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

(11) **EP 4 272 842 A1**

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
08.11.2023 Bulletin 2023/45

(21) Application number: **21915447.3**

(22) Date of filing: **14.10.2021**

(51) International Patent Classification (IPC):
A63B 23/20 *(2006.01)* ***A63B 21/00*** *(2006.01)*
A63B 21/02 *(2006.01)*

(52) Cooperative Patent Classification (CPC):
A63B 21/00; A63B 21/02; A63B 23/20

(86) International application number:
PCT/KR2021/014154

(87) International publication number:
WO 2022/145649 (07.07.2022 Gazette 2022/27)

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

(30) Priority: **31.12.2020 KR 20200188695**
07.07.2021 KR 20210088849

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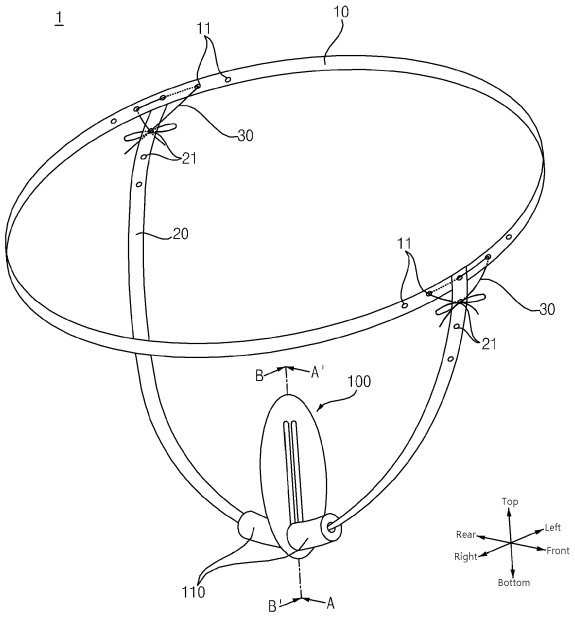
(54) PELVIC FLOOR MUSCLE EXERCISE APPARATUS

(57) A pelvic floor muscle exercise machine according to the present invention comprises: a waist belt fixed to a user's waist; a support belt fixed to the waist belt; and an insertion device provided on the support belt. The insertion device comprises: an insertion part inserted into and extracted from the user's vagina; a rod extending from the insertion portion, penetrated by the support belt so as to be slidable; and guiding the movement of the insertion part; and an elastic member supported by the rod, and providing elastic restoring force to the insertion part by elastically transforming in accordance with the relative movement of the insertion part with respect to the support belt.

FIGs. 1



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Description

Technical Field

[0001] The present invention relates to a pelvic floor muscle exercise machine.

Background Art

[0002] The pelvic floor muscles consist of two layers of the perineum and the pelvic diaphragm. The pelvic floor muscles are a collection of muscles efficiently forming the pelvic floor, and they support the organs inside the lower portion of the pelvis, such as the bladder, the womb, the rectum, and the like. In addition, they play an important role in breathing, bowel movement, urination, and delivery.

[0003] As known methods for preventing and treating the perineal damage occurring by an unexpected accident or delivery, there are Kegel exercises and a Femcon therapy. The Kegel exercises are performed by lifting and holding and then relaxing the pubococcygeus muscle, and the Femcon therapy is performed by inserting a weight into the vagina to induce the contraction and relaxation of the pelvic floor muscles.

[0004] Further, there are various methods for exercising the pelvic floor muscles, and perineum contraction as one of the methods helps the pelvic floor muscles exercised. Wearing a tight belt and/or abdominal pressure belt helps the pelvic floor muscles strengthened.

[0005] The pelvic floor muscles including the pubococcygeus muscle, the puborectalis, the iliococcygeus, and the like are portions that are not often used normally and anatomically hidden deeply inside the human body, and accordingly, it is hard to massage the portions by others. To exercise the pelvic floor muscles, therefore, the contraction and relaxation of the pelvic floor muscles should be intentionally performed.

[0006] Since the contraction and relaxation of the pelvic floor muscles are performed directly by a person who wants to exercise his or her pelvic floor muscles, the pelvic floor muscle exercises are forcedly or semi-forcedly done through an auxiliary machine, so that the efficiencies of the exercises are improved.

Disclosure of the Invention

Technical Problems

[0007] It is an object of the present invention to provide a pelvic floor muscle exercise machine that is configured to be used to contract and relax the muscles around the pelvis.

[0008] It is another object of the present invention to provide a pelvic floor muscle exercise machine that is capable of allowing a user to do accurate and efficient exercises to thus prevent the user from being hurt.

Technical Solutions

[0009] To accomplish the above-mentioned objects, according to the present invention, a pelvic floor muscle exercise machine may include a waist belt fixed to a user's waist; a support belt fixed to the waist belt; and an insertion device provided on the support belt, wherein the insertion device may include: insertion parts inserted into and escaping from the user's vagina; a rod extending from the insertion parts, slidably passing through the support belt, and guiding the movements of the insertion parts; and an elastic member supported by the rod and elastically deformed by the relative movements of the insertion parts with respect to the support belt to provide an elastic restoring force to the insertion parts.

[0010] The insertion device may further include a slot passing through the insertion parts and allowing the support belt to be located at the inside thereof, and the rod and the elastic member may be located inside the slot.

[0011] The insertion device may further include a guide holder disposed on the support belt, and the guide holder may include a rod guide adapted to insert the rod thereinto and guide the movement of the rod and an insertion part guide protruding radially from the outer peripheral surface of the rod guide, supporting the inner peripheral surfaces of the insertion parts forming the slot, and guiding the movements of the insertion parts.

[0012] The rod may extend downward from the underside of the insertion parts, and the elastic member may be located on the opposite side to the insertion parts with respect to the support belt, while having top end fixed to the underside of the support belt and underside end fixed to the underside of the rod.

[0013] The pelvic floor muscle exercise machine may further include a mounting stand located under the support belt to support the support belt thereagainst, the mounting stand including a support plate grasped by the user or seated on an installation surface, a pulling strap pulled by the user and having one end fixed to the underside of the insertion parts, and a strap locker formed on the support plate to lock the pulling strap thereonto, whereby when the other end of the pulling strap is pulled by the user, the pulling strap pulls the insertion parts downward.

[0014] The pelvic floor muscle exercise machine may further include an elastic ring configured to allow the other end of the pulling strap to be fixed to top thereof, while allowing the left and right sides thereof to be pressurized against the user's thighs, whereby when the elastic ring is elastically deformed by the user, the other end of the pulling strap is pulled so that the pulling strap pulls the insertion parts downward.

[0015] The pelvic floor muscle exercise machine may further include an abdominal pressure belt adapted to surround the user's abdomen and waist and thus raise the user's abdominal pressure.

Advantageous Effectiveness

[0016] According to the embodiments of the present invention, the user pushes or pulls the insertion parts inserted into the vagina to the outside or inside of the vagina, thereby performing the pelvic floor muscle exercises.

[0017] According to the embodiments of the present invention, if the user rightly relaxes and contracts the pelvic floor muscles, the insertion parts inserted into the vagina move, and the movements of the insertion parts are checked by the visual and haptic senses of the user, thereby making the user check whether right muscles are used for herself.

[0018] According to the embodiments of the present invention, after the exercise is done, the insertion parts are automatically returned to the position at which the exercise starts by means of the elastic force of the elastic member, thereby easily repeating the pelvic floor muscle exercises.

[0019] According to the embodiments of the present invention, the elastic force allowing the insertion parts to be returned to their original position is generated from the elastic member for elastically supporting the insertion parts, and the elastic force is provided as the load required for the pelvic floor muscle exercise.

[0020] According to the embodiments of the present invention, the elastic member is prevented from coming into direct contact with the user's body, thereby avoiding the user from being hurt.

[0021] According to the embodiments of the present invention, the abdominal pressure belt is provided to raise the user's abdominal pressure, thereby improving the effectiveness of the pelvic floor muscle exercises.

Brief Description of Drawings

[0022]

FIG. 1 is a perspective view showing a pelvic floor muscle exercise machine according to an embodiment of the present invention.

FIG. 2 is a perspective view showing a state in which an abdominal pressure belt is additionally provided for the pelvic floor muscle exercise machine of FIG. 1.

FIG. 3 is an exemplary view showing a state in which the pelvic floor muscle exercise machine of FIG. 1 is inserted into a user's vagina.

FIG. 4 is a sectional view taken along the line A-A' of FIG. 1.

FIG. 5 is a sectional view taken along the line B-B' of FIG. 1.

FIG. 6 is a bottom view showing an upper insertion part of the pelvic floor muscle exercise machine of FIG. 1.

FIG. 7 is a top view showing a lower insertion part of the pelvic floor muscle exercise machine of FIG. 1.

FIG. 8 is an exploded perspective view showing a guide holder of the pelvic floor muscle exercise machine of FIG. 1.

FIG. 9 is a sectional view showing another arrangement example of an elastic member of the pelvic floor muscle exercise machine of FIG. 1.

FIG. 10 is a perspective view showing a pelvic floor muscle exercise machine according to another embodiment of the present invention.

FIG. 11 is a sectional view showing a portion of the pelvic floor muscle exercise machine of FIG. 10.

FIG. 12 is a perspective view showing a mounting stand for the pelvic floor muscle exercise machine according to the embodiments of the present invention.

FIG. 13 is a perspective view showing a state in which an elastic ring is additionally provided for the pelvic floor muscle exercise machine of FIG. 12.

FIG. 14 is a side view showing a use state of the elastic ring of FIG. 13.

Mode for Invention

[0023] Before the present invention is disclosed and described, it is to be understood that the disclosed embodiments are merely exemplary of the invention, which can be embodied in various forms replacing the embodiments and drawings of the present invention at the time point when the present invention is filed.

[0024] The corresponding parts or components in the embodiments of the present invention are indicated by corresponding reference numerals or symbols. The thicknesses of the shapes or the sizes of the components shown in the drawing may be magnified for the clarity and convenience of the description.

[0025] The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting. The term 'a' or 'an', as used herein, are defining as one or more than one. The term 'including' and/or 'having', as used herein are intended to refer to the above features, numbers, steps, operations, elements, parts or combinations, and it is to be understood that the terms are not intended to preclude the presence of one or more features, numbers, steps, operations, elements, parts or combinations and added possibilities.

[0026] Terms, such as the first, and the second, may be used to describe various elements, but the elements should not be restricted by the terms. The terms are used to only distinguish one element from the other element. For example, a first element may be named a second element without departing from the scope of the present invention. Likewise, a second element may be named a first element. A term 'and/or' includes a combination of a plurality of relevant and described items or any one of a plurality of related and described items.

[0027] Terms as used herein, such as 'top', 'bottom', 'upper', and 'lower' are defined with respect to the drawings, and accordingly, the shapes and positions of the

components are not limited by the terms.

[0028] Hereinafter, embodiments of the present invention will be explained in detail with reference to the attached drawings.

[0029] FIG. 1 is a perspective view showing a pelvic floor muscle exercise machine according to an embodiment of the present invention. FIG. 2 is a perspective view showing a state in which an abdominal pressure belt is additionally provided for the pelvic floor muscle exercise machine of FIG. 1. FIG. 3 is an exemplary view showing a state in which the pelvic floor muscle exercise machine of FIG. 1 is inserted into a user's vagina. FIG. 4 is a sectional view taken along the line A-A' of FIG. 1. FIG. 5 is a sectional view taken along the line B-B' of FIG. 1. FIG. 6 is a bottom view showing an upper insertion part of the pelvic floor muscle exercise machine of FIG. 1. FIG. 7 is a top view showing a lower insertion part of the pelvic floor muscle exercise machine of FIG. 1. FIG. 8 is an exploded perspective view showing a guide holder of the pelvic floor muscle exercise machine of FIG. 1.

[0030] Referring to FIGs. 1 to 8, a pelvic floor muscle exercise machine 1 includes straps 10, 20, and 30 worn on a user's body and an insertion device 100 configured to be inserted into the user's body.

[0031] As the straps 10, 20, and 30 are worn on the user's body, the insertion device 100 comes into close contact with her body or is separated from her body by a given distance.

[0032] In specific, the straps 10 and 20 include the waist belt 10 fixed to the user's waist and the support belt 20 whose both ends are fixed to the waist belt 10 to mount the insertion device 100 thereon. The support belt 20 passes through the user's groin.

[0033] The straps 30 include the fastening straps 30 for coupling the waist belt 10 and the support belt 20 to each other. The waist belt 10 and the support belt 20 have rectangular sectional shapes. The waist belt 10 and the support belt 20 are made of synthetic fibers, cotton, leather, or the like.

[0034] The waist belt 10 has a plurality of fastening holes 11 formed on the front and rear surfaces thereof, and the support belt 20 has a plurality of fixing holes 21 formed on the front and rear ends thereof. Any one of the plurality of fastening holes 11 and any one of the plurality of fixing holes 21 corresponding to one fastening hole 11 are overlaid on top of each other to pass each fastening strap 30 therethrough. The fastening strap 30 passing through the fastening hole 11 and the fixing hole 21 overlaid on top of each other passes through other fastening holes 11 and/or fixing holes 21 adjacent thereto, and in this state, a knot of the fastening strap 30 is tied so that the fastening strap 30 can couple the waist belt 10 and the support belt 20 to each other.

[0035] As the fastening hole 11 and the fixing hole 21 passing through each fastening strap 30 are changed in position, the support belt 20 is adjustable in length.

[0036] However, the adjustment is not limited thereto. For example, each fastening strap may include at least one length adjusting member, such as, a tightening thread, a cord lock, a buckle, and the like, that is mounted on the support belt 20 and/or the waist belt 10 to adjust the length of the support belt 20 and/or the waist belt 10.

[0037] However, the adjustment is not limited thereto. As shown in FIG. 2, the pelvic floor muscle exercise machine 1 further includes an abdominal pressure belt 10' (or an abdominal belt). The abdominal pressure belt 10' is provided separately from the waist belt 10 so that it can be additionally worn on the user's waist in a state where the waist belt 10 is worn, and otherwise, the waist belt 10 is replaced with the abdominal pressure belt 10'. The fastening holes 11 are formed on the abdominal pressure belt 10', and if the waist belt 10 is replaced with the abdominal pressure belt 10', the support belt 20 is fixed to the abdominal pressure belt 10' through the fastening straps 30.

[0038] The abdominal pressure belt 10' has a sleeve open in upward and downward directions. The abdominal pressure belt 10' is adapted to surround the user's abdomen and waist. The abdominal pressure belt 10' is made of a material with excellent elasticity. The abdominal pressure belt 10' is made of at least one material selected from nylon, polyester, polyurethane, and cotton. However, the material is not limited thereto, and the abdominal pressure belt 10' may be made of other fabrics with elasticity. In a state where the abdominal pressure belt 10' is worn on the user's body, the user does her pelvic floor muscle exercises, and as the abdominal pressure increases by the abdominal pressure belt 10', the efficiencies of the pelvic floor muscle exercises are improved.

[0039] The insertion device 100 includes insertion parts 101 and 102 inserted into the user's vagina, a rod 111 fixed to the insertion parts 101 and 102 and thus extending in upward and downward directions, an elastic member 106 supported by the rod 111 and adapted to elastically support the insertion parts 101 and 102 thereagainst, and a guide holder 120 disposed on the support belt 20, passing through the support belt 20, and slidably inserting the rod 111 thereinto.

[0040] The insertion parts 101 and 102 provide the outer shape of the insertion device 100. The insertion parts 101 and 102 have the horizontal sectional shapes of circles and the vertical sectional shapes of ovals. However, the shapes of the insertion parts 101 and 102 are not limited thereto, and for example, the insertion parts 101 and 102 may have egg or gourd-like outer shapes. The insertion parts 101 and 102 have a plurality of protrusions protruding from the outer surfaces thereof.

[0041] The insertion parts 101 and 102 include the upper insertion part 101 located on the upper portion of the insertion device 100 and the lower insertion part 102 located on the lower portion thereof. The lower insertion part 102 is positioned on the underside of the upper insertion part 101. The length of the upper insertion part 101 in upward and downward directions is longer than that of the lower insertion part 102. In specific, the length

of the upper insertion part 101 in upward and downward directions is longer by about 3 times than that of the lower insertion part 102.

[0042] The upper insertion part 101 and the lower insertion part 102 are separably coupled to each other. In specific, the upper insertion part 101 has a male screw 107 formed on the bottom end thereof, and the lower insertion part 102 has a female screw 108 formed on the top end thereof correspondingly to the male screw 107, so that as the male screw 107 is coupled to the female screw 108, the upper insertion part 101 and the lower insertion part 102 are separably coupled to each other.

[0043] However, the coupling way is not limited thereto. For example, the upper insertion part 101 and the lower insertion part 102 are formed unitarily with each other. For another example, the male screw 107 is formed on the lower end periphery of the rod 111 formed unitarily with the upper insertion part 101, and the female screw 108 is formed on the inner bottom surface of the lower insertion part 102 as the bottom of a slot 103 correspondingly to the lower end periphery of the rod 111.

[0044] The insertion device 100 further includes the slot 103 penetrating the insertion parts 101 and 102 to allow the support belt 20 to be located therein. In specific, the slot 103 is the space formed surroundingly by the inner peripheral surfaces of the insertion parts 101 and 102.

[0045] When the insertion device 100 is viewed in forward and backward directions, the slot 103 is located on the centers of the insertion portions 101 and 102 and extends in upward and downward directions. When the insertion device 100 is viewed in left and right directions, the slot 103 passes through the insertion portions 101 and 102 in forward and backward directions.

[0046] The support belt 20 passes through the slot 103 in the forward and backward directions, and accordingly, the support belt 20 moves along the slot 103 inside the slot 103 in the upward and downward directions. That is, if it is assumed that the support belt 20 is fixed, the insertion parts 101 and 102 move in the upward and downward directions with respect to the support belt 20, and the slot 103 limits the range of the upward and downward movements of the insertion parts 101 and 102.

[0047] The rod 111 and the elastic member 106 are located inside the slot 103 and extend from the insertion parts 101 and 102. That is, the rod 111 and the elastic member 106 are located inside the insertion parts 101 and 102. Like this, as the rod 111 and the elastic member 106 are located inside the slot 103, they as the components having motions are prevented from coming into direct contact with the user's body, thereby avoiding the user from being hurt.

[0048] Top and underside of the rod 111 are fixed to the insertion parts 101 and 102. The top of the rod 111 is fixed to top surface of the slot 103 (or the upper insertion part 101), and the underside of the rod 111 is fixed to the bottom surface of the slot 103 (or the lower insertion part 102). The rod 111 extends in upward and downward directions. The rod 111 is provided separately from the insertion parts 101 and 102 and thus fixed to the insertion parts 101 and 102, and otherwise, the rod 111 is provided unitarily with the insertion parts 101 and 102.

[0049] The rod 111 includes a first rod part 104 whose top is connected (or fixed) to the upper insertion part 101 and extends downward and a second rod part 105 whose underside is connected (or fixed) to the lower insertion part 102 and extends upward. The first and second rod parts 104 and 105 have circular sectional shapes.

[0050] As the upper insertion part 101 and the lower insertion part 102 are coupled to each other, the underside of the first rod part 104 is coupled to the top of the second rod part 105, and the first rod part 104 and the second rod part 105 are provided as one rod 111. The central axis of the first rod part 104 corresponds to that of the second rod part 105.

[0051] As the upper insertion part 101 and the lower insertion part 102 are separated from each other, the rod 111 is divided into the first rod part 104 and the second rod part 105, and accordingly, the first rod part 104 and the second rod part 105 are separated from each other.

[0052] However, the coupling and separation are not limited thereto. The first rod part 104 and the second rod part 105 are formed unitarily with each other. In specific, the first and second rod parts 104 and 105 formed unitarily with each other are represented as the rod 111, and top of the rod 111 is fixed to the upper insertion part 101. The top of the rod 111 is formed unitarily with the upper insertion part 101 and connected to the upper insertion part 101. The underside of the rod 111 is separably coupled to the lower insertion part 102. In this case, the male screw 107 is formed on the underside of the rod 111, and the female screw 108 is formed on the inner bottom surface of the lower insertion part 102, so that the rod 111 is coupled to the lower insertion part 102 to allow the upper insertion part 101 and the lower insertion part 102 to be separably coupled to each other.

[0053] The rod 111 is adapted to allow the support belt 20 to slidably pass therethrough. Accordingly, when the insertion parts 101 and 102 move in the upward and downward directions, the rod 111 moves in the upward and downward directions, together with the insertion parts 101 and 102. The rod 111 guides the movements of the insertion parts 101 and 102 to allow the upward and downward movements of the insertion parts 101 and 102 to be performed stably.

[0054] Top of the rod 111 (the first rod part 104) is located above the support belt 20, and underside of the rod 111 (the second rod part 105) is located under the support belt 20.

[0055] The rod 111 supports the elastic member 106. In specific, the elastic member 106 is a coil spring extending in upward and downward directions along the rod 111, and the rod 111 passes through the coil spring in the upward and downward directions. The rod 111 prevents the elastic member 106 from being buckled. The coil spring may be a compression spring. The coil spring

may be a spring to which both of compression and extension are applied.

[0056] The elastic member 106 is disposed inside the slot 103, while surrounding the rod 111, and elastically supports the insertion parts 101 and 102. The elastic member 106 is disposed above the support belt 20. The underside of the elastic member 106 is fixed to one surface (e.g., top) of the support belt 20.

[0057] The guide holder 120 is disposed on the support belt 20 and inserts the rod 111 thereinto.

[0058] The guide holder 120 includes a rod guide 121 passing through the support belt 20 and having an insertion hole 121a adapted to insert the rod 111 thereinto, an insertion part guide 122 protruding radially from the outer peripheral surface of the rod guide 121, and a fastening member 124 for fixing the guide holder 120 to the support belt 20.

[0059] The rod guide 121 has the shape of a cylinder extending in upward and downward directions, and the hollow portion formed at the center thereof is the insertion hole 121a. The rod guide 121 serves to guide the upward and downward sliding movements of the rod 111 inserted into the insertion hole 121a. Further, the rod guide 121 and the insertion hole 121a are formed slantly with respect to the support belt 20. For example, the tops of the rod guide 121 and the insertion hole 121a are slant backward and thus have an angle of about 70° with respect to the support belt 20. In this case, as the rod 111 is slidably inserted into the insertion hole 121a, the rod 111 has an angle of about 70° with respect to the support belt 20. However, the slant angle is not limited thereto, and accordingly, the rod guide 121, the insertion hole 121a, and the rod 111 may have another angle with respect to the support belt 20.

[0060] The insertion part guide 122 supportingly comes into contact with the inner peripheral surfaces of the insertion parts 101 and 102 forming the slot 103 and thus serves to guide relative movements of the insertion parts 101 and 102 with respect to the support belt 20. When the insertion parts 101 and 102 reciprocate in the upward and downward directions with respect to the support belt 20, they move stably by means of the insertion part guide 122, while not swinging in left and right directions.

[0061] The fastening member 124 is separably coupled to the rod guide 121. In specific, the rod guide 121 has a crest 123 formed on the outer peripheral surface of the lower end portion thereof, and the fastening member 124 has a root formed on the inner peripheral surface thereof correspondingly to the crest 123, so that the rod guide 121 and the fastening member 124 are coupled to each other by means of the coupling between the crest 123 and the root. The fastening member 124 may include a nut.

[0062] When the guide holder 120 passes through the support belt 20 from top to bottom, the insertion guide part 122 is located above the support belt 20, and the crest 123 formed on the lower end periphery of the rod guide 121 is located under the support belt 20. In this state, the fastening member 124 is coupled to the crest 123 to allow the guide holder 120 to be fixed to the support belt 20.

[0063] The insertion part guide 122 is located on one surface (e.g., top) of the support belt 20 to prevent the guide holder 120 from passing through the support belt 20 and thus escaping downward from the support belt 20, and the fastening member 124 is located on the other surface (e.g., underside) of the support belt 20 to prevent the guide holder 120 from passing through the support belt 20 and thus escaping upward from the support belt 20. Further, the lower end periphery of the elastic member 106 is fixed to the guide holder 120 (e.g., the rod guide 121 and/or the insertion part guide 122).

[0064] The insertion device 100 further includes buffering members 110 adapted to prevent the user's skin from being caught between the slot 103 and the sides of the support belt 20 and thus getting hurt when the insertion parts 101 and 102 move relative to the support belt 20.

[0065] Each buffering member 110 is made of a material, such as rubber, synthetic resin, silicone, latex, and the like. The buffering member 110 has the shape of a general cylinder extending along the support belt 20 and is thus fixed to the support belt 20. The support belt 20 is inserted into the buffering members 110 and thus located around the central axes of the buffering members 110. However, the buffering members 110 may not be limited thereby, and for example, only if they have given shapes and sizes so that they are completely discharged from the user's vagina when the insertion parts 101 and 102 are located at a discharge position P2, they may be freely adopted.

[0066] One pair of buffering members 110 is provided. The buffering members 110 are located behind and in front of the insertion parts 101 and 102. The pair of buffering members 110 is disposed close to the slot 103.

[0067] Further, the insertion device 100 includes an electrical simulation part. The electrical simulation part includes an electrode, a battery for supplying power to the electrode, and a processor for controlling a period and intensity of electrical simulation generated from the electrode. The battery may be a rechargeable battery. The electrode may be attached to the outer peripheral surface of one side insertion part 101 or 102 (e.g., the upper insertion part 101). The battery and the processor are fixed to the underside of the support belt 20 or the waist belt 10. The electrode, the battery, and the processor are electrically connected to one another by means of an electric wire.

[0068] The electrode of the electrical simulation part applies the electrical simulation to the muscle of the user with the insertion device 100 inserted into her vagina. For example, the electrical simulation part applies the electrical simulation to the user's pubococcygeus muscle. As the electrical simulation part applies the electrical simulation to the user's pubococcygeus muscle, it helps

the user sense an accurate exercise region, thereby making it possible to perform her muscle exercises accurately and efficiently. However, the electrical simulation part may not be limited thereby, and for example, it may apply the electrical simulation to other muscles, not to the pubococcygeus muscle.

[0069] Further, the insertion device 100 includes a vibration simulation part. The vibration simulation part includes a vibration motor, a battery for supplying power to the vibration motor, and a processor for controlling a period and intensity of vibration simulation generated from the vibration motor. The battery may be a rechargeable battery. If the insertion device 100 includes both of the electrical simulation part and the vibration simulation part, one processor may control both of the electrode and the vibration motor, and one battery may supply power to both of the electrode and the vibration motor. The vibration motor may be mounted on the insertion part 101 or 102. For example, the upper insertion part 101 has a space formed therein, and the vibration motor is mounted in the internal space of the upper insertion part 101. For another example, the vibration motor may be mounted in the slot 103. The battery and the processor are fixed to the underside of the support belt 20 or the waist belt 10. The vibration motor, the battery, and the processor are electrically connected to one another by means of an electric wire. The vibration motor may be vibrated in at least one direction of forward and backward directions, left and right directions, and upward and downward directions.

[0070] The vibration simulation part applies the vibration simulation to the muscle of the user with the insertion device 100 inserted into her vagina. For example, the vibration simulation part vibrates the insertion parts 101 and 102 to apply the vibration simulation to the user's pubococcygeus muscle. Accordingly, the user performs massages for the pubococcygeus muscle by using the vibrations of the vibration simulation part. However, the vibration simulation part may not be limited thereby, and for example, it may apply the vibration simulation to other muscles, not to the pubococcygeus muscle.

[0071] Hereinafter, an operation of the insertion device 100 will be explained in detail with reference to FIG. 5.

[0072] The insertion device 100 reciprocates between an insertion position P1 at which a portion (e.g., the upper insertion part 101) of the insertion parts 101 and 102 is inserted into the user's vagina and the discharge position P2 at which the entire portion of the insertion parts 101 and 102 is discharged from the vagina.

[0073] At the insertion position P1, most of the insertion parts 101 and 102 are located above the support belt 20, and at the discharge position P2, most of the insertion parts 101 and 102 are located under the support belt 20.

[0074] The elastic member 106 is located on top of the support belt 20 and elastically supports the insertion parts 101 and 102 so that the insertion parts 101 and 102 are located at the insertion position P1. In specific, the elastic member 106 is disposed between the inner top surface of the upper insertion part 101 forming top of the slot 103 and the support belt 20 and elastically supports the insertion part 101 or 102 (e.g., the upper insertion part 101), so that the insertion parts 101 and 102 are located at the insertion position P1.

[0075] At the insertion position P1, the elastic member 106 is somewhat compressed or in a state having a free length.

[0076] As the insertion parts 101 and 102 inserted into the vagina are pushed outward from the vagina through the relaxation of the pelvic floor muscles, the user performs the pelvic floor muscle exercise. Like this, the insertion parts 101 and 102 are discharged from the vagina. That is, the insertion parts 101 and 102 move to the discharge position P2.

[0077] While the insertion parts 101 and 102 move from the insertion position P1 to the discharge position P2, they move downward with respect to the support belt 20 in a state where the support belt 20 is tightly pulled and does not move at all, and accordingly, top of the elastic member 106 is pressurized downward by means of the insertion parts 101 and 102 (e.g., the inner top surface of the upper insertion part 101), so that the elastic member 106 becomes more deformedly compressed.

[0078] The elastic force (or "elastic restoring force") generated from the deformedly compressed elastic member 106 is applied to the insertion parts 101 and 102 reaching the discharge position P2 in an upward direction. That is, the elastic force is applied to a direction restoring to the insertion position P1. By means of the elastic force of the elastic member 106, accordingly, the insertion parts 101 and 102 are automatically restored to the insertion position P1 from the discharge position P2. The user automatically pushes the insertion parts 101 and 102 inserted into the vagina again, thereby easily repeating the pelvic floor muscle exercises.

[0079] While the insertion parts 101 and 102 inserted into the vagina are being pushed, further, the elastic force of the elastic member 106 may act as a load. As a degree of a force pushing the insertion parts 101 and 102 to the outside of the vagina is adjusted, the load of the elastic member 106 is appropriately adjusted according to the user's ability. While the pelvic floor muscle exercises are being performed, for example, a beginner can move the insertion parts 101 and 102 within the vagina, and an expert can completely push the insertion parts 101 and 102 to the outside of the vagina.

[0080] FIG. 9 is a sectional view showing another arrangement example of the elastic member of the pelvic floor muscle exercise machine of FIG. 1.

[0081] Hereinafter, an explanation of the operation of the insertion device 100 having another arrangement of the elastic member 106 will be given in detail with reference to FIG. 9.

[0082] The elastic member 106 is located on the underside of the support belt 20. Top of the elastic member 106 is disposed on or fixed to the underside of the support belt 20. The underside of the elastic member 106 is dis-

posed on or fixed to the inner bottom surface of the lower insertion part 102 forming the bottom of the slot 103.

[0083] The elastic member 106 elastically supports the insertion parts 101 and 102 so that the insertion parts 101 and 102 are located at the discharge position P2. In specific, the elastic member 106 is disposed between the inner bottom surface of the lower insertion part 102 forming the bottom of the slot 103 and the support belt 20 and elastically supports the insertion part 101 or 102 (e.g., the lower insertion part 102), so that the insertion parts 101 and 102 are located at the discharge position P2.

[0084] At the discharge position P2, the elastic member 106 is somewhat compressed or in a state having a free length.

[0085] The user pushes the insertion parts 101 and 102 upward and thus locates them at the insertion position P1, so that the insertion parts 101 and 102 are inserted into the user's vagina.

[0086] While the insertion parts 101 and 102 are moving from the discharge position P2 to the insertion position P1, they move upward with respect to the support belt 20 in a state where the support belt 20 is tightly pulled and does not move at all, and accordingly, underside of the elastic member 106 is pressurized upward by means of the insertion parts 101 and 102 (e.g., the inner bottom surface of the lower insertion part 102,) so that the elastic member 106 becomes more deformedly compressed.

[0087] The elastic force generated from the deformedly compressed elastic member 106 is applied to the insertion parts 101 and 102 reaching the insertion position P1 in a downward direction. That is, the elastic force is applied to a direction restoring to the discharge position P2. By means of the elastic force of the elastic member 106, accordingly, the insertion parts 101 and 102 are automatically restored to the discharge position P2 from the insertion position P1. The user contracts the pelvic floor muscles to pull the insertion parts 101 and 102 discharged from the vagina to the inside of the vagina, thereby performing the pelvic floor muscle exercise. Further, the elastic force of the elastic member 106 may act as a load required for the exercise.

[0088] As shown in FIGs. 5 and 9, the upper insertion part 101 and the lower insertion part 102 are separated from each other so that the user can change the arrangement of the elastic member 106 inside the slot 103. As a result, the elastic member 106 is disposed selectively on top or underside of the support belt 20, and the elastic force (or load) applied to the insertion parts 101 and 102 is changed in direction by means of the elastic member 106.

[0089] However, the arrangement of the elastic member 106 may not be limited thereby. One end of the elastic member 106 is fixed to the insertion part 101 or 102 (e.g., the inner top surface of the upper insertion part 101 or the inner bottom surface of the lower insertion part 102), and the other end of the elastic member 106 is fixed to the guide holder 120. When the elastic member 106 is in a state having a free length, the insertion parts 101 and 102 are located between the insertion position P1 and the discharge position P2. As a result, the elastic member 106 deformedly compressed when the user pushes the insertion parts 101 and 102 inserted into the vagina to the outside of the vagina applies the elastic force to the insertion parts 101 and 102 in the upward direction, and the elastic member 106 deformedly extending when the user pulls the insertion parts 101 and 102 to the inside of the vagina deeply applies the elastic force to the insertion parts 101 and 102 in the downward direction. That is, the elastic member 106 applies the elastic force to the insertion parts 101 and 102 in the opposite direction to the direction of moving the insertion parts 101 and 102 through the contraction and relaxation of the pelvic floor muscles, thereby providing the loads required for the pelvic floor muscle exercises bi-directionally (in the upward and downward directions).

[0090] FIG. 10 is a perspective view showing a pelvic floor muscle exercise machine according to another embodiment of the present invention. FIG. 11 is a sectional view showing a portion of the pelvic floor muscle exercise machine of FIG. 10. When the pelvic floor muscle exercise machine as shown in FIGs. 10 and 11 are compared with that as shown in FIG. 1, some parts of an insertion device are different from the parts of the insertion device 100, and unless specially described, the explanation of the pelvic floor muscle exercise machine as shown in FIG. 1 is given to the pelvic floor muscle exercise machine as shown in FIGs. 10 and 11.

[0091] Referring to FIGs. 10 and 11, the pelvic floor muscle exercise machine includes straps 10, 20, and 30 and an insertion device 200 disposed on the straps 10, 20, and 30.

[0092] The insertion device 200 includes an insertion part 201 inserted into the user's vagina, rods 211 and 212 fixed to the insertion part 201 and extending in upward and downward directions, an elastic member 106 supported by the rods 211 and 212 and adapted to elastically support the insertion part 201 thereagainst, and a guide holder 220 disposed on the support belt 20, passing through the support belt 20, and slidably inserting the rods 211 and 212 thereinto.

[0093] The insertion part 201 provides a general egg-like shape, but it may have free shapes such as a gourd shape, without being not limited thereto.

[0094] The rods 211 and 212 extend downward from the underside of the insertion part 201, and the rod 211 slidably passes through the support belt 20.

[0095] The rods 211 and 212 include the rod part 211 extending in upward and downward directions and having top end fixed to the insertion part 201 and the fixing part 212 coupled to the lower end periphery of the rod part 211 and having a fixing groove 212a adapted to fixedly insert the elastic member 106 thereinto. The insertion part 201 is located above the support belt 20, the fixing part 212 is located under the support belt 20, and the rod part 211 connects the insertion part 201 and the

fixing part 212 to each other.

[0096] The rods 211 and 212 support the elastic member 106. In specific, the elastic member 106 is a coil spring extending in upward and downward directions, and the rod part 211 passes through the coil spring in upward and downward directions. The rods 211 and 212 prevent the elastic member 106 from being buckled. The coil spring may be a compression spring or an extension spring. The coil spring may be a spring to which both of compression and extension are applied.

[0097] To prevent the elastic member 106 from coming direct contact with the user's body and thus causing the user's body to be hurt, the elastic member 106 is located under the support belt 20. Top of the elastic member 106 is fixed to the underside of the support belt 20, and underside thereof is fixedly inserted into the fixing groove 212a of the fixing part 212.

[0098] The guide holder 220 is disposed on the support belt 20 and inserts the rods 211 and 212 (e.g., the rod part 211).

[0099] The guide holder 220 includes a rod guide 221 passing through the support belt 20 and having an insertion hole 221a adapted to insert the rod part 211 thereinto, an elastic member fixer 222 protruding radially from the outer peripheral surface of the rod guide 221, and a fastening member 224 for fixing the guide holder 220 to the support belt 20.

[0100] The rod guide 221 has the shape of a cylinder extending in upward and downward directions, and the hollow portion formed at the center thereof is the insertion hole 221a. The rod guide 221 serves to guide the upward and downward sliding movements of the rods 211 and 212 inserted into the insertion hole 221a.

[0101] The elastic member fixer 222 serves to fix the underside of the support belt 20 and top of the elastic member 106, together. Top of the elastic member 106 is fixedly inserted into a gap formed between the elastic member fixer 222 and the underside of the support belt 20.

[0102] The fastening member 224 is coupled to a crest 223 formed on the outer peripheral surface of the upper end portion of the rod guide 221. The elastic member fixer 222 serves to prevent the guide holder 220 from pulling and escaping upward from the support belt 20, and the fastening member 224 serves to prevent the guide holder 220 from pulling and escaping downward from the support belt 20.

[0103] The insertion device 200 reciprocates between an insertion position P1 at which at least a portion of the insertion part 201 is inserted into the user's vagina and a discharge position P2 at which the entire insertion part 201 is discharged from the vagina. The insertion position P1 is higher than the discharge position P2.

[0104] The insertion part 201 is at the discharge position P2 when an external force is not applied to the elastic member 106, that is, when the elastic member 106 has a free length. The elastic member 106 satisfying such a condition is represented as a first elastic member.

[0105] The user pushes the insertion part 201 upward to allow the insertion part 201 to be at the insertion position P1, so that the insertion part 201 is inserted into the vagina.

[0106] While the insertion part 201 is moving from the discharge position P2 to the insertion position P1, the insertion part 201 and the rods 211 and 212 move upward with respect to the support belt 20 in a state where the support belt 20 is tightly pulled and does not move at all, and accordingly, underside of the elastic member 106 is pressurized upward by means of the fixing part 212, so that the elastic member 106 becomes more deformedly compressed.

[0107] The elastic force generated from the deformedly compressed elastic member 106 is applied to the insertion part 201 reaching the insertion position P1 through the rods 211 and 212. By means of the elastic force of the elastic member 106, accordingly, the insertion part 201 is automatically restored to the insertion position P1 from the discharge position P2. The user contracts the pelvis floor muscles and thus pulls the insertion part 201 discharged from the vagina to the inside of the vagina again, thereby performing the pelvic floor muscle exercise. Further, the elastic force of the elastic member 106 may act as a load required for the exercise.

[0108] However, the insertion part 201 may not be limited by the above-mentioned embodiment. The insertion part 201 is at the insertion position P1 when an external force is not applied to the elastic member 106, that is, when the elastic member 106 has a free length. The elastic member 106 satisfying such a condition is represented as a second elastic member.

[0109] The user relaxes the pelvis floor muscles and thus pushes the insertion part 201 inserted into the vagina to the outside of the vagina, thereby performing the pelvic floor muscle exercise. While the insertion part 201 is moving to the discharge position P2 from the insertion position P1, the insertion part 201 and the rods 211 and 212 move downward with respect to the support belt 20 in a state where the support belt 20 is tightly pulled and does not move at all, and accordingly, underside of the elastic member 106 is pulled downward by means of the fixing part 212 moving downward, so that the elastic member 106 becomes more deformedly compressed.

[0110] The elastic force generated from the deformedly compressed elastic member 106 is applied to the insertion part 201 reaching the discharge position P2 through the rods 211 and 212. By means of the elastic force of the elastic member 106, accordingly, the insertion part 201 is automatically returned to the insertion position P1 from the discharge position P2. The user automatically pushes the insertion part 201 inserted into the vagina again, thereby easily repeating the pelvic floor muscle exercise.

[0111] While the insertion part 201 inserted into the vagina is being pushed, further, the elastic force of the elastic member 106 may act as a load. As a degree of a force pushing the insertion part 201 to the outside of the

vagina is adjusted, the load of the elastic member 106 is appropriately adjusted according to the user's ability. While the pelvic floor muscle exercises are being performed, for example, a beginner can move the insertion part 201 within the vagina, and an expert can completely push the insertion part 201 to the outside of the vagina.

[0112] The elastic member 106 may include both of the first elastic member and the second elastic member, and the fixing part 212 is separated from the elastic member 106 and thus demounted from the insertion device 200. Any one of the first elastic member and the second elastic member is selected and thus mounted on the insertion device 200, and the elastic force (or load) of the elastic member 106 may be changed in direction. The first elastic member and the second elastic member are changeable with each other.

[0113] However, the insertion part 201 may not be limited by the above-mentioned embodiment. The insertion part 201 is between the insertion position P1 and the discharge position P2 when the elastic member 106 has a free length. Accordingly, the elastic member 106 deformedly compressed when the user pushes the insertion part 201 inserted into the vagina to the outside of the vagina applies the elastic force to the insertion part 201 in the upward direction, and the elastic member 106 deformedly extending when the user pulls the insertion part 201 to the inside of the vagina deeply applies the elastic force to the insertion part 201 in the downward direction. That is, the elastic member 106 applies the elastic force to the insertion part 201 in the opposite direction to the direction of moving the insertion part 201 through the contraction and relaxation of the pelvic floor muscles, thereby providing the loads required for the pelvic floor muscle exercise bi-directionally (in the upward and downward directions).

[0114] FIG. 12 is a perspective view showing a mounting stand for the pelvic floor muscle exercise machine according to the embodiments of the present invention. An explanation of the parts repeated with those as mentioned above will be omitted.

[0115] Referring to FIG. 12, the pelvic floor muscle exercise machines as shown in FIGs. 1 and/or 10 further include a mounting stand 300. Hereinafter, the mounting stand 300 mounted on the pelvic floor muscle exercise machine 1 as shown in FIG. 1 will be explained. Of course, the same explanation will be applied to the pelvic floor muscle exercise machine as shown in FIG. 10.

[0116] The mounting stand 300 includes a support plate 301 grasped by the user or seated on an installation surface (e.g., indoor floor, a chair seat, and the like), a first mounting piece 303 extending upward from the front end of the support plate 301, a second mounting piece 302 extending upward from the rear end of the support plate 301, and an operating space 300a formed above the support plate 301 to locate the insertion device 100 therein. The support plate 301 is fixed to the installation surface by means of an adhesive, a screw, a clamp, etc.

[0117] The operating space 300a is the space surrounded by the first and second mounting pieces 303 and 302 and the support plate 301, and when the insertion device 100 or 200 is discharged from the vagina (at the discharge position P2), the insertion device 100 or 200 (e.g., the insertion parts 101 and 102 or the insertion part 201) and/or the rod 111 or the rods 211 and 212 are exposed or located in the operating space 300a.

[0118] The first mounting piece 303 has a first mounting groove 305 adapted to insert a portion of the support belt 20 located in front of the insertion device 100 or 200, and the second mounting piece 302 has a second mounting groove 304 adapted to insert a portion of the support belt 20 located behind the insertion device 100 or 200. The first mounting groove 305 is formed on top of the first mounting piece 303, and the second mounting groove 304 on top of the second mounting piece 302. The support belt 20 is separably coupled to the first mounting groove 305 and the second mounting groove 304.

[0119] Each mounting groove 304 or 305 includes a bottleneck portion 304a open upward and an accommodation portion 304b communicating with the bottleneck portion 304a under the bottleneck portion 304a to accommodate the support belt 20 thereinto.

[0120] The bottleneck portion 304a is the inlet of the mounting groove 304 or 405. The support belt 20 twistingly passes through the bottleneck portion 304a, and after it has been accommodated in the accommodation portion 304b, it is restored to its original shape. The width of the bottleneck portion 304a in left and right directions is smaller than that of the support belt 20 in left and right directions, and accordingly, even if the support belt 20 slidingly moves in forward and backward directions in the state of being accommodated into the accommodation portion 304b, the support belt 20 is prevented from unintentionally escaping from the mounting groove 304 or 305. However, the shapes of the mounting grooves 304 and 305 may not be limited thereto, and only if the mounting grooves serve to supportedly or fixedly seat the support belt 20 thereonto, they may be freely shaped.

[0121] After the mounting stand 300 has been coupled to the support belt 20, the mounting stand 300 ensures the operating space 300a in which the insertion device 100 moves in upward and downward directions. For example, if the user who wears the pelvic floor muscle exercise machine 1 sits on a chair, without having any mounting stand 300, the space in which the insertion parts 101 and 102 move downward does not exist, thereby making it impossible to perform the pelvic floor muscle exercises. However, if the mounting stand 300 is used, the operating space 300a is ensured above the support plate 301 mounted on the seat of the chair, and accordingly, the user performs the pelvic floor muscle exercises, while sitting on the chair.

[0122] Further, after the user holds the support plate 301 by her hands or fixes the support plate 301 to the chair, the user performs the pelvic floor muscle exercises, while moving her waist in forward and backward direc-

tions. In this case, the mounting grooves 304 and 305 stably guide the forward and backward sliding movements of the support belt 20.

[0123] The mounting stand further includes a pulling strap 310 having one end fixed to the underside of the insertion parts 101 and 102 and a strap locker 320 formed on the support plate 301 to lock the pulling strap 310 thereonto.

[0124] The strap locker 320 has an incised portion 321 formed incisedly at a given area on top of the support plate 301 and a support bar 322 disposed on top of the incised portion 321.

[0125] The pulling strap 310 extends downward in a state where one end is fixed to a fastening loop 112 located on the underside of the insertion parts 101 and 102, and the other end of the pulling strap 310 is inserted into the incised portion 321, surroundingly turns the support bar 322, and finally escapes in the opposite direction to the inserted direction.

[0126] The other end of the pulling strap 310 is pulled by the user's hand, and accordingly, the insertion parts 101 and 102 are pulled downward by the user. That is, the support bar 322 serves as a kind of a fixing pulley, and accordingly, the support bar 322 changes a direction of a force locked onto the pulling strap 310 by the user.

[0127] The user contracts the pelvic floor muscles to pull the insertion parts 101 and 102 escaping from the vagina to the inside of the vagina, thereby performing the pelvic floor muscle exercise, and in this case, the user directly pulls the insertion parts 101 and 102 downward by means of the use of the pulling strap 310, thereby increasing the load required for the exercise.

[0128] Further, the user moves her waist in a state where the free end of the pulling strap 310 is fixedly tied on an external object (e.g., an indoor post, her ankle, and the like), thereby autonomously and continuously increasing or decreasing the load required for the exercise. Moreover, after the elastic member 106 is removed from the insertion device 100, the user can perform the pelvic floor muscle exercises only with the force of pulling the pulling strap 310 as the load required for the exercise.

[0129] FIG. 13 is a perspective view showing a state in which an elastic ring is additionally provided for the pelvic floor muscle exercise machine of FIG. 12. FIG. 14 is a side view showing a use state of the elastic ring of FIG. 13. FIG. 14a shows a state in which the elastic ring is not elastically deformed, and FIG. 14b shows a state in which the elastic ring is elastically deformed by the user. The pelvic floor muscle exercise machine as shown in FIGs. 13 to 14 includes all of parts of the pelvic floor muscle exercise machine as shown in FIG. 12. Explanations of repeated parts will be omitted.

[0130] As shown in FIGs. 13 and 14, the pelvic floor muscle exercise machine further includes an elastic ring 400 pressurized by the user's thighs.

[0131] The elastic ring 400 has the shape of a loop. The elastic ring 400 is made of an elastically deformable material. For example, the elastic ring 400 is made of a material having excellent elasticity, such as plastic, metal, rubber, silicone, and the like. However, the material of the elastic ring 400 may be freely selected, without being limited thereto.

[0132] One end of the pulling strap 310 is fixed to one end (e.g., top) of the elastic ring 400. In specific, in a state where the pulling strap 310 is locked onto the strap locker 320, one end is fixed to the elastic ring 400 and the other end to the fastening loop 112 of the insertion parts 101 and 102. The elastic ring 400 has a guide hole 401 formed on the other end (e.g., underside) thereof to pass the pulling strap 310 therethrough so that the pulling strap 310 extends up to one end thereof. The guide hole 401 slides along the pulling strap 310 when the elastic ring 400 is elastically deformed and thus guides the movements of the pulling strap 310. However, the elastic ring 400 may not be limited by the above-mentioned embodiment, and the guide hole 401 may not be provided.

[0133] The first mounting piece 303 has a through hole formed thereon to pass the pulling strap 310 therethrough so that the pulling strap 310 extends in a direction in front of the user. Of course, the through hole may be formed on the support plate 301. However, the through hole may not be provided, without being limited thereto, and accordingly, the pulling strap 310 passes through the side space of the first mounting piece 303 and extends forwardly.

[0134] The elastic ring 400 is located between the user's thighs. The user holds the elastic ring 400 by her thighs to prevent the elastic ring 400 from escaping from the thighs.

[0135] The user applies a force to the thighs in a direction of closing the thighs to elastically deform the elastic ring 400. In this case, the elastic ring 400 having the shape of the circular loop before pressurized by the user is elastically deformed to the shape of a gourd so that the left and right sides thereof are depressed inwardly by the user's thighs. However, the deformed shape may not be limited thereto. For example, the elastic ring 400 having the shape of the circular loop before pressurized by the user may be elastically deformed to the shape of an oval so that the left and right sides thereof are pressurized to cause a long axis to extend in upward and downward directions, while causing a short axis to extend in left and right directions.

[0136] When the elastic ring 400 is elastically deformed by the user, one end of the elastic ring 400 to which the pulling strap 310 is fixed is changed in position. In specific, top of the elastic ring 400 to which the pulling strap is fixed moves upward.

[0137] As one end (e.g., top) of the elastic ring 400 to which the pulling strap 310 is fixed moves, the pulling strap 310 is pulled. When one end of the pulling strap 310 is pulled upward by the movement of the elastic ring 400, the pulling strap 310 pulls the insertion parts 101 and 102 downward. That is, the pulling strap 310 is pulled by the user through the elastic ring 400.

[0138] The user contracts the pelvic floor muscles to

pull the insertion parts 101 and 102 discharged from the vagina to the inside of the vagina, thereby performing the pelvic floor muscle exercise.

[0139] Further, if the user removes the force applied to the thighs to thus open the thighs, the elastic ring 400 is elastically restored to its original circular shape, and simultaneously, the insertion parts 101 and 102 are restored to the insertion position.

[0140] Like this, the insertion device 100 and the elastic ring 400 are used together, so that the user performs the exercises for the contraction of the pelvic floor muscles and for the contraction of hip muscles (e.g., internal obturator muscle, external obturator muscle, and the like), gluteal muscles (e.g., gluteus maximus, tensor fasciae latae muscle, and the like), and adductor (e.g., pectineus muscle, adductor minimus muscle, adductor brevis muscle, adductor magnus muscle, gracilis muscle, and the like), thereby improving the effectiveness of the pelvic floor muscle exercises and achieving the coordinated exercises with the adjacent muscles to the pelvic floor muscles.

[0141] While the present invention has been described with reference to the particular illustrative embodiments, it is not to be restricted by the embodiments but only by the appended claims. It is to be appreciated that those skilled in the art can change or modify the embodiments without departing from the scope and spirit of the present invention.

Claims

1. A pelvic floor muscle exercise machine comprising:

a waist belt fixed to a user's waist;
a support belt fixed to the waist belt; and
an insertion device provided on the support belt, wherein the insertion device comprises:

insertion parts inserted into and escaping from the user's vagina;
a rod extending from the insertion parts, slidably passing through the support belt, and thus guiding the movements of the insertion parts;
an elastic member supported by the rod and elastically deformed by the relative movements of the insertion parts with respect to the support belt to provide an elastic restoring force to the insertion parts; and
a slot passing through the insertion parts and allowing the support belt to be located at the inside thereof,
wherein the rod and the elastic member are located inside the slot.

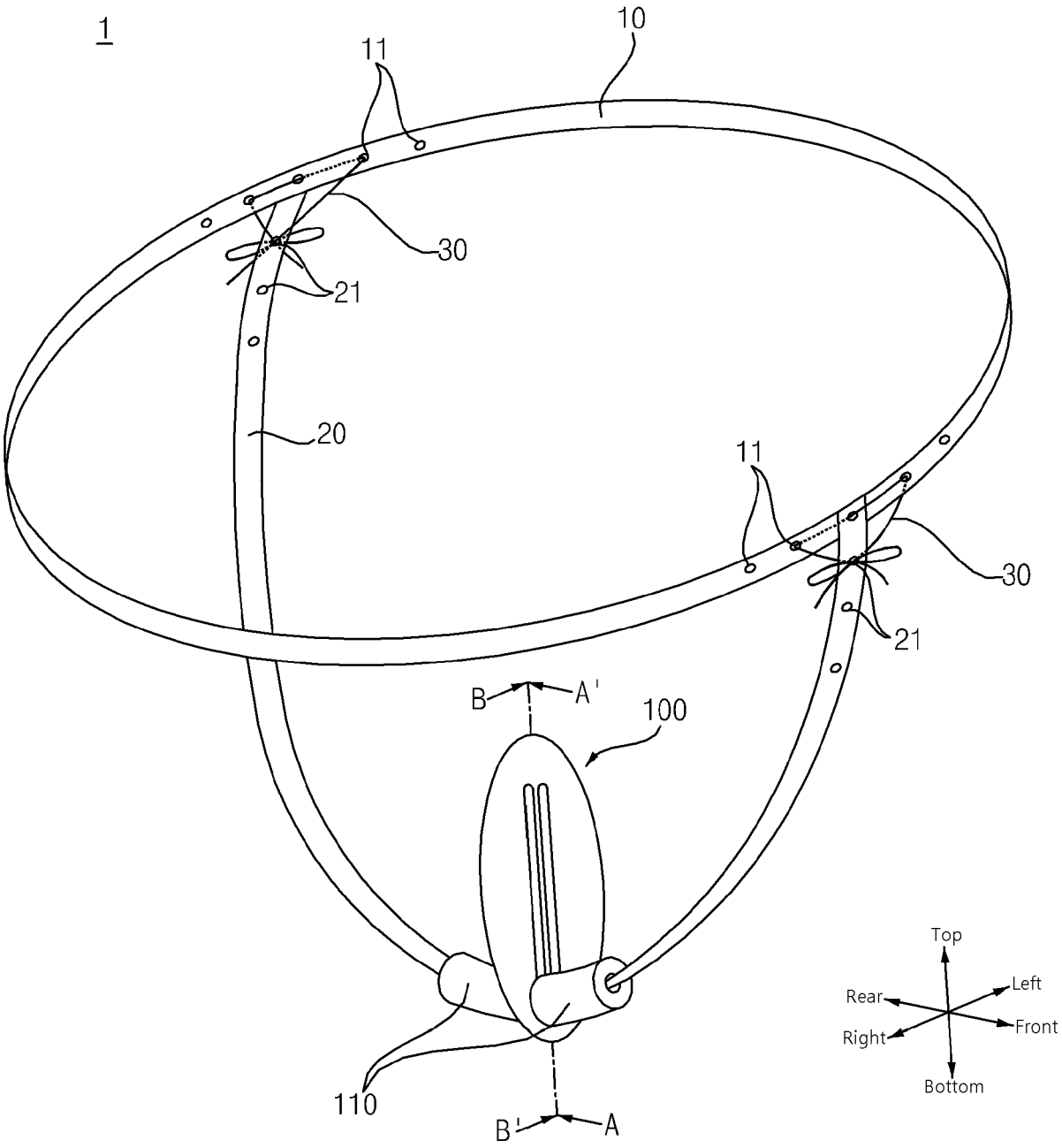
2. The pelvic floor muscle exercise machine according to claim 1, wherein the insertion device further comprises a guide holder disposed on the support belt, the guide holder comprising a rod guide adapted to insert the rod thereinto and guide the movement of the rod and an insertion part guide protruding radially from the outer peripheral surface of the rod guide, supporting the inner peripheral surfaces of the insertion parts forming the slot, and guiding the movements of the insertion parts.

3. The pelvic floor muscle exercise machine according to claim 1, further comprising a mounting stand located under the support belt to support the support belt thereagainst, the mounting stand comprising a support plate grasped by the user or seated on an installation surface, a pulling strap pulled by the user and having one end fixed to the underside of the insertion parts, and a strap locker formed on the support plate to lock the pulling strap thereonto, whereby when the other end of the pulling strap is pulled by the user, the pulling strap pulls the insertion parts downward.

4. The pelvic floor muscle exercise machine according to claim 3, further comprising an elastic ring configured to allow the other end of the pulling strap to be fixed to top thereof, while allowing the left and right sides thereof to be pressurized against the user's thighs, whereby when the elastic ring is elastically deformed by the user, the other end of the pulling strap is pulled so that the pulling strap pulls the insertion parts downward.

5. The pelvic floor muscle exercise machine according to claim 1, further comprising an abdominal pressure belt adapted to surround the user's abdomen and waist and thus raise the user's abdominal pressure.

FIGs. 1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11
30
21
20
11
30
21
B
A'
100
110
B'
A
Top
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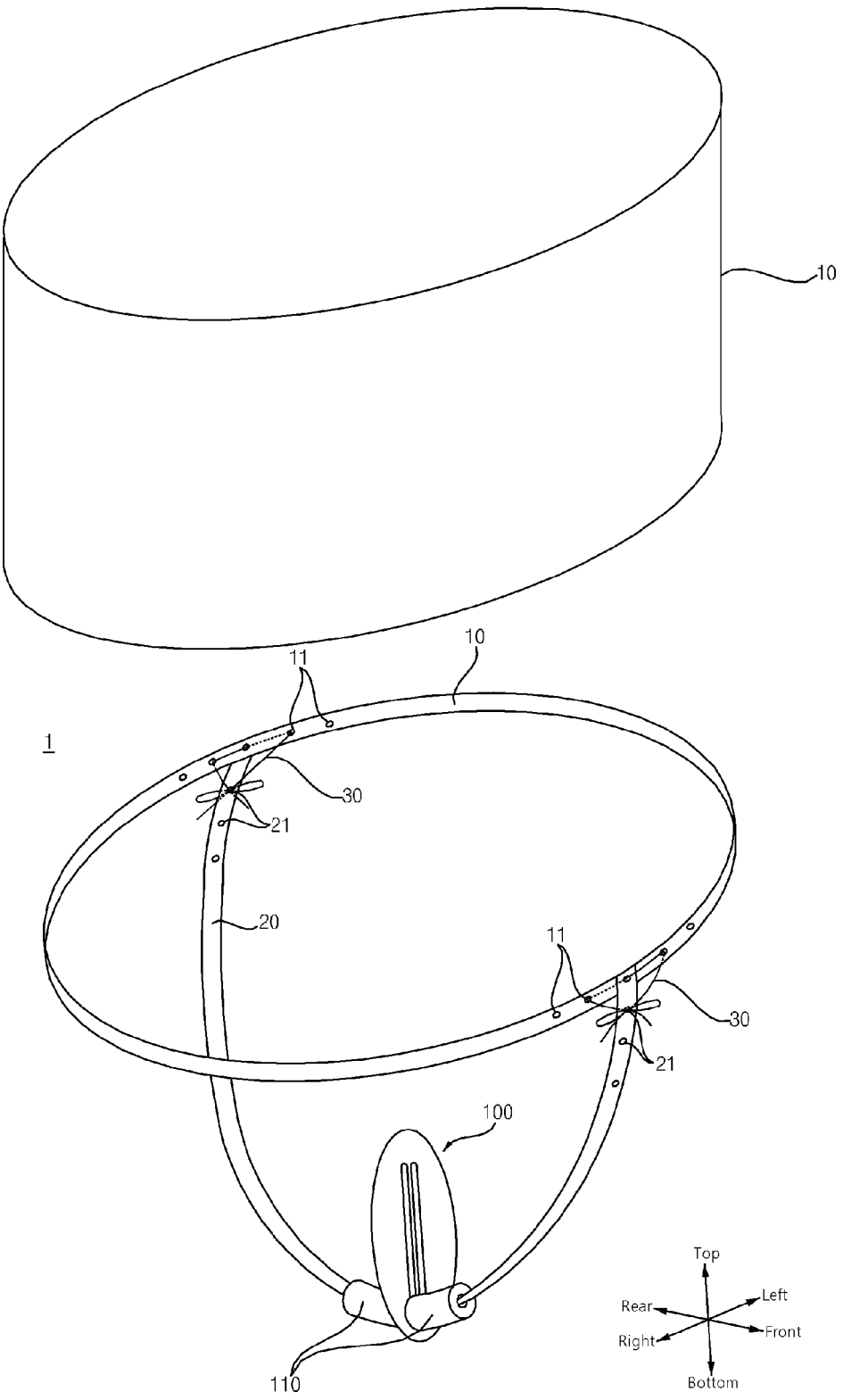
Rear
Front
Right
Bottom

FIGs. 2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11
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110
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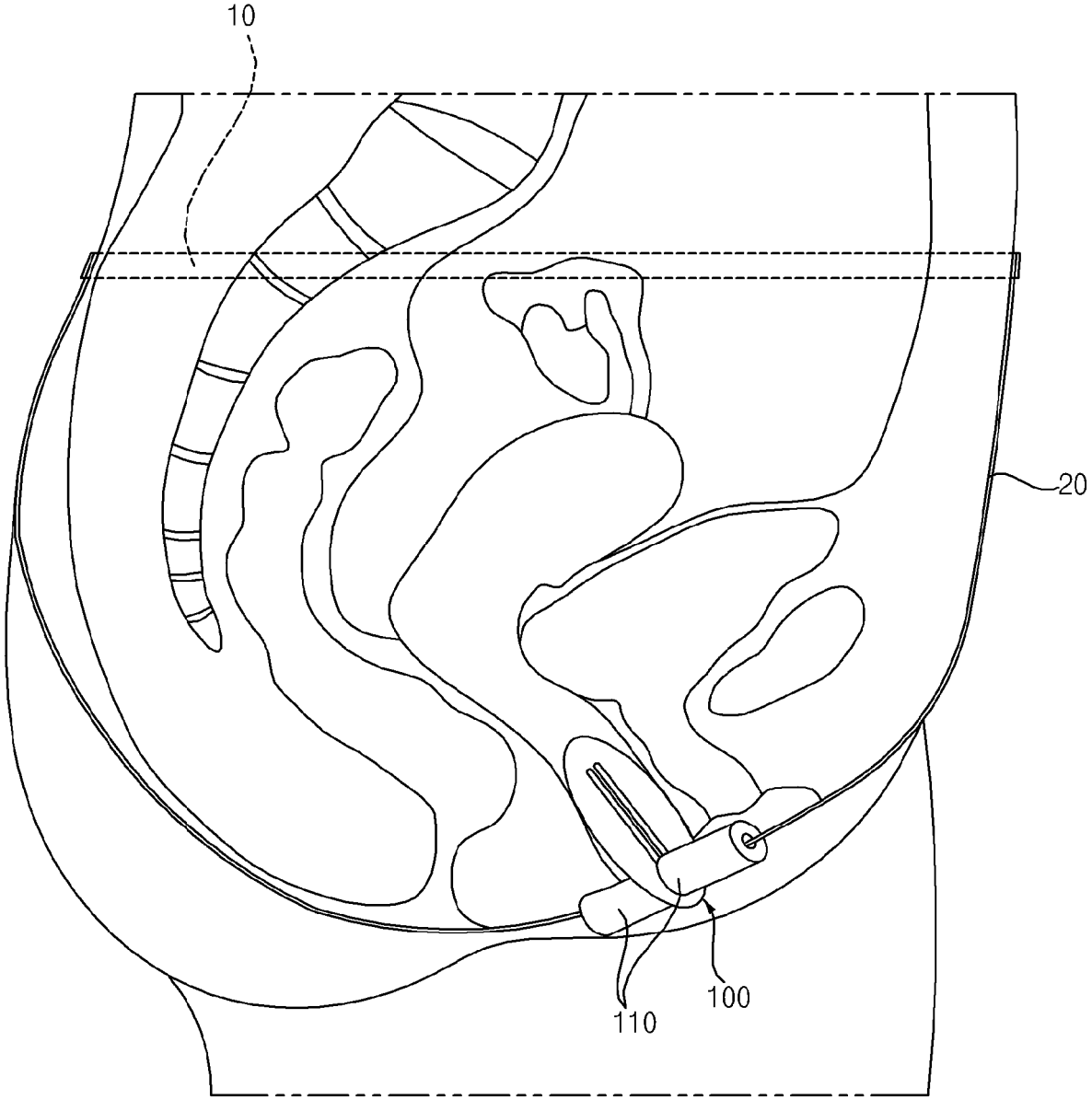
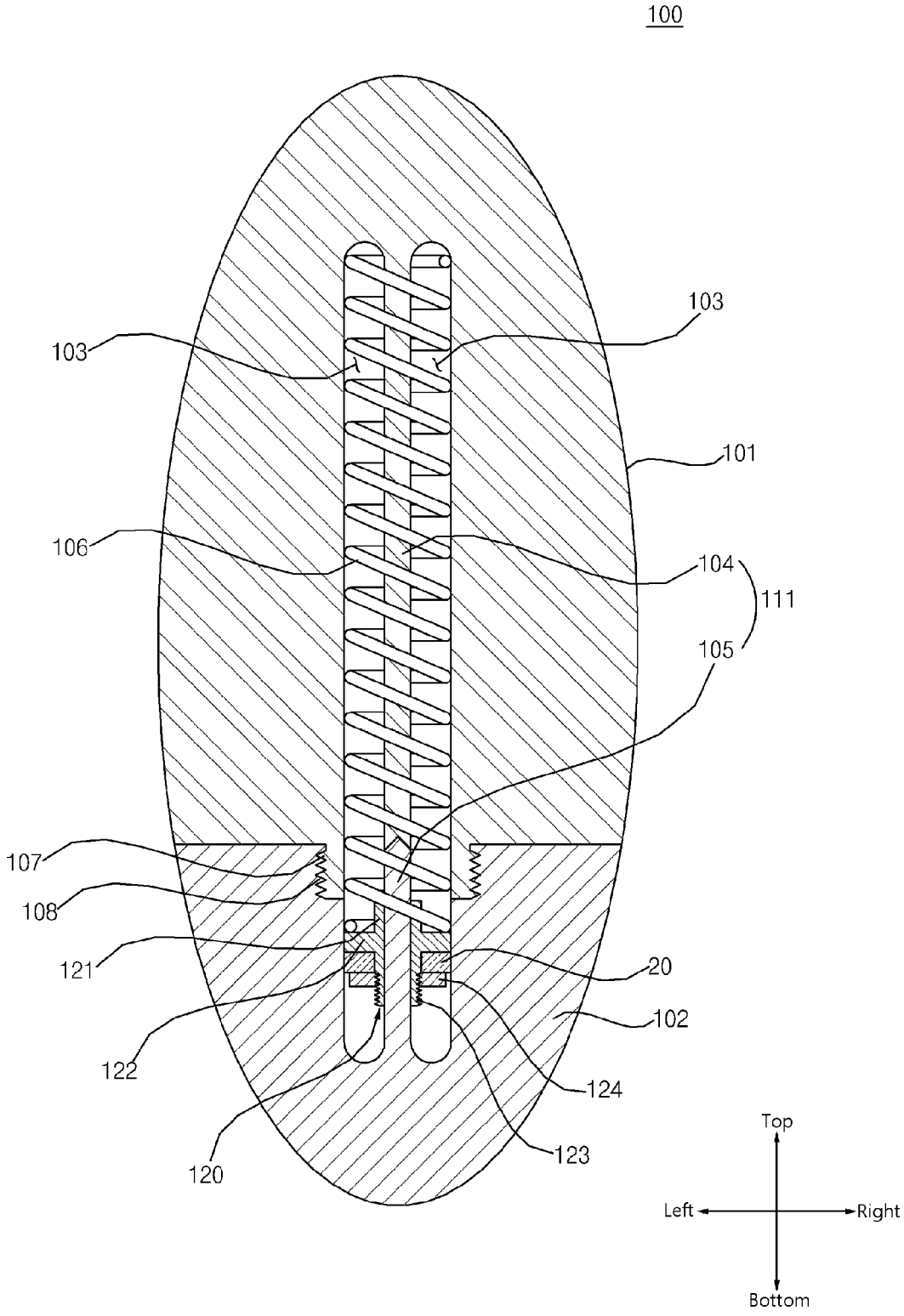
Bottom

FIGs. 3



FIGs. 4


100
103
103
101
106
104
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105
107
108
121
20
102
122
124
123
120
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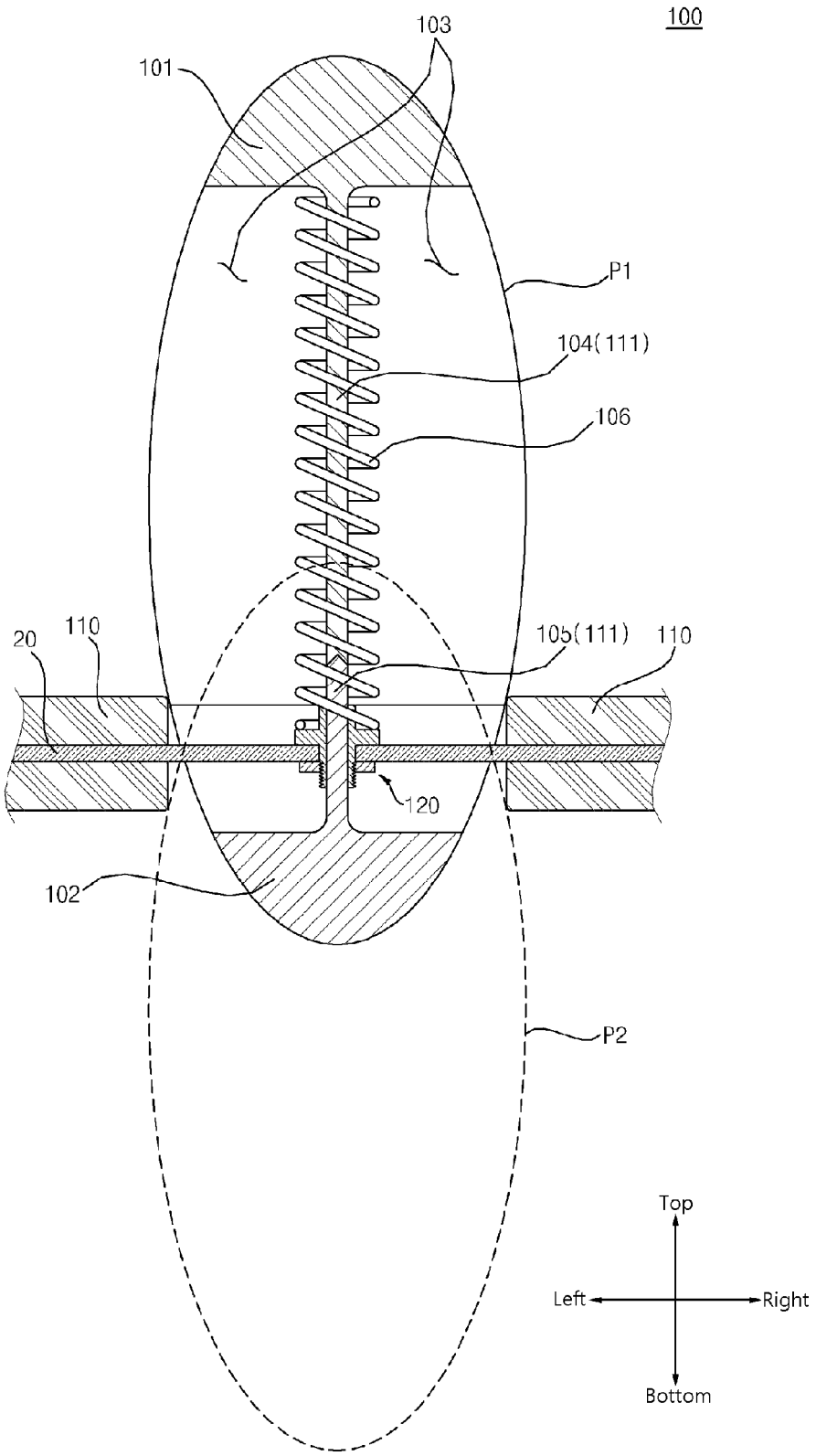
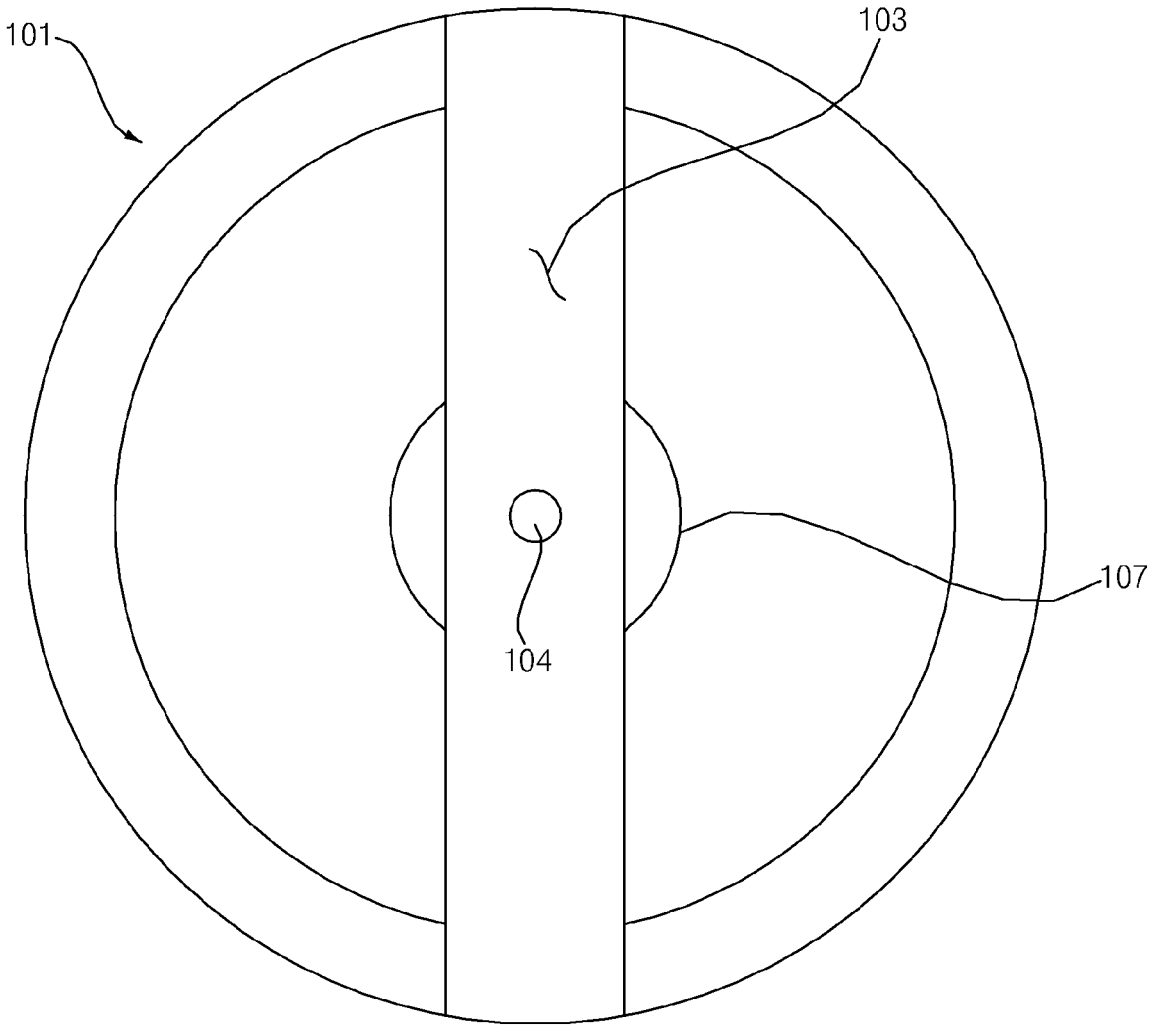
Right
Bottom

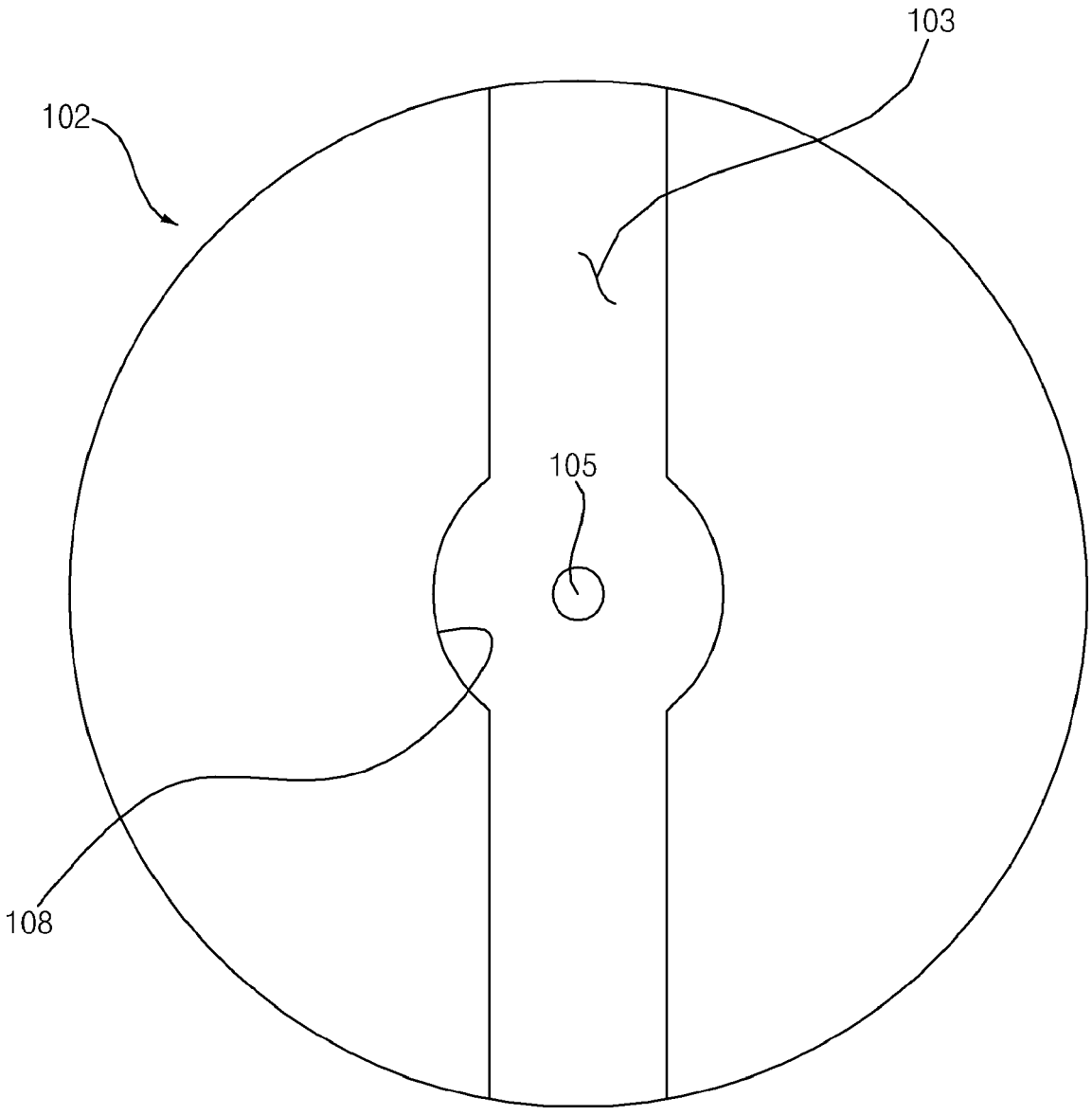
FIGs. 5


100
103
101
P1
104(111)
106
20
110
105(111)
110
120
102
P2
Top
Left
Right
Bottom

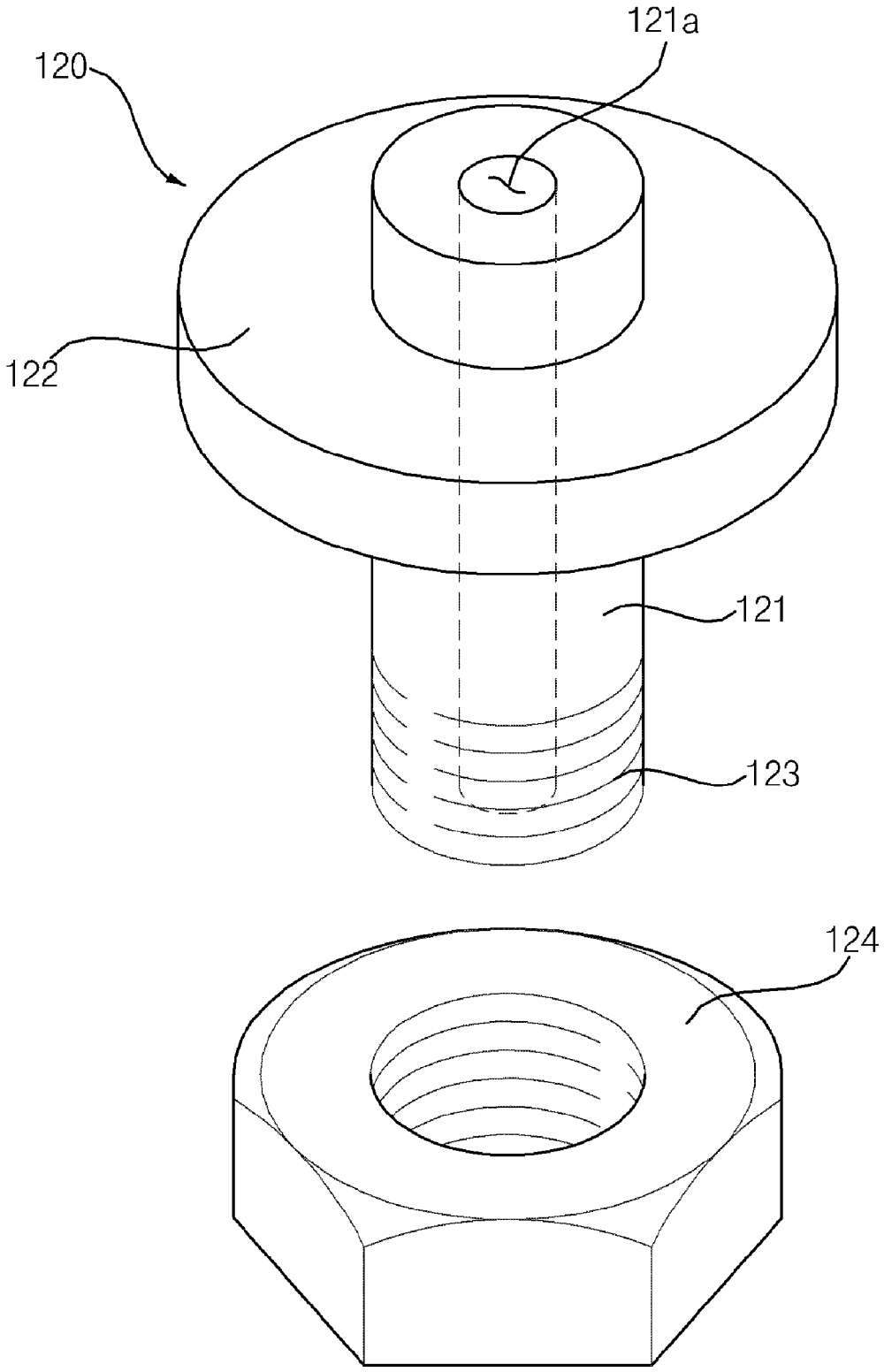
FIGs. 6



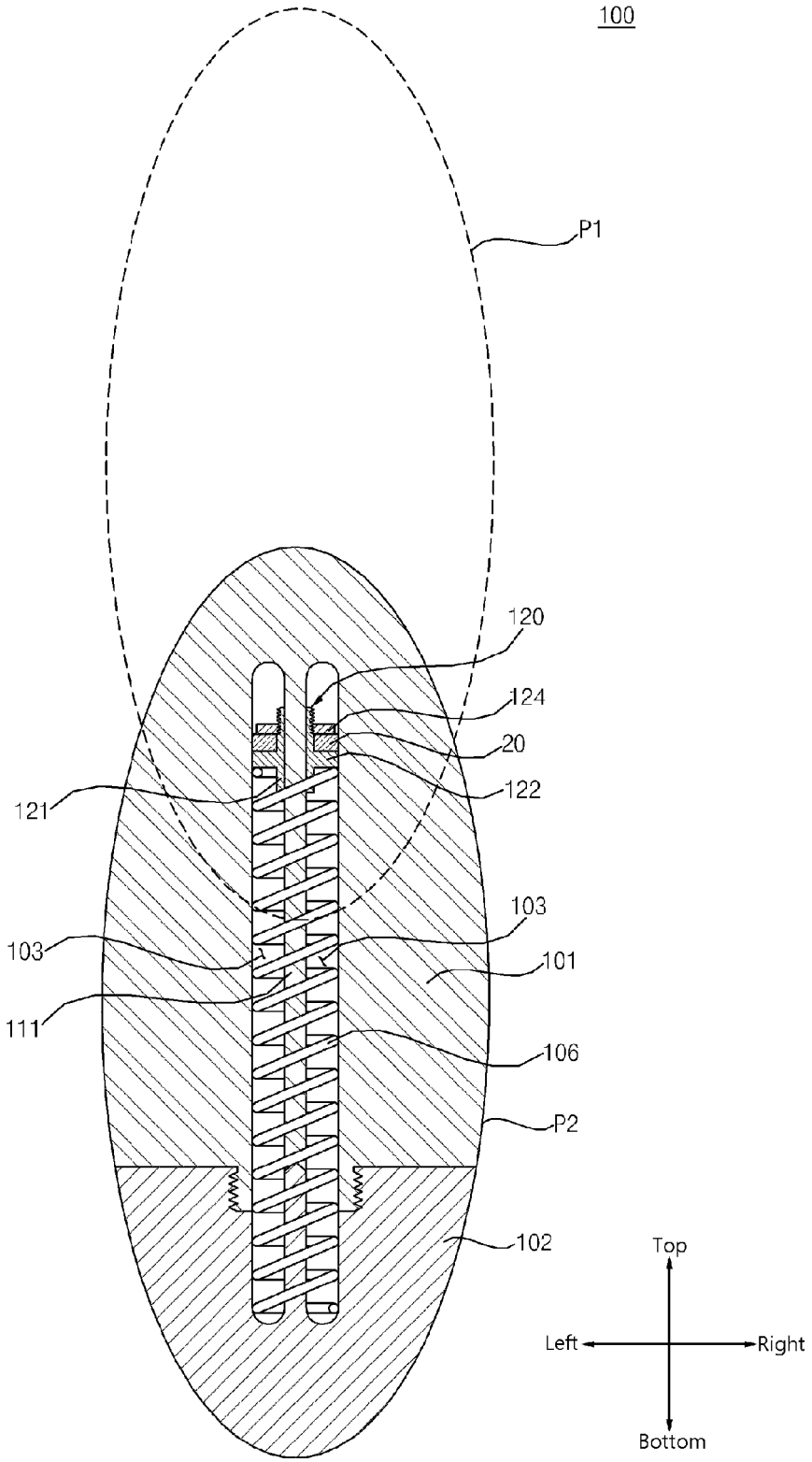
FIGs. 7



FIGs. 8



FIGs. 9


100
P1
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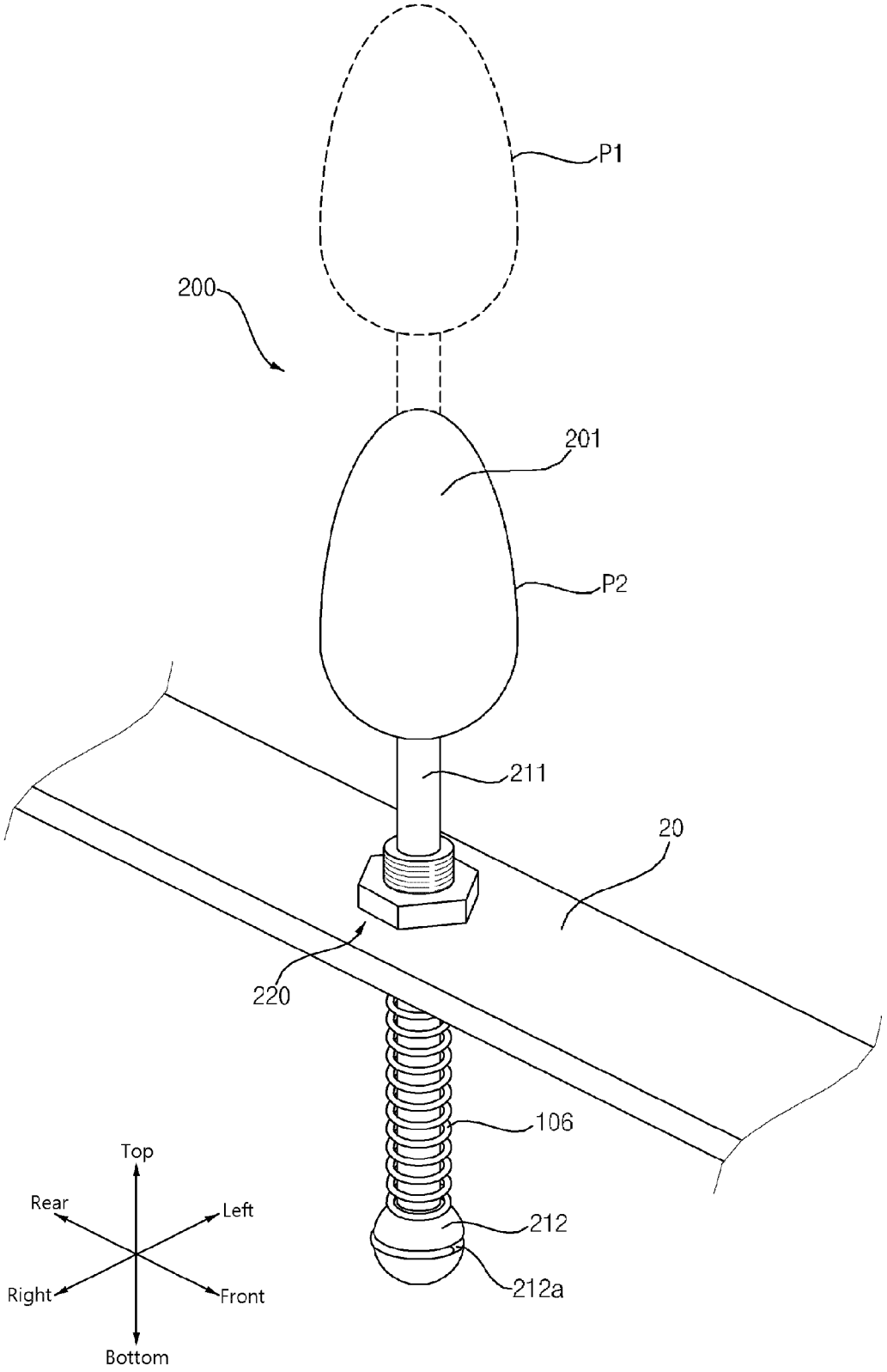
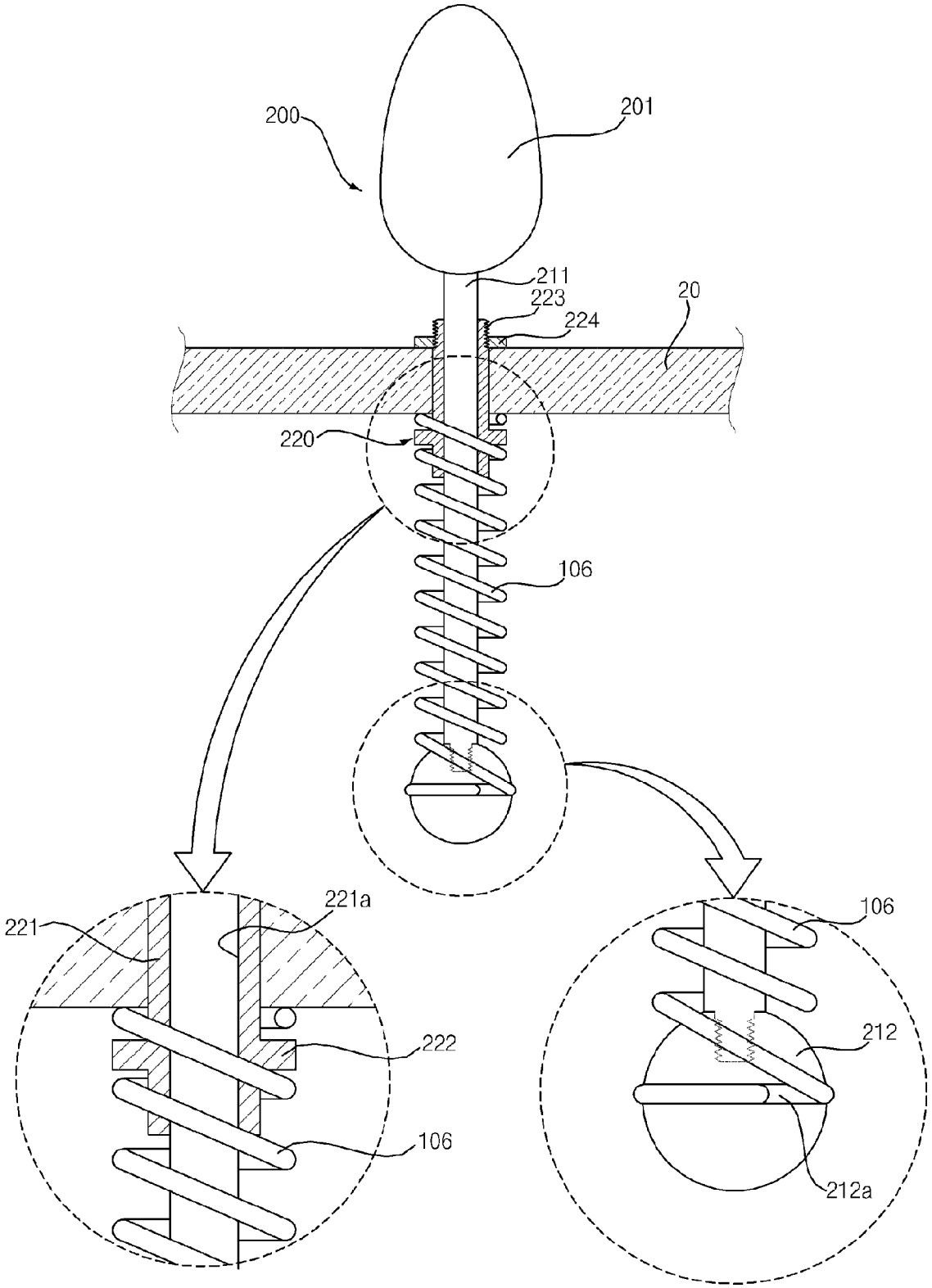
103
103
101
111
106
P2
102
Top
Left
Right
Bottom

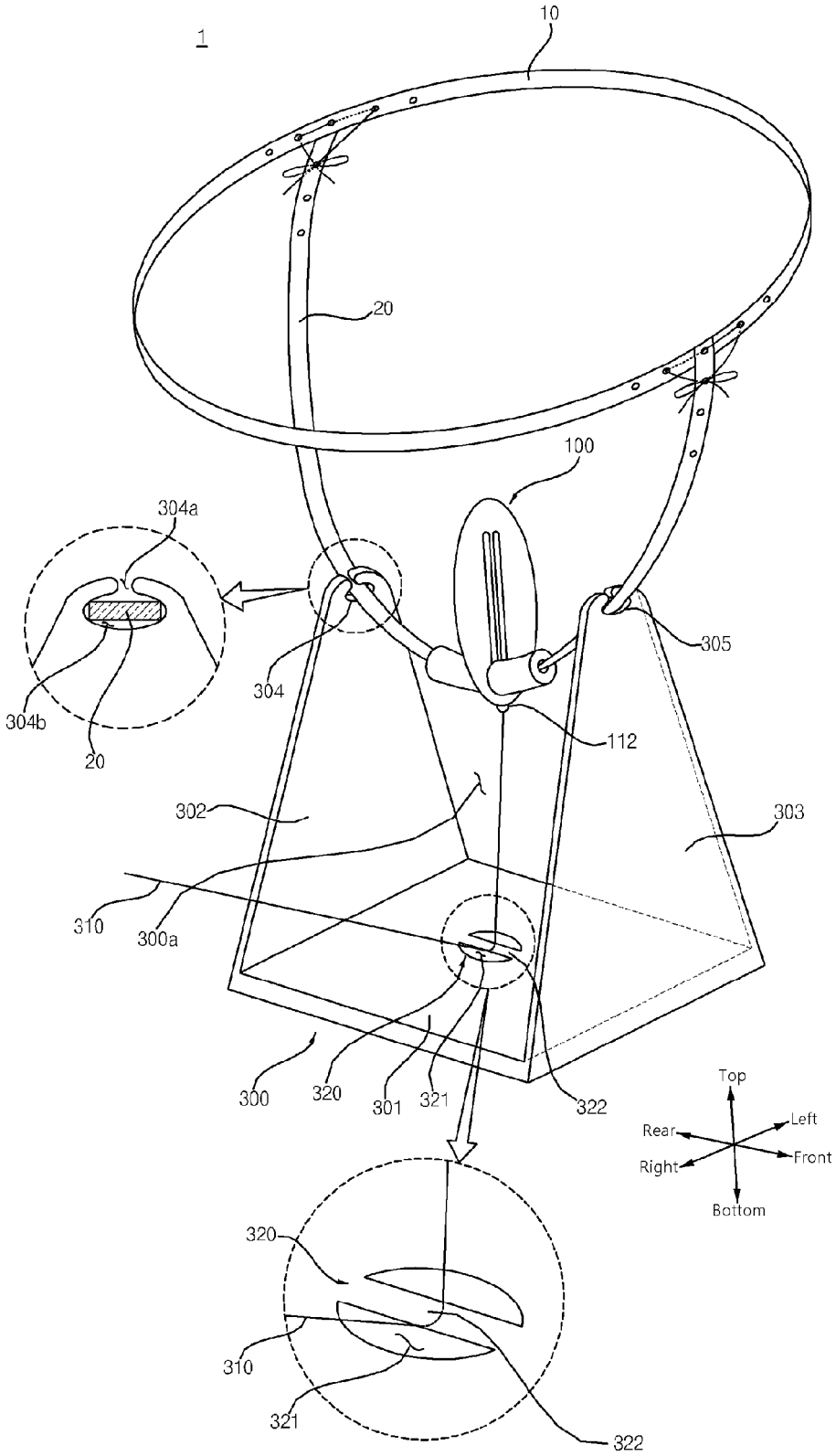
FIGs. 10


P1
200
201
P2
211
20
220
106
212
212a
Top
Rear
Left
Right
Front
Bottom

FIGs. 11



FIGs. 12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20
100
304a
304b
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305
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20
302
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300a
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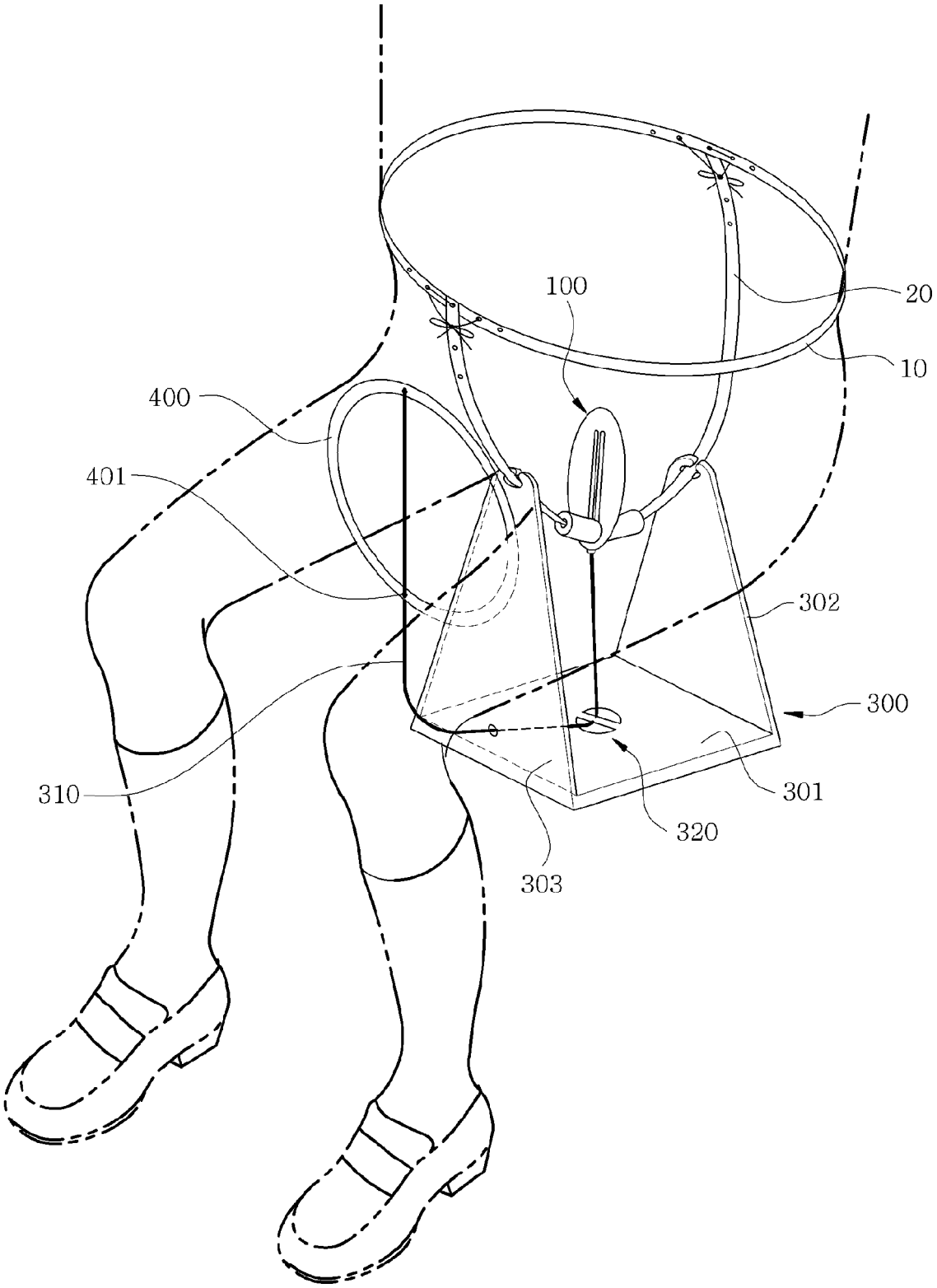
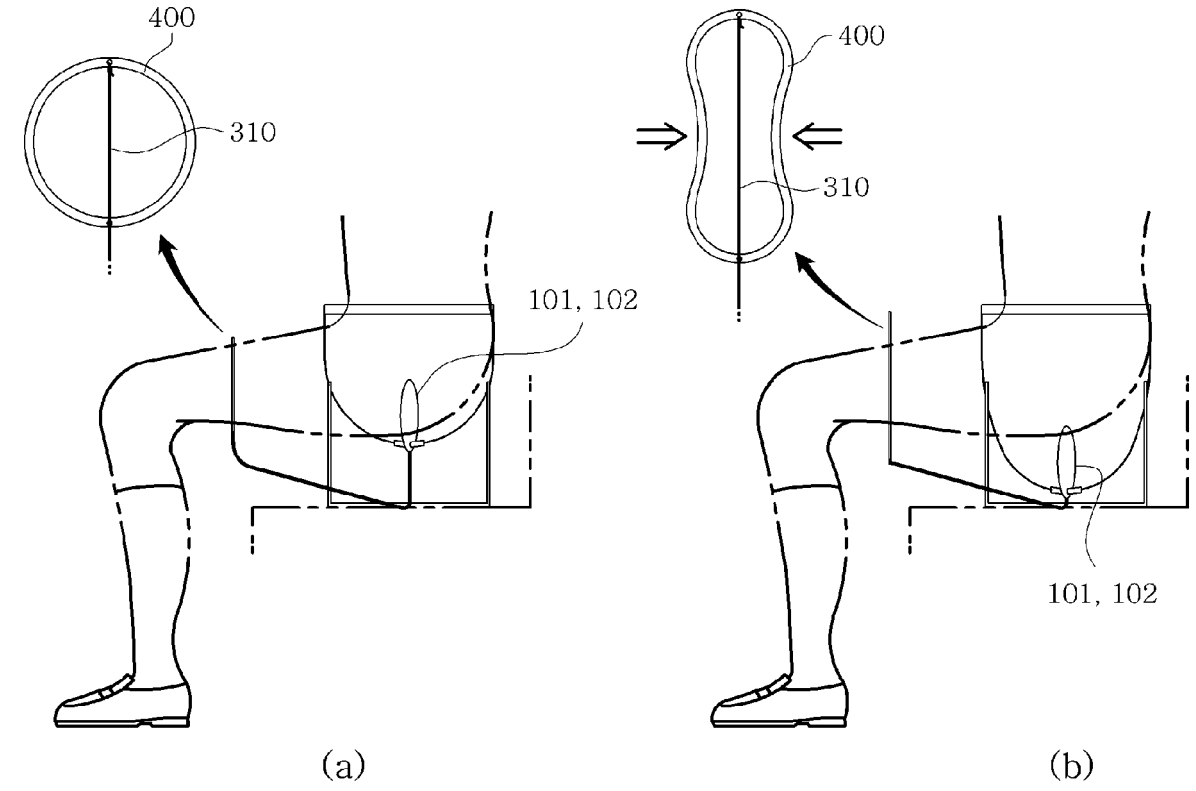
322
Top
Left
Rear
Front
Right
Bottom
320
310
321
322

FIGs. 13



FIGs. 14



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2021/014154

A. CLASSIFICATION OF SUBJECT MATTER

A63B 23/20(2006.01)i; **A63B 21/00**(2006.01)i; **A63B 21/02**(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)

A63B 23/20(2006.01); A61B 5/00(2006.01); A61B 5/20(2006.01); A61H 19/00(2006.01)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models: IPC as above
Japanese utility models and applications for utility models: IPC as above

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

eKOMPASS (KIPO internal) & keywords: 허리벨트(waist belt), 지지벨트(supporting belt), 삽입부(inserting portion), 로드(rod), 탄성부재(elastic element), 슬롯(slot)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5733230 A (SAWCHUCK, Diane J. et al.) 31 March 1998 (1998-03-31) See column 5, line 49 – column 10, line 19; claim 1; and figures 2-7.	1-5
A	US 2002-0169056 A1 (ROSS, Anthony C. et al.) 14 November 2002 (2002-11-14) See paragraphs [0031]-[0035]; and figure 4.	1-5
A	US 2003-0078526 A1 (FARLEY, Michael) 24 April 2003 (2003-04-24) See claims 1-13; and figures 1-6.	1-5
A	KR 10-0710908 B1 (KIM, Kyung Il) 27 April 2007 (2007-04-27) See claims 1-23; and figures 1-6.	1-5
A	KR 10-2016-0065590 A (HUMAN MEDICAL SOLUTION CO., LTD.) 09 June 2016 (2016-06-09) See claims 1-8; and figures 1-4.	1-5

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

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"D" document cited by the applicant in the international application
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
17 January 2022	**17 January 2022**
Name and mailing address of the ISA/KR **Korean Intellectual Property Office** **Government Complex-Daejeon Building 4, 189 Cheongsa-ro, Seo-gu, Daejeon 35208** Facsimile No. **+82-42-481-8578**	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/KR2021/014154

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				AU	2003-247528	A1	13 May 2004
				US	6406411	B1	18 June 2002
				US	6672996	B2	06 January 2004
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				WO	2004-037352	A1	06 May 2004
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				WO	02-053235	A2	11 July 2002
				WO	02-053235	A3	31 October 2002
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				CN	101146478	A	19 March 2008
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