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Amended claims in accordance with Rule 137(2)
EPC.

(54) **RIGID THREE-DIMENSIONAL SOCK-SHOE**

(57) A rigid three-dimensional sock-shoe includes a shoe sole (1), a three-dimensional sock (2), and a tightening unit (3) disposed transversely on the three-dimensional sock (2). The sock (2) includes a sock sole (21) connected to the shoe sole (1), and a sock upper (22) connected to and cooperating with the sock sole (21) to define a foot space (20). The sock (2) is composed of a sock lining (23), a first adhesive layer (24), a waterproof sleeve (25), a second adhesive layer (26) and a sock main body (27) that are arranged in order from the inside to the outside thereof. The first adhesive layer (24) connects the sock lining (23) to the waterproof sleeve (25). The second adhesive layer (26) connects the waterproof sleeve (25) to the sock main body (27). Each of the sock main body (27) and the sock lining (23) is a one-piece woven sock.

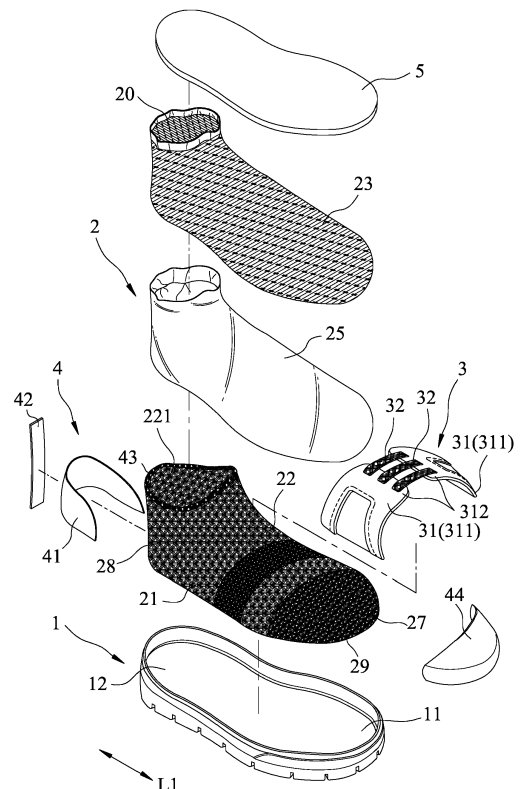


FIG.1

Description

[0001] The disclosure relates to a sock-shoe, more particularly to a rigid three-dimensional sock-shoe.

[0002] A shoe upper of a conventional shoe is usually made of a hard material, such as leather, which is cut and then sewn to fix the shape. The leather shoe upper provides support and protection to a wearer's foot. However, it will also generate discomfort due to large area of pressure and friction upon the wearer's foot. As such, the wearer will have to put on socks first before wearing the conventional shoes. Through the soft sock that serves as a buffer layer between the wearer's foot and the shoe upper, the feeling of discomfort can be reduced. In recent years, woven shoes have gradually replaced leather shoes and have become the mainstream. Since the manufacturing time of the woven shoes is long and the cost thereof is high, some industry has developed a one-piece sock-shoe with the sock as its main component, such as Taiwanese Patent Publication Nos. M473088, M522581 and M526299.

[0003] However, the aforesaid conventional sock-shoes, apart from being thin and cannot provide warmth, are also not moisture-permeable waterproof. When rain is encountered during wear of the conventional sock-shoes, rain water will seep into the inner portions of the sock-shoes, so that the wearer not only will feel uncomfortable, but also the feet of the wearer are prone to be infected with diseases, such as athlete's foot, etc., because of being placed in a high humid condition for a long period of time. Further, the conventional sock-shoes mainly rely on the wearer's feet to form the three-dimensional shape thereof. That is, when not in use, the conventional sock-shoes will collapse and have a creased appearance, which is unaesthetic and unattractive. Moreover, to wear the conventional sock-shoe is just like wearing the ordinary sock, that is, the wearer must first extend the fingers of his/her hands inside the conventional sock-shoe and then pull it outward to permit entry of the wearer's foot into the sock-shoe. Hence, use of the conventional sock-shoe is inconvenient.

[0004] Therefore, an object of the present disclosure is to provide a rigid three-dimensional sock-shoe that is waterproof, that is easy to wear and that maintains a three-dimensional shape when not in use.

[0005] Accordingly, a rigid three-dimensional sock-shoe of this disclosure includes a shoe sole extending along a front-rear direction, a three-dimensional sock extending along the front-rear direction, and a tightening unit disposed transversely on the three-dimensional sock. The three-dimensional sock defines a foot space, and includes a sock sole connected to the shoe sole, and a sock upper that is connected to a periphery of the sock sole and that is not collapsible. The sock sole and the sock upper cooperate with each other to define the foot space. The three-dimensional sock is composed of a sock lining, a first adhesive layer, a waterproof sleeve, a second adhesive layer and a sock main body that are

arranged in order from the inside to the outside thereof. The first adhesive layer connects the sock lining to the waterproof sleeve. The second adhesive layer connects the waterproof sleeve to the sock main body. Each of the sock main body and the sock lining is a one-piece woven sock.

[0006] Other features and advantages of the disclosure will become apparent in the following detailed description of the embodiments with reference to the accompanying drawings, of which:

Fig. 1 is an exploded perspective view of a rigid three-dimensional sock-shoe according to the first embodiment of this disclosure;

Fig. 2 is an assembled perspective view of Fig. 1;

Fig. 3 is a sectional view of the first embodiment;

Fig. 4 is an enlarged fragmentary sectional view of the first embodiment;

Fig. 5 is a view similar to Fig. 4, but illustrating an alternative form of a waterproof sleeve of the first embodiment;

Fig. 6 is an assembled perspective view of a rigid three-dimensional sock-shoe according to the second embodiment of this disclosure;

Fig. 7 illustrates a sock lining of a rigid three-dimensional sock-shoe according to the third embodiment of this disclosure;

Fig. 8 is an assembled perspective view of a rigid three-dimensional sock-shoe according to the fourth embodiment of this disclosure; and

Fig. 9 illustrates an alternative form of a tightening unit of the fourth embodiment.

[0007] Before the present disclosure is described in greater detail with reference to the accompanying embodiments, it should be noted herein that like elements are denoted by the same reference numerals throughout the disclosure.

[0008] Referring to Figs. 1 to 4, a rigid three-dimensional sock-shoe according to the first embodiment of the present disclosure is shown to comprise a shoe sole 1, a three-dimensional sock 2, a tightening unit 3, a strengthening unit 4, and a shoe pad 5.

[0009] The shoe sole 1 extends along a front-rear direction (L1), and has a sole toe region 11 and a sole heel region 12 opposite to each other along the front-rear direction (L1).

[0010] The three-dimensional sock 2 extends along the front-rear direction (L1), defines a three-dimensional foot space 20, and includes a sock sole 21 connected to the shoe sole 1, and a sock upper 22 that is connected to a periphery of the sock sole 21 and that is not collapsible. The sock sole 21 and the sock upper 22 cooperate with each other to define the three-dimensional foot space 20. The shoe pad 5 is disposed inside the foot space 20, abuts against the sock sole 21, and is configured to be stepped on by a wearer. The sock upper 22 defines a sock opening 221 opposite to the sock sole 21,

and has an upper heel portion 28 and an upper toe portion 29 opposite to each other along the front-rear direction (L1).

[0011] The three-dimensional sock 2 is composed of a sock lining 23, a first adhesive layer 24, a waterproof sleeve 25, a second adhesive layer 26 and a sock main body 27 that are arranged in order from the inside to the outside thereof.

[0012] The sock lining 23 is a one-piece woven sock that is soft to touch, that has a certain thickness and that has a pattern structure. Through this, the sock lining 23 can provide the functions of sweat absorption, keeping warmth and shock absorption similar to that of an ordinary soft fabric material, so that the wearer's foot can achieve wearing comfort. However, the sock lining 23 may also be a one-piece nonwoven sock, and is not limited to the aforesaid disclosure.

[0013] The waterproof sleeve 25 has moisture permeability, and includes a substrate 251 corresponding in shape to the foot space 20, and a moisture-permeable waterproof membrane 252 disposed around an outer surface of the substrate 251. The moisture-permeable waterproof membrane 252 can use a moisture-permeable waterproof resin to completely form around and cover the outer surface of the substrate 251 by a dipping method. However, the forming of the moisture-permeable waterproof membrane 252 on the outer surface of the substrate 251 is not limited to the dipping method, a spraying method may also be employed. The moisture-permeable waterproof resin may also be mixed with an additive containing anti-bacterial agent, so that the formed moisture-permeable waterproof membrane 252 has an anti-bacterial effect.

[0014] The moisture-permeable waterproof membrane 252 is made from one of the following resins: polyurethane (PU), thermoplastic polyurethane (TPU), latex, thermoplastic elastomer (TPE), polytetrafluoroethylene (PTFE), polyethylene (PE), polypropylene (PP) and polyvinyl chloride (PVC).

[0015] The first adhesive layer 24 connects the sock lining 23 to the substrate 251 of the waterproof sleeve 25, and initially shapes the sock lining 23 to correspond to that of the foot space 20.

[0016] Fig. 5 illustrates an alternative form of the waterproof sleeve 25 of the first embodiment. In this case, the waterproof sleeve 25 only includes the moisture-permeable waterproof membrane 252, and does not have the substrate 251. The moisture-permeable waterproof resin is directly sprayed onto an outer surface of a shoe last and is then heated to dry and solidify so as to form the moisture-permeable waterproof membrane 252. When the moisture-permeable waterproof membrane 252 is removed from the shoe last, it becomes the waterproof sleeve 25 of the three-dimensional sock 2. The first adhesive layer 24 connects the sock lining 23 to the moisture-permeable waterproof membrane 252. It should be noted herein that two moisture-permeable waterproof membranes 252 in sheet forms may first be

made, after which they are fixedly adhered to each other using a high frequency or ultrasonic bonding method so as to form the waterproof sleeve 25 with a one-piece structure.

[0017] The sock main body 27 is a one-piece woven sock having a pattern structure, but is not limited thereto. It should be noted herein that the sock lining 23, the waterproof sleeve 25 and the sock main body 27 may have pattern structures that match each other. If special pattern structures are provided on corresponding ankle portions of the sock lining 23, the waterproof sleeve 25 and the sock main body 27, the tightness thereamong may be enhanced, and the effect of strengthening the foot support may also be achieved.

[0018] With reference to Figs. 1, 3 and 4, the second adhesive layer 26 connects the moisture-permeable waterproof membrane 252 of the waterproof sleeve 25 to the main sock body 27. The sock lining 23, the waterproof sleeve 25 and the sock main body 27 are set to shape after heating to dry and solidify so as to form the three-dimensional sock 2 that is rigid and that is not collapsible. It should be noted herein that the first and second adhesive layers 24, 26 are both moisture-permeable.

[0019] Referring again to Figs. 1 to 4, the tightening unit 3 is disposed transversely on the three-dimensional sock 2, and is used to tighten the user's foot inserted into the foot space 20 of the three-dimensional sock 2. In this embodiment, the tightening unit 3 includes a pair of tightening plates 31 respectively connected to the left and right sides of the shoe sole 1, and three tightening strips 32 interconnecting the tightening plates 31. Each tightening plate 31 has a connecting end portion 311 connected to the respective left or right side of the shoe sole 1, and a free end portion 312 opposite to the connecting end portion 311. The tightening strips 32 interconnect the free end portions 312 of the tightening plates 31.

[0020] The strengthening unit 4 is disposed on the three-dimensional sock 2, and includes a first reinforcement layer 41, a support strip 42, a resilient tightening member 43 and a second reinforcement layer 44.

[0021] The support strip 42 is made of, but not limited to, a leather material, is connected to the sole heel region 12, and extends from a rear end of the sole heel region 12 toward the sock opening 221. It is preferable that the support strip 42 extends from the rear end of the sole heel region 12 to the sock opening 221. The first reinforcement layer 41 is connected to the rear end of the sole heel region 12, and extends from the sole heel region 12 toward the sole toe region 11. The first reinforcement layer 41 has a substantially U-shape that surrounds the upper heel portion 28 of the sock upper 22 and that is disposed between the upper heel portion 28 and the support strip 42. The disclosure is provided with the first reinforcement layer 41 and the support strip 42 to further strengthen foot support and to thereby enhance the stability of the ankle. The second reinforcement layer 44 is connected to a front end of the sole toe region 11 and covers the upper toe portion 29 of the sock upper 22. It

should be noted herein that the first and second reinforcement layers 41, 44 are, but not limited to, hot melt adhesive layers.

[0022] The resilient tightening member 43 is disposed on and surrounds the sock opening 221 of the sock upper 22. The resilient tightening member 43 can be formed on the sock opening 221 as a flange portion that protrudes outward from the sock main body 27 by a weaving method. As such, the structural strength of the sock opening 221 can be further strengthened, that is, the sock opening 221 will not easily lose its resiliency by repeated pulling and stretching.

[0023] During manufacturing, the sock lining 23 is first sleeved on the shoe last, after which the first adhesive layer 24 is coated on the outer surface of the sock lining 23. Next, the waterproof sleeve 25 is sleeved on the sock lining 23, then the second adhesive layer 26 is coated on the outer surface of the waterproof sleeve 25, after which the sock main body 27 is sleeved on the waterproof sleeve 25. The assembly of the sock lining 23, the waterproof sleeve 25 and the sock main body 27 are then placed in an oven and are heated to cure the first adhesive layer 24 between the sock lining 23 and the waterproof sleeve 25 and the second adhesive layer 26 between the waterproof sleeve 25 and the sock main body 27. As such, the sock lining 23, the waterproof sleeve 25 and the sock main body 27 can be tightly bonded together to form the three-dimensional sock 2 of this disclosure. Afterwards, the shoe sole 1 is adhered to the sock sole 21 of the three-dimensional sock 2, and the tightening unit 3, the first reinforcement layer 41, the support strip 42 and the second reinforcement layer 44 are adhered to the three-dimensional sock 2. Finally, the shoe last is removed, and the rigid non-collapsible three-dimensional sock-shoe of this disclosure is obtained. In an alternative embodiment, the tightening unit 3, the first reinforcement layer 41, the support strip 42 and the second reinforcement layer 44 may be sewn to the three-dimensional sock 2.

[0024] The three-dimensional sock-shoe of this disclosure is rigid, so that when it is worn, the wearer only needs to slightly pull outward the sock opening 221 to permit quick entry of his/her foot into the three-dimensional foot space 20 of the three-dimensional sock-shoe of this disclosure, unlike the wearing of the conventional sock-shoe where the fingers of the wearer's hands must first extend inside the sock-shoe and then pull it outward to permit entry of his/her foot into the conventional sock-shoe. Hence, the three-dimensional sock-shoe of this disclosure is easy to wear.

[0025] With the three-dimensional sock 2 being provided with the waterproof sleeve 25, and with the first and second adhesive layers 24, 26 having moisture-permeability, the three-dimensional sock-shoe of this disclosure has good waterproof and high moisture-permeability effects. In actual use, when the foot sweats, the sock lining 23 can absorb the sweat, and the moisture can be expelled through the waterproof sleeve 25. During rainy

days, rainwater is prevented from seeping from the sock main body 27 into the sock lining 23, so that the foot of the wearer can be kept dry and comfortable.

[0026] Referring to Fig. 6, the second embodiment of the rigid three-dimensional sock-shoe according to this disclosure is generally identical to the first embodiment, and only differs in that the tightening unit 3 of the second embodiment includes two pairs of tightening plates 31 that are spaced apart from each other along the front-rear direction (L1). The connecting end portions 311 of the tightening plates 31 of each pair are respectively connected to the left and right sides of the shoe sole 1. Only one tightening strip 32 is used to interconnect the free end portions 312 of the tightening plates 31.

[0027] It should be noted herein that the sock main body 27 of the second embodiment can have a pattern structure different from that shown in Fig. 2 of the first embodiment so as to provide the wearer with a different visual appearance. The advantages of the first embodiment can be similarly achieved using the second embodiment.

[0028] Referring to Fig. 7, the third embodiment of the rigid three-dimensional sock-shoe according to this disclosure is generally identical to the first embodiment, and only differs in that the rigid three-dimensional sock-shoe of the third embodiment further comprises an anti-sideslip member 6 having an upwardly curved body 61 disposed on the outer surface of the sock lining 23. Alternatively, the anti-sideslip member 6 may have a ring shape so that it may be directly sleeved on the outer surface of the sock lining 23. The upwardly curved body 61 can be used to protect the wearer's ankle when the foot steps into a wrong position causing the ankle to turn outward. It will be appreciated that the rigid three-dimensional sock-shoe of this disclosure may also comprise a plurality of the anti-sideslip members 6 disposed on the outer surface of the sock lining 23 and spacedly arranged along the front-rear direction (L1). As long as the effect of preventing the wearer's ankle from turning outward can be achieved, the number and the disposition of the anti-sideslip members 6 should not be limited to the afore-said disclosure. The advantages of the first embodiment can be similarly achieved using the third embodiment.

[0029] Referring to Fig. 8, the fourth embodiment of the rigid three-dimensional sock-shoe according to this disclosure is generally identical to the first embodiment, and only differs in that the tightening unit 3 of the fourth embodiment includes a plurality of pairs of loop portions 33 disposed on and exposed from the sock upper 22 and spaced apart from each other along the front-rear direction (L1), and a shoelace 34 threaded through the pairs of loop portions 33. It will be appreciated that, by tightening the shoelace 34, each pair of the loop portions 33 can be brought close to each other, so that the effect of tightening the three-dimensional sock 2 on the user's foot when the foot enters the three-dimensional space 20 can also be achieved.

[0030] Fig. 9 illustrates an alternative form of the tight-

ening unit 3 of the fourth embodiment. In this case, the tightening unit 3 includes a covering body 35 curving upwardly and partially surrounding the waterproof sleeve 25. The covering body 35 has spaced-apart left and right end portions 351, and a plurality of pairs of loop portions 352 provided on the left and right end portions 351 and spaced apart from each other along the front-rear direction (L1). The pairs of loop portions 352 extend out of the sock upper 22 to be exposed therefrom. In use, the shoelace 34 (see Fig. 8) can also be threaded through the pairs of loop portions 352.

[0031] The advantages of the first embodiment can be similarly achieved using the fourth embodiment.

[0032] From the foregoing, the advantages of the rigid three-dimensional sock-shoe according to this disclosure can be summarized as follows:

1) The three-dimensional sock 2 is provided with the waterproof sleeve 25, so that water can be prevented from seeping from the sock main body 27 into the sock lining 23. Hence, the disclosure can achieve a moisture-permeable waterproof effect.

2) Through the provision of the first and second adhesive layers 24, 26, the appearance of the sock lining 23, the waterproof sleeve 25 and the sock main body 27 can be set, so that the sock lining 23, the waterproof sleeve 25 and the sock main body 27 are tightly connected to form the three-dimensional sock 2 and can maintain a three-dimensional form that is not collapsible. Thus, the disclosure not only is aesthetic, but also is convenient to wear.

3) Since the sock lining 23 is soft to touch and has a certain thickness, after the sock lining 23, the waterproof sleeve 25 and the sock main body 27 are tightly connected to form the three-dimensional sock 2, the three-dimensional sock 2 can provide a good step buffering effect. Further, because the three-dimensional sock 2 has a moisture-permeable waterproof effect, the wearer's foot can be kept dry and comfortable. Moreover, the sock main body 27 can have different specific pattern woven structure, so that the three-dimensional sock-shoe of this disclosure not only can present a variety of visual effects, the tightness thereof can also be enhanced by providing special patterns on a position corresponding to the wearer's ankle. Hence, the effect of strengthening foot support can be achieved.

4) The three-dimensional sock 2 of this disclosure includes the sock sole 21 and the sock upper 22, both of which have a moisture-permeable waterproof effect, so that this disclosure not only can prevent water from seeping from the sock main body 27 into the sock lining 23, but also can prevent the water from seeping into the sock sole 21 from the shoe sole 1. That is, the moisture-permeable waterproof effect of this disclosure is comprehensive and thorough.

[0033] The object of the rigid three-dimensional sock-shoe of this disclosure can indeed be achieved.

5 Claims

1. A rigid three-dimensional sock-shoe comprising a shoe sole (1) extending along a front-rear direction (L1), a three-dimensional sock (2) extending along the front-rear direction (L1), and a tightening unit (3) disposed transversely on said three-dimensional sock (2), **characterized by:**

said three-dimensional sock (2) defining a foot space(20) and including a sock sole (21) connected to said shoe sole (1), and a sock upper (22) that is connected to a periphery of said sock sole (21) and that is not collapsible, said sock sole (21) and said sock upper (22) cooperating with each other to define said foot space (20), said three-dimensional sock (2) being composed of a sock lining (23), a first adhesive layer (24), a waterproof sleeve (25), a second adhesive layer (26) and a sock main body (27) that are arranged in order from the inside to the outside thereof, said first adhesive layer (24) connecting said sock lining (23) to said waterproof sleeve (25), said second adhesive layer (26) connecting said waterproof sleeve (25) to said sock main body (27), each of said sock main body (27) and said sock lining (23) being a one-piece woven sock.

2. The rigid three-dimensional sock-shoe as claimed in Claim 1, wherein said waterproof sleeve (25) includes a substrate (251) corresponding in shape to said foot space (20), and a moisture-permeable waterproof membrane (252) disposed around an outer surface of said substrate (251).
3. The rigid three-dimensional sock-shoe as claimed in Claim 1, wherein said waterproof sleeve (25) is formed into a one-piece body by two moisture-permeable waterproof membranes (252) using a high frequency or ultrasonic bonding method.
4. The rigid three-dimensional sock-shoe as claimed in Claim 1, wherein said waterproof sleeve (25) is made from one of the following resins: polyurethane (PU), thermoplastic polyurethane (TPU), latex, thermoplastic elastomer (TPE), polytetrafluoroethylene (PTFE), polyethylene (PE), polypropylene (PP) and polyvinyl chloride (PVC).
5. The rigid three-dimensional sock-shoe as claimed in Claim 1, wherein said sock main body (27) has a pattern structure matching with that of said sock lining (23) .

6. The rigid three-dimensional sock-shoe as claimed in Claim 1, wherein said shoe sole (1) includes a sole toe region (11) and a sole heel region (12) opposite to each other along the front-rear direction (L1), said sock upper (22) defining a sock opening (221) opposite to said sock sole (21) and having an upper heel portion (28) and an upper toe portion (29) opposite to each other along the front-rear direction (L1), said rigid three-dimensional sock-shoe further comprising a strengthening unit (4) disposed on said three-dimensional sock (2) and including a support strip (42), a first reinforcement layer (41), and a second reinforcement layer (44), said support strip (42) being connected to said sole heel region (12) and extending from a rear end of said sole heel region (12) toward said sock opening (221), said first reinforcement layer (41) being connected to said sole heel region (12) and being disposed between said upper heel portion (28) of said sock upper (22) and said support strip (42), said first reinforcement layer (41) having a substantially U-shape that surrounds said upper heel portion (28), said second reinforcement layer (44) being connected to a front end of said sole toe region (11) and covering said upper toe portion (29) of said sock upper (22).
7. The rigid three-dimensional sock-shoe as claimed in Claim 1, wherein said tightening unit (3) includes at least one pair of tightening plates (31) respectively connected to left and right sides of said shoe sole (1), and at least one tightening strip (32) interconnecting said at least one pair of tightening plates (31), each of said tightening plates (31) having a connecting end portion (311) connected to a respective one of said left and right sides of said shoe sole (1), and a free end portion (312) opposite to said connecting end portion (311), said at least one tightening strip (32) interconnecting said free end portions (312) of said tightening plates (31).
8. The rigid three-dimensional sock-shoe as claimed in Claim 7, wherein said tightening unit (3) includes two said pairs of tightening plates (31) that are spaced apart from each other along the front-rear direction (L1), and said at least one tightening strip (32) interconnects said free end portions (312) of said pairs of tightening plates (31).
9. The rigid three-dimensional sock-shoe as claimed in Claim 1, further comprising an anti-sideslip member (6) having an upwardly curved body (61) disposed on an outer surface of said sock lining (23).
10. The rigid three-dimensional sock-shoe as claimed in Claim 1, wherein said tightening unit (3) includes a plurality of pairs of loop portions (33) disposed on and exposed from said sock upper (22) and spaced apart from each other along the front-rear direction

(L1), and a shoelace (34) threaded through said pairs of loop portions (33).

11. The rigid three-dimensional sock-shoe as claimed in Claim 1, wherein said tightening unit (3) includes a covering body (35) curving upwardly and partially surrounding said waterproof sleeve (25), said covering body (35) having spaced-apart left and right end portions (351), and a plurality of pairs of loop portions (352) provided on said left and right end portions (351) and spaced apart from each other along the front-rear direction (L1), said pairs of loop portions (352) extending out of said sock upper (22) to be exposed therefrom for extension of a shoelace (34) therethrough.

Amended claims in accordance with Rule 137(2) EPC.

1. A rigid three-dimensional sock-shoe comprising a shoe sole (1) extending along a front-rear direction (L1), a three-dimensional sock (2) extending along the front-rear direction (L1), and a tightening unit (3) disposed transversely on said three-dimensional sock (2), **characterized by:**

said three-dimensional sock (2) defining a foot space (20) and including a sock sole (21) connected to said shoe sole (1), and a sock upper (22) that is connected to a periphery of said sock sole (21) and that is not collapsible, said sock sole (21) and said sock upper (22) cooperating with each other to define said foot space (20), said three-dimensional sock (2) being composed of a sock lining (23), a first adhesive layer (24), a waterproof sleeve (25), a second adhesive layer (26) and a sock main body (27) that are arranged in order from the inside to the outside thereof, said first adhesive layer (24) connecting said sock lining (23) to said waterproof sleeve (25), said second adhesive layer (26) connecting said waterproof sleeve (25) to said sock main body (27), each of said sock main body (27) and said sock lining (23) being a one-piece woven sock;

characterized in that said rigid three-dimensional sock-shoe further comprises an anti-sideslip member (6) having an upwardly curved body (61) disposed on an outer surface of said sock lining (23).

2. The rigid three-dimensional sock-shoe as claimed in Claim 1, wherein said waterproof sleeve (25) includes a substrate (251) corresponding in shape to said foot space (20), and a moisture-permeable waterproof membrane (252) disposed around an outer surface of said substrate (251).

3. The rigid three-dimensional sock-shoe as claimed in Claim 1, wherein said waterproof sleeve (25) is formed into a one-piece body by two moisture-permeable waterproof membranes (252) using a high frequency or ultrasonic bonding method. 5
4. The rigid three-dimensional sock-shoe as claimed in Claim 1, wherein said waterproof sleeve (25) is made from one of the following resins: polyurethane (PU), thermoplastic polyurethane (TPU), latex, thermoplastic elastomer (TPE), polytetrafluoroethylene (PTFE), polyethylene (PE), polypropylene (PP) and polyvinyl chloride (PVC). 10
5. The rigid three-dimensional sock-shoe as claimed in Claim 1, wherein said sock main body (27) has a pattern structure matching with that of said sock lining (23) . 15
6. The rigid three-dimensional sock-shoe as claimed in Claim 1, wherein said shoe sole (1) includes a sole toe region (11) and a sole heel region (12) opposite to each other along the front-rear direction (L1), said sock upper (22) defining a sock opening (221) opposite to said sock sole (21) and having an upper heel portion (28) and an upper toe portion (29) opposite to each other along the front-rear direction (L1), said rigid three-dimensional sock-shoe further comprising a strengthening unit (4) disposed on said three-dimensional sock (2) and including a support strip (42), a first reinforcement layer (41), and a second reinforcement layer (44), said support strip (42) being connected to said sole heel region (12) and extending from a rear end of said sole heel region (12) toward said sock opening (221), said first reinforcement layer (41) being connected to said sole heel region (12) and being disposed between said upper heel portion (28) of said sock upper (22) and said support strip (42), said first reinforcement layer (41) having a substantially U-shape that surrounds said upper heel portion (28), said second reinforcement layer (44) being connected to a front end of said sole toe region (11) and covering said upper toe portion (29) of said sock upper (22). 20
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7. The rigid three-dimensional sock-shoe as claimed in Claim 1, wherein said tightening unit (3) includes at least one pair of tightening plates (31) respectively connected to left and right sides of said shoe sole (1), and at least one tightening strip (32) interconnecting said at least one pair of tightening plates (31), each of said tightening plates (31) having a connecting end portion (311) connected to a respective one of said left and right sides of said shoe sole (1), and a free end portion (312) opposite to said connecting end portion (311), said at least one tightening strip (32) interconnecting said free end portions (312) of said tightening plates (31). 50
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8. The rigid three-dimensional sock-shoe as claimed in Claim 7, wherein said tightening unit (3) includes two said pairs of tightening plates (31) that are spaced apart from each other along the front-rear direction (L1), and said at least one tightening strip (32) interconnects said free end portions (312) of said pairs of tightening plates (31).
9. The rigid three-dimensional sock-shoe as claimed in Claim 1, wherein said tightening unit (3) includes a plurality of pairs of loop portions (33) disposed on and exposed from said sock upper (22) and spaced apart from each other along the front-rear direction (L1), and a shoelace (34) threaded through said pairs of loop portions (33).
10. The rigid three-dimensional sock-shoe as claimed in Claim 1, wherein said tightening unit (3) includes a covering body (35) curving upwardly and partially surrounding said waterproof sleeve (25), said covering body (35) having spaced-apart left and right end portions (351), and a plurality of pairs of loop portions (352) provided on said left and right end portions (351) and spaced apart from each other along the front-rear direction (L1), said pairs of loop portions (352) extending out of said sock upper (22) to be exposed therefrom for extension of a shoelace (34) therethrough.

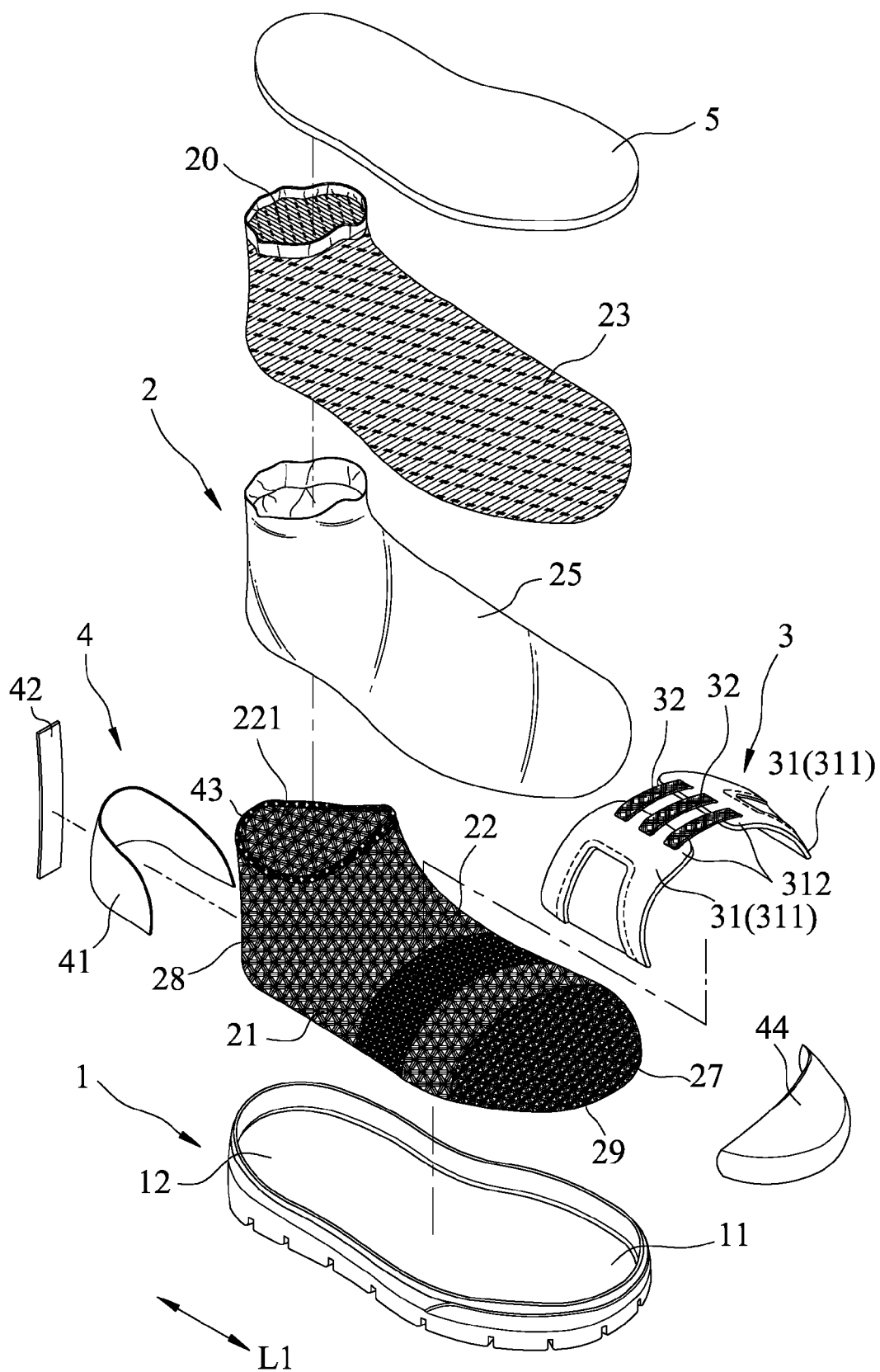


FIG.1

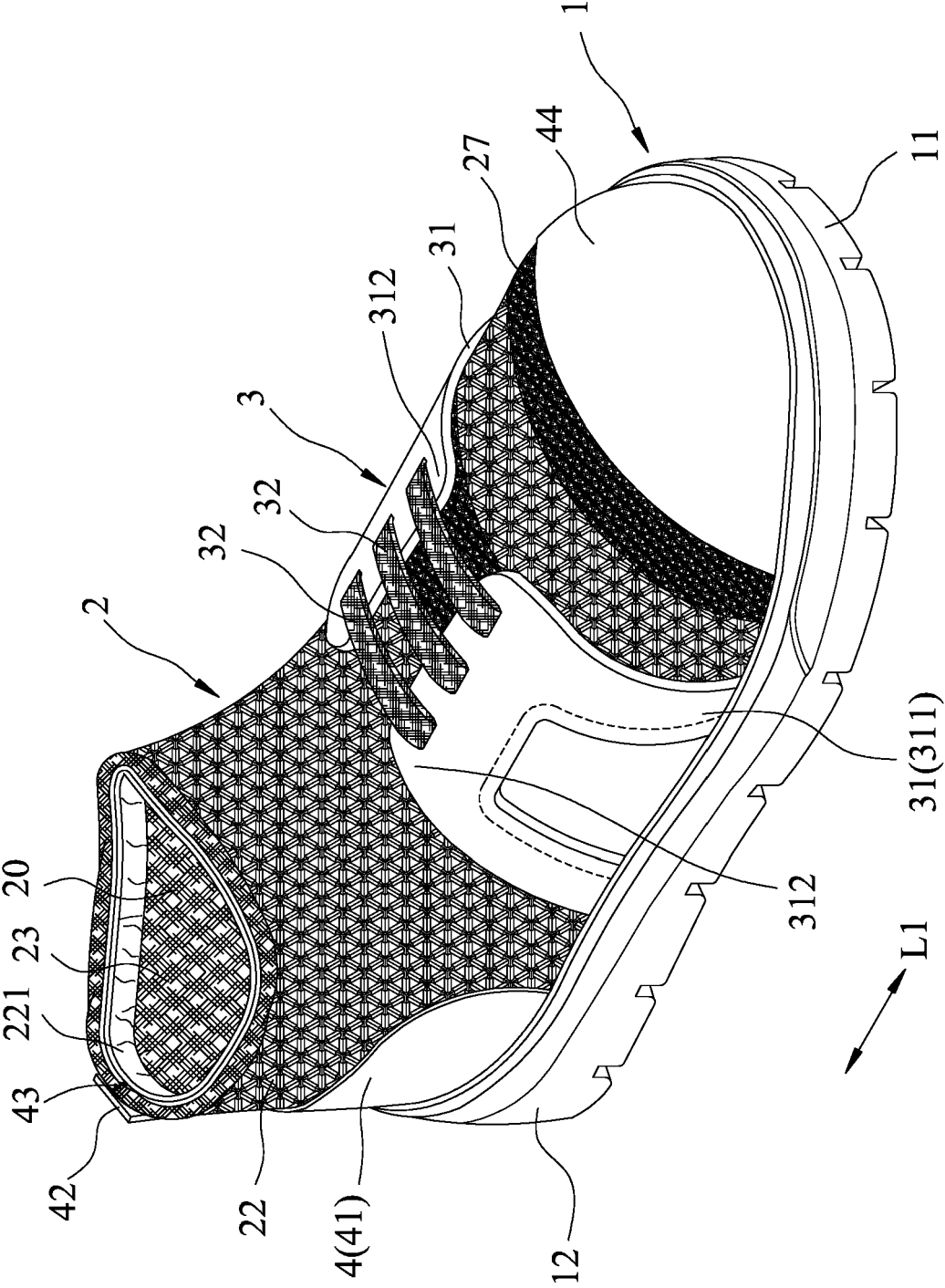


FIG.2

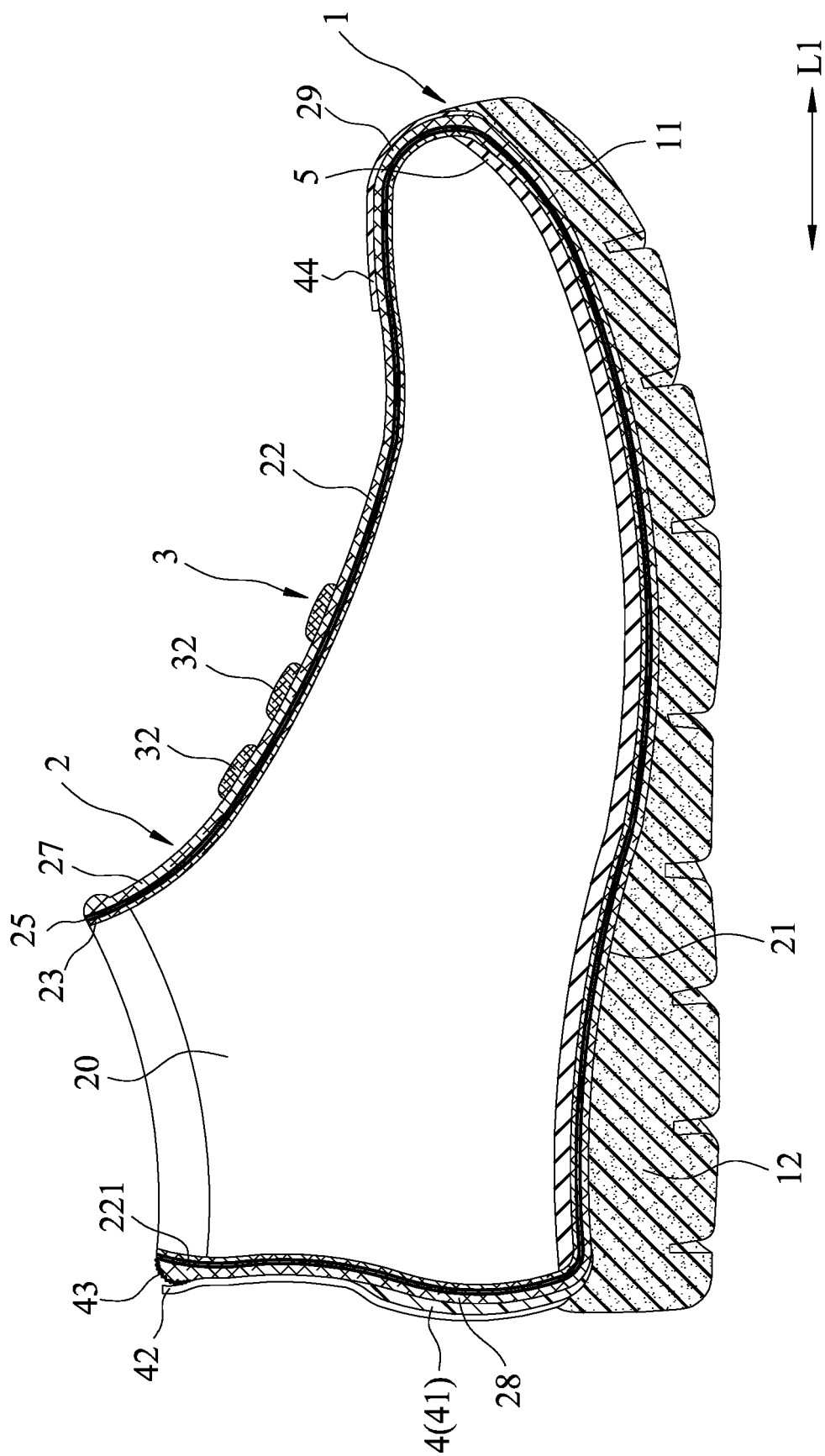


FIG. 3

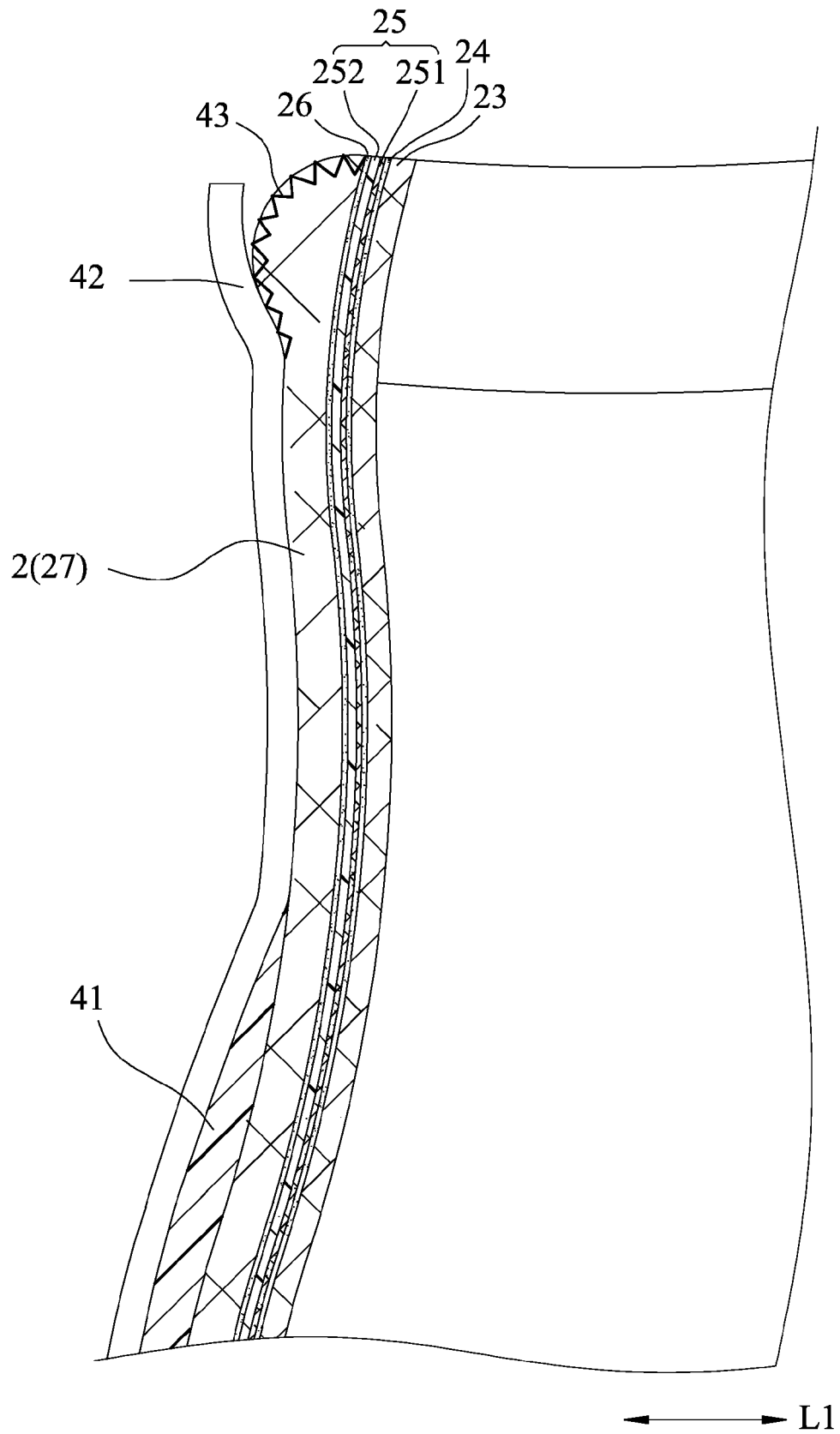


FIG.4

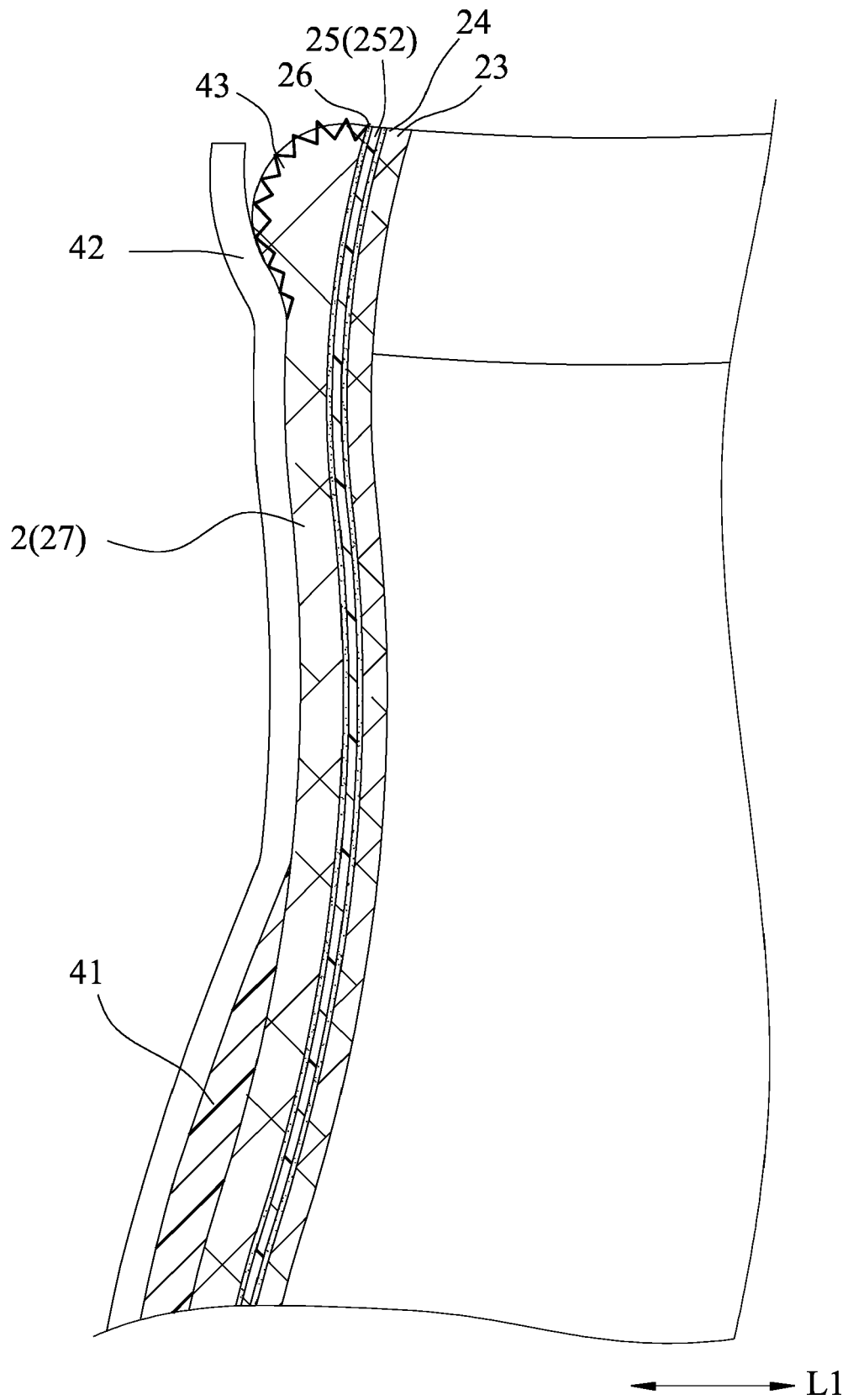


FIG.5

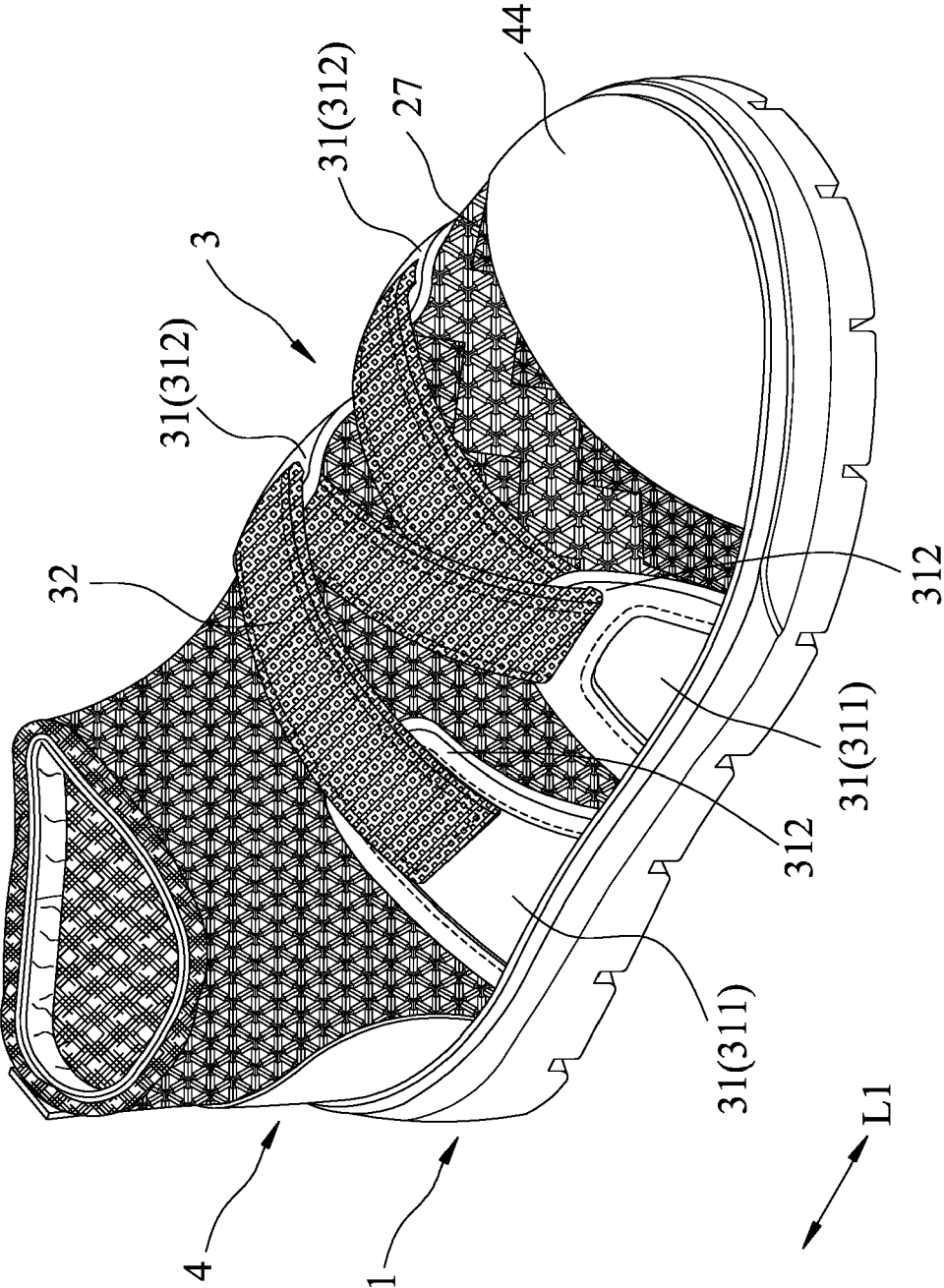


FIG.6

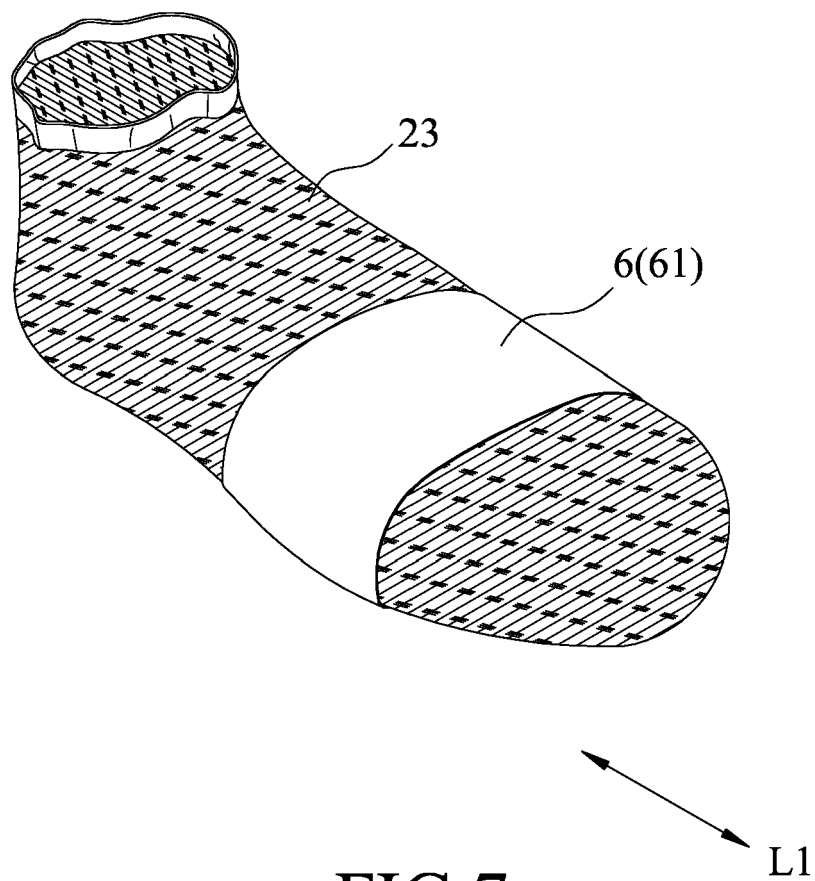


FIG.7

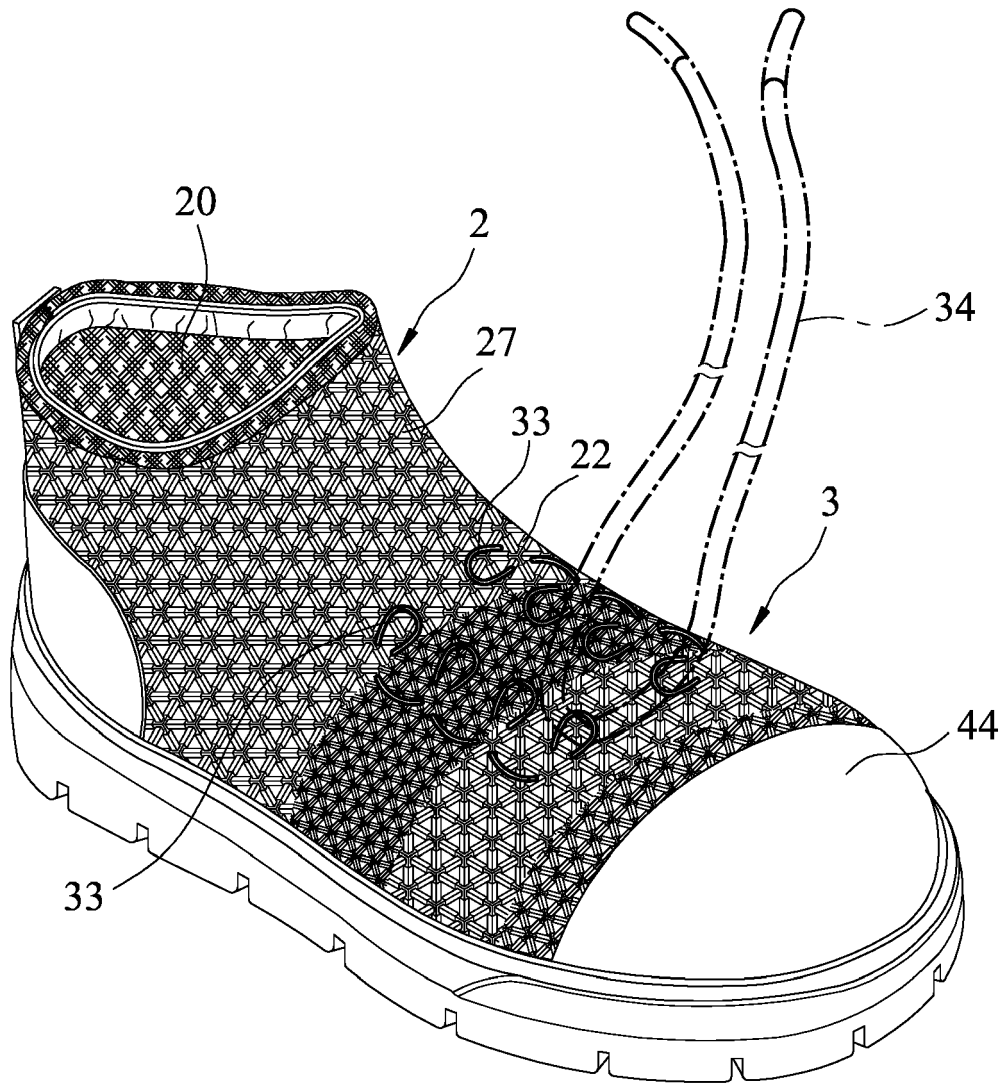


FIG. 8

L1

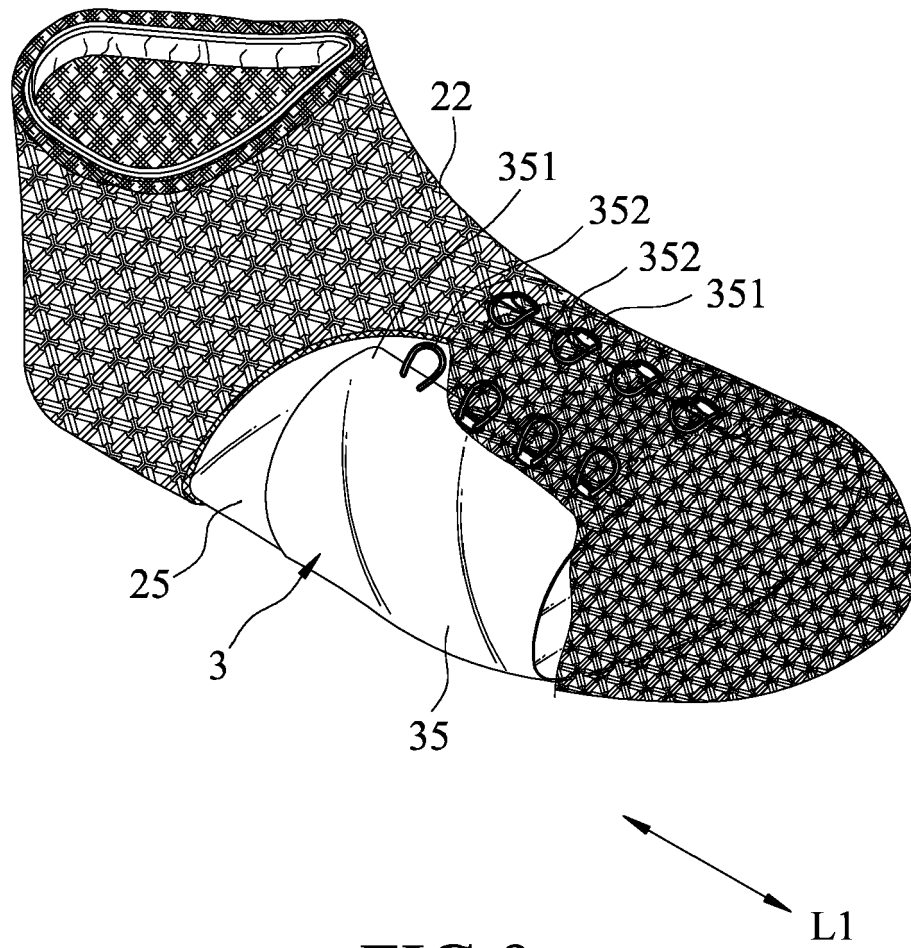


FIG. 9



EUROPEAN SEARCH REPORT

Application Number
EP 17 15 6444

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			A43B A43C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 29 August 2017	Examiner Ciubotariu, Adrian
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			

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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