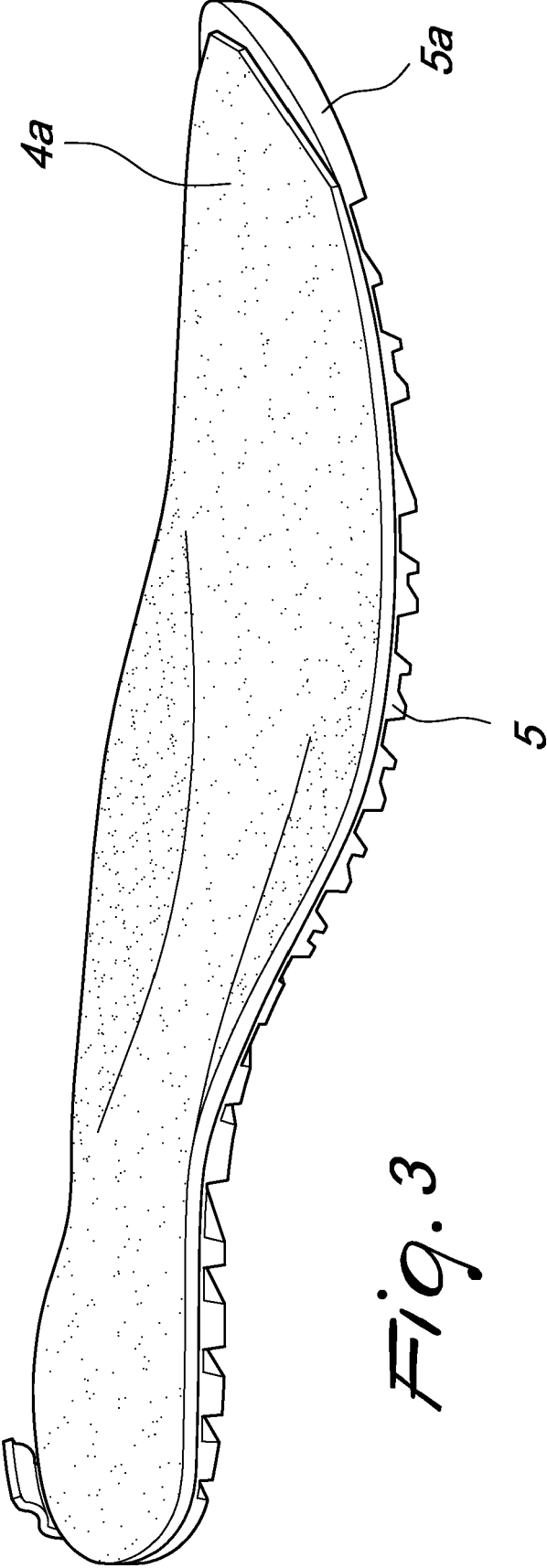
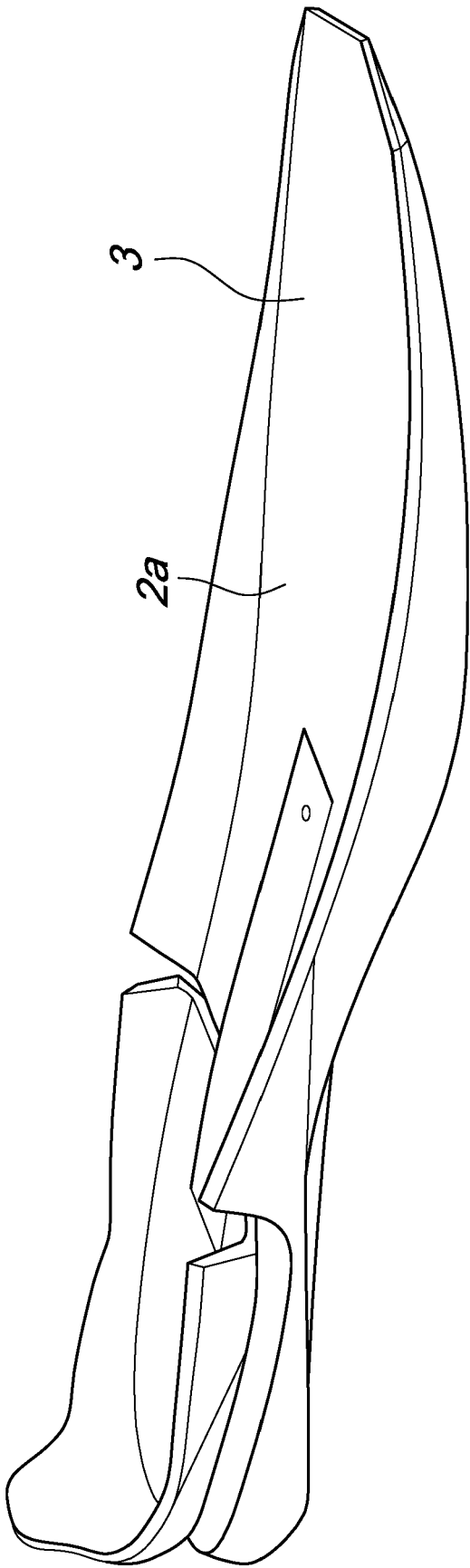


Fig. 3



EUROPEAN SEARCH REPORT

Application Number

EP 22 17 3089

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EPO FORM 1503 03.82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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A	* page 3, line 28 - page 4, line 19; figures 3,4 *	9-12	A43B1/00 A43B13/36
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Y	* paragraphs [0008], [0025], [0026], [0032] - [0034]; figures 1-5 *	1-8	
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			TECHNICAL FIELDS SEARCHED (IPC)
			A43B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 30 August 2022	Examiner Baysal, Kudret
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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30-08-2022

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REFERENCES CITED IN THE DESCRIPTION

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