



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
16.08.2023 Bulletin 2023/33

(51) International Patent Classification (IPC):
A43B 5/02 (2006.01) **A43B 13/12** (2006.01)
A43B 23/02 (2006.01)

(21) Application number: **23155856.0**

(52) Cooperative Patent Classification (CPC):
A43B 23/0235; A43B 5/02; A43B 13/122

(22) Date of filing: **09.02.2023**

(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 ME MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
KH MA MD TN

- **SCHNEIDER, Stefan**
91074 Herzogenaurach (DE)
- **MACE, Thomas**
91074 Herzogenaurach (DE)
- **TÖBBEN, Lars**
91074 Herzogenaurach (DE)
- **LAZIC, Tatjana**
91074 Herzogenaurach (DE)

(30) Priority: **11.02.2022 DE 102022201465**

(71) Applicant: **adidas AG**
91074 Herzogenaurach (DE)

(74) Representative: **Bardehle Pagenberg**
Partnerschaft mbB
Patentanwälte Rechtsanwälte
Prinzregentenplatz 7
81675 München (DE)

(72) Inventors:
• **SLACK, James**
91074 Herzogenaurach (DE)

(54) **STABILIZING ELEMENT FOR A SHOE UPPER**

(57) The present invention relates to a shoe (1) comprising a shoe upper (2), an outsole (3), and a stabilizing element (10). The stabilizing element (10) extends from the outsole (3) upward towards a step-in opening (4) of the shoe upper (2) and rearward towards a heel region (5) of the shoe (1). Further, the stabilizing element (10) comprises an outer layer (12), wherein the stabilizing element (10) extends along an outside (6) of the shoe upper (2). Moreover, an area (13) of the outside (6) of the shoe upper (2) is not covered by the stabilizing element (10),

whereby the area (13) is located between the stabilizing element (10) and the outsole (3). Furthermore, the area (13) continuously transitions into a further area (18) of the outside (6) of the shoe upper (2) which is not covered by the stabilizing element (10). Said the further area (18) extends into a portion of the shoe upper (2) which is configured to receive an Achilles area and/or an Achilles tendon insertion. The outer layer (12) of the stabilizing element (10) is integrally formed with the outsole (3) of the shoe (1).



Fig. 1

Description

1. Technical field

[0001] The present invention relates to a shoe comprising a shoe upper, an outsole, and a stabilizing element. Further, the present invention relates to a method for manufacturing at least one lockdown element in a shoe upper, a respective shoe upper, and a shoe comprising said shoe upper.

2. Prior art

[0002] When designing shoes, a compromise is often made between comfort, functionality, and safety. For example, a soccer shoe may offer outstanding comfort due to a pronounced cushioning. However, this same soccer shoe may have deficits due to the pronounced cushioning regarding functionality, e.g. a limited feel for the ball, and regarding safety, e.g. an insufficient stabilization of the ankle.

[0003] Nevertheless, a fundamental objective is to increase the comfort as well as the functionality and the safety of a shoe. Especially for sports and outdoor activities, it is essential that a shoe is comfortable to wear, ensures a low risk of injury and fulfills the function intended for the shoe. In this direction, the present invention aims to solve a first and a second problem.

[0004] The first problem to which the present invention is directed is the design of stabilizing elements for ankle stabilization. For various kinds of shoes ankle stabilization is required to prevent injury to the ankle and/or to avoid ligament injuries. For example, when a soccer player takes a shot while standing on a soft and/or uneven surface, there is an increased risk of twisting one's ankle, which may lead to injuries. Accordingly, stabilizing elements may be applied to the shoes, particularly soccer shoes. However, stabilizing elements known in the prior art have several drawbacks. Either the existing stabilizing elements do not provide sufficient stabilization and/or are uncomfortable up to such an extent that it affects the health of the foot.

[0005] The existing stabilizing elements of a first group enclose the heel region and extend from an outsole of a shoe towards a medial ankle area and a lateral ankle area and towards the achilleas area. Thereby such stabilizing elements extend from a lateral side of the shoe to a medial side of the shoe and at least partially enclose the Achilles area and particularly the Achilles tendon insertion.

[0006] Since these stabilizing elements are formed around the heel region, they provide good ankle stability to the wearer. This is as these stabilizing elements tightly clasp the heel portion. However, they exert a pressure onto the Achilles area and particularly the Achilles tendon insertion. This is uncomfortable for the wearer, especially during running. Even further, said pressure on the Achilles area and particularly on the Achilles tendon insertion

may lead to an irritation or even an inflammation of the Achilles tendon.

[0007] The existing stabilizing elements of a second group extend from an outsole of a shoe towards a medial ankle area or a lateral ankle area. Thereby these stabilizing elements do not extend from a lateral side of the shoe to a medial side of the shoe and therefore do not enclose the Achilles area. Rather, a first stabilizing element is provided on the lateral side of the shoe and a second stabilizing element is provided on the medial side of the shoe.

[0008] Accordingly, such stabilizing elements may avoid that a pressure is applied onto the Achilles area and particularly the Achilles tendon insertion. Hence, an increased comfortability may be provided. Moreover, an irritation or even an inflammation of the Achilles tendon may be avoided. However, since the existing stabilizing elements of the second group do not tightly clasp the heel region, they provide less stability to the wearer.

[0009] Therefore, it is a first object underlying the present invention to provide a shoe comprising a stabilizing element which maximizes stability, while minimizing pressure on the Achillea area and the Achilles tendon insertion in particular.

[0010] The second problem to which the present invention is directed refers to the need to keep a foot of a wearer fixed inside the shoe, preferably in a comfortable manner.

[0011] In general, laces are known to fix the wearer's foot in the shoe. Further, the use of stretchable elements and Velcro fasteners is common to fix the wearer's foot in the shoe. However, in some cases, additionally, a further means of fixing the foot in the shoe is desirable. Exemplarily, when a particularly good hold within the shoe is required. Even further, in some cases it may also be necessary that a shoe has no laces. One reason therefor may be to provide a soccer shoe that allows a particularly good feel for the ball in the top midfoot area. Another reason may be that tight laces are often perceived as unpleasant.

[0012] It is therefore a second object underlying the present invention to provide means which improve the fixation of the foot of a wearer inside a shoe.

[0013] JP 2005-296 101 relates to a reinforcing device for a shoe, wherein parts of the reinforcing device are integrally molded by a non-foaming resin, and wherein the cross section of inner parts is curved along the curve of the foot so that the reinforcing device is practically along the foot. Further, the stiffness of the outer side surface of the heel part of the shoe is less than that of the inner side surface of the heel part of the shoe, and it is set to be conveniently along the foot.

[0014] JP 2008-206 629 A relates to a shoe having a heel counter in the heel portion of the upper of the shoe, wherein the heel counter is arranged around the lower portion of the calcaneus at a position corresponding to the lower portion of the calcaneus of the foot of the shoe wearer and is located on the lateral instep side of the

shoe.

[0015] DE 10 2014 101 032 A1 relates to a shank for an article of footwear including a substantially planar base portion extending within a first plane in the longitudinal and lateral directions and a substantially planar ramp portion designed to absorb footwear loads in a vertical direction, the ramp portion extending, in an uncompressed state, within a second plane that is oblique to the first plane. The shank comprises a lateral stabilizing element.

3. Summary of the invention

[0016] The first object underlying the present invention is at least partially achieved by the teachings of the independent claims and in particular by a first aspect of the invention. Further, the first object underlying the present invention is at least partially achieved by a second aspect of the invention. Even further, the first object underlying the present invention is at least partially achieved by a third aspect of the invention. Moreover, the second object underlying the present invention is at least partially achieved by a fourth aspect of the invention.

[0017] The first aspect of the invention according to a first alternative relates to a shoe comprising a shoe upper, an outsole, and a stabilizing element. The stabilizing element extends from the outsole upward towards a step-in opening of the shoe upper and rearward towards a heel region of the shoe. Optionally, the stabilizing element extends rearward into the heel region of the shoe. Further, the stabilizing element comprises an outer layer. Moreover, the stabilizing element extends along an outside of the shoe upper, wherein an area of the outside of the shoe upper is not covered by the stabilizing element, whereby the area is located between the stabilizing element and the outsole. The area continuously transitions into a further area of the outside of the shoe upper which is not covered by the stabilizing element, whereby the further area extends into a portion of the shoe upper which is configured to receive an Achilles area and/or an Achilles tendon insertion. Furthermore, the outer layer of the stabilizing element is integrally formed with the outsole of the shoe.

[0018] Thereby "integrally formed" may refer to the aspect that no material boundary can be identified between the outer layer and the outsole. Particularly, the outer layer and the outsole may be integrally formed by injection molding, direct casting and/or foaming. Further, the outer layer and the outsole may comprise a polymer material. Particularly, the outer layer and the outsole may comprise polyamide, polyurethane and/or rubber. By integrally forming the outer layer with the outsole, the outer layer may be provided with a higher pretension against the inner layer. Accordingly, a higher pressure onto the heel region of the wearer may be applied. Furthermore, the necessary work steps may be reduced.

[0019] The area of the outside of the shoe upper which is not covered by the stabilizing element, and which is

located between the stabilizing element and the outsole may be at least partially limited by an axis which substantially perpendicularly extends from the outsole to the stabilizing element. More particular, said axis may extend substantially perpendicularly from a plane of expansion of the outsole of the shoe to the rearmost point of the stabilizing element. Said area which is not covered by the stabilizing element at least partially avoids that an uncomfortable pressure on the Achilles area is applied. Particularly, said area may avoid that the stabilizing element exerts a pressure on an insertion of the Achilles tendon. Hence the comfortability of the shoe can be increased and/or irritations of the Achilles tendon can be avoided. It is understood that further areas of the shoe upper besides the area of the outside of the shoe upper which is located between the stabilizing element and the outsole may also not be covered by the stabilizing element.

[0020] The above-mentioned further area additionally avoids that an uncomfortable pressure on the Achilles area is applied. Particularly, said further area may avoid that the stabilizing element exerts a pressure on an insertion of the Achilles tendon. Moreover, the flexibility of the shoe upper may not be impeded by the stabilizing element in the Achilles area and/or at the Achilles tendon insertion. Hence, the comfortability of the shoe may be increased and/or irritations of the Achilles tendon may be avoided. The further area preferably extends from a lateral side of the shoe to a medial side of the shoe. Thereby said advantages may be even further emphasized.

[0021] Further it is understood that the outer layer of the stabilizing element may be directly applied on the outside of the shoe upper. Exemplary, the outer layer of the stabilizing element may be attached to the outside of the shoe upper by means of stitching, thermal welding and/or gluing. However, the outer layer of the stabilizing element may be in contact with the outside of the shoe upper without being additionally attached to the outside of the shoe upper. Even further, it will be also understood that the outer layer as described above may be more generally referred to as "layer". Nevertheless, in view of further features according to the invention which are described below, the term "outer layer" facilitates understanding.

[0022] Moreover, the stabilizing element of the shoe according to the first alternative of the first aspect of the present invention may comprise an inner layer. It is understood that the inner layer may be arranged between the outer layer and the outside of the shoe upper. By means of the inner layer further support may be provided and a separation of functions within the stabilizing element may be achieved. Exemplarily, the inner layer may provide support to the foot of the wearer, whereas the outer layer serves to clasp the inner layer towards the foot of the wearer. Thereby the amount of material required for the stabilizing element may be reduced as the inner layer and the outer layer are optimized regarding the specific function they fulfil.

[0023] Moreover, a lower rearward edge of the stabilizing element may extend from the outsole upward towards a step-in opening of the shoe upper and rearward towards a heel region of the shoe, wherein the angle between the lower rearward edge of the stabilizing element and the plane of expansion of the outsole is preferably between 10° and 90°, more preferably between 15° and 60°, even more preferably between 20° and 50°, most preferably between 30° and 40°. The lower rearward edge may limit the stabilizing element at least partly in a posterior direction. Further, the stabilizing element may be at least partly limited in the posterior direction by a superior rearmost edge of the stabilizing element, wherein the superior rearmost edge may be arranged offset from a rearmost line of the upper, which extends from an outsole upward towards a step-in opening. The superior rearmost edge may be arranged in a superior direction from the lower rearward edge. The stabilizing element may be fully limited in the posterior direction by the superior rearmost edge and/or the lower rearward edge. It will be understood that by means of the foregoing the above-mentioned area of the outside of the shoe upper which is not covered by the stabilizing element, and which is located between the stabilizing element and the outsole may be alternatively described.

[0024] Moreover, the first aspect of the invention according to a second alternative refers to a shoe comprising a shoe upper, an outsole, and a stabilizing element. The stabilizing element extends from the outsole upward towards a step-in opening of the shoe upper and rearward towards a heel region of the shoe. Optionally, the stabilizing element extends rearward into the heel region of the shoe. Further, the stabilizing element comprises an inner layer and an outer layer. Moreover, the inner layer and the outer layer comprise different materials. The stabilizing element extends along an outside of the shoe upper.

[0025] The different materials allow a separation of functions. The inner layer may comprise a material with a higher stiffness and/or a higher strength than the outer layer. Exemplarily, the inner layer may comprise a fiber reinforced polymer. Further, the outer layer may comprise a material with a higher elasticity or higher stiffness than the inner layer. Exemplarily the outer layer may comprise a polyamide material. Thus, the inner layer may provide support, whereas the outer layer may clasp the inner layer to the shoe upper. Accordingly, the stabilizing element may be clasped to the heel and/or the ankle of a wearer. Thereby, the stability may be increased. Further, due to specific use of materials the weight of the stabilizing element may be reduced. Exemplarily, the inner layer, which comprises a fiber reinforced polymer, can comprise a reduced thickness due to a higher tensile strength. Moreover, the inner layer may be adapted to the properties of the foot of a wearer, whereas the outer layer may remain unchanged. Hence, due to the separation of functions in the stabilizing element by using different materials, the modification effort may be reduced.

The inner layer and/or the outer layer may comprise a polymer such as polyamide, polyurethane and/or rubber. Particularly, the inner layer and/or the outer layer may comprise ethylene-vinyl acetate (EVA), Polyamide 11 (PA 11) and/or Polyamide 12 (PA 12). Further, the inner layer and/or the outer layer may comprise a thermoplastic elastomer (TPE) such as polyether block amide (PEBA) and/or thermoplastic polyurethane (TPU). Moreover, the inner layer and/or the outer layer may comprise composite materials, natural materials and/or metals.

[0026] The inner layer and the outer layer of the shoe according to the first alternative may comprise different materials. Thereby the configurations and/or advantages of the previous paragraph may be considered.

[0027] The shoe according to the second alternative may be further specified in that an area of the outside of the shoe upper is not covered by the stabilizing element, whereby the area is located between the stabilizing element and the outsole. Said area may be at least partially limited by an axis which perpendicularly extends from the outsole to the stabilizing element. More particular, said axis may extend perpendicularly from a plane of expansion of the outsole of the shoe to the rearmost point of the stabilizing element. It will be understood that said axis may be a virtual axis and may serve to define the area. Said area may avoid that an uncomfortable pressure on the Achilles area is applied. Particularly, said area may avoid that the stabilizing element exerts a pressure on an insertion of the Achilles tendon. Hence, the comfortability of the shoe may be increased and/or irritations of the Achilles tendon may be avoided. It is understood that further areas of the shoe upper besides the area of the outside of the shoe upper which is located between the stabilizing element and the outsole may also not be covered by the stabilizing element.

[0028] Moreover, a lower rearward edge of the stabilizing element may extend from the outsole upward towards a step-in opening of the shoe upper and rearward towards a heel region of the shoe, wherein the angle between the lower rearward edge of the stabilizing element and the plane of expansion of the outsole is preferably between 10° and 90°, more preferably between 15° and 60°, even more preferably between 20° and 50°, most preferably between 30° and 40°. The lower rearward edge may limit the stabilizing element at least partly in a posterior direction. Further, the stabilizing element may be at least partly limited in the posterior direction by a superior rearmost edge of the stabilizing element, wherein the superior rearmost edge may be arranged offset from a rearmost line of the upper, which extends from an outsole upward towards a step-in opening. The superior rearmost edge may be arranged in a superior direction from the lower rearward edge. The stabilizing element may be fully limited in the posterior direction by the superior rearmost edge and/or the lower rearward edge. It will be understood that by means of the foregoing the above-mentioned area of the outside of the shoe upper which is not covered by the stabilizing element, and

which is located between the stabilizing element and the outsole may be alternatively described.

[0029] It will be understood that the following is directed to the first alternative of the first aspect of the invention and to the second alternative of the first aspect of the invention. Further, according to this invention the term "rearward" with respect to a shoe refers to a direction which directs from a tip of the shoe towards an Achilles area of the shoe. Hence a "rearmost" point of an element of the shoe is the point which has the largest distance to the tip of the shoe. Further, according to this invention the term "upward" refers to a direction which directs from the outsole to the shoe upper.

[0030] The shoe according to the present invention may be a sports shoe, a daytime shoe, a casual shoe and/or a work shoe. Further, said shoe may be a soccer shoe, a running shoe, a mountaineering boot, a climbing boot, a ski boot, a cross-country skiing boot and/or a basketball shoe. The mentioned examples are not conclusive.

[0031] The shoe upper may comprise a polymer material and/or a natural material, such as leather and/or natural fibers. Moreover, the shoe upper may comprise a woven material, a knitted material, a material with unidirectional fibers and/or a material without fibers. Preferably, the material of a major part of the shoe upper comprises a lower stiffness than the material of the inner layer and/or the outer layer of the stabilizing element.

[0032] The stabilizing element may serve to fix a heel of a wearer within the shoe. Particularly, the stabilizing element may press the heel towards the sole. Thereby mainly the Calcaneus bone may be pressed towards the sole, preferably without applying a load onto the Achilles area and particularly the Achilles tendon insertion. By fixating the heel of a wearer within the shoe, an instability due to heel slippage inside the shoe may be avoided. Hence, the stabilizing element may serve to stabilize the ankle of a wearer at least indirectly. Moreover, by stabilizing the ankle of a wearer at least indirectly a twisting of the ankle may be avoided. The term ankle in the present invention may be also referred to as ankle joint.

[0033] The stabilizing element may be in contact with the outsole. Thereby, the stabilizing element may extend from a rear half of the shoe. Further, the stabilizing element may extend from the heel region of the shoe and/or an underfoot area of the shoe. According to the present invention the heel region may be referred to as a region, which encloses a heel and/or a Calcaneus bone of a wearer. The step-in opening may be also referred to as a throat opening.

[0034] The use of at least two layers, i.e. the inner layer and the outer layer, may allow that a graduation of stabilization is achieved. Exemplarily, areas of the shoe upper which require less stabilization may be covered by only one layer, wherein areas which require more stabilization may be covered by at least two layers. Further, by means of the at least two layers of the stabilizing element a separation of functions may be achieved. The

inner layer may be more rigid compared to the outer layer and/or designed to provide a stable shape. The outer layer may be more elastic compared to the inner layer and/or designed to clasp the inner layer towards the inside of the shoe. Hence, by means of the separation of functions, the stabilizing element itself may be provided with a stable shape and may further provide sufficient pressure to the heel region and/or ankle region. Both aspects contribute to an improved stabilization. Further, in an alternative embodiment the outer layer may be more rigid compared to the inner layer and/or designed to provide a stable shape. The inner layer may be more elastic compared to the outer layer and/or designed to conform to the shape of the foot.

[0035] The stabilizing element may comprise further layers besides the inner layer and the outer layer. Exemplarily, between the inner layer and the outside of the shoe upper an adhesive layer may be applied. Further exemplarily, an adhesive layer may be also applied between the inner layer and the outer layer.

[0036] The stabilizing element extending along an outside of the shoe upper may be fixedly attached to the outside of the shoe upper. Particularly, the inner layer and/or the outer layer may be stitched, glued and/or thermally welded to the outside of the shoe upper. Thus, the stabilization by means of the stabilizing element may be further increased.

[0037] The area of the outside of the shoe upper which is not covered by the stabilizing element and located between the stabilizing element and the outsole may have a size of at least 100 mm², preferably of at least 150 mm², more preferably of at least 200 mm², even more preferably of at least 250 mm², and most preferably of at least 300 mm². These sizes ensure that the pressure which is applied onto the Achilles area is minimized. Particularly, the application of a pressure onto the Achilles tendon insertion may be avoided at least partially.

[0038] In the shoe according to the second alternative of the first aspect, the area of the outside of the shoe upper which is not covered by the stabilizing element and located between the stabilizing element and the outsole may continuously transition into a further area of the outside of the shoe upper which is not covered by the stabilizing element. Thereby the further area may extend into a portion of the shoe upper which is configured to receive an Achilles area and/or an Achilles tendon insertion, whereby the further area preferably extends from a lateral side of the shoe to a medial side of the shoe. Said further area may additionally avoid that an uncomfortable pressure on the Achilles area is applied. Particularly, said further area may avoid that the stabilizing element exerts a pressure on an insertion of the Achilles tendon. Moreover, the flexibility of the shoe upper may not be impeded by the stabilizing element in the Achilles area and/or at the Achilles tendon insertion. Hence, the comfortability of the shoe may be increased and/or irritations of the Achilles tendon may be avoided.

[0039] The stabilizing element may comprise a wing

shape, a parallelogram shape, a trapezoid shape, an elliptical shape, and/or a rectangular shape. Thereby the shapes may comprise edges which are rounded. Further, it will be understood that not the explicit geometric equivalence is required. Particularly, the inner layer and/or the outer layer may comprise a wing shape, a parallelogram shape, a trapezoid shape, an elliptical shape, and/or a rectangular shape. These shapes may serve to cover the ankle area optimally. Particularly the parallelogram shape may be beneficial since one side may be attached or integrally formed with the outsole, wherein two parallel sides extend towards and optionally into the heel region and upward towards the step-in opening. As aforementioned, the explicit geometric equivalence for the parallelogram shape is not required. Hence, regarding the parallelogram shape it will be understood that the two parallel sides extending towards and optionally into the heel region and upward towards the step-in opening are not required to be exactly parallel.

[0040] A shape of the stabilizing element may be at least limited by two straight edges which extend along the outside of the shoe upper upward towards the step-in opening and rearward towards the heel region, wherein the two edges preferably have a length of at least 10 mm, more preferably at least 15 mm, even more preferably at least 20 mm, and most preferably at least 25 mm. It will be understood that the straight edges not necessarily need to be exactly straight in the geometric sense. Rather, the straight edges may be substantially straight in the geometric sense. This may include that at least one of the straight edges is slightly curved, e.g. with a decreasing gradient or an increasing gradient as seen from the surface defined by the outsole. The two straight edges may limit a shape of the inner layer and/or the outer layer. Thereby, an angle between the outsole and at least one of the straight edges may range from 5 degrees to 70 degrees, preferably from 10 degrees to 60 degrees, more preferably from 15 degrees to 50 degrees, even more preferably from 20 degrees to 40 degrees, and most preferably from 25 degrees to 35 degrees. With said two straight edges limiting the shape of the stabilizing element it can be ensured that no or less pressure is applied on the Achilles tendon insertion.

[0041] The inner layer and/or the outer layer may each comprise a thickness from 0.01 mm to 3 mm, preferably from 0.1 mm to 2 mm, more preferably from 0.2 mm to 1 mm, even more preferably from 0.25 mm to 0.5 mm, and most preferably from 0.28 mm to 0.32 mm. Said thickness ranges allow for a good compromise between stiffness, i.e. stabilization of the foot, and comfort.

[0042] The stabilizing element may extend at least partially into a lateral ankle area or a medial ankle area. The term ankle area according to the present invention in general refers to the area of the shoe upper which covers the area of the foot which comprises the ankle, i.e. the ankle joint. The term medial ankle area according to the present invention may refer to the area of the shoe upper which covers the area of the foot which comprises liga-

ments between Tibia and Calcaneus bone. Further, the term lateral ankle area according to the present invention may refer to the area of the shoe upper which covers the area of the foot which comprises ligaments between Fibula and Calcaneus bone.

[0043] The outer layer of the stabilizing element of the shoe according to the second alternative of the first aspect of the invention may be integrally formed with the outsole of the shoe. Thereby "integrally formed" may refer to the aspect that no material boundary can be identified between the outer layer and the outsole. Particularly, the outer layer and the outsole may be integrally formed by injection molding, direct casting and/or foaming. Further, the outer layer and the outsole may comprise a polymer material. Particularly, the outer layer and the outsole may comprise polyamide, polyurethane and/or rubber. By integrally forming the outer layer with the outsole, the outer layer may be provided with a higher pretension against the inner layer. Accordingly, a higher pressure onto the heel region of the wearer may be applied. Furthermore, the necessary work steps may be reduced.

[0044] The shape of the inner layer may correspond to the shape of the outer layer. The term "correspond" may refer to the aspect that the shape of the outer layer lies within the inner layer and/or that at least one edge of the inner layer and/or the outer layer are substantially parallel. This allows loads to be transferred continuously between the inner and outer layer. Thereby a homogeneous stress distribution may be achieved. Hence material damages due to stress concentrations may be avoided.

[0045] The inner layer may extend beyond the outer layer. Preferably, the inner layer may extend beyond the outer layer rearwards towards the Achilles area and/or upwards towards the step-in opening. Thus, the inner layer can increase the support of the stabilizing element for the foot. Further, the inner layer may extend beyond the outer layer in an anterior direction towards a toe region of the foot. Thereby, the outer layer may serve to press the inner layer towards the inside of the shoe. Hence, the areas of the shoe upper which are supposed to be stabilized may be easily amended by adapting the inner layer, whereas the outer layer may remain unchanged.

[0046] The inner layer may have a larger contour than the outer layer. Particularly, the inner layer may serve to cover the areas of the shoe upper which are supposed to be stabilized. Thereby, the outer layer may serve to press the inner layer towards the inside of the shoe. Hence, the areas of the shoe upper which are supposed to be stabilized may be easily amended by adapting the inner layer, whereas the outer layer may remain unchanged.

[0047] The inner layer may comprise a composite layer, wherein the composite layer preferably is a fiber reinforced layer. The term "composite" may refer to the aspect that the layer comprises at least two materials with different material properties. Thereby the composite

layer may comprise a fiber reinforced polymer. Particularly, the composite layer may comprise a carbon fiber reinforced polymer, a glass fiber reinforced polymer, a natural fiber reinforced polymer, a ceramic fiber reinforced polymer and/or an aramid fiber reinforced polymer. Hence, the inner layer may provide high strength and/or high stiffness. Moreover, the weight of the inner layer may be reduced.

[0048] Further, the inner layer may comprise anisotropic material properties. By means of anisotropic material properties the inner layer may be adapted to specific load cases. Exemplarily, fibers in the inner layer may be oriented to provide a high bending stiffness and a low torsion stiffness. Thus, the shoe may offer flexibility and at the same time provides stability against twisting one's ankle.

[0049] The outer layer may comprise at least one of the materials ethylene-vinyl acetate (EVA), Polyamide 11 (PA 11), Polyamide 12 (PA 12), thermoplastic elastomer (TPE) such as polyether block amide (PEBA) and/or thermoplastic polyurethane (TPU). Hence, the outer layer may provide high stiffness to clasp the inner layer to the shoe upper. Further, the outer layer may thus be integrally formed with the outsole.

[0050] The outer layer may have a triangular cross section. Thereby the cross section of the outer layer may comprise three corners. Said corners may be at least partially rounded. Moreover, the cross section of the outer layer may comprise three edges. Thereby these three edges may be straight or partially curved. Particularly, one edge and/or two of the corners may be in contact with the inner layer. The triangular cross section increases the area moment of inertia of the outer layer, in particular compared to substantially rectangular cross sections with the same area. Hence, the stiffness of the outer layer can be increased.

[0051] The outer layer may comprise a varying thickness. Exemplarily, a first portion of the outer layer may have greater thickness than a second portion of the outer layer. Exemplarily, the first portion and the second portion may be separated by a step in the surface of the outer layer. Said step may be a discontinuous change in the surface of the outer layer.

[0052] The outer layer may comprise a reinforcement rib. The reinforcement rib may comprise the step which divides the first portion and the second portion of the outer layer, as defined above. The reinforcement rib may extend from the outsole along the outer layer of the stabilizing element. Preferably, the outer layer of the stabilizing element is integrally formed with the outsole or a component of the outsole. The reinforcement rib may extend essentially along the full length of the stabilizing element. The reinforcement rib may extend at least partly along the outsole. The reinforcement rib increases the area moment of inertia of the outer layer. Hence, the stiffness of the outer layer can be increased.

[0053] The outer layer may comprise a composite layer. With the outer layer comprising a composite layer the

stiffness of the stabilizing element may be further increased. Thus, the stabilizing element may provide even more stability.

[0054] The outsole may comprise multiple parts. Exemplarily, the outsole may be formed as a modular assembly. Thereby at least one module of the modular assembly of the outsole may be a composite module. The composite module preferably is a fiber reinforced module. The term "composite" may refer to the aspect that the part comprises at least two materials with different material properties. Thereby the composite module may comprise a fiber reinforced polymer. Particularly, the composite module may comprise a carbon fiber reinforced polymer, a glass fiber reinforced polymer, a natural fiber reinforced polymer, a ceramic fiber reinforced polymer and/or an aramid fiber reinforced polymer. Exemplarily, the composite module can be a plate or a rod but is not limited thereto. The outsole may comprise multiple composite modules.

[0055] Further, at least one module may be connected to the inner layer and/or the outer layer of the stabilizing element. Particularly, the module may be integrally formed with the inner layer and/or the outer layer. Thereby "integrally formed" may refer to the aspect that no material boundary can be identified between the outer layer and the module.

[0056] Further, a line on the outside of the shoe upper which extends substantially straight along the Achilles area, from the outsole to the step-in opening may not be covered by the inner layer and/or the outer layer. Thereby, preferably said line is not covered by the stabilizing element. By means of said line on the outside of the shoe upper which extends substantially straight along the Achilles area, from the outsole to the step-in opening and which is not covered by the inner layer and/or the outer layer, the mobility of the Achilles tendon can be enhanced, improving comfort and/or functionality. This is as the influence of the inner layer and/or the outer layer on a stretching and/or a relaxation of the Achilles tendon is at least reduced. Particularly as the stretching and/or the relaxation of the Achilles tendon may then be primarily limited by the material of the shoe upper. These advantages particularly apply if the shoe comprises two stabilizing elements as set forth below.

[0057] The shoe may comprise two stabilizing elements as defined above, wherein preferably a first stabilizing element is arranged on a lateral side of the shoe, wherein further preferably a second stabilizing element is arranged on a medial side of the shoe. Thereby a shoe with increased lateral and medial stability may be provided. Thus, the risk of twisting in lateral and medial direction is reduced. Moreover, the stabilizing elements, as described above, avoid applying a pressure on the Achilles area and particularly the Achilles tendon insertion.

[0058] The inner layer of the first stabilizing element and the inner layer of the second stabilizing element may be connected to each other by a first connecting element. The first connecting element may extend at least partly

along a sole region of the shoe. The first connecting element may be formed integrally with the inner layer of the first stabilizing element and the inner layer of the second stabilizing element.

[0059] The inner layer of the first stabilizing element and the inner layer of the second stabilizing element may be connected to a module of the modular assembly of the outsole. Particularly, said inner layers may be integrally formed with the module, as described above. Further, the inner layer of the first stabilizing element and the inner layer of the second stabilizing element may be connected to the same module of the modular assembly of the outsole. Thus, the inner layers may be connected to each other via the module. Thereby the stabilization may be further improved without applying a pressure on the Achilles area and particularly the Achilles tendon insertion.

[0060] The outer layer of the first stabilizing element and the outer layer of the second stabilizing element may be connected to each other by a second connecting element. The second connecting element may extend at least partly along a sole region of the shoe. The second connecting element may be formed integrally with the outer layer of the first stabilizing element and the outer layer of the second stabilizing element.

[0061] The outer layer of the first stabilizing element and the outer layer of the second stabilizing element may be connected to a module of the modular assembly of the outsole. Particularly, the outer layers may be integrally formed with the module, as described above. Further, the outer layer of the first stabilizing element and the outer layer of the second stabilizing element may be connected to the same module of the modular assembly of the outsole. Thus, the outer layers may be connected to each other via the module. Thereby the stabilization may be further improved without applying a pressure on the Achilles area and particularly the Achilles tendon insertion.

[0062] The first stabilizing element may extend at least partially into a lateral ankle area, wherein the second stabilizing element may extend at least partially into a medial ankle area. Hence, the ankle, i.e. the ankle joint, may be further protected against twisting and/or injuries.

[0063] The first stabilizing element and the second stabilizing element may be configured to clasp a Calcaneus bone and thereby preferably do not apply a pressure to the Achilles area and/or the Achilles tendon insertion. By clasping the Calcaneus bone, the heel of a wearer can be fixed within the shoe. By fixating the heel of a wearer within the shoe, an instability due to heel slippage inside the shoe may be avoided. By avoiding the application of a pressure onto the Achilles area and/or the Achilles tendon insertion, comfortability can be increased and the risk of irritation or even inflammation can be reduced.

[0064] Further, the first stabilizing element and the second stabilizing element may not cover a portion of the shoe upper which is configured to receive the Achilles area and/or the Achilles tendon insertion. Hence, the por-

tion of the shoe upper which is configured to receive the Achilles area and/or the Achilles tendon insertion may remain uncovered from the stabilizing elements. By avoiding covering such portion, the application of a pressure onto the Achilles area and/or the Achilles tendon insertion may be avoided. Thus, comfortability can be increased and the risk of irritation or even inflammation can be reduced.

[0065] The first stabilizing element and the second stabilizing element may be spaced apart by a distance which extends along the outside of the shoe upper and at least partly along the Achilles area. This may avoid that an uncomfortable pressure on the Achilles area is applied. Particularly, it may be avoided that the stabilizing elements exert a pressure on the insertion of the Achilles tendon. Hence, the comfortability of the shoe may be increased and/or irritations of the Achilles tendon may be avoided. As the distance extends at least partly along the Achilles area and along the outside of the shoe upper it will be understood that the distance may be represented by a curved line. Further, the distance may be measured from the rearmost point of the first stabilizing element to the rearmost point of the second stabilizing element. The distance may lie in the range from 10 mm to 50 mm, preferably in the range from 20 mm to 35 mm, and more preferably in the range from 25 mm to 30 mm. Said distances have proven to provide for sufficient stabilization while at the same time avoiding the application of a pressure on the Achilles area. The distance may be measured in a plane which is perpendicular to the plane of expansion of the outsole of the shoe.

[0066] Further, at least one of the inner layer or the outer layer of the stabilizing element may be located between an innermost and an outermost layer of the shoe upper. Thus at least one of the inner layer or the outer layer of the stabilizing element may extend along an outside of an inner layer or an intermediate layer of the shoe upper.

[0067] As mentioned above, the first object underlying the present invention is at least partially achieved by the second aspect of the invention.

[0068] The second aspect of the invention refers to a shoe comprising:

a shoe upper;
an outsole; and
a first stabilizing element,

wherein the first stabilizing element extends from a lateral side of the outsole upward towards a step-in opening of the shoe upper and rearward towards (e.g. into) a heel region of the shoe,

wherein the first stabilizing element comprises an inner layer and an outer layer,
wherein the first stabilizing element extends along an outside of the shoe upper; and

a second stabilizing element,

wherein the second stabilizing element extends from a medial side of the outsole upward towards a step-in opening of the shoe upper and rearward towards (e.g. into) a heel region of the shoe,

wherein the second stabilizing element comprises an inner layer and an outer layer, wherein the second stabilizing element extends along an outside of the shoe upper, and

wherein the first stabilizing element and the second stabilizing element are spaced apart by a distance which extends along the outside of the shoe upper and at least partly along the Achilles area.

[0069] The shoe according to the second aspect of the invention may avoid that an uncomfortable pressure on the Achilles area is applied. Particularly, it may be avoided that the stabilizing elements exert a pressure on the insertion of the Achilles tendon. Hence, the comfortability of the shoe may be increased and/or irritations of the Achilles tendon may be avoided. As the distance extends at least partly along the Achilles area and along the outside of the shoe upper it will be understood that the distance may be represented by a curved line. Further, the distance may be measured from the rearmost point of the first stabilizing element to the rearmost point of the second stabilizing element. The distance may lie in the range from 10 mm to 50 mm, preferably in the range from 20 mm to 35 mm, and more preferably in the range from 25 mm to 30 mm. Said distances have proven to provide for sufficient stabilization while at the same time avoiding the application of a pressure on the Achilles area. The distance may be measured in a plane which is perpendicular to the plane of expansion of the outsole of the shoe. The superior rearmost edge of the first stabilizing element according to the first aspect of the invention may comprise said rearmost point of the first stabilizing element. The superior rearmost edge of the second stabilizing element according to the first aspect of the invention may comprise said rearmost point of the second stabilizing element. Further, in an alternative embodiment, the distance may be measured from the superior rearmost edge of the first stabilizing element to superior rearmost edge of the second stabilizing element.

[0070] In the shoe according to the second aspect of the invention, a line on the outside of the shoe upper which extends substantially straight along the Achilles area, from the outsole to the step-in opening may not be covered by the inner layer and/or the outer layer of the first stabilizing element and/or the second stabilizing element. Thereby, preferably said line is neither covered by the first stabilizing element nor by the second stabilizing element. By means of said line on the outside of the shoe upper which extends substantially straight along the Achilles area, from the outsole to the step-in opening

and which is not covered by the inner layer and/or the outer layer of the first stabilizing element and/or the second stabilizing element, the mobility of the Achilles tendon can be enhanced, improving comfort and/or functionality. This is as the influence of the inner layer(s) and/or the outer layer(s) on a stretching and/or a relaxation of the Achilles tendon is at least reduced. Particularly, as the stretching and/or the relaxation of the Achilles tendon may then be primarily limited by the material of the shoe upper.

[0071] It is understood that the features of the first aspect of the invention may be combined with the second aspect of the invention. In particular, the first stabilizing element and/or the second stabilizing element of the second aspect of the invention may comprise features of the stabilizing element of the first aspect of the invention described herein. Hence, the advantages of the first aspect of the invention may also apply for the second aspect of the invention and vice versa.

[0072] As mentioned above, the first object underlying the present invention is at least partially achieved by the third aspect of the invention.

[0073] The third aspect of the invention relates to a shoe comprising a shoe upper, an outsole, and a stabilizing element. The stabilizing element extends from the outsole upward towards a step-in opening of the shoe upper and rearward towards a heel region of the shoe. Further, the stabilizing element comprises an inner layer and an outer layer. Moreover, the stabilizing element extends along an outside of the shoe upper. Furthermore, the stabilizing element extends at least partly along a midfoot region of the upper. Said midfoot region may comprise a region of the upper corresponding to the metatarsal bones. It is understood that the features of the first aspect of the invention may be applied to the third aspect of the invention. In particular, the stabilizing element of the third aspect of the invention may comprise features of the stabilizing element of the first aspect of the invention described herein. Hence, the advantages of the first aspect of the invention may also apply for the third aspect of the invention and vice versa.

[0074] Moreover, the rearmost edge of the stabilizing element may be arranged in an anterior direction from the malleolus of a side of the foot, which said stabilizing element is arranged on, when the shoe is worn. Further, the stabilizing element may substantially clasp a midfoot portion of the wearer's foot. Moreover, the stabilizing element may extend from a front half of the shoe. Thereby, the shapes which are suggested regarding the stabilizing element of the first aspect of the invention may allow for stabilizing elements which are adapted to the shape of the foot of a wearer and provide improved stabilization for the midfoot portion.

[0075] As mentioned above, the second object underlying the present invention is at least partially achieved by the fourth aspect of the invention.

[0076] The fourth aspect of the invention refers to a method for manufacturing at least one lockdown element

in a shoe upper. The method comprises the steps of providing a shoe upper, embossing at least one cavity into the shoe upper, and filling the cavity at least partially with a foam.

[0077] The lockdown element according to the present invention may be referred to as an embossed cavity which is at least partially filled with foam. The lockdown element may be arranged to keep the foot of a wearer fixed inside a shoe. Particularly, the lockdown element may serve to lock the foot of a wearer down inside the shoe. Further, the lockdown element may prevent the foot from slipping out in a midfoot area of the shoe.

[0078] The shoe upper may comprise a polymer material and/or a natural material, such as leather and/or natural fibers. Moreover, the shoe upper may comprise a woven material, a knitted material, a material with uni-directional fibers and/or a material without fibers. The shoe upper may be for a sports shoe, a daytime shoe, a casual shoe and/or a work shoe. Further, the shoe upper may be for a soccer shoe, a running shoe, a mountaineering boot, a climbing boot, a ski boot, a cross-country skiing boot and/or a basketball shoe. The mentioned examples are not exhaustive.

[0079] The step of embossing creates the necessary space for the foam. Moreover, the step of embossing reduces relaxation and/or stretching of the formed cavity which is at least partially filled with foam. Thus, a greater stiffness and therefore stability of the lockdown element may be obtained. This is especially required for laceless shoes, such as laceless soccer shoes.

[0080] The step of embossing may be performed by means of an embossing machine. The embossing machine may comprise a positive mold and/or a negative mold. Moreover, the step of embossing may comprise heating the shoe upper and/or at least one mold. Thereby, during embossing a material of the shoe upper may at least partially exceed a glass transition temperature. Further, during embossing the shoe upper may be at least partially melted. Thus, the shape of the cavity may be formed permanently.

[0081] During embossing a surface adjacent to the cavity may be at least partially melted and/or pressed. Hence, the rigidity of the adjacent surface may be increased. Thus, the stability of the lockdown element may be further increased.

[0082] The foam in the cavity may be compressed when a foot is inserted into the shoe upper. Due to the compression the foam may exert a pressure onto the foot. Said pressure may prevent the foot from slipping out of the shoe upper. The foam may be a polymer foam. Particularly the foam may be an ethylene-vinyl acetate foam, a neoprene foam, a polyurethane foam, a polyethylene foam, a polystyrol foam or a polyethylenterephthalat foam. Particularly ethylene-vinyl acetate foams and neoprene foam offer a high durability against environmental conditions.

[0083] The method may further comprise the step of providing a layer over the cavity, whereby the cavity is

at least partially closed. Further, the cavity may be fully closed by the layer. The layer may be a textile layer such as a mesh textile layer. Further, the layer may serve to fix and/or protect the foam inside the cavity. By means of the layer the foot being in contact with the shoe upper is avoided from being irritated by an edge of the embossed cavity.

[0084] The cavity may be embossed on an inside surface of the shoe upper, such that the shape of the cavity preferably protrudes on an outside of the shoe upper. Hence, the foam may protrude on the inside of the shoe upper. Thus, the foam may exert a pressure onto a foot being in contact with the inside surface of the shoe upper.

[0085] The foam may protrude inwardly and/or outwardly from the shoe upper, relative to a surface of the shoe upper adjacent the cavity which was not embossed. Thus, the foam may have enough volume which may be compressed, such that sufficient force may be applied on a foot which contacts the shoe upper.

[0086] The cavity may be embossed on a lateral and/or a medial side of the shoe upper. Hence, the lateral and/or the medial side of a foot may be fixed inside the shoe upper.

[0087] The cavity may have a cross-section which is at least partially annular, oval, elliptical, triangular and/or rectangular. By means of said cross sections the spring characteristics and/or the damping characteristics of the lockdown element may be adapted. Exemplarily, by means of a triangular cross-section a more progressive spring characteristic may be obtained than by means of a rectangular cross-section. A progressive spring characteristic may provide comfort and at the same time sufficient protection against slipping out of the shoe upper.

[0088] The cavity may be elongated along the shoe upper. Thereby the foam inside the cavity may apply a force along the shoe upper when a foot contacts the shoe upper. Hence, multiple areas of the foot may be fixed and/or damped. Moreover, the force which is applied onto the foot may be distributed. Thus, the shoe upper may be more comfortable.

[0089] The cavity may extend from an ankle area of the shoe upper into a midfoot area of the shoe upper. Particularly, the cavity may extend from an ankle area of the shoe upper into a top midfoot area of the shoe upper. Thus, the foot may be prevented from slipping out in the midfoot area. Moreover, at the same time the foot may be prevented from slipping out in the ankle area.

[0090] The term ankle in the present invention may be also referred to as ankle joint. Further, the term ankle area according to the present invention in general refers to the area of the shoe upper which covers the area of the foot which comprises the ankle, i.e. the ankle joint. The term medial ankle area according to the present invention may refer to the area of the shoe upper which covers the area of the foot which comprises ligaments between Tibia and Calcaneus bone. Further, the term lateral ankle area according to the present invention may refer to the area of the shoe upper which covers the area

of the foot which comprises ligaments between Fibula and Calcaneus bone.

[0091] The cavity may comprise a length and a width, wherein the ratio of the length to the width preferably is from 5 to 18, more preferably from 7 to 16, even more preferably from 9 to 14, and most preferably from 10 to 12. Thereby the ratio may be defined by the maximum width and/or the maximum length. These ratios provide an improved stabilization and at the same time are comfortable for the foot of a wearer. In a particularly preferred embodiment, the ratio of the length to the width is from 5 to 8.

[0092] The cavity may extend along 20 % to 80%, preferably 25 % to 75 %, more preferably 30 % to 65 %, even more preferably 40 % to 60 %, and most preferably 45 % to 55 % of a length of the shoe upper. These ranges were found to provide sufficient pressure on the foot of a wearer, while avoiding superfluous cavity space.

[0093] A cross sectional area of the cavity and/or the width of the cavity may reach a maximum value in a mid portion of the cavity which is preferably spaced apart from one end of the cavity by the length of the cavity multiplied by a factor of 0.3 to 0.7, preferably of 0.35 to 0.65, more preferably of 0.4 to 0.6, even more preferably of 0.45 to 0.55, and most preferably from 0.48 to 0.52. Thereby the foam of the lockdown element may apply the highest pressure on the area of the foot which lies in the middle between the top midfoot area and the ankle area. Thus, the area of the foot, which tends to slip out most, is subjected to the greatest pressure. Moreover, the foot thereby may be pressed rearward in the shoe upper into the heel portion. This may provide further protection against slipping out.

[0094] The cross sectional area of the cavity and/or the width of the cavity may reach a minimum value in the midfoot area and/or the ankle area. This allows the pressure of the lockdown element to fade out towards the ends. Hence the comfort for the wearer may be increased. Further, the application of pressure may be reduced in areas where less pressure is required and/or where pressure is uncomfortable, i.e. the ankle area and/or the midfoot area.

[0095] A first cavity may be embossed on a lateral side of the shoe upper, and a second cavity may be embossed on a medial side of the shoe upper. Hence, the lateral side and the medial side of the foot may be equally fixed against slipping out. The second cavity may be located more upward, i.e. closer to the step-in opening, than the first cavity. Thus, the positioning of the lockdown elements is adapted to the anatomy of the wearer's foot. It will be understood that the first cavity and the second cavity may be at least partially filled with foam.

[0096] Further, the second object of the invention is at least partially achieved by a shoe upper comprising at least one lockdown element, wherein the lockdown element is manufactured by a method as described above.

[0097] Even further, the second object of the invention is at least partially achieved by a shoe comprising a shoe

upper according to the previous paragraph. Thereby the shoe may be a sports shoe, a daytime shoe, a casual shoe and/or a work shoe. Further, said shoe may be a soccer shoe, a running shoe, a mountaineering boot, a climbing boot, a ski boot, a cross-country skiing boot and/or a basketball shoe. The mentioned examples are not exhaustive.

4. Brief description of the accompanying figures

[0098] In the following, the accompanying figures are briefly described:

Fig. 1 shows an exemplary shoe according to the first aspect of the present invention in lateral view;

Fig. 2 shows an exemplary shoe according to the first aspect and the fourth aspect of the present invention in lateral view;

Fig. 3 shows a detailed view of a rear portion of the exemplary shoe according to the first aspect and the fourth aspect of the present invention in lateral view;

Fig. 4 shows a detailed view of a rear portion of the exemplary shoe according to the first aspect and the fourth aspect of the present invention in medial view;

Fig. 5 shows a detailed view of the exemplary shoe according to the first aspect and the fourth aspect of the present invention in lateral view;

Fig. 6 depicts an exemplary method for manufacturing at least one lockdown element in a shoe upper according the fourth aspect of the present invention;

Fig. 7 shows a second exemplary shoe according to the first aspect, the second aspect and the fourth aspect of the present invention in rear view;

Fig. 8 shows a bottom view of the second exemplary shoe according to the first aspect and the fourth aspect of the present invention;

Fig. 9 shows a front view of a third exemplary shoe according to the fourth aspect of the present invention;

Fig. 10 shows the second exemplary shoe according to the first aspect and the fourth aspect of the present invention in medial view;

Fig. 11 shows a detailed view of the second exemplary shoe according to the first aspect and the fourth aspect of the present invention, and

Fig. 12 shows a detailed view of the second exemplary shoe according to the first aspect, the second

aspect and the fourth aspect of the present invention.

5. Detailed description of the figures

[0099] Fig. 1 shows an exemplary shoe 1 according to the first aspect of the present invention in lateral view. The shoe 1 is a soccer shoe. However, it is understood that the shoe may also be a running shoe, a mountaineering boot, a climbing boot, a ski boot, a cross-country skiing boot and/or a basketball shoe. Even further, the shoe may be any other sports shoe, a daytime shoe, a casual shoe and/or a work shoe. The mentioned examples are not exhaustive.

[0100] Fig. 1 in accordance with the first aspect of the present invention shows a shoe 1 comprising a shoe upper 2, an outsole 3, and a stabilizing element 10.

[0101] The stabilizing element 10 serves to fix the heel of a wearer within the shoe 1 and to stabilize the ankle of a wearer. By fixating the heel of a wearer within the shoe 1, an instability due to heel slippage inside the shoe can be avoided. Moreover, by stabilizing the ankle of a wearer a twisting of the ankle may be avoided.

[0102] Said stabilizing element 10 extends from the outsole 3 upward towards a step-in opening 4 of the shoe upper 2 and rearward towards a heel region 5 of the shoe 1. Particularly, the stabilizing element 10 extends rearward into a heel region 5 of the shoe 1. Said stabilizing element 10 comprises an outer layer 12. Further, the stabilizing element 10 extends along an outside 6 of the shoe upper 2. Thereby the outer layer 12 is in contact with the outside 6 of the shoe upper 2. It will be understood that the outer layer 12 may be attached to the outside 6 of the shoe upper 2, e.g. by means of thermal welding, gluing, and/or stitching. Moreover, an area 13 of the outside 6 of the shoe upper 2 which is located between the stabilizing element 10 and the outsole 3 is not covered by the stabilizing element 10.

[0103] Said area 13 which is not covered by the stabilizing element 10 avoids or at least reduces a pressure being applied on the Achilles area. Particularly, said area may avoid that the stabilizing element 10 exerts a pressure on an insertion of the Achilles tendon. Hence the comfortability of the shoe 1 can be increased and/or irritations of the Achilles tendon may be avoided.

[0104] As further depicted by Fig. 1 and in accordance with the first aspect of the invention, the outer layer 12 of the stabilizing element 10 is integrally formed with the outsole 3 of the shoe 1. By integrally forming the outer layer with the outsole, the outer layer can be provided with a higher pretension. Accordingly, a higher pressure onto the heel region of the wearer may be applied. Furthermore, the necessary manufacturing steps may be reduced. It will be understood that in Fig. 1 the "outer layer" may be also more generally referred to as "layer" since the stabilizing element comprises only one layer.

[0105] Fig. 2 shows an exemplary shoe 1 according to the first aspect and the fourth aspect of the present invention in lateral view. The shoe 1 is a laceless soccer

shoe. However, it is understood that the shoe may also be a running shoe, a mountaineering boot, a climbing boot, a ski boot, a cross-country skiing boot and/or a basketball shoe. Even further, the shoe may be any other sports shoe, a daytime shoe, a casual shoe and/or a work shoe. The mentioned examples are not exhaustive.

[0106] Fig. 2 in accordance with the first aspect of the present invention shows a shoe 1 comprising a shoe upper 2, an outsole 3, and a stabilizing element 10.

[0107] The stabilizing element 10 serves to fix the heel of a wearer within the shoe 1 and to stabilize the ankle of a wearer. By fixating the heel of a wearer within the shoe 1, an instability due to heel slippage inside the shoe can be avoided. Moreover, by stabilizing the ankle of a wearer a twisting of the ankle may be avoided.

[0108] Said stabilizing element 10 extends from the outsole 3 upward towards a step-in opening 4 of the shoe upper 2 and rearward towards, i.e. into, a heel region 5 of the shoe 1. Said stabilizing element 10 comprises an inner layer 11 and an outer layer 12. Further, the stabilizing element 10 extends along an outside 6 of the shoe upper 2. Moreover, an area 13 of the outside 6 of the shoe upper 2 which is located between the stabilizing element 10 and the outsole 3 is not covered by the stabilizing element 10. The inner layer 11 and the outer layer 12 comprise different materials.

[0109] Said area 13 which is not covered by the stabilizing element 10 avoids or at least reduces a pressure being applied on the Achilles area. Particularly, said area (13) may avoid that the stabilizing element 10 exerts a pressure on an insertion of the Achilles tendon. Hence the comfortability of the shoe 1 can be increased and/or irritations of the Achilles tendon may be avoided.

[0110] The area 13 of the outside 6 of the shoe upper 2 which is not covered by the stabilizing element 10 and located between the stabilizing element 10 and the outsole 3 continuously transitions into a further area 18 of the outside 6 of the shoe upper 2 which is not covered by the stabilizing element 10. Thereby, as e.g. depicted in more detail in Fig. 7 and Fig. 11, the further area 18 extends into a portion of the shoe upper 2 which is configured to receive an Achilles area and/or an Achilles tendon insertion, whereby the further area 18 extends from a lateral side of the shoe 1 to a medial side of the shoe 1. Said further area 18 may avoid that an uncomfortable pressure on the Achilles area is applied. Particularly, said further area 18 may avoid that the stabilizing element 10 exerts a pressure on an insertion of the Achilles tendon. Moreover, the flexibility of the shoe upper 2 may not be impeded by the stabilizing element 10 in the Achilles area and/or at the Achilles tendon insertion. Hence, the comfortability of the shoe 1 can be increased and/or irritations of the Achilles tendon can be avoided.

[0111] The use of different materials allows a separation of functions. The inner layer preferably comprises a material with a higher stiffness and/or a higher strength than the outer layer. Further, the outer layer may comprise a material with a higher elasticity than the inner

layer. Thus, the inner layer may provide stiffness and/or strength, whereas the outer layer may clasp the inner layer to the shoe upper. Accordingly, the stabilizing element may be firmly clasped to the heel and/or the ankle of a wearer. Thereby, the stability may be increased. Further, due to the specific use of materials the weight of the stabilizing element may be reduced. Moreover, the inner layer may be adapted to the properties of the foot of a wearer, whereas the outer layer may remain unchanged. Hence, due to the use of different materials and the separation of functions in the stabilizing element, the modification effort may be reduced.

[0112] Further in accordance with the first aspect of the invention, the shoe 1 of Fig. 2 comprises two stabilizing elements 10, 15, wherein a first stabilizing element 10 is arranged on a lateral side of the shoe 1. A second stabilizing element 15 is arranged on a medial side of the shoe 1. However, said second stabilizing element 15 is hidden in Fig. 2, but shown in Fig. 4. Said first stabilizing element 10 extends at least partially into a lateral ankle area 7a. The first stabilizing element 10 and the second stabilizing element 15 are configured to clasp a Calcaneus bone and thereby do not apply a pressure to an Achilles tendon insertion.

[0113] Fig. 2 in accordance with the fourth aspect of the present invention shows a shoe 1 comprising a shoe upper 2, wherein the shoe upper 2 comprises a lockdown element 20. The lockdown element 20 was manufactured according to a method 100 as depicted in Fig. 6.

[0114] Fig. 3 shows a detailed view of a rear portion of an exemplary shoe according to the first aspect and the fourth aspect of the present invention in lateral view.

[0115] Fig. 3 in accordance with the first aspect of the present invention shows that a shape of the stabilizing element 10 is at least limited by two straight edges 14a, 14b which extend along the outside 6 of the shoe upper 2 upward towards the step-in opening and rearward towards the heel region 5. Thereby the two edges 14a, 14b have a length of at least 15 mm. With said two straight edges 14a, 14b limiting the shape of the stabilizing element 10 it can be ensured that no or only reduced pressure is applied on the Achilles tendon insertion.

[0116] As further depicted by Fig. 3 and in accordance with the first aspect of the invention, the outer layer 12 of the stabilizing element 10 is integrally formed with the outsole 3 of the shoe 1. By integrally forming the outer layer with the outsole, the outer layer can be provided with a higher pretension against the inner layer. Accordingly, a higher pressure onto the heel region of the wearer may be applied. Furthermore, the necessary manufacturing steps may be reduced.

[0117] The shape of the inner layer 11 corresponds to the shape of the outer layer 12. This allows loads to be transferred continuously between the inner and outer layer. Thereby a homogeneous stress distribution may be achieved. Hence material damages due to stress concentrations may be avoided. Moreover, the inner layer 11 has a larger contour than the outer layer 12. Thereby

the inner layer serves to cover the areas of the shoe upper which are supposed to be stabilized, wherein the outer layer serves to press the inner layer towards the inside of the shoe.

[0118] The inner layer 11 preferably comprises a composite layer, wherein the composite layer preferably is a fiber reinforced layer.

[0119] Fig. 4 shows a detailed view of a rear portion of the exemplary shoe according to the first aspect and the fourth aspect of the present invention in medial view.

[0120] Fig. 4 in accordance with the first aspect of the present invention shows the stabilizing element 15 extending at least partially into the medial ankle area 7b. What has been described above with respect to the stabilizing element 10 arranged on the lateral side of the shoe upper applies to the stabilizing element 15 arranged on the medial side of the shoe upper analogously. In other embodiments, however, the lateral and medial stabilizing elements may differ, e.g. with respect to their size, shape, materials, etc.

[0121] Fig. 5 shows a detailed view of the exemplary shoe according to the first aspect and the fourth aspect of the present invention in lateral view.

[0122] Fig. 5 in accordance with the fourth aspect of the present invention shows a detail of the shoe 1 as depicted in Fig. 2, comprising a shoe upper 2, wherein the shoe upper 2 comprises a lockdown element 20. Said lockdown element 20 was manufactured according to a method 100 as depicted in Fig. 6. Said method 100 comprises the steps of providing 110 a shoe upper 2, embossing 120 at least one cavity 21 into the shoe upper 2, and filling 130 the cavity 21 at least partially with a foam. Moreover, the method 100 may further comprise the step of providing 140 a layer over the cavity 21, whereby the cavity 21 is at least partially closed.

[0123] As depicted, the cavity 21 is embossed 120 on an inside surface 30 of the shoe upper 2, such that the shape of the cavity 21 protrudes on an outside 6 of the shoe upper 2. Thereby, the foam, which is hidden, may protrude inwardly and/or outwardly from the shoe upper 2, relative to a surface 23 of the shoe upper 2 adjacent the cavity 21 which was not embossed.

[0124] The cavity 21 is embossed on a lateral side of the shoe upper 2 and has a cross-section which is at least partially triangular. Moreover, the cavity 21 is elongated along the shoe upper 2. Thereby the cavity 21 extends from an ankle area 7a, of the shoe upper 2 into a midfoot area 8 of the shoe upper 2. Particularly, in Fig. 5 the cavity 21 extends from a lateral ankle area 7a, whereas in Fig. 4 the cavity 21 extends from a medial ankle area 7b. Thereby the cavity 21 extends along 30 % to 65 % of a length of the shoe upper 2. This range provides sufficient pressure on the foot of a wearer, while avoiding superfluous cavity space.

[0125] Moreover, a cross sectional area of the cavity 21 and the width of the cavity 21 reach a maximum value in a mid portion of the cavity 21 which is spaced apart from one end of the cavity 21 by the length of the cavity

21 multiplied by a factor of 0.45 to 0.55. Thereby the foam of the lockdown element applies the highest pressure on the area of the foot which lies in the middle between the top midfoot area and the ankle area. Thus, the area of the foot, which tends to slip out the most, is subject to the greatest pressure. Moreover, the foot thereby may be pressed rearward in the shoe upper into the heel portion. This may provide further protection against slipping out.

[0126] Further, the cross sectional area of the cavity 21 and the width of the cavity 21 reach a minimum value in the midfoot area 8 and the ankle area 7a, 7b. This allows the pressure of the lockdown element to fade out towards the ends. Hence the comfort for the wearer may be increased.

[0127] As depicted by Figs. 4 and 5, a first cavity 21 is embossed on a lateral side of the shoe upper 2, and a second cavity 26 is embossed on a medial side of the shoe upper 2. Hence, the lateral side and the medial side of the foot are equally fixed against slipping out.

[0128] Fig. 6 depicts an exemplary method 100 for manufacturing at least one lockdown element 20 in a shoe upper 2 according the fourth aspect of the present invention. The method 100 comprises the steps of providing 110 a shoe upper 2, embossing 120 at least one cavity 21 into the shoe upper 2, and filling 130 the cavity 21 at least partially with a foam. Moreover, the method 100 may further comprise the step of providing 140 a layer over the cavity 21, whereby the cavity 21 is at least partially closed.

[0129] Fig. 7 shows a second exemplary shoe 1 according to the first aspect, the second aspect and the fourth aspect of the present invention in rear view. Thereby a first stabilizing element 10 and a second stabilizing element 15 are spaced apart by a distance 30 which extends at least partly along the Achilles area and along the outside of a shoe upper 2. Thereby may be avoided that an uncomfortable pressure on the Achilles area is applied. Particularly, it may be avoided that the stabilizing elements 10, 15 exert a pressure on the insertion of the Achilles tendon. Hence, the comfortability of the shoe 1 may be increased and/or irritations of the Achilles tendon may be avoided. As illustrated in Fig. 7, the distance 30 is measured from the rearmost point of the first stabilizing element 10 to the rearmost point of the second stabilizing element 15.

[0130] Further, in accordance with the second aspect of the present invention, Fig. 7 shows a second exemplary shoe 1 comprising a shoe upper 2, an outsole 3, a first stabilizing element 10, and a second stabilizing element 15. The first stabilizing element 10 extends from a lateral side of the outsole 3 upward towards a step-in opening 4 of the shoe upper 2 and rearward into a heel region 5 of the shoe 1. Further, the first stabilizing element 10 comprises an inner layer 11 and an outer layer 12. Moreover, the first stabilizing element 10 extends along an outside 6 of the shoe upper 2. The second stabilizing element 15 extends from a medial side of the outsole 3

upward towards a step-in opening 4 of the shoe upper 2 and rearward into a heel region 5 of the shoe 1. Further, the second stabilizing element 15 comprises an inner layer 16 and an outer layer 17. Moreover, the second stabilizing element 15 extends along an outside 6 of the shoe upper 2. The first stabilizing element 10 and the second stabilizing element 15 are spaced apart by a distance 30 which extends along the outside 6 of the shoe upper 2 and at least partly along the Achilles area.

[0131] Even though only Figs. 7 and 12 depict a first stabilizing element and a second stabilizing element as suggested by the second aspect of the present invention, it will be understood that features being depicted in Figs. 8, 10, and 11 may also form part of the second aspect of the present invention. This is as the Figs. 7, 8, and 10 to 12 all depict the second exemplary shoe. Further, it will be understood that the features of the first exemplary shoe may also form part of the second aspect of the present invention. This is as shown in Figs. 2 and 4, the first exemplary shoe also comprises a first stabilizing element and a second stabilizing element as suggested by the second aspect of the present invention.

[0132] Fig. 8 shows a bottom view of the second exemplary shoe 1 according to the first aspect and the fourth aspect of the present invention. As illustrated, an outsole 3 comprises an embedded carbon sole insert 40. The carbon sole insert 40 may be referred to as composite module as described above. Accordingly, the inner layers of the stabilizing elements 10, 15 may be connected to each other via carbon sole insert 40, i.e. the composite module. Same applies for the outer layers. Thereby the stabilization may be further improved without applying a pressure on the Achilles area and particularly the Achilles tendon insertion.

[0133] Fig. 9 shows a front view of a third exemplary shoe 1 according to the fourth aspect of the present invention. As illustrated, a first cavity 21 is embossed on a lateral side of a shoe upper 2, and a second cavity 26 is embossed on a medial side of the shoe upper 2. Thereby, the lateral side and the medial side of the foot may be equally fixed against slipping out. As further illustrated, the second cavity 26 is located more upward, i.e. closer to a step-in opening 4, than the first cavity 21. Thus, the positioning of lockdown elements 20, 25 is adapted to the anatomy of the wearer's foot.

[0134] Fig. 10 shows the second exemplary shoe according to the first aspect and the fourth aspect of the present invention in medial view.

[0135] According to the first aspect of the present invention, the inner layer 16 of a second stabilizing element 15 extends beyond an outer layer 17 of the second stabilizing element 15. Particularly, the inner layer 16 extends beyond the outer layer 17 rearwards towards the Achilles area and upwards towards the step-in opening. Thus, the inner layer can increase the support of the stabilizing element for the foot. Further, the inner layer 16 extends beyond the outer layer 17 in an anterior direction towards a toe region of the foot. Thereby, the outer layer

17 can serve to press the inner layer 16 towards the inside of the shoe 1. Hence, the areas of the shoe upper 2 which are supposed to be stabilized may be easily amended by adapting the inner layer 16, whereas the outer layer 17 may remain unchanged.

[0136] Further according to the first aspect of the present invention, the shape of an inner layer 16 of a second stabilizing element 15 corresponds to the shape of an outer layer 17 of the second stabilizing element 15. Particularly, the shape of the outer layer 17 lies within the inner layer and three edges of the inner layer and the outer layer are substantially parallel. This allows loads to be transferred continuously between the inner and outer layer. Thereby a homogeneous stress distribution may be achieved.

[0137] According to the fourth aspect of the present invention, an embossed second cavity 26 of a second lockdown element 25 has a cross-section which is at least partially annular. Compared to the substantially triangular cross-section exemplarily depicted in Figs. 2 to 5, a less progressive spring characteristic may be obtained. A less progressive spring characteristic may provide improved comfort.

[0138] Fig. 11 shows a detailed view of the second exemplary shoe 1 according to the first aspect and the fourth aspect of the present invention. As depicted, the outer layer 17 of the second stabilizing element 15 comprises a varying thickness. Particularly, a step 51 in the surface of the outer layer 17 separates portions of the outer layer 17 with different thicknesses. Said step 51 is a discontinuous change in the surface of the outer layer 17. As further illustrated, the outer layer 17 comprises a reinforcement rib 50 which comprises the step 51. As shown in Fig. 12, the first stabilizing element 10 so as the second stabilizing element 15 also comprises a reinforcement rib 50.

[0139] Fig. 12 shows a detailed view of the second exemplary shoe according to the first aspect, the second aspect and the fourth aspect of the present invention. The reinforcement rib 50 of the first stabilizing element 10 extends from the outsole 3 along the outer layer 12 of the stabilizing element 10. The outer layer 12 of the stabilizing element is integrally formed with the outsole or a component of the outsole. Moreover, the reinforcement rib 50 extends essentially along the full length of the stabilizing element 10. The reinforcement rib 50 further extends at least partly along the outsole 3, wherein this aspect is also illustrated in Fig. 10.

List of reference signs:

[0140]

- 1 shoe
- 2 shoe upper
- 3 outsole
- 4 step-in opening
- 5 heel region

- 6 outside of the shoe upper
- 7a lateral ankle area
- 7b medial ankle area
- 10 first stabilizing element
- 5 11 inner layer of the first stabilizing element
- 12 outer layer of the first stabilizing element
- 13 area of the outside of the shoe upper
- 14a, 14b straight edges
- 15 second stabilizing element
- 10 16 inner layer of the second stabilizing element
- 17 outer layer of the second stabilizing element
- 18 further area of the outside of the shoe upper
- 20 lockdown element
- 21 first cavity
- 15 23 surface which was not embossed
- 25 second lockdown element
- 26 second cavity
- 30 distance
- 40 carbon sole insert
- 20 50 reinforcement rib
- 51 step
- 100 method for manufacturing at least one lockdown element in a shoe upper
- 110 providing a shoe upper
- 25 120 embossing at least one cavity into the shoe upper
- 130 filling the cavity at least partially with foam
- 140 providing a layer over the cavity

Embodiments according to the fourth aspect of the invention:

[0141]

1. A method 100 for manufacturing at least one lockdown element 20, 25 in a shoe upper 2, wherein the method 100 comprises the steps of

- a. providing 110 a shoe upper 2;
- b. embossing 120 at least one cavity 21 into the shoe upper 2, and
- c. filling 130 the cavity 21 at least partially with a foam.

2. Method 100 according to embodiment 1, wherein the method 100 further comprises the step of

- d. providing 140 a layer over the cavity 21, whereby the cavity 21 is at least partially closed.

3. Method 100 according to one of the preceding embodiments, wherein the cavity 21 is embossed 120 on an inside surface of the shoe upper 2, such that the shape of the cavity 21 preferably protrudes on an outside 6 of the shoe upper 2.

4. Method 100 according to one of the preceding embodiments, wherein the foam protrudes inwardly and/or outwardly from the shoe upper 2, relative to

a surface 23 of the shoe upper 2 adjacent the cavity 21 which was not embossed.

5. Method 100 according to one of the preceding embodiments, wherein the cavity 21 is embossed on a lateral and/or a medial side of the shoe upper 2.

6. Method 100 according to one of the preceding embodiments, wherein the cavity 21 has a cross-section which is at least partially annular, oval, elliptical, triangular and/or rectangular.

7. Method 100 according to one of the preceding embodiments, wherein the cavity 21 is elongated along the shoe upper 2.

8. Method 100 according to the preceding embodiments, wherein the cavity 21 extends from an ankle area 7a, 7b of the shoe upper 2 into a midfoot area 8 of the shoe upper 2.

9. Method 100 according to one of embodiments 7 to 8, wherein the cavity 21 comprises a length and a width, wherein the ratio of the length to the width preferably is from 5 to 18, more preferably from 7 to 16, even more preferably from 9 to 14, and most preferably from 10 to 12.

10. Method 100 according to one of embodiments 7 to 9, wherein the cavity 21 extends along 20 % to 80%, preferably 25 % to 75 %, more preferably 30 % to 65 %, even more preferably 40 % to 60 %, and most preferably 45 % to 55 % of a length of the shoe upper 2.

11. Method 100 according to one of embodiments 9 to 10, wherein a cross sectional area of the cavity 21 and/or the width of the cavity 21 reach a maximum value in a mid portion of the cavity 21 which is preferably spaced apart from one end of the cavity 21 by the length of the cavity 21 multiplied by a factor of 0.3 to 0.7, preferably of 0.35 to 0.65, more preferably of 0.4 to 0.6, even more preferably of 0.45 to 0.55, and most preferably from 0.48 to 0.52.

12. Method 100 according to one of embodiments 9 to 11, wherein the cross sectional area of the cavity 21 and/or the width of the cavity 21 reach a minimum value in the midfoot area 8 and/or the ankle area 7a, 7b.

13. Method 100 according to one of the preceding embodiments, wherein a first cavity 21 is embossed on a lateral side of the shoe upper 2, and a second cavity 26 is embossed on a medial side of the shoe upper 2.

14. A shoe upper 2 comprising at least one lockdown

element 20, wherein the lockdown element 20 is manufactured by a method 100 according to one of embodiments 1 to 13.

15. A shoe 1 comprising a shoe upper 2 according to embodiment 14.

[0142] In the following, further embodiments are described to facilitate the understanding of the invention:

1. A shoe 1 comprising:

a shoe upper 2;
an outsole 3; and
a stabilizing element 10,

wherein the stabilizing element 10 extends from the outsole 3 upward towards a step-in opening 4 of the shoe upper 2 and rearward towards a heel region 5 of the shoe 1, wherein the stabilizing element 10 comprises an outer layer 12, wherein the stabilizing element 10 extends along an outside 6 of the shoe upper 2,

wherein an area 13 of the outside 6 of the shoe upper 2 is not covered by the stabilizing element 10, whereby the area 13 is located between the stabilizing element 10 and the outsole 3,

wherein the area 13 continuously transitions into a further area 18 of the outside 6 of the shoe upper 2 which is not covered by the stabilizing element 10, whereby the further area 18 extends into a portion of the shoe upper 2 which is configured to receive an Achilles area and/or an Achilles tendon insertion, and

wherein the outer layer 12 of the stabilizing element 10 is integrally formed with the outsole 3 of the shoe 1.

2. Shoe 1 according to the preceding embodiment, wherein the further area 18 extends from a lateral side of the shoe 1 to a medial side of the shoe 1.

3. Shoe 1 according to one of the preceding embodiments, wherein the stabilizing element 10 comprises an inner layer 11.

4. A shoe 1 comprising:

a shoe upper 2;
an outsole 3; and
a stabilizing element 10,

wherein the stabilizing element 10 extends from the outsole 3 upward towards a step-in opening 4 of the shoe upper 2 and rear-

- ward towards a heel region 5 of the shoe 1, wherein the stabilizing element 10 comprises an inner layer 11 and an outer layer 12, wherein the inner layer 11 and the outer layer 12 comprise different materials, and wherein the stabilizing element 10 extends along an outside 6 of the shoe upper 2. 5
5. Shoe 1 according to the preceding embodiment, wherein the outer layer 12 of the stabilizing element 10 is integrally formed with the outsole 3 of the shoe 1. 10
6. Shoe 1 according to embodiment 3, wherein the inner layer 11 and the outer layer 12 comprise different materials. 15
7. Shoe 1 according to embodiment 4, wherein an area 13 of the outside 6 of the shoe upper 2 is not covered by the stabilizing element 10, whereby the area 13 is located between the stabilizing element 10 and the outsole 3. 20
8. Shoe 1 according to the preceding embodiment, wherein the area 13 continuously transitions into a further area 18 of the outside 6 of the shoe upper 2 which is not covered by the stabilizing element 10, whereby the further area 18 extends into a portion of the shoe upper 2 which is configured to receive an Achilles area and/or an Achilles tendon insertion, whereby the further area 18 preferably extends from a lateral side of the shoe 1 to a medial side of the shoe 1. 25 30
9. Shoe 1 according to one of the embodiments 1 to 3 and 6 to 8, wherein the area 13 has a size of at least 100 mm², preferably of at least 150 mm², more preferably of at least 200 mm², even more preferably of at least 250 mm², and most preferably of at least 300 mm². 35 40
10. Shoe 1 according to one of the preceding embodiments, wherein the stabilizing element 10 comprises a wing shape, a parallelogram shape, a trapezoid shape, an elliptical shape, and/or a rectangular shape. 45
11. Shoe 1 according to one of the preceding embodiments, wherein a shape of the stabilizing element 10 is at least limited by two straight edges 14a, 14b which extend along the outside 6 of the shoe upper 2 upward towards the step-in opening 4 and rearward towards the heel region 5, wherein the two edges 14a, 14b preferably have a length of at least 10 mm, more preferably at least 15 mm, even more preferably at least 20 mm, and most preferably at least 25 mm. 50 55
12. Shoe 1 according to one of the preceding embodiments, wherein the outer layer 12 comprises a thickness from 0.01 mm to 3 mm, preferably from 0.1 mm to 2 mm, more preferably from 0.2 mm to 1 mm, even more preferably from 0.25 mm to 0.5 mm, and most preferably from 0.28 mm to 0.32 mm.
13. Shoe 1 according to one of embodiments 3 to 12, wherein the inner layer 11 comprises a thickness from 0.01 mm to 3 mm, preferably from 0.1 mm to 2 mm, more preferably from 0.2 mm to 1 mm, even more preferably from 0.25 mm to 0.5 mm, and most preferably from 0.28 mm to 0.32 mm.
14. Shoe 1 according to one of embodiments 3 to 13, wherein the shape of the inner layer 11 corresponds to the shape of the outer layer 12.
15. Shoe 1 according to one of embodiments 3 to 14, wherein the inner layer 11 extends beyond the outer layer 12.
16. Shoe 1 according to one of embodiments 3 to 15, wherein the inner layer 11 comprises a composite layer, wherein the composite layer preferably is a fiber reinforced layer.
17. Shoe 1 according to the preceding embodiment, wherein the composite layer comprises a carbon fiber reinforced layer.
18. Shoe 1 according to one of the preceding embodiments, wherein the outer layer 12 comprises a reinforcement rib 50, preferably extending from the outsole along the outer layer 12 of the stabilizing element 10.
19. Shoe 1 according to one of the preceding embodiments, wherein the outer layer 12 comprises a composite layer, wherein the outer layer 12 preferably extends from a composite module of the outsole 3.
20. Shoe 1 according to one of the preceding embodiments, wherein a line on the outside 6 of the shoe upper 2 which extends substantially straight along the Achilles area, from the outsole 3 to the step-in opening 4 is not covered by the inner layer 11 and/or the outer layer 12, wherein preferably said line is not covered by the stabilizing element 10.
21. Shoe 1 according to one of the preceding embodiments, wherein the shoe 1 comprises two stabilizing elements 10, 15 as defined in one of the preceding embodiments, wherein preferably a first stabilizing element 10 is arranged on a lateral side of the shoe 1, wherein further preferably a second stabilizing element 15 is arranged on a medial side of

the shoe 1.

22. Shoe 1 according to embodiment 21, wherein the first stabilizing element 10 and the second stabilizing element 15 are configured to clasp a Calcaneus bone and thereby preferably do not apply a pressure to the Achilles area and/or the Achilles tendon insertion.

23. Shoe 1 according to one of embodiments 21 to 22, wherein the first stabilizing element 10 and the second stabilizing element 15 do not cover a portion of the shoe upper 2 which is configured to receive the Achilles area and/or the Achilles tendon insertion.

24. Shoe 1 according to one of embodiments 21 to 23, wherein the first stabilizing element 10 and the second stabilizing element 15 are spaced apart by a distance 30 which extends along the outside 6 of the shoe upper 2 and at least partly along the Achilles area.

Claims

1. A shoe (1) comprising:

a shoe upper (2);
an outsole (3); and
a stabilizing element (10),

wherein the stabilizing element (10) extends from the outsole (3) upward towards a step-in opening (4) of the shoe upper (2) and rearward towards a heel region (5) of the shoe (1),

wherein the stabilizing element (10) comprises an outer layer (12), wherein the stabilizing element (10) extends along an outside (6) of the shoe upper (2),

wherein an area (13) of the outside (6) of the shoe upper (2) is not covered by the stabilizing element (10), whereby the area (13) is located between the stabilizing element (10) and the outsole (3), wherein the area (13) continuously transitions into a further area (18) of the outside (6) of the shoe upper (2) which is not covered by the stabilizing element (10), whereby the further area (18) extends into a portion of the shoe upper (2) which is configured to receive an Achilles area and/or an Achilles tendon insertion, and

wherein the outer layer (12) of the stabilizing element (10) is integrally formed with the outsole (3) of the shoe (1).

2. Shoe (1) according to the preceding claim, wherein the further area (18) extends from a lateral side of the shoe (1) to a medial side of the shoe (1).

3. Shoe (1) according to one of the preceding claims, wherein the stabilizing element (10) comprises an inner layer (11).

4. A shoe (1) comprising:

a shoe upper (2);
an outsole (3); and
a stabilizing element (10),

wherein the stabilizing element (10) extends from the outsole (3) upward towards a step-in opening (4) of the shoe upper (2) and rearward towards a heel region (5) of the shoe (1),

wherein the stabilizing element (10) comprises an inner layer (11) and an outer layer (12),

wherein the inner layer (11) and the outer layer (12) comprise different materials, and wherein the stabilizing element (10) extends along an outside (6) of the shoe upper (2).

5. Shoe (1) according to the preceding claim, wherein the outer layer (12) of the stabilizing element (10) is integrally formed with the outsole (3) of the shoe (1).

6. Shoe (1) according to claim 3, wherein the inner layer (11) and the outer layer (12) comprise different materials.

7. Shoe (1) according to claim 4, wherein an area (13) of the outside (6) of the shoe upper (2) is not covered by the stabilizing element (10), whereby the area (13) is located between the stabilizing element (10) and the outsole (3), wherein preferably the area (13) continuously transitions into a further area (18) of the outside (6) of the shoe upper (2) which is not covered by the stabilizing element (10), whereby the further area (18) extends into a portion of the shoe upper (2) which is configured to receive an Achilles area and/or an Achilles tendon insertion, whereby the further area (18) preferably extends from a lateral side of the shoe (1) to a medial side of the shoe (1).

8. Shoe (1) according to one of the preceding claims, wherein a shape of the stabilizing element (10) is at least limited by two straight edges (14a, 14b) which extend along the outside (6) of the shoe upper (2) upward towards the step-in opening (4) and rearward towards the heel region (5), wherein the two edges (14a, 14b) preferably have a length of at least 10 mm, more preferably at least 15 mm, even more pref-

erably at least 20 mm, and most preferably at least 25 mm.

9. Shoe (1) according to one of claims 3 to 8, wherein the shape of the inner layer (11) corresponds to the shape of the outer layer (12), wherein preferably the inner layer (11) extends beyond the outer layer (12). 5
10. Shoe (1) according to one of claims 3 to 9, wherein the inner layer (11) comprises a composite layer, wherein the composite layer preferably is a fiber reinforced layer, wherein further preferably the composite layer comprises a carbon fiber reinforced layer. 10
11. Shoe (1) according to one of the preceding claims, wherein the outer layer (12) comprises a composite layer, wherein the outer layer (12) preferably extends from a composite module of the outsole (3). 15
12. Shoe (1) according to one of the preceding claims, wherein a line on the outside (6) of the shoe upper (2) which extends substantially straight along the Achilles area, from the outsole (3) to the step-in opening (4) is not covered by the inner layer (11) and/or the outer layer (12), wherein preferably said line is not covered by the stabilizing element (10). 20 25
13. Shoe (1) according to one of the preceding claims, wherein the shoe (1) comprises two stabilizing elements (10, 15) as defined in one of the preceding claims, wherein preferably a first stabilizing element (10) is arranged on a lateral side of the shoe (1), wherein further preferably a second stabilizing element (15) is arranged on a medial side of the shoe (1). 30 35
14. Shoe (1) according to claim 13, wherein the first stabilizing element (10) and the second stabilizing element (15) are configured to clasp a Calcaneus bone and thereby preferably do not apply a pressure to the Achilles area and/or the Achilles tendon insertion, wherein further preferably the first stabilizing element (10) and the second stabilizing element (15) do not cover a portion of the shoe upper (2) which is configured to receive the Achilles area and/or the Achilles tendon insertion. 40 45
15. Shoe (1) according to one of claims 13 to 14, wherein the first stabilizing element (10) and the second stabilizing element (15) are spaced apart by a distance (30) which extends along the outside (6) of the shoe upper (2) and at least partly along the Achilles area. 50

55

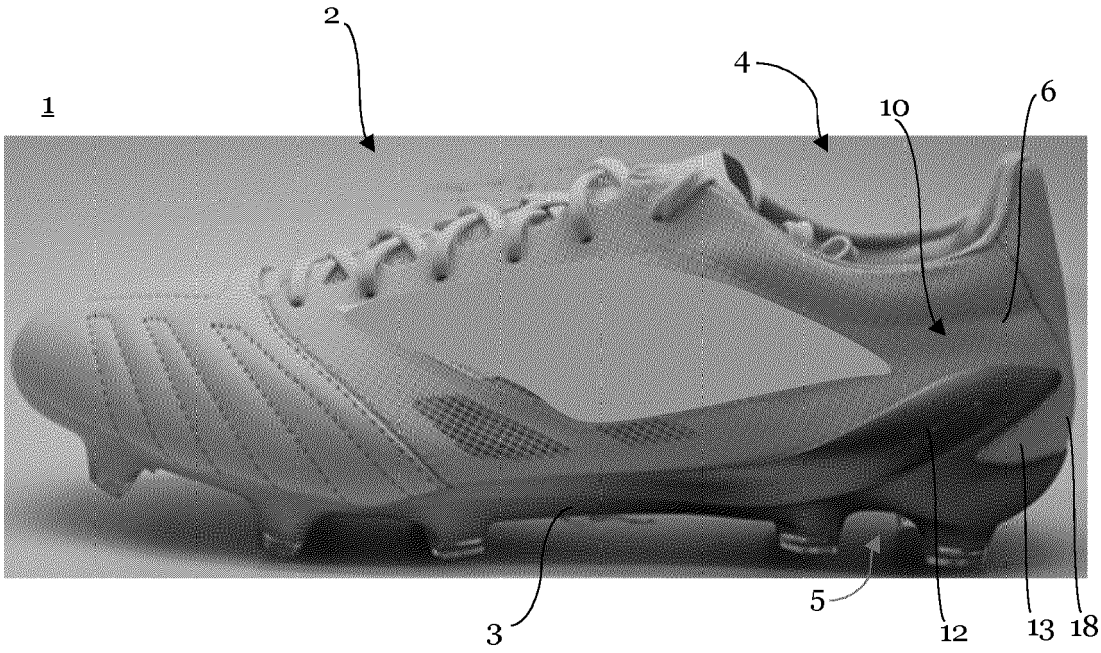


Fig. 1

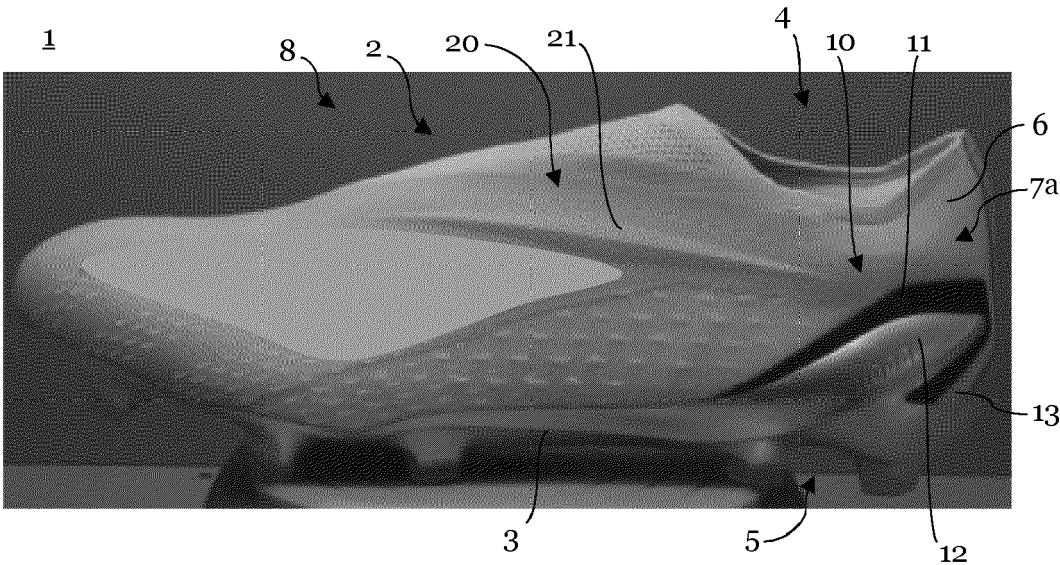


Fig. 2

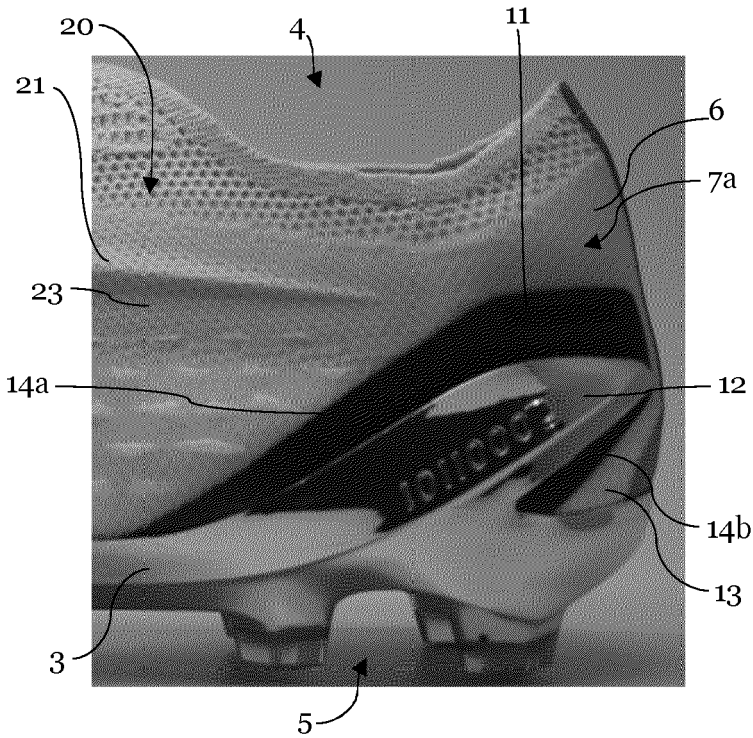


Fig. 3

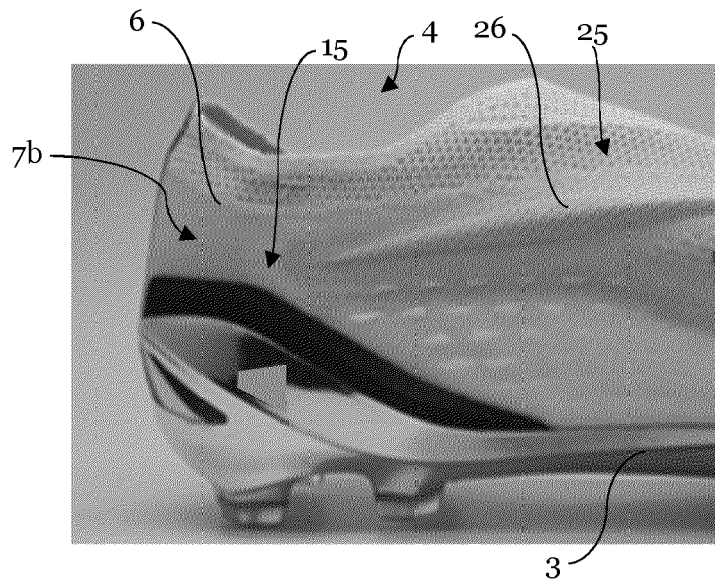


Fig. 4

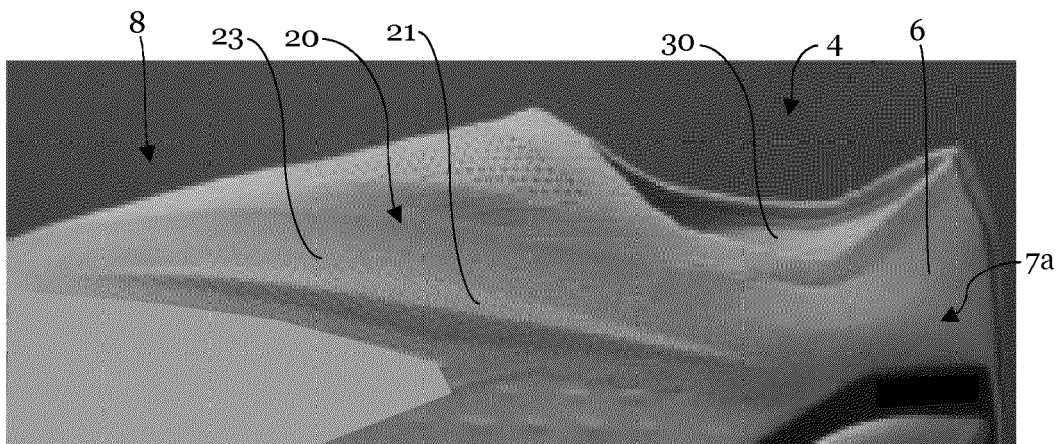


Fig. 5

100

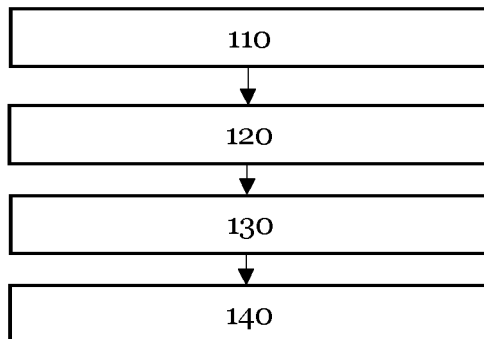


Fig. 6

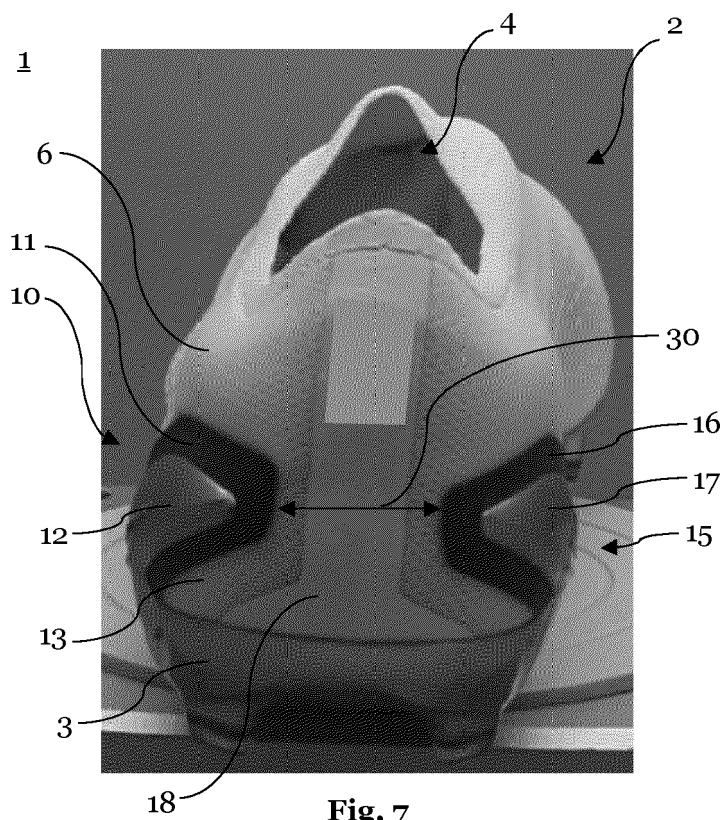


Fig. 7

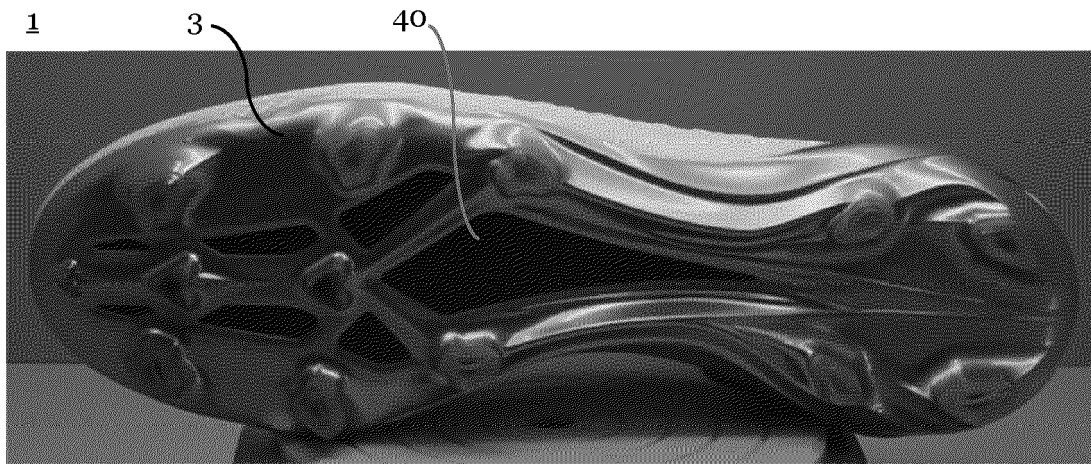


Fig. 8

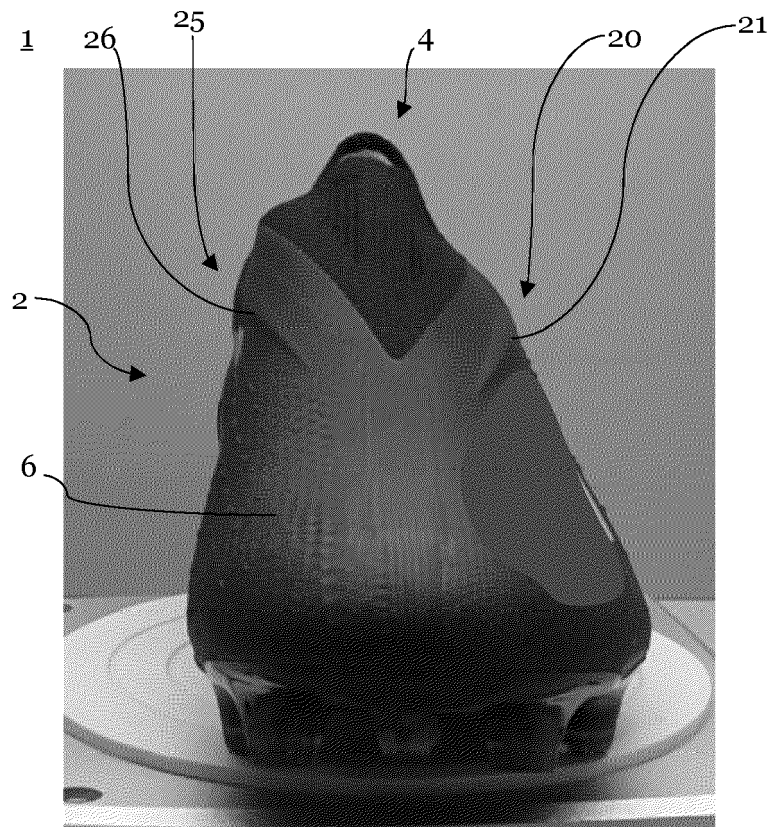


Fig. 9

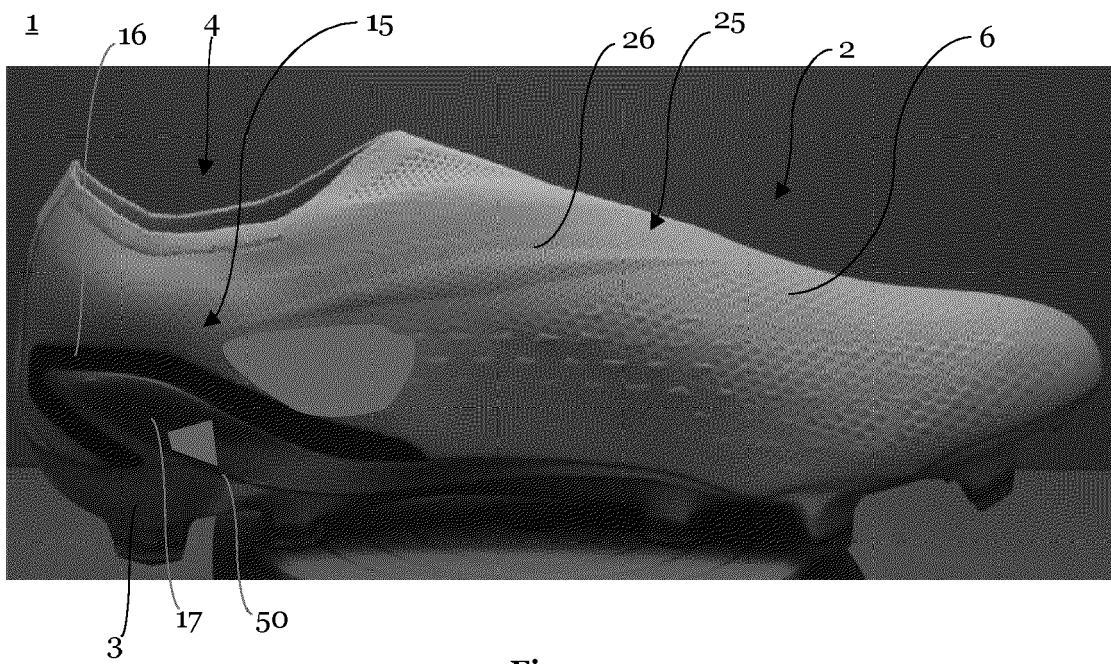


Fig. 10

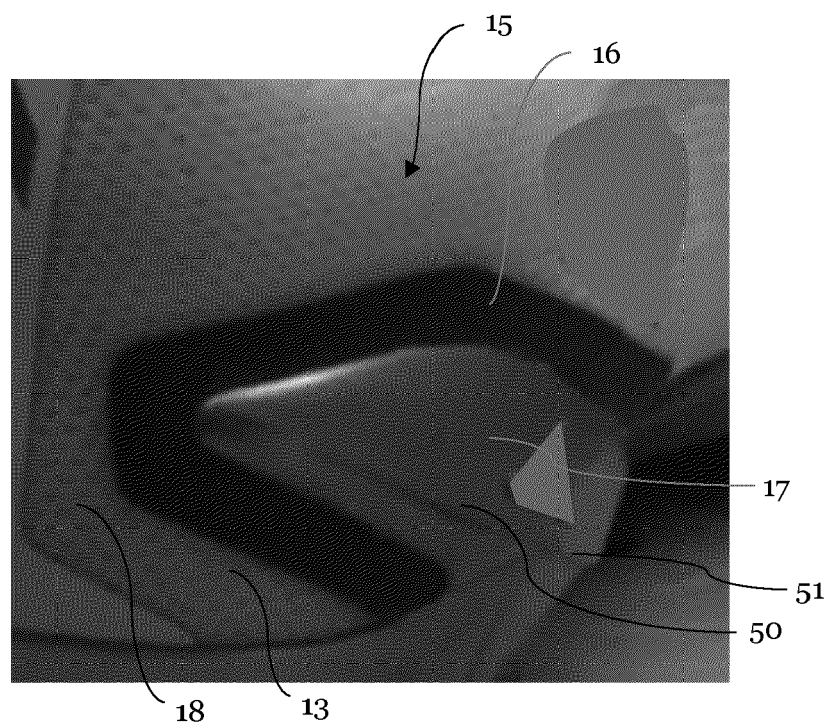


Fig. 11

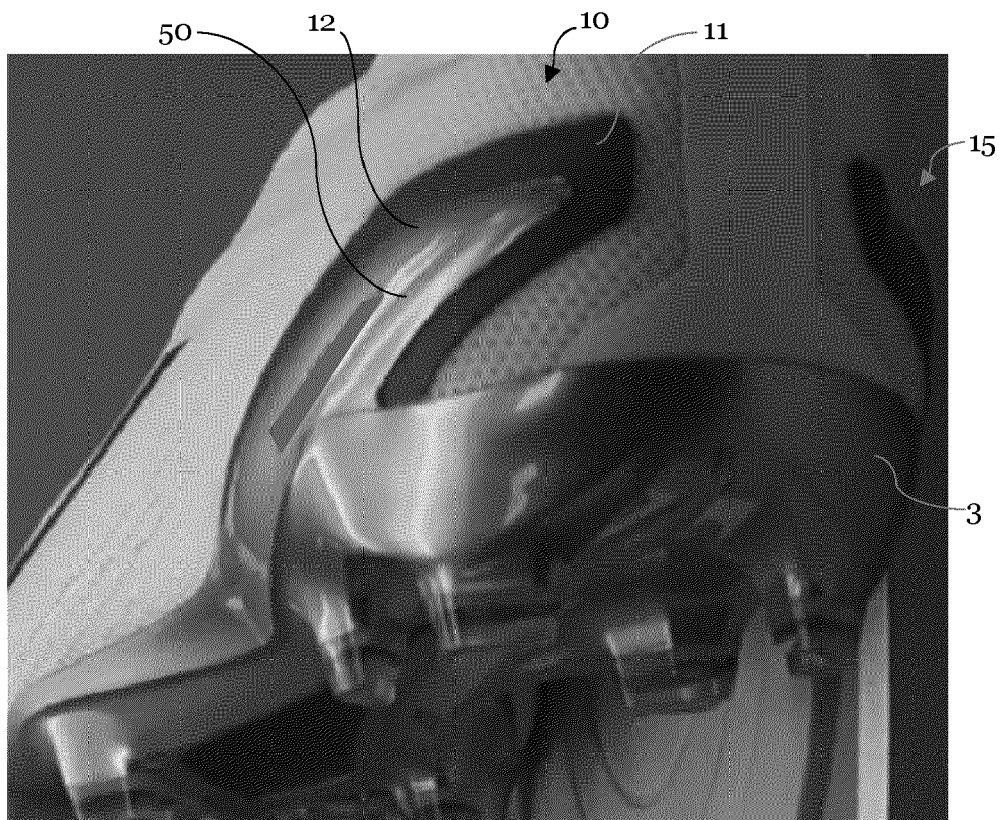


Fig. 12

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

- JP 2005296101 A [0013]
- JP 2008206629 A [0014]
- DE 102014101032 A1 [0015]