

(19)



(11)

EP 2 446 763 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

02.05.2012 Bulletin 2012/18

(51) Int Cl.:

A43B 7/08 (2006.01) **A43B 7/12** (2006.01)
A43B 13/12 (2006.01) **A43B 13/16** (2006.01)
A43B 17/08 (2006.01)

(21) Application number: **10188951.7**

(22) Date of filing: **26.10.2010**

(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

(71) Applicant: **Vibram S.p.A.**

21041 Albizzate (Varese) (IT)

(72) Inventors:

• **Bramani, Marco**
21041, Albizzate (Varese) (IT)

• **Gabbrielli, Giorgio**

21041, Albizzate (Varese) (IT)

• **Yalkut, Defne**

21041, Albizzate (Varese) (IT)

(74) Representative: **Feltrinelli, Secondo Andrea et al**
APTA S.r.l.

Via Ca' di Cozzi, 41

37124 Verona (IT)

(54) **Transpiring shoe's sole**

(57) Transpiring sole for shoe, comprising a first element (3;103;203;303;403;503), in direct contact with the ground, provided with holes (9;209;309), a second element (4;104;204;304;404;504) overlapped to the first element (3;103;203;303;403;503) and provided with at least one seat (5;105;205;305;405;505) for a transpiring insert (6;106;206;306;406;506) self-sealing in contact with the humidity, this seat (5;105;205;305;405;505) being provided at the holes (9;209;309), a third element (7;

107;207;307;407;507), overlapped to the second element (4;104;204;304;404;504), provided with openings (13;213;313) provided at this seat (5;105;205;305;405;505), a fourth transpiring element (8;108;208;308;408;508) placed in direct contact with the foot sole, the above holes (9;209;309), the above insert (6; 106; 206; 306; 406; 506) and the above openings (13;213;313) defining a passage channel (14;214;314;414;514) for air and humidity.

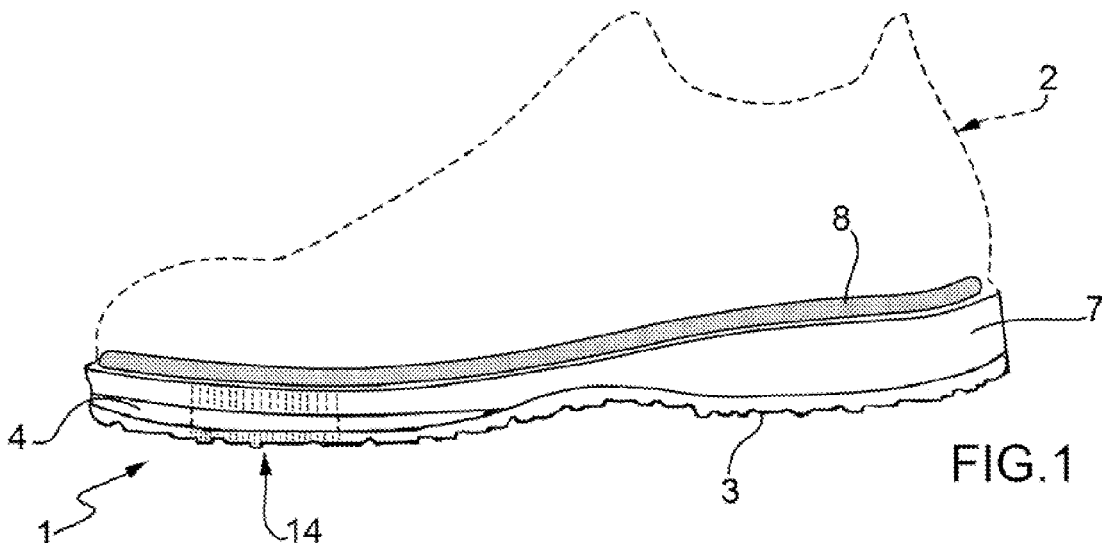


FIG.1

EP 2 446 763 A1

Description

TECHNICAL FIELD OF THE INVENTION

[0001] The present invention relates to a transpiring sole for shoe.

[0002] More in particular, the present invention relates to a shoe's sole of the transpiring and waterproof type.

PRIOR ART

[0003] Shoes provided with so-called transpiring soles are known and widespread on the market. This feature denotes soles that allow the escape, from inside the shoe, of the humidity produced by the foot, and at the same time prevent the entrance of water from the outside in external humid or wet conditions, thus ensuring waterproofing.

[0004] Some of the above transpiring soles of the known type usually comprise transpiring waterproof membranes of the micro-porous type, for example of the type known on the market as Goretex®.

[0005] Other transpiring soles of the known type comprise osmotic membranes which, as said, prevent the entrance of water from the outside and selectively allow the escape of humidity from inside the shoe.

[0006] It has been found that both of the above types of known transpiring soles do not provide satisfactory performance mainly from the point of view of transpiration.

[0007] In fact, the amount of humidity that may be ejected by the membranes of the known type, mentioned above, actually is quite low.

[0008] Such amount of humidity that may be ejected by the membranes is certainly not sufficient, for example, in usage conditions where the foot sweats more than usual. Just to mention a few situations, let's think of especially hot and sultry days or of the use of the shoe for sports activities, also in a hot and humid weather.

[0009] Moreover, it has been noted that the sole transpiration is not sufficient, besides for the limited transpiring capacity of the known membranes, also for the poor or lacking air circulation inside the shoe, which causes the stagnation of humidity in certain zones of the foot.

OBJECTS OF THE INVENTION

[0010] The technical task of the present invention therefore is to obviate the above drawbacks by providing a transpiring shoe's sole characterised by a higher transpiring capacity than the shoes of the known type, besides an optimal impermeableness to the water coming from the outside.

[0011] Within the scope of such task, an object of the present invention is to make a transpiring sole for shoe which allows obtaining a better air circulation inside the same shoe.

[0012] This object is achieved by the transpiring sole

for shoe according to the annexed claim 1.

[0013] The transpiring sole according to the invention in fact comprises a first element, in direct contact with the ground, provided with holes, a second element overlapped to the first element and provided with at least one seat for a transpiring insert that is self-sealing in contact with humidity, a seat that is provided at said holes. The sole further comprises a third element, overlapped to the second element, provided with openings provided at the seat, and a fourth transpiring element placed in direct contact with the foot sole. The above holes, insert and openings define a passage channel for air and humidity, which allows eliminating higher amounts of humidity from inside the shoe than shoes with soles of the known type.

[0014] Moreover, the self-sealing insert allows completely closing said passage channel in the presence of water or high humidity on the outside, preventing the penetration thereof into the shoe.

[0015] Further advantageous features are described in the dependent claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] The features of the invention shall be better understood by any man skilled in the art from the following description and annexed drawing tables, provided by way of a non-limiting example, wherein:

- figure 1 is a schematic side view of a shoe provided with the sole according to the invention;
- figure 2 is an exploded perspective view of the sole according to the invention;
- figure 3 is a perspective view of the insert of the second element of the sole according to the invention;
- figure 4 is an exploded perspective view of the sole according to the invention, in another embodiment;
- figure 5 is an exploded perspective view of the sole according to the invention, in yet another embodiment;
- figure 6 is an exploded perspective view of the sole according to the invention, in a further embodiment;
- figure 7 is a schematic side view of a shoe provided with the sole according to the invention, in another embodiment;
- figure 8 is a plan detailed view of the fourth element of the sole of figure 7;
- figure 9 is a schematic side view of a shoe provided with the sole according to the invention, in another embodiment;
- figure 10 is a schematic perspective view of the second element of the sole of figure 9, with the relative transpiring inserts.

EMBODIMENTS OF THE INVENTION

[0017] With reference to the annexed figure 1, reference numeral 1 globally denotes a transpiring sole for shoe according to the present invention.

[0018] The transpiring sole according to the present invention may be applied to any type of shoe, with no limitations. For example, the sole may be applied to elegant, sports, free time and yet other types of shoes.

[0019] More in detail, the sole may be used for shoes wherein for the user it is necessary to obtain a particular sensation of comfort from the point of view of transpiration along with features of total waterproofing in the use in rain, cold, bad weather and similar conditions, as it shall appear more clearly from the following detailed description.

[0020] In figure 1, sole 1 is inserted in a shoe, globally indicated with reference numeral 2, schematically shown only for the purpose of a better understanding of the invention.

[0021] Sole 1, as is seen in particular in figure 1 and in figure 2 as well, comprises a first element 3, which in use is in direct contact with the ground.

[0022] Sole 1 further comprises a second element 4, directly overlapped to the first element 3. The second element 4 is provided with at least one seat 5 for a transpiring insert 6 that is self-sealing in contact with humidity, with the advantages that shall appear more clearly in the following description.

[0023] Sole 1 further comprises a third element 7, directly overlapped to the second element 4.

[0024] Sole 1 finally comprises a fourth transpiring element 8 which in use conditions is in direct contact with the foot sole.

[0025] More in particular, the first element 3 of sole 1 is substantially extended to all or to parts of the foot sole and carries out the function of adhesion to prevent dangerous slipping. The first element 3 is made, for example, of a natural or synthetic rubber, cured or thermoplastic, or also of another elastomeric material (such as TPU, PU, etc.) provided with suitable mechanical features for withstanding direct contact with the sole during the usage steps (walking, running, etc.).

[0026] The first element 3 of sole 1 comprises holes 9 for air passage, for example circular or of another shape. In the particular embodiment shown in figure 2, holes 9 for air passage are in particular grouped and concentrated at the front zone of the foot sole, substantially at the centre of said front zone.

[0027] Such holes may have very different shapes, number and dimensions according to the shoe model and to the shape and dimensions of the transpiring and self-sealing insert 6.

[0028] In other embodiments, as shall appear more clearly hereinafter, holes 9 for air passage may also be provided in other zones of the foot sole.

[0029] The second element 4 is made of a foamed elastomeric material such as EVA, PU, natural and synthetic rubber or other polymeric material, or of another nature, with suitable features, selected among those commonly used in the field, for example among those elastically flexible, with a limited weight, and with other advantageous features in the production of shoe soles.

The second element 4 of sole 1 is fixed to the first element 3 by gluing, or by other equivalent fixing means.

[0030] The second element 4 preferably has a larger thickness than that of the first element 3, and in any case a suitable thickness for seating insert 6 in an optimal manner.

[0031] In the particular embodiment of figure 2, the second element 4 is only extended to a portion of the foot sole, that is, the front portion. In fact, the second element 4 is delimited by a cross edge substantially placed at the central portion of the foot sole.

[0032] Seat 5 for the above self-sealing transpiring insert 6, as is seen in figure 2, is substantially provided at holes 9 for air passage; in other words, seat 5 is partly or completely overlapped to holes 9 in usage conditions of shoe 2, so that certain air circulation may take place thereinbetween while walking.

[0033] In other embodiments of sole 1 according to the invention, better described hereinafter, the second element 4 may also be provided in other zones of the foot sole, in relation to the specific application requirements and to the desired results.

[0034] The self-sealing transpiring insert 6, schematically shown in figure 3, comprises at least one absorbing layer 10 for humidity and water, comprised between two air-permeable layers 11, 12, which may be identical to each other or also different: for example, materials with a different air permeability, with a different resistance, may be used for making such two air-permeable layers 11, 12. In particular, in relation to specific usage requirements or for obtaining predetermined results, it is possible to use a more permeable material at the outside surface of insert 6, and instead a less air-permeable material at the inside surface of insert 6, or vice versa.

[0035] The absorbing layer 10 may be made, for example, of a polymeric material having suitable properties; in particular, the so-called super-absorbing polymeric materials may be used.

[0036] The absorbing polymeric material may be mixed for forming the absorbing layer 10, with a filler material of the known type.

[0037] On the other hand, as regards the air-permeable layers 11, 12 of insert 6, for the making thereof in the practice it is possible to use various materials or mixtures of materials, such as for example polymeric materials, metals, ceramic or yet other materials.

[0038] The materials for making the absorbing layer 10 and those for making the air-permeable layers 11, 12 in any case are of the known type. They are based on the technology developed by IQ TEX ® in collaboration with BASF ®. Such technology allows making highly transpiring/waterproof inserts by the use of super-absorbing materials produced by BASF ®.

[0039] The above three layers 10, 11, 12 of insert 6 are assembled so that in dry conditions, there is a certain distance between them, defined based on the design specifications, that is, based on the functional features that are to be imparted to the same insert 6.

[0040] Insert 6 may further be provided with other outside protective layers, on one or both sides, made of materials of known use in the field.

[0041] Insert 6 may also be provided with a stiff support inserted in seat 5.

[0042] The third element 7 of sole 1 is overlapped to the second element 4, and is connected to the latter for example through gluing, or by other equivalent connecting means of a known use in the field.

[0043] The third element 7 of sole 1 extends by a surface substantially equal to that of the shoe plan, and has a thickness for example larger than that of the second element 4, although it may also have a smaller thickness, in relation to the specific requirements.

[0044] The third element 7 of sole 1 is made for example of a foamed elastomeric material such as EVA, PU, or natural or synthetic rubber, or other polymeric material, or of another nature, with suitable features, selected among those commonly used in the field, for example among those elastically flexible, with a limited weight, and with other advantageous features in the production of shoe soles.

[0045] The third element 7 comprises openings 13 for air passage, for example circular or of another shape. More in detail, openings 13 for air passage of the third element 7 are grouped at the front zone of the foot sole, substantially at the centre of said front zone. As is seen in particular in figure 2, openings 13 of the third element 7 are positioned so as to be at seat 5 of the second element 4, that is, partly or completely overlapped thereto, and therefore at insert 6.

[0046] In this way, in substantially dry weather conditions, an air passage channel is created between the shoe interior and the outside environment, said channel being globally indicated with reference numeral 14 in figure 1: such channel 14 is defined, in the outside-inside direction, by holes 9 of the first element 3, by insert 6 and by openings 13 of the third element 7.

[0047] The fourth transpiring element 8 of sole 1 extends by a surface substantially equal to that of the shoe 2 plan, as shown in figures 1, 2.

[0048] The fourth element 8 may be fixed on top of the third element 7 by gluing or other equivalent connecting means, or it may be simply seated into the shoe, as insole.

[0049] In fact, the fourth element 8 is intended to be in direct contact with the user's foot sole or in any case with the sock worn by the user, and therefore it may be necessary to make it simply and quickly interchangeable mainly for hygiene reasons.

[0050] The fourth element 8 is made of fabric or three-dimensional mesh, of a per se known type. The material such fabric or three-dimensional mesh is made of is, for example, polymeric material such as PP (polypropylene), PVDC (polyvinylidene chloride), PES (polyester). In an embodiment, a mixed PVDC/PES material may also be used for having good thermo-weldability at the edges along with sufficient load-bearing capacity.

[0051] The fabric or three-dimensional mesh of the

fourth element 8, thanks to the shape of its meshes, defines a plurality of air circulation paths 15. Such paths 15 are, for example, parallel to each other and longitudinal relative to the front-back axis of sole 1, and they are open at the respective ends.

[0052] In particular, the fourth element 8 allows air circulation inside shoe 2 and underneath the foot sole; moreover, the air circulation paths 15 of the fourth element 8 directly communicate with openings 13 of the third element 8, and thus with insert 6 and therefore, through holes 9 of the first element 3, with the outside environment.

[0053] It is thus possible to obtain an effective ventilation inside the shoe with air coming from the outside environment, while allowing the foot transpiration, that is, the outwards evaporation of the humidity produced by the same foot.

[0054] The usage way and the operation of sole 1 according to the invention are described hereinafter.

[0055] In dry weather conditions, the passage channel 14 defined by holes 9, by insert 6 and by openings 13, along with the fourth element 8, allows the high and optimal foot transpiration inside shoe 2: in other words, the humidity generated by the foot inside shoe 2 easily escapes through holes 9 thanks to the high air circulation inside the same shoe, strongly favoured by the presence of the fourth element 8.

[0056] More in particular, in conditions of no humidity or water outside the shoe, insert 6 allows the free air passage through its thickness thanks to the outside permeable layers 11, 12, so as to perform the function of foot transpiration. In this way the user of the shoe provided with sole 1 feels a strong sensation of comfort.

[0057] The two air-permeable layers 11, 12, in fact, have a transpiring and protective function, and moreover they cooperate for closing the insert in the presence of humidity and/or water coming from the outside.

[0058] In fact, in the presence of humidity or water outside the shoe, the absorbing layer 10 of insert 6 undergoes a progressive increase in volume, proportional to the amount of water absorbed, until its surface adheres to the surface of at least one of the two outside air-permeable layers 11, 12, or at least of the innermost one 11 relative to shoe 2: in this way, the passage of both air and water through insert 6 is prevented, so that the user may feel a dry sensation also in the presence of water outside.

[0059] As the conditions of high outside humidity end, the absorbing layer 10 progressively disperses the previously absorbed humidity outwards, through the permeable layer 12, and decreases in volume, so as to restore the normal conditions of foot transpiration and free air passage in a short time.

[0060] As is understood from the above detailed description, sole 1 for shoe according to the present invention allows obtaining important technical advantages.

[0061] In the first place, the transpiring capacity of sole 1 is significantly increased compared to what happens

in the transpiring soles of the type currently widespread on the market. In fact in sole 1 according to the present invention, the transpiring or micro-porous membranes that characterise other known shoes and that, as said, do not exhibit satisfactory performance from the point of view of transpiration, are not provided.

[0062] In sole 1 according to the present invention, on the other hand, the air passage and the removal of the humidity produced by the foot take place, in dry weather conditions, through holes 9, openings 13 and air-permeable layers 11, 12 of insert 6, that is, through elements that are more permeable to air and water.

[0063] Besides the higher permeability of channel 14 for the passage of air and humidity, provided in sole 1 according to the present invention, the increase of the transpiring capacity of sole 1 itself is further increased, in a decisive manner, by the presence of the fourth transpiring element 8. The latter, in fact, greatly favours the air circulation underneath the foot sole, and thus it allows eliminating also the humidity coming from zones of the sole that are away from channel 14, that is, in the present embodiment, from the zones for example of the heel.

[0064] Sole 1 according to the present invention, besides the increased capacity of transpiration compared to the known soles, is characterised, as said, also by the perfect seal in the presence of a humid or wet outside weather.

[0065] In fact insert 6 - as described above in detail - in the presence of outside humidity or water, also in low amounts, automatically, immediately and suddenly closes, thanks to the sudden increase in volume of the absorbing layer 10.

[0066] Another embodiment of the sole according to the invention is shown in figure 4. In this embodiment, parts corresponding to those of the previous embodiment are indicated with the same reference numerals, increased by 100 units.

[0067] In this embodiment of sole 101, the second element 104 is substantially extended to the entire foot sole. Seat 105 for insert 106 is still provided at the front zone of the foot sole, as in the previous embodiment. This solution, besides exhibiting all the advantages described in the previous embodiment - may in particular be adopted if materials with other mechanical features are to be used - for example different stiffness - at the different layers of the sole.

[0068] In other words, this solution may be used if a second element 104 is desired to be provided between the first element 103 and the third element 107 in the heel zone as well, the second element 104 being made, for example, of a material with the desired mechanical features - for example a shock-absorbing material for the foot impact on the ground - active on the entire foot sole, and thus not only in the front zone.

[0069] The remaining elements of the sole, that is, the first element 103, the third element 107 and the fourth element 108 are totally identical to those described and shown in the previous embodiment of figures 1,2,3. An-

other embodiment of the sole according to the invention is shown in figure 5.

[0070] In this embodiment of sole 201, the second element 204 is provided with two seats 205 for two respective inserts 206, of which one in the front zone and one in the back zone.

[0071] Correspondingly, also the first element 203 is provided with two distributions of holes 209, of which one in the front zone and one in the back zone. Correspondingly, the third element 207 comprises two distributions of openings 213, of which one in the front zone and one in the back zone.

[0072] The fourth element 208 is the same as the previous embodiments.

[0073] In this way, two channels 214 are created for the passage of air and humidity, of which a front one and a back one. The transpiring capacity of sole 201 is therefore increased compared to the previous embodiments: in any case, all the other advantages described in the previous embodiments above are provided.

[0074] More in general, the second element 204 may comprise a plurality of seats 205 provided in different zones of the foot sole - selected by number and position in relation to specific usage requirements - a corresponding plurality of distributions of holes 209 in the first element 203 and a corresponding plurality of distributions of openings 213 in the third element 207.

[0075] Yet another embodiment of the sole according to the invention is shown in figure 6.

[0076] In this embodiment, the second element 304 of sole 301 comprises a single seat 305 for a single insert 306 that extends from the front zone to the back zone of the foot sole.

[0077] Correspondingly, the first element 303 comprises a distribution of air passage holes 309 that extends from the front zone to the back zone of the foot sole.

[0078] In a corresponding manner, the third element 307 of sole 301 comprises a distribution of openings 313 that extends from the front zone to the back zone of the foot sole.

[0079] The fourth element 308 is the same as the previous embodiments.

[0080] A single air passage channel 314 is therefore defined, larger than in the previous embodiments, the section whereof extends from the front zone to the back zone of the foot sole.

[0081] This solution - besides exhibiting the advantages of the previous embodiments - is especially indicated in applications where a strong transpiring effect is desired, much higher than what happens in the soles according to the previous embodiments; for example, this solution may be applied in shoes usable in summertime, or intended for hot weather countries, or the like.

[0082] Another embodiment of the sole according to the invention is shown in figures 7,8.

[0083] In figure 7, in particular, sole 401 is coupled to the vamp of a shoe 402 of any kind.

[0084] As in the previous embodiments, sole 401 com-

prises a first element 403, a second element 404, a third element 407 and a fourth element 408.

[0085] The second element 404 comprises a seat 405 for a transpiring insert 406 whereat, as already described for the previous embodiments, an air passage channel 414 is defined.

[0086] This embodiment is characterised by the particular shape of the fourth element 408, shown in figure 8. Such fourth element 408, in fact, besides defining paths 415 for air circulation, comprises lowered zones 416, of various shapes and geometries, that define thin and flexible portions of the fourth element 408 - those having the lowered zones 416 - alternating with portions with a transpiring and shock-absorbing capacity, those where paths 415 are. Such lowered zones may consist, as in the example of figure 8, of longitudinal, cross strips or closed lines, like the external one or that of the heel zone. The result is a third element 408 with a different behaviour according to the different portions of the foot sole.

[0087] In this embodiment, elements 403, 404, 407 and insert 406 may be of the type described in any one of the previous embodiments.

[0088] Another embodiment of the sole according to the invention is shown in figures 9, 10.

[0089] In figure 9, in particular, sole 501 is coupled to the vamp of a shoe 502 of any kind.

[0090] As in the previous embodiments, sole 501 comprises a first element 503, a second element 504, a third element 507 and a fourth element 508.

[0091] The second element 504 comprises two seats 505 for two respective transpiring insert 506 whereat, as already described for the previous embodiments, air passage channels 514 are defined.

[0092] This embodiment is characterised by the particular shape of the transpiring inserts 506, shown in figure 10, wherein the second element 504 is shown with an interrupted line.

[0093] Inserts 506, one in the front zone and the other in the back zone of the foot sole, comprise each a flat support 520, provided with a raised portion 521 with smaller surface, wherein a plurality of through cells 522, arranged as a grid, is defined. Respective bodies 523, made of a transpiring material, are inserted in cells 522.

[0094] This solution allows having a transpiring insert 506 with a large surface and at the same time provided with the necessary mechanical features required to support the foot.

[0095] It has thus been seen that the invention achieves the intended objects.

[0096] The present invention has been described according to preferred embodiments but equivalent versions may be conceived without departing from the scope of protection offered by the following claims.

Claims

1. Transpiring sole for shoe, **characterised in that** it comprises:

- a first element (3;103;203;303;403;503), in direct contact with the ground, provided with holes (9; 209; 309) ;
- a second element (4;104;204;304;404;504) overlapped to said first element (3;103;203;303; 403;503) and provided with at least one seat (5; 105;205;305;405;505) for a transpiring insert (6; 106; 206; 306; 406; 506) self-sealing in contact with the humidity, said seat (5;105;205;305;405; 505) being provided at said holes (9;209;309);
- a third element (7;107;207;307;407;507), overlapped to said second element (4;104;204; 304;404;504), provided with openings (13;213; 313) provided at said seat (5;105;205;305;405; 505);
- a fourth transpiring element (8;108;208;308; 408;508) placed in direct contact with the foot sole;
- said holes (9; 209; 309) , said insert (6; 106; 206; 306; 406; 506) and said openings (13;213; 313) defining a passage channel (14;214;314; 414;514) for air and humidity.

2. Sole according to claim 1, wherein said second element (4;104;204;304;414;514) is extended to a portion of the foot sole.

3. Sole according to claim 1, wherein said second element (4;104;204;304;404;504) is extended to the entire foot sole.

4. Sole according to one of the previous claims, wherein said seat (5;105;205;305;405;505), said holes (9; 209;309) and said openings (13;213;313) are provided at the front zone of the foot sole.

5. Sole according to one of the previous claims, wherein said seat (5;105;205;305;405;505) extends from the front zone to the back zone of the foot sole and wherein correspondingly, said holes (9;209;309) and said openings (13;213;313) are distributed from the front zone to the back zone of the foot sole.

6. Sole according to one of the previous claims, comprising a plurality of said seats (5;105;205;305;405; 505) provided in different zones of the foot sole, a corresponding plurality of distributions of holes (9; 209;309) in said first element (3;103;203;303;403; 503) and a corresponding plurality of distributions of openings (13;213;313) in said third element (7;107; 207;307;407;507).

7. Sole according to one of the previous claims, where-

in said fourth transpiring element (8;108;208;308;408;508) is made of fabric or three-dimensional mesh.

8. Sole according to one of the previous claims, wherein said fourth transpiring element (8;108;208;308;408;508) extends on a surface substantially equal to the entire foot sole. 5

9. Sole according to one of the previous claims, wherein said fabric or three-dimensional mesh of said fourth element (8;108;208;308;408;508) defines a plurality of parallel longitudinal paths (15;415) for air circulation. 10

10. Sole according to one of the previous claims, wherein said self-sealing transpiring insert (6;106;206;306;406;506) comprises at least one absorbing layer (10) comprised between two air-permeable layers (11,12). 15
20

11. Sole according to one of the previous claims, wherein said fourth element (408) comprises lowered zones (416), of various shapes and geometries, which define thin and flexible portions of said fourth element (408) alternating to portions with transpiring and shock-absorbing capacity. 25

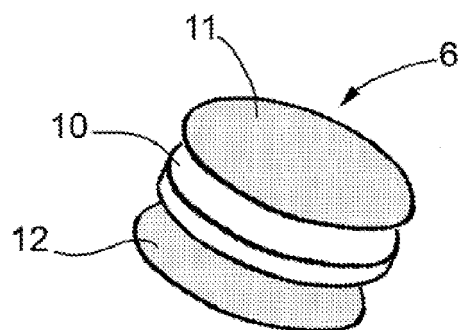
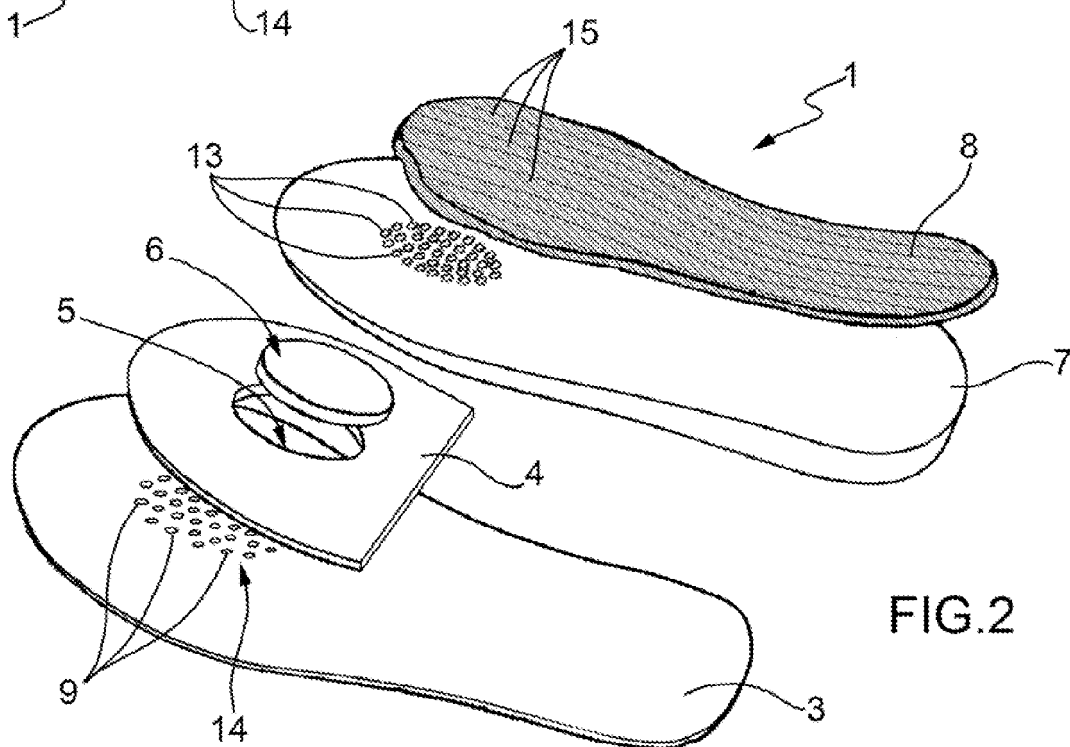
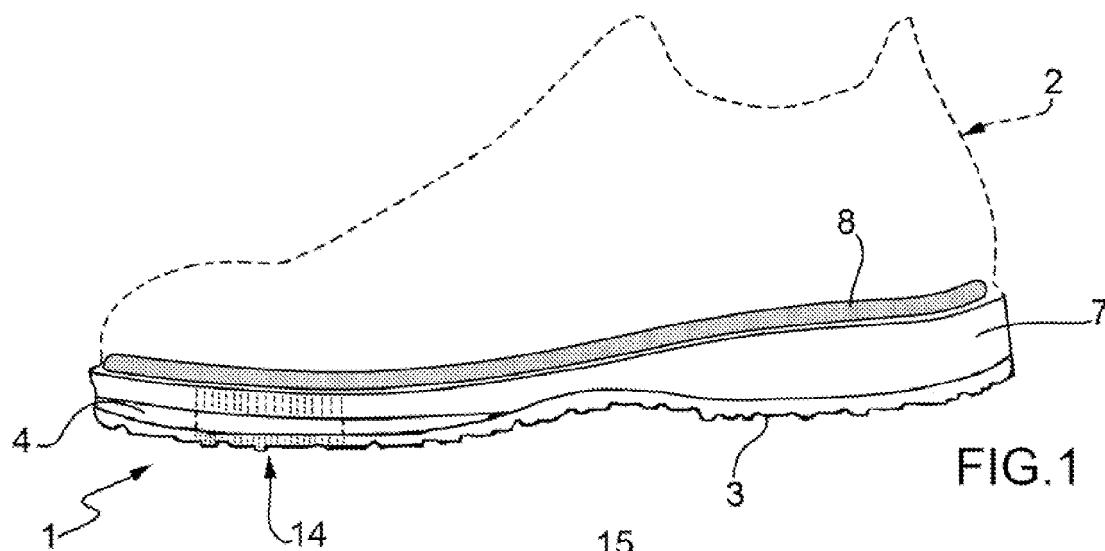
12. Sole according to one of the previous claims, wherein said insert (506), comprises a flat support (520), provided with a raised portion (521) wherein a plurality of through cells (522) is defined wherein respective bodies (523), made of a transpiring material, are inserted. 30
35

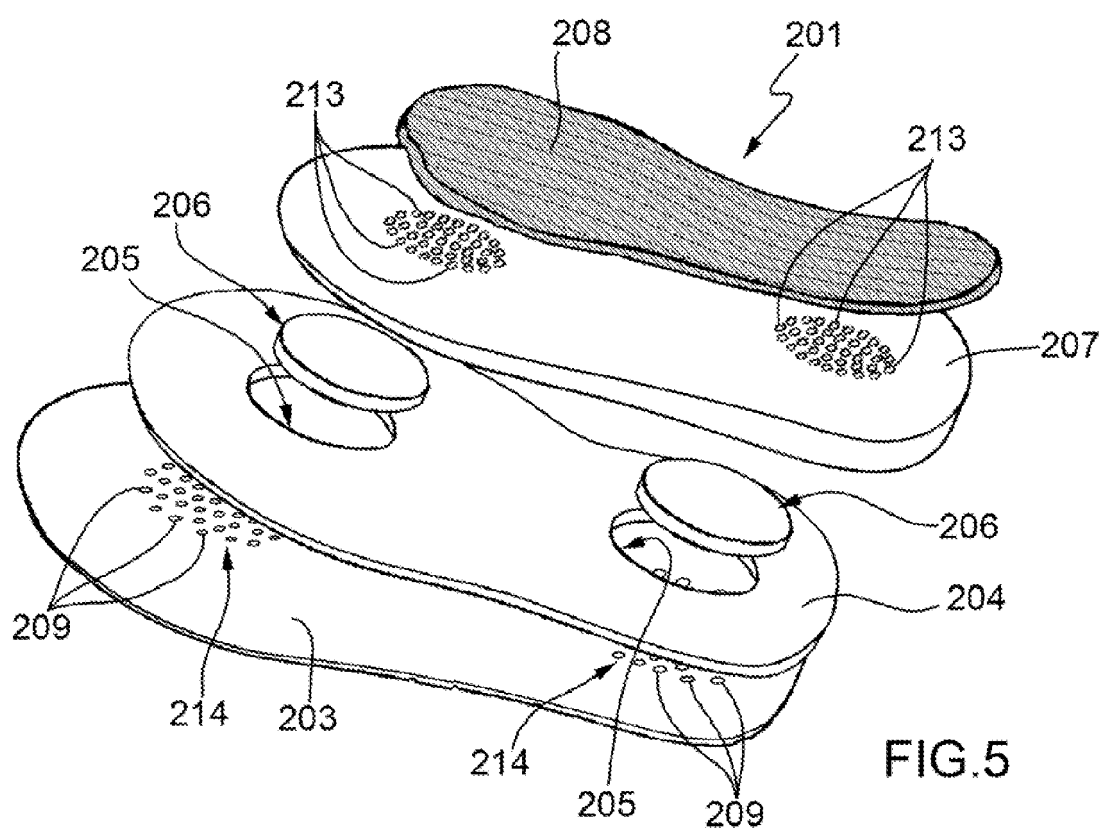
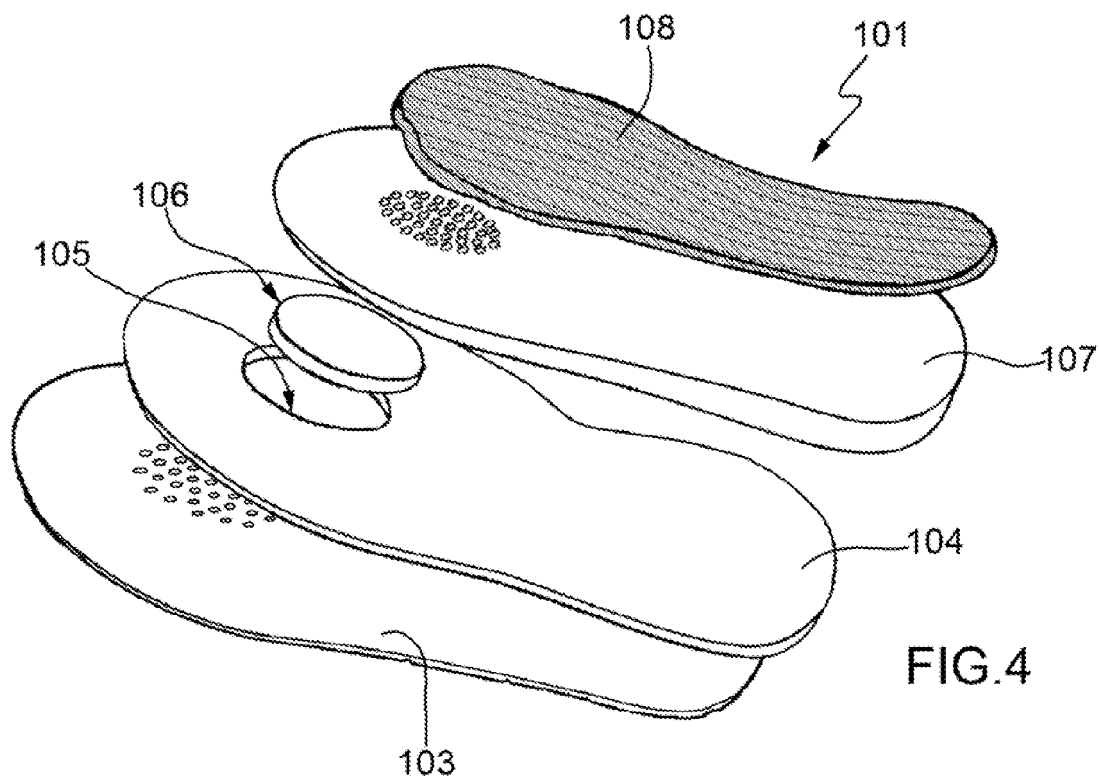
40

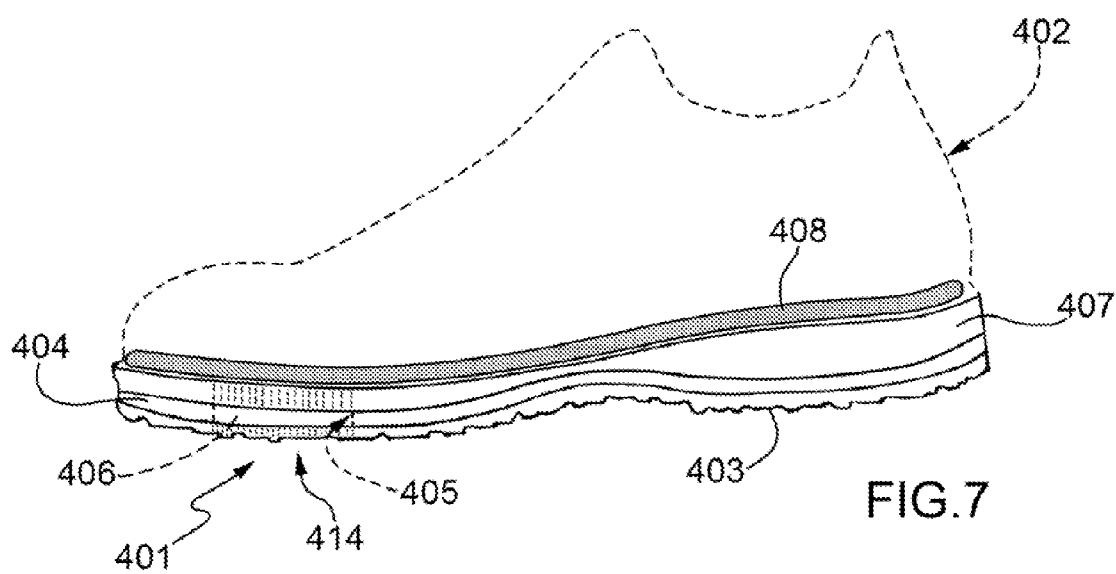
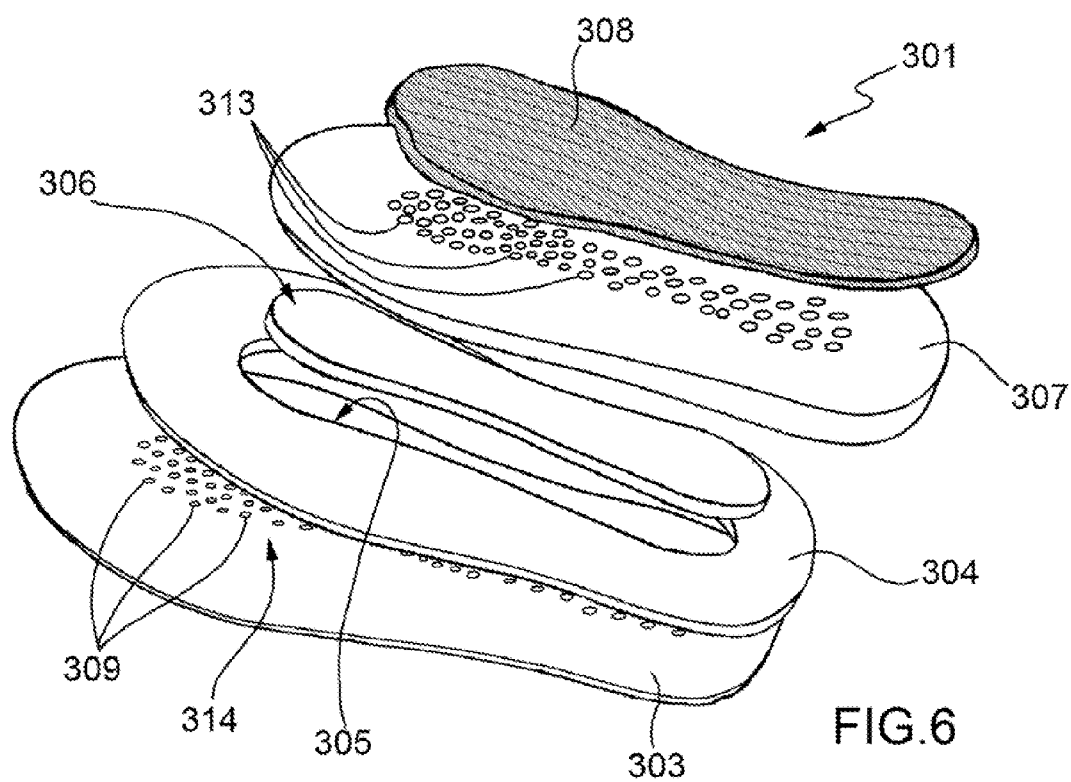
45

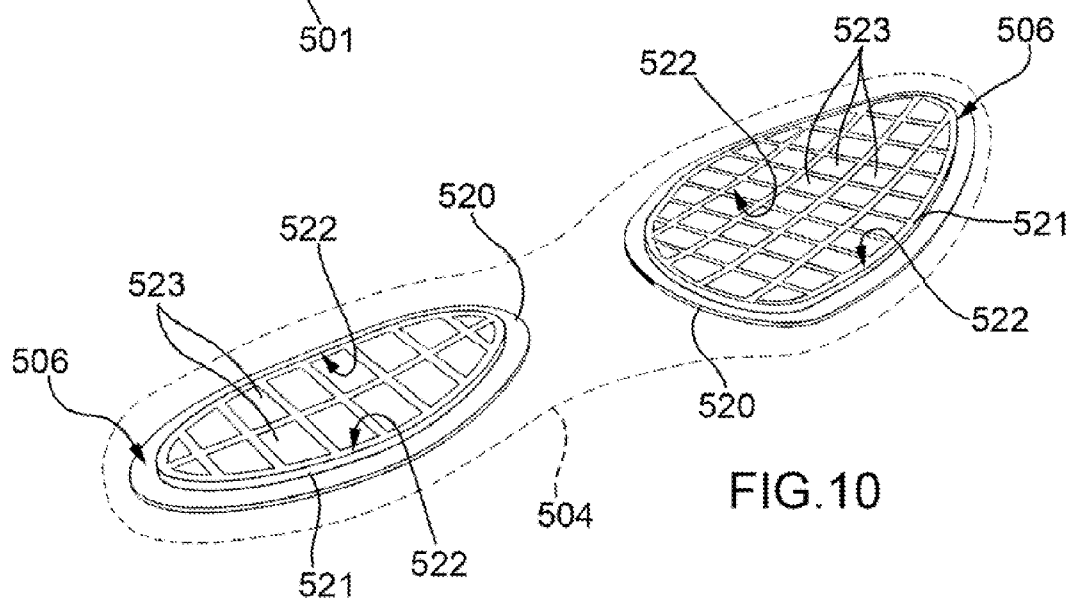
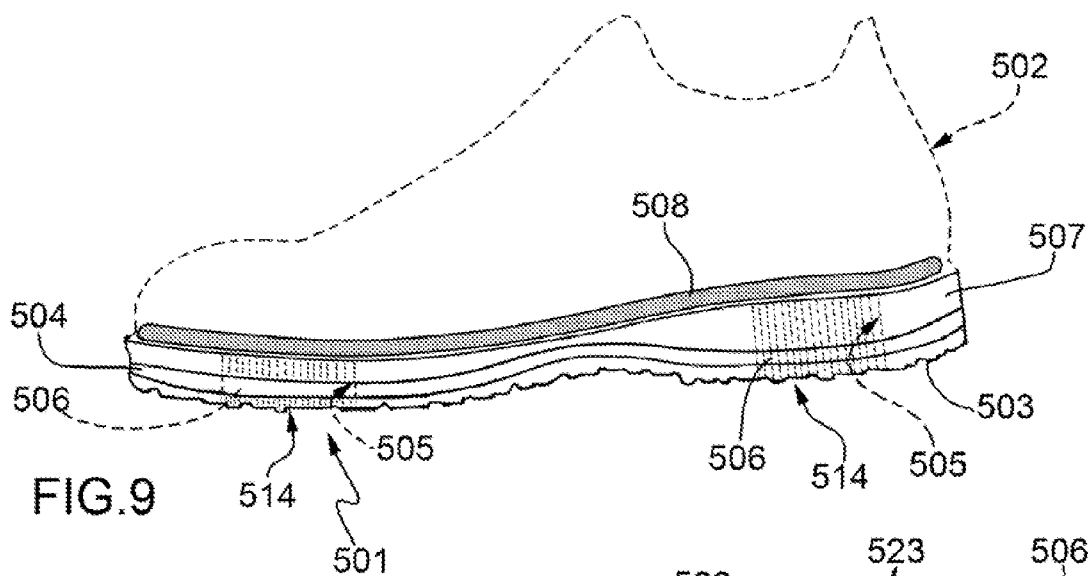
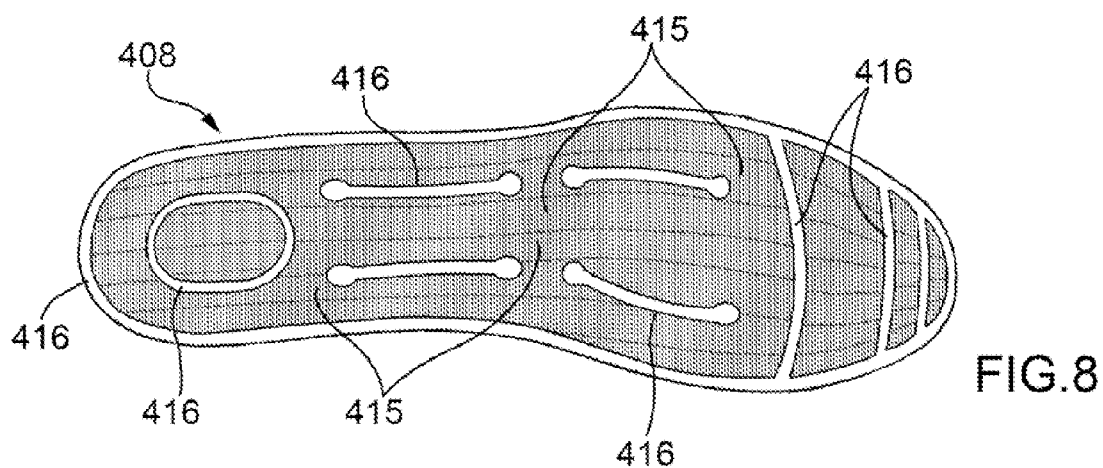
50

55











EUROPEAN SEARCH REPORT

Application Number
EP 10 18 8951

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	WO 2007/101625 A1 (GORE W L & ASS GMBH [DE]; PEIKERT MARC [DE]; NABERNIK STANE [SI]) 13 September 2007 (2007-09-13) * the whole document *	1-8	INV. A43B7/08 A43B7/12 A43B13/12 A43B13/16 A43B17/08
X	US 2004/250446 A1 (GREENE PAMELA SUSAN [US] ET AL) 16 December 2004 (2004-12-16) * paragraphs [0058], [0059]; figure 7 *	1-8	
X	US 2005/126036 A1 (WU HUEI-LING [TW]) 16 June 2005 (2005-06-16) * figure 2 *	1-8	
X	US 2004/093760 A1 (TUAN WEI-JEI [TW]) 20 May 2004 (2004-05-20) * figures 5-7 *	1-8	
X	CN 201 451 618 U (ZHANG CONGMING) 12 May 2010 (2010-05-12) * the whole document *	1-8	
A	WO 2006/123378 A1 (NUOVA ADELCHI S P A [IT]; ADELCHI SERGIO [IT]) 23 November 2006 (2006-11-23) * figures 2,3 *	1	TECHNICAL FIELDS SEARCHED (IPC) A43B
1 The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 25 March 2011	Examiner Tejada Biarge, Diego
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)



Application Number

EP 10 18 8951

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-8

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).



**LACK OF UNITY OF INVENTION
SHEET B**

Application Number

EP 10 18 8951

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-8

A seat for a transpiring insert, the seat extending from the front area to the back zone of the foot sole.

2. claims: 1, 9

A sock with a plurality of parallel longitudinal paths for air circulation.

3. claims: 1, 10

A transpiring insert with an absorbing layer sandwiched between two air-permeable layers.

4. claims: 1, 11

A sock with lowered zones.

5. claims: 1, 12

A grid-like transpiring insert.

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

EP 10 18 8951

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.

25-03-2011

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2007101625 A1	13-09-2007	AU 2007222644 A1	13-09-2007
		CA 2644527 A1	13-09-2007
		EP 1991078 A1	19-11-2008
		JP 2009528105 A	06-08-2009
		KR 20090007309 A	16-01-2009
		RU 2008139305 A	10-04-2010
		US 2009172971 A1	09-07-2009

US 2004250446 A1	16-12-2004	AT 377972 T	15-11-2007
		BR PI0411240 A	18-07-2006
		CN 1832692 A	13-09-2006
		DE 602004010103 T2	11-09-2008
		EP 1631162 A1	08-03-2006
		HK 1080694 A1	09-05-2008
		WO 2005000060 A1	06-01-2005

US 2005126036 A1	16-06-2005	AT 8105 U1	15-02-2006
		DE 202004008539 U1	02-09-2004
		FR 2863457 A1	17-06-2005
		GB 2409149 A	22-06-2005

US 2004093760 A1	20-05-2004	NONE	

CN 201451618 U	12-05-2010	NONE	

WO 2006123378 A1	23-11-2006	BR PI0520312 A2	05-05-2009
		CN 101175420 A	07-05-2008
		EP 1901627 A1	26-03-2008
		JP 2008540025 A	20-11-2008
		KR 20080014971 A	15-02-2008
		US 2009031586 A1	05-02-2009
