



- (51) **International Patent Classification:**
A43B 9/02 (2006.01) *A43B 13/14* (2006.01)
A43B 7/08 (2006.01)
- (21) **International Application Number:**
PCT/EP2013/061114
- (22) **International Filing Date:**
29 May 2013 (29.05.2013)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
MC2012A000052 1 June 2012 (01.06.2012) IT
- (71) **Applicant:** KING - S.R.L. [IT/IT]; 20, Contrada San Domenico, I-62012 Civitanova Marche (MC) (IT).
- (72) **Inventors:** TARTUFOLI, Giovanni; 102, Via Molise, I-62012 Civitanova Marche (MC) (IT). TARTUFOLI, Giacomo; 102, Via Molise, I-62012 Civitanova Marche (MC) (IT). TARTUFOLI, Sofia; 102, Via Molise, I-62012 Civitanova Marche (MC) (IT).
- (74) **Agent:** BALDI, Claudio; 13, Viale Cavallotti, I-60035 Jesi (AN) (IT).
- (81) **Designated States** (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,

BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

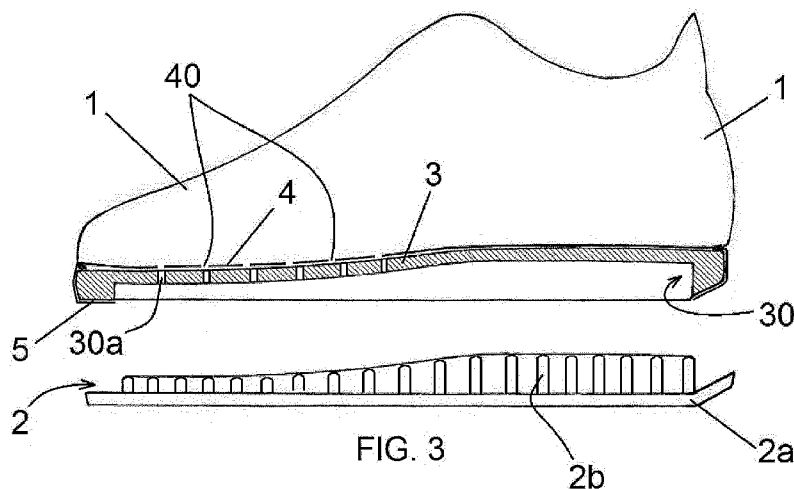
Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *of inventorship (Rule 4.17(iv))*

Published:

- *with international search report (Art. 21(3))*

(54) **Title:** SHOE INCORPORATING A WEDGE AND A SOLE



(57) **Abstract:** A shoe comprising an upper (1), a sole (2) and a wedge (3) positioned between upper (1) and sole (2); the wedge (3) is provided with a large cavity (30) opened in lower position and extending for nearly the entire length and width of the wedge, said cavity (30) being adapted to receive a portion of the sole (2) according to male-female coupling mode, said cavity (30) having suitable depth in order to obtain a reduced thickness of the wedge (3) under the foot, in such manner that the portion of wedge under the foot is capable of deforming during walking.



Description

Shoe incorporating a wedge and a sole

The present patent application for industrial invention relates to a new model of shoe characterized in that it incorporates a wedge and a sole.

“Pre-assembled” shoes are known, being produced with an old traditional manufacturing process, according to which the upper is “pre-assembled” onto an intermediate sole, with the help of a last, before being coupled with the corresponding sole.

More precisely, according to such a technique, the upper, i.e. the part of the shoe surrounding the foot on the side and on top, is prepared at first. The upper is opened in lower position, i.e. along the entire perimeter of the foot, being adapted to be assembled onto said intermediate sole, under which the walking sole is applied.

As already mentioned, the pre-assembly of the upper onto the intermediate sole is made with the help of a last (consisting in a model that reproduces the three-dimensional shape of a foot), whereon the upper is inserted. Then, the lower edges of the upper are ironed, turned up and fixed under the borders of said intermediate sole, which is previously centered and fixed in the center of the foot of said last. Finally, the sole is glued and sewn under said intermediate sole.

With the arrival of bottoms obtained from molding plastic or rubber materials, such as for example polyurethane or thermoplastic rubber, shoe designers have been able to give the strangest and most extravagant shape to the sole, sometimes with very high thickness, given the low specific weight and high elasticity of said hot molded materials.

Bottoms with higher thickness are defined as wedges, and are normally provided with a high body, the upper border of which has a slightly undulating profile ascending from point to heel, whereas the walking sole normally has a planar profile, wherein the typical arch of the foot is completely missing or slightly accentuated at the most.

Evidently, the use of a wedge considerably increases the height of the person wearing the shoe, same as with typical women's shoes with high tapered heels. Nevertheless, shoes with high tapered heels are extremely uncomfortable, since they impose a forward-inclination to the foot, in which
5 the heel of the foot is raised from the ground by several centimeters (sometimes more than ten), and toes rest onto the ground.

Instead, when using a wedge-type bottom, both the heel and toes are raised from the ground by approximately the same distance, imposing a minor, almost natural forward-inclination to the foot. On the other hand, the
10 presence of said large massive wedge impairs the aesthetics of the shoe.

FR 243221 discloses a shoe that comprises a wedge, an upper and an intermediate sole positioned between wedge and upper. The wedge has a plurality of small blind lightening holes and is not provided with a large cavity adapted to receive a sole. Such a wedge is certainly not adapted to receive a
15 sole and the lightening holes of said wedge do not provide any ventilation inside the shoe.

The purpose of the present invention is to solve the drawbacks of the prior art by disclosing a shoe that incorporates a wedge and a sole, which is versatile and able to use interchangeable soles.

20 Another purpose is to disclose such a shoe incorporating a wedge and a sole, which is able to provide ventilation inside the shoe.

An additional purpose is to provide such a shoe incorporating a wedge and a sole, wherein the wedge is not visible at the observer's eyes.

These and other objectives have been achieved by the shoe of the present invention, the characteristics of which are disclosed in the first
25 independent claim, whereas preferred embodiments of the invention are disclosed in the depending claims.

The shoe of the invention comprises an upper, a sole and a wedge positioned between upper and sole.

30 The wedge has a large cavity opened in lower position and extending for nearly the entire length and width of the wedge,

The cavity of the wedge is adapted to receive a portion of the sole according to male-female coupling mode.

Said cavity of the wedge is provided with suitable depth in order to obtain a reduced thickness of the wedge under the foot, in such manner that
5 the portion of wedge under the foot is capable of being deformed during walking.

The advantages of the invention are evident, since it provides interchangeable coupling between sole and wedge.

These advantages are additionally accentuated when a shock-absorbing massaging sole is used, providing massage and shock-absorption
10 for the foot during walking.

Moreover, said advantages are further accentuated when ventilation holes are obtained in the wedge to provide for ventilation inside the shoe. In such a case the shock-absorbing massaging sole acts as pump for shoe
15 ventilation.

For explanatory reasons the description of the shoe of the invention continues with reference to the attached drawings, which only have an illustrative, not limiting value, wherein:

- Fig. 1 is a diagrammatic perspective view of the shoe of the invention;
- 20 - Fig. 2 is a sectional view of the shoe of Fig. 1 with a vertical longitudinal plane cutting the shoe from heel to point;
- Fig. 3 is a sectional view as Fig. 2 showing the sole detached from the wedge in an exploded view;
- Fig. 4 is the same as Fig. 3, except in that it shows the wedge
25 detached from the upper;
- Fig. 5 is an enlarged view of a detail of Fig. 4.

Referring to the aforementioned figures, the shoe of the invention is disclosed, being generally indicated as (A). The shoe (A) comprises an upper (1), a sole (2) and a wedge (3) positioned between upper (1) and sole (2),

30 The upper (1) is shaped as a bag. The upper (1) is closed on the bottom with a sheet (4) of suitable material, such as for example fabric or leather.

Said sheet (4) has perimeter borders (4a) and the upper has perimeter borders (1a). The perimeter borders (4a) of the sheet are preferably joined to the perimeter borders (1a) of the upper (1) by means of a first seam (C1) (see Fig. 5).

5 The upper (1) comprises a lower hanging perimeter edge (5). The perimeter edge (5) of the upper forms a perimeter skirt (G). The perimeter skirt (G) has height higher than the thickness of the wedge (3).

According to specific requirements, said perimeter skirt (G) can be made with the same material and same color as the upper (1), or with the same material and different color, or with different material and color
10 compared to the upper (1).

The perimeter skirt (G) is joined with the upper (1) by means of a second seam (C2) (see Fig. 5) that joins the perimeter edge (5) of the upper with the perimeter borders (4a and 1a) of sheet (4) and upper (1).

15 As shown in Fig. 5, the perimeter skirt (G) has an upper border (5a) that is folded in such manner to conceal said seams (C1, C2).

In any case, the perimeter edge (5) of the upper is folded, turned up and fixed, preferably glued, under the wedge (3) in order to be tightened between wedge (3) and sole (2).

20 In view of the above, when the manufacturing process of the shoe (A) is completed, the wedge (3) is covered and concealed completely by the perimeter skirt (G), which only leaves an external lateral portion of the sole (2) uncovered.

If the upper (1) is provided with a perimeter decorative band (F1), a person looking at the shoe (A) will also see a second decorative band composed of the perimeter skirt (G), which may have a different color and/or material compared to the with respect to the upper (1).
25

According to the present invention, the wedge (3) has a large cavity (30) opened in lower position and extending for nearly the entire length and width of the wedge, The cavity (30) is adapted to receive a portion of the sole (2) according to male-female coupling mode. The depth of the cavity (30) is such to obtain a reduced thickness of the wedge (3) under the sheet (4) of the
30

upper. In this way the part of wedge under the foot is capable of deforming during walking.

The sole comprises a side (2a) with suitable plate-like shape, adapted to come in contact with the ground. A plurality of soft flexible protuberances (2b) project upwards from the side (2a) of the sole. The protuberances (2b) of the sole have height equal to the depth of the cavity (30) of the wedge. In such manner the protuberances (2b) are received in the cavity (30) of the wedge.

Given the fact that the thickness of the wedge (3) is reduced, under the foot, the protuberances (2b) are adapted to deform elastically under the weight of the foot, in order to generate a shock-absorbing and micro-massaging effect during walking.

The sole (2) is advantageously obtained from injection molding of synthetic materials.

The wedge (3) is molded with light-weight, soft flexible materials, preferably polyurethane.

The wedge (3) has a plurality of vertical through holes (30a) disposed at least on the front of the foot.

The sheet (4) of the upper is provided with a plurality of vertical through holes (40) disposed at least on the front of the foot and adapted to be aligned with the through holes (30a) of the wedge.

In this way the cavity (30) of the wedge is in communication with the interior space of the shoe.

The provision of said holes (30a and 40) allows for air flow from the cavity (30) inside the shoe and vice versa, when the cavity (30) is coupled with the sole (2) because the deformation of the protuberances (2b) of the sole creates an air pumping effect inside the cavity (30) between the side (2a) of the sole and the deformable thickness of the wedge.

Evidently, during walking, the air contained in said cavity (30) of the wedge undergoes a pumping action at every step. During walking there is a first air ejection step from said cavity (30) of the wedge, with forced air

transfer inside the shoe, and a second air extraction step from the interior space of the shoe towards the cavity (30) of the wedge.

Claims

1) A shoe (A) comprising upper (1), sole (2) and wedge (3) positioned between upper (1) and sole (2),

characterized in that

said wedge (3) has a large cavity (30) opened in lower position and
5 extending for nearly the entire length and width of the wedge,

said cavity (30) being adapted to receive a portion of the sole (2) according to male-female coupling mode,

said cavity (30) having suitable depth in order to obtain a reduced thickness of the wedge (3) under the foot, in such manner that the portion of
10 wedge under the foot is capable of being deformed during walking.

2) The shoe (A) of claim 1, wherein said sole (2) comprises:

- a side (2a) with suitable plate-like shape, adapted to come in contact with the ground, and

- a plurality of soft flexible protuberances (2b) projecting upwards from
15 the side (2a) of the sole; said protuberances (2b) of the sole having height identical to the depth of the cavity (30) of the wedge in such manner to be received into the cavity (30) of the wedge; said protuberances (2b) being adapted to deform under the weight of the foot in order to generate a shock-absorbing and micro-massaging effect.

20 3) The shoe (A) of claim 1 or 2, wherein said wedge (3) is provided with a plurality of vertical through holes (30a) disposed at least on the front of the foot, in such manner that the cavity (30) of the wedge is in communication with the interior of the shoe.

4) The shoe (A) of any one of the preceding claims, wherein said upper
25 (1) is shaped as a bag and is closed on the bottom with a sheet (4) adapted to be positioned on the wedge (3).

5) The shoe (A) of claims 3 and 4, wherein said sheet (4) of the upper is provided with a plurality of vertical through holes (40) disposed at least on the front of the foot and adapted to be aligned with the through holes (30a) of
30 the wedge.

6) The shoe (A) of any one of the preceding claims, wherein:

- said upper (1) has a lower hanging perimeter edge (5) that forms a perimeter skirt (G) with height higher than the thickness of said wedge (3), in such a way to cover the wedge; and

5 - said perimeter edge (5) of the upper is folded, turned up and fixed, on the outside and under the wedge (3), leaving a portion of the external lateral surface of sole (2) visible.

7) The shoe of any one of claims 4 to 6, comprising a first seam (C1) that joins the perimeter borders (4a) of the sheet of the upper with the
10 perimeter borders (1a) of the upper.

8) The shoe of claims 6 and 7, comprising a second seam (C2) that joins said perimeter edge (5) of the upper with said perimeter borders (4a and 1a) of sheet and upper.

9) The shoe of claim 8, wherein said perimeter skirt (G) is provided
15 with upper border (5a) folded in such manner to conceal said first and second seam (C1 and C2).

1 / 2

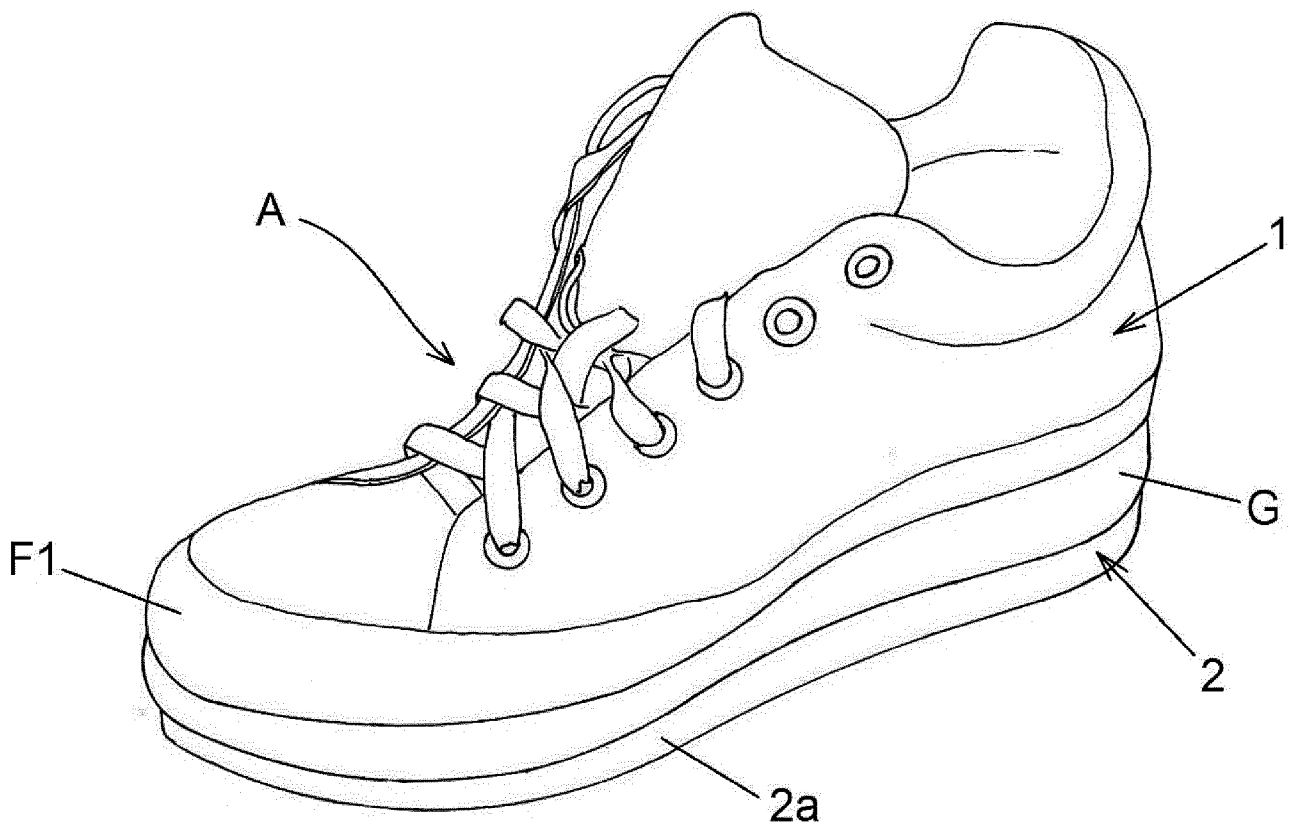


FIG. 1

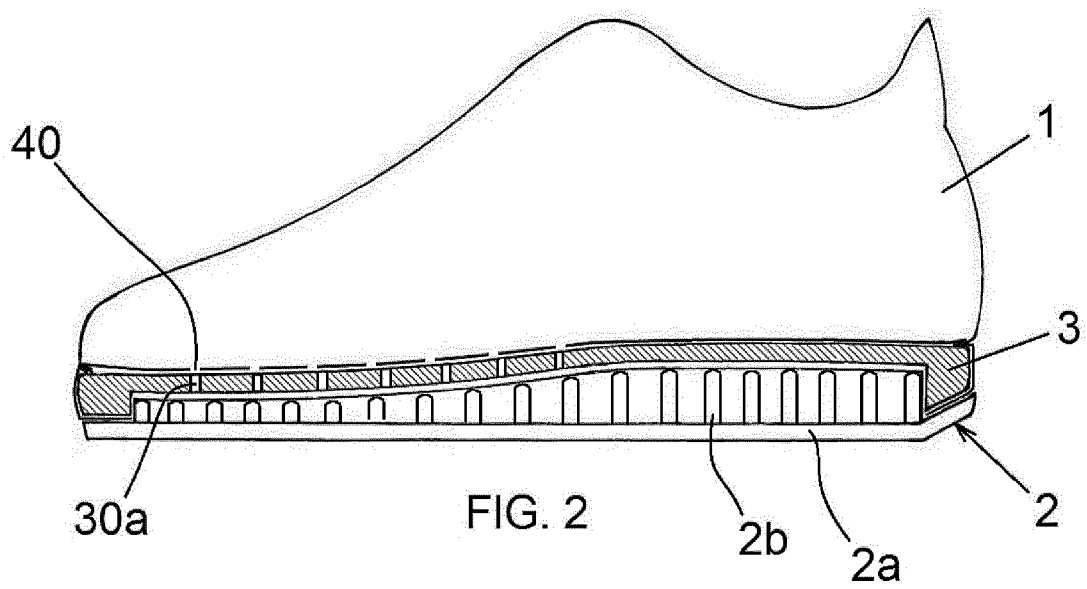
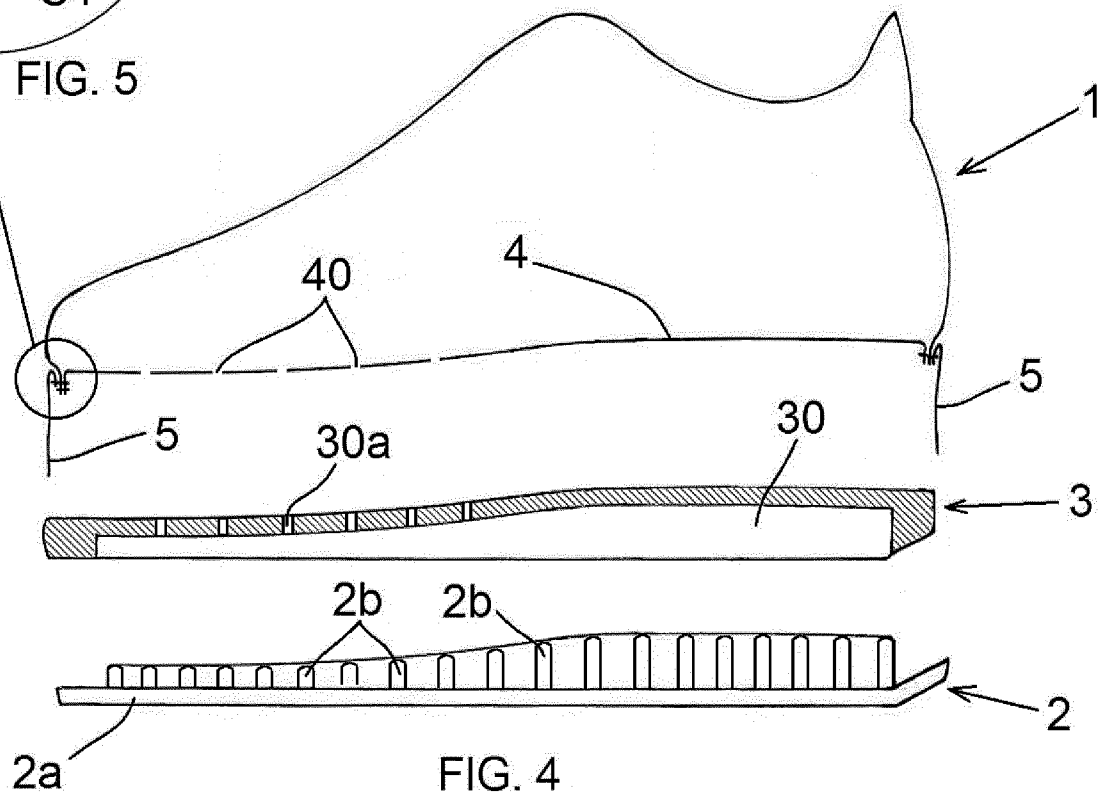
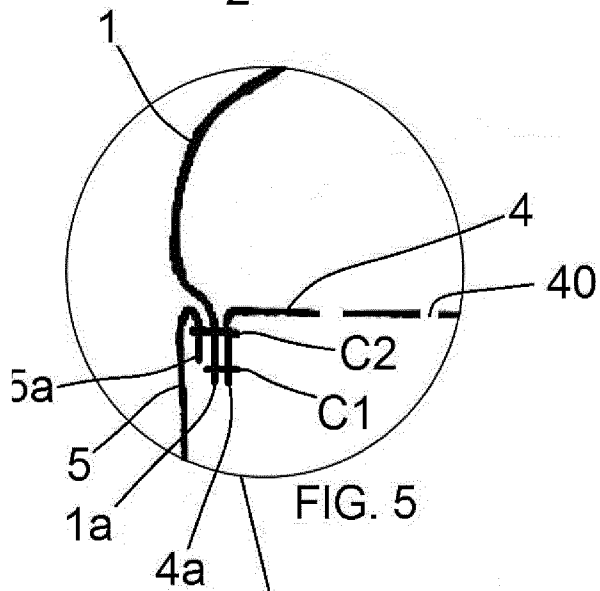
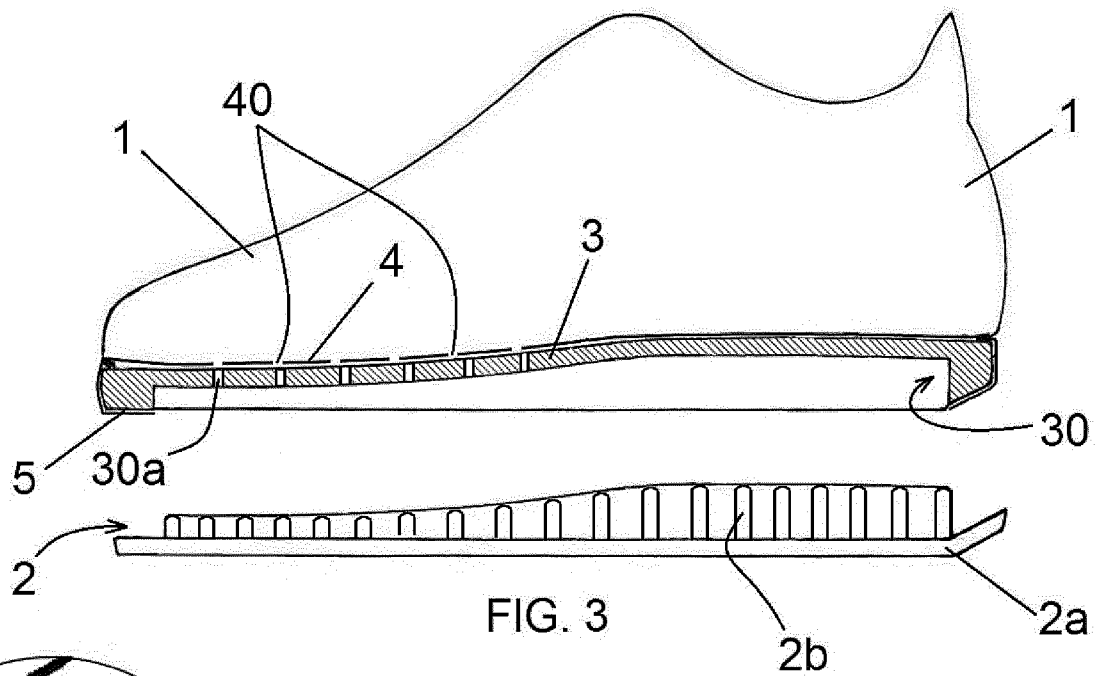


FIG. 2



INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2013/061114

A. CLASSIFICATION OF SUBJECT MATTER

INV. A43B9/02 A43B7/08 A43B13/14
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A43B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 20 2010 010359 U1 (DS PRODUKTE GMBH [DE]) 21 October 2010 (2010-10-21) paragraph [0027]; figure 1 -----	1-9
A	FR 2 443 221 A1 (FERRAND PIERRE FERRAND PIERRE [FR]) 4 July 1980 (1980-07-04) cited in the application figure 1 -----	1-9
A	US 4 001 954 A (TAYLOR JR KENNEDY G) 11 January 1977 (1977-01-11) figure 9 -----	1-9
A	US 2001/037587 A1 (LU CHUN MING [TW]) 8 November 2001 (2001-11-08) claims; figures -----	1-9



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

27 June 2013

Date of mailing of the international search report

09/07/2013

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Gkionaki, Angeliki

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2013/061114

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 202010010359 U1	21-10-2010	CN 103068268 A	24-04-2013
		DE 202010010359 U1	21-10-2010
		EP 2592958 A1	22-05-2013
		WO 2012007093 A1	19-01-2012

FR 2443221 A1	04-07-1980	BE 880162 A1	17-03-1980
		DE 7934113 U1	06-03-1980
		FR 2443221 A1	04-07-1980
		IT 1126471 B	21-05-1986

US 4001954 A	11-01-1977	NONE	

US 2001037587 A1	08-11-2001	NONE	
