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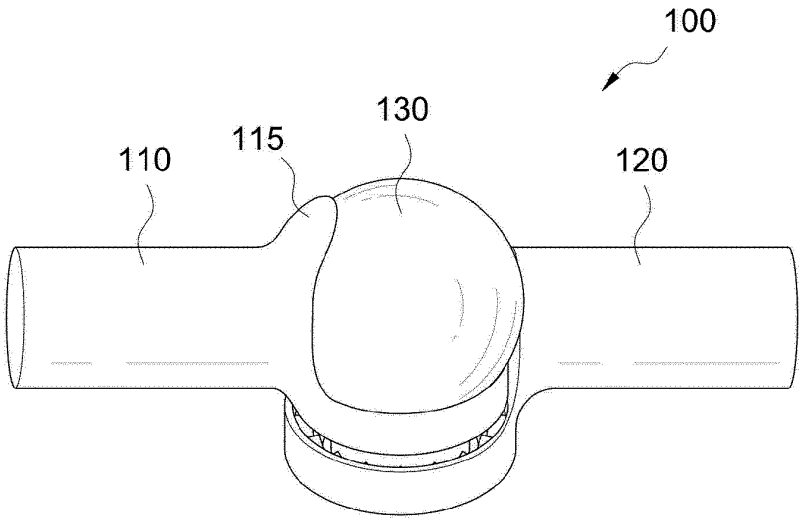
(54) **TOY BLOCK**

(57) A toy block is disclosed. The present invention can be freely connected and rotated, and can be fixed to maintain a certain angle at a specific position, thereby maintaining a specific posture or shape.

【FIG. 2】



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Description

Technical Field

[0001] The present disclosure relates to a block toy and, more particularly, to a block toy that can be freely connected and rotated and can be fixed to maintain a predetermined angle at a specific position.

Background Art

[0002] In general, a toy having joint portions is configured such that the joint portions are made round so as to enable movement of joints similar to the structure of the human body.

[0003] As an example of such a toy, Korean Laid-Open Patent Publication No. 2005-0086491 (August 30, 2005) discloses a toy provided with a friction joint at each joint of a doll.

[0004] In addition, another example of a toy using a joint is disclosed in Korean Patent No. 10-0526971 (November 1, 2005).

[0005] However, in the toy according to the prior art, connection members of a doll toy are connected by concavo-convex joint members, which are provided in the joint portions to be bent, respectively, which allows a user to easily form various poses of the toy. However, there is a problem in that the toy cannot express various human-like postures or shapes.

[0006] In addition, Korean Laid-open Patent Publication No. 2006-0039236 (May 8, 2006) discloses a joint device of a toy using a magnetic force, wherein the joint device includes a connector in which at least one cylindrical magnetic anchor is installed on one side or the other side, and a dumbbell-shaped rotator, which is detached or fixed by magnetic force to one side of the anchor provided in the connector and rotates.

[0007] The toy using the magnets use the principle that blocks can be coupled by using an attractive force of different poles.

[0008] FIG. 1 is an exemplary view illustrating a toy having a joint structure using a magnet according to the prior art, and includes a first body 10, a second body 20, and a connector 30 made of a metal material, and the first body 10 and the second body 20 are provided respectively with magnets 11 and 21 to be connected to the connector 30 via a magnetic force using a magnetic field.

[0009] In addition, blocks using magnets may be mainly installed in a toy having joint portions, such as the arms, the legs, and the neck of a doll or figure, so that the doll or figure can maintain a predetermined posture or shape.

[0010] However, the block toy using magnets have a problem in that it is difficult to maintain a set posture or shape when the magnetic force between the magnets and the connector 30 is weak or the weights of the first body 10 and the second body 20 are heavy.

[0011] In addition, there is a problem in that it is difficult to maintain the shape even when a friction agent is included.

Disclosure of Invention

Technical Problem

[0012] In order to solve these problems, the present disclosure provides a block toy that can be freely connected and rotated, and can be fixed to maintain a predetermined angle at a specific position.

Solution to Problem

[0013] In view of the foregoing, an embodiment of the present disclosure provides a block toy including: a first body;

a second body provided to be brought into close contact with or to be separable from the first body; and
a connector configured to fixedly support the first body and the second body when the first body and the second body are at least partially in close contact with each other in a state in which an arbitrary angle is formed therebetween.

[0014] In addition, according to an embodiment, the connector may be made of a spherical magnetic material, at least one of the first body and the second body may further include a magnet that forms a magnetic field with the connector.

[0015] In addition, according to an embodiment, the first body may include a first body coupling portion coupled to the second body, and
a guide portion on which a portion of the connector is mounted.

[0016] In addition, according to an embodiment, the first body may further include a flange formed to be in close contact with a portion of the connector seated in the guide portion.

[0017] In addition, according to an embodiment, the second body may include a second body coupling portion coupled to the first body,

a seating groove provided inside the second body coupling portion to allow a portion of the connector penetrating the first body to be seated therein, and
a magnet installed in the seating groove to form a magnetic attraction with the connector.

[0018] In addition, according to an embodiment, in the block toy, the connector is installed on one side of the first body and the second body is installed on the other side.

[0019] In addition, according to an embodiment, a block toy may include: a first body including, on one side, a first body coupling portion to which a second body is rotatably connected via a connector, wherein the first

body coupling portion is configured to support the second body to be fixed at an arbitrary position; the second body configured to be rotatably coupled to the first body via the connector and including, on one side, a second body coupling portion configured to be coupled with at least a portion of either the first body or the first body coupling portion, wherein the second body coupling portion is configured to support the first body or the first body coupling portion to be fixed at a position forming an arbitrary angle with the first body; and the connector detachably installed in the first body and the second body.

[0020] In addition, according to an embodiment, each of the first body and the second body may further include a contact pad configured to increase frictional force with the connector.

[0021] In addition, according to an embodiment, the magnet may be slidably installed in the first body and the second body.

[0022] In addition, according to an embodiment, when the magnet forms a magnetic field with the connector and is attached to the connector in a state of protruding to one side of the first body, the second body and the connector may be disposed at a distance d from an inner surface of the first body and may be coupled to be freely rotatable.

[0023] In addition, according to an embodiment, when the magnet is attached to the connector in a state of being accommodated inside the first body, the second body and the connector may come into close contact with the inner surface of the first body, so that a predetermined shape can be maintained or fixed through friction caused by pressure.

[0024] In addition, according to an embodiment, when the magnet is attached to the connector in a state of being accommodated inside the first body, the second body and the connector may come into close contact with the inner surface of the first body to be limited in a rotation range or to be fixed at a predetermined angle.

[0025] In addition, according to an embodiment, the first body coupling portion may include a plurality of second body fixing portions provided at a predetermined interval to be coupled with at least a portion of the second body coupling portion to fix the second body at an arbitrary angle.

[0026] In addition, according to an embodiment, the first body coupling portion may be coupled to be rotatable around a longitudinal rotation axis C of the first body.

[0027] In addition, according to an embodiment, the first body coupling portion may further include a first body fixing portion coupled to the first body to limit a rotation range of the first body.

[0028] In addition, according to an embodiment, the second body coupling portion may include at least one second body fixing portion coupled to either the first body or the first body coupling portion.

[0029] In addition, according to an embodiment, when the magnet forms a magnetic field with the connector and is attached to the connector in a state of protruding to one side of the second body, the second body and the connector may come into close contact with the inner surface of the first body to be limited in a rotation range or to be fixed at a predetermined angle.

[0030] In addition, according to an embodiment, when the magnet is attached to the connector in a state of being accommodated inside the second body, the second body and the connector may be disposed at a distance from an inner surface of the first body and may be coupled to be freely rotatable.

[0031] In addition, according to an embodiment, the second body coupling portion may be coupled to be rotatable around a longitudinal rotation axis C of the second body.

[0032] In addition, according to an embodiment, the second body coupling portion may further include a second body fixing portion coupled to the second body to limit a rotation range of the second body.

Advantageous Effects of Invention

[0033] The present disclosure has an advantage in that the second body can be freely connected and rotated and can be fixed to maintain a certain angle at a specific position, so that a specific posture or shape can be maintained.

Brief Description of Drawings

[0034]

FIG. 1 is an exemplary view illustrating a toy having a joint structure according to the prior art.

FIG. 2 is an exemplary view illustrating a block toy according to an embodiment of the present disclosure.

FIG. 3 is an exploded perspective view illustrating the configuration of the block toy according to the embodiment of FIG. 2.

FIG. 4 is another exploded perspective view illustrating the configuration of the block toy according to the embodiment of FIG. 2.

FIG. 5 is an exemplary view illustrating a block toy according to another embodiment of the present disclosure.

FIG. 6 is an exploded perspective view illustrating the block toy according to the embodiment of FIG. 5.

FIG. 7 is a cross-sectional view illustrating the configuration of the block toy according to the embodiment of FIG. 5.

FIG. 8 is a perspective view illustrating a block toy according to another embodiment of the present disclosure.

FIG. 9 is an exploded perspective view illustrating a block toy according to FIG. 8.

FIG. 10 is an exploded perspective view illustrating another embodiment of the present disclosure.

FIG. 11 is a perspective view illustrating the block

toy according to the embodiment of FIG. 10.
FIG. 12 is another perspective view illustrating the block toy according to the embodiment of FIG. 10.
FIG. 13 is a cross-sectional view illustrating the configuration of the block toy according to the embodiment of FIG. 10.
FIG. 14 is a perspective view illustrating a block toy according to another embodiment of the present disclosure.
FIG. 15 is an exploded perspective view illustrating the configuration of a block toy according to the embodiment of FIG. 14.
FIG. 16 is a perspective view illustrating a block toy according to another embodiment of the present disclosure.
FIG. 17 is an exploded perspective view illustrating the configuration of the block toy according to the embodiment of FIG. 16.
FIG. 18 is a perspective view illustrating a block toy according to another embodiment of the present disclosure.
FIG. 19 is an exploded perspective view illustrating the configuration of a block toy according to the embodiment of FIG. 18.
FIG. 20 is a perspective view illustrating a block toy according to another embodiment of the present disclosure.
FIG. 21 is an exploded perspective view illustrating the configuration of the block toy according to the embodiment of FIG. 21.
FIG. 22 is a perspective view illustrating a block toy according to another embodiment of the present disclosure.
FIG. 23 is an exploded perspective view illustrating the configuration of the block toy according to the embodiment of FIG. 22.
FIG. 24 is a perspective view illustrating a block toy according to another embodiment of the present disclosure.
FIG. 25 is another perspective view illustrating the block toy according to the embodiment of FIG. 24.
FIG. 26 is an exploded perspective view illustrating the configuration of the block toy according to the embodiment of FIG. 24.

Best Mode for Carrying out the Invention

[0035] Hereinafter, the present disclosure will be described in detail with reference to embodiments of the present disclosure and the accompanying drawings on the premise that like reference numerals denote like elements.

[0036] Prior to describing specific details for the implementation of the present disclosure, it is to be noted that configurations, which are not directly related to the technical subject matter of the present disclosure, are omitted within the scope of not disturbing the technical subject matter of the present disclosure.

[0037] Based on the principle that an inventor can define the concept of appropriate terms in order to best describe his or her disclosure, the terms or words used in this specification and claims should be interpreted as meanings and concepts consistent with the technical spirit of the disclosure.

[0038] In this specification, the expression that a certain feature "includes" a certain component means that the feature may further include other components rather than excluding other components.

[0039] In addition, the term, such as "...part", "...device", or "...module", means a unit for processing at least one function or operation, and may be classified into hardware, software, or a combination thereof.

[0040] In addition, the term "at least one" is defined as a term including singular and plural, and even if the term "at least one term" does not exist, it will be apparent that each component may exist in singular or plural numbers, and the term may mean singular or plural.

[0041] In addition, each component may be provided in singular or plural depending on how it is implemented.

[0042] Hereinafter, embodiments of a block toy according to the present disclosure will be described in detail with reference to the accompanying drawings.

(First Embodiment)

[0043] FIG. 2 is an exemplary view illustrating a block toy according to an embodiment of the present disclosure, FIG. 3 is an exploded perspective view illustrating the configuration of the block toy according to the embodiment of FIG. 2, and FIG. 4 is another exploded perspective view illustrating the configuration of the block toy according to the embodiment of FIG. 2.

[0044] Referring to FIGS. 2 to 4, a block toy 100 according to a first embodiment of the present disclosure may include a first body 110, a second body 120, and a connector 130.

[0045] The first body 110 is a member configured in a shape such as a sphere, a circular cylinder, a cylinder, or a polyhedron shape such as a tetrahedron or hexahedron, wherein the first body 110 may be fabricated as a partial component of a joint structure such as a hand, a wrist, a foot, an ankle, an arm, an elbow, a leg, a knee, a torso, a head, a shoulder, a waist, or a pelvis in a jointed toy such as a doll or a figure.

[0046] In addition, the first body 110 may be fabricated as a partial component of an arch structure to form a certain angle between bricks in a block-type toy that forms an arbitrary shape through assembly or stacking.

[0047] In addition, the first body 110 may include a first body coupling portion 111 to be coupled to the second body 120 on one side.

[0048] The first body coupling portion 111 is coupled to a portion of the second body 120 and fixed so that the first body and the second body can maintain a state of forming an arbitrary angle.

[0049] In addition, the first body 110 may include a

guide portion 112, which is in close contact with at least a portion of the outer surface of the connector 130 along the outer peripheral edge of the first body coupling portion 111 so that the connector 130 is supported, and a through hole 113 which is bored such that the connector 130 partially penetrates the guide portion 112.

[0050] In addition, the first body 110 may include toothed engagement grooves 114 protruding by a predetermined length at a distal end portion of the guide portion 112, and the toothed engagement grooves 114 allow the first body 110 and the second body 120 coupled in close contact with each other to maintain a predetermined angle therebetween.

[0051] In the embodiment of the present disclosure, the configuration using the toothed engagement groove 114 is described as an example for convenience of explanation, but is not limited thereto. The first body 110 and the second body 120 may be provided with materials for increasing frictional force, such as rubber and silicone, on the outer surfaces thereof such that the first body 110 and the second body 120 can maintain a predetermined position or a predetermined angle.

[0052] In addition, the first body 110 may include a flange 115 formed such that a portion of the connector 130 seated on the guide portion 112 more firmly comes into close contact with the first body 110.

[0053] In addition, the flange 115 may have a curved surface formed on the inner surface thereof in close contact with the connector 130 so that the contact state with the connector 130 can be maintained more firmly.

[0054] The second body 120 is a member that is installed to be in close contact with or separable from the first body and is configured in a shape such as a sphere, a circular cylinder, a cylinder, or a polyhedron shape such as a tetrahedron or hexahedron, wherein the second body may be fabricated as a partial component of a joint structure such as a hand, a wrist, a foot, an ankle, an arm, an elbow, a leg, a knee, a torso, a head, a shoulder, a waist, or a pelvis in a jointed toy such as a doll or a figure.

[0055] In addition, the second body 120 may be fabricated as a partial component of an arch structure to form a certain angle between bricks in a block-type toy that forms an arbitrary shape through assembly or stacking.

[0056] In addition, the second body 120 may include a second body coupling portion 121 to be coupled to the first body 110 on one side.

[0057] The second body coupling portion 121 is coupled to a portion of the first body 110, that is, the toothed engagement grooves 114 of the first body coupling portion 111 to fix the first body 110 and the second body 120 so that the first body 110 and the second body 120 can maintain a state of forming an arbitrary angle.

[0058] In addition, the second body 120 may include, inside the second body coupling portion 121, a seating groove 122 in which a portion of the outer surface of the connector 130 exposed through the through hole 113 in the first body 110 is seated.

[0059] In addition, the second body 120 may have an toothed engagement groove portion 123 protruding by a predetermined length on the inner surface of the second body coupling portion 121, and the toothed engagement groove portion 123 may be coupled with the toothed engagement groove portion 114 provided on the first body 110 so that the first body 110 and the second body 120, which are engaged with each other, can maintain a state of being coupled at a predetermined angle.

[0060] Meanwhile, in the embodiment of the present disclosure, the configuration using the toothed engagement groove 123 is described as an example for convenience of explanation, but is not limited thereto. The first body 110 and the second body 120 may be provided with materials for increasing frictional force, such as rubber and silicone, on the outer surfaces thereof such that the first body 110 and the second body 120 can maintain a predetermined position or a predetermined angle.

[0061] That is, the first body 110 and the second body 120 can more firmly maintain a fixed state through an increase in frictional force.

[0062] In addition, the second body 120 may have a magnet 124 installed at the center of the seating groove 122 to form a magnetic attraction with the connector 130.

[0063] The magnet 124 forms a magnetic field with the connector 130 so that the first body 110 and the second body 120 can be maintained in close contact with each other.

[0064] That is, the connector 130 is installed on one side of the first body 110, the second body 120 is installed on the other side of the first body 110, and the magnet 124 installed on the second body 120 forms a magnetic attraction with the connector 130, so that the first body 110 and the second body 120 can maintain a close contact state while maintaining a predetermined angle.

[0065] The connector 130 is a member installed between the first body 110 and the second body 120. Preferably, the connector 130 may have a spherical shape, and more preferably, the connector 130 may be made of a metallic magnetic material to be capable of forming a magnetic field with the magnet 124 of the second body 120.

[0066] That is, when the first body 110 and the second body 120 are at least partially brought into close contact with each other in the state of forming an arbitrary angle, so that the toothed engagement grooves 114 of the first body 110 and the toothed engagement grooves 123 of the second body 120 are engaged with each other, the connector 130 fixedly supports the first body 110 and the second body 120.

[0067] Next, the operation process of the block toy 100 according to the first embodiment will be described.

[0068] First, in the state in which the first body 110 and the second body 120, which are separated from each other, are arranged to form a predetermined angle, the toothed engagement grooves 114 provided in the first body 110 and the toothed engagement grooves 123 provided in the second body 120 are brought into close contact with each other.

[0069] Subsequently, the connector 130 is installed on the other side of the first body 110 such that the first body 110 and the second body 120 are fixed in the state of forming a predetermined angle therebetween via a magnetic field with the magnet 124 of the second body 120.

[0070] In addition, the connector 130 is placed in close contact with the inner surface of the flange 115 of the first body 110 such that the connector 130 and the magnet 124 can maintain a more firmly fixed state.

(Second Embodiment)

[0071] FIG. 5 is an exemplary view illustrating a block toy according to a second embodiment of the present disclosure, FIG. 6 is an exploded perspective view illustrating the block toy according to the embodiment of FIG. 5, and FIG. 7 is a cross-sectional view illustrating the configuration of the block toy according to the embodiment of FIG. 5.

[0072] As illustrated in FIGS. 5 to 7, the block toy 100a according to the second embodiment includes a first body 110a, a second body 120a, and a connector 130a.

[0073] The first body 110a includes first body coupling portions 111a, which allow the second body 120a to be rotatably coupled to one side of the first body 110a via a connector 130a and fixedly supports the second body 120a in the state in which the first body 110a and the second body 120a maintain an arbitrary position or a predetermined angle.

[0074] The first body coupling portions 111a are a pair of members each of which have a semicircular shape, wherein the first body coupling portions may be installed at a predetermined distance from each other, may be connected with the body portion 110a at one side while being open at the other side.

[0075] In addition, second body fixing portions 111a' may be provided at regular intervals along the semicircular inner surfaces of the first body coupling portions 111a.

[0076] The second body fixing portions 111a' are partially engaged with a component of the second body 120a such that the second body 120a can be fixed at a position maintaining a predetermined angle with the first body 110a.

[0077] In the present embodiment, the configuration in which the second body fixing portions 111a' are installed in the first body coupling portions 111a is described as an example, but is not limited thereto. The second body fixing portions may be provided in the first body 110a.

[0078] In addition, a magnet 112a may be provided inside the first body 110a to form a magnetic attraction with the connector 130a.

[0079] In addition, the first body 110a may be configured to be coupled to the connector 130a via the first body coupling portions 111a.

[0080] The second body 120a may be rotatably coupled to the first body 110a via the connector 130a.

[0081] In addition, the second body 120a may include, at one side thereof, second body coupling portions 121a, which are at least partially engaged with the first body coupling portions 110a or the second body fixing portions 111a' provided on one of the first body coupling portions 111a to fixedly support the second body 120a at a position where the second portion 120a forms a predetermined angle with the first body 110a.

[0082] The second body coupling portions 121a may be provided at one distal end of the second body 120a, and may include flanges 121a' protruding radially outward by a predetermined length. The flanges 121a' may be arranged at regular intervals along the circumference of the second body coupling portions 121a.

[0083] That is, the flanges 121a' of the second body coupling portions 121a are engaged with the second body fixing portion 111a' of the first body coupling portions 111a, so that the first body 110a and the second body 120a are fixed at a position where the first body 110a and the second body 120a form a predetermined angle therebetween.

[0084] In addition, a magnet 122a may be provided inside the second body 120a to form a magnetic attraction with the connector 130a.

[0085] The connector 130a is a member installed between the first body 110a and the second body 120a. Preferably, the connector 130 may have a spherical shape, and more preferably, the connector 130 may be made of a metallic magnetic material to be capable of forming a magnetic field with the magnet 112a of the first body 110a and the magnet 122a of the second body 120a.

[0086] In addition, the connector 130a may be configured to be freely detachable from the first body 110a and the second body 120a and may allow the first body 110a or the second body 120a attached thereto to be freely rotatable via the spherical outer shape thereof.

[0087] Next, an operation process of the block toy 100a according to the second embodiment will be described.

[0088] First, the connector 130a is installed in the first body 110a.

[0089] At this time, the connector 130a may be coupled to the first body 110a via the first body coupling portion 111a or may be coupled via a magnetic field formed by the magnet 112a.

[0090] Thereafter, the second body 120a is brought into close contact with the connector 130a such that the second body 120a is rotatably coupled to the first body 110a via a magnetic field formed by the magnet 122a.

[0091] That is, the first body 110a and the second body 120a are rotatably coupled to each other via a magnetic attraction formed by the magnet 122a with the connector 130a.

[0092] Next, when the second body 120a is fixed at a position where the second body 120a forms a predetermined angle with the first body 110a, the flanges 121a' of the second body coupling portion 121a are moved to the first body coupling portion 111a to be engaged with the second body fixing portions 111a' provided on the

inner or outer surfaces of the first body coupling portions 111a such that the second body 120a is fixed at a position where the second body 120a forms the predetermined angle with the first body 110a.

[0093] Therefore, the first body 110a and the second body 120a can be freely connected and rotated with respect to each other and can be fixed to maintain a predetermined angle at a specific position desired by a user by using the first body coupling portions 111a and the second body coupling portion 121a, so that the first body 110a and the second body 120a can maintain a specific posture or shape.

(Third Embodiment)

[0094] FIG. 8 is a perspective view illustrating a block toy according to a third embodiment of the present disclosure, and FIG. 9 is an exploded perspective view illustrating a block toy according to FIG. 8.

[0095] As illustrated in FIGS. 8 and 9, the block toy 100b according to the third embodiment includes a first body 110b, a second body 120b, and a connector 130b.

[0096] The block toy 100b according to the third embodiment differs from the first embodiment in terms of the components corresponding to the first body coupling portions 111a (see FIG. 5) and the second body coupling portions 121a (see FIG. 5) of the first embodiment.

[0097] A first body coupling portion 111b according to the third embodiment is provided at one distal end of the first body 110b, and may include an accommodation groove 111b' having an opening on one side in the vertical direction to accommodate the second body 120b, and a magnet (not illustrated) provided in a lower portion of the accommodation groove 111b'.

[0098] In addition, the second body coupling portion 121b according to the third embodiment has a hemispherical shape configured to partially accommodate the connector 130b, and a magnet 122b is installed on one side of the second body coupling portion 121b to form a magnetic field with the connector 130b.

[0099] Therefore, the second body coupling portion 121b accommodates a portion of the connector 130b, and in the state in which the connector 130b is accommodated, the second body coupling portion 121b is coupled to the first body coupling portion 111b so that stable and free coupling can be provided and the second body 120b can be fixed while maintaining a predetermined angle at an arbitrary position of the first body 110b in the vertical direction.

[0100] The connector 130b is a member installed between the first body 110b and the second body 120b, and may be made of a metallic magnetic material in a spherical shape.

[0101] In addition, the connector 130b may be configured to be freely detachable from the first body 110b and the second body 120b and may allow the first body 110b or the second body 120b attached thereto to be freely rotatable via the spherical outer shape thereof.

(Fourth Embodiment)

[0102] FIG. 10 is an exploded perspective view illustrating a fourth embodiment of the present disclosure, FIG. 11 is a perspective view illustrating the block toy according to the embodiment of FIG. 10, FIG. 12 is another perspective view illustrating the block toy according to the embodiment of FIG. 10, and FIG. 13 is a cross-sectional view illustrating the configuration of the block toy according to the embodiment of FIG. 10.

[0103] As illustrated in FIGS. 10 and 13, the block toy 100c according to the fourth embodiment includes a first body 110c, a second body 120c, and a connector 130c.

[0104] The block toy 100c according to the fourth embodiment differs from the second embodiment in terms of the components corresponding to the first body coupling portions 110a (see FIG. 5), the second body coupling portions 120a (see FIG. 5), and the magnet 112c of the second embodiment.

[0105] The first body 110c has a hollow therein and is configured such that the magnet 112c in the hollow is slidable in the longitudinal direction of the first body 110c.

[0106] In addition, the first body 110c includes a first body coupling portion 111c on one side, and the first body coupling portion 111c is an arc-shaped member with one side open and supports the second body 120c to be freely rotatable.

[0107] In addition, in the first body coupling portion 111c, a through hole 111c' is formed between the first body 110c so that the magnet 112c can be pulled out from the inside of the first body 110c to the outside.

[0108] The magnet 112c may have a flange 112c' at its distal end portion.

[0109] In addition, the first body 110c may further include a contact pad 113c in order to increase the frictional force with the second body 120c or the connector 130c installed in the first body coupling portion 111c, thereby fixing the second body 120c not to rotate.

[0110] In the second body 120c, the second body coupling portion 121c may be configured in a semicircular or hemispherical shape to partially accommodate the connector 130c, and a magnet 122c may be installed on one side of the second body coupling portion 121c to form a magnetic field with the connector 130c.

[0111] The connector 130c is a member installed between the first body 110c and the second body 120c, and may be made of a metallic magnetic material in a spherical shape.

[0112] In addition, the connector 130c may be configured to be freely detachable from the first body 110c and the second body 120c and may allow the first body 110c or the second body 120c attached thereto to be freely rotatable via the spherical outer shape thereof.

[0113] Next, an operation process of the block toy 100c according to the fourth embodiment will be described.

[0114] When the magnet 112c forms a magnetic field with the connector 130c coupled to the second body 120c , the magnet 112c moves to the outside of the first

body 110c and is attached to the connector 130c in the state of protruding to one side of the first body 110c.

[0115] At this time, the second body 120c and the connector 130c are disposed at a position spaced apart from the inside of the first body 110c by a predetermined distance d due to the protruding magnet 112c, and the second body 120c is freely rotatable even in the state of being coupled to the first body 110c.

[0116] Thereafter, in a state of setting the second body 120c and the connection portion 130c to form a predetermined angle with the first body 110c, a user pushes and moves the second body 120c and the connector 130 toward the inside of the first body 110c, thereby completely inserting the second body 120c and the connector 130c into the first body coupling portion 111c.

[0117] The second body 120c inserted into the inside of the first body coupling portion 111c is fixed at a predetermined position or at a predetermined angle with respect the first body 110c at the inserted position by the frictional force with the contact pad 113c.

[0118] In addition, in the above-described embodiment, when the magnet is attached to the connector in a state of being accommodated inside the first body, the second body and the connector is in close contact with the inside of the first body to be limited in the rotation range or to be fixed at a predetermined angle.

(Fifth Embodiment)

[0119] FIG. 14 is a perspective view illustrating a block toy according to a fifth embodiment of the present disclosure, and

[0120] FIG. 15 is an exploded perspective view illustrating the configuration of the block toy according to the embodiment of FIG. 14.

[0121] As illustrated in FIGS. 14 and 15, the block toy 100d according to the fifth embodiment includes a first body 110d, a second body 120d, and a connector 130d.

[0122] The block toy 100d according to the fifth embodiment differs from the second embodiment in terms of the components corresponding to the first body 110a (see FIG. 5) and the second body 120a (see FIG. 5) of the second embodiment.

[0123] The first body 110d may include a ring-shaped first body coupling portion 111d on one side.

[0124] In the ring-shaped first body coupling portion 111d, a connector 130d may be installed at the center, and a plurality of second body fixing portions 111d' may be provided at regular intervals along the outer surface of the first body coupling portion 111d.

[0125] The second body fixing portions 111d' are engaged with at least a portion of the second body coupling portion 121d provided on the second body 120d, so that the second body 120d is fixed at a predetermined angle with respect to the first body 110d.

[0126] In addition, the first body coupling portion 111d has a first body fixing portion 111d" provided on the other side, so that the first body coupling portion 111d is coupled to be rotatable around the longitudinal rotation axis C of the first body 110d.

[0127] That is, a protrusion 110d' is provided at the distal end portion of the first body 110d to be rotatably coupled to the lower portion of the first body coupling portion 111d, and coupling grooves 110d" are formed along the periphery of the protrusion 110d' to be engaged with the first body fixing portion 111d" of the first body coupling portion 111d. As a result, the first body coupling portion 111d can be limited in the rotation range on the rotation axis C of the first body 110d, and can be fixed at a predetermined angle.

[0128] The second body 120d has a pair of second body coupling portions 121d provided on one side thereof to be in close contact with the connector 130d, and a bump 121d' may be provided on the bottom surface of the second body coupling portion 121d to be engaged with the second body fixing portion 111d' such that the second body 120d is fixed at a predetermined position.

[0129] In addition, although not illustrated in the drawing, the first body 110d and the second body 120d may each include a magnet (not illustrated) to form a magnetic field with the connector 130d.

[0130] The connector 130d is a member installed between the first body 110d and the second body 120d, and may be made of a metallic magnetic material in a spherical shape.

[0131] In addition, the connector 130d may be configured to be freely detachable from the first body 110d and the second body 120d and may allow the first body 110d or the second body 120d attached thereto to be freely rotatable via the spherical outer shape thereof.

(Sixth Embodiment)

[0132] FIG. 16 is a perspective view illustrating a block toy according to a sixth embodiment of the present disclosure, and

[0133] FIG. 17 is an exploded perspective view illustrating the configuration of the block toy according to the embodiment of FIG. 16

[0134] As illustrated in FIGS. 16 and 17, the block toy 100e according to the sixth embodiment includes a first body 110e, a second body 120e, and a connector 130e.

[0135] The first body 110e may include a ring-shaped first body coupling portion 111e on one side.

[0136] In the ring-shaped first body coupling portion 111e, a connector 130e may be installed at the center, and a plurality of second body fixing portions 111e' may be provided at regular intervals along the outer surface of the first body coupling portion 111e.

[0137] The second body fixing portions 111e' are engaged with at least a portion of the second body coupling portion 121e provided on the second body 120e, so that the second body 120e is fixed while forming a predetermined angle with respect to the first body 110e.

[0138] In addition, the first body coupling portion 111e has a first body fixing portion 111e" provided on the other

side, so that the first body coupling portion 111e is coupled to be rotatable around the longitudinal rotation axis of the first body 110e.

[0139] That is, a protrusion 110e' is provided at the distal end portion of the first body 110e to be rotatably coupled to the lower portion of the first body coupling portion 111e, and coupling grooves 110e" are formed along the periphery of the protrusion 110e' to be engaged with the first body fixing portion 111e" of the first body coupling portion 111e. As a result, the first body coupling portion 111e can be limited in the rotation range on the rotation axis of the first body 110e, and can be fixed while forming a predetermined angle.

[0140] The second body 120e has a second body coupling portion 121e, which is provided on one side thereof and brought into close contact with the connector 130e by a magnetic field formed by the magnet 122e with the connector 130e, and a protrusion 121e' may be provided on one side of the second body coupling portion 121e to be engaged with the second body fixing portion 111e' such that the second body 120e can be fixed at a predetermined position.

[0141] The connector 130e is a member installed between the first body 110e and the second body 120e, and may be made of a metallic magnetic material in a spherical shape.

[0142] In addition, the connector 130e may be configured to be freely detachable from the first body 110e and the second body 120e and may allow the first body 110e or the second body 120e attached thereto to be freely rotatable via the spherical outer shape thereof.

(Seventh Embodiment)

[0143] FIG. 18 is a perspective view illustrating a block toy according to a seventh embodiment of the present disclosure, and FIG. 19 is an exploded perspective view illustrating the configuration of the block toy according to the embodiment of FIG. 18.

[0144] As illustrated in FIGS. 18 and 19, the block toy 100f according to the seventh embodiment includes a first body 110f, a second body 120f, and a connector 130f.

[0145] The first body 110f may include a first body coupling portion 111f on one side.

[0146] The first body coupling portion 111f may include a protrusion 111f' protruding by a predetermined length toward the second body 120f, and coupling grooves 111f" may be provided at regular intervals along the circumference of the outer surface of the protrusion 111f'.

[0147] In addition, a magnet 112f may be provided at a distal end of the protruding portion 111f'.

[0148] The second body 120f may include a pair of second body coupling portions 121f on one side, and coupling grooves 121f" may be provided at regular intervals along the circumference of a distal end portion of the second body coupling portion 121f.

[0149] The coupling grooves 121f" are engaged with the coupling grooves 111f" of the first body coupling portion 111f so that the second body 120f can be fixed in the state of maintaining a predetermined angle with the first body 110f.

[0150] In addition, a hollow may be provided inside the second body 120f, and a slide portion 120f' may be provided to be movable along the inside of the second body 120f.

[0151] The slide portion 120f' includes a magnet 122f on one side to be capable of forming a magnetic field with the connector 130f, and a coupling groove 120f" provided on the other side to be in close contact with and fixed to an external configuration so that the second body coupling portion 121f or the second body 120f is coupled to be rotatable around the longitudinal rotation axis of the slide portion 120f'.

[0152] That is, when the magnet 122f forms a magnetic field with the connector 130f and is attached to the connector 130f in a state of protruding to one side of the second body 120f, the second body 120f and the connector 130f are brought into close contact with the coupling groove 111f" inside the first body 110f to be limited in rotation range or to be fixed at a predetermined angle.

[0153] In addition, when the magnet 122f is attached to the connector 130f in a state of being accommodated inside the second body 120f, the second body 120f and the connector 130f are disposed at a position spaced apart from the inside of the first body 110f and are coupled to be freely rotatable.

[0154] The connector 130f is a member installed between the first body 110f and the second body 120f, and may be made of a metallic magnetic material in a spherical shape.

[0155] In addition, the connector 130f may be configured to be freely detachable from the first body 110f and the second body 120f and may allow the first body 110f or the second body 120f attached thereto to be freely rotatable via the spherical outer shape thereof.

(Eighth Embodiment)

[0156] FIG. 20 is a perspective view illustrating a block toy according to an eighth embodiment of the present disclosure, and FIG. 21 is an exploded perspective view illustrating the configuration of the block toy according to the embodiment of FIG. 20

[0157] As illustrated in FIGS. 20 and 21, the block toy 100g according to the eighth embodiment includes a first body 110g, a second body 120g, and a connector 130g.

[0158] The first body 110g may include, on one side, a first body coupling portion 111g having a flap rotatable via a hinge portion 110g'.

[0159] The flap is configured to be rotatable via the hinge portion 110g', so that at a first position, the flap presses at least a portion of the second body 120g such that the second body 120g is fixed to maintain a predetermined angle with the first body 110g, and at the second position (for example, when rotated upward in the drawing and separated from the second body 120g) the flap

allows the second body 120g to rotate freely.

[0160] In addition, the first body coupling portion 111g may include a protrusion 111g' protruding by a predetermined length toward the second body 120g, and coupling grooves 111g" may be provided at regular intervals along the circumference of the outer surface of a distal end portion of the protrusion 111g' .

[0161] In addition, in the protrusion 111g', a magnet (not illustrated) may be provided to form a magnetic field with the connector 130g to be attached to the connector 130g.

[0162] The second body 120g may include a pair of second body coupling portions 121g on one side, and coupling grooves 121g' may be provided at regular intervals along the circumference of a distal end portion of the second body coupling portion 121g.

[0163] The coupling grooves 121g" are engaged with the coupling grooves 111g" of the first body coupling portion 111g so that the second body 120g can be fixed in the state of maintaining a predetermined angle with the first body 110g.

[0164] In addition, although not illustrated in the drawing, the second body 120g may include a magnet (not illustrated) to form a magnetic field with the connector 130g.

[0165] The connector 130g is a member installed between the first body 110g and the second body 120g, and may be made of a metallic magnetic material in a spherical shape.

[0166] In addition, the connector 130g may be configured to be freely detachable from the first body 110g and the second body 120g and may allow the first body 110g or the second body 120g attached thereto to be freely rotatable via the spherical outer shape thereof.

(Ninth Embodiment)

[0167] FIG. 22 is a perspective view illustrating a block toy according to a ninth embodiment of the present disclosure, and FIG. 23 is an exploded perspective view illustrating the configuration of the block toy according to the embodiment of FIG. 22

[0168] As illustrated in FIGS. 22 and 23, the block toy 100h according to the ninth embodiment includes a first body 110h, a second body 120h, and a connector 130h.

[0169] The first body 110h may include a first body coupling portion 111h provided on one side, and a protrusion 111h' protruding by a predetermined length toward the second body 120h may be provided inside the first body coupling portion 110h.

[0170] In addition, coupling grooves 111h" may be provided at regular intervals along the circumference of the outer surface of the protrusion 111h'.

[0171] In addition, in the protrusion 111h', a magnet 112h may be provided to form a magnetic field with the connector 130h to be attached to the connector 130.

[0172] The second body 120h includes a pair of second body coupling portions 121h on one side, and the second body coupling portions 121h may include a locking portion configured to be rotatable via a hinge 123h.

[0173] In addition, coupling grooves 121h' may be provided at regular intervals along the circumference of the distal end portion of the second body coupling portion 121h.

[0174] In addition, inside the second body coupling portion 121h, an accommodation groove 121h" may be provided such that the connector 120h is seated in the accommodation groove and a magnet (not illustrated) may be provided to form a magnetic field with the connector 130h to be attached to the connector 130h.

[0175] When the locking portion is coupled with the first body coupling portion 111h to be rotatable via the hinge portion 123h and is in the locked state, the coupling grooves 121h' in the second body 120h are pressed and engaged with the coupling grooves 111h" in the protrusion 111h', thereby fixing the second body 120h to maintain a predetermined angle with the first body 110h.

[0176] In addition, when unlocked, the locking portion is separated from the second body coupling portion 120h, thereby allowing the second body 120h to be freely rotatable.

[0177] Although not illustrated in the drawings, the second body 120h may include a magnet (not illustrated) to form a magnetic field with the connector 130h.

[0178] The connector 130h is a member installed between the first body 110h and the second body 120h, and may be made of a metallic magnetic material in a spherical shape.

[0179] In addition, the connector 130h may be configured to be freely detachable from the first body 110h and the second body 120h and may allow the first body 110h or the second body 120h attached thereto to be freely rotatable via the spherical outer shape thereof.

(Tenth Embodiment)

[0180] FIG. 24 is a perspective view illustrating a block toy according to a tenth embodiment of the present disclosure, FIG. 25 is another perspective view illustrating the block toy according to the embodiment of FIG. 24, and FIG. 26 is an exploded perspective view illustrating the configuration of the block toy according to the embodiment of FIG. 24

[0181] As illustrated in FIGS. 24 to 26, the block toy 100i according to the tenth embodiment includes a first body 110i, a second body 120i, and a connector 130i.

[0182] The first body 110i includes a hollow in which internal slide portions 110i' are provided, and the slide portion 110i' is configured to be slidable in the longitudinal direction of the first body 110i.

[0183] The slide portion 110i' is a cylindrical member, includes, on one side, a magnet 112i, so that the slide portion can be coupled to the connector 130i by using a magnetic field, and includes, on the other side, coupling grooves 110i" which are engaged with an external member so that the rotation of the first body 110i can be limited.

[0184] In addition, the first body 110i may include a pair of first body coupling portions 111i having rotation support portions 111i', so that the second body 120i is rotatably coupled to one side of the first body 110i.

[0185] The first body coupling portions 111i are arranged to form a U shape, and a through hole is provided therebetween so that the slide portion 110i' can be pulled out through the through hole.

[0186] In addition, the first body coupling portion 111i may be provided with a bump 111i" so that the rotation of the second body 120i can be limited and the second body 120i can be fixed at a predetermined angle.

[0187] That is, in the state in which the slide portion 110i' is pulled out and attached to the second body 120i, the first body coupling portions 111i support the second body 120i to be freely rotatable, and in the state in which the slide portion 110i' is accommodated in the first body 110i, the first body coupling portion 111i causes the rotation of the second body 120i to be limited to a predetermined direction and within a predetermined angle range via the rotation support portions 111i' and the bump 111i".

[0188] The second body 120i includes second body coupling portions 121i formed in a semicircular or hemispherical shape to accommodate a portion of the connector 130i.

[0189] The second body coupling portions 121i is provided, on the opposite sides thereof, with through holes 121i' to be coupled with the rotation support portions 111i', so that the second body 120i can be rotated around the rotation support portions 111i'.

[0190] In addition, the second body coupling portions 121i include coupling grooves 121i", which are provided at regular intervals on the outer surfaces thereof to be engaged with the bumps 111i", thereby limiting the rotation such that the second body 120i is fixed at a predetermined angle.

[0191] Although not illustrated in the drawings, the second body 120i may include a magnet (not illustrated) to form a magnetic field with the connector 130i.

[0192] The connector 130i is a member installed between the first body 110i and the second body 120i, and may be made of a metallic magnetic material in a spherical shape.

[0193] In addition, the connector 130i may be configured to be freely detachable from the first body 110i and the second body 120i and may allow the first body 110i or the second body 120i attached thereto to be freely rotatable via the spherical outer shape thereof.

[0194] Therefore, the second body can be freely connected and rotated and can be fixed to maintain a certain angle at a specific position, so that a specific posture or shape can be maintained.

[0195] While the present disclosure has been described above with reference to the embodiments thereof, a person ordinarily skilled in the art may understand that the present disclosure can be variously modified and changed without departing from the technical idea and scope of the present disclosure described in the claims.

[0196] In addition, the reference numerals in the claims of the present disclosure are described for clarity and convenience of description, and the present disclosure is not limited by the reference numerals. In the process of describing the embodiment, the thicknesses of lines or the sizes of components illustrated in the drawings may be exaggerated for clarity and convenience of description.

[0197] In addition, the above-mentioned terms are terms defined in consideration of functions in the present disclosure, which may vary according to the intention or custom of a user or an operator. Therefore, the terms are to be interpretated based on the content throughout the present specification.

[0198] In addition, even if not explicitly illustrated or described, it is evident that a person ordinarily skilled in the art to which the present disclosure belongs can make various modifications including the technical idea according to the present disclosure based on the description of the present disclosure, and the modifications still fall into the scope of the present disclosure.

[0199] The embodiments described above with reference to the accompanying drawings have been described for the purpose of describing the present disclosure, and the scope of the present disclosure is not limited to these embodiments.

[Description of Reference Numeral]

[0200]

100, 100a, 100b, 100c, 100d, 100e, 100f, 100g, 100h, 100i: block toy
110, 110a, 110b, 110c, 110d, 110e, 110f, 110g, 110h, 110i: first body portion
111, 111a, 111b, 111c, 111d, 111e, 111f, 111g, 111h, 111i: first body coupling portion
112: guide portion
112a, 112b, 112e, 112i, 112e, 1121, 112m, 112n, 112g, 112h: magnet
113: through hole 114: toothed engagement groove
115: flange
120, 120a, 120b, 120c, 120d, 120e, 120f, 120g, 120h, 120i: second body
121, 121a, 121b, 121c, 121d, 121e, 121f, 121g, 121h, 121i: second body coupling portion
122: seating groove, 122a, 122b, 122d, 122i, 122e: magnet
123: engagement groove, 124: magnet
130, 130a, 130b, 130c, 130d, 130e, 130f, 130g, 130h, 130i: connector

Claims

1. A block toy comprising:

a first body;
a second body provided to be brought into close contact with or to be separable from the first body; and
a connector configured to fixedly support the first body and the second body when the first body and the second body are at least partially in close contact with each other in a state in which an arbitrary angle is formed therebetween.

2. The block toy of claim 1, wherein the connector is made of a spherical magnetic material, and at least one of the first body and the second body comprises a magnet that forms a magnetic field with the connector.

3. The block toy of claim 1 or 2, wherein the first body comprises:

a first body coupling portion coupled to the second body; and
a guide portion on which a portion of the connector is mounted.

4. The block toy of claim 3, wherein the first body further comprises a flange formed to be in close contact with a portion of the connector seated in the guide portion.

5. The block toy of claim 1 or 2, wherein the second body comprises:

a second body coupling portion configured to be coupled to the first body;
a seating groove provided inside the second body coupling portion to allow a portion of the connector penetrating the first body to be seated therein; and
a magnet provided in the seating groove to form a magnetic attraction with the connector.

6. The block toy of claim 2, wherein the connector is installed on one side of the first body and the second body is installed on an opposite side to the one side.

7. The block toy of claim 1 or 2, further comprising:

a first body comprising, on one side, a first body coupling portion to which a second body is rotatably connected via a connector, wherein the first body coupling portion is configured to support the second body to be fixed at an arbitrary position;
the second body configured to be rotatably coupled to the first body via the connector and including, on one side, a second body coupling portion configured to be coupled with at least a portion of either the first body or the first body coupling portion, wherein the second body coupling portion is configured to support the first body or the first body coupling portion to be fixed at a position forming an arbitrary angle with the first body; and
the connector detachably installed in the first body and the second body.

8. The block toy of claim 7, wherein each of the first body and the second body further comprises a contact pad configured to increase frictional force with the connector.

9. The block toy of claim 8, wherein the magnet is slidably installed in the first body and the second body.

10. The block toy of claim 9, wherein, when the magnet forms a magnetic field with the connector and is attached to the connector in a state of protruding to one side of the first body, the second body and the connector are disposed at a distance (d) from an inner surface of the first body and are coupled to be freely rotatable.

11. The block toy of claim 10, wherein, when the magnet is attached to the connector in a state of being accommodated inside the first body, the second body and the connector come into close contact with the inner surface of the first body, so that a predetermined shape is maintained or fixed through friction caused by pressure.

12. The block toy of claim 10, wherein, when the magnet is attached to the connector in a state of being accommodated inside the first body, the second body and the connector come into close contact with the inner surface of the first body to be limited in a rotation range or to be fixed at a predetermined angle.

13. The block toy of claim 7, wherein the first body coupling portion comprises a plurality of second body fixing portions provided at a predetermined interval to be coupled with at least a portion of the second body coupling portion to fix the second body at an arbitrary angle.

14. The block toy of claim 7, wherein the first body coupling portion is coupled to be rotatable around a longitudinal rotation axis (C) of the first body.

15. The block toy of claim 14, wherein the first body coupling portion further comprises a first body fixing portion coupled to the first body to limit a rotation range of the first body.

16. The block toy of claim 7, wherein the second body coupling portion comprises at least one second body fixing portion coupled to either the first body or the first body coupling portion.

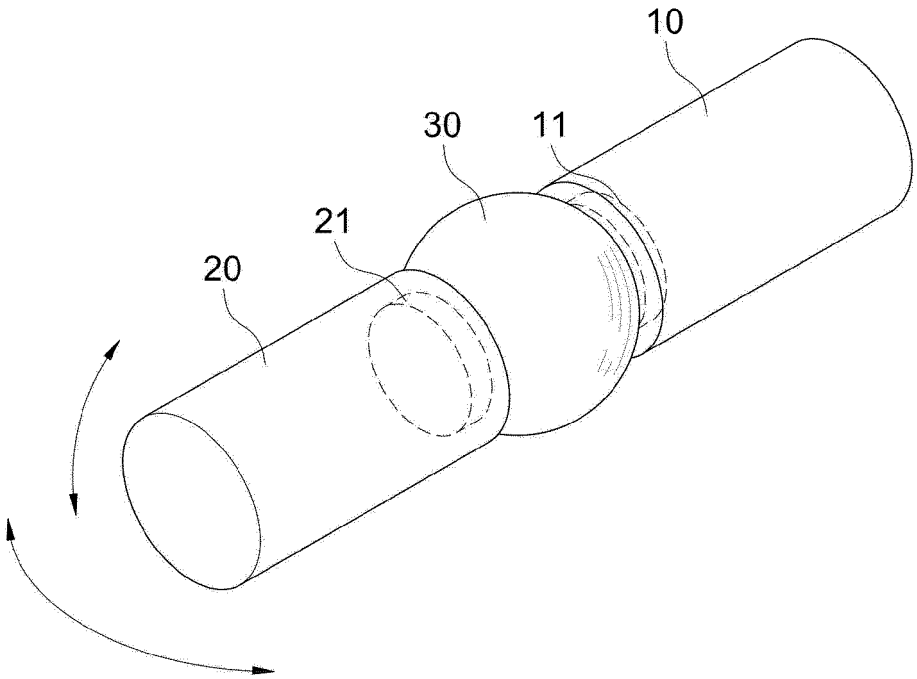
17. The block toy of claim 9, wherein, when the magnet forms a magnetic field with the connector and is attached to the connector in a state of protruding to one side of the second body, the second body and the connector come into close contact with the inner surface of the first body to be limited in a rotation range or to be fixed at a predetermined angle.

18. The block toy of claim 17, wherein, when the magnet is attached to the connector in a state of being accommodated inside the second body, the second body and the connector are disposed at a distance from the inner surface of the first body and are coupled to be freely rotatable.

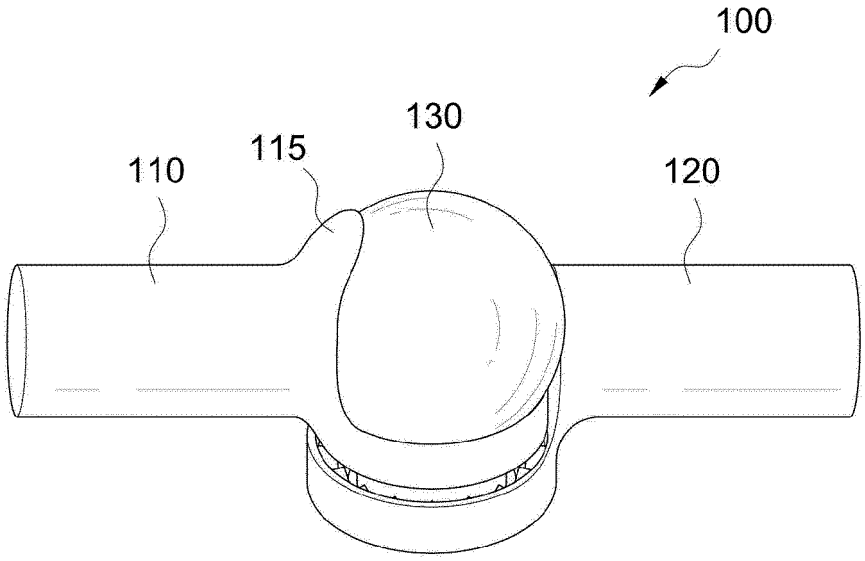
19. The block toy of claim 7, wherein the second body coupling portion is coupled to be rotatable around a longitudinal rotation axis (C') of the second body.

20. The block toy of claim 19, wherein the second body coupling portion further comprises a second body fixing portion coupled to the second body to limit a rotation range of the second body.

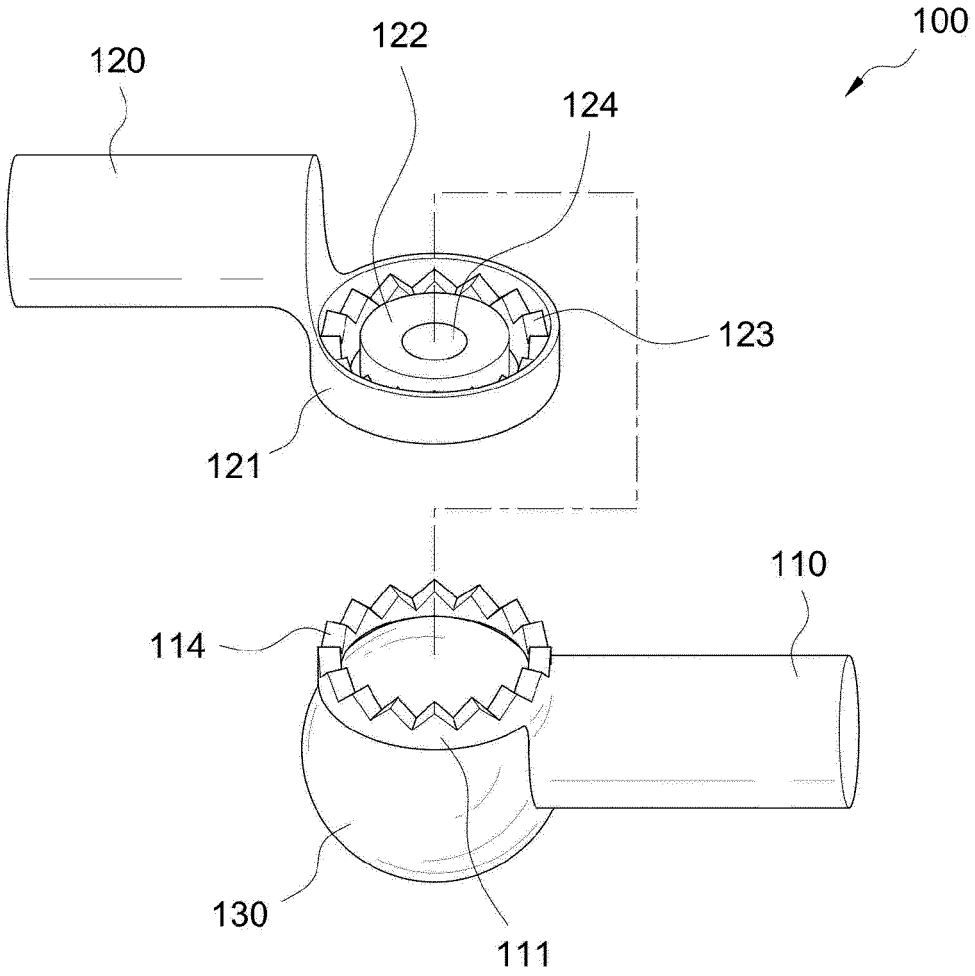
【FIG. 1】



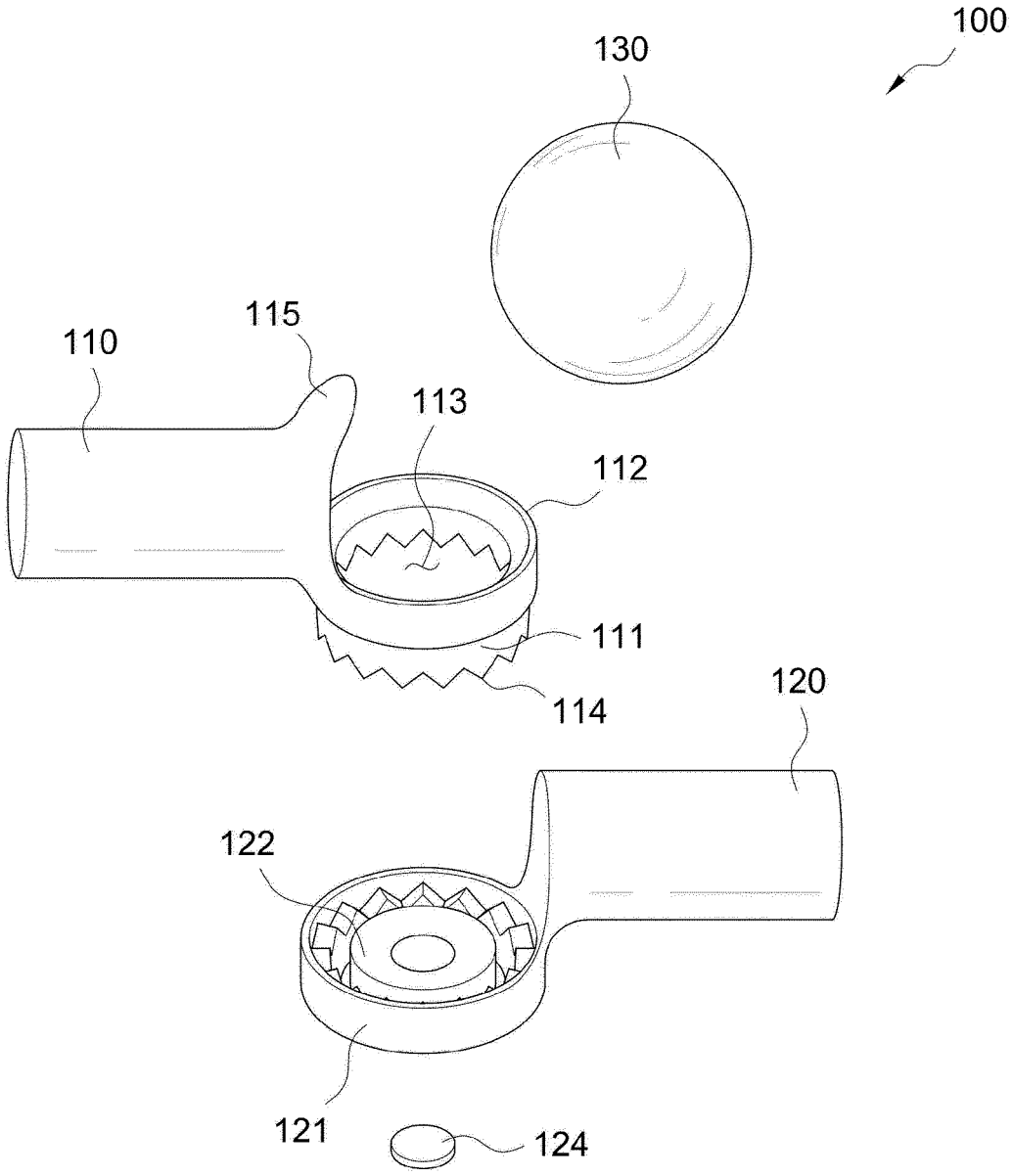
【FIG. 2】



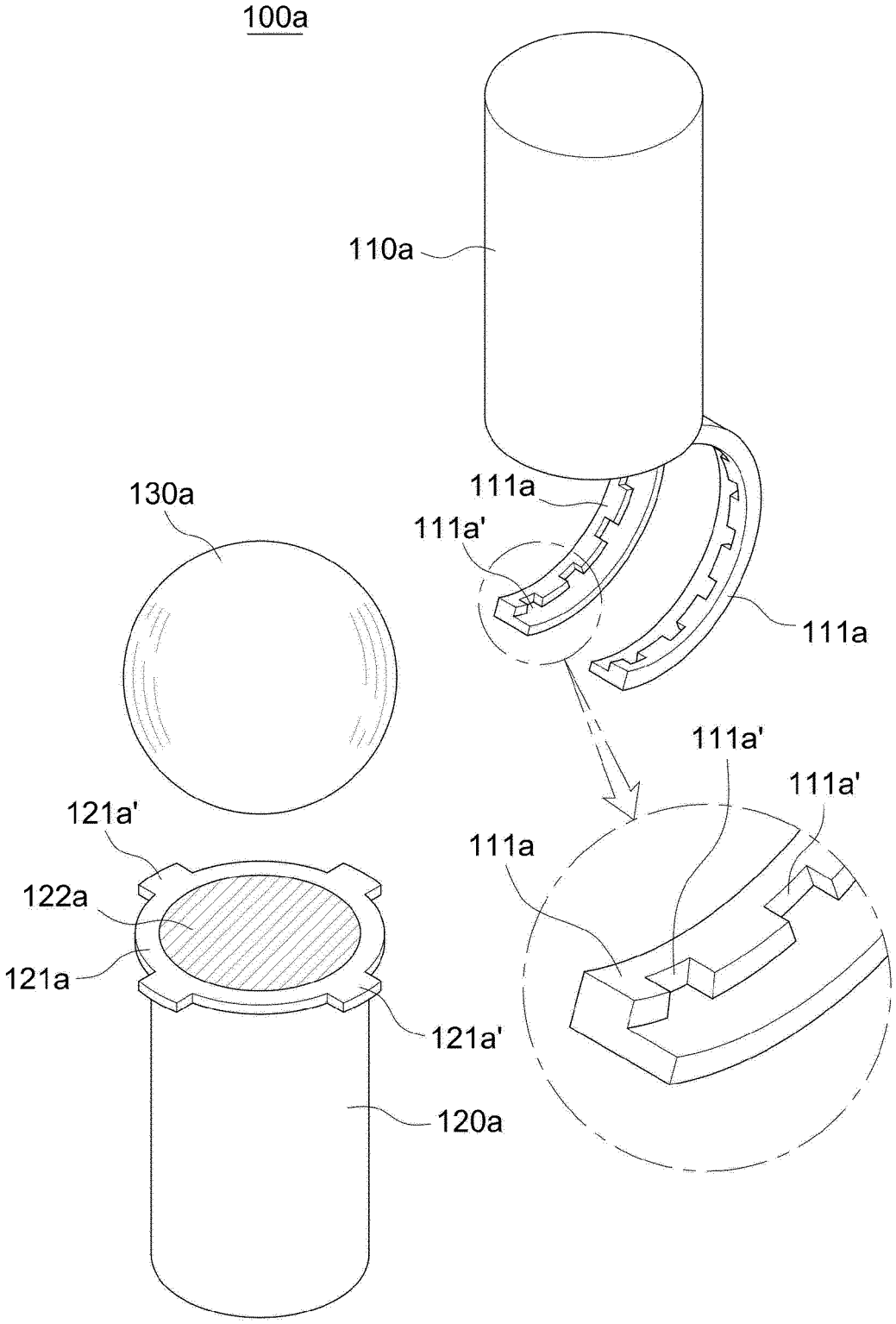
【FIG. 3】



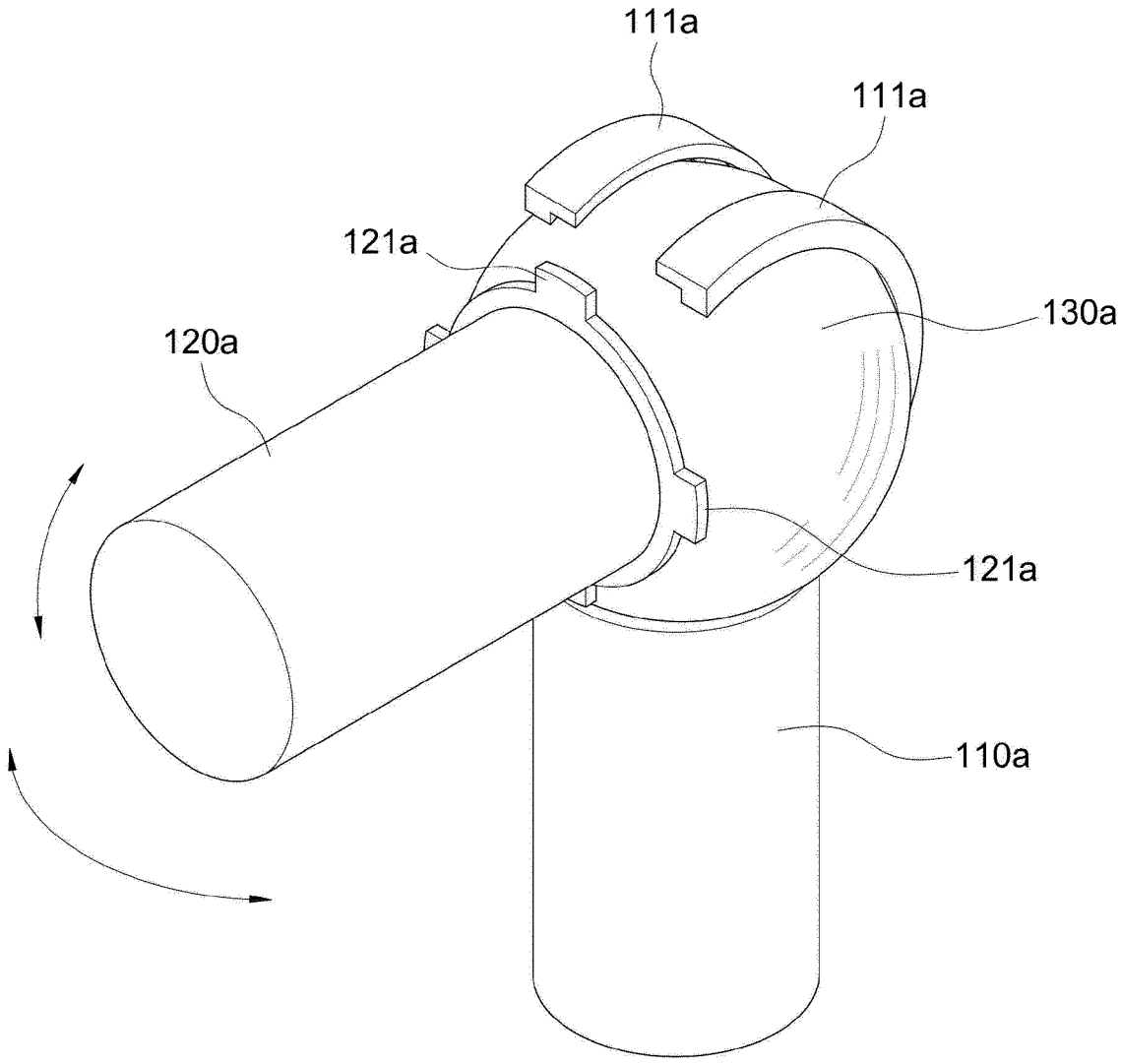
【FIG. 4】



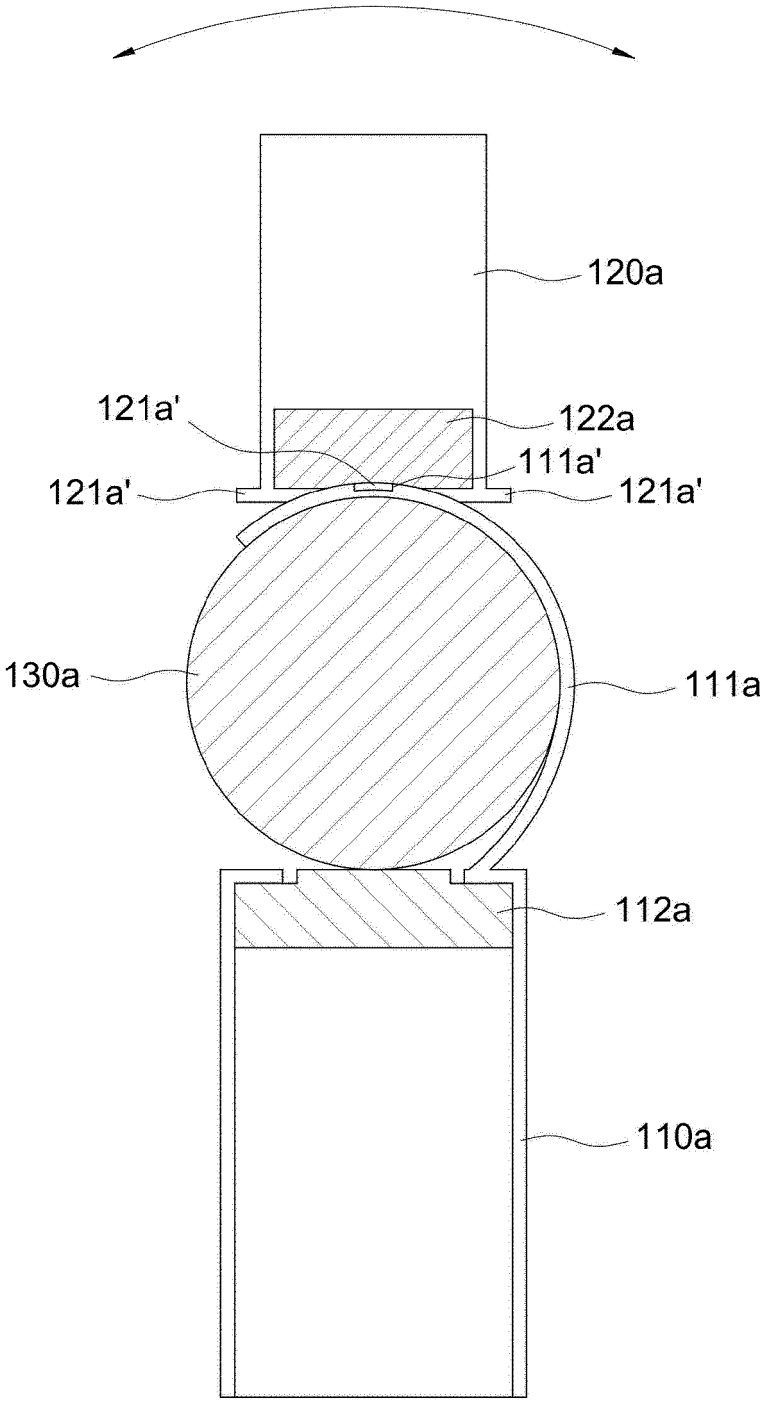
【FIG. 5】


100a
110a
130a
111a
111a'
111a
111a'
111a'
111a
121a'
122a
121a
121a'
120a

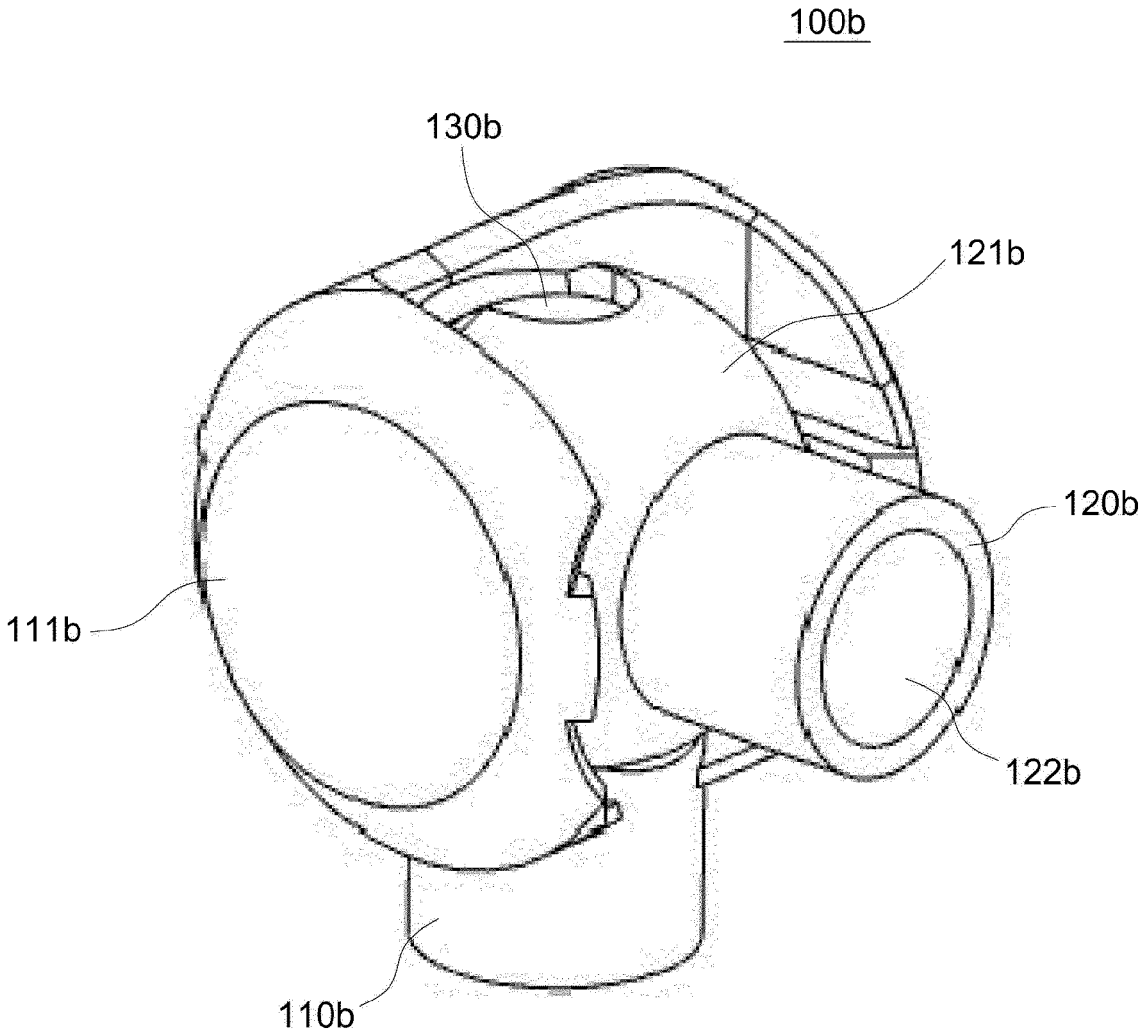
【FIG. 6】



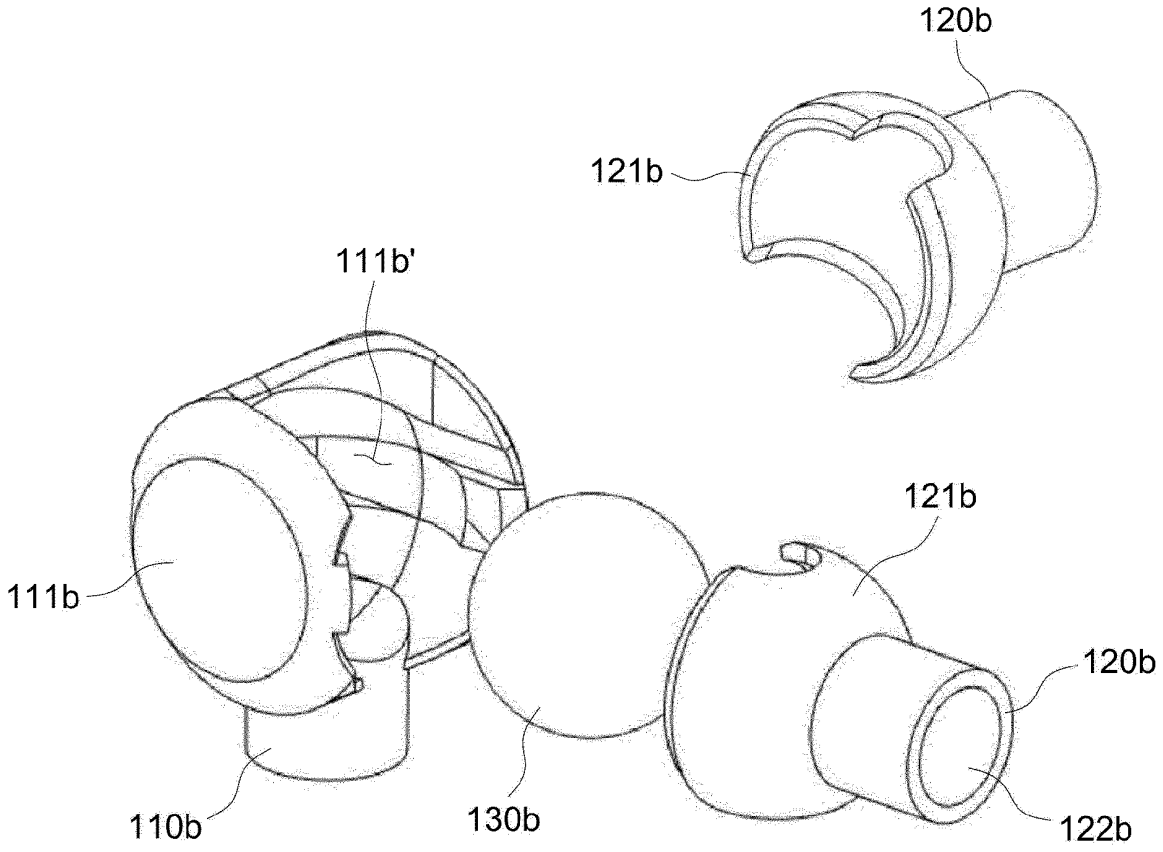
【FIG. 7】



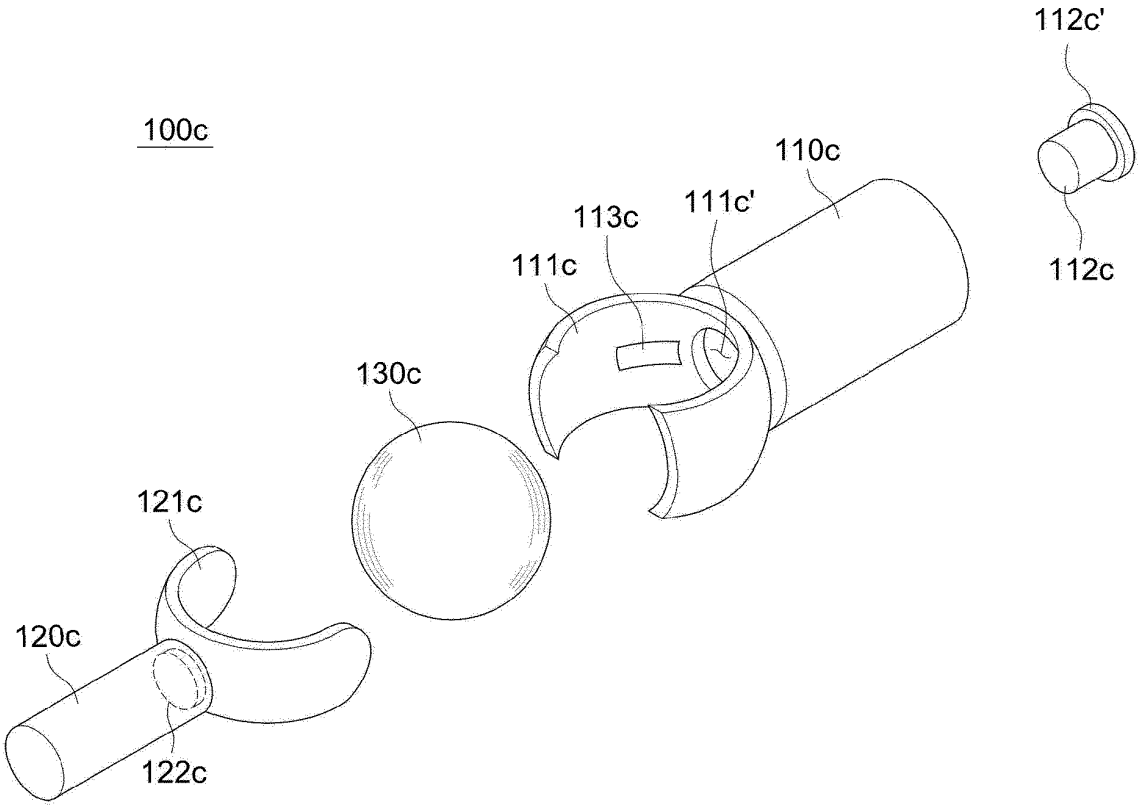
【FIG. 8】



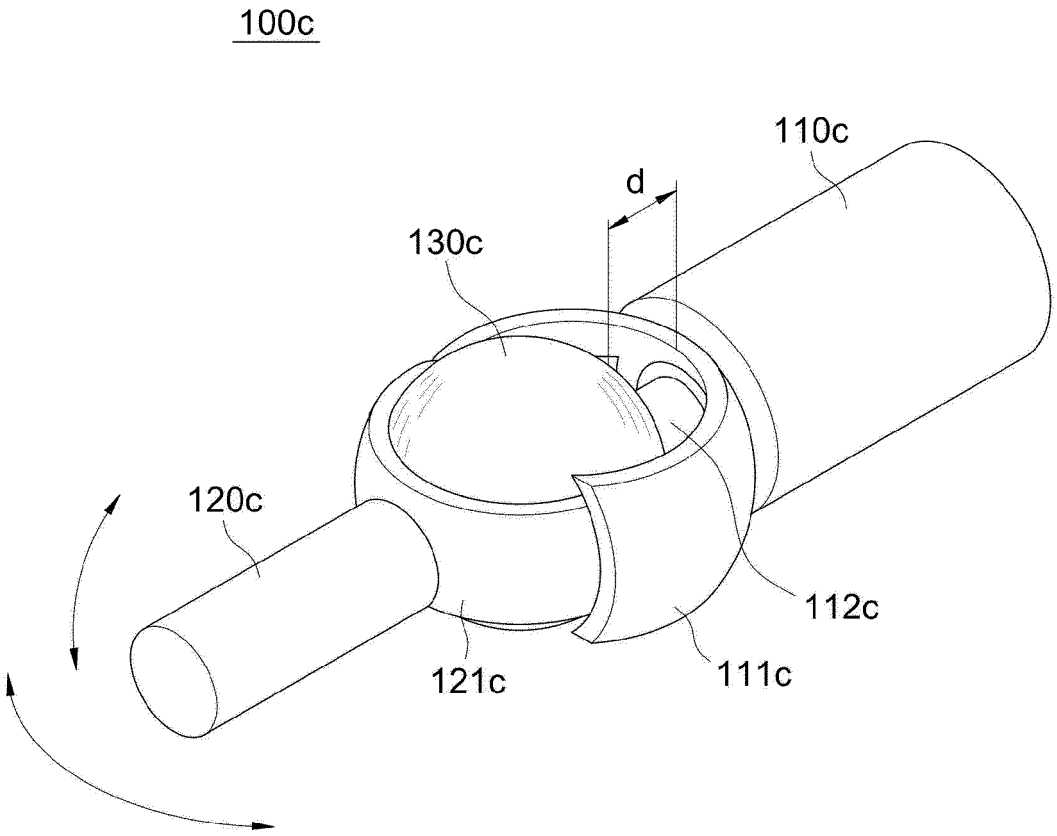
【FIG. 9】



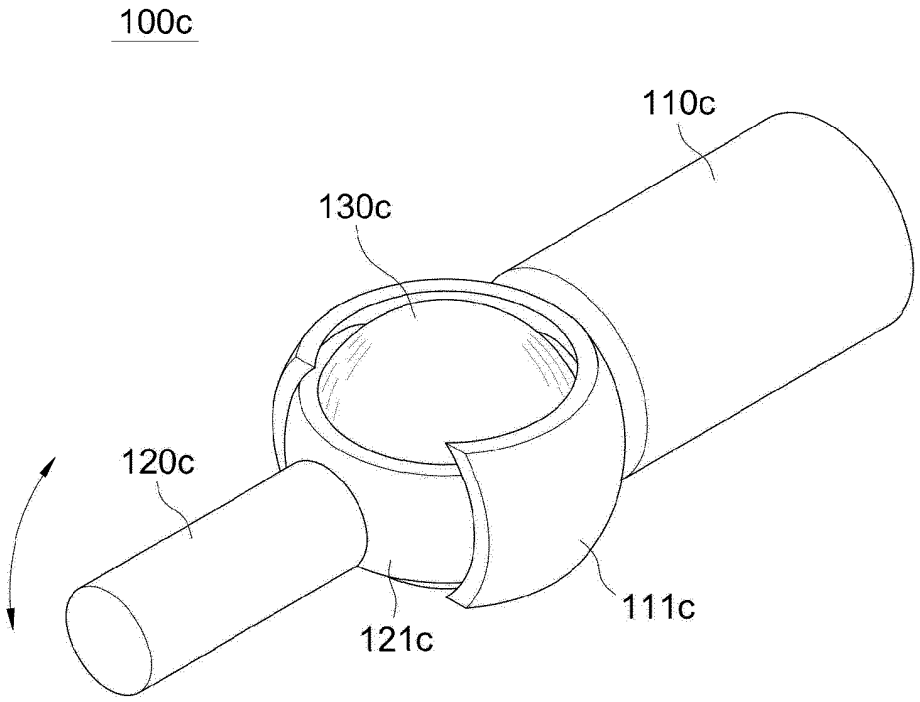
【FIG. 10】



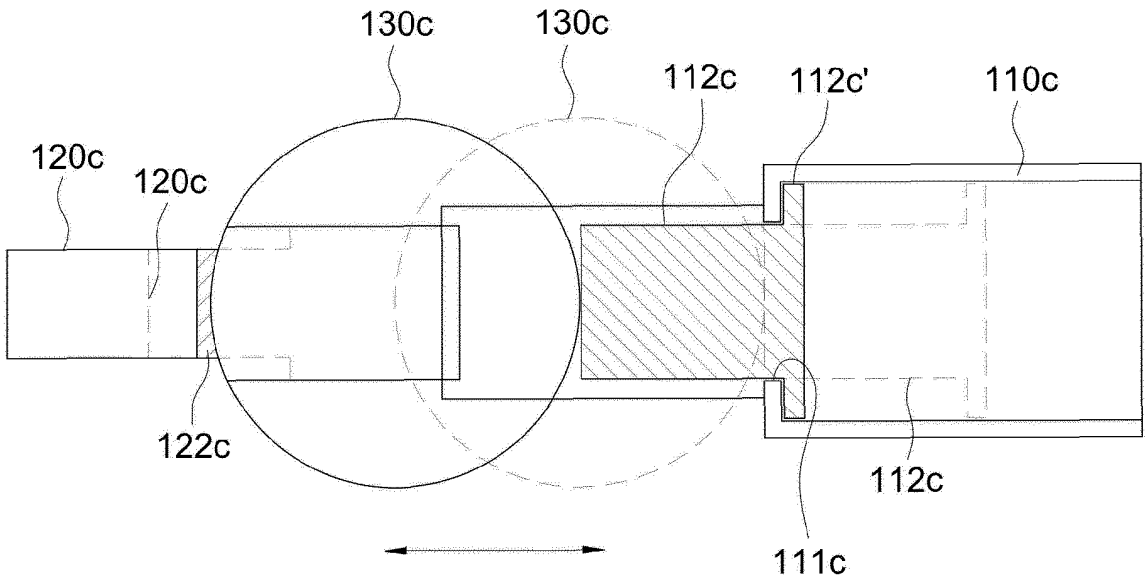
【FIG. 11】



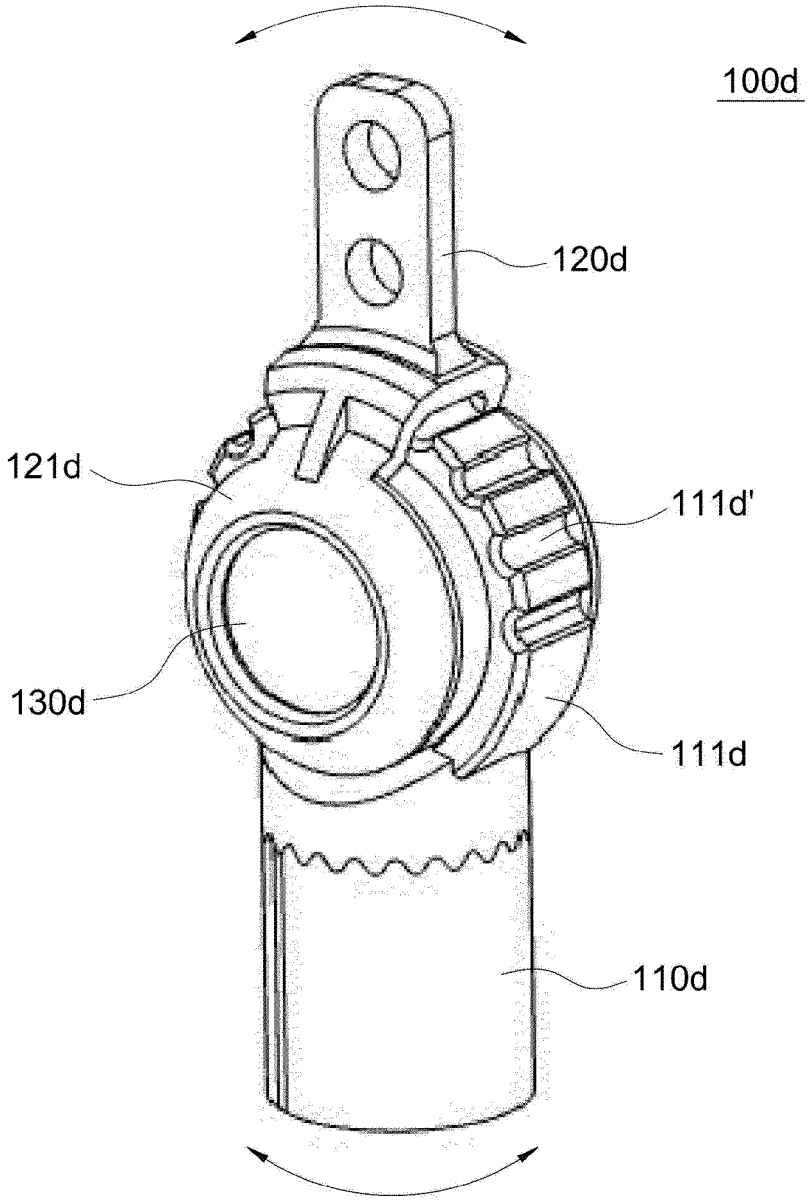
【FIG. 12】


100c
110c
130c
120c
111c
121c

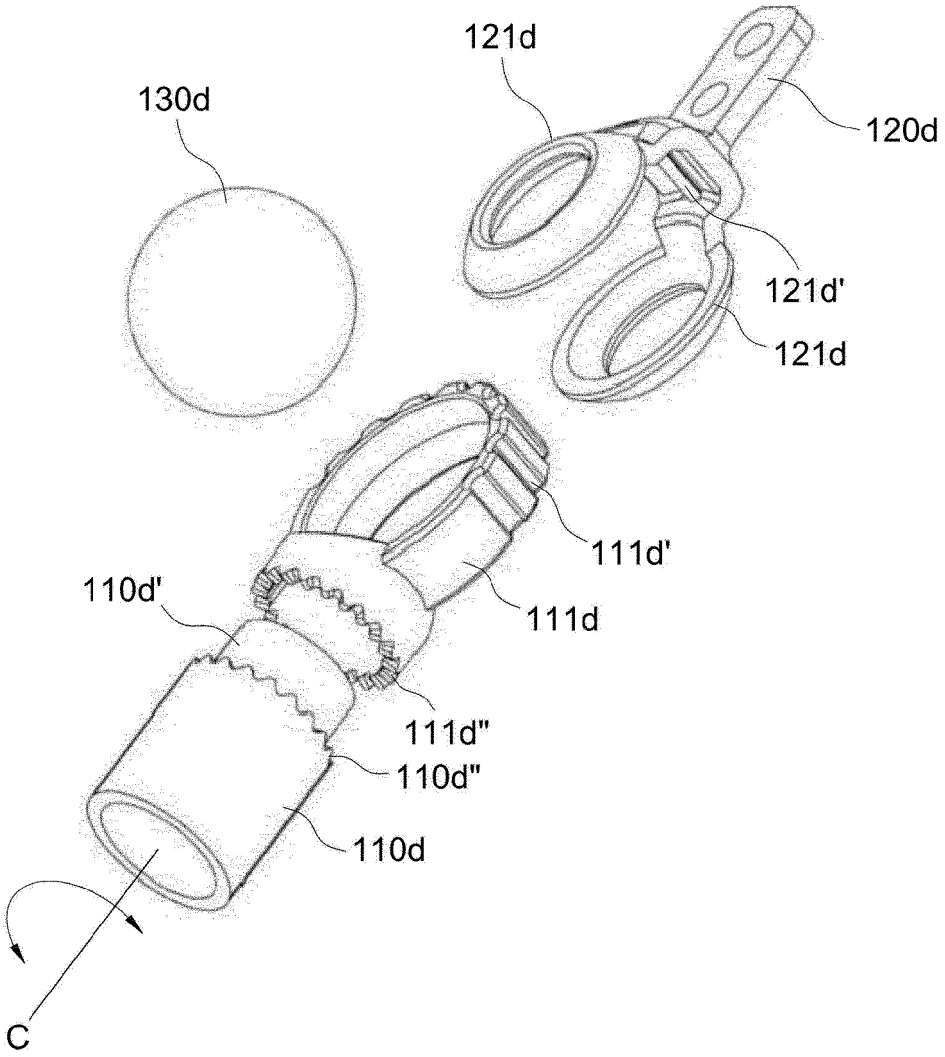
【FIG. 13】


130c
130c
112c
112c'
110c
120c
120c
122c
112c
111c

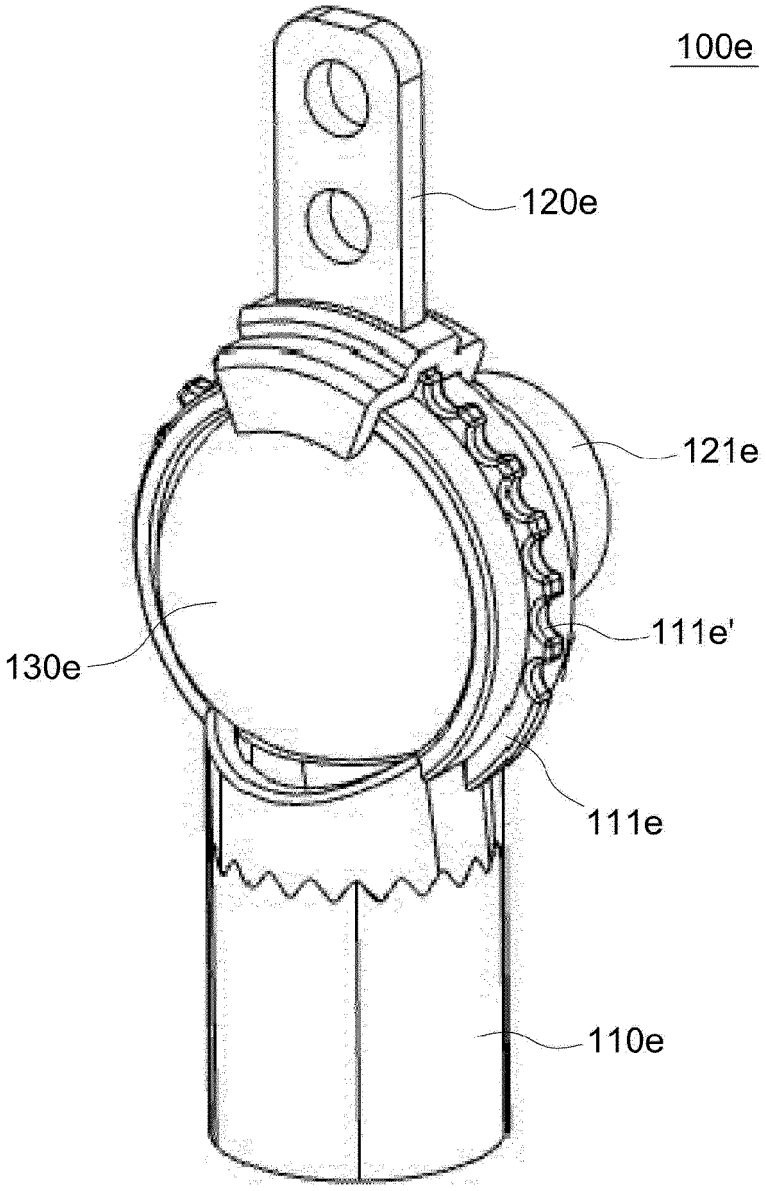
【FIG. 14】



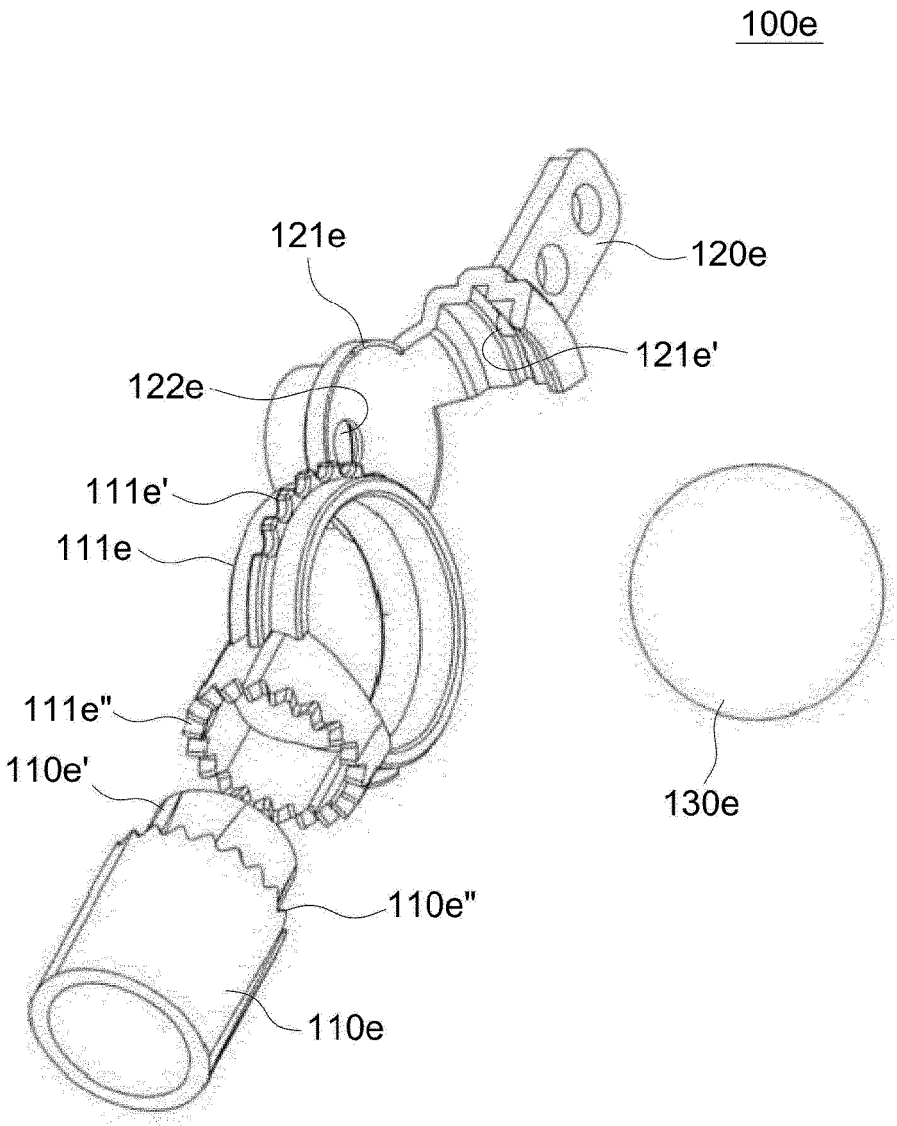
【FIG. 15】



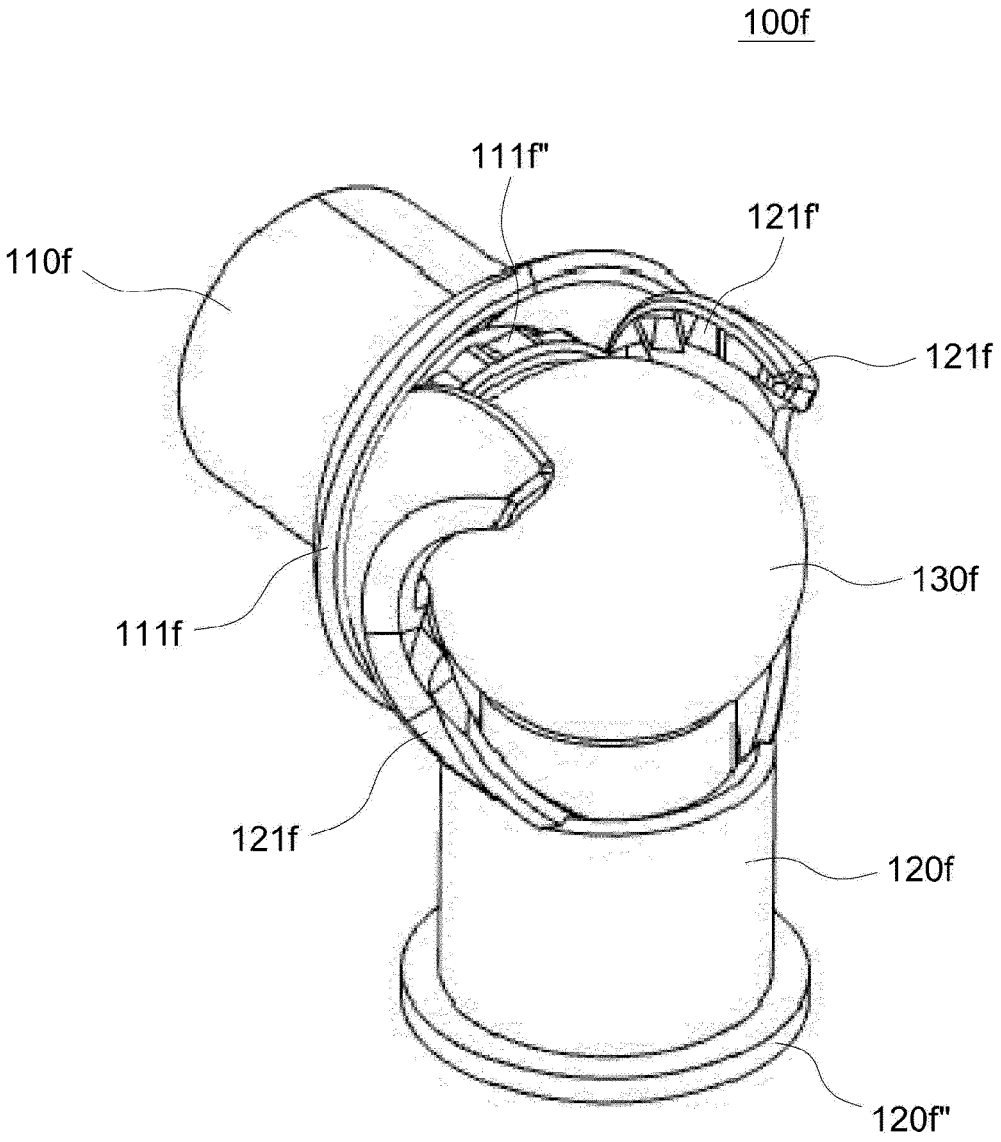
【FIG. 16】



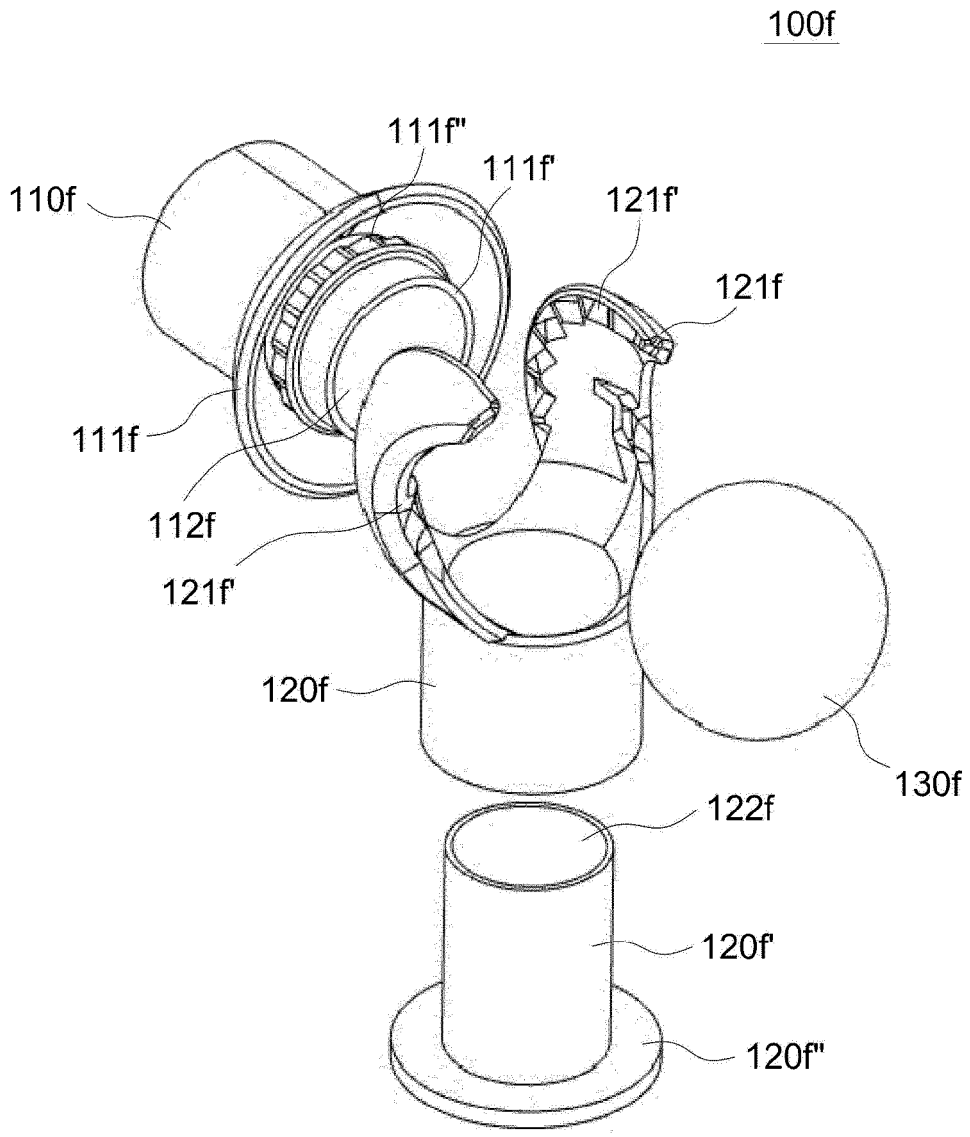
【FIG. 17】



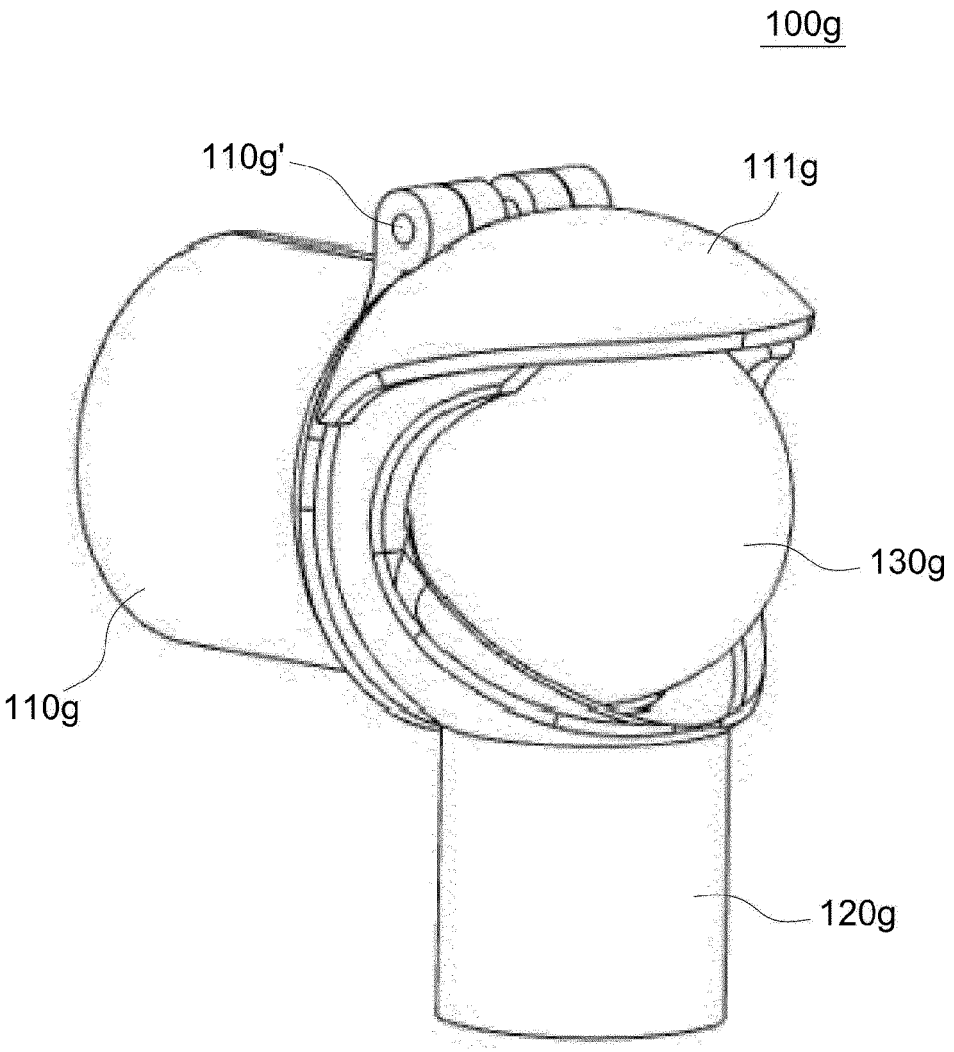
【FIG. 18】



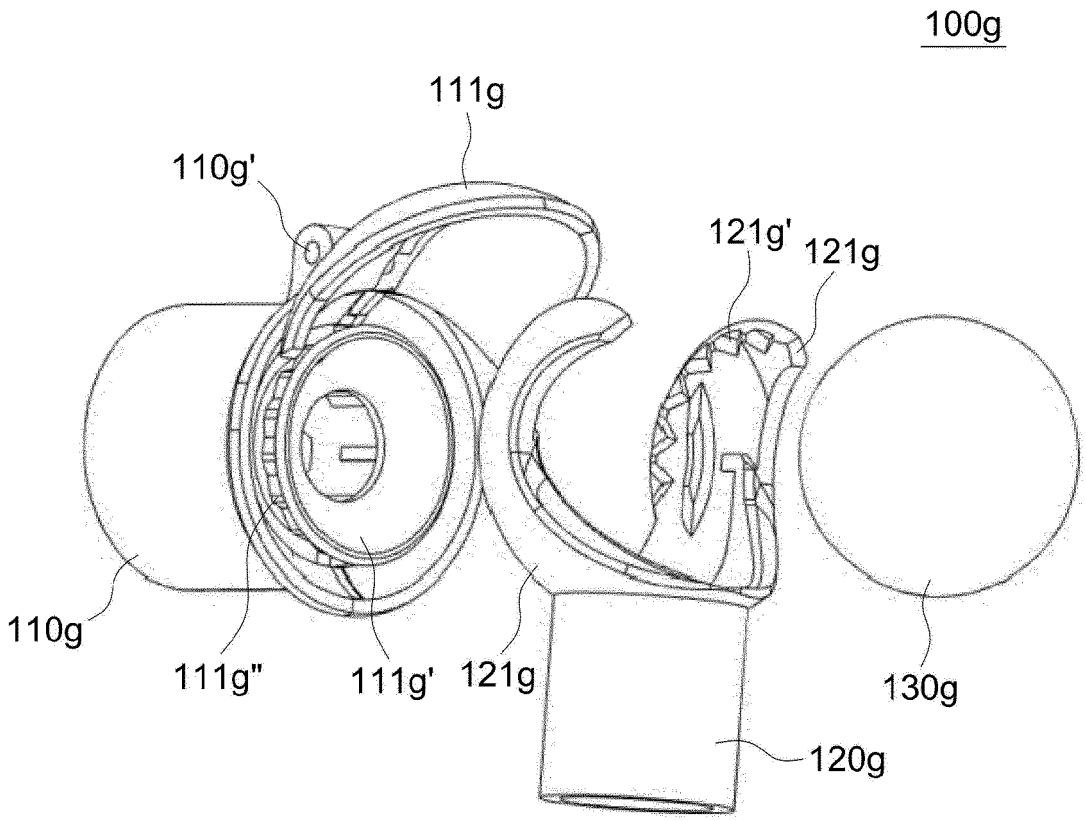
【FIG. 19】


100f
111f"
111f'
110f
121f'
121f
111f
112f
121f'
120f
130f
122f
120f'
120f"

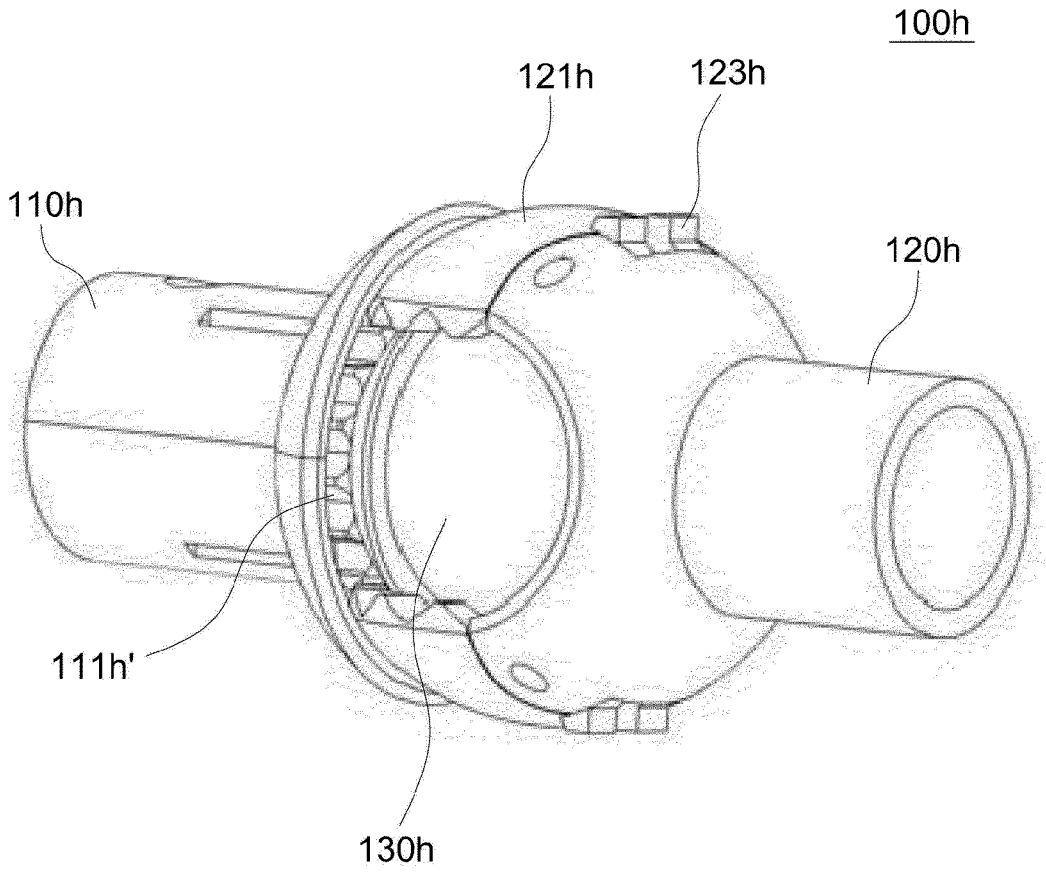
【FIG. 20】



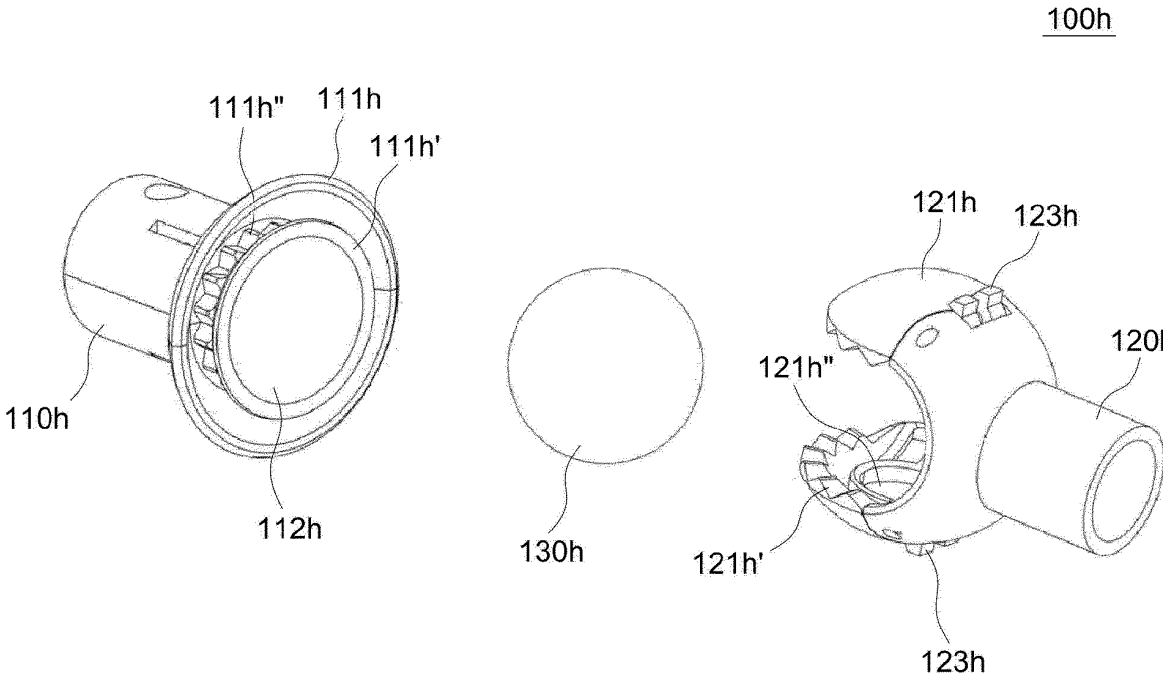
【FIG. 21】



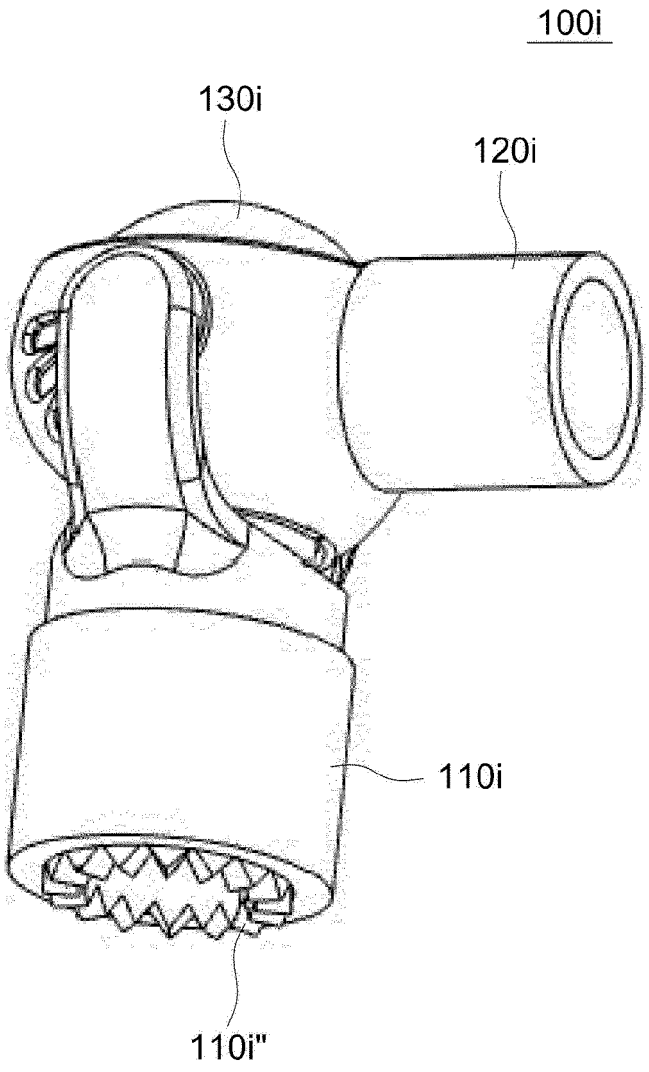
【FIG. 22】



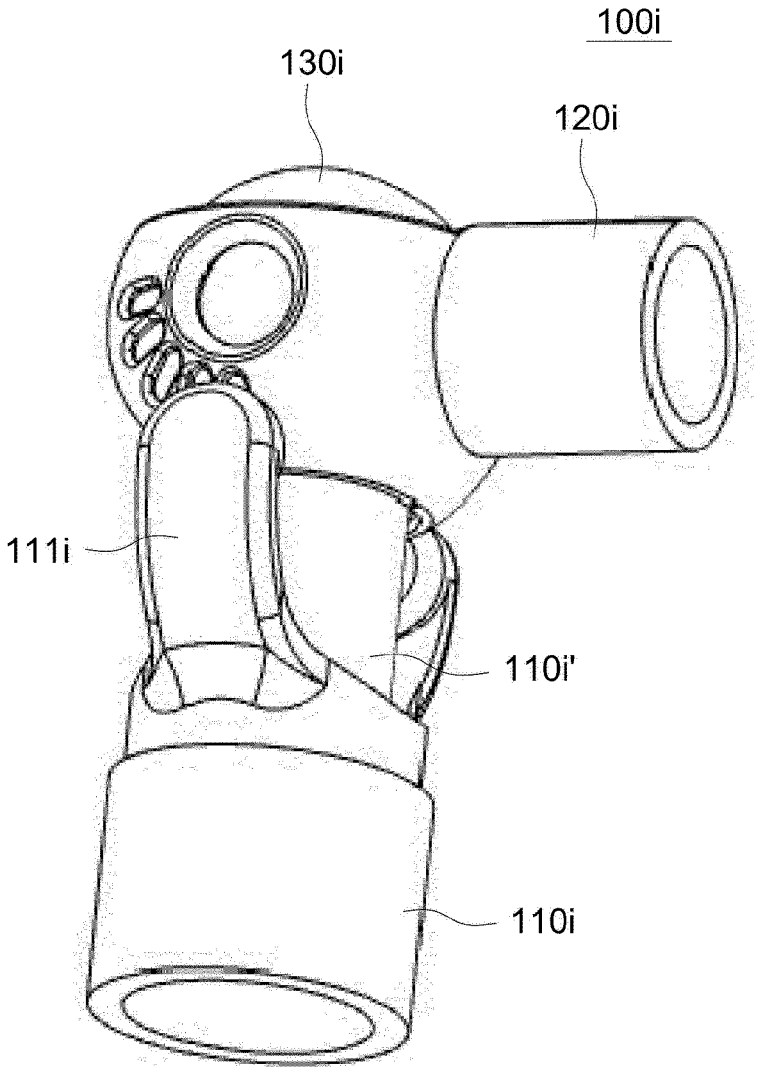
【FIG. 23】


100h
111h"
111h
111h'
110h
112h
130h
121h
123h
120h
121h"
121h'
123h

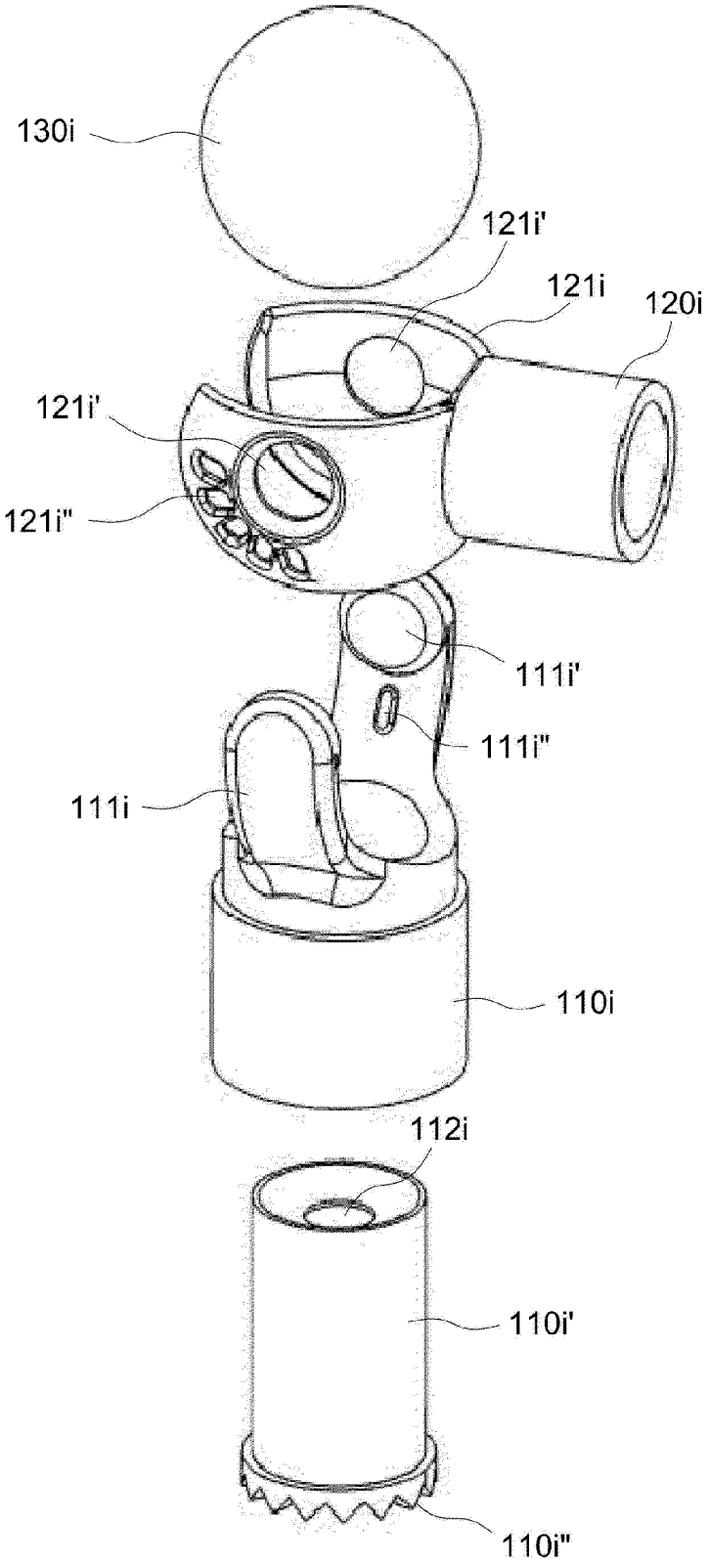
【FIG. 24】



【FIG. 25】



【FIG. 26】


130i
121i'
121i
120i
121i'
121i"
111i'
111i"
111i
110i
112i
110i'
110i"

INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2021/013962

A. CLASSIFICATION OF SUBJECT MATTER

A63H 3/46(2006.01)i; **A63H 3/16**(2006.01)i; **A63H 3/04**(2006.01)i; **A63H 33/04**(2006.01)i; **A63H 33/06**(2006.01)i; **A63H 33/08**(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)

A63H 3/46(2006.01); A63H 3/04(2006.01); A63H 3/16(2006.01); A63H 33/06(2006.01); A63H 33/08(2006.01); A63H 33/10(2006.01); F16C 11/06(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: 자석(magnet), 연결부(connection), 관절(joint), 회전(rotation), 마찰(friction)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KR 10-2010-0085765 A (NEOSTORM ENTERTAINMENT CO., LTD.) 29 July 2010 (2010-07-29) See paragraphs [0028]-[0036] and figures 1-5.	1,3,4,7
Y		5
A		2,6,8-20
Y	KR 10-2014-0117806 A (YU, Je-Woo) 08 October 2014 (2014-10-08) See paragraphs [0025]-[0026] and figure 2.	5
A	US 2016-0341243 A1 (HONG KONG BAPTIST UNIVERSITY) 24 November 2016 (2016-11-24) See paragraphs [0047]-[0048] and figure 13.	1-20
A	KR 10-1743107 B1 (JUNG, Dong Keon) 02 June 2017 (2017-06-02) See paragraphs [0055]-[0058] and figures 5-9.	1-20

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

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18 February 2022	**18 February 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

International application No.
PCT/KR2021/013962

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	KR 10-2021-0112854 A (CHOIROCK CONTENTS COMPANY CO., LTD.) 15 September 2021 (2021-09-15) See paragraphs [0040]-[0181]; claims 1-15; and figures 1-23.	1-2,7-20

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/KR2021/013962

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
KR 10-2010-0085765 A	29 July 2010	None	
KR 10-2014-0117806 A	08 October 2014	None	
US 2016-0341243 A1	24 November 2016	CN 106402144 A	15 February 2017
		CN 106402144 B	14 December 2018
		HK 1231536 A1	22 December 2017
		US 9970477 B2	15 May 2018
KR 10-1743107 B1	02 June 2017	None	
KR 10-2021-0112854 A	15 September 2021	None	

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- KR 20050086491 **[0003]**
- KR 100526971 **[0004]**
- KR 20060039236 **[0006]**