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(54) ANTI-SLIP UNIT AND FUNCTIONAL SHOES INCLUDING THE SAME

(57) An anti-slip unit included in soles of shoes to provide an anti-slip function for the shoes includes a main body including an inner space and a spike through-hole connecting the inner space and the outside, a spike provided in the inner space so as to be movable along the spike through-hole, and a movable member that is provided in the inner space so as to be movable and that moves to allow the spike to be moved. The movable member moves between a first position in which at least part of the spike is concealed in the inner space and a second position in which the spike is exposed outside the main body and an exposed state of the spike is maintained. The spike may be concealed in, or exposed outside, the above-configured anti-slip unit of the present disclosure, and a user may simply and conveniently manipulate the anti-slip unit.

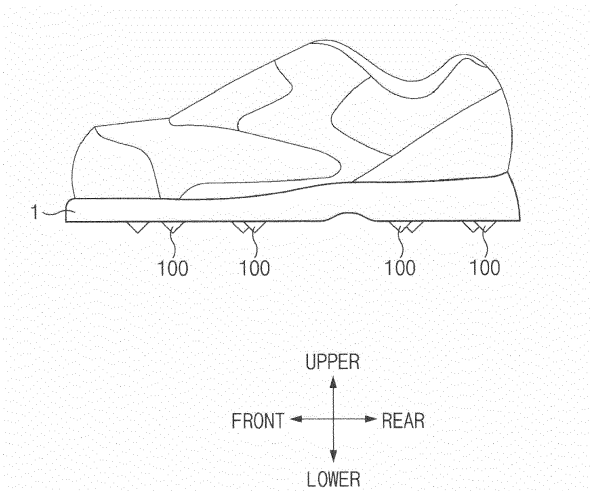

FIG.1

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Description

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims the benefit of priority to Korean Patent Application No. 10-2018-0078083, filed in the Korean Intellectual Property Office on July 05, 2018, the entire contents of which are incorporated herein by reference.

TECHNICAL FIELD

[0002] The present disclosure relates to an anti-slip unit for providing an anti-slip function for shoes, and functional shoes including the anti-slip unit.

BACKGROUND

[0003] Shoes are originally aimed at protecting feet from external impacts or foreign matter, but special functions are added to shoes. Alternatively, in many cases, shoes have special functions from the manufacturing stage. For example, climbers attach crampons to their shoes to prevent slipping.

[0004] Crampons may be integrated with shoes or may be provided so as to be detachable from shoes. However, crampon integrated shoes have a problem in that the comfort that a user experiences when walking on a flat land is significantly deteriorated, and detachable crampons have a problem in that a user has the inconvenience of attaching the crampons to shoes and then detaching the crampons from the shoes when slippery sections alternate with flat lands.

SUMMARY

[0005] The present disclosure has been made to solve the above-mentioned problems occurring in the prior art while advantages achieved by the prior art are maintained intact.

[0006] An aspect of the present disclosure provides functional shoes or an anti-slip unit for functional shoes that enables a user to conveniently switch between a crampon function and a normal shoe function without taking off the shoes.

[0007] Another aspect of the present disclosure provides a structure for improving the durability of an anti-slip unit of functional shoes that is capable of switching between a crampon function and a normal shoe function.

[0008] The technical problems to be solved by the present disclosure are not limited to the aforementioned problems, and any other technical problems not mentioned herein will be clearly understood from the following description by those skilled in the art to which the present disclosure pertains.

[0009] According to an aspect of the present disclosure, an anti-slip unit included in soles of shoes to provide an anti-slip function for the shoes includes a main body including an inner space and a spike through-hole that connects the inner space and the outside, a spike provided in the inner space so as to be movable along the spike through-hole, and a movable member that is provided in the inner space so as to be movable and that moves to allow the spike to be moved.

[0010] The movable member moves between a first position in which at least part of the spike is concealed in the inner space and a second position in which the spike is exposed outside the main body and an exposed state of the spike is maintained.

[0011] The anti-slip unit may further include a manipulation member that moves the movable member from the first position to the second position or from the second position to the first position.

[0012] According to another aspect of the present disclosure, functional shoes for preventing slipping include a sole having a space inside, a spike provided in the interior of the sole so as to be movable in a vertical direction along a spike through-hole that is formed in the sole to connect the interior of the sole and the outside, and a movable member that is provided in the interior of the sole so as to be movable and that moves to allow the spike to be moved in the vertical direction.

[0013] The movable member moves between a first position in which at least part of the spike is concealed in the interior of the sole and a second position in which the spike is exposed outside the sole and an exposed state of the spike is maintained.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] The above and other objects, features and advantages of the present disclosure will be more apparent from the following detailed description taken in conjunction with the accompanying drawings:

FIG. 1 is a side view illustrating functional shoes according to an embodiment of the present disclosure;
FIG. 2 is a bottom view illustrating the functional shoes of FIG. 1;
FIG. 3 is a side sectional view illustrating an anti-slip unit of the functional shoes of FIG. 1;
FIG. 4 is an exploded view illustrating the anti-slip unit of FIG. 3;
FIG. 5 is a bottom view illustrating a movable member of the anti-slip unit of FIG. 4;
FIG. 6 is a top view illustrating the movable member of the anti-slip unit of FIG. 4; and
FIG. 7 is a view illustrating some of the components of the anti-slip unit of FIG. 4.

DETAILED DESCRIPTION

[0015] Hereinafter, some embodiments of the present disclosure will be described in detail with reference to the exemplary drawings. In adding the reference numerals to the components of each drawing, it should be noted

that the identical or equivalent component is designated by the identical numeral even when they are displayed on other drawings. Further, in describing the embodiment of the present disclosure, a detailed description of well-known features or functions will be ruled out in order not to unnecessarily obscure the gist of the present disclosure.

[0016] Hereinafter, the terms "upper, lower, front, rear, left, and right" may be defined as illustrated in the drawings. However, these are only for the convenience of description, and the terms "upper, lower, front, rear, left, and right" may be defined differently from those illustrated in the drawings.

[0017] FIG. 1 is a side view illustrating functional shoes according to an embodiment of the present disclosure, and FIG. 2 is a bottom view illustrating the functional shoes of FIG. 1.

[0018] The functional shoes according to this embodiment include a sole 1 and an anti-slip unit 10 coupled to the sole 1 so as to be detachable. The anti-slip unit 10 includes a plurality of spikes 100 movable therein.

[0019] The sole 1 may have a predetermined thickness and may include an inner space in which the anti-slip unit 10 is received. The sole 1 may include an anti-slip unit receiving recess in which the anti-slip unit 10 is received, and the anti-slip unit receiving recess may be concavely formed toward the interior of the sole 1 from the bottom of the sole 1.

[0020] The sole 1 is provided at the lower parts of the shoes that contact the ground. The sole 1, when contacting the ground, alleviates impacts (impacts experienced by a user) and increases frictional force with the ground to prevent slipping.

[0021] The anti-slip unit 10 may be installed at the front and the rear of the sole 1. The spikes 100 movably installed in the anti-slip unit 10 may be concealed in the interior of the anti-slip unit 10 or may be exposed outside the anti-slip unit 10.

[0022] In the related art, shoes include spikes to prevent slipping, but have a problem in that, when a user walks on a flat land, the spikes contact the flat land so that the user experiences discomfort. Meanwhile, crampons that are able to be attached to and detached from shoes also exist in the related art, but have a problem in that a user has the inconvenience of attaching the crampons to the shoes and then detaching the crampons from the shoes every time.

[0023] The functional shoes according to this embodiment are characterized in that the spikes for preventing slipping protrude from the sole or are concealed in the sole. More specifically, to enable a user to conveniently expose or conceal the spikes, the functional shoes according to this embodiment include a movable member installed in the sole so as to be rotatable and the spikes vertically moved by rotation of the movable member. Accordingly, the user may conveniently expose or conceal the spikes by rotating the movable member using a manipulation member, and thus user convenience may be improved.

[0024] Hereinafter, the anti-slip unit according to this embodiment will be described in detail.

[0025] FIG. 3 is a side sectional view illustrating the anti-slip unit of the functional shoes of FIG. 1. FIG. 4 is an exploded view illustrating the anti-slip unit of FIG. 3. FIG. 5 is a bottom view illustrating the movable member of the anti-slip unit of FIG. 4. FIG. 6 is a top view illustrating the movable member of the anti-slip unit of FIG. 4.

[0026] The anti-slip unit 10 may include the spikes 100, a main body 200, the movable member 300, elastic members 400, the manipulation member 500, and a fastening screw 600.

[0027] The spikes 100 may each include a pointed protrusion at a lower end thereof and may provide an anti-slip function for the shoes. The spikes 100 may be vertically movable, and may be concealed in the main body 200 or may protrude outside the main body 200.

[0028] The plurality of spikes 100 may be provided. Referring to FIG. 5, the plurality of spikes 100 may be arranged at predetermined angular intervals with respect to the center of rotation of the movable member 300.

[0029] Referring to FIG. 2, some of the plurality of spikes 100 may be disposed on a concentric circle far away from the center of the anti-slip unit 10, and the other spikes 100 may be disposed on a concentric circle close to the center of the anti-slip unit 10. The plurality of spikes 100 may be disposed on the concentric circles with the axis of rotation of the movable member 300 as the center.

[0030] The plurality of spikes 100 may improve an anti-slip effect.

[0031] Each of the spikes 100 may include a spike body 110 and a spike head 120.

[0032] The spike body 110 may have a cylindrical shape with a predetermined diameter and may include a conical protrusion at a lower end thereof. Accordingly, when the user with the shoes on walks in the state in which the spikes 100 protrude outside the main body 200, the pointed protrusions may contact the ground to increase frictional force with the ground, thereby preventing slipping.

[0033] The spike head 120 may be connected to an upper end of the spike body 110 and may have a larger diameter than the spike body 110. That is, a step may be formed between the spike head 120 and the spike body 110 due to the diameter difference.

[0034] The spike head 120 may have a larger diameter than spike through-holes 230 of the main body 200, which will be described below. Thus, the spike head 120 may prevent the corresponding spike 100 from escaping from the anti-slip unit 10 and may restrict the length by which the spike 100 protrudes.

[0035] The edge of the spike head 120 that is adjacent to the movable member 300 may be rounded. Accordingly, the spike head 120 may be prevented from being worn or damaged by contact with the movable member 300 and may smoothly move when the spike 100 moves while being pressed by rotation of the movable member

300.

[0036] Alternatively, the edge of the spike head 120 may be chamfered at an angle corresponding to the slope of an inclined surface, which will be described below, and thus a movement of the spike 100 may be smoothly guided when the movable member 300 rotates.

[0037] The spikes 100 may be formed of a wear-resistant material and may be machined to have a smooth surface. Accordingly, a frictional force that may be generated when the spikes 100 make contact with the movable member 300 or the main body 200 may be reduced, and the spikes 100 may be prevented from being damaged.

[0038] The main body 200 may have an inner space S in which the movable member 300 is received. The main body 200 may include a main body base 210 and a movable-member receiving part 220.

[0039] Referring to FIGS. 3 and 4, a peripheral portion of the upper surface of the main body base 210 may protrude upward to form the movable-member receiving part 220.

[0040] The movable-member receiving part 220 may be formed in a donut shape on the upper surface of the main body base 210. The outer circumferential surface of the movable-member receiving part 220 may be connected with the outer circumferential surface of the main body base 210, and the inner circumferential surface of the movable-member receiving part 200 may form the inner space S.

[0041] The movable-member receiving part 220 may have the same outer diameter as the main body base 210 to form the side surface of the main body 200.

[0042] The main body base 210 may have the spike through-holes 230 formed therein to connect the inner space S and the outside of the anti-slip unit 10.

[0043] The spike through-holes 230 may be vertically formed through the main body base 210 to correspond to the diameters of the spike bodies 110 and may guide vertical movements of the spikes 100 along the inner circumferential surfaces of the spike through-holes 230.

[0044] The same number of spike through-holes 230 as the spikes 100 may be formed.

[0045] The spike through-holes 230 may be formed in the main body base 210 to correspond to the positions where the plurality of spikes 100 are disposed.

[0046] Referring to FIG. 2, the plurality of spike through-holes 230 may be formed at predetermined angular intervals. Some of the plurality of spike through-holes 230 may be provided on a concentric circle far away from the center of the main body 200, and the other spike through-holes 230 may be provided on a concentric circle close to the center of the main body 200. The plurality of spike through-holes 230 may be located on the concentric circles with the axis of rotation of the movable member 300 as the center.

[0047] Elastic-member receiving recesses 240 may be concavely formed on an inner surface facing a concealment direction (the upper direction) among the inner surfaces of the main body 200 that define the inner space S, along the peripheries of the spike through-holes 230.

[0048] That is, the elastic-member receiving recesses 240 may be concavely formed on the upper surface of the main body base 210 along the peripheries of the spike through-holes 230. Steps may be formed between the elastic-member receiving recesses 240 and the spike through-holes 230 due to the diameter difference between the elastic-member receiving recesses 240 and the spike through-holes 230.

[0049] The elastic members 400 may be received in the elastic-member receiving recesses 240. The elastic members 400 may be inserted into and fixed in the elastic-member receiving recesses 240 and may apply elastic forces to the spikes 100 to move the spikes 100 in the concealment direction (the upper direction). For example, the elastic members 400 may be implemented with springs.

[0050] The elastic members 400 may be disposed in the plurality of elastic-member receiving recesses 240, respectively. The elastic members 400 may be springs.

[0051] A manipulation member through-hole 250 through which the manipulation member 500 passes may be vertically formed through the main body 200. That is, the manipulation member through-hole 250 may be vertically formed through the main body base 210 and may connect the inner space S and the outside of the main body 200.

[0052] The manipulation member through-hole 250 may have a diameter corresponding to the diameter of a manipulation member body 510, which will be described below, such that the manipulation member body 510 is rotatable in the state of being inserted into the manipulation member through-hole 250.

[0053] A thread for coupling the main body 200 to the sole 1 may be formed on the side surface of the main body 200. An external thread may be formed on the outer circumferential surface of the main body 200, and an internal thread may be formed on the inner circumferential surface of the anti-slip unit receiving recess of the sole 1. The external thread may be fastened to the internal thread.

[0054] For example, an external thread 260 may be formed on the side surface of the main body 200, and an internally threaded recess (not illustrated) may be formed on the inner circumferential surface of the anti-slip unit receiving recess of the sole 1.

[0055] Accordingly, the anti-slip unit 10 may be removably coupled to the sole 1 and may thus be removed from the sole 1 in an easy and simple manner when necessary.

[0056] The movable member 300 may be provided in the inner space S of the main body 200 so as to be movable. The movable member 300 may move to allow the spikes 100 to be moved.

[0057] The movable member 300 may move between a first position where at least parts of the spikes 100 are concealed in the inner space S and a second position where the spikes 100 are exposed outside the main body

200 and the exposed states of the spikes 100 are maintained.

[0058] The direction in which the spikes 100 are concealed in the inner space S may be defined as a concealment direction (the upper direction in the drawings), and the direction in which the spikes 100 are exposed outside the main body 200 may be defined as an exposure direction (the lower direction in the drawings). The exposure direction is opposite to the concealment direction.

[0059] In the first position, the movable member 300 allows the spikes 100 to move in the concealment direction, or in order to maintain the concealed states of the spikes 100, the movable member 300 does not allow the spikes 100 having already moved in the concealment direction to move in the exposure direction.

[0060] While moving from the first position to the second position, the movable member 300 allows or forces the spikes 100 to move in the exposure direction.

[0061] In the second position, the movable member 300 does not allow the spikes 100 having already moved in the exposure direction to move in the concealment direction, in order to maintain the exposed states of the spikes 100.

[0062] The movable member 300 may include a non-contact area and a contact area. The non-contact area may be located above the spikes 100 in the concealment direction with respect to the second position, and although the spikes 100 move in the concealment direction, the non-contact area may not make contact with the spikes 100 while the spikes 100 move at least a predetermined distance. The contact area may make contact with the spikes 100 having already moved in the exposure direction.

[0063] The first position, in which the non-contact area is located on the spikes 100, may be defined as a position where the spikes 100 are allowed to move in the concealment direction through the non-contact area.

[0064] The second position, in which the contact area is located on the spikes 100, may be defined as a position where the spikes 100 having already moved in the exposure direction are not allowed to move in the concealment direction due to the contact with the contact area.

[0065] The movable member 300 may make contact with the spikes 100 while moving from the first position to the second position and may press and move the spikes 100 in the exposure direction when making contact with the spikes 100.

[0066] The structure of the movable member 300 for performing the function will be described below in detail.

[0067] The movable member 300 may be formed in a disc shape and may be provided in the inner space S so as to be rotatable about an axis oriented in a direction corresponding to the vertical direction. The movable member 300 may rotate between the first position and the second position.

[0068] Here, the direction corresponding to the vertical direction may be defined as including the vertical direction or a direction that is inclined at a predetermined angle with respect to the vertical direction but can be approximately recognized as the vertical direction.

[0069] Referring to FIGS. 4 to 6, the movable member 300 may include spike receiving recesses 310 and 330 and inclined portions 320 and 340.

[0070] The spike receiving recesses 310 and 330 may be concavely formed upward from the bottom of the movable member 300. The spike receiving recesses 310 and 330 may have a diameter larger than the outer diameter of the spike body 110, and at least parts of the spikes 100 may be received in the spike receiving recesses 310 and 330.

[0071] When the spikes 100 are located in the spike receiving recesses 310 and 330, at least parts of the spikes 100 may be concealed in the inner space S. That is, when the movable member 300 is located such that the spikes 100 are located in the spike receiving recesses 310 and 330, the spikes 100 may be allowed to move in the concealment direction.

[0072] The non-contact area that does not make contact with the spikes 100 while the spikes 100 move at least the predetermined distance although the spikes 100 move in the concealment direction may be defined as an area provided by the spike receiving recesses 310 and 330.

[0073] The first position, in which the spikes 100 are allowed to move in the concealment direction (the upper direction in the drawings) through the non-contact area, may be defined as the position of the movable member 300 that allows the spike receiving recesses 310 and 330 of the movable member 300 and the spikes 100 to be vertically located on the same line. Alternatively, the first position may be defined as the position of the movable member 300 that allows the spikes 100 to be located in the spike receiving recesses 310 and 330.

[0074] Meanwhile, when the movable member 300 is located in the first position, the spikes 100 may be forcibly moved in the concealment direction by the elastic members 400. Accordingly, the spikes 100 may be moved in the concealment direction to the position where movements of the spikes 100 are restricted by the movable member 300 or the sole 1, and may be concealed in the main body 200.

[0075] Areas adjacent to the spike receiving recesses 310 and 330 may be recessed to form the inclined portions 320 and 340 on a surface of the movable member 300 that faces the exposure direction (the lower direction in the drawings).

[0076] The inclined portions 320 and 340 may include first inclined surfaces 321 and 341 that are brought into contact with the spikes 100 while the movable member 300 moves from the first position to the second position.

[0077] The inclined portions 320 and 340 may include first seating surfaces 322 and 342 on which the spikes 100 are seated while the movable member 300 is located in the second position.

[0078] That is, the second position may be defined as

the position of the movable member 300 in which the spikes 100 are located on the first seating surfaces 322 and 342.

[0079] The inclined portions 320 and 340 may include second inclined surfaces 323 and 343 that are brought into contact with the spikes 100 while the movable member 300 moves from the second position to a third position and that move the spikes 100 in the exposure direction further than when the movable member 300 is in the second position.

[0080] The inclined portions 320 and 340 may include second seating surfaces 324 and 344 on which the spikes 100 are seated while the movable member 300 is located in the third position.

[0081] That is, the third position may be defined as the position of the movable member 300 in which the spikes 100 are located on the second seating surfaces 324 and 344.

[0082] The contact area that prevents the spikes 100 having already moved in the exposure direction from moving in the concealment direction may be defined as an area provided by the inclined portions 320 and 340.

[0083] When the movable member 300 located in the first position rotates toward the second position, the spikes 100 are brought into contact with the first inclined surfaces 321 and 341. The movable member 300 moves the spikes 100 in the exposure direction (the lower direction in the drawings) by the pressure according to the contact. At this time, the spikes 100 move in the exposure direction while moving along the first inclined surfaces 321 and 341.

[0084] When the movable member 300 moves to the second position, the spikes 100 are located on the first seating surfaces 322 and 342. At this time, the first seating surfaces 322 and 342 prevent the spikes 100 from moving in the concealment direction.

[0085] When the movable member 300 rotates toward the third position from the second position, the spikes 100 are brought into contact with the second inclined surfaces 323 and 343. The movable member 300 further moves the spikes 100 in the exposure direction (the lower direction in the drawings) by the pressure according to the contact. At this time, the spikes 100 further move in the exposure direction while moving along the second inclined surfaces 323 and 343.

[0086] When the movable member 300 moves to the third position, the spikes 100 are located on the second seating surfaces 324 and 344, and the second seating surfaces 324 and 344 prevent the spikes 100 from moving in the concealment direction.

[0087] That is, when the movable member 300 is located in the first position, the spikes 100 are allowed to be concealed in the inner space S. At this time, the entire spikes 100 do not have to be concealed in the main body 200. However, the spikes 100 have only to be further concealed in the main body 200 than when the movable member 300 is located in the second position or the third position.

[0088] When the movable member 300 is located in the second position, the spikes 100 are maintained in the exposed state, and the inclined portions 320 and 340, more specifically, the first seating surfaces 322 and 342 prevent the spikes 100 from moving in the concealment direction.

[0089] When the movable member 300 is located in the third position, the spikes 100 are maintained in the exposed state, and the inclined portions 320 and 340, more specifically, the second seating surfaces 324 and 344 prevent the spikes 100 from moving in the concealment direction. At this time, the length by which the spikes 100 protrude outside the main body 200 is longer than that when the movable member 300 is located in the second position.

[0090] The spike receiving recesses 310 and 330 may be concavely formed in higher positions than the first seating surfaces 332 and 342, and therefore all or part of the spikes 100 may be allowed to be concealed in the inner space S of the main body 200.

[0091] In contrast, when the movable member 300 moves from the third position to the second position, the spikes 100 are allowed to move a predetermined distance in the concealment direction. At this time, the spikes 100 may be forcibly moved in the concealment direction by the elastic members 400. The predetermined distance by which the spikes 100 are allowed to move in the concealment direction may correspond to the height difference between the first seating surfaces 322 and 342 and the second seating surfaces 324 and 344.

[0092] When the movable member 300 is located in the second position, the first seating surfaces 322 and 342 prevent the spikes 100 from moving in the concealment direction.

[0093] The above-described method may be applied even when the movable member 300 moves from the second position to the first position.

[0094] Although it has been exemplified in this embodiment that the seating surfaces are implemented with two steps, the seating surfaces may be implemented with a larger number of steps. The length by which the spikes 100 protrude outside the main body 200 may be more finely adjusted with an increase in the number of steps that implement the seating surfaces.

[0095] Although it has been exemplified in this embodiment that the spike receiving recesses 310 and 330 of the movable member 300 are concavely formed upward from the bottom of the movable member 300, spike holes may be vertically formed through the movable member 300. In this case, the spikes 100 may be restricted from moving in the concealment direction by the contact of the spike heads 120 with the inner surface of the sole 1 that faces the anti-slip unit 10 coupled to the sole 1 of the shoes.

[0096] The above-configured movable member 300 enables stepwise adjustment of the length by which the spikes 100 protrude outside the main body 200. Even when the spikes 100 are located on the inclined surfaces,

the length by which the spikes 100 protrude outside the main body 200 may be changed. However, it is difficult to stably support the spikes 100 such that the spikes 100 do not move in the concealment direction. As the seating surfaces are implemented with multiple steps, the spikes 100 may be stably supported in the state of protruding outside the main body 200 by different lengths.

[0097] FIG. 7 is a view illustrating some of the components of the anti-slip unit of FIG. 4, where FIG. 7 illustrates the movable member, the manipulation member, and the fastening screw among the components of the anti-slip unit of FIG. 4.

[0098] The manipulation member 500 may include the manipulation member body 510 and a manipulation member head 520.

[0099] The manipulation member body 510 may have a smooth outer circumferential surface and may be rotated in the state of being inserted into the manipulation member through-hole 250 of the main body 200.

[0100] The manipulation member head 520 may be connected to one side of the manipulation member body 510 that faces the concealment direction (the upper direction in the drawing). The manipulation member head 520 may be fixedly inserted into a manipulation member receiving hole 350 of the movable member 300. The manipulation member head 520 may have, in the center thereof, a recess that is open in the concealment direction and to which the fastening screw 600 is threaded.

[0101] An external thread may be formed on the outer circumferential surface of the manipulation member head 520, and an internal thread may be formed on the inner circumferential surface of the manipulation member receiving hole 350 of the movable member 300. The external thread may be fastened to the internal thread.

[0102] Referring to FIG. 7, a manipulation member head external-thread 521 may be formed on the outer circumferential surface of the manipulation member head 520, and a manipulation member receiving hole internal-thread 351 may be formed on the inner circumferential surface of the manipulation member receiving hole 350.

[0103] An external thread may be formed on the outer circumferential surface of the fastening screw 600, and an internal thread may be formed on the inner circumferential surface of a manipulation member head recess 522 of the manipulation member head 520 into which the fastening screw 600 is inserted. The external thread may be fastened to the internal thread.

[0104] Referring to FIG. 7, a fastening screw thread 611 may be formed on the outer circumferential surface of a fastening screw body 610, and a manipulation member head internal-thread 523 may be formed on the inner circumferential surface of the manipulation member head recess 522.

[0105] When the manipulation member 500 is screwed into the movable member 300, the manipulation member 500 may be released from the movable member 300 as the movable member 300 is repeatedly rotated in one direction and an opposite direction. To prevent this problem, the fastening screw 600 is additionally provided. The fastening screw 600 is threaded into the manipulation member head recess 522 of the manipulation member head 520 through a fastening screw recess 360 of the movable member 300. At this time, the fastening screw 600 may be threaded into the manipulation member head 520 in the opposite direction to the direction in which the manipulation member head 520 is screwed into the movable member 300, and thus the manipulation member 500 may be effectively prevented from being released from the movable member 300.

[0106] The manipulation member body 510 may have a wrench recess formed therein, into which a wrench is inserted. The wrench recess may be open in the exposure direction (the lower direction in the drawing). The wrench recess may be implemented with a hexagonal recess 511.

[0107] The spikes 100 of the above-configured anti-slip unit 10 may be pushed by the movable member 300 to protrude outside the main body 200 and may be concealed in the main body 200 by the elastic members 400 when the force exerted on the spikes 100 by the movable member 300 is released.

[0108] A user may insert an Allen wrench into the hexagonal recess 511 and may rotate the manipulation member 500 in one direction to rotate the movable member 300 in the one direction, thereby allowing the spikes 100 to protrude outside the main body 200. In contrast, the user may rotate the manipulation member 500 in the opposite direction with the Allen wrench inserted into the hexagonal recess 511 to rotate the movable member 300 in the opposite direction, thereby allowing the spikes 100 to be concealed in the main body 200. As described above, the user may expose or conceal the spikes 100 through the simple and convenient manipulation, and thus user convenience may be improved.

[0109] Furthermore, the manipulation member 500 and the movable member 300 are doubly coupled with each other by the fastening screw 600, and thus the coupling force between the manipulation member 500 and the movable member 300 may be enhanced. Accordingly, the anti-slip unit 10 may have high durability to prevent the manipulation member 500 and the movable member 300 from being separated from each other even though the user uses the anti-slip unit 10 while repeatedly rotating the movable member 300 in the one direction and the opposite direction.

[0110] According to the present disclosure, the spikes are moved by a movement of the movable member that is provided in the inner space of the main body so as to be movable, and the movable member is moved by using the manipulation member without separating the anti-slip unit from the shoes. Thus, the above-configured anti-slip unit of the present disclosure enables a user to conveniently switch between a crampon function and a normal shoe function without taking off the shoes.

[0111] In addition, according to the present disclosure, the movable member is provided in the inner space of

the main body so as to be movable, and the spikes are provided in the inner space so as to be movable along the spike through-hole. Accordingly, the anti-slip unit may be protected from the outside of the shoes and may be structurally stable, and thus the durability of the anti-slip unit may be improved.

[0112] Hereinabove, although the present disclosure has been described with reference to exemplary embodiments and the accompanying drawings, the present disclosure is not limited thereto, but may be variously modified and altered by those skilled in the art to which the present disclosure pertains without departing from the spirit and scope of the present disclosure claimed in the following claims.

Claims

1. An anti-slip unit included in soles of shoes to provide an anti-slip function for the shoes, the anti-slip unit comprising:

   a main body including an inner space and a spike through-hole configured to connect the inner space and the outside;
   a spike provided in the inner space so as to be movable along the spike through-hole; and
   a movable member provided in the inner space so as to be movable and configured to move to allow the spike to be moved,
   wherein the movable member moves between a first position in which at least part of the spike is concealed in the inner space and a second position in which the spike is exposed outside the main body and an exposed state of the spike is maintained.

2. The anti-slip unit of claim 1, wherein a direction in which the spike is concealed in the inner space is referred to as a concealment direction, and a direction in which the spike is exposed outside the main body is referred to as an exposure direction, the exposure direction being opposite to the concealment direction, and
   wherein the movable member:

   in the first position, allows the spike to move in the concealment direction, or does not allow the spike having already moved in the concealment direction to move in the exposure direction, in order to maintain a concealed state of the spike;
   allows or forces the spike to move in the exposure direction while the movable member moves from the first position to the second position; and
   in the second position, does not allow the spike having already moved in the exposure direction to move in the concealment direction, in order to maintain the exposed state of the spike.

3. The anti-slip unit of claim 1, wherein a direction in which the spike is concealed in the inner space is referred to as a concealment direction, and a direction in which the spike is exposed outside the main body is referred to as an exposure direction, the exposure direction being opposite to the concealment direction,
   wherein the movable member includes a non-contact area located above the spike in the concealment direction with respect to the second position and configured not to make contact with the spike while the spike moves at least a predetermined distance although the spike moves in the concealment direction and a contact area configured to make contact with the spike having already moved in the exposure direction,
   wherein the first position, in which the non-contact area is located on the spike, is a position where the spike is allowed to move in the concealment direction through the non-contact area, and
   wherein the second position, in which the contact area is located on the spike, is a position where the spike having already moved in the exposure direction is not allowed to move in the concealment direction due to contact with the contact area.

4. The anti-slip unit of claim 3, wherein the movable member makes contact with the spike while moving from the first position to the second position and moves the spike in the exposure direction by pressure according to the contact when making contact with the spike.

5. The anti-slip unit of claim 4, wherein an inclined surface for forcing the spike to move in the exposure direction is formed on at least one of one portion of the spike and one portion of the movable member that make contact with each other while the movable member moves from the first position to the second position, and
   wherein the inclined surface is formed such that part of force exerted on the spike by the movable member during the contact is applied in the exposure direction.

6. The anti-slip unit of claim 4, wherein the movable member has a spike receiving recess formed on one surface facing the exposure direction, and the spike is received in the spike receiving recess when moving in the concealment direction,
   wherein an area adjacent to the spike receiving recess is recessed to form an inclined portion, and
   wherein the inclined portion includes:

   a first inclined surface configured to make contact with the spike while the movable member moves from the first position to the second position;

a first seating surface on which the spike is seated while the movable member is located in the second position;
a second inclined surface configured to make contact with the spike while the movable member moves from the second position to the third position and configured to further move the spike in the exposure direction than when the movable member is in the second location; and
a second seating surface on which the spike is seated while the movable member is located in the third position;

7. The anti-slip unit of claim 3, wherein an elastic member is provided between the main body and the spike to forcibly move the spike in the concealment direction when the movable member is in the first position, and
wherein an elastic-member receiving recess is concavely formed on an inner surface facing the concealment direction among inner surfaces of the main body that define the inner space, along a periphery of the spike through-hole, and the elastic member is disposed in the elastic-member receiving recess.

8. The anti-slip unit of claim 1, further comprising:
a manipulation member configured to move the movable member from the first position to the second position or from the second position to the first position.

9. The anti-slip unit of claim 1, wherein the movable member having a disc shape is provided in the inner space so as to be rotatable about an axis oriented in a direction corresponding to a vertical direction and rotates between the first position and the second position.

10. The anti-slip unit of claim 9, further comprising:

a manipulation member configured to pass through the main body and coupled with the movable member; and
a fastening screw threaded into the manipulation member and configured to cause the movable member and the manipulation member to be coupled with each other.

11. The anti-slip unit of claim 10, wherein the movable member has a manipulation member receiving hole formed at the center of a surface facing an exposure direction where the center of rotation of the movable member is located and a fastening screw recess formed on a surface facing a concealment direction to connect to the manipulation member receiving hole, the fastening screw being inserted into the fastening screw recess,
wherein the main body has a manipulation member through-hole through which a manipulation member passes, the through-hole being vertically formed through the main body, and
wherein the manipulation member includes:

a manipulation member body installed in the manipulation member through-hole of the main body so as to be rotatable; and
a manipulation member head connected to one side of the manipulation member body that faces the concealment direction and fixedly inserted into the manipulation member receiving hole of the movable member, the manipulation member head having, in the center, a recess that is open in the concealment direction and to which the fastening screw is threaded.

12. The anti-slip unit of claim 11, wherein the manipulation member body has a wrench recess into which a wrench is inserted, the wrench recess being open in the exposure direction.

13. Functional shoes for preventing slipping, comprising:

a sole having a space inside;
a spike provided in the interior of the sole so as to be movable in a vertical direction along a spike through-hole that is formed in the sole to connect the interior of the sole and the outside; and
a movable member provided in the interior of the sole so as to be movable and configured to move to allow the spike to be moved in the vertical direction,
wherein the movable member moves between a first position in which at least part of the spike is concealed in the interior of the sole and a second position in which the spike is exposed outside the sole and an exposed state of the spike is maintained.

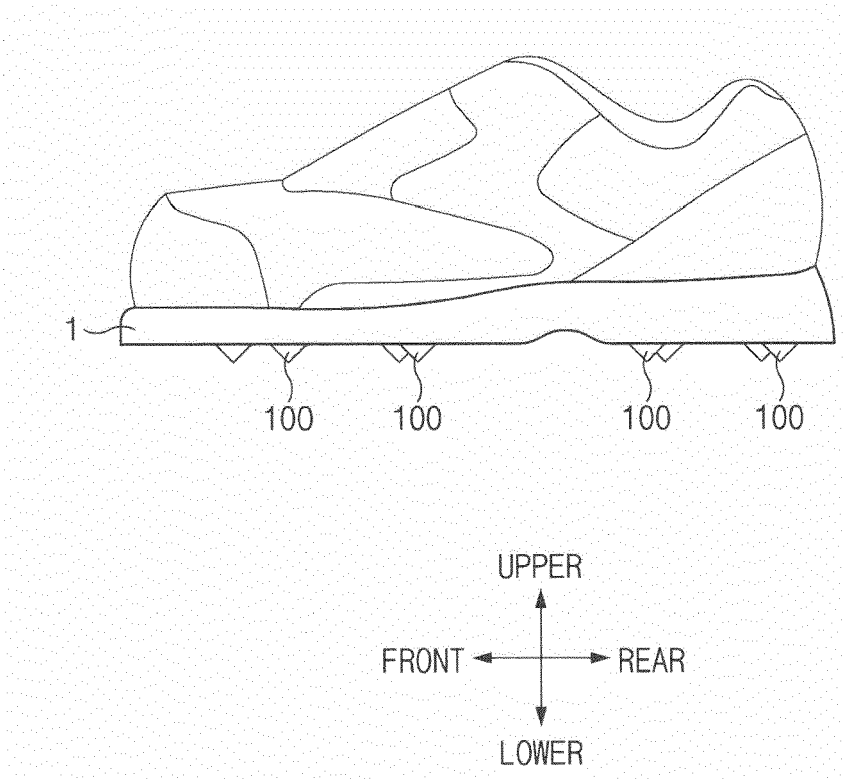

FIG.1

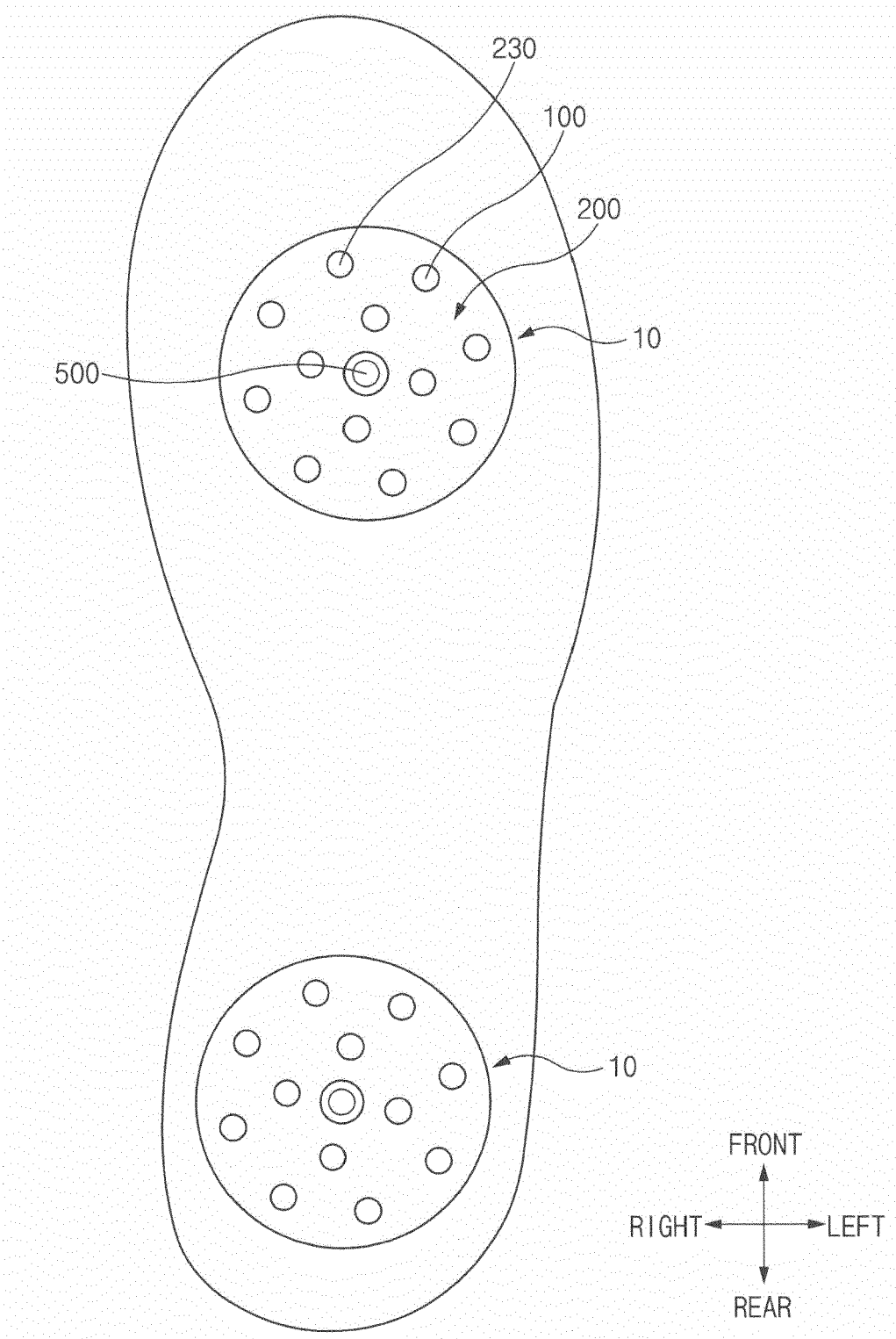

FIG.2

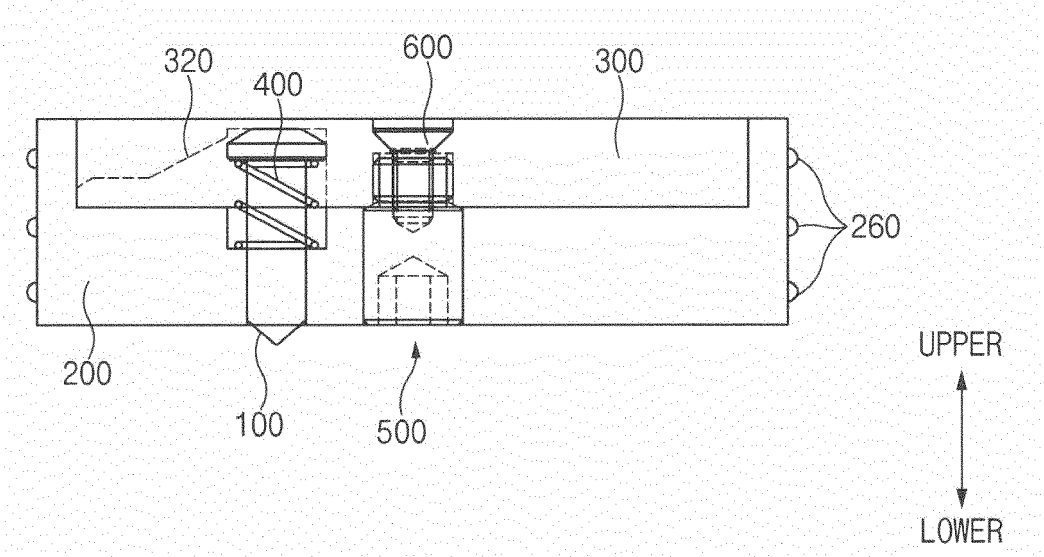

FIG.3

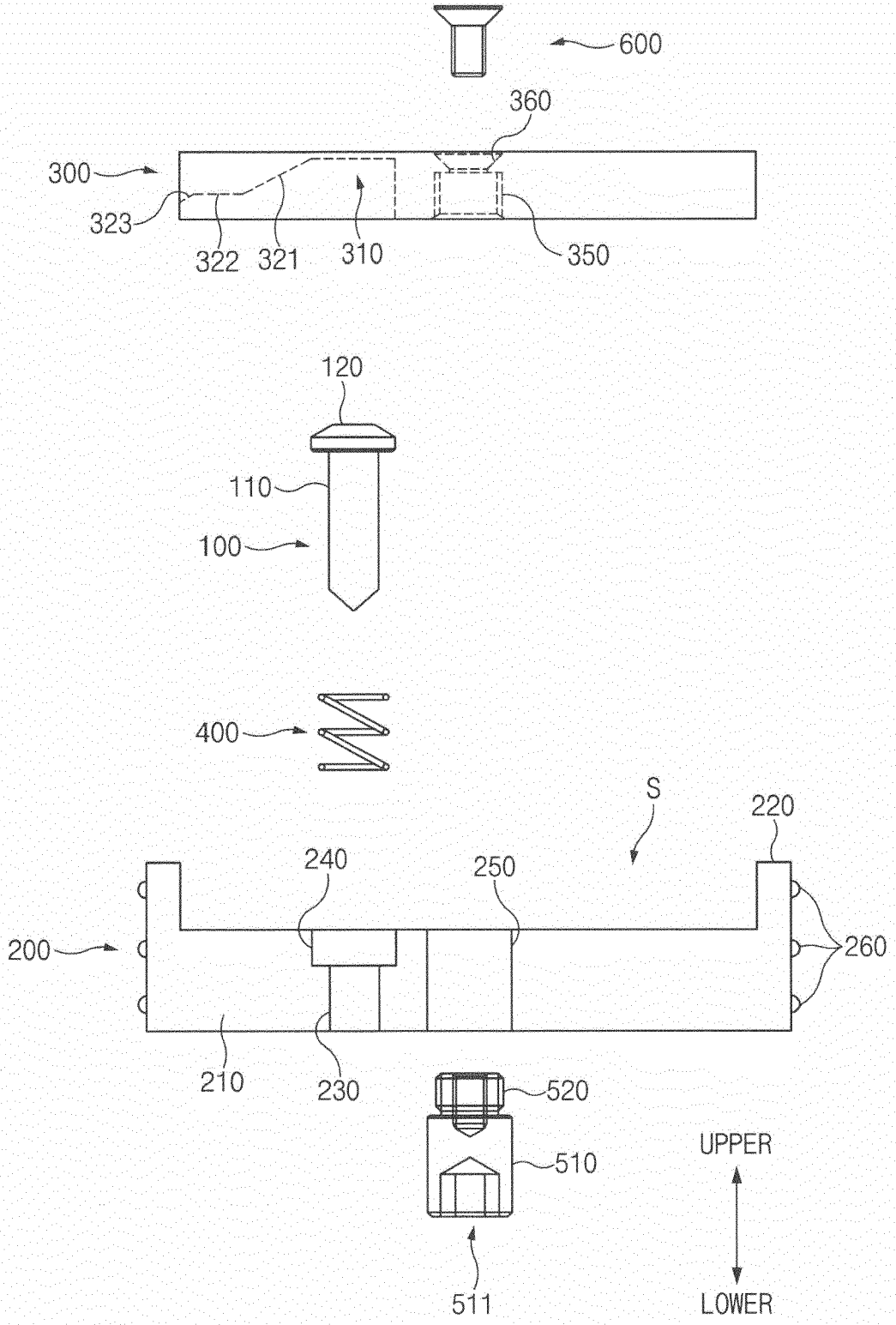
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FIG.4

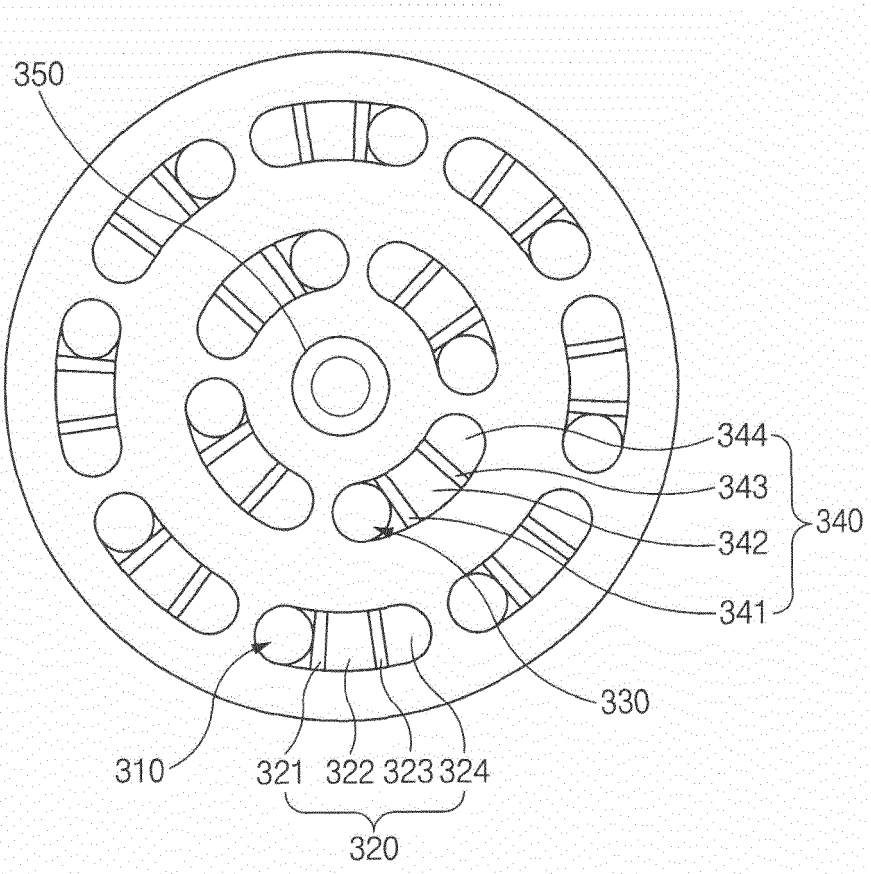

FIG.5

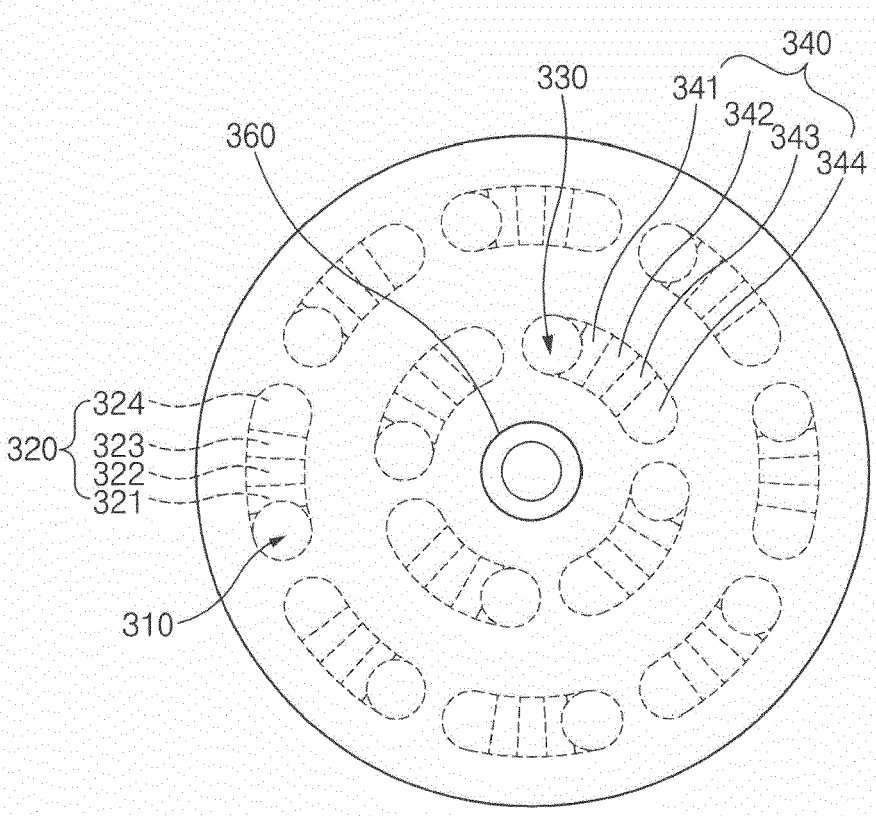

FIG.6

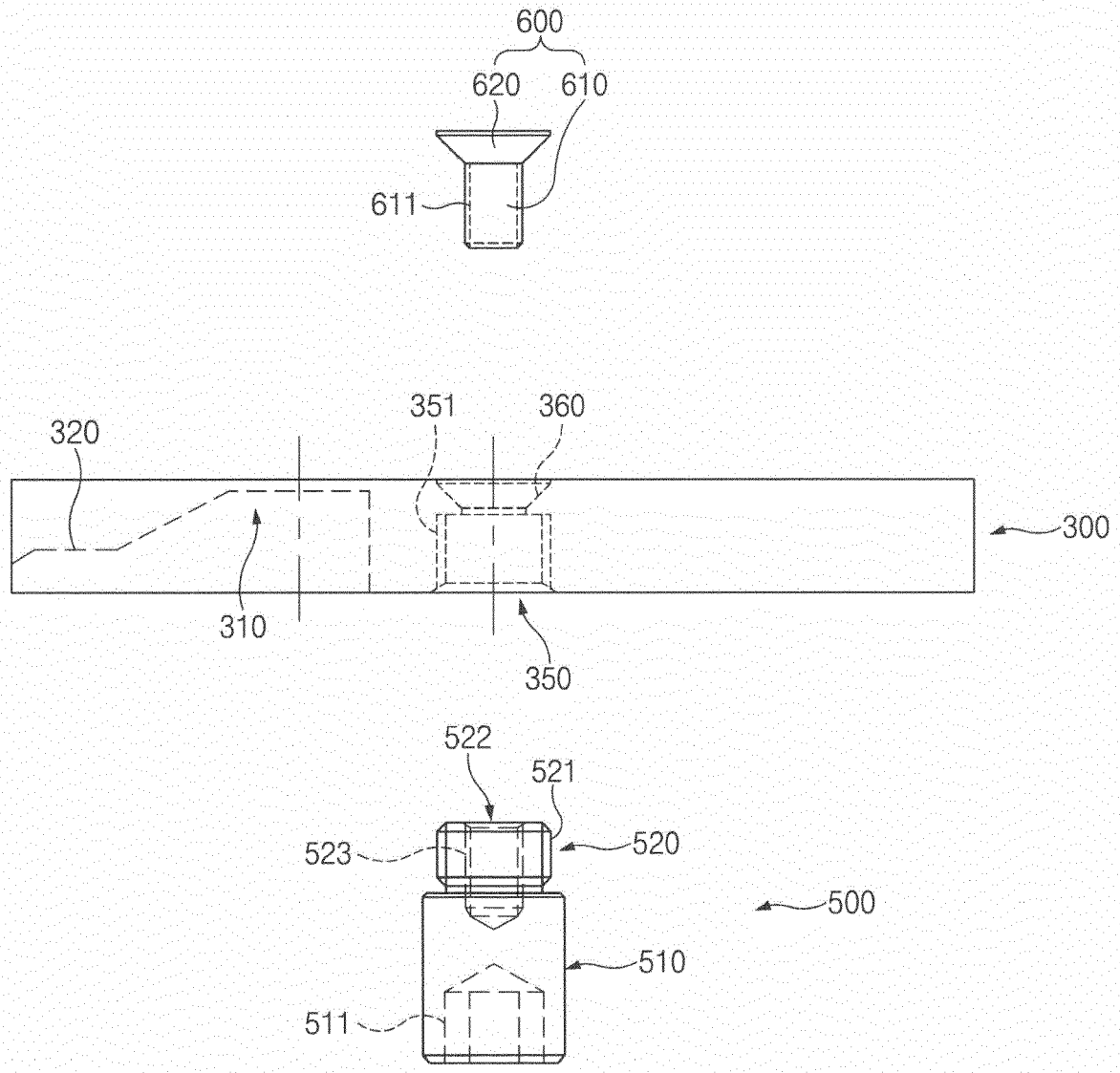
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FIG.7

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EUROPEAN SEARCH REPORT

Application Number
EP 19 18 4045

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	1 November 2019	Gkionaki, Angeliki

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01-11-2019

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