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

(11) **EP 3 932 239 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
05.01.2022 Bulletin 2022/01

(51) Int Cl.:
A43B 5/14 *(2006.01)* ***A43B 5/06*** *(2006.01)*

(21) Application number: **21183526.9**

(22) Date of filing: **02.07.2021**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(30) Priority: **03.07.2020 GB 202010258**

(71) Applicants:
- **Jones, Oliver**
  Cheltenham, Gloucestershire GL53 8NY (GB)
- **Jones, Trevor**
  Cheltenham, Gloucestershire GL53 8NY (GB)

(72) Inventors:
- **Jones, Oliver**
  Cheltenham, Gloucestershire GL53 8NY (GB)
- **Jones, Trevor**
  Cheltenham, Gloucestershire GL53 8NY (GB)

(74) Representative: **Hocking, Adrian Niall et al**
Albright IP Limited
County House
Bayshill Road
Cheltenham, Glos. GL50 3BA (GB)

(54) **RUNNING AND CYCLING SHOE**

(57) A running and cycling shoe (10) for use when running a race and for attaching a cleat (20) thereto to lock with clip-in pedals, the running and cycling shoe (10) comprising: a flexible running-shoe body (12) including a heel (32) which is flared and built-up, and a sole (14); a recess (16) in a ground-contact surface (18) of the sole (14), the recess (16) located so as to underlie a ball of a foot of a user when the shoe (10) is worn; a cleat attachment means in the recess (16) for attaching a cleat (20) to the shoe (10); and a plug securable to the shoe body (12) so that the plug occludes or substantially occludes the recess (16).

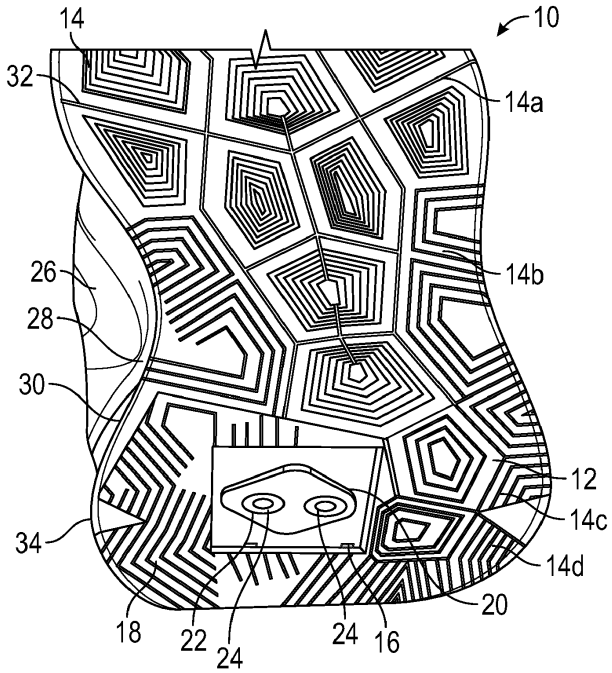

FIG. 1

EP 3 932 239 A1

Description

[0001] The present invention relates to a running shoe, and more particularly to a running and cycling shoe, a triathlon shoe, or a duathlon shoe. The invention further relates to method of reducing a time of a transition from a cycling stage to a running stage during a triathlon or duathlon event.

[0002] Triathlon races involve three stages: swimming, cycling and running. Duathlon races involve a running stage, followed by a cycling stage, followed by a running stage

[0003] For efficient cycling, a cyclist's shoes are required to be clipped or otherwise attached to the pedals of a bicycle. This is to improve a power output of the cyclist since power can be generated on an upstroke of a pedalling action, as well as on a downstroke.

[0004] To attach the shoes to the pedals, cycling shoes with a cleat attached to an underside of a shoe are required. The cleat clips to or connects with a corresponding mechanism on clip-in or clipless pedals.

[0005] Cycling shoes are challenging to walk in, and would be near impossible to run in, and so a triathlete is required to change from a cycling shoe to a running shoe when transitioning from the cycling to the running stage of the triathlon or duathlon. This change in shoes delays the triathlete during the transition and thus negatively impacts a triathlete's time in the race.

[0006] Furthermore, the requirement to obtain two types of shoes increases a cost of participating in triathlons or duathlons. The increased cost can therefore represent a financial barrier to entry into the sport.

[0007] As such it would be advantageous to provide a shoe which can be used to run a race, as well as to connect or clip to the pedals of a bicycle.

[0008] The present invention seeks to provide a solution to these problems.

[0009] According to a first aspect of the present invention, there is provided a running and cycling shoe for use when running a race and for attaching a cleat thereto to lock with clip-in pedals, the running and cycling shoe comprising: a flexible running-shoe body including a heel which is flared and built-up, and a sole; a recess in a ground-contact surface of the sole, the recess located so as to underlie a ball of a foot of a user when the shoe is worn; a cleat attachment means in the recess for attaching a cleat to the shoe; and a plug securable to the shoe body so that the plug occludes or substantially occludes the recess.

[0010] This arrangement provides a multi-use shoe, in other words a shoe which can be used for clipping to clip-in pedals when cycling, as well as for running. The cleat attachment means provides for the ability to clip to clip-in pedals. The position of the cleat under the ball of the foot allows for efficient power output when cycling. The recess permits for a cleat to be recessed so as to not impact the ground, which enables effective running. The flexible shoe body and built-up and flared heel allow for a user to run competitively in a running stage of a triathlon event or duathlon event. The plug can help to improve the running properties of the shoe, which may otherwise be limited by the presence of the recess. For example, the stability and resistance to twisting motion of the sole or shoe body may otherwise be limited by the presence of the recess. Additionally, the plug may assist with preventing or limiting the ingress of dirt or other waste matter into the recess. This may prevent or limit damage or obstruction of the cleat.

[0011] By providing a multi-use shoe, a user or triathlete is not required to change shoes when transitioning from a cycling stage to a running stage when competing in a triathlon or duathlon. This reduces a time taken to transition and thus can improve a triathlete's overall time in a race. Additionally, the triathlete is not required to purchase two pairs of shoes to participate in triathlons, which reduces a cost of participating in the sport.

[0012] Although principally described as being for a triathlon, it will be appreciated that the shoe can be used whenever cycling is to be carried out before and/or after running. As such, the shoe may be considered to be a duathlon shoe, a duathlon comprising a running stage, followed by a cycling stage, followed by a running stage.

[0013] Preferably, the plug and recess may be configured so that the plug is captively receivable in the recess via an interference fit. An interference fit, or a push-fit, reduces a time required to attach the plug to the recess.

[0014] Advantageously, the plug may have a tapering cross-section. A tapering cross-section may increase a frictional engagement between the plug and shoe body to reduce a likelihood of the plug becoming dislodged from the recess. This may assist with forming the interference fit.

[0015] Beneficially, the recess has a tapering cross-section. This may provide a similar or identical benefit as the tapering cross-section of the plug.

[0016] In a preferable embodiment, the cleat attachment means comprises at least one fastener receiving hole. This allows for attachment of the cleat.

[0017] Beneficially, the cleat attachment means may comprise two fastener receiving holes for receiving two bolts to attach a two-bolt cycling cleat. Three fastener receiving holes for attaching a three-bolt cleat may also be considered.

[0018] Additionally, the plug may include at least one fastener receiving hole, the plug and recess configured so that the fastener receiving hole of the plug is alignable with the fastener receiving hole of the cleat attachment means so that the plug can be secured to the shoe body via a fastener. This allows for the plug and shoe body to be more securely attached to one another, via the use of a fastener

[0019] Optionally, the attachment means may include a protruding plate, the plug including a recess for receiving the protruding plate. A plate, such as a metal plate, may allow for the cleat to be securely fastened against a rigid surface of the shoe body.

[0020] Preferably the fastener receiving hole of the plug extends from the recess of the plug.

[0021] Advantageously, the plug comprises a flexible material. The plug comprising a flexible material improves the flexibility of the sole. This can improve a springiness or elasticity of the sole which allows for more efficient running.

[0022] Additionally, the plug may consist essentially of the flexible material. It will be appreciated that the plug may consist only of the flexible material.

[0023] The sole, and potentially only a portion of the sole which provides the ground contact surface, preferably comprises, consists or consists essentially of a or the flexible material.

[0024] In a preferable embodiment, the plug and the sole comprise similar or identical materials. This may provide a more uniform flexibility or elasticity of the sole.

[0025] Optionally, the plug may comprise carbon rubber. Carbon rubber is a suitably flexible and hard-wearing material.

[0026] Preferably, the recess and plug may be configured so that a cleat-receiving space is defined between the cleat attachment means and the plug when the plug is secured to the shoe body. This allows for the plug to be secured without first removing the cleat. Advantageously, the recess is off-centre relative to a longitudinal centreline of the shoe body. The recess and/or cleat attachment means being in such a position can allow for the shoe to be separated or spaced from a frame of the bicycle to avoid clashes or impacts therebetween when cycling. Although described as being off-centre, the recess may in fact be aligned with the centre-line of the shoe.

[0027] Beneficially, the recess is proximal to an inside side of the shoe body.

[0028] Preferably, the shoe body may be arranged and sufficiently flexible so that a forwardmost portion of a sole is positionable in a plane perpendicular or substantially perpendicular to a plane of a rearwardmost portion of the sole. Such an arrangement and flexibility permit for an efficient running style.

[0029] Additionally, the running and cycling shoe may further comprise the cleat attached to the cleat attachment means.

[0030] Optionally, the cleat may be received in the cleat receiving space with the plug secured to the shoe body.

[0031] It will be appreciated that the plug may fill or substantially fill the recess. This can provide an advantage since any empty space provided by the recess would be prevented or reduced, providing a more uniform sole to improve running characteristics.

[0032] Instead of filling the recess, the plug may instead only cover at least part of the opening of the recess, and preferably would cover the whole of the opening of the recess or substantially the whole of the opening of the recess. Covering the recess and not filling the recess would provide a space behind the plug. It will be appreciated that the plug may cover the recess opening entirely or substantially cover the recess opening entirely, to prevent or limit dirt entry, and partly or entirely fill the recess.

[0033] The plug may engage with the side walls of the recess, although it will be appreciated that this may not be necessary in the instance of fastening means. The plug may not be included.

[0034] Whilst the cleat attachment means is described as underlying the ball of the foot, it will be appreciated that this may not necessarily be the case and may, for example underlie an arch of the foot.

[0035] Beneficially, the plug may comprise at least one projection at a side edge thereof, and the recess includes at least one corresponding hole in a side wall of the recess away from the ground-contact surface, the projection being receivable in the hole so as to secure the plug to the shoe body. This may allow the plug to be more securely attached to the shoe body.

[0036] Additionally, the plug or the ground-contact surface at the recess may include a cut-out to permit leverage to be applied to the plug.

[0037] Advantageously, the plug may comprise at least one projection at a side edge thereof, the ground contact surface having an opening for accommodating the projection when the plug is inserted into the recess, the recess including a void adjacent to the opening in a circumferential direction of the recess, the plug being rotatable in the recess so that the projection is moveable into the void to secure the plug to the shoe body. This may allow the plug to be more securely attached to the shoe body.

[0038] Optionally, the plug may be flexibly joined to the sole so that the plug comprises a flap. This may prevent or limit the plug from becoming lost if removed or displaced from the shoe body. The join is preferably sufficiently flexible so that it may be bent or deformed so that the cleat can be attached.

[0039] Other features to adapt the shoe to both running and cycling may be considered. For example, the shoe may include reinforcement for an upper of the shoe to prevent or limit wearing of the upper of the shoe during cycling. This may particularly be the case on an upper surface of the upper, for example above the toe box or above the portion of the shoe which houses the ball of the foot. The reinforcement may include a removable insert positionable between the foot and the upper layer of the upper of the shoe. The reinforcement may be elastic or springy, for example being formed from carbon fibre. When running, the insert may be positionable beneath the foot to assist with running.

[0040] The reinforcement may instead be attached to an exterior surface of the shoe, for example at the upper surface of the upper. The reinforcement may be pivotably or slidably attached so as to be moveable beneath the sole so as to occlude the recess. In this case, the reinforcement may replace or act as the plug.

[0041] Alternatively, the recess may instead be positioned as to underlie an arch of the foot, the cleat may be slidably mounted to the shoe body, for example on rails, to move the cleat from under the ball of the foot, to

the recess under the arch of the foot. Locking means may be provided to lock the cleat into position.

[0042] The cleat attachment means may include a quick release to quickly remove the cleat. For example, the cleat may be twistable so as to be removable. Additionally, the cleat may have a flexible material base such that it can be inverted so as to act as the plug.

[0043] The plug may be storable in the heel of the shoe when cycling. To achieve this, the heel may have a compartment which is openable in which the plug can be positioned.

[0044] According to a second aspect of the invention, there is provided a method of reducing a time of a transition from a cycling stage to a running stage during a triathlon or duathlon event, the method comprising: a) providing the running shoe according to the first aspect of the invention with a cleat attached to the cleat attachment means; b) clipping the cleat to clip-in pedals of a bicycle; c) completing the cycling stage with the bicycle; d) unclipping the cleat from the clip-in pedals; e) securing the plug to the shoe body to occlude the recess of the shoe; and f) running the running stage.

[0045] This may allow for triathletes to achieve improved times at events. The industrial applicability of such a method will be understood since competing in triathlons may be a financial pursuit, and as such the method can be used in a professional sports industry.

[0046] According to a third aspect of the invention, there is provided a running and cycling shoe for use when running a race and for attaching a cleat thereto to lock with clip-in pedals, the running and cycling shoe comprising: a flexible running-shoe body including a sole; a recess in a ground-contact surface of the sole, the recess located so as to underlie a ball of the foot; a cleat attachment means in the recess for attaching a cleat to the shoe; and a plug securable to the shoe body so that the plug occludes or substantially occludes the recess.

[0047] The invention will now be more particularly described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 shows a bottom view of a first embodiment of a running and cycling shoe, with a cycling cleat attached to a shoe body and a plug removed;

Figure 2 shows the running shoe of Figure 1, with the plug in the recess and secured to the shoe body;

Figure 3 shows a side view of the running shoe of Figure 1, indicating a flexibility thereof;

Figure 4 shows a rear view of the running shoe of Figure 1;

Figure 5 shows a bottom view of a second embodiment of a running and cycling shoe with a plug removed;

Figure 6 shows a bottom view of the running shoe of Figure 5, with the plug secured to a shoe body;

Figure 7 shows a bottom representation of a third embodiment of a running and cycling shoe with a plug removed and to the side, with a double-headed arrow indicating insertion of the plug into the recess; and

Figure 8 shows a cross-sectional view of the plug of Figure 7.

[0048] Referring firstly to Figure 1, there is shown a first embodiment of a running and cycling shoe 10. The running shoe 10 may in fact be considered to be a cycling shoe, or a multi-use shoe. The running shoe 10 has a running-shoe body 12 which includes a sole 14, a recess 16 in a ground-contact surface 18 of the sole 14 and a cleat 20 attached to the shoe body 12 via cleat attachment means 22, which here comprises two fasteners 24 received through corresponding holes. It will be appreciated that the shoe is one shoe of a pair of shoes to be worn by a user, triathlete, cyclist or runner.

[0049] The shoe body 12 comprises parts of shoe which may include an upper 26 of the shoe 10, as well as the sole 14. The upper 26 may define an entirety of the shoe body 12 above the sole 14. The sole 14 may include the outsole 28, which includes the ground-contact surface 18 of the sole 14, and midsole 30 which separates the upper 26 from the outsole 28. A rear portion of the sole 14 comprises the heel 32. The sole 14, and in particular the heel 32, may include cushioning.

[0050] The outsole 28 is preferably formed from an elastomeric material, such as rubber, and more particularly carbon rubber or blown rubber. The midsole 30 may comprise polyurethane, ethylene-vinyl acetate, or any other elastomeric material. The upper may comprise polyester or nylon, for example a polyester or nylon mesh.

[0051] The recess 16 and/or cleat attachment means is positioned so as to underlie, or be aligned below, a ball of a foot of a user when the shoe 10 is worn. For example, the recess 16 may be located within a forward third of the sole 14. At least part of the recess 16, and preferably the centre of the recess 16, may be located between 50 mm and 100 mm from a front of the shoe 10.

[0052] The sole 14 of the shoe may have a heel portion 14a which underlies or supports a heel of the foot, an arch portion 14b which underlies or supports an arch of the foot, a ball portion 14c which underlies or supports a ball of the foot, and a toe portion 14d which underlies or supports toes of the foot. The toes of a foot may be received in a toe box of the shoe. The recess 16 and/or cleat attachment means may be in the ball portion 14c of the sole 14.

[0053] The recess 16 is preferably misaligned or offset from a longitudinal centreline of the sole 14 or shoe body 12. In other words, the recess 16 is preferably off-centre in a side-to-side direction of the sole 14. The recess 16

is therefore preferably closer to a side 34 of the sole 14 which is at or adjacent to an inside-facing surface of the shoe 10. The inside-facing surface of the shoe 10 may be considered to be the side surface of the shoe 10 which is proximal to the bicycle when a user is cycling. Such an arrangement may prevent or limit the side 34 of the shoe 10 from impacting the bicycle, for example a frame of the bicycle, when cycling, which may be of concern due to the conventionally larger profile of running shoes compared to cycling shoes. At least part of the recess 16, and preferably the centre of the recess 16, may be located between 50 mm and 100 mm from a side 34 of the shoe 10.

[0054] The recess 16 may have a depth of between 5 mm and 15 mm and may more preferably have a depth of 10 mm. However, greater depths may be considered, such as 20 mm or between 20 mm and 30 mm. Such a depth allows for the cleat 20 to be recessed relative to the ground-contact surface 18 of the shoe 10, which permits convenient running, whilst allowing for the cleat to be clipped to the pedal. The recess not being overly deep also prevents or limits a requirement for a significantly increased thickness of sole 14, and reduces or limits removal of cushioning of the shoe 10.

[0055] The cleat attachment means 22 is positioned in the recess 16, for example in the centre of the recess 16. Preferably, the cleat attachment means 22 comprises at least one fastener receiving hole for receiving a fastener 24. Here the fastener receiving hole is a bolt hole, and there are preferably two bolt holes for attaching a two-bolt cleat 20. However, other numbers of fastener receiving holes may be considered such as three bolt holes for attaching a three-bolt cleat 20, one bolt hole or more than three bolt holes.

[0056] Although the cleat attachment means is described as bolt holes, it will be appreciated that slots may be considered to allow forward and back adjustment of the cleat. Referring to Figure 2, the running shoe 10 comprises a plug 36 securable to the shoe body 12 so that the plug 36 occludes or substantially occludes the recess 16. Here the plug 36 is secured to the shoe 10 with the cleat 20 received in the recess 16. In this way, the plug 36 covers the cleat 20. As such, between the plug 36 and the recess 16 a cleat-receiving space is defined when the plug 36 is secured to the shoe body 12, the cleat 20 being receivable in the space. The plug 36 may also be referred to as a cover, or stop. Although described as substantially occluding the recess, it will be appreciated that substantially the whole of the recess need not necessarily be occluded, and that at least the portion of the recess on which the cleat is located should be occluded.

[0057] To permit the formation of the cleat-receiving space, the plug 36 may include a depression, recess or hole in an inside facing surface thereof to receive the cleat 20 therein. Alternatively, an inside facing surface of the plug 36 may comprise a flexible, pliant and/or readily compressible material, such as a flexible foam. Such a material may be deformed by the cleat 20 to allow the cleat 20 to be received.

[0058] However, it will be appreciated that this may not be necessary and the plug 36 may be substantially planar, and be of a thickness with the recess 16 having a depth so that an inside facing surface of the plug 36 is spaced apart sufficiently from the cleat attachment means 22 to accommodate the cleat 20. In other words, the plug 36 may be thinner than the recess 16 is deep by a distance sufficient to accommodate the cleat 20.

[0059] The plug 36 preferably forms an interference fit with the shoe body 12, sole 14 and/or the recess 16 to secure the plug 36 to the shoe body 12. In other words, in the first embodiment there is preferably no fastener, such as a bolt, to secure the plug 36 to the shoe body 12. The plug 36 therefore can be held by the recess 16, or is captively receivable or tenable by the recess 16. Walls of the plug 36 engage with those of the recess 16, and friction therebetween holds the plug in the recess. To achieve such an interference fit, the plug 36 may have a tapered cross-section, which may permit convenient insertion into the recess 16, but prevent or limit unintentional loss of the plug 36 from the recess 16. This may be achieved by increased frictional engagement between the tapered surface of the plug 36 and the surface of the recess 16. The walls of the recess 16 are preferably not tapered and the recess 16 may have a uniform or substantially uniform width. The shape of the plug 36 will be better understood with reference to a third embodiment described hereinbelow.

[0060] The plug 36 is preferably flush or substantially flush with the ground-contact surface 18 of the sole 14.

[0061] It will be appreciated that, although the plug 36 is described as having a tapered cross-section, the plug 36 may have a constant or uniform width and the recess 16 may have a cross-sectional taper. Alternatively, both plug 36 and recess 16 may be tapered.

[0062] The plug 36 and recess 16 preferably have a similar or identical shape and/or size. Here the recess 16 and/or plug 36 has a width and/or length greater than 30 mm. More preferably the width and/or length of the plug 36 and/or recess 16 is or is substantially 50 mm. However, it will be appreciated that the plug 36 may have a greater width or length than the recess 16 to improve a frictional engagement therebetween. Additionally, other lengths and widths of the plug may be considered, such as lengths and widths greater than 50 mm.

[0063] The plug 36 and recess 16 both have a rectangular shape. However, any other shape may be considered. For example, any polygonal shape may be considered such as pentagonal, hexagonal, or octagonal. Polygonal shapes may be preferred since the corners may increase frictional engagement to assist with maintaining the plug 36 in the recess 16. However, curved shapes such as circles or ellipses may also be considered.

[0064] The plug 36 is preferably formed from a flexible material. More preferably, the plug 36 is formed from a similar or identical material as the sole 14, for example being formed from carbon rubber, ethylene-vinyl acetate

or polyurethane. Other elastomeric materials may also be considered.

[0065] Referring now to Figure 3, the running shoe 10 is shown to be flexible, with a front portion deformed so as to be bent upwards. The running shoe 10 is configured and sufficiently flexible so that the a forward-most portion 14d of the sole 14 is positionable in a plane perpendicular or substantially perpendicular to a plane of a rearward-most portion 14a of the sole 14. Such an arrangement allows for more efficient running.

[0066] Additionally, the heel 32 of the running shoe 10 can be seen to be built up. In other words, the heel portion of the sole 14 is thicker than a front portion of the sole 14. Such an arrangement allows for a more efficient running style.

[0067] Referring now to Figure 4, the running shoe 10 can be seen to have a flared heel 32. In other words, a cross-section of the heel 32 is tapered so that it is wider towards a bottom 32a of the heel 32 and narrower towards a top 32b of the heel 32. A flared heel 32 provides for greater stability of the shoe 10.

[0068] Although the shoe 10 is described as having a flared and built up heel 32, it will be appreciated that this may not be the case. As such, running shoe styles without flared heels may be considered.

[0069] To manufacture the shoe 10, the shoe body 12 may be formed using the aforementioned materials via conventional methods. The recess 16 may be formed via removing a portion of the sole 14, for example by machining or cutting the sole 14. Alternatively, the sole 14 may be moulded or otherwise formed with the recess 16 therein. To form the cleat attachment means 22, holes may be formed at the desired location at the recess 16. The holes may be formed when moulding the sole 14 or via machining. A long nut, connector nut, or other internally screw-threaded component, preferably comprising metal or plastic, may be inserted into the hole and attached thereto, for example using an adhesive, to act as a receiver for the bolt which attaches the cleat 20. The plug 36 may be formed via individual moulding, or via cutting or stamping a larger piece of material.

[0070] It will be appreciated that alternative means of securing the plug to the shoe body without the use of separate mechanical fasteners may be considered. For example, the plug may comprise at least one projection at a side edge thereof. The recess may include at least one hole in a side wall of the recess away from the ground-contact surface. The projection is receivable in the hole so as to secure the plug to the shoe body. There may be projections at each side of the plug.

[0071] If using such projections and corresponding holes, or even if not, it may assist with removal of the plug if the plug, or the ground-contact surface at the recess, includes a cut-out to permit leverage to be applied to the plug. A user may therefore use their fingertip, fingernail, or a tool to pry the plug from the recess.

[0072] Alternatively, the plug may comprise at least one projection at a side edge thereof. The ground contact surface may have an opening for accommodating the projection when the plug is inserted into the recess. A void would be adjacent to the opening in a circumferential direction of the recess. The plug can then be rotated in the recess so that the projection is moveable into the void to secure the plug to the shoe body. Such a form of securement may be termed a detent. It will be appreciated that such an arrangement may require, or be most useful, if the plug is circular.

[0073] Additionally or alternatively, the plug may be flexibly joined to the sole so that the plug comprises a flap. For example, a strip of flexible material, which acts as a hinge may join the plug with the shoe body. This may prevent the plug from being lost in the event of displacement from the hole. The flexibility of the hinge would be such that the plug can be bent backwards to be accommodated when cycling.

[0074] In use, when competing in a triathlon event, cleats 20 would already be secured to the cleat attachment means 22 of the shoes 10, for example via bolts. Each plug 36 may be removed from the corresponding recess 16 by the triathlete, or the plugs 36 may already be pre-removed. The triathlete would put on the shoes 10, having completed the swimming stage, and may store the plugs 36 in a pocket, for example. The triathlete would then complete the cycling stage, using the cleats 20 to clip into the pedals. Having completed the cycling stage, the triathlete would unclip from the pedals, dismount from the bicycle and may insert the plugs 36 into the recesses 16 of the shoes 10. The triathlete would then complete the running stage. However, it will be appreciated that the triathlete may complete the running stage without first inserting the plug 36 into the recess 16, which may save time.

[0075] When training or practising for the running stage of the triathlon, the plugs 36 should be used to prevent or limit ingress of material, such as dirt, into the recesses 16 which may damage or clog the cleats 20. The plugs 36 may also maintain a structural integrity of the sole 14 to provide suitable shoe characteristics for running.

[0076] Referring to Figure 5, a second embodiment of the running shoe 110 is shown. The second embodiment of the running shoe 110 is similar or identical to the first embodiment with similar or identical reference numerals used with 100 added.

[0077] The recess 116 of the second embodiment can be seen to be similarly located and sized as the first embodiment. The second embodiment is shown without the cleat attached to the cleat attachment means 122.

[0078] The plug 136 preferably has a thickness which is similar or identical to the depth of the recess 116. As such, when the plug 136 is received within the recess 116, there is no cleat-receiving space defined between the plug 136 and the cleat attachment means 122. Therefore, the cleat is required to be removed before the plug 136 is inserted and therefore the plug 136 does not cover the cleat.

[0079] The plug 136 preferably includes through holes

138 or apertures therethrough to receive fasteners 124 to attach the plug 136 to the cleat attachment means 122. Therefore, the fastener receiving holes 138 in the plug 136 are arranged to overlie those of the cleat attachment means 122, to allow a fastener or bolt to be inserted therethrough. The plug 136 may be flush or substantially flush with the ground-contact surface 118 of the sole 114. The fastener receiving holes 138 in the plug 136 may be countersunk or counterbored to prevent or limit a head of the fastener 124 from protruding beyond the ground-contact surface 118 of the sole 114, and/or so that the head of the fastener 124 can be recessed relative to the fastener receiving holes 138.

[0080] Referring to Figure 6, the plug 136 is shown received in the recess 116 having bolts 124 received through the fastener receiving apertures 138.

[0081] Although the plug is fastened to the running-shoe body, it will be appreciated that the plug may be securable to the running-shoe body without a fastener via an interference fit. In this case, the fasteners could be used to provide additional securement.

[0082] Additionally, an arrangement may be considered where the cleat is attached to the cleat attachment means with the plug in the recess and fasteners attaching the plug to the cleat attachment means, extending through the cleats.

[0083] Figure 7 shows a representation of a third embodiment a running shoe 210. The third embodiment is similar or identical to the second embodiment, with similar or identical reference numerals used with 100 added.

[0084] As indicated in Figure 7, the cleat attachment means 222 in the recess 216 may comprise a rigid member 240. The rigid member 240 may comprise a metal plate. The rigid member 240 preferably has fastener receiving apertures 238a extending therethrough for receiving fasteners to attach the cleat. The rigid member 240 may project beyond a rear wall of the recess 216.

[0085] Referring to Figure 8, the plug 236 preferably includes a recess 242 for receiving the projecting extent of the rigid member 240.

[0086] A tapering of the plug 236 is shown. As such, a shape of the plug 236 may be considered to be a frustrum, such as a pyramidal frustrum. The fastener receiving aperture 238b can be seen to extend through the plug 236, including at a location of the recess of the plug 36.

[0087] The use of the second and third embodiments 110, 210 may be similar to that or the first embodiment 10. However, it will be appreciated that it would not be sensible to secure the plug to the shoe body using fasteners during a competitive triathlon event. As such, this step may be omitted.

[0088] It is therefore possible to provide a multi-use shoe which can be used for the cycling and running events in a triathlon. The shoe includes a recess in which a cleat can be attached. The recess and cleat are sized such that the cleat does not protrude beyond a ground-contact surface of the shoe. A plug is included which is used to cover the cleat to prevent ingress of material into the recess, damage to the cleat, or reduction in the mechanical properties of the shoe when running.

[0089] The words 'comprises/comprising' and the words 'having/including' when used herein with reference to the present invention are used to specify the presence of stated features, integers, steps or components, but do not preclude the presence or addition of one or more other features, integers, steps, components or groups thereof.

[0090] It is appreciated that certain features of the invention, which are, for clarity, described in the context of separate embodiments, may also be provided in combination in a single embodiment. Conversely, various features of the invention which are, for brevity, described in the context of a single embodiment, may also be provided separately or in any suitable sub-combination.

[0091] The embodiments described above are provided by way of examples only, and various other modifications will be apparent to persons skilled in the field without departing from the scope of the invention as defined herein.

Claims

1. A running and cycling shoe (10; 110; 210) for use when running a race and for attaching a cleat (20) thereto to lock with clip-in pedals, the running and cycling shoe (10; 110; 210) comprising:

   a flexible running-shoe body (12) including a heel (32) which is flared and built-up, and a sole (14; 114);
   a recess (16; 116; 216) in a ground-contact surface of the sole (14; 114), the recess (16; 116; 216) located so as to underlie a ball of a foot of a user when the shoe (10; 110; 210) is worn;
   a cleat attachment means (22; 122; 222) in the recess (16; 116; 216) for attaching a cleat (20) to the shoe (10; 110; 210); and
   a plug (36; 136; 236) securable to the shoe body (12) so that the plug (36; 136; 236) occludes or substantially occludes the recess (16; 116; 216).

2. A running and cycling shoe (10; 110; 210) as claimed in claim 1, wherein the plug (36; 136; 236) and recess (16; 116; 216) are configured so that the plug (36; 136; 236) is captively receivable in the recess (16; 116; 216) via an interference fit, such as via the plug (36; 136; 236) and/or recess (16; 116; 216) having a tapering cross-section.

3. A running and cycling shoe (10; 110; 210) as claimed in any one of the preceding claims, wherein the cleat attachment means (22; 122; 222) comprises at least one fastener receiving hole.

4. A running and cycling shoe (110; 210) as claimed in

claim 3, wherein the plug (136; 236) includes at least one fastener receiving hole, the plug (136; 236) and recess (116; 216) configured so that the fastener receiving hole of the plug (136; 236) is alignable with the fastener receiving hole of the cleat attachment means (122; 222) so that the plug (136; 236) can be secured to the shoe body (12) via a fastener.

5. A running and cycling shoe (210) as claimed in any one of the preceding claims, wherein the attachment means (222) includes a protruding plate (240), the plug (236) including a recess (242) for receiving the protruding plate (240).

6. A running and cycling shoe (210) as claimed in claim 5, when dependent on claim 3, wherein the fastener receiving hole (238b) of the plug (236) extends from the recess of the plug (236).

7. A running and cycling shoe (10; 110; 210) as claimed in any one of the preceding claims, wherein the plug (36; 136; 236) comprises or consists essentially of a flexible material.

8. A running and cycling shoe (10; 110; 210) as claimed in any one of the preceding claims, wherein the plug (36; 136; 236) and the sole (14; 114) comprise similar or identical materials.

9. A running and cycling shoe (10; 110; 210) as claimed in any one of the preceding claims, wherein the plug (36; 136; 236) comprises carbon rubber.

10. A running and cycling shoe (10) as claimed in any one of the preceding claims, wherein the recess (16) and plug (36) are configured so that a cleat-receiving space is defined between the cleat attachment means (22) and the plug (36) when the plug (36) is secured to the shoe body (12).

11. A running and cycling shoe (10; 110) as claimed in any one of the preceding claims, wherein the recess (16; 116) is off-centre relative to a longitudinal centreline of the shoe body (12) and is proximal to an inside side (34) of the shoe body (12).

12. A running and cycling shoe (10; 110; 210) as claimed in any one of the preceding claims, wherein the shoe body (12) is arranged and sufficiently flexible so that a forwardmost portion of a sole (14; 114) is positionable in a plane perpendicular or substantially perpendicular to a plane of a rearwardmost portion of the sole (14; 114).

13. A running and cycling shoe as claimed in any one of the preceding claims, wherein the plug or the ground-contact surface at the recess includes a cut-out to permit leverage to be applied to the plug.

14. A running and cycling shoe as claimed in any one of the preceding claims, wherein the plug is flexibly joined to the sole so that the plug comprises a flap.

15. A method of reducing a time of a transition from a cycling stage to a running stage during a triathlon or duathlon event, the method comprising:

a) providing the running shoe (10; 110; 210) as claimed in any one of the preceding claims with a cleat (20) attached to the cleat attachment means (22; 122; 222);
b) clipping the cleat (20) to clip-in pedals of a bicycle;
c) completing the cycling stage with the bicycle;
d) unclipping the cleat (20) from the clip-in pedals;
e) securing the plug (36; 136; 236) to the shoe body (12) to occlude the recess (16; 116; 216) of the shoe (10; 110; 210); and
f) running the running stage.

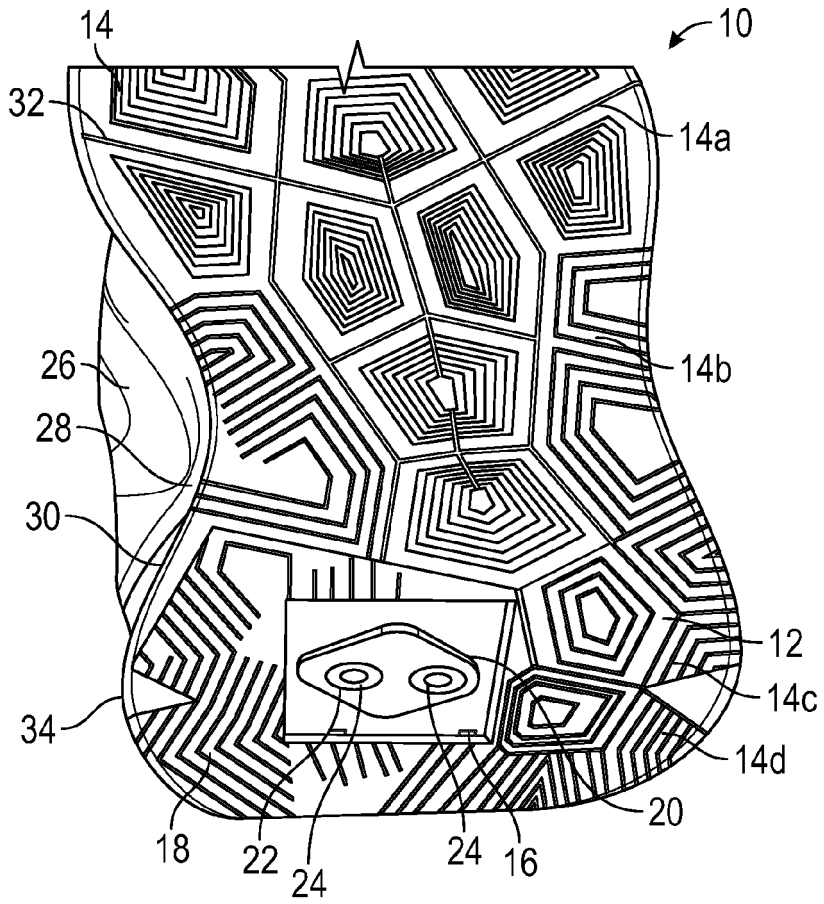
14
10
32
14a
26
14b
28
30
12
14c
34
14d
20
18
22
24
24
16

FIG. 1

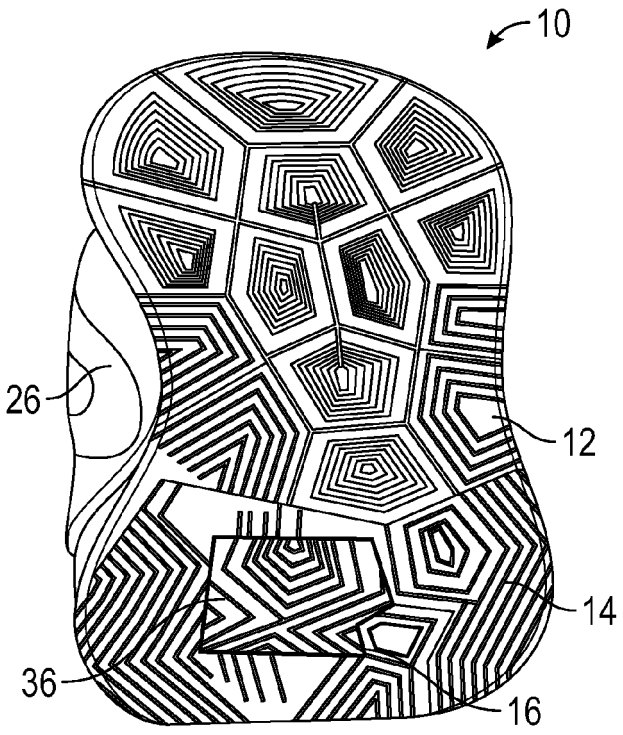
10
26
12
14
36
16

FIG. 2

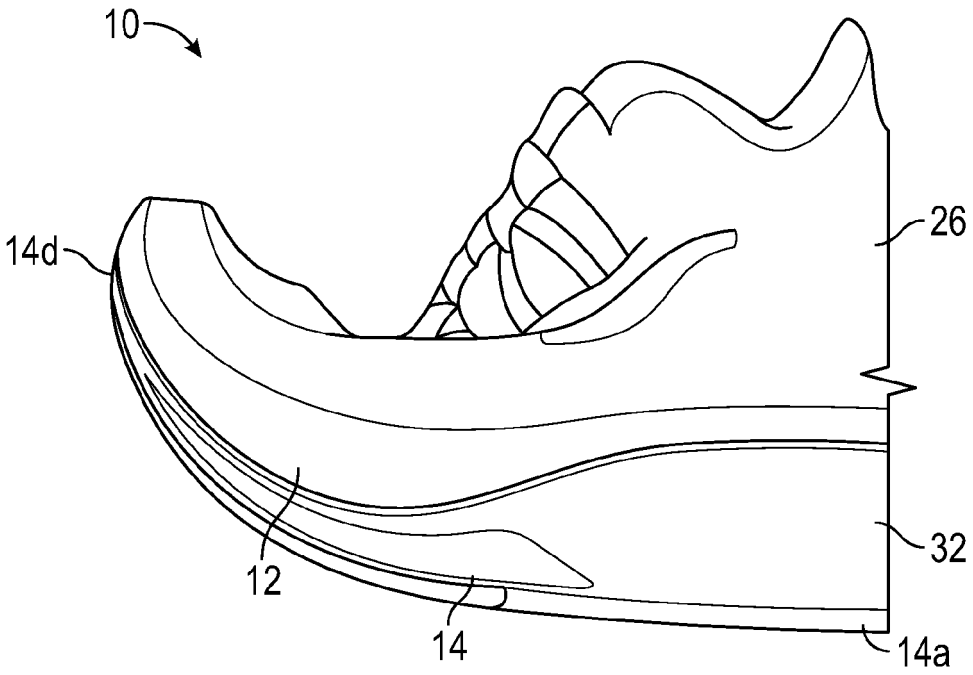

FIG. 3

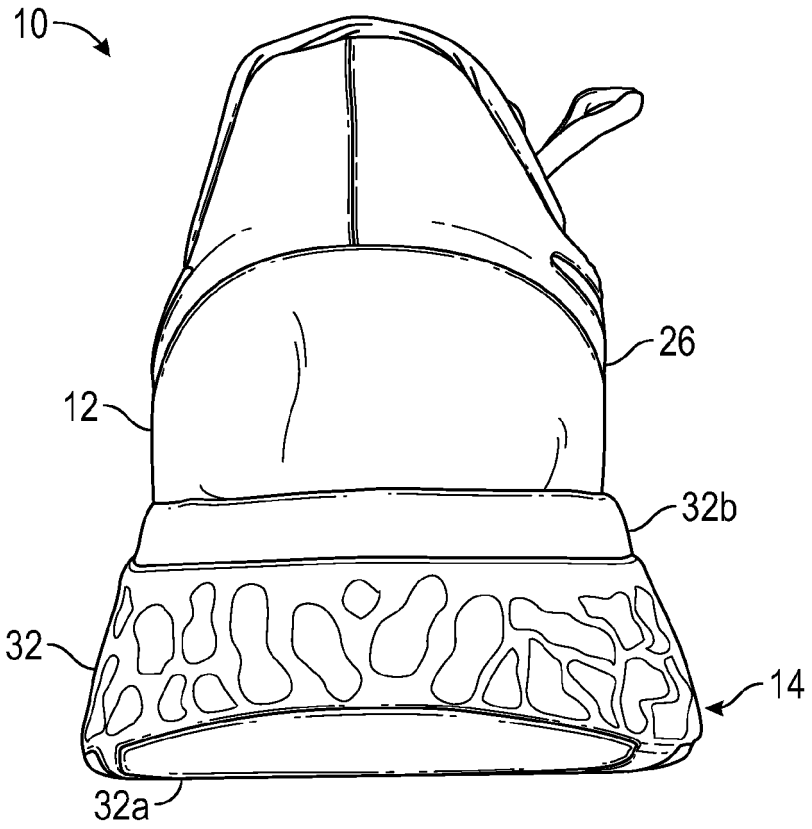

FIG. 4

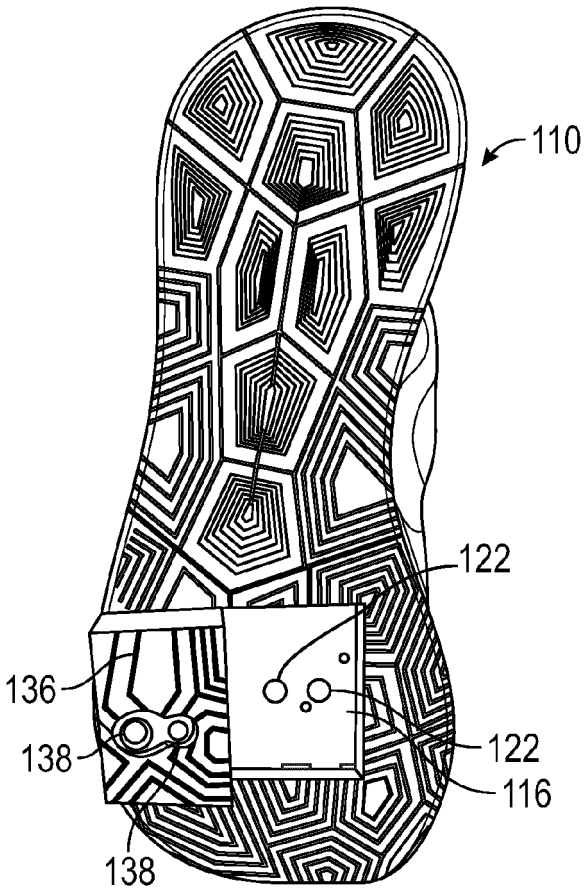

FIG. 5

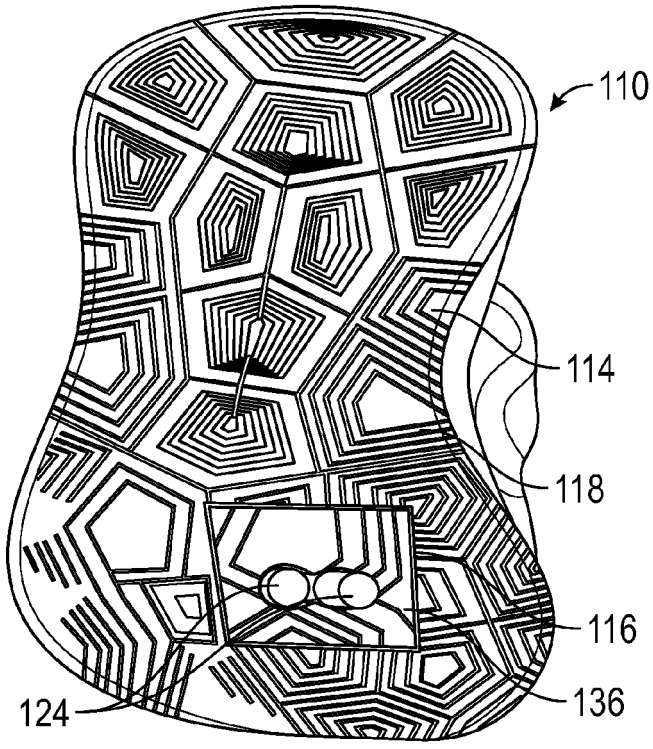

FIG. 6

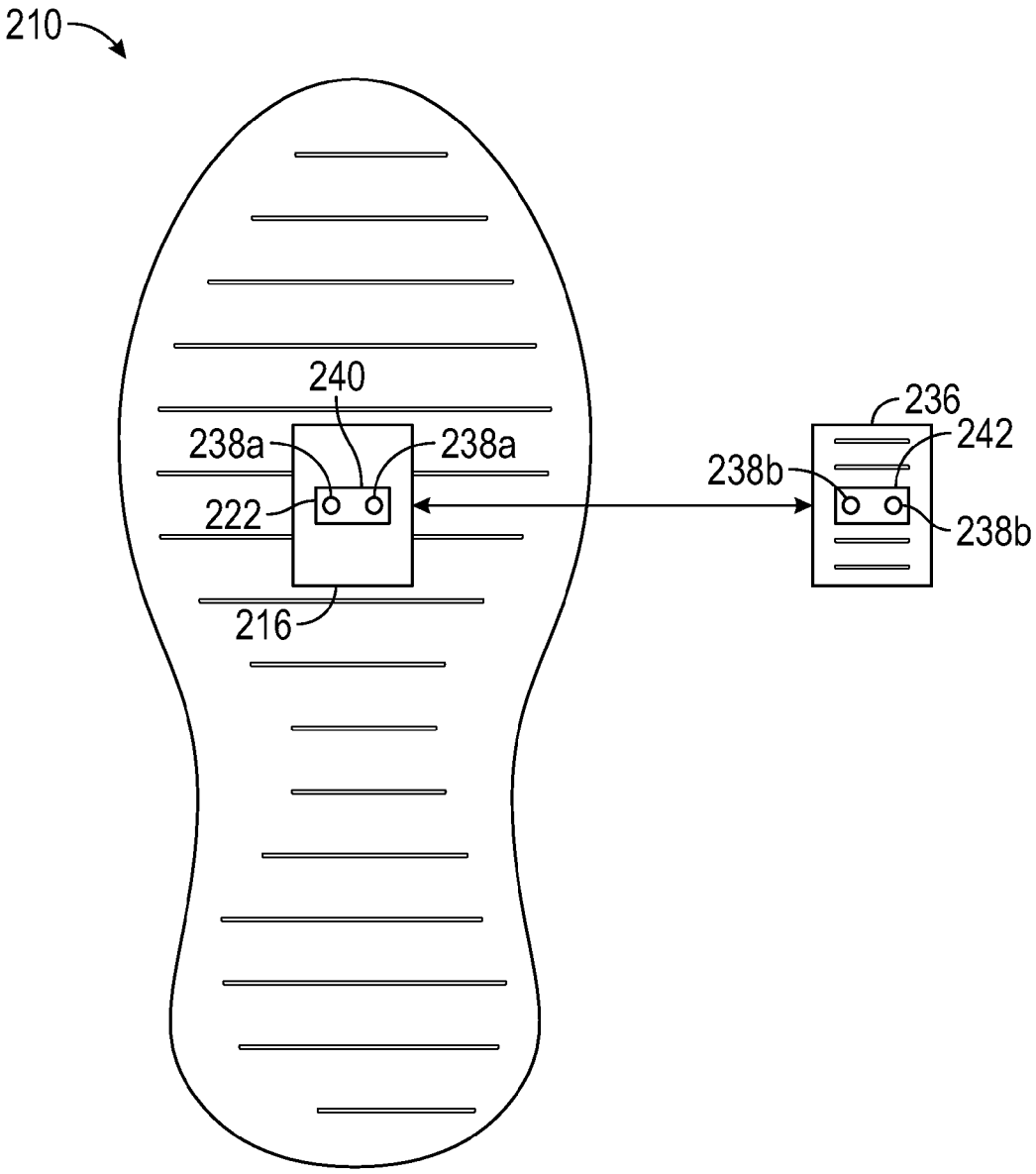

FIG. 7

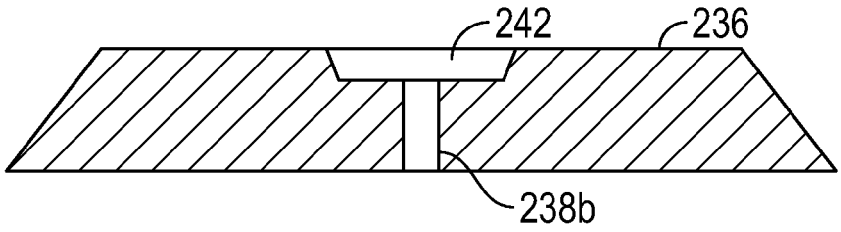

FIG. 8

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 21 18 3526

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2019/069627 A1 (TORRANCE TONY L [US]) 7 March 2019 (2019-03-07)	1-13,15	INV. A43B5/14
A	* paragraphs [0021] - [0025], [0029] - [0031]; figures *	14	A43B5/06
X	US 5 446 977 A (NAGANO MASASHI [JP] ET AL) 5 September 1995 (1995-09-05)	1-3, 7-13,15	
A	* column 8, line 5 - line 10; figures 2-7 * * column 4, line 10 - line 14 * * column 4, line 51 - line 56; figures *	4-6,14	
X	WO 96/10346 A1 (SIGNORI DINO SIDI SPORT [IT]; SIGNORI DANIELE [IT]) 11 April 1996 (1996-04-11)	1-13,15	
A	* page 5; figures * * page 6, paragraph 2nd; figures *	14	
A	US 2014/259796 A1 (HILLYER CHRISTOPHER [US]) 18 September 2014 (2014-09-18) * the whole document *	1-15	

TECHNICAL FIELDS SEARCHED (IPC)
A43B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	9 November 2021	Chirvase, Lucian

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 21 18 3526

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

09-11-2021

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2019069627 A1	07-03-2019	AU 2011268142 A1	10-01-2013
		CA 2802538 A1	22-12-2011
		EP 2582260 A1	24-04-2013
		JP 5981425 B2	31-08-2016
		JP 2013528475 A	11-07-2013
		NZ 604514 A	27-06-2014
		US 2012000095 A1	05-01-2012
		US 2019069627 A1	07-03-2019
		WO 2011160058 A1	22-12-2011
US 5446977 A	05-09-1995	DE 4040727 A1	18-07-1991
		FR 2656990 A1	19-07-1991
		GB 2239780 A	17-07-1991
		IT 1243450 B	10-06-1994
		KR 910014070 A	31-08-1991
		US 5446977 A	05-09-1995
WO 9610346 A1	11-04-1996	AU 3565995 A	26-04-1996
		IT PD940166 A1	04-04-1996
		WO 9610346 A1	11-04-1996
US 2014259796 A1	18-09-2014	NONE	

EPO FORM P0459

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