

(19)



(11)

EP 2 873 338 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
20.05.2015 Bulletin 2015/21

(51) Int Cl.:
A43B 1/00 (2006.01) **A43B 3/02 (2006.01)**
A43B 7/12 (2006.01) **B29D 35/06 (2010.01)**

(21) Application number: **14191822.7**

(22) Date of filing: **05.11.2014**

(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

• **Perin, Roberto**
36078 Valdagno VI (IT)
• **Perin, Oriano Giovanni**
36078 Valdagno VI (IT)

(74) Representative: **Modiano, Micaela Nadia et al**
Modiano & Partners (IT)
Via Meravigli, 16
20123 Milano (IT)

(30) Priority: **14.11.2013 IT PD20130307**

(71) Applicant: **Perin SpA**
36076 Recoaro Terme (VI) (IT)

(72) Inventors:
• **Perin, Lorenzo Giuseppe**
36078 Valdagno VI (IT)

Remarks:

Amended claims in accordance with Rule 137(2) EPC.

(54) **Shoe with luminous effect**

(57) A shoe (10) with luminous effect, which comprises a lighting device (11) which is enclosed in a protective sealing enclosure (14) that is embedded in the plastic

material of a sole part (12) that is at least partially permeable to light and at least partially visible from the outside.

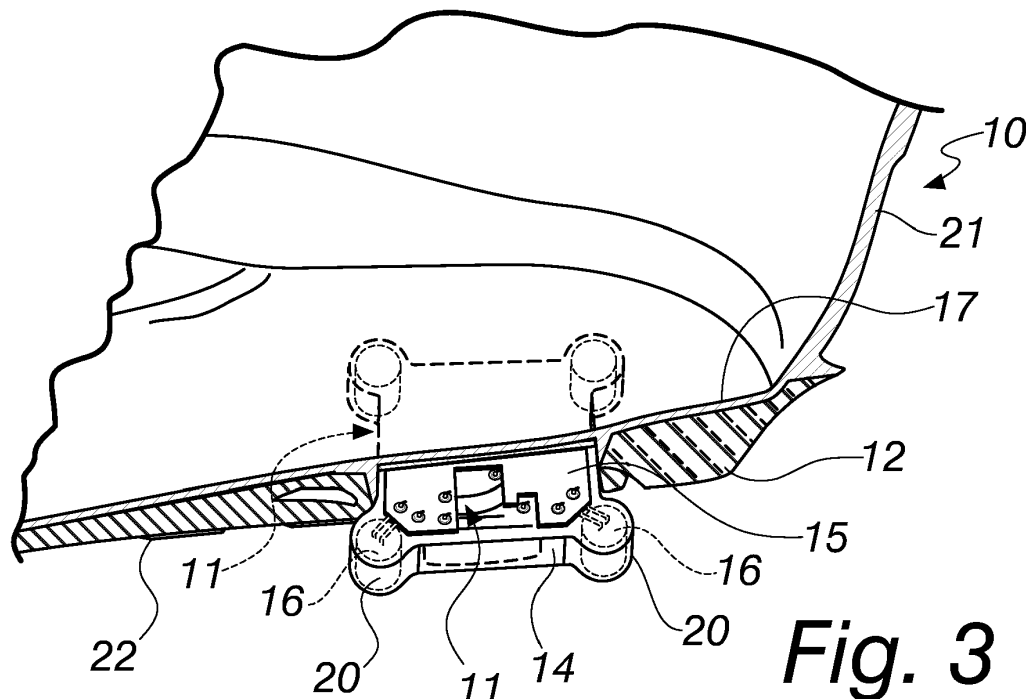


Fig. 3

EP 2 873 338 A1

Description

[0001] The present invention relates to a shoe with luminous effect.

[0002] Rain boots, particularly but not exclusively for children, are currently known which in order to stimulate the interest of the potential buyer and to respond to the requirements of fashion are marketed in different colors or with particular decorations.

[0003] Shoes, particularly sports or casual shoes for children, are also known which have a particular luminous effect due to the propagation of light outside the sole.

[0004] This effect is due to the presence of lights, typically of the LED type, which are connected to a battery-based power source inserted manually in the sole of the shoe, usually under the insole, in a seat provided as a consequence of the molding of the sole or of the shoe proper and covered by the insole.

[0005] This type of shoe suffers drawbacks.

[0006] The LED-based luminous device in fact can be easily reached and tampered with and therefore can be dangerous especially for children.

[0007] Moreover, a luminous device inserted in the manner described above in the shoe is not perfectly waterproofed, since it can be subject to moisture due to perspiration of the foot or infiltrations of water. Consequently, the noxious substances contained in less than perfectly insulated batteries may propagate until they make contact with the foot.

[0008] The aim of the present invention is to provide a shoe with a particular luminous effect that is due to the presence of a lighting device that is installed in the sole and not removable, particularly by children, ensuring higher safety levels than shoes of the known type.

[0009] Within this aim, an object of the invention is to provide a shoe with luminous effect wherein the lighting device be insulated in a waterproof manner, preserving its operation and ensuring higher levels of safety for the health of the user.

[0010] Another object of the invention is to propose a shoe with luminous effect that is structurally simple and can be manufactured with known technologies and with low costs.

[0011] This aim, as well as these and other objects that will become better apparent hereinafter, are achieved by a shoe with luminous effect, characterized in that it comprises a lighting device enclosed in a protective sealing enclosure embedded in the plastic material of a sole part that is at least partially permeable to light and at least partially visible from the outside.

[0012] Further characteristics and advantages of the invention will become better apparent from the description of a preferred but not exclusive embodiment of the shoe according to the invention, illustrated by way of non-limiting example in the accompanying drawings, wherein:

invention;

Figure 2 is a bottom plan view of the shoe according to the invention;

Figure 3 is a sectional view of a part of the shoe according to the invention;

Figure 4 is a sectional view of another part of the shoe according to the invention;

Figure 5 is a bottom plan view of another shoe model according to the invention.

[0013] With reference to the figures, the shoe according to the invention is designated generally by the reference numeral 10 and in the illustrated example consists of a rain boot for children.

[0014] Figures 3 and 4 show two corresponding halves of a shoe 10 shown in cross-section.

[0015] By viewing Figure 3, it is evident that a lighting device 11, enclosed in a protective sealing enclosure 14 embedded in the plastic material of a sole part 12 that is permeable to light, is part of the shoe 10.

[0016] The lighting device 11 is of the LED type and operation depends on vibrations which, transmitted during walking, light the LEDs.

[0017] The sole 13 of the shoe 10 is made of plastic material and in particular the sole part 12 is advantageously overmolded on the lighting device 11 enclosed in the protective enclosure 14.

[0018] Conveniently, the protective enclosure 14 is transparent and resistant to pressure and to the injection-molding temperature. The protective enclosure 14 is made of transparent plastic material and can be replaced equivalently with a container having the same characteristics.

[0019] In greater detail, the lighting device 11 has a central body 15 around which LEDs 16 are arranged and is overmolded with the material of an insole 17 of the sole 13, except for the regions in which the LEDs 16 are present, being accommodated in a seat 18 that lies below the insole 17 and is integral therewith. The seat 18 therefore is provided in one piece with the insole 17 during the same injection molding step. In particular, the lighting device 11 is arranged conveniently in the heel region, where the thickness of the sole part 12 is greater and the sole 13 does not flex while walking.

[0020] The sole part 12 is overmolded on the insole 17, wrapping around the seat 18, and in this manner the lighting device 11 is substantially immersed in the sole part 12.

[0021] As an alternative, the shoe 10 can be manufactured by overmolding the insole 17 on the sole part 12.

[0022] As shown clearly in Figure 4, the seat 18 is provided with openings 19. Said openings are four in number, i.e., the two shown in the figure and two more on the other shoe half 10 shown in Figure 3, in which they are not visible because they are covered by the lighting device 11.

[0023] Protrusions 20 of the central body 15 protrude from the openings 19, are mutually equidistant and sup-

Figure 1 is a side view of the shoe according to the

port the LEDs 16. Such LEDs are arranged advantageously substantially on four opposite corners in order to obtain a substantially uniform light distribution within the sole part 12.

[0024] The insole 17 is provided in one piece with the upper 21 of the shoe 10, which thus comprises, in the illustrated example, also the quarter of the boot, since they are provided in a single injection-molding step and in a single mold.

[0025] As an alternative, only the lower part of the upper can be injection-molded and portions of quarter made of other materials can be sewn thereto, as occurs for example in après-ski boots.

[0026] The sole part 12 is instead overmolded on the insole 17, with the seat 18 integral therewith (as already anticipated, as an alternative the insole 17 can be overmolded on the sole part 12) and on a tread 22 and conveniently is made of a single plastic material that makes it entirely permeable to light. In the illustrated example, it in fact constitutes the midsole of the shoe 10; however, in other models it can constitute only a portion thereof that is permeable to light at the heel.

[0027] Figure 5 is a bottom plan view of another rain boot model, in which the sole part 12 that is permeable to light, in this case also the midsole, is less covered by the tread 22 than the previous example, the bottom plan view of which is shown in Figure 2.

[0028] Operation of the boot according to the invention is as follows.

[0029] The lighting device 11 is sensitive to the vibrations transmitted by walking, which therefore light the LEDs 16. Even with small movements of the foot, the lighting device 11 emits intermittent light beams.

[0030] The particular shape of the lighting device 11 allows to distribute the light within the sole part 12 in a substantially uniform manner in all directions.

[0031] The example shown describes and illustrates a rain boot, but the same inventive concept can be applied for the production of footwear in general, such as also mules, shoes and après-ski boots.

[0032] It should be noted that following the overmoldings, the tread, the sole part or midsole, and the insole are mutually associated so as to constitute the sole substantially in one piece, completely insulating the lighting device embedded therein.

[0033] In this manner, the possibility that infiltrations of water or sweat might reach the lighting device, compromising its operation or causing the propagation of noxious substances contained in the batteries, or that the device is tampered with, is excluded.

[0034] The lighting device in fact can be reached only after destroying the shoe.

[0035] In practice it has been found that the invention achieves the intended aim and objects, since by achieving perfect insulation of the lighting device it ensures higher safety levels than shoes of the known type, especially for children, in addition to making it impermeable, preserving its operation.

[0036] Another advantage of the shoe according to the invention is that it achieves diffuse lighting of the sole part, visible from the outside by way of the particular arrangement of the LEDs in the lighting device, which achieves a new particular luminous effect that is capable of stimulating the interest and curiosity of the potential buyer also for rain boots or for après-ski boots.

[0037] Moreover, the shoe is structurally simple and can be manufactured with known technologies and with low costs. During the production of the shoe, the lighting device is in fact inserted directly in the mold, with a lower labor cost.

[0038] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims; all the details may further be replaced with other technically equivalent elements.

[0039] 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 requirements and to the state of the art.

[0040] The disclosures in Italian Patent Application No. PD2013A000307 from which this application claims priority are incorporated herein by reference.

[0041] 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 shoe (10) with luminous effect, **characterized in that** it comprises a lighting device (11) which is enclosed in a protective sealing enclosure (14) that is embedded in the plastic material of a sole part (12) that is at least partially permeable to light and at least partially visible from the outside.
2. The shoe according to claim 1, **characterized in that** said lighting device (11) is provided with a central body (15), around which LEDs (16) are arranged, and is overmolded with the material of an insole (17), except for the regions in which said LEDs (16) are located, being accommodated in a seat (18) that lies below said insole (17) and is integral therewith, said sole part (12) wrapping around said seat (18).
3. The shoe according to claim 2, **characterized in that** said seat (18) is provided with openings (19) from which protrusions (20) of said central body (15) protrude which are mutually equidistant and support said LEDs (16).
4. The shoe according to one or more of the preceding

claims, **characterized in that** said insole (17) is provided in one piece with an upper (21) of said shoe (10), said insole (17) and said upper (21) being provided in a single step of injection of plastic material.

5. The shoe according to one or more of the preceding claims, **characterized in that** said sole part (12) is overmolded on said insole (17), with said seat (18) integral therewith, and on a tread (22).
6. The shoe according to one or more of the preceding claims, **characterized in that** said insole (17) is overmolded on said sole part (12).

Amended claims in accordance with Rule 137(2) EPC.

1. A shoe (10) with luminous effect, comprising a lighting device (11) which is enclosed in a protective sealing enclosure (14) that is embedded in the plastic material of a sole part (12) that is at least partially permeable to light and at least partially visible from the outside, said lighting device (11) being provided with a central body (15), around which LEDs (16) are arranged, said protective sealing enclosure (14) of said lighting device (11) being accommodated, except for the regions in which the LEDs (16) are present, in a seat (18) that lies below an insole (17), obtained by injection-molding of plastic material of a part of said shoe (10).
2. The shoe according to claim 1, **characterized in that** the material of said insole (17) is overmolded on said central body (15), except for the regions in which said LEDs (16) are located, being accommodated in said seat (18) that lies below said insole (17) and is integral therewith, said sole part (12) wrapping around said seat (18).
3. The shoe according to claim 2, **characterized in that** said seat (18) is provided with openings (19) from which protrusions (20) of said central body (15) protrude which are mutually equidistant and support said LEDs (16).
4. The shoe according to one or more of the preceding claims, **characterized in that** said insole (17) is provided in one piece with an upper (21) of said shoe (10), said insole (17) and said upper (21) being provided in a single step of injection of plastic material.
5. The shoe according to one or more of the preceding claims 1 to 3, **characterized in that** said insole (17) is provided in one piece with an upper (21) of the shoe (10), said insole (17) and a lower part of said upper (21) being provided in a single step of injection of plastic material.

6. The shoe according to one or more of the preceding claims, **characterized in that** said sole part (12) is overmolded on said insole (17), with said seat (18) integral therewith, and on a tread (22).

7. The shoe according to one or more of the preceding claims, **characterized in that** said insole is overmolded on said sole part, in the plastic material of which is embedded said lighting device (11) enclosed in said protective sealing enclosure (14).

8. The shoe according to one or more of the preceding claims, **characterized in that** said sole part (12) is overmolded on the insole (17), with the seat (18) integral therewith.

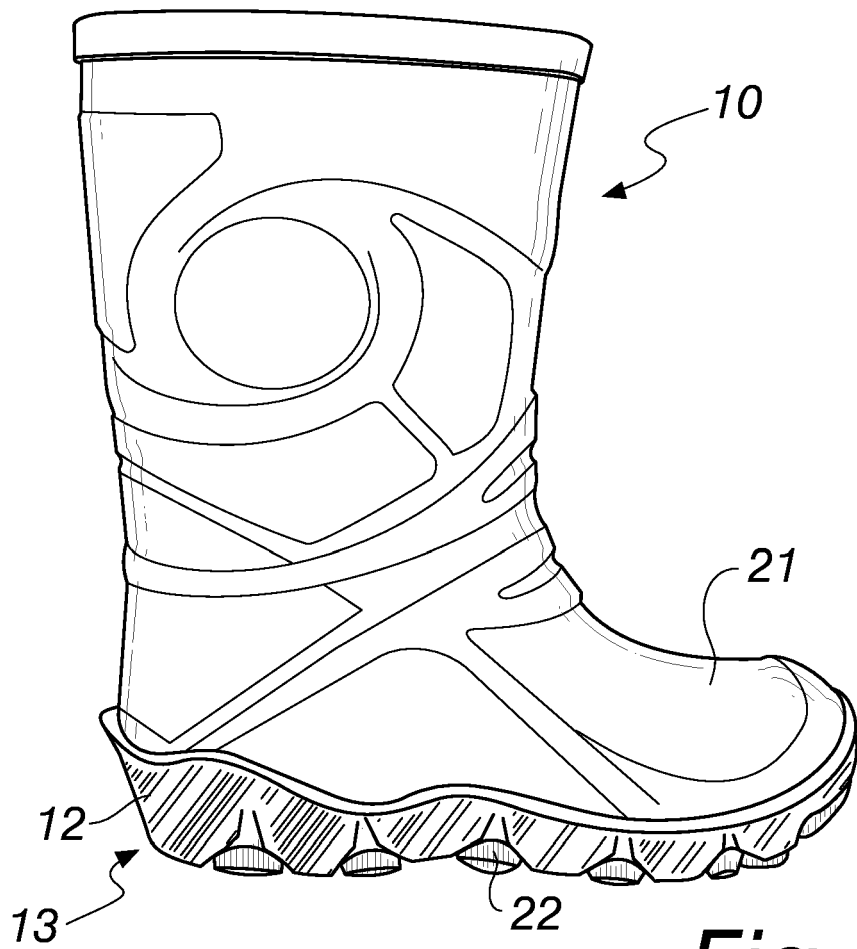


Fig. 1

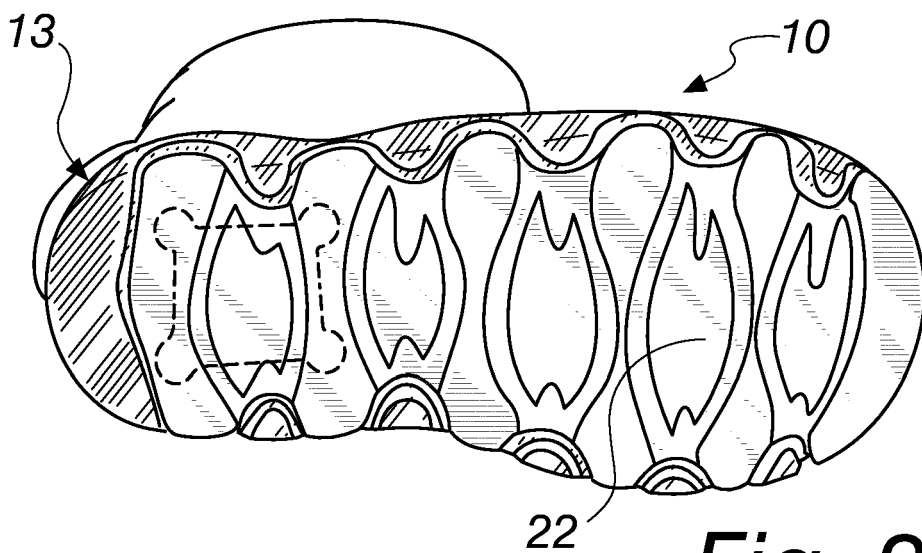
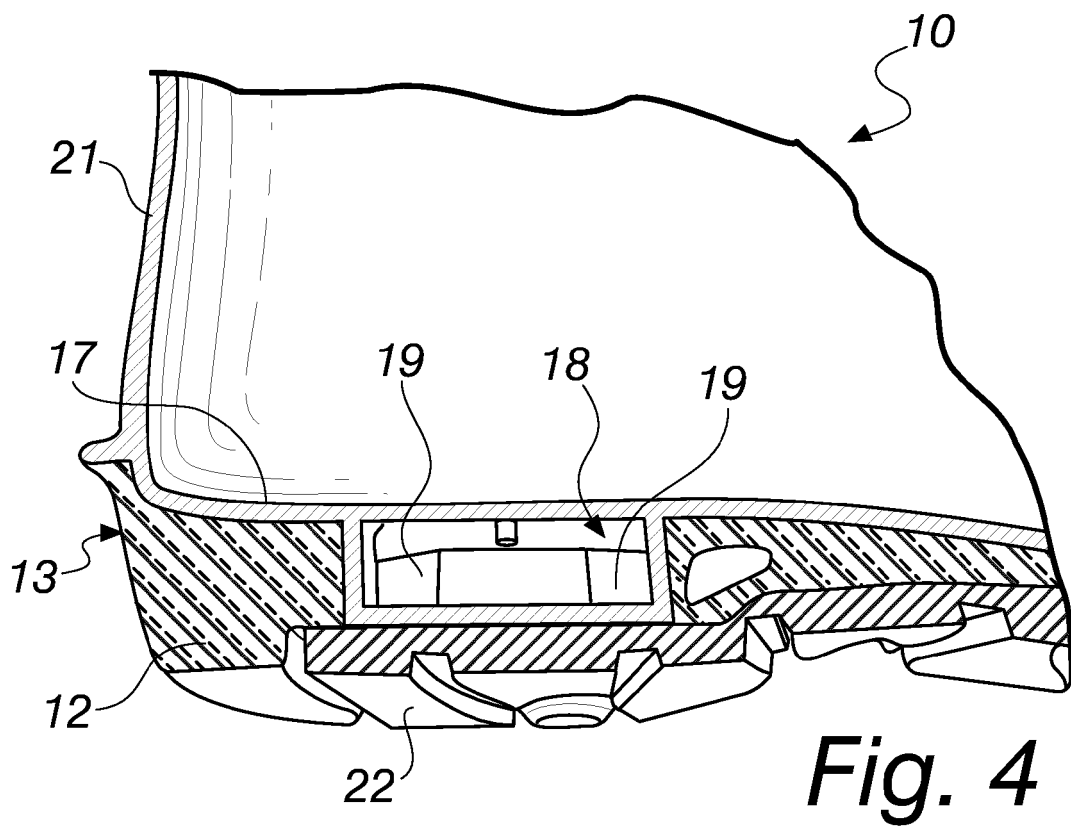
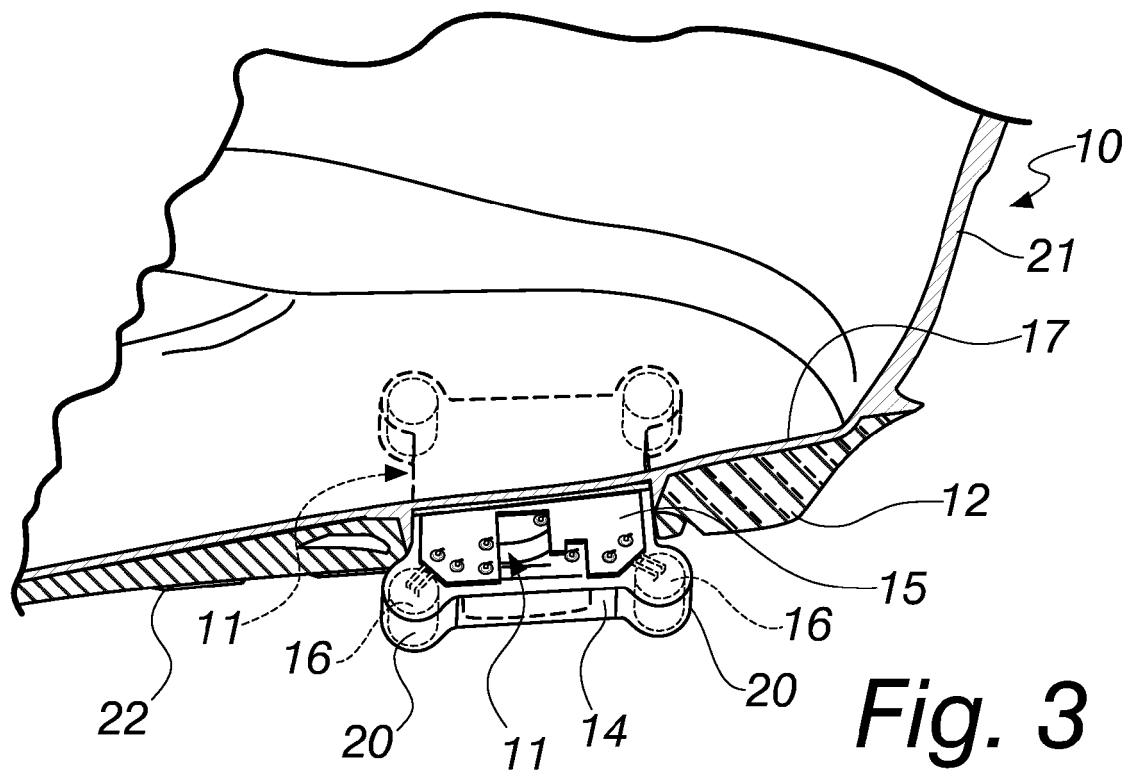


Fig. 2



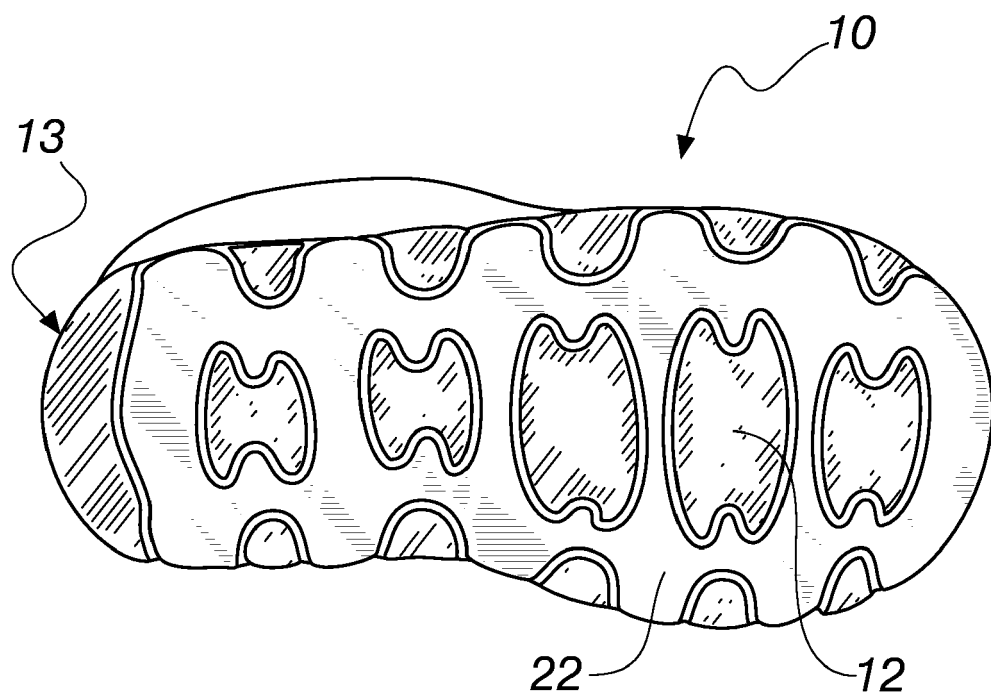


Fig. 5



EUROPEAN SEARCH REPORT

Application Number
EP 14 19 1822

5

10

15

20

25

30

35

40

45

50

55

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2007/205535 A1 (VITULLI PARDO [CA]) 6 September 2007 (2007-09-06)	1,6	INV.
A	* paragraphs [0024] - [0026]; figures * * paragraphs [0031] - [0034] *	2-5	A43B1/00 A43B3/02 A43B7/12 B29D35/06
X	US 5 419 061 A (BARROCAS JOSE E [US]) 30 May 1995 (1995-05-30) * column 2, line 43 - column 4, line 3; figures *	1,5	
A	US 2008/005935 A1 (CHYN SHU-SHYONG [TW]) 10 January 2008 (2008-01-10) * claims; figures *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			A43B B29D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 18 December 2014	Examiner Jones, Mark
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			

EPO FORM 1503 03.82 (P04C01)

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

EP 14 19 1822

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

18-12-2014

10

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2007205535 A1	06-09-2007	CA 2538631 A1	02-09-2007
		US 2007205535 A1	06-09-2007
US 5419061 A	30-05-1995	NONE	
US 2008005935 A1	10-01-2008	CN 2914720 Y	27-06-2007
		US 2008005935 A1	10-01-2008

15

20

25

30

35

40

45

50

55

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- IT PD20130307 A [0040]