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(54) SHOE HAVING STABILIZER

(57) A stabilizer includes a midsole, and a counter placed in a rearfoot portion of the midsole, the counter including a counter body attached to a surface of the rearfoot portion of the upper, and at least one skirt extending downward from the counter body and covering, and attached to, a side surface of the rearfoot portion of the midsole on a medial side or a lateral side, the at least one skirt including a posterior end placed on the side surface or a back surface of the midsole, and an exposed portion where the skirt is absent and the midsole is exposed is provided in at least a portion in a circumferential direction of the back surface of the midsole.

FIG 1A : Medial

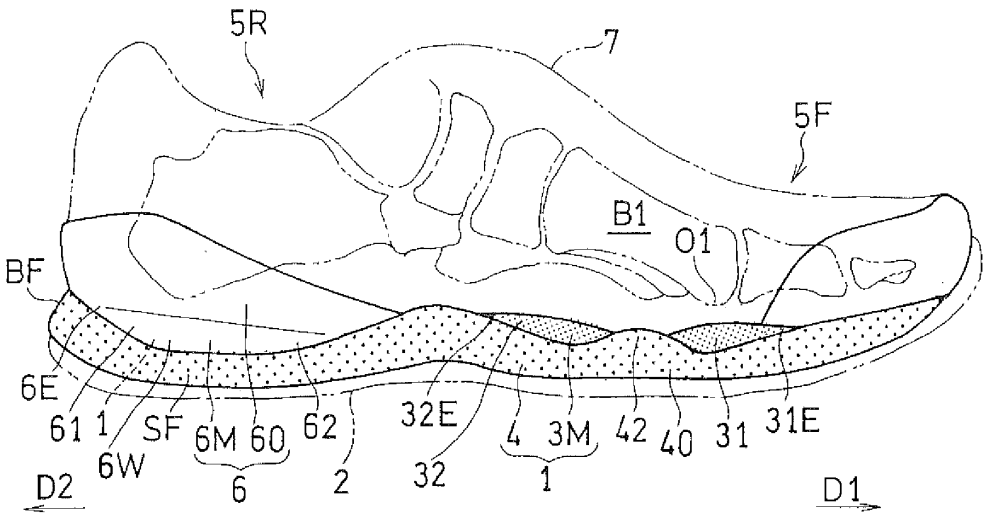

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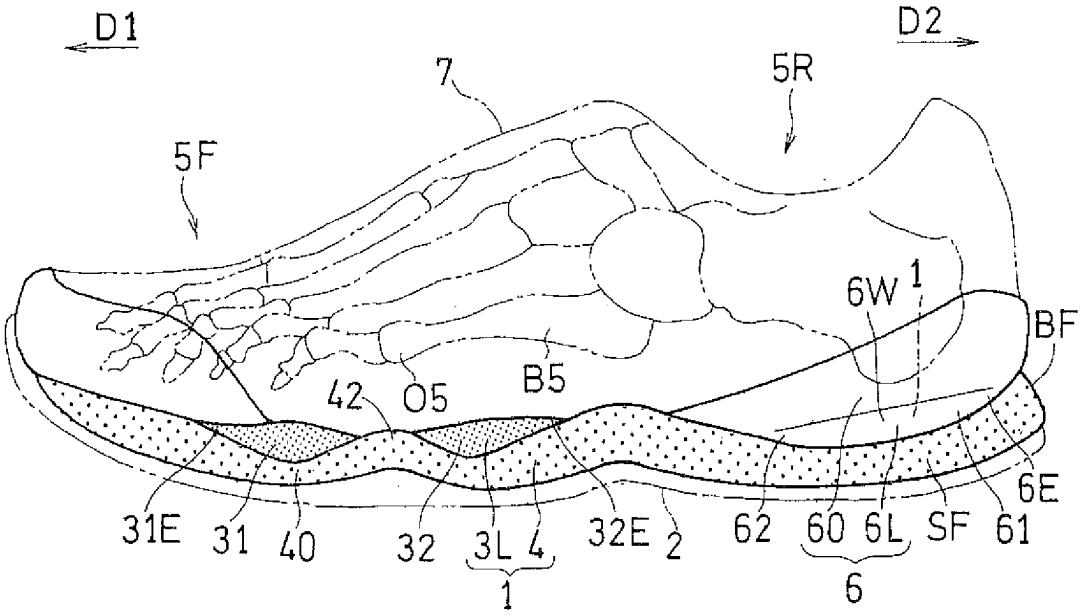
FIG1B : Lateral



Description

TECHNICAL FIELD

[0001] The present invention relates to a shoe having a stabilizer.

BACKGROUND ART

[0002] As stabilizers for the rearfoot, heel counters for stabilizing the heel when running or walking are well known in the art.

[0003] As stabilizers for the forefoot, roll-up structures for suppressing lateral shake in the medial or lateral direction of the forefoot when running or walking are well known in the art.

CITATION LIST

PATENT LITERATURE

[0004]

First Patent Document: JP09-215501A (FIG. 6, FIG. 3)
Second Patent Document: JP10-108709A (Front page)
Third Patent Document: JP2002-262907A (Front page)
Fourth Patent Document: JP60-135003A (FIG5)
Fifth Patent Document: JP07-8304A (FIG. 1)
Sixth Patent Document: WO2013/168256A1 (Abstract)
Seventh Patent Document: JP2003-9906A (FIG. 3)

SUMMARY OF INVENTION

[0005] A stabilizer restrains the foot while suppressing the lateral shake. Therefore, it may deteriorate the wearability.

[0006] It is therefore an object of the present invention to provide a shoe having a stabilizer capable of suppressing the lateral shake of the foot while preventing the wearability from deteriorating.

[0007] For example, JP60-135003A discloses a counter having a U-letter shape covering the side surface and the back surface of the rearfoot portion of the midsole. The counter will suppress the lateral shake of the rearfoot. However, the counter covering the side surface and the back surface of the rearfoot portion of the midsole will inhibit deformation of the midsole. Thus, it lowers the cushioning property of the rearfoot portion, and the wearer will be likely to feel a great impact on the first strike upon landing when running or walking.

[0008] For example, JP07-8304A discloses a raised portion of a hard reinforcement member of a non-foamed material. This raised portion will inhibit the lateral shake of the forefoot. However, the raised portion of the hard reinforcement member of a non-foamed material will significantly inhibit the flexion and deformation of the forefoot portion of the midsole. Therefore, the wearer may be likely to feel the resistance against flexion while running or walking.

[0009] In a first aspect of the present invention, a shoe includes an upper **7,** and a stabilizer attached to at least a portion of the upper **7,** wherein:

the stabilizer includes a midsole **1,** and a counter **6** placed (arranged) in a rearfoot portion **5R** of the midsole **1;**
the counter **6** includes a counter body **60** attached to a surface of the rearfoot portion **5R** of the upper, and at least one skirt **6M, 6L,** extending downward from the counter body **60** and covering, and attached to, a side surface **SF** of the rearfoot portion **5R** of the midsole **1** on a medial side **ME** and/or a lateral side **LA;** and
the at least one skirt **6M, 6L** includes a posterior end **6E** placed (arranged) on the side surface **SF** or a back surface **BF** of the midsole **1,** and an exposed portion where the skirt **6M, 6L** is absent (not arranged) and the midsole **1** is exposed is provided in at least a portion in a circumferential direction of the back surface **BF** of the midsole **1.**

[0010] In the first aspect, the skirt seamlessly integral with the counter body increases the stiffness of the counter. The skirt is attached to the midsole to cover the side surface of the midsole, thereby suppressing the deformation of the midsole while further increasing the stiffness of the counter. Thus, on the medial side and/or the lateral side on which the skirt is provided, the rearfoot lateral shake suppressing function is improved significantly.

[0011] On the other hand, the exposed portion of the midsole back surface where the skirt is not attached can exert the intended cushioning property of the midsole. Therefore, the first strike impact occurring when the posterior end of the rearfoot lands while running or walking is absorbed by the posterior end of the midsole.

[0012] In the first aspect, "extending downward from the counter body **60"** means that the skirt is formed seamlessly integral with the counter body.

[0013] Moreover, "placed on the side surface **SF** or a back surface **BF"** means that the posterior end is placed on side surfaces extending straight in the posterior direction, or on a back surface, or on corners between the medial and lateral side surfaces and the back surface.

[0014] The "back surface" means a central portion of the surface that can be seen from the back side that is about 1/3 the maximum width of the rearfoot portion of the midsole.

[0015] In the first aspect, it is only required that at least a portion of the back surface **BF** of the midsole **1** is exposed without being covered by the skirt, and the skirt may extend to the central area of the back surface, for

example. This is because the first strike impact is often greater on the outside than on the central area of the rearfoot.

[0016] In a second aspect of the present invention, a shoe having a stabilizer, the shoe including an outsole **2** having a contact surface (tread surface) to be in contact with a road surface, and a midsole **1** placed on the outsole **2** and covering at least a portion of a forefoot section of a wearer;
the midsole **1** includes a main midsole **4** formed by a resin foam, and at least one sub-midsole **3M, 3L** placed (arranged) on the main midsole **4** and formed by a resin foam;
a hardness of the at least one sub-midsole **3M, 3L** is larger than a hardness of the main midsole **4**; and
the at least one sub-midsole **3M, 3L** includes a base **30** covering a bottom surface of a big toe **B1** and/or a little toe **B5** of the wearer on a medial side **ME** and/or a lateral side **LA** of a forefoot portion **5F,** and two hard roll-up portions **31, 32** continuous with the base **30** and rolled up upward from the base **30** at positions which are on the medial side **ME** or the lateral side **LA** and which are spaced apart from each other in a front-rear direction.

[0017] In this second aspect, the sub-midsole harder than the main midsole **4** forms the two hard roll-up portion **31**, **32** that are spaced apart from each other in the front-rear direction in the forefoot portion **5F.** The two hard roll-up portions **31, 32** are less collapsible, and are capable of suppressing the lateral shake of the forefoot portion **5F** over a wide area of the forefoot portion **5F** that is divided in the front-rear direction.

[0018] The two hard roll-up portions **31, 32,** which are relatively hard, are spaced apart from each other in the front-rear direction, and the side surfaces of the midsole **1** can easily bend between the two hard roll-up portions **31, 32.** Particularly, the sub-midsole including two hard roll-up portions is formed from a foamed resin material, as opposed to a non-foamed hard resin material, and the base **30** and the two hard roll-up portions **31, 32** are therefore adequately bendable. Thus, the resistance against bending while running or walking is unlikely to be felt.

[0019] The texture of the foamed material gets fatigued after the flexible midsole **1** is bent repeatedly, and the stiffness weakens over time in the forefoot portion, resulting in deterioration. In contrast, a hard sub-midsole will suppress the stiffness deterioration.

[0020] In the present specification, the hardness difference between the main midsole and the sub-midsole in terms of C hardness is preferably about 3 degrees to about 25 degrees, and more preferably about 4 degrees to about 20 degrees. The advantageous effects are difficult to realize when the hardness difference is small. On the other hand, when the hardness difference is excessive, it is likely to be out of the practical range of hardness.

[0021] In view of the above, the hardness of the sub-midsole is set to about 59 degrees to 72 about degrees in terms of JIS C hardness, and more preferably about 61 degrees to about 69 degrees, for example.

[0022] On the other hand, the hardness of the main midsole is set to about 47 degrees to about 62 degrees in terms of JIS C hardness, and preferably about 49 degrees to about 57 degrees, for example.

[0023] Note that in the present specification, the C hardness means the value measured with a durometer of the JIS K 7312 C type.

BRIEF DESCRIPTION OF DRAWINGS

[0024]

FIG. **1A** and FIG. **1B** are a schematic medial side view and a schematic lateral side view, respectively, showing a shoe according to one embodiment of the present invention, wherein the upper and the outsole are denoted by two-dot-chain lines.
In these figures, high-hardness areas of the midsole are densely dotted, and low-hardness areas are coarsely dotted.
FIG. **2A** and FIG. **2B** are a back view and a perspective view, respectively, showing the rearfoot portion of the shoe.
FIG. **3** is a perspective view showing the midsole and the counter as seen from an obliquely anterior direction.
FIG. **4A** and FIG. **4B** are a medial perspective view and a lateral perspective view, respectively, showing the stabilizer including the counter attached to the rearfoot portion of the midsole as seen from an obliquely posterior direction.
FIG. **5** is an exploded perspective view showing the rearfoot portion of the midsole and the counter.
FIG. **6** is a plan view showing the relationship of the midsole and the counter with the foot bone structure.
FIG. **7A,** FIG. **7B,** FIG. **7C** and FIG. **7D** are cross-sectional views showing the sole and the counter taken alone lines shown in FIG. **6.**
FIG. **8A,** FIG. **8B** and FIG. **8C** are cross-sectional views showing the sole and the counter taken alone lines shown in FIG. **6.**
FIG. **9** is a perspective view showing the stabilizer of the forefoot portion of the midsole.
FIG. **10** is an exploded perspective view showing the same.
FIG. **11A** and FIG. **11B** are a medial side view and a lateral side view, respectively, showing the shoe in a standstill position and a bent position. In these figures, the main midsole is dotted and hatched in the standstill position and in the bent position, respectively.

DESCRIPTION OF EMBODIMENTS

[0025] Preferred embodiments of the first aspect will now be described below.

[0026] In the first aspect, it is preferred that the at least

one skirt **6M, 6L** includes a wide portion **6W** attached to the side surface **SF** of the rearfoot portion **5R** of the midsole **1** on the medial side **ME** and/or the lateral side **LA,** and a first small width portion **61** on the side surface **SF** and/or the back surface **BF** of the midsole **1,** the first small width portion **61** being continuous with the wide portion **6W** and having a width **H** in a height direction, smaller than that (a width in the height direction) of the wide portion **6W,** over which the midsole **1** is covered.

[0027] The width **H** in the height direction of the first small width portion **61** of the skirt is smaller than the width **H** in the height direction of the wide portion **6W.** The first small width portion **61** having a small width **H** will realize the lateral shake suppressing function of the rearfoot and cushioning property of the posterior end of the rearfoot.

[0028] In the first aspect, it is more preferred that a lower-edge line **61L** of the first small width portion **61** of the at least one skirt **6M, 6L** extends in an obliquely posterior **D2** and upward direction and on the side surface **SF** of the rearfoot portion **5R** of the midsole **1** on the medial side **ME** and/or the lateral side **LA** and/or the back surface **BF** of the midsole **1.**

[0029] In this case, since the width **H** of the first small width portion **61** decreases toward the back surface **BF,** the lateral shake suppressing function and the cushioning property of the rearfoot will change smoothly.

[0030] The first small width portion **61** is smoothly continuous with both the wide portion **6W** and the counter body **60,** and will serve to increase the stiffness of the wide portion **6W.** This will improve the lateral shake suppressing function.

[0031] In the first aspect, it is more preferred that the at least one skirt **6M, 6L** further includes a second small width portion **62** in an area extending in an anterior direction **D1** from the wide portion **6W,** the second small width portion **62** being continuous with the wide portion **6W** and having a width **H** in the height direction, smaller than that (a width in the height direction) of the wide portion **6W,** over which the midsole **1** is covered.

[0032] The width **H** in the height direction of the second small width portion **62** of the skirt is smaller than the width **H** in the height direction of the wide portion **6W.** The second small width portion **62** having a small width **H** will realize the lateral shake suppressing function and the cushioning property in an area anterior to the wide portion **6W.**

[0033] In the first aspect, it is more preferred that a lower-edge line **62L** of the second small width portion **62** of the at least one skirt **6M, 6L** extends toward an obliquely anterior **D1** and upward direction on the side surface **SF** of the medial side **ME** and/or the lateral side **LA.**

[0034] In this case, since the width **H** of the second small width portion **62** decreases toward the anterior **D1** direction, the lateral shake suppressing function and the cushioning property will change smoothly.

[0035] The second small width portion **62** is smoothly continuous with both the wide portion **6W** and the counter body **60,** and will serve to increase the stiffness of the wide portion **6W.** This will improve the lateral shake suppressing function.

[0036] In the first aspect, it is preferred that the counter **6** further includes a flange **6F** that is continuous with the counter body **60** and that projects from the counter body **60** toward a central area **CE** of the rearfoot portion **5R.**

[0037] The flange **6F** thus projecting toward the central area **CE** of the rearfoot portion **5R** serves to support the sole of the foot.

[0038] The central area **CE** as used herein is a broader concept than "center", and refers to a region that is between the medial side and the lateral side and between the posterior end of the middle foot portion and the posterior end of the rearfoot portion.

[0039] Note that the forefoot portion, the middle foot portion and the rearfoot portion refer to areas that cover the forefoot, the middle foot and the rearfoot, respectively, of the foot. The forefoot includes five metatarsal bones and fourteen phalanges. The middle foot includes a navicular bone, a cuboid bone and three cuneiform bones. The rearfoot is an area that is posterior to the middle foot.

[0040] In the first aspect, it is more preferred that the flange **6F** is formed in a U-letter shape as seen from above (seen in a planar view).

[0041] The U-shaped flange **6F** suppresses the deformation such that the two anterior ends of the counter **6** expand away from each other, thereby significantly increasing the stiffness of the counter **6.** This significantly improves the lateral shake preventing function of the rearfoot.

[0042] The U-shaped flange **6F** does not support the central area **CE** of the rearfoot, and will therefore not lower the cushioning property of the rearfoot portion.

[0043] In the first aspect, it is more preferred that a step portion **11,** into which the flange **6F** fits, is formed on an upper surface **1U** of the midsole **1.**

[0044] In this case, the flange **6F** of the counter **6** fits into the step portion so that the flange **6F** is smoothly continuous with the upper surface of the sole **1.** Therefore, the flange **6F** will not cause an awkward feel on the sole of the foot.

[0045] In the first aspect, it is preferred that the counter body **60** covers a rearfoot portion **5R** of the upper extending from a medial side surface to a lateral side surface of the rearfoot portion of the upper through a back surface **BF** of the rearfoot portion of the upper, and is formed in a U-letter shape as seen from above (seen in a planar shape).

[0046] Such a U-shaped counter body **60** supports the rearfoot with the upper interposed therebetween, and therefore suppresses the lateral shake of the rearfoot.

[0047] In the first aspect, the skirt **6M, 6L** may be provided at least on the medial side **ME,** of the medial side **ME** and the lateral side **LA.**

[0048] Such a skirt **6M** on the medial side **ME** suppresses the compressive deformation of the midsole on the medial side of the rearfoot portion, thereby contributing to suppressing the overpronation.

[0049] Herein, "skirt being provided at least on the medial side **ME"** means that the skirt may cover a portion of the lateral side surface or the back surface.

[0050] The skirt may be provided only on the medial side, of the medial side and the lateral side. In this case, the skirt may be present on the back surface but is absent on the lateral side.

[0051] In the first aspect, the skirt may be provided at least on the lateral side **LA,** of the medial side **ME** and the lateral side **LA.**

[0052] Such a skirt **6L** on the lateral side **LA** suppresses the compressive deformation of the midsole on the lateral side of the rearfoot portion, thereby contributing to suppressing the oversupination.

[0053] Herein, "skirt being provided at least on the lateral side **LA"** means that the skirt may cover a portion of the medial side surface or the back surface.

[0054] The skirt may be provided only on the lateral side, of the medial side and the lateral side. In this case, the skirt may be present on the back surface but is absent on the medial side.

[0055] In the first aspect, the skirt may be provided both on the medial side **ME** and on the lateral side **LA.**

[0056] Such medial and lateral the skirts **6M, 6L** will serve to suppress both oversupination and overpronation.

[0057] In this case, the skirt may cover a portion of the back surface.

[0058] The area of the skirt on the medial side may be greater than that of the skirt on the lateral side. Alternatively, the area of the skirt on the lateral side may be greater than that of the skirt on the medial side. Alternatively, the two skirts may have about the same size.

[0059] Preferred embodiments of the second aspect will now be described below.

[0060] In the second aspect, it is preferred that the main midsole **4** defines a mating recess (concave) **43** into which the base **30** of the at least one sub-midsole **3M, 3L** fits.

[0061] As the sub-midsole fits into such a mating recess **43,** the sub-midsole and the hard roll-up portions **31, 32** are accurately positioned with respect to the main midsole **4.**

[0062] In the second aspect, it is more preferred that the main midsole **4** further includes a soft roll-up portion **42** placed (arranged) between the two hard roll-up portions **31, 32,** continuous with a base **40** of the main midsole **4,** and rolled up from the base **40.**

[0063] The soft roll-up portion **42** is placed between the hard roll-up portions **31, 32,** which are spaced apart from each other in the front-rear direction, thereby reinforcing the area between the two hard roll-up portions **31, 32** where the lateral shake suppressing function is weak. Thus, the lateral shake suppressing function is further enhanced.

[0064] On the other hand, the soft roll-up portion **42** of the main midsole **4** has a lower hardness than the two hard roll-up portions **31, 32.** This will suppress the drawback that the midsole becomes less bendable, and the resistance against bending is unlikely to be felt.

[0065] In the second aspect, it is preferred that the main midsole **4** includes a projecting (convex) portion **41** surrounded by the mating recess **43** and the soft roll-up portion **42** and continuous with the soft roll-up portion **42.**

[0066] The main midsole **4** is placed under the base **30** of the sub-midsole, and therefore the portion thereof corresponding to the base **30** of the sub-midsole has a small thickness. When the soft roll-up portion **42** is rolled up from such a small-thickness portion, the soft roll-up portion **42** may become more collapsible, failing to realize a sufficient lateral shake preventing function.

[0067] In contrast, the projecting portion **41** continuous with the soft roll-up portion **42** suppresses the collapse of the soft roll-up portion **42,** and therefore a high lateral shake preventing function can be expected.

[0068] In the second aspect, it is preferred that the at least one sub-midsole **3M, 3L** defines a notch **33** where the at least one sub-midsole **3M, 3L** is recessed (necked, constricted, or narrowed) at the projecting portion **41.**

[0069] Such a notch **33** of the sub-midsole serves to help the midsole bend at the intended position.

[0070] In the second aspect, it is preferred that a sub-midsole **3L** is provided at least on the lateral side **LA,** and the two hard roll-up portions **31, 32** are provided on the sub-midsole **3L** of the lateral side **LA.**

[0071] The lateral shake of the forefoot, which is typically likely to occur on the lateral side of the foot, can be suppressed.

[0072] Note that the sub-midsole **3M** having the two hard roll-up portions **31, 32** may be provided at least on the medial side **ME.**

[0073] In the second aspect, it is more preferred that an anterior end **31E** of the anterior hard roll-up portion **31,** of the two hard roll-up portions **31, 32,** is placed anterior **D1** to a ball **O5** of the little toe (a little toe ball), and a posterior end **32E** of the posterior hard roll-up portion **32,** of the two hard roll-up portions, is placed posterior **D2** to the ball **O5** of the little toe.

[0074] The bending on the lateral side of the foot is typically significant in the vicinity of the ball **O5** of the little toe, and therefore the midsole **1** bends significantly also in the vicinity of the ball **O5** of the little toe. The aforementioned placement of the two hard roll-up portions **31, 32** on the lateral side **LA** will promote appropriate bending on the lateral side of the foot.

[0075] In the second aspect, it is preferred that the at least one the sub-midsole **3M, 3L** includes a pair of sub-midsoles **3M, 3L,** with one of the pair arranged on the medial side **ME** and the other of the pair arranged on the lateral side **LA;** and the pair of sub-midsoles **3M, 3L** are both provided with the two hard roll-up portions **31, 32.**

[0076] In this case, the lateral shake preventing function, etc., are improved on the medial side and on the lateral side of the forefoot.

[0077] In the second aspect, it is more preferred that the anterior end **31E** of the anterior hard roll-up portion

31, of the two hard roll-up portions **31, 32** on the medial side, is placed (arranged) anterior **D1** to a ball **O1** of the big toe, and the posterior end **32E** of the posterior **D2** hard roll-up portion **32,** of the two hard roll-up portions on the medial side, is placed posterior **D2** to the ball **O1** of the big toe; and

the anterior end **31E** of the anterior **D1** hard roll-up portion **31,** of the two hard roll-up portions **31, 32** on the lateral side **LA,** is placed anterior **D1** to the ball **O5** of the little toe (the little toe ball), and the posterior end **32E** of the posterior hard roll-up portion **32,** of the two hard roll-up portions on the lateral side, is placed (arranged) posterior **D2** to the ball **O5** of the little toe.

[0078] The bending on the medial side and the lateral side of the foot is typically significant in the vicinity of the ball **O1** of the big toe and the ball **O5** of the little toe, and therefore the midsole **1** bends significantly also in the vicinity of the ball **O1** of the big toe and the ball **O5** of the little toe. The aforementioned placement of the two hard roll-up portions **31, 32** on the medial side **ME** and on the lateral side **LA** will promote appropriate bending on the medial side and the lateral side of the foot.

[0079] In the second aspect, it is preferred that the at least one the sub-midsole **3M, 3L** includes a pair of sub-midsoles **3M, 3L** on the medial side **ME** and the lateral side **LA;** and

the pair of sub-midsoles **3M, 3L** are spaced apart from each other, one on the medial side **ME** and the other on the lateral side **LA.**

[0080] In this case, the lateral shake preventing function, etc., are improved on the medial side and on the lateral side of the forefoot. Moreover, the pair of sub-midsoles are spaced apart from each other, one on the medial side and the other on the lateral side, thereby suppressing the problem of being less bendable even if the sub-midsoles have a high hardness.

[0081] Any feature illustrated and/or depicted in conjunction with one of the aforementioned aspects or the following embodiments may be used in the same or similar form in one or more of the other aspects or other embodiments, and/or may be used in combination with, or in place of, any feature of the other aspects or embodiments.

EMBODIMENTS

[0082] The present invention will be understood more clearly from the following description of preferred embodiments taken in conjunction with the accompanying drawings. Note however that the embodiments and the drawings are merely illustrative and should not be taken to define the scope of the present invention. The scope of the present invention shall be defined only by the appended claims. In the accompanying drawings, like reference numerals denote like components throughout the plurality of figures.

[0083] One embodiment of the present invention will now be described with reference to the drawings.

[0084] The present embodiment is directed to a shoe for trail running or walking, for example.

[0085] In FIG. **1A** and FIG. **1B,** the sole includes the outsole **2** having the tread surface to be in contact with the road surface, and the midsole **1** placed on the outsole **2.**

[0086] Note that the upper **7** wrapping the instep of the foot is provided over the shoe sole.

[0087] As shown in FIG. **6,** the midsole **1** covers the sole of the foot in the forefoot portion **5F,** the middle foot portion **5M** and the rearfoot portion **5R.** The midsole **1** of FIG. **1A** and FIG. **1B** includes the main midsole **4** and the sub-midsoles **3M, 3L,** which are made of a resin-made foamed material such as EVA, for example. Note that "made of resin" means that a resin component such as a thermoplastic component is contained, and may include any other suitable component. The midsole **1** may be provided with a low-resilience material, a high-resilience material, a groove, etc.

[0088] The outsole **2** is a tread sole made of a rubber that has a higher abrasion resistance than the foamed material of the midsole **1** and typically has a higher hardness than the foamed material of the midsole **1.** Note that "made of rubber" means that it contains a natural rubber component or a synthetic rubber component, and it may contain any other component.

[0089] The outsole **2** may have complicated projections/depressions as shown in FIG. **7A** to FIG. **7D** and FIG. **8A** to FIG. **8C,** but it is shown in a simple shape denoted by a tow-dot-chain line in other figures for the sake of illustration. Note that the envelope of the upper **7** is denoted by a two-dot-chain line as in FIG. **1A** for ease of understanding of the invention.

[0090] A structure of the stabilizer of the rearfoot portion **5R** will now be described.

[0091] The stabilizer of the rearfoot portion **5R** is attached to at least a portion of the upper **7.** The stabilizer includes the midsole **1,** and the counter **6** placed in the rearfoot portion **5R** of the midsole **1.** The counter **6** has a shape and a structure that are generally symmetrical between the medial side and the lateral side, and includes the counter body **60** and the medial and lateral skirts **6M, 6L.**

[0092] The counter body **60** is attached, by being bonded and/or welded, to the surface of the rearfoot portion **5R** of the upper **7.** As shown in FIG. **3,** the counter body **60** covers the rearfoot portion **5R** of the upper **7** (FIG. **1A,** FIG. **1B**) extending from the medial side surface to the lateral side surface through the back surface **BF,** and is formed in a U-letter shape as seen from above (see FIG. **6**).

[0093] The counter **6** further includes the flange **6F** that is integrally continuous with the counter body **60** and projects from the counter body **60** toward the central area **CE** of the rearfoot portion **5R.** The flange **6F** is formed in a continuous U-letter shape as seen from above as shown in FIG. **6.** As shown in FIG. **5,** the shallow first step portion **11,** into which the flange **6F** fits, is formed

on the upper surface **1U** of the midsole **1.**

[0094] Next, an important portion of the stabilizer of the rearfoot will be described.

[0095] The medial and lateral skirts **6M, 6L** of FIG. **1A** and FIG. **1B** extends downward from the counter body **60.** In the case of the present embodiment, the medial and lateral skirts **6M, 6L** are provided on the medial side and on the lateral side, respectively, and the medial and lateral skirts **6M, 6L** cover the side surfaces **SF** on the medial side **ME** and the lateral side **LA** of the rearfoot portion **5R** of the midsole **1** of FIG. **5** and are attached, by being bonded and/or welded, to the side surfaces **SF.**

[0096] As shown in FIG. **5,** FIG. **8B** and FIG. **8C,** a deep second step portion **12,** into which the medial and lateral skirts **6M, 6L** fit, is formed in the medial and lateral side surfaces **SF** and the upper surface **1U** of the midsole **1.** The skirt is attached to the side surface **SF** and the upper surface **1U** of the midsole **1** in the area from the second step portion **12** to the first step portion **11.**

[0097] As shown in FIG. **4A** and FIG. **4B,** the medial and lateral skirts **6M, 6L** include the posterior ends **6E** placed in corner **CO** areas between the side surfaces **SF** and the back surface **BF** of the midsole **1.** The back surface **BF** of the midsole **1** includes an exposed portion **10** where skirts **6M, 6L** are absent.

[0098] That is, the cross-sectional shape of the back surface of the counter **6** has a "J"-letter shape as shown in the vertical cross-sectional view of FIG. **7A.** On the other hand, the cross-sectional shape of the side surface of the counter **6** has a generally "Y"-letter shape or "T"-letter shape as shown in the horizontal cross-sectional view of FIG. **8B** and FIG. **8C.**

[0099] Note that as shown in FIG. **8B,** FIG. **8C** and FIG. **5,** in the case of the present embodiment, the upper edge of the counter body **60** extends in an obliquely downward direction toward the anterior **D1** direction. Thus, the torsional stiffness of the middle foot portion will be of an appropriate value.

[0100] The skirts **6M, 6L** of FIG. **4A** and FIG. **4B** both include the wide portion **6W** and the first and second small width portions **61, 62.** The first or second small width portion **61, 62** extend in the posterior **D2** direction or the anterior **D1** from the wide portion **6W.**

[0101] The wide portion **6W** of each skirt **6M, 6L** is attached to the side surface **SF** of the medial side **ME** or the lateral side **LA** of the rearfoot portion **5R** of the midsole **1.**

[0102] The first small width portion **61** is continuous with the wide portion **6W,** and the width **H** in the height direction thereof covering the midsole **1** is smaller than that of the wide portion **6W** in an area from the side surface **SF** to the back surface **BF** of the midsole **1.** The lower-edge line **61L** of the first small width portion **61** of each skirt **6M, 6L** extends in an obliquely posterior **D2** and upward direction from the side surface **SF** of the medial side **ME** or the lateral side **LA** of the rearfoot portion **5R** of the midsole **1** to the back surface **BF** of the midsole **1.**

[0103] The second small width portion **62** is continuous with the wide portion **6W,** and the width **H** in the height direction thereof covering the midsole **1** is smaller than that of the wide portion **6W** in an area extending from the wide portion **6W** toward the anterior **D1** direction. The lower-edge line **62L** of the second small width portion **62** of each skirt **6M, 6L** extends in an obliquely anterior **D1** and upward direction in the side surface **SF** on the medial side **ME** or the lateral side **LA.**

[0104] Next, the structure of the stabilizer of the forefoot portion **5F** of FIG. **1A** and FIG. **1B** will be described.

[0105] The midsole 1 includes the main midsole **4** formed from a foamed resin material, and the medial and lateral sub-midsoles **3M** and **3L** placed on the main midsole **4** and formed from a foamed resin material. The hardness of the sub-midsoles **3M, 3L** is higher than the hardness of the main midsole **4.**

[0106] Each sub-midsole **3M, 3L** includes the base **30** and the two hard roll-up portions **31, 32** formed integral with the base **30** as shown in FIG. **9** and FIG. **10.** On the medial side **ME** or the lateral side **LA** of the forefoot portion **5F,** the base **30** of FIG. **6** covers the reverse surface of the hallux **B1** or the little toe **B5** of the wearer. The two hard roll-up portions **31, 32** of FIG. **10** are continuous with, and are rolled up from, the base **30** on the medial side **ME** and the lateral side **LA** and at positions that are spaced apart from each other in the front-rear direction.

[0107] The hard roll-up portions **31, 32** will serve to suppress the lateral shake of the forefoot.

[0108] The pair of sub-midsoles **3M, 3L** shown in FIG. **9** may be spaced apart from each other, one on the medial side **ME** and the other on the lateral side **LA.** Thus, in the central portion on the medial side and the lateral side of the forefoot portion **5F,** the main midsole **4** is exposed without being covered by the pair of sub-midsoles **3M, 3L.** As shown in FIG. **10,** the main midsole **4** defines the mating recess **43,** into which the base **30** of the pair of sub-midsoles **3M, 3L** fits.

[0109] The main midsole **4** of FIG. **10** includes the soft roll-up portion **42** and the projecting portion **41.** The soft roll-up portion **42** of FIG. **1** is placed between the two hard roll-up portions **31, 32** so as to divide the two hard roll-up portions **31**, **32** from each other. The soft roll-up portion **42** of FIG. **10** is continuous with, and is rolled up from, the base **40** of the main midsole **4.** The projecting portion **41** is surrounded by the mating recess **43** and the soft roll-up portion **42,** and is continuous with the soft roll-up portion **42.**

[0110] Each sub-midsole **3M, 3L** defines the narrowed notch **33** that fits the projecting portion **41.** The hard roll-up portions **31, 32** are absent in the notch **33.**

[0111] Of the two hard roll-up portions **31, 32** on the medial side of FIG. **1A,** the anterior end **31E** of the anterior hard roll-up portion **31** is placed anterior **D1** to the ball **O1** of the big toe, and the posterior end **32E** of the posterior **D2** hard roll-up portion **32** is placed posterior **D2** to the ball **O1** of the big toe.

[0112] Of the two hard roll-up portions **31, 32** on the

lateral side **LA** of FIG. **1B,** the anterior end **31E** of the anterior **D1** hard roll-up portion **31** is placed anterior **D1** to the ball **O5** of the little toe, and the posterior end **32E** of the posterior hard roll-up portion **32** is placed posterior **D2** to the ball **O5** of the little toe.

[0113] With such a placement, when the shoe sole bends as shown in FIG. **11A** and FIG. **11B,** the resistance against bending due to the hard roll-up portions **31, 32** is unlikely to be felt.

[0114] While preferred embodiments have been described above with reference to the drawings, various obvious changes and modifications will readily occur to those skilled in the art upon reading the present specification.

[0115] For example, the stabilizer may be provided only in one of the forefoot portion and the rearfoot portion.

[0116] In the rearfoot portion, the skirt may be provided only on the medial or lateral side surface.

[0117] In the forefoot portion, the sub-midsole may be provided only on the medial side or on the lateral side.

[0118] The midsole of the foamed material may be provided only in one of the forefoot portion and the rearfoot portion.

[0119] On the lateral side of the foot, the anterior end **31E** of the anterior hard roll-up portion **31** and the posterior end **32E** of the posterior hard roll-up portion **32** may both be placed posterior **D2** to the ball **O5** of the little toe. For example, on the lateral side of the foot, of the two hard roll-up portions **31, 32,** the anterior end **31E** of the anterior hard roll-up portion **31** may be placed posterior to the fifth metatarsal phalangeal (MP) joint or the posterior end **32E** of the posterior hard roll-up portion **32** may be placed anterior to the Lisfranc joint of the fifth toe. Therefore, on the lateral side of the foot, of the two hard roll-up portions **31, 32,** the anterior end **31E** of the anterior hard roll-up portion **31** and the posterior end **32E** of the posterior hard roll-up portion **32** may be placed anterior to the Lisfranc joint of the fifth toe.

[0120] Thus, such changes and modifications are deemed to fall within the scope of the present invention.

INDUSTRIAL APPLICABILITY

[0121] The present invention is applicable to running shoes, walking shoes and shoes for daily use, as well as shoes for trail running, mountain climbing and cross country.

DESCRIPTION OF REFERENCE SIGNS

[0122]

1: Midsole, 10: Exposed portion, 11: First step portion, 12: Second step portion, 1U: Upper surface
2: Outsole
3M, 3L: Sub-midsole
30: Base, 31, 32: Hard roll-up portion, 31E: Anterior end, 32E: Posterior end, 33: Notch
4: Main midsole
40: Base, 41: Projecting portion, 42: Soft roll-up portion, 43: Mating recess
5F: Forefoot portion, 5R: Rearfoot portion
6: Counter, 6M, 6L: Skirt, 6F: Flange, 6E: Posterior end, 6W: Wide portion
60: Counter body, 61: First small width portion, 62: Second small width portion, 61L, 62L: Lower-edge line
7: Upper
D1: Anterior, D2: Posterior, H: Width in height direction
ME: Medial, LA: Lateral, SF: Side surface, BF: Back surface
B1: Hallux, B5: Little toe
O1: Ball of big toe, O5: Ball of little toe
CE: Central area, CO: Corner, H: Width

Claims

1. A shoe comprising an upper **7,** and a stabilizer attached to at least a portion of the upper **7,** wherein:

   the stabilizer includes a midsole **1,** and a counter **6** placed in a rearfoot portion **5R** of the midsole **1;** the counter **6** includes a counter body **60** attached to a surface of the rearfoot portion **5R** of the upper, and at least one skirt **6M, 6L,** extending downward from the counter body **60** and covering, and attached to, a side surface **SF** of the rearfoot portion **5R** of the midsole **1** on a medial side **ME** and/or a lateral side **LA;** and
   the at least one skirt **6M, 6L** includes a posterior end **6E** placed on the side surface **SF** or a back surface **BF** of the midsole **1,** and an exposed portion where the skirt **6M, 6L** is absent and the midsole **1** is exposed is provided in at least a portion in a circumferential direction of the back surface **BF** of the midsole **1.**

2. The shoe according to claim 1, wherein the at least one skirt **6M, 6L** includes a wide portion **6W** attached to the side surface **SF** of the rearfoot portion **5R** of the midsole **1** on the medial side **ME** and/or the lateral side **LA,** and a first small width portion **61** on the side surface **SF** and/or the back surface **BF** of the midsole **1,** the first small width portion **61** being continuous with the wide portion **6W** and having a width **H** in a height direction, smaller than that of the wide portion **6W,** over which the midsole **1** is covered.

3. The shoe according to claim 2, wherein a lower-edge line **61L** of the first small width portion **61** of the at least one skirt **6M, 6L** extends in an obliquely posterior **D2** and upward direction and on the side surface **SF** of the rearfoot portion **5R** of the midsole **1** on the medial side **ME** and/or the lateral side **LA**

and/or the back surface **BF** of the midsole **1.**

4. The shoe according to claim 2 or 3, wherein the at least one skirt **6M, 6L** further comprises a second small width portion **62** in an area extending in an anterior direction **D1** from the wide portion **6W,** the second small width portion **62** being continuous with the wide portion **6W** and having a width **H** in the height direction, smaller than that of the wide portion **6W,** over which the midsole **1** is covered.

5. The shoe according to claim 4, wherein a lower-edge line **62L** of the second small width portion **62** of the at least one skirt **6M, 6L** extends toward an obliquely anterior **D1** and upward direction on the side surface **SF** of the medial side **ME** and/or the lateral side **LA.**

6. The shoe according to any of claims 1 to 5, wherein the counter **6** further includes a flange **6F** that is continuous with the counter body **60** and that projects from the counter body **60** toward a central area **CE** of the rearfoot portion **5R.**

7. The shoe according to claim 6, wherein the flange **6F** is formed in a U-letter shape as seen from above.

8. The shoe according to claim 6 or 7, wherein a step portion **11,** into which the flange **6F** fits, is formed on an upper surface **1U** of the midsole **1.**

9. The shoe according to any of claims 1 to 8, wherein the counter body **60** covers the rearfoot portion **5R** of the upper extending from a medial side surface to a lateral side surface through a back surface **BF,** and is formed in a U-letter shape as seen from above.

10. The shoe according to any of claims 1 to 9, wherein the at least one skirt **6M, 6L** is provided at least on the medial side **ME,** of the medial side **ME** and the lateral side **LA.**

11. The shoe according to any of claims 1 to 9, wherein the at least one skirt **6M, 6L** is provided at least on the lateral side **LA,** of the medial side **ME** and the lateral side **LA.**

12. The shoe according to claim 1 or 2, wherein the at least one skirt **6M, 6L** is provided both on the medial side **ME** and on the lateral side **LA.**

13. A shoe having a stabilizer, the shoe comprising an outsole **2** having a contact surface to be in contact with a road surface, and a midsole **1** placed on the outsole **2** and covering at least a portion of a forefoot section of a wearer;
the midsole **1** includes a main midsole **4** formed by a resin foam, and at least one sub-midsole **3M, 3L** placed on the main midsole **4** and formed by a resin foam;
a hardness of the at least one sub-midsole **3M, 3L** is larger than a hardness of the main midsole **4;** and the at least one sub-midsole **3M, 3L** includes a base **30** covering a bottom surface of a big toe **B1** and/or a little toe **B5** of the wearer on a medial side **ME** and/or a lateral side **LA** of a forefoot portion **5F,** and two hard roll-up portions **31, 32** continuous with the base **30** and rolled up upward from the base **30** at positions which are on the medial side **ME** or the lateral side **LA** and which are spaced apart from each other in a front-rear direction.

14. The shoe according to claim 13, wherein the main midsole **4** defines a mating recess **43** into which the base **30** of the at least one sub-midsole **3M, 3L** fits.

15. The shoe according to claim 14, wherein the main midsole **4** further includes a soft roll-up portion **42** placed between the two hard roll-up portions **31, 32,** continuous with a base **40** of the main midsole **4,** and rolled up from the base **40** of the main midsole.

16. The shoe according to claim 15, wherein the main midsole **4** includes a projecting portion **41** surrounded by the mating recess **43** and the soft roll-up portion **42** and continuous with the soft roll-up portion **42.**

17. The shoe according to claim 16, wherein the at least one sub-midsole **3M, 3L** defines a notch **33** where the at least one sub-midsole **3M, 3L** is recessed at the projecting portion **41.**

18. The shoe according to any of claims 13 to 17, wherein a sub-midsole **3L** is provided at least on the lateral side **LA,** and the two hard roll-up portions **31, 32** are provided on the sub-midsole **3L** of the lateral side **LA.**

19. The shoe according to claim 18, wherein an anterior end **31E** of an anterior hard roll-up portion **31,** of the two hard roll-up portions **31, 32,** is placed anterior **D1** to a little toe ball **O5**, and a posterior end **32E** of a posterior hard roll-up portion **32,** of the two hard roll-up portions, is placed posterior **D2** to the little toe ball **O5**.

20. The shoe according to any of claims 13 to 17, wherein:

the at least one the sub-midsole **3M, 3L** includes a pair of sub-midsoles **3M, 3L** on the medial side **ME** and the lateral side **LA;** and
the pair of sub-midsoles **3M, 3L** are both provided with the two hard roll-up portions **31, 32.**

21. The shoe according to claim 20, wherein:

an anterior end **31E** of an anterior hard roll-up

portion **31,** of the two hard roll-up portions **31, 32** on the medial side, is placed anterior **D1** to a ball **O1** of the big toe, and a posterior end **32E** of a posterior **D2** hard roll-up portion **32,** of the two hard roll-up portions on the medial side, is placed posterior **D2** to the ball **O1** of the big toe; and

an anterior end **31E** of an anterior **D1** hard roll-up portion **31,** of the two hard roll-up portions **31, 32** on the lateral side **LA,** is placed anterior **D1** to a little toe ball **O5**, and a posterior end **32E** of a posterior hard roll-up portion **32,** of the two hard roll-up portions on the lateral side, is placed posterior **D2** to the little toe ball **O5.**

22. The shoe according to any of claims 13 to 21, wherein:

the at least one the sub-midsole **3M, 3L** includes a pair of sub-midsoles **3M, 3L** on the medial side **ME** and the lateral side **LA;** and

the pair of sub-midsoles **3M, 3L** are spaced apart from each other, one on the medial side **ME** and the other on the lateral side **LA.**

FIG 1A : Medial

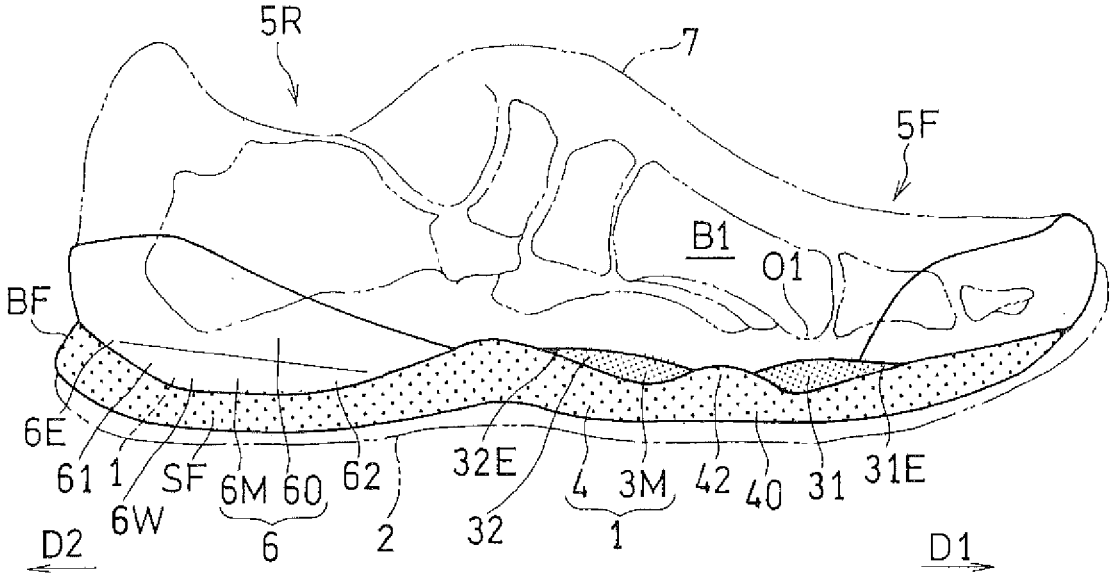


FIG 1B : Lateral

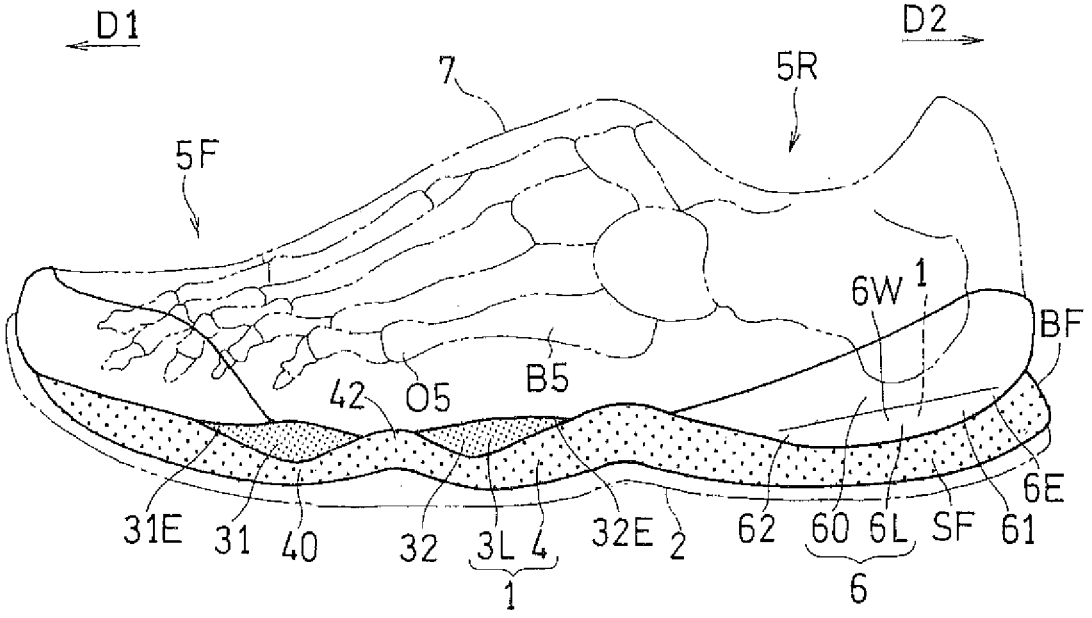


FIG 2A

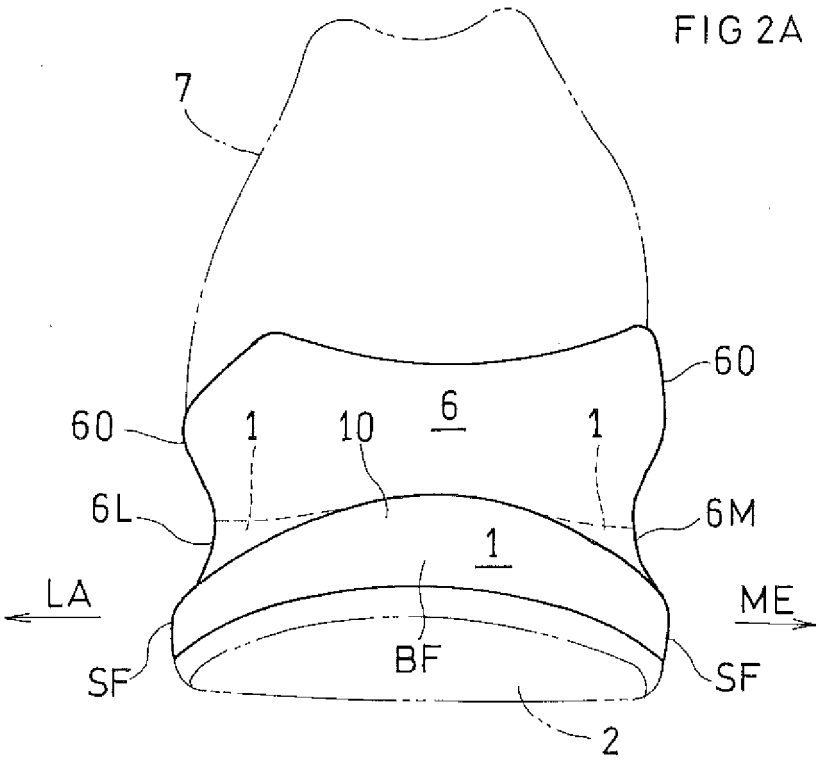


FIG 2B

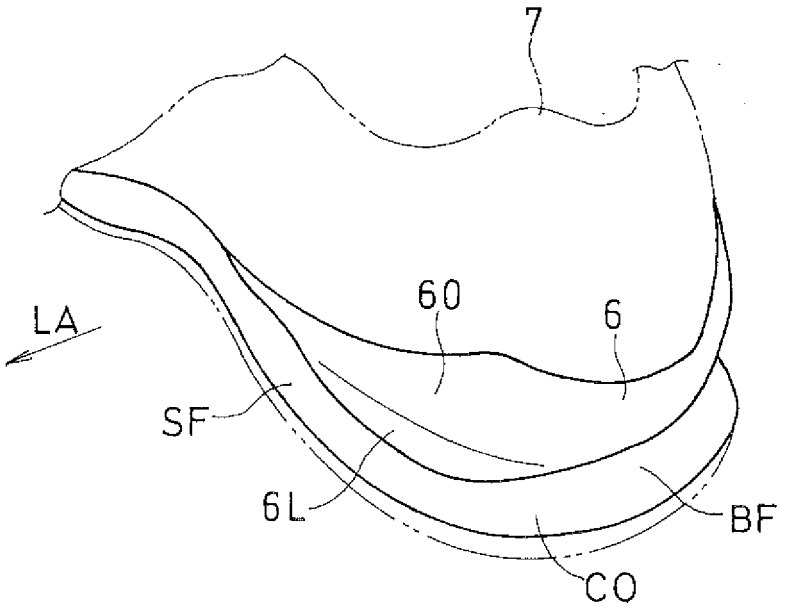


FIG 3

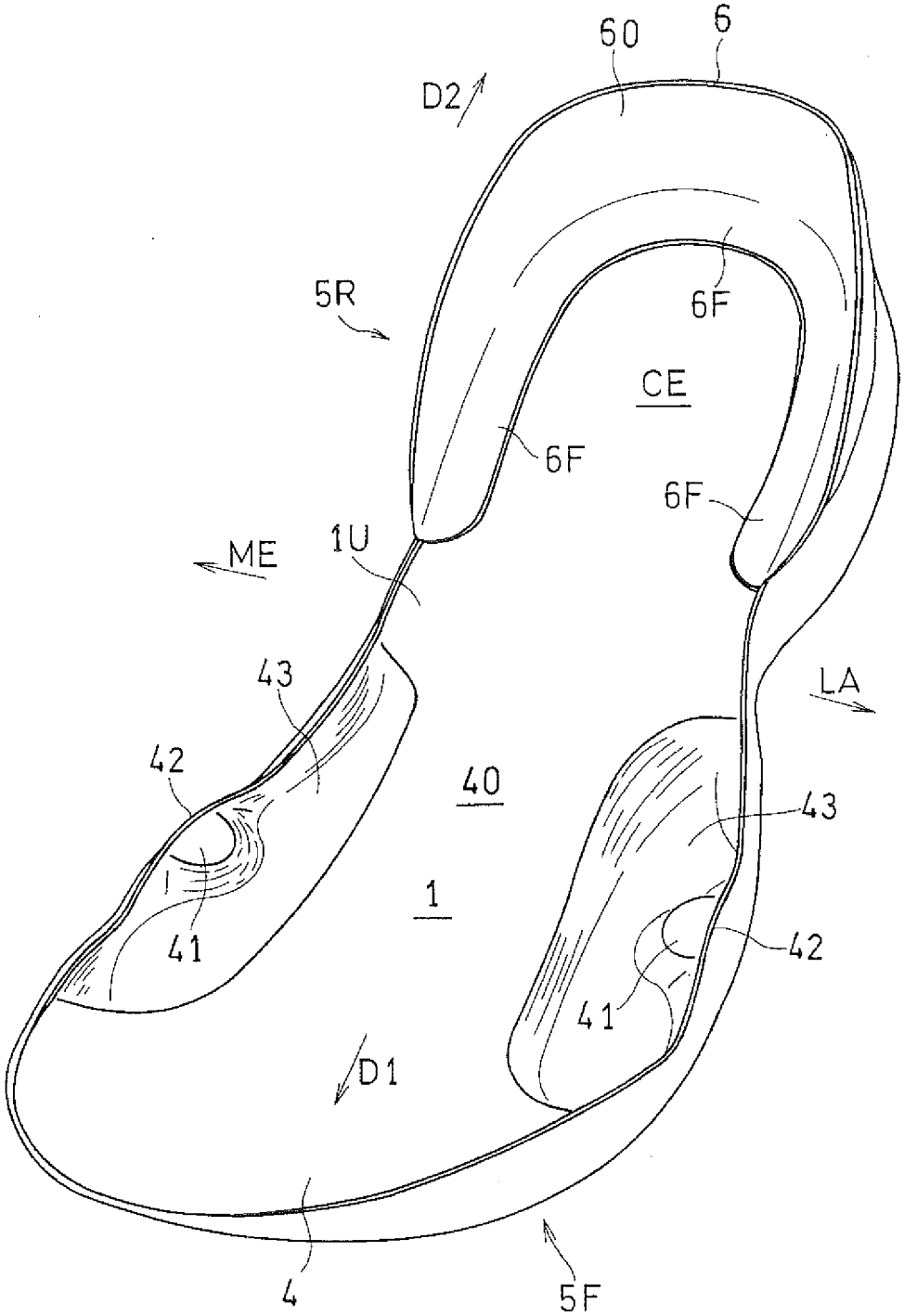


FIG 4A : Medial

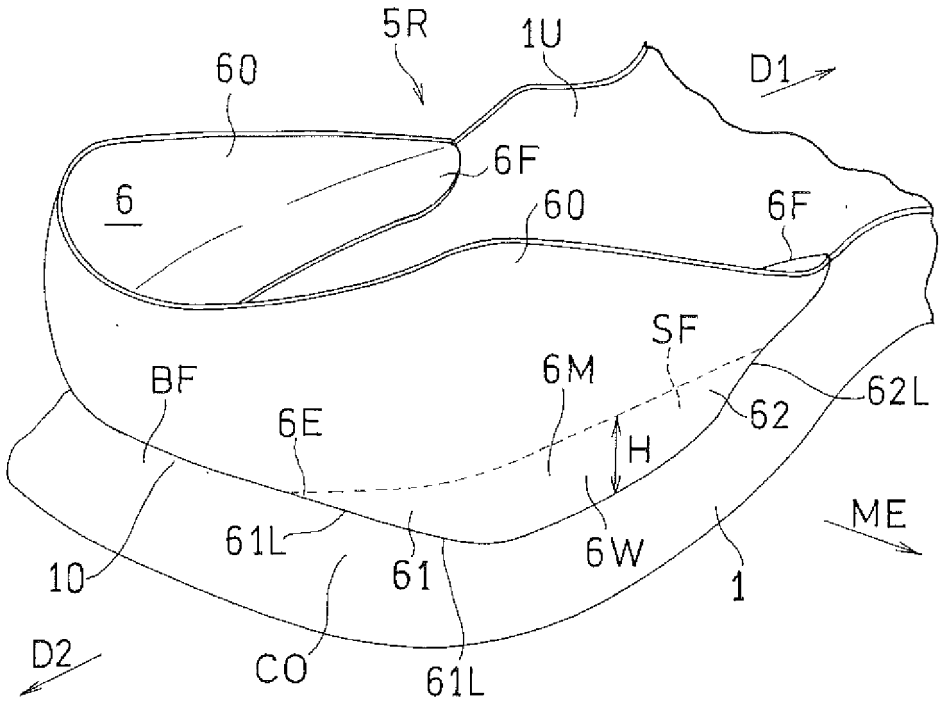


FIG 4B : Lateral

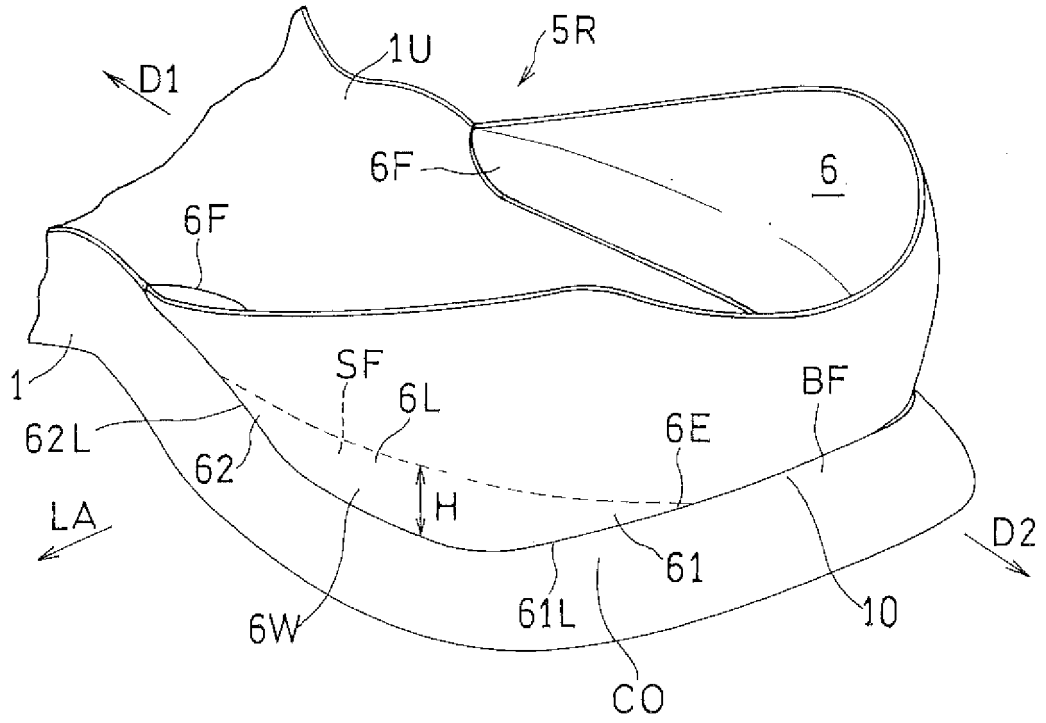


FIG 5

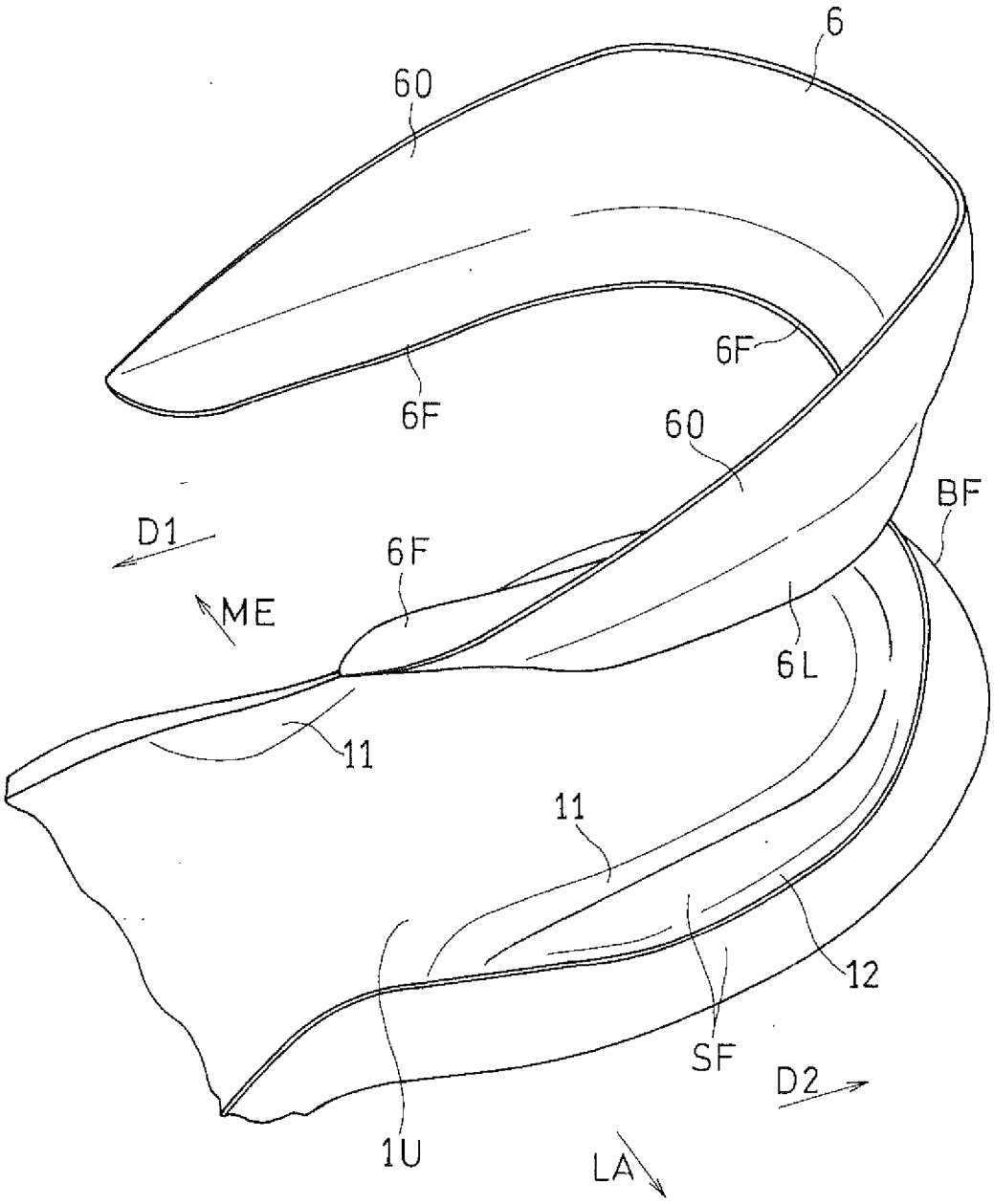
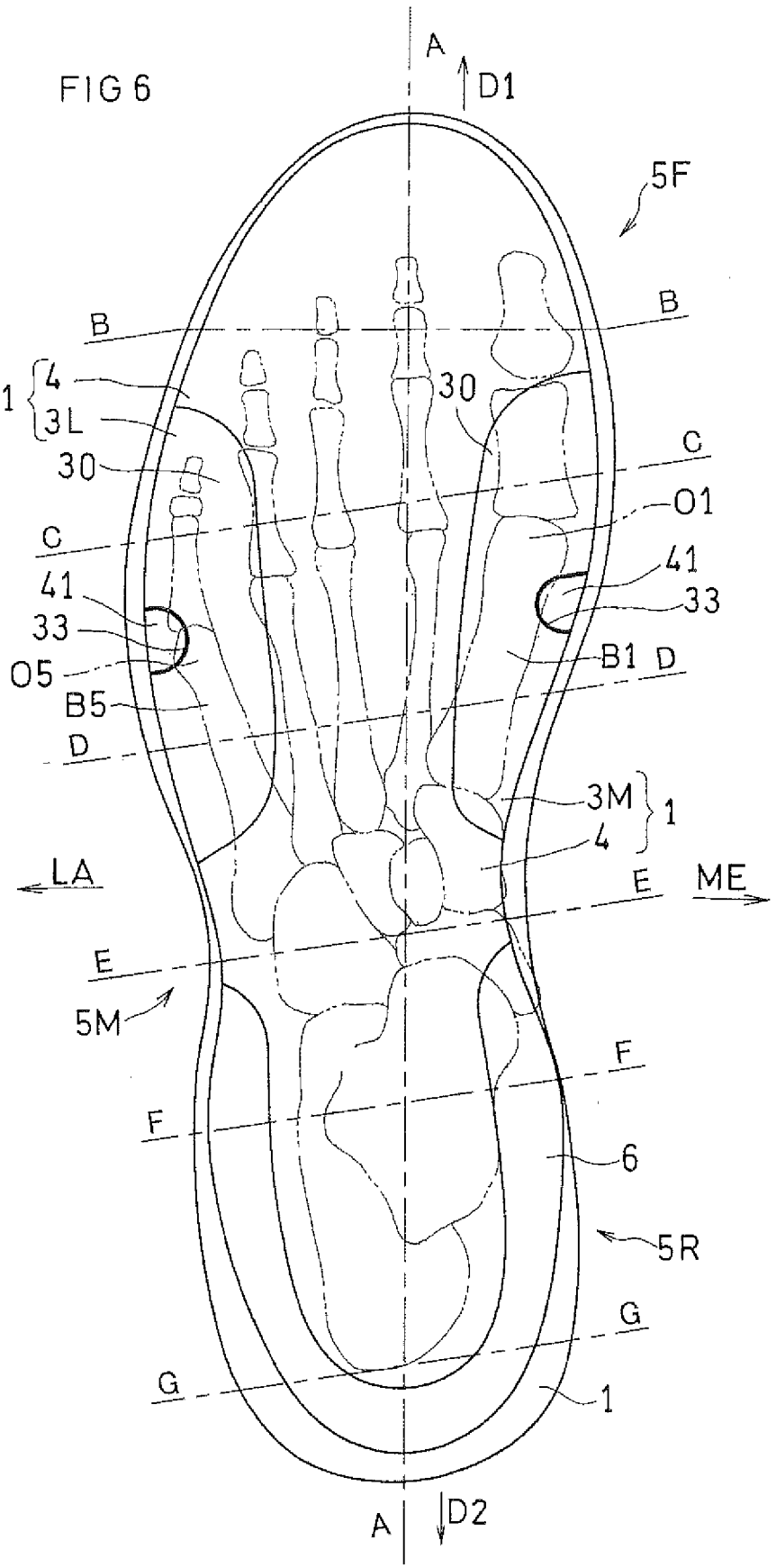


FIG 6


A
D1
5F
B
B
1
4
3L
30
30
C
C
O1
41
33
41
33
O5
B1
D
B5
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LA
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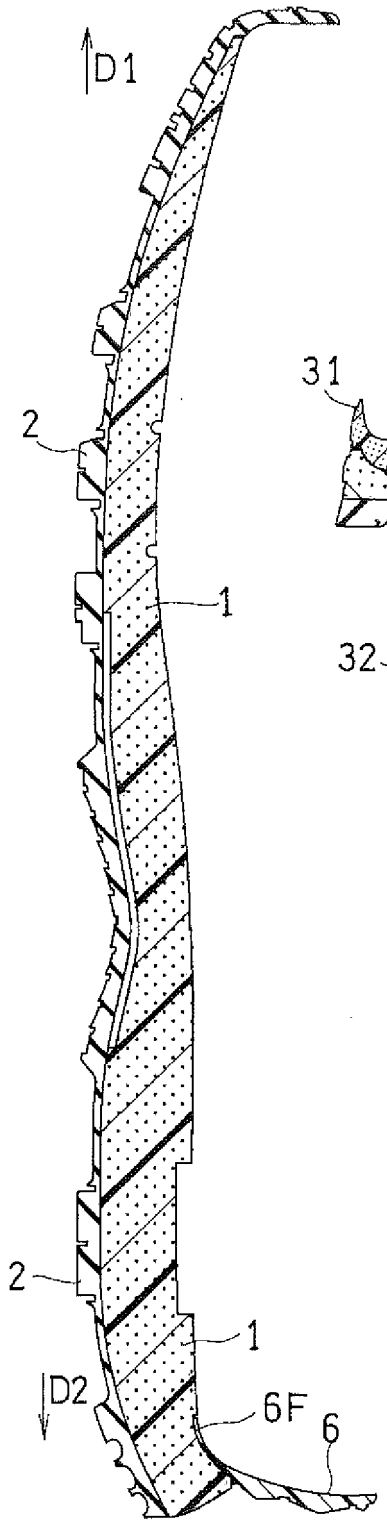
F
F
6
5R
G
G
1
A
D2



A - A section

FIG7B

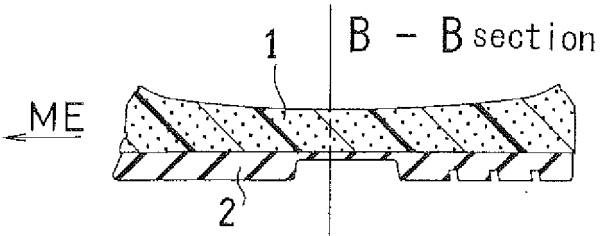
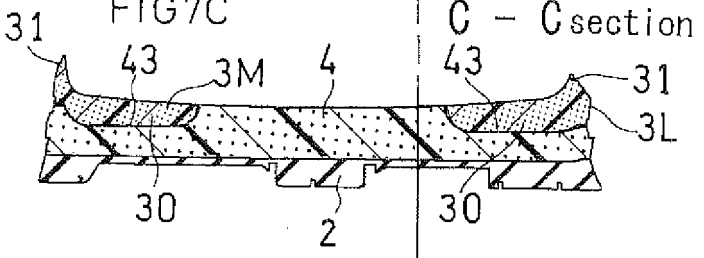


FIG7C



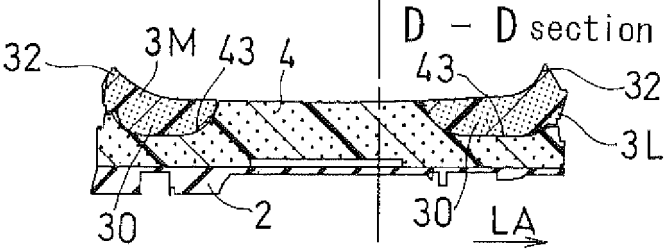


FIG7D

FIG7A

FIG 8A

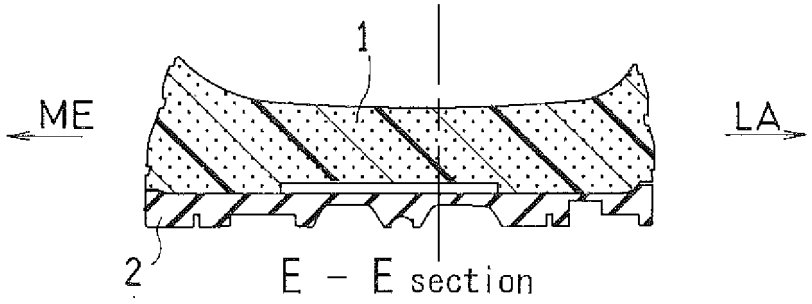


FIG 8B

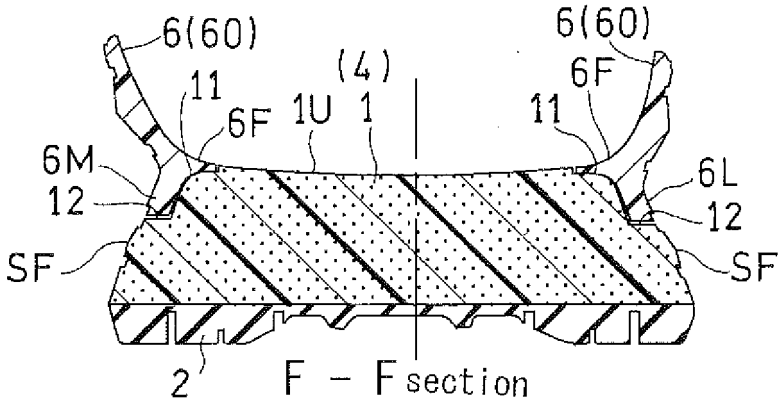


FIG 8C

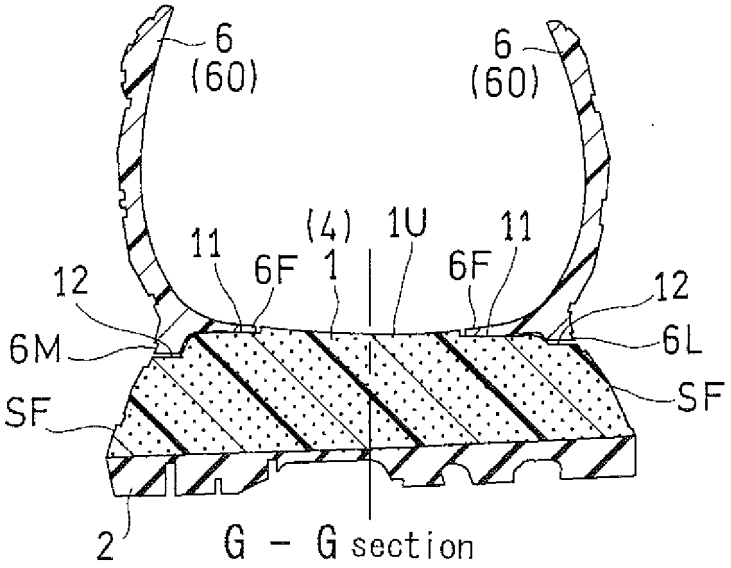


FIG 9

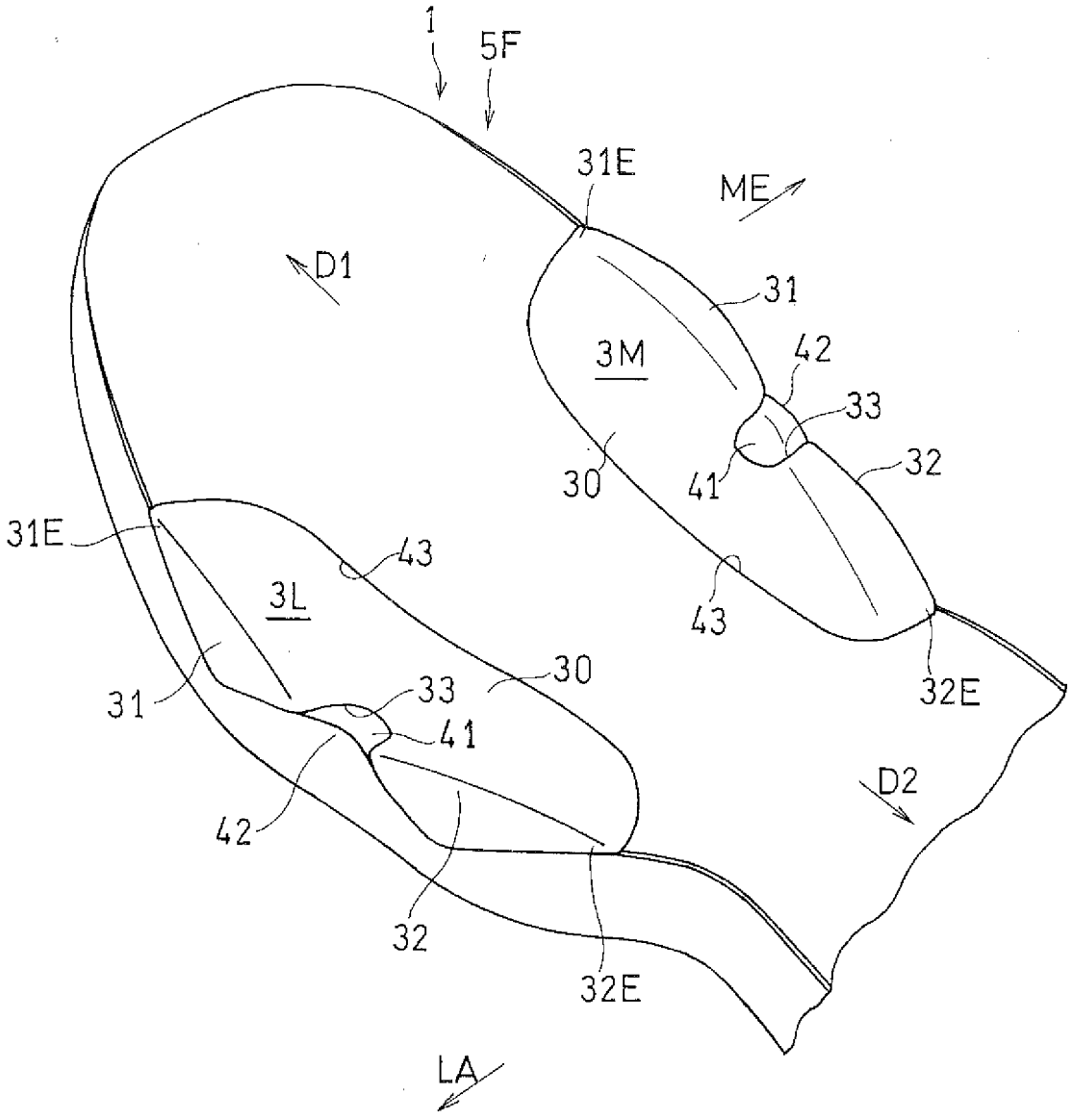

1
5F
31E
ME
D1
31
3M
42
33
32
30
41
31E
43
3L
43
31
30
33
32E
41
D2
42
32
32E
LA

FIG10

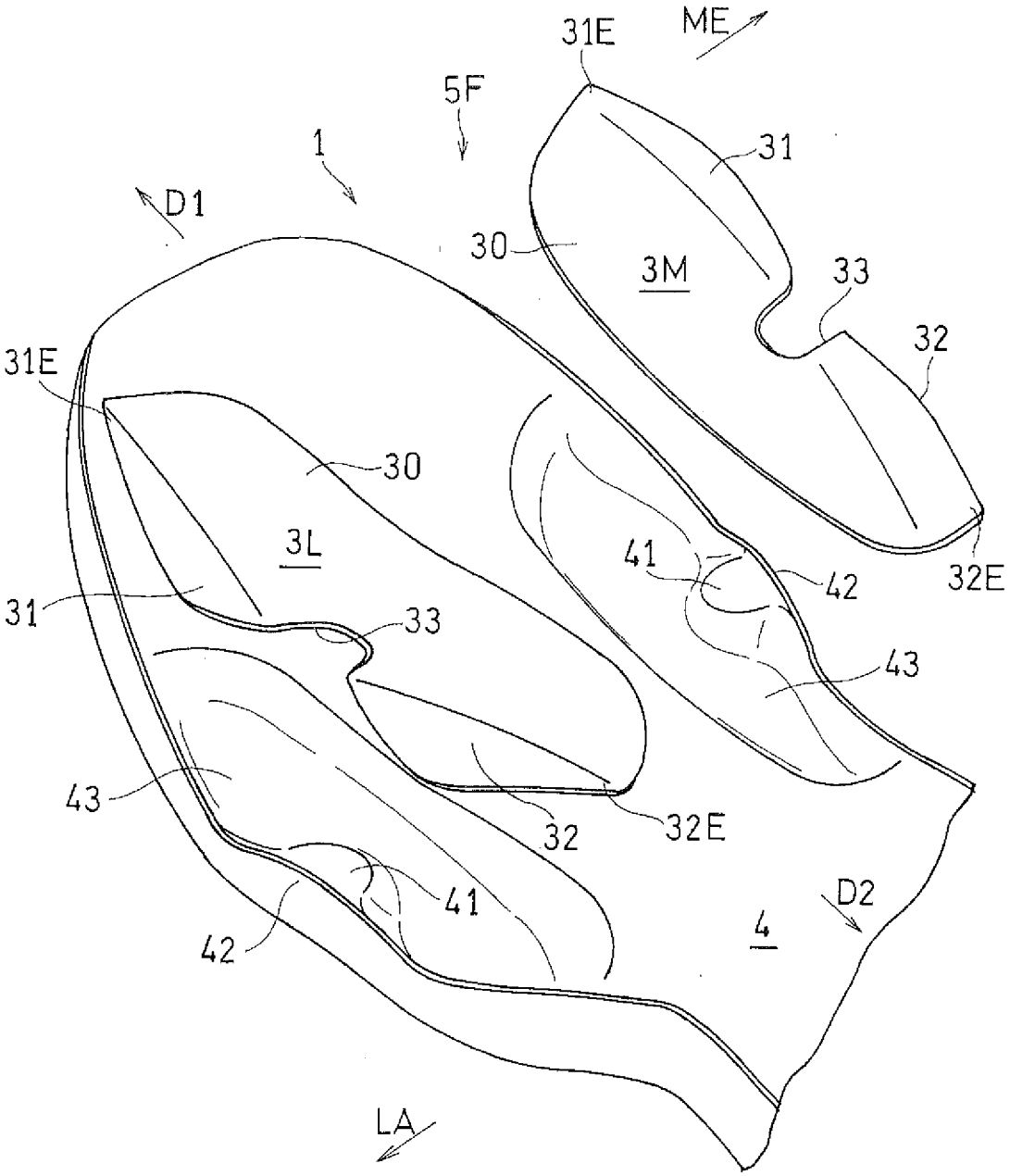

31E
ME
5F
1
31
D1
30
3M
33
32
31E
30
3L
41
42
32E
31
33
43
43
32
32E
41
D2
42
4
LA

FIG11A
(Medial)

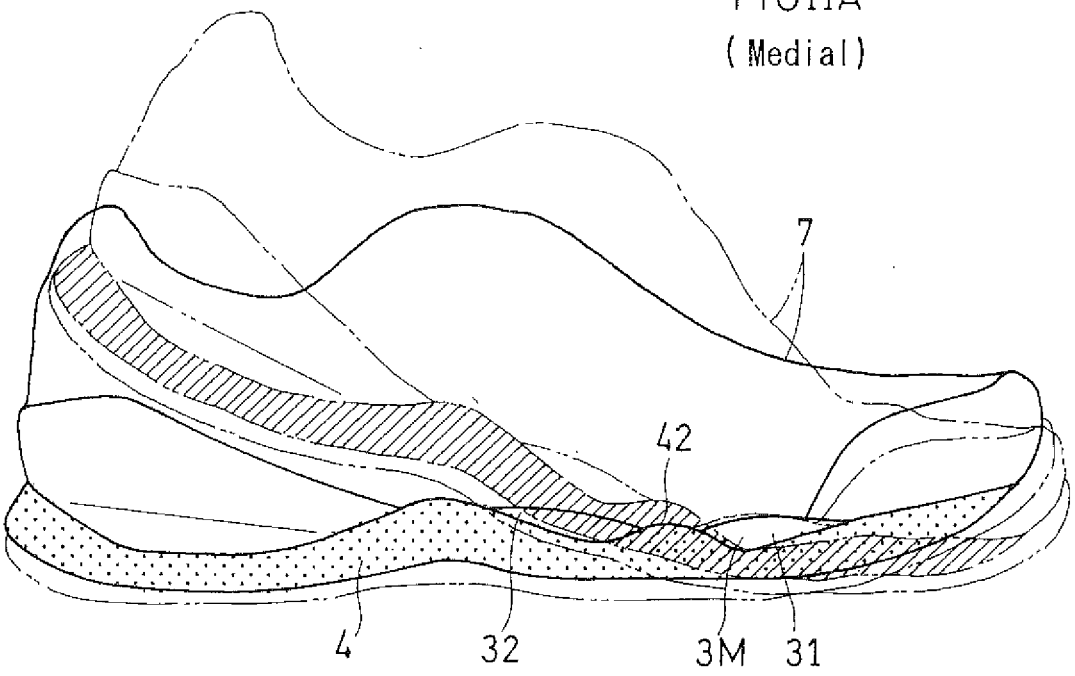
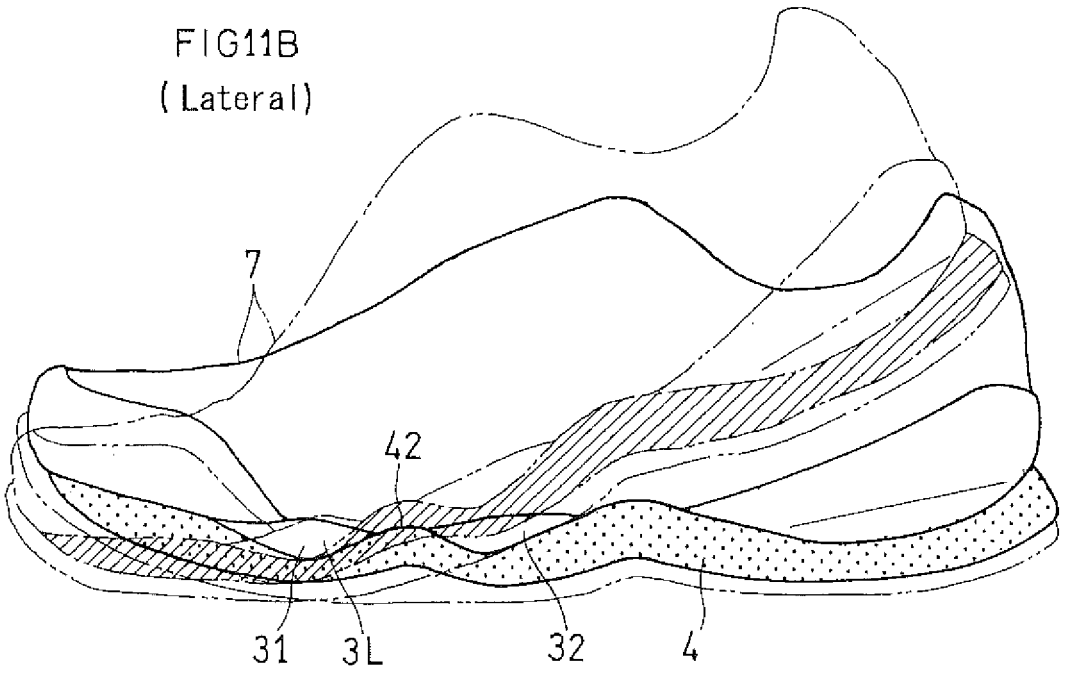


FIG11B
(Lateral)



INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2015/058722

A. CLASSIFICATION OF SUBJECT MATTER
A43B23/08(2006.01)i, *A43B13/38*(2006.01)i, *A43B13/41*(2006.01)i

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A43B23/08, A43B13/38, A43B13/41

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2015
Kokai Jitsuyo Shinan Koho 1971-2015 Toroku Jitsuyo Shinan Koho 1994-2015

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 5465814 B1 (Asics Corp.), 09 April 2014 (09.04.2014), entire text; all drawings (Family: none)	1-22
A	JP 9-215501 A (Mizuno Inc.), 19 August 1997 (19.08.1997), entire text; all drawings (Family: none)	1-22
A	JP 10-108709 A (Oji Paper Co., Ltd.), 28 April 1998 (28.04.1998), entire text; all drawings (Family: none)	1-22

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
08 June 2015 (08.06.15)	16 June 2015 (16.06.15)
Name and mailing address of the ISA/ Japan Patent Office 3-4-3,Kasumigaseki,Chiyoda-ku, Tokyo 100-8915,Japan	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2015/058722

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2002-262907 A (DynaGait Co., Ltd.), 17 September 2002 (17.09.2002), entire text; all drawings (Family: none)	1-22
A	JP 60-135003 A (Wolverine World Wide, Inc.), 18 July 1985 (18.07.1985), entire text; all drawings & EP 146208 A1	1-22
A	JP 7-8304 A (Hiroshima Kasei Ltd.), 13 January 1995 (13.01.1995), entire text; all drawings (Family: none)	1-22

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REFERENCES CITED IN THE DESCRIPTION

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- JP 9215501 A **[0004]**
- JP 10108709 A **[0004]**
- JP 2002262907 A **[0004]**
- JP 60135003 A **[0004] [0007]**
- JP 7008304 A **[0004] [0008]**
- WO 2013168256 A1 **[0004]**
- JP 2003009906 A **[0004]**