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

(11) **EP 2 870 892 A1**

# (12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
**13.05.2015 Bulletin 2015/20**

(51) Int Cl.:
***A43B 17/18*** *(2006.01)* *A43B 3/10* *(2006.01)*

(21) Application number: **14191559.5**

(22) Date of filing: **03.11.2014**

(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**

(30) Priority: **11.11.2013 US 201361902430 P**

(71) Applicants:
- **Fronhoffs, Alistair**
  **1082 Berchem Sainte Agathe (BE)**
- **Fronhoffs, Jonathan**
  **1081 Koekelberg (BE)**

(72) Inventors:
- **Fronhoffs, Alistair**
  **1082 Berchem Sainte Agathe (BE)**
- **Fronhoffs, Jonathan**
  **1081 Koekelberg (BE)**

(74) Representative: **De Groote, Christophe et al**
**Pecher & de Groote sprl**
**Centre Monnet**
**Avenue Jean Monnet, 1**
**1348 Louvain-la-Neuve (BE)**

## (54) Open shoe comprising a textile layer and means of fixation

(57) An open shoe (1) including a textile layer (21) shaped to fit on the sole (11) of the open shoe (1), the textile layer (21) and the open shoe (1) comprising means (12, 22) able to cooperate together in such a manner that the textile layer (21) is attachable and removable relatively to the sole (11) of the open shoe (1). When the textile layer (21) is attached to the sole (11), at least a portion of the textile layer (21) is disposed between the open shoe (1) and the skin of the foot.

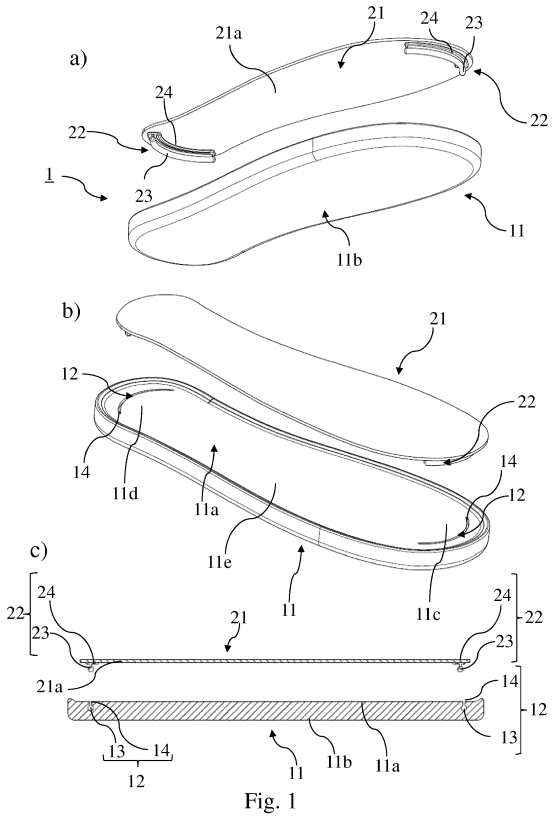


Fig. 1

EP 2 870 892 A1

## Description

### TECHNICAL FIELD

**[0001]** The present invention relates generally to the field of open shoes. More particularly, the invention relates to a removable textile layer and means for fixing the textile layer to the open shoe.

### DESCRIPTION OF RELATED ART

**[0002]** Open shoes, like sandals and the like, are currently very widely used. The soles of the open shoes are usually made of plastics, rubbers and/or leather. In warmer climates, people often wish to wear their open shoes without a sock, because it is aesthetically unappealing, thereby trading off the comfort and hygiene of wearing a sock. A lack of breathability at the interface between the foot and the sole is exacerbated by modern synthetic materials. A direct contact between the foot and the upper surface of the sole of an open shoe leaves no rooms for air to circulate under the foot and can cause the foot to sweat considerably. Excessive sweat can soak into the open shoe, speeding up the rate at which the upper surfaces of the open shoes wear out, Moisture from sweat encourages bacteria growth which in turn can also lead to unpleasant odors, even when the sole has been treated with antimicrobial products or systems.

**[0003]** A sock allows the absorption of moisture perspired by the foot by creating a space between the foot and the upper surface of the sole. Some flat and topless socks have been used to solve these problems. Generally, these socks are removable and can be re-used after washing. Accordingly, sometimes a flat and topless sock (or removable textile layer) is inserted into a shoe on the upper surface of the sole of the shoe. For example, in document US pat. application pub. n° US 2012/0255101, a flat sock is provided and sticked to the insole, for example by means of adhesives like hook-and-loop fasteners. Hence, the sock is removable and can be replaced after use by a clean sock when needed. The textile after being soiled is washed. Hence, the sock is repeatedly washed and dried. Adhesive fasteners generally do not retain their properties through normal wear and numerous wash and dry cycles.

**[0004]** Moreover, the fixing means that allow sticking the sock to the insole may be a discomfort for the wearer when no sock is attached to the sole. The fixing means is in contact with the skin of the foot, thereby rubbing the skin or creating an unpleasant feeling.

**[0005]** Hence, there is a need for an open shoe that can receive and fixe a removable textile layer by way of fixing means, said fixing means being unable to rub the skin of the foot when a removable textile layer is not present, said fixing means and textile layer being relatively indifferent to wash and dry cycles. There is also a need for a textile layer for an open shoe that is easily removable and washable.

### SUMMARY OF THE INVENTION

**[0006]** Accordingly, a first aspect of the invention is an open shoe that comprises a sole, and a covering textile layer shaped to fit on the sole, and means to attach the textile layer to the sole in a removable manner. The present invention provides an article of footwear. The article of footwear includes an open shoe and a removable textile layer, such two combinative elements being attachable to and detachable from each other. The two combinative elements are connected by means of fixation. Those are part on one hand of the removable textile layer and on another hand of the sole of the open shoe. The means of fixation present on the open shoe are not directly in contact with the skin of the foot, even if no removable textile layer is present on the open shoe, allowing wearing the open shoe on its own.

**[0007]** An object of the present invention is to provide an open shoe having a removable textile layer to provide a greatly improved and simple alteration of the open shoes of the prior art. Another object of the invention is to provide an open shoe with a removable textile layer increasing walking comfort. A still further object of the invention is to provide an open shoe with a removable textile layer, both connected by means indifferent to wash and dry cycles of the removable textile layer and/or the open shoe. Another object of the invention is to provide an open shoe with a removable textile layer that provides stable and mechanically secure footwear when these components are assembled. Moreover, it is an object of the invention that the fixing means are unnoticeable or nearly unnoticeable when the textile layer is in place. Another object of the invention is the possibility to add further accessories to the open shoe, for example an orthopedic sole or a toecap.

**[0008]** Accordingly, in a first embodiment of the invention, an open shoe is provided, the open shoe comprising a sole and a textile layer, the sole comprising at least one first fixing means, the textile layer comprising at least one second fixing means, the at least one first fixing means and the at least one second fixing means being able to cooperate together to removably attach the textile layer to the sole,

wherein the at least one first fixing means comprises a cavity inside the sole,

and wherein the at least one second fixing means comprises a protrusion, said protrusion and said cavity being complementary shaped, said protrusion extending from a bottom surface of said textile layer or from a lateral surface of said textile layer.

**[0009]** With an open shoe according to this embodiment, the combination of the sole of the open shoe and the removable textile layer is performed by means that are indifferent to wash and dry cycles. Accordingly, the open shoe and the removable textile layer are reusable without wear of the fixing means. Hence, even after numerous wash and dry cycles, the fixing means are still able to perform with full satisfaction the combination of

the sole and the textile layer, thus enabling durable reuse. Moreover, with the open shoe according to this embodiment, it is possible to wear the open shoe without the removable textile layer if needed, for example when a person wants to use the open shoe in water. The inside of the cavity is not in contact with the skin on the bottom of the foot. Hence, the unpleasant feeling when a person wears this type of open shoe when a removable textile layer is not present or is reduced. The textile layer is in fact very easy to insert in the sole and equally easy to remove. The present invention provides an open shoe that can be manufactured easily and cheaply. As a result, the wearer is assured the textile layer will stay in place whether walking, walking in water, or running.

**[0010]** In a preferred embodiment, the at least one first fixing means furthermore comprises an opening on an upper surface or on a lateral surface of the sole, said opening being less wide than the cavity's maximum width, said opening linking the cavity to said upper surface or said lateral surface of the sole.

**[0011]** The open shoe according to this embodiment has a reduced opening on the upper surface of the sole and/or on the lateral surface of the sole. This opening leads to a stronger link between the fixing means. Moreover, the reduced opening leads to minimize even more the unpleasant feeling when the foot is in contact directly with the sole.

**[0012]** In a second embodiment, each first fixing means comprises a unique cavity and a unique opening.

**[0013]** The open shoe according to this embodiment is linked to the textile layer on uninterrupted lengths, leading to a more resistant and comfortable shoe. A strong link reduces the movement of the removable textile layer on the sole when the person is walking, thereby improving the walk and reducing risks of slipping or uncoupling.

**[0014]** In an alternative or complementary embodiment, at least one first fixing means is disposed on a toe part of the sole, and at least one first fixing means is disposed on the heel part of the sole. Accordingly, the textile layer may have at least one fixing means on a toe part of the textile layer and at least one second fixing means on a heel part of the textile layer. In a preferred embodiment, at least one first fixing means is disposed on an arch part of the sole, and at least one second fixing means is disposed on an arch part of the textile layer.

**[0015]** With an open shoe according to this embodiment, the removable textile layer is linked to the sole of the open shoe with a plurality of fixing means, leading to a better distribution of the forces between the sole and the textile layer and a stronger link between them. Hence, the removable textile layer is less susceptible to move on the sole of the open shoe, reducing even more risks of slipping or uncoupling.

**[0016]** In a preferred embodiment, the second fixing means comprises a head part, that is woven, sewn, stitched, pressed thermally, ultrasonically welded or bound to the textile layer on the bottom surface of the layer, or on an edge of the layer. Additionally, the protrusion and/or the head part may comprise a material selected from polymers, thermoplastics, polypropylene, polyethylene, polystyrene, polyvinyl chloride, polyamide, polyurethane, resins, silicones, or a combination thereof.

**[0017]** With an open shoe according to this embodiment, the second fixing means is a resistant piece, improving the link between the sole and the textile layer. Because the second fixing means is woven, sewn, stitched, pressed thermally or ultrasonically welded or bound on the lower surface of the textile layer, or on one of its lateral surface, it cannot be in contact with the skin of the foot, and the thickness of the textile layer prevents the wearer of the shoe to feel the fixing means on the bottom surface of his foot.

**[0018]** In a more preferred embodiment, the first fixing means is in a first material, said first material being harder than a second material constituting the sole. The first material may be snug fitted inside the sole.

**[0019]** With an open shoe according to this embodiment, the first fixing means is in a material more resistant than the sole of the open shoe. Hence, most of the sole can be made in a soft material, thereby improving the comfort of the open shoe, while the first fixing means is in a harder material, improving the link with the second fixing means. The first fixing means occupying a limited surface of the upper surface of the sole of the open shoe, a wearer of an open shoe without a removable sole does not have an unpleasant feeling and the first fixing means does not rub the skin of the foot.

**[0020]** The invention is defined by the independent claims. The dependent claims define advantageous embodiments.

## BRIEF DESCRIPTION OF THE DRAWING

**[0021]** **Fig.1** is a view of an open shoe illustrating the components of the device according to a first embodiment of the invention. **Fig 1a** is a lower perspective of this first embodiment while the **Fig 1b** is an upper perspective of this first embodiment. **Fig 1c** is a lateral sectional view of this first embodiment.

**[0022]** **Fig.2** is a view of a textile layer according to an embodiment of the invention. **Fig2a** is a lateral view, **Fig2b** is a lower view of the textile layer, and the **fig 2c** is a front view of the textile layer.

**[0023]** **Fig.3** is a view of the second fixing means according to an embodiment of the invention. **Fig 3a** is a lower perspective of the second fixing means; **Fig 3b** is a lower view of the second fixing means; **fig 3c** is a lateral view of a second fixing means.

**[0024]** **Fig.4** is a lateral sectional view of the invention according to one embodiment of the invention.

**[0025]** **Fig. 5** is a lateral sectional view of the invention according to another embodiment.

**[0026]** The drawings of the figures are neither drawn to scale nor proportioned. Generally, identical components are denoted by the same reference numerals in the figures.

## DETAILED DESCRIPTION OF THE INVENTION

**[0027]** Referring now to the invention with more details, in Fig. 1 through 5 there are shown various views and variations of the open shoe according to the invention. In further details, an open shoe (1) is provided. The open shoe may be a slipper, a sandal and the like. The open shoe comprises a sole (11). The sole may comprise a material selected from rubber, vulcanized rubber, EVA (ethylene-vinyl acetate), EVA foam, polyurethane, elastomers, rubber foam, leather, hide or a combination thereof. In a preferred embodiment, the sole is made of polyurethane, elastomers, rubber, rubber foam, EVA, or EVA foam.

**[0028]** In one representative embodiment, illustrated on fig. 1, a sole (11) comprises a surface having a peripheral edge defining a toe portion (11 c), a heel portion (11 d), and an arch portion (11 e). The sole (11) comprises an upper surface (11 a) and a lower surface (11 b). The lower surface (11 b) of the sole may be the surface of the first sole in contact with the ground when one uses an open shoe with a single sole. The number of sole present in an open shoe is irrelevant. The sole (11) may comprise a plurality of soles laminated between them to form a single sole. The upper surface (11 a) of the sole is the surface in contact with a textile layer (21) or with the skin on the bottom surface of the foot when no textile layer is present. A textile layer (21) is provided. The term textile layer refers to any kind of textile fibers generally used for items of clothing, and especially for socks. Hence, the textile layer may be a topless sock, i.e. a sock with only the bottom part of a sock. Preferably, the textile layer is made at least partially of cotton, polyester, nylon, silk, wool, acrylic or a combination thereof, but other materials can be used. The textile layer (21) is shaped to fit a generic shape of an open shoe, like sandals or flip-flop. The textile layer (21) can be made to be sufficiently wide and long enough to fit any size foot and is offered in a variety of sizes to fit all standard or non-standard open shoe sizes. The textile layer (21) is able to be attached to or detached from the open shoe (1) by means of fixation. The sole (11) and the textile layer (21) may have the same size, but in a preferred embodiment, the width and the length of the textile layer (21) are smaller than the width and the length of the sole (11). The length of a sole (11) is defined as the longest portion of the sole, generally from a heel part to a toe part. The width of a sole is defined as the perpendicular direction relatively to the length of the sole.

**[0029]** At least one first fixing means (12) is present. The first fixing means (12) is part of the sole (11). A first fixing means (12) comprises at least a cavity (13). The first fixing means may also comprise an opening (14) that is less wide that the cavity's maximum width. The cavity (13) is disposed inside the sole (11) of the open shoe (1). A first fixing means (11) may be disposed substantially transversally relatively to the sole (11). Alternatively or complementarily, a first fixing means (11) may be disposed substantially longitudinally relatively to the sole (11), for example in the arch portion (11 e) of the sole (11). The cavity (13) may have any shape. In a preferred embodiment, the cavity (13) is a cylinder, a cone or a prism. When the first fixing means (12) also comprises an opening (14), the opening (14) is located between the cavity (13) and the upper surface (11a) or between the cavity (13) and the lateral surface of the sole (11). It has to be understood that the cavity (13) does not have an opening on the lower surface of the sole (11). The cavity (13) may be defined as a blind hole. The opening (14) links the cavity to the upper surface (11 a) of the sole (11) or to the lateral surface of the sole. The opening (14) has approximately the same length as the cavity (13). The width of the opening (14) is smaller than the maximum width of the cavity (13). For example, when the cavity is a cylinder, the opening's width is less than the cylinder's diameter. It is to be understood that the first fixing means (12) does not overhang the upper surface (11a) of the sole (11) or the lateral surface of the sole (11). Hence, the upper surface (11a) of the sole (11) and the lateral surface of the sole (11) are flat and no protrusion of the first fixing means (12) may rub the skin of the foot, or create an unpleasant feeling on the skin on the bottom of the foot.

**[0030]** At least one second fixing means (22) is provided. A representative embodiment of a second fixing means is illustrated on fig. 3. The second fixing means (22) is able to cooperate with the first fixing means (12). The second fixing means (22) is part of the textile layer (21). The second fixing means (22) comprises a protrusion (23). The protrusion (23) is shaped for a suitable interlocking with the cavity (13) of the first fixing means (12). For example, if the cavity (13) is a cylinder, then the protrusion (23) is a cylinder than can be snug fitted inside the cavity (13) when the first fixing means (12) does not comprise an opening (14), or snap fitted inside the cavity (13) when the first fixing means (12) comprises an opening (14), as illustrated on fig. 1c. A second fixing means (22) cooperates with a first fixing means (12) by pushing the protrusion (23) inside a cavity (13); the textile layer (21) is hence attached to the open shoe (1). The removing of the textile layer (21) can be performed by simply pulling out the protrusion (23) from the cavity (13). The textile layer (21) is attachable to the open shoe (1) in such a manner that the textile layer (21) is removable. When a person wears such an open shoe (1), at least a portion of the textile layer (21) is disposed between the open shoe (1) and the person's foot. It has to be understood that the second fixing means (22) does not overhang the upper surface of the textile layer (21).

**[0031]** The second fixing means (22) may comprise a material selected from polymers, thermoplastics, polypropylene, polyethylene, polystyrene, polyvinyl chloride, polyamide, resins, silicones or a combination thereof. In a preferred embodiment of the invention, the second fixing means (22) is made of polymers, thermoplastics, polypropylene, polyethylene, polystyrene, polyvinyl chlo-

ride, polyamide, resins, silicones or a combination thereof.

**[0032]** The protrusion (23) of the second fixing means (22) is disposed on a lower surface (21 a) of the textile layer (21) or on a lateral surface of the textile layer (21), as illustrated on fig 2 and 5 respectively. In a particular embodiment, the second fixing means (22) may comprise a head part (24) woven, sewn, stitched, pressed thermally, ultrasonically welded or bound on the textile layer (21). The head part (24) may be flat, an upper surface of the head part (24) being woven, sewn, stitched, pressed thermally, ultrasonically welded or bound on the lower surface of the textile layer (21), or on an edge of the textile layer, as illustrated on fig. 2. In other words, each second fixing means (21) may be fixed to the textile layer (21) by adhesive bonding or equivalent fixing means like sewing, thermal bonding and the like.

**[0033]** In an alternative embodiment, illustrated on fig. 5, the second fixing means (22) may be a rod (27) disposed inside a fold of the textile layer (21), the fold being located on the lower surface (21 a) of the textile layer (21) or on a lateral surface of the textile layer (21). The fold may be a made from a folding of an external layer of the textile layer (21). Alternatively, the end of the toe part and/or the end of the heel part of the textile layer (21) may be looped and sewn together around a rod (27). The rod (27) may comprise a material selected from polymers, thermoplastics, polypropylene, polyethylene, polystyrene, polyvinyl chloride, polyamide, resins, silicones or a combination thereof. In a preferred embodiment of the invention, the rod (27) is made of polymers, thermoplastics, polypropylene, polyethylene, polystyrene, polyvinyl chloride, polyamide, resins, silicones or a combination thereof.

**[0034]** The first fixing means (12) may be disposed anywhere on the sole (11). In a preferred embodiment, at least one first front fixing means (12) is disposed on a toe portion (11c) of the sole (11) and at least one first rear fixing means (12) is disposed on the heel portion (11 d) of the sole (11), as illustrated on fig. 1b. Complementarily, the textile layer (21) may comprise a second front fixing means (22) on its toe portion and a second rear fixing means (22) on its heel portion. In a more preferred embodiment, at least one first arch fixing means (12) is disposed on an arch portion of the sole (11). The arch portion is the portion of the sole between the toe portion and the heel portion. Complementarily, the textile layer (21) may comprise at least one second arch fixing means (22) on its arch portion.

**[0035]** In a preferred embodiment, when a first fixing means (12) is substantially transversal relatively to the sole (11), the length of the cavity (13) may represent at least 20% of the width of the sole (11), more preferentially at least 30%, still more preferentially at least 50%. Alternatively or complementarily, when a first fixing means (12) is substantially longitudinal relatively to the sole (11), the length of the cavity (13) may represent at least 10% of the length of the sole (11), more preferentially at least 20%, still more preferentially at least 30%. The width and the length that have to be considered are the width and the length of the sole where the cavity is located. In a preferred embodiment, the opening's width (14) is less than 5 mm, more preferably less than 4 mm, and still more preferably less than 3 mm. Complementarily, the length of the cavity (13) and the length of the opening (13) are longer than 2 cm, preferably longer than 3 cm, and still more preferably longer than 4 cm.

**[0036]** In a particular embodiment, the sole (11) comprises one first front fixing means (12) on its toe portion and one first rear fixing means (12) on its heel portion, and the textile layer (21) comprises one second front fixing means (22) on its toe portion and one second rear fixing means (22) on its heel portion. Additionally, the sole (11) also comprises one first arch fixing means (12) on its arch portion and the textile layer (21) comprises one second arch fixing means (22) on its arch portion.

**[0037]** In a preferred embodiment, the opening of the at least one first fixing means (12) is surrounded by a first material. The cavity (13) and the opening (14) are made directly inside the sole (11) and a first material different from the second material constituting the sole (11) is injected, bi-injected, overmolded, coated, or glued around the opening (14) in order to strengthen the surrounding of the opening. The first material is fixed, for example by way of gluing or coating on the upper surface (11 a) of the sole (11). The first material is harder than a second material constituting the sole. The second material may be polymers, thermoplastics, polypropylene, polyethylene, polystyrene, polyvinyl chloride, polyamide, resins, silicones or a combination thereof. The hardness of the materials may be determined by norm ISO 48. When the hardness of a component of the open shoe has to be determined, a durometer-Shore hardness test according to the previous norm may be used.

**[0038]** In a preferred embodiment, the first fixing means (12) is made in a first material different from the second material constituting the sole (11). For example, a cavity (13) and an opening (14) are made in a piece made of polymers, thermoplastics, polypropylene, polyethylene, polystyrene, polyvinyl chloride, polyamide, resins, silicones or a combination thereof. The piece fits snuggly inside the sole (11) in a manner that the opening (14) is located on the upper surface (11 a) of the sole (11), in the same way as if the cavity and the opening were in the sole of the upper shoe. The first material is harder than the second material. The hardness of the materials may be determined by performing a durometer-Shore hardness test according to norm ISO 48.

**[0039]** The first fixing means (12) may have a unique cavity (13) and a unique opening (14) all along its length. Alternatively, a plurality of cavities (13) and a plurality of corresponding openings (14) may be present all along the length of the first fixing means (12). Complementarily, the protrusion (23) may be a unique protrusion all along its length or the protrusion (23) may comprise a plurality of protrusions.

**[0040]** In a preferred embodiment, further accessories are provided. In one embodiment, a toecap is provided. The toecap comprises a second fixing means (22). Then, the sole (11) may comprise at least two first front fixing means (12) in its toe part, one for the textile layer (21) and one for the toecap. Alternatively, or complementary, an orthopedic insole may be provided inside the textile layer. Alternatively, the orthopedic sole may replace the textile layer (21).

**[0041]** In a preferred embodiment, the open shoe according to any one of the previous embodiment is a sandal. In a still more preferred embodiment of the invention, the textile layer is a topless sock, i.e. a sock with only the bottom part of a sock.

**[0042]** Another aspect of the invention concerns a method to make an open shoe (1). Accordingly, it is disclosed a method to make an open shoe (1) able to receive a removable textile layer (21), said method comprising the steps of:

a) Providing an open shoe (1) with a sole (11),
b) Forming a first fixing means (12) on the open shoe (1) by forming at least one cavity (13) inside the sole (11) of the open shoe (1) and by forming at least one opening (14) between the at least one cavity (13) and an upper surface (11 a) of the sole (11) of the open shoe (1),
c) Providing a textile layer (21) with at least one second fixing means (22) attached to the textile layer (11) on its lower surface or on one edge of said textile layer (11), said second fixing means (22) comprising a protrusion (23) able to cooperate with the at least one cavity (13) of the first fixing means (12).

**[0043]** The method may comprise additional steps. For example, a step of providing a toecap (30) comprising a second fixing means (22) may be present. A step of providing an orthopedic sole may also be present. The method may also comprise the following steps in replacement of step b):

- make a receptacle inside the sole (11)
- provide at least one first fixing means (12) in a piece made of polymers, thermoplastics, polypropylene, polyethylene, polystyrene, polyvinyl chloride, polyamide, resins, silicones or a combination thereof, said at least one first fixing means (12) comprising a cavity (13) and an opening (14),
- snuggly fit the at least one first fixing means (12) inside the receptacle, in a manner that the opening (14) of the at least one first fixing means (12) is disposed on the upper surface (11 a) of the sole (1).

**[0044]** It is intended that all patentable subject matter disclosed herein be claimed and that no such patentable subject matter be dedicated to the public. Thus, it is intended that the claims be read broadly in light of that intent. In addition, unless it is otherwise clear to the contrary from the context, it is intended that all references to "a" and "an" and subsequent corresponding references to "the" referring back to the antecedent basis denoted by "a" or "an" are to be read broadly in the sense of "at least one." Similarly, unless it is otherwise clear to the contrary from the context, the word "or," when used with respect to alternative named elements is intended to be read broadly to mean, in the alternative, any one of the named elements, any subset of the named elements or all of the named elements.

**[0045]** In view of the above, it will be seen that the several advantages of the invention are achieved and other advantageous results obtained. It should be understood that the aforementioned embodiments are for exemplary purposes only and are merely illustrative of the many possible specific embodiments that can represent applications of the principles of the invention. Thus, as various changes could be made in the above methods and compositions without departing from the scope of the invention, it is intended that all matter contained in the above description as shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

**[0046]** Moreover, one of ordinary skill in the art can make various changes and modifications to the invention to adapt it to various usages and conditions, including those not specifically laid out herein, without departing from the spirit and scope of this invention. Accordingly, those changes and modifications are properly, equitably, and intended to be, within the full range of equivalents of the invention disclosed and described herein.

**[0047]** The terms and descriptions used herein are set forth by way of illustration only and are not meant as limitations. Those skilled in the art will recognize that many variations are possible within the spirit and scope of the invention as defined in the following claims, and their equivalents, in which all terms are to be understood in their broadest possible sense unless otherwise indicated. As a consequence, all modifications and alterations will occur to others upon reading and understanding the previous description of the invention. In particular, dimensions, materials, and other parameters, given in the above description may vary depending on the needs of the application.

## Claims

1. An open shoe, comprising a sole and a textile layer, the sole comprising at least one first fixing means, the textile layer comprising at least one second fixing means, the at least one first fixing means and the at least one second fixing means being able to cooperate together to removably attach the textile layer to the sole,
wherein the at least one first fixing means comprises a cavity inside the sole,
and wherein the at least one second fixing means

comprises a protrusion, said protrusion and said cavity being complementary shaped, said protrusion extending from a bottom surface of said textile layer or from a lateral surface of said textile layer.

**2.** The open shoe of claim 1, wherein the at least one first fixing means furthermore comprises an opening on an upper surface or on a lateral surface of the sole, said opening being less wide than the cavity's maximum width, said opening linking the cavity to said upper surface or said lateral surface of the sole.

**3.** The open shoe according to anyone of the previous claim, wherein the at least one first fixing means comprises a first rear fixing means disposed on a heel portion of the sole and a first front fixing means disposed on a toe portion of the sole.

**4.** The open shoe according to anyone of the previous claim, wherein at least one of said at least one first fixing means is disposed substantially transversally relatively to the sole.

**5.** The open shoe according to anyone of the previous claim, wherein the at least one first fixing means comprises a first arch fixing means disposed on an arch portion of the sole.

**6.** The open shoe according to claim 5, wherein the at least one first fixing means disposed on the arch portion of the sole is disposed substantially longitudinally relatively to the sole.

**7.** The open shoe according to anyone of the previous claim, wherein the at least one second fixing means comprises at least one second rear fixing means disposed on a heel portion of the bottom surface of the textile layer or on the lateral surface of the heel portion of the textile layer, and at least one second front fixing means disposed on a toe portion of the bottom surface of the textile layer or on the lateral surface of the toe portion of the textile layer.

**8.** The open shoe according to anyone of the previous claim, wherein the at least one second fixing means comprises a second arch fixing means disposed on an arch portion of the bottom surface of the textile layer.

**9.** The open shoe according to anyone of claims 2 to 11, wherein the opening of the at least one fixing means is surrounded by a first material, said first material being harder than a second material constituting the sole.

**10.** The open shoe according to anyone of the previous claim, wherein the at least one first fixing means is in a first material, said first material being harder than a second material constituting the sole, and said first material being snug fitted or snap fitted inside the sole.

**11.** The open shoe according to anyone of the previous claim furthermore comprising a toecap, wherein the toecap comprises at least one second fixing means.

**12.** The open shoe according to anyone of the previous claim, wherein the cavity is substantially a cylinder, a cone or a prism.

**13.** The open shoe according to anyone of the previous claim, wherein each second fixing means furthermore comprises a head part that is woven, sewn, glued, stitched, pressed thermally, ultrasonically welded or bound to the textile layer on the bottom surface of the textile layer or on the lateral surface of the textile layer.

**14.** The open shoe according to anyone of the previous claim, wherein each second fixing means is a rod disposed inside a fold on the lower surface of the textile layer or inside a fold on the lateral surface of the textile layer.

**15.** A method to make an open shoe (1) able to receive a removable textile layer (21), said method comprising the steps of:

a) Providing an open shoe (1) with a sole (11),
b) Forming a first fixing means (12) on the open shoe (1) by forming at least one cavity (13) inside the sole (11) of the open shoe (1) and by forming at least one opening (14) between the at least one cavity (13) and an upper surface (11 a) of the sole (11) of the open shoe (1),
c) Providing a textile layer (21) with at least one second fixing means (22) attached to the textile layer (11) on its lower surface or on one edge of said textile layer (11), said second fixing means (22) comprising a protrusion (23) able to cooperate with the at least one cavity (13) of the first fixing means (12).

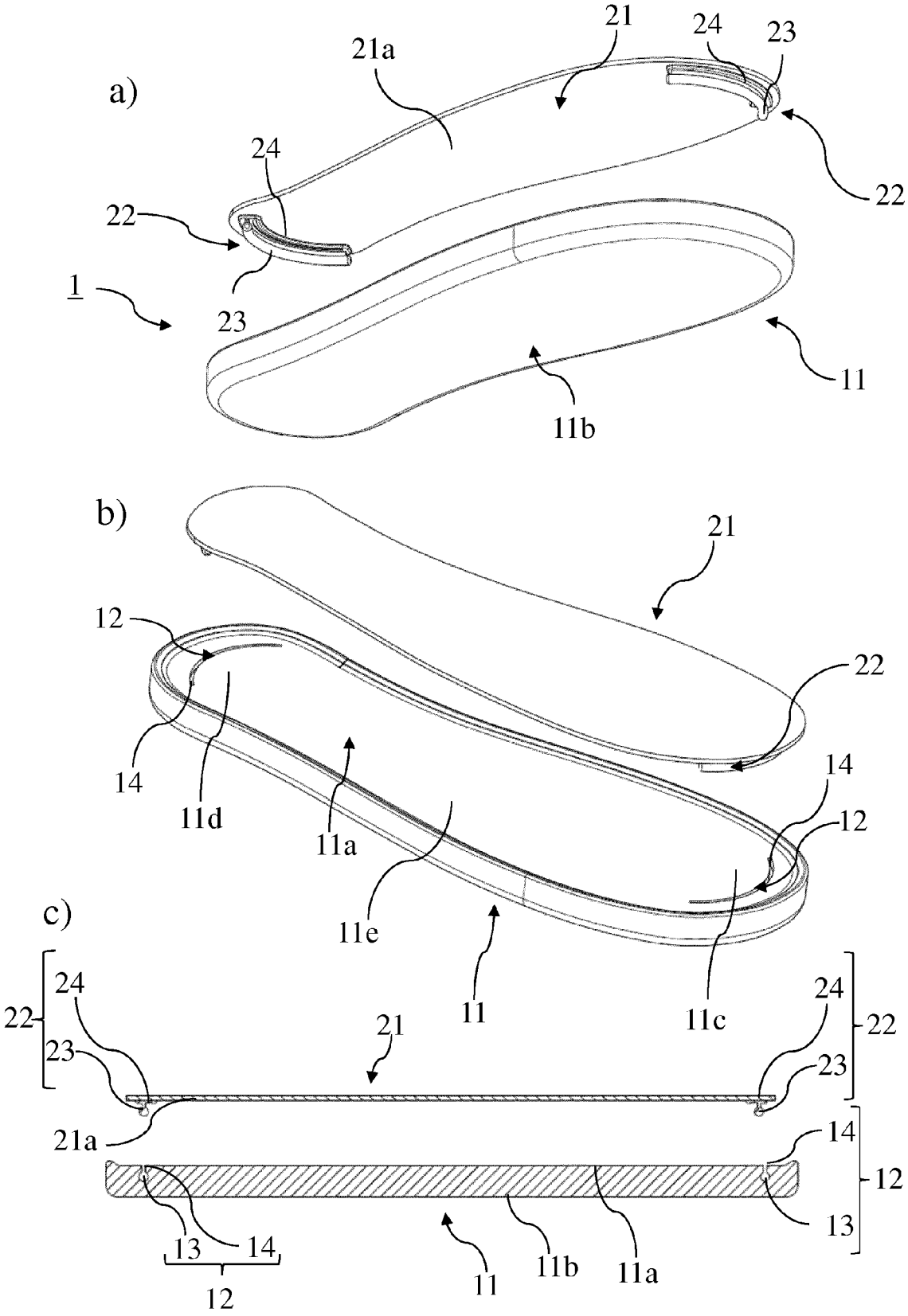
a)
21
24
23
21a
22
24
22
1
23
11
11b
b)
21
12
22
14
14
11d
11a
11e
11
11c
c)
22
24
23
21
24
22
23
21a
14
12
13
13
14
12
11
11b
11a

Fig. 1

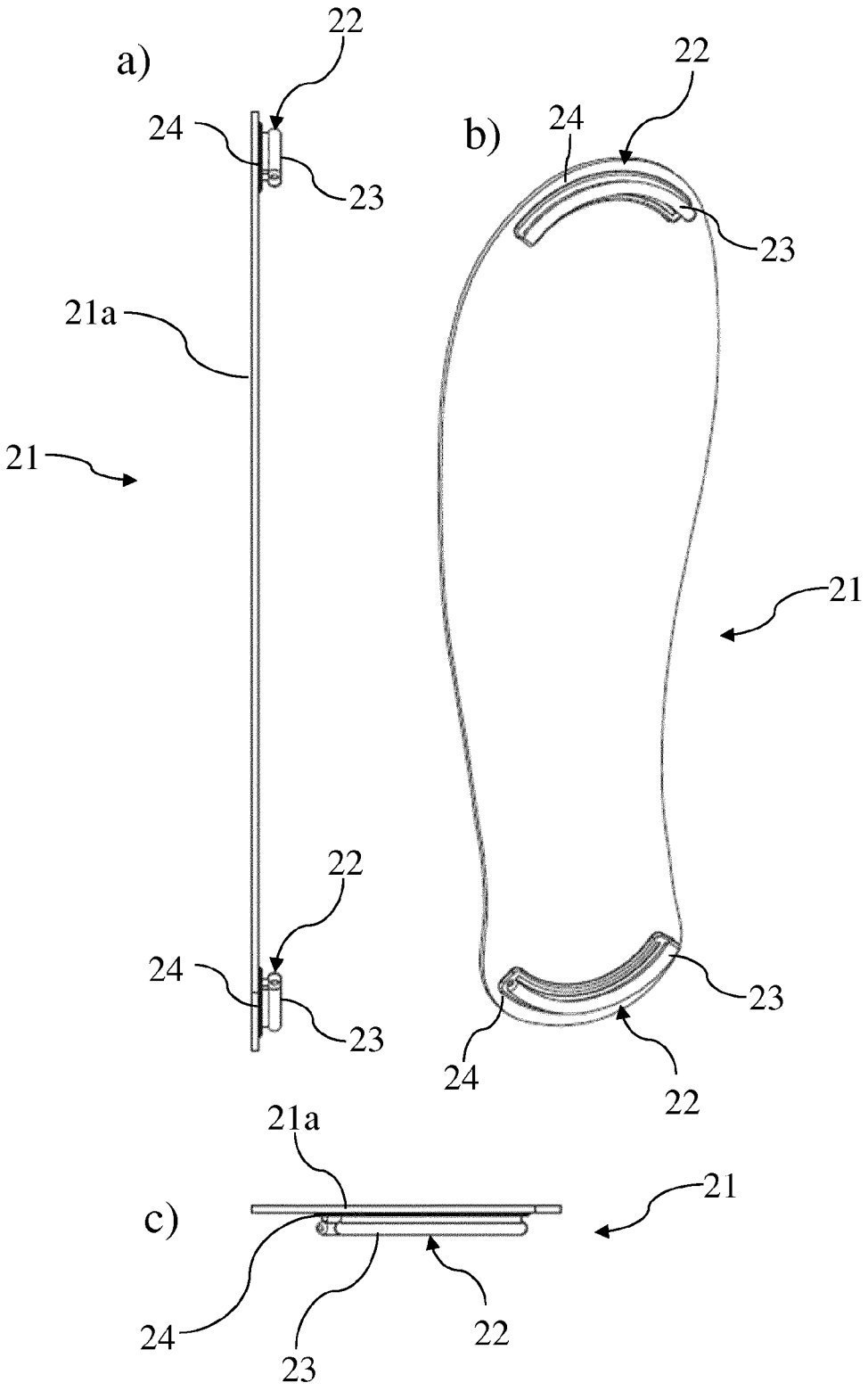


Fig. 2

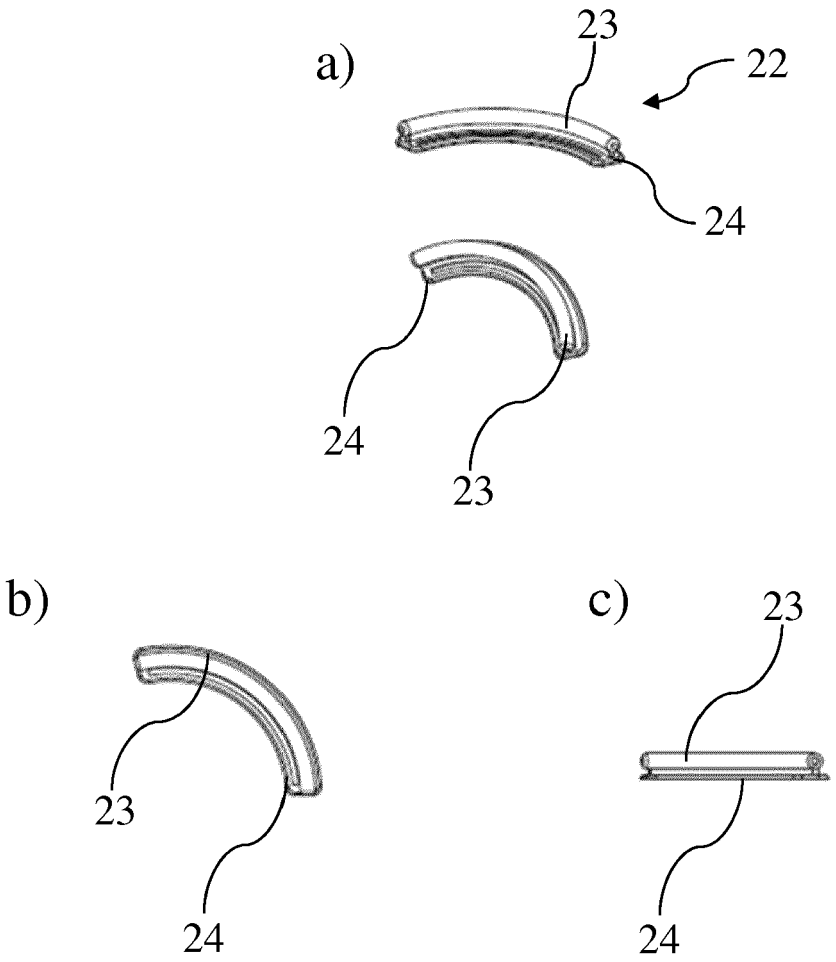


Fig. 3

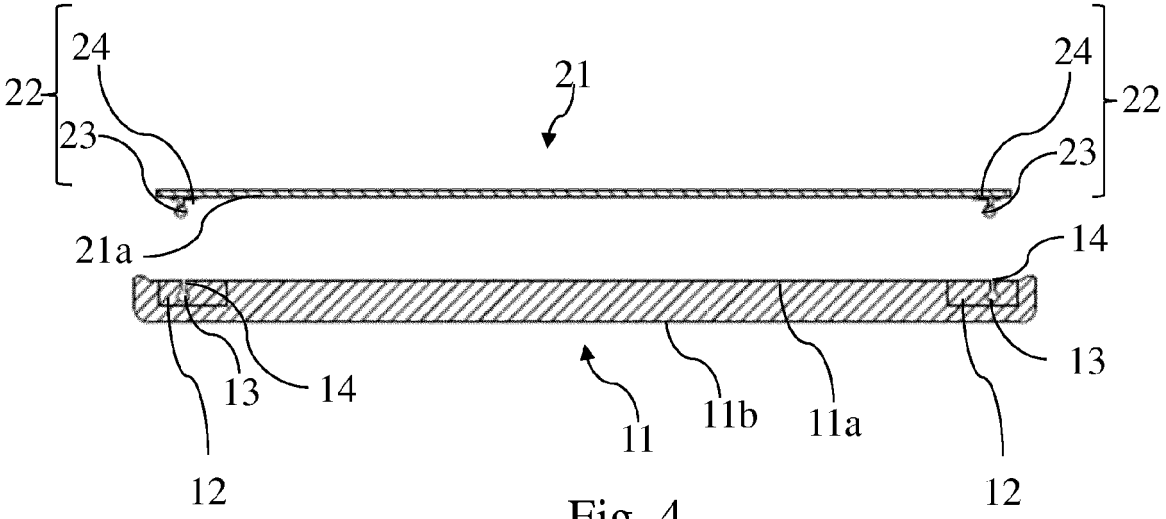
22
24
23
21
24
22
23
21a
14
13
14
13
11
11b
11a
12
12

Fig. 4

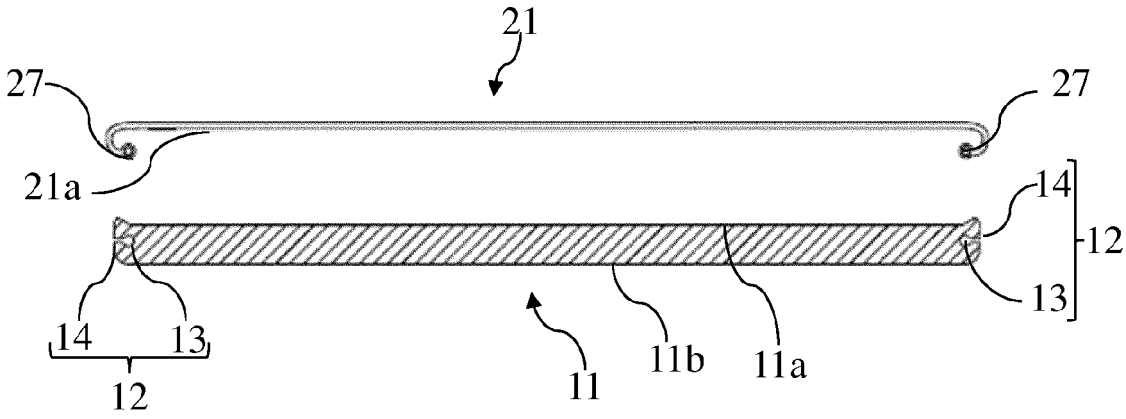
21
27
27
21a
14
12
13
14
13
12
11
11b
11a

Fig. 5

Europäisches Patentamt
European Patent Office
Office européen des brevets

# EUROPEAN SEARCH REPORT

Application Number
EP 14 19 1559

## 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 02/071880 A1 (SCHALLER PASCAL [CH])<br>19 September 2002 (2002-09-19)<br>* page 6, lines 14-18; figures *<br>* page 7, line 19 - page 9, line 5 * | 1-8,<br>11-15 | INV.<br>A43B17/18<br><br>ADD.<br>A43B3/10 |
| X | US 2008/092406 A1 (LUDEMANN JOHN F [US])<br>24 April 2008 (2008-04-24)<br>* paragraph [0028]; claim 1; figures 6-11<br>* | 1-3,5,7,<br>8,15 | |
| X | WO 2012/161576 A1 (FLIPLOCKER BV;<br>VEHMEIJER STEPHAN BERNARD WILLEM [NL]; VAN DER VECHT AR)<br>29 November 2012 (2012-11-29)<br>* page 4, lines 22-25; claim 1; figures * | 1-3,7,<br>12,15 | |
| X | US 2 368 314 A (HERMAN MARX)<br>30 January 1945 (1945-01-30)<br>* page 2, left-hand column, lines 1-52 *<br>* page 2, right-hand column, lines 9-18; figures * | 1-12,15 | |
| | | | TECHNICAL FIELDS SEARCHED (IPC) |
| X | DE 81 01 424 U1 (ADIDAS SPORTSCHUHFABRIKEN ADI DASSLER KG) 25 June 1981 (1981-06-25)<br>* claims 1,2,6,7; figures 2,3 * | 1,3-8,15 | A43B |
| E | WO 2014/188083 A1 (QILAQILA [FR])<br>27 November 2014 (2014-11-27)<br>* abstract; figures 1-5 * | 1,2,5,6,<br>8,11,<br>13-15 | |
| A,D | US 2012/255101 A1 (PIZZO CARL M [US])<br>11 October 2012 (2012-10-11)<br>* abstract; figures * | 1,15 | |

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| The Hague | 30 March 2015 | 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 1559

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.

30-03-2015

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| WO 02071880 A1 | 19-09-2002 | NONE | |
| US 2008092406 A1 | 24-04-2008 | CN 101164465 A | 23-04-2008 |
| | | US 2008092406 A1 | 24-04-2008 |
| WO 2012161576 A1 | 29-11-2012 | AU 2012259515 A1 | 23-01-2014 |
| | | EP 2763560 A1 | 13-08-2014 |
| | | NL 2006833 C | 22-01-2013 |
| | | NL 2011255 A | 23-09-2013 |
| | | WO 2012161576 A1 | 29-11-2012 |
| US 2368314 A | 30-01-1945 | NONE | |
| DE 8101424 U1 | 25-06-1981 | NONE | |
| WO 2014188083 A1 | 27-11-2014 | NONE | |
| US 2012255101 A1 | 11-10-2012 | NONE | |

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


- US 20120255101 A **[0003]**