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(54) SPINNING TOP TOY

(57) **[Object]**

To provide a spinning top toy which improves a rotational stability in comparison with the conventional one, and appropriately changes an inertia moment in response to a rotation speed.

[Means to solve the problems]

A spinning top toy 1 is provided with a shaft part 10 and a body 40, and rotates around an axis Ax of a rotating shaft 11. The body 40 is provided with a guide groove 48, which extends from the rotating shaft 11 side to the outer peripheral side and is formed with a gap in the middle, and a spherical-shaped weight member 49, which is stored in the guide groove 48 in a rolling manner.

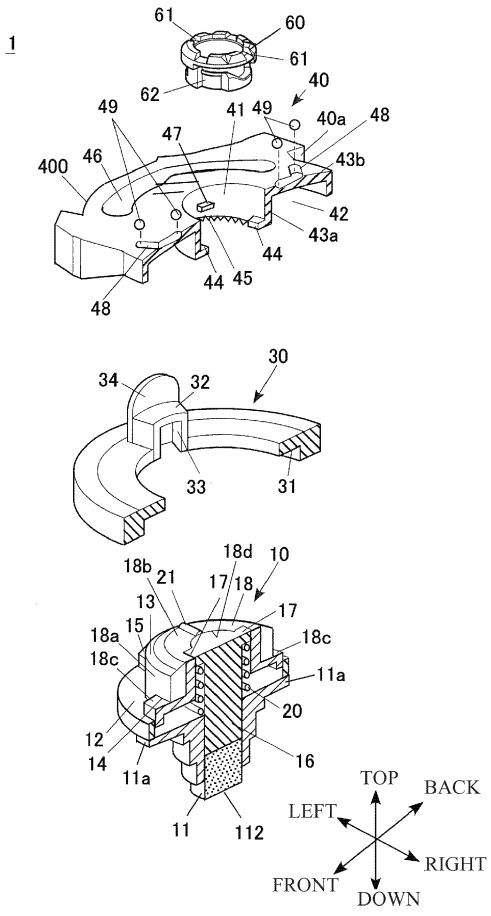

Figure 3

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Description

Technological Filed

[0001] The present invention relates to a spinning top toy.

Background Technology

[0002] As battle games using spinning top toys, by applying impact to the spinning top toys each other, there are cases in which the rotation of the spinning top toy of an opponent is stopped by the impact force; the spinning top toy of the opponent is flicked out by the impact force; or the spinning top toy of the opponent is disassembled by the impact force, etc.

[0003] For example, in the spinning top toy described in Patent Document 1, it is designed to improve an offensive power or to keep a stable rotation by controlling a rotation balance automatically in response to a rotation speed. Specifically, the spinning top toy described in Patent Document 1, a plurality of guide grooves, which are inclined upward from the rotation center side toward the outer peripheral side and which are radially extended, are provided in the spinning top toy body. A weight member such as a metal ball, etc. is movably arranged in the inside of each guide groove.

[0004] In the case of the spinning top toy of Patent Document 1, at the time of fast speed rotation, the metal balls are moved toward the outer peripheral side (peripheral edge part) along the guide grooves by the centrifugal force. Accordingly, the inertia moment of the spinning top toy becomes large, and therefore, it improves the offensive power (impact force) at the time of battle games. Further, at the time of slow speed rotation, the metal balls are moved toward the center side along the guide grooves. Accordingly, the inertia moment of the spinning top toy becomes small, and the rotation of the spinning top toy is stabilized.

Prior Art Document

Patent Document

[0005] [Patent Document 1] Japanese Registered Utility Model Application Publication No. 3071767

Disclosure of the Invention

Problems to Be Solved by the Invention

[0006] However, in the spinning top toy described in the Patent Document 1, since each guide groove has a uniform slope, even though the rotation variation is small, the weight member is moved in the guide groove. As a result, it is easy to change the inertia moment of the spinning top toy, so that in fact, there is a possibility that the rotation may not be stabilized.

[0007] The present invention was created considering the aforementioned conventional status. An object is to provide a spinning top toy to improve the rotational stability in comparison with the conventional spinning top toy, and to be capable of appropriately changing the inertia moment in response to a rotation speed.

Means for Solving the Problems

[0008] In order to solve the aforementioned problems, according to the first means, in a spinning top toy, which includes a shaft part and a body and rotates around a rotating shaft, the body includes a guide groove which extends in a direction from the rotating shaft side to an outer peripheral side and forms a gap in a middle, and a spherical-shaped weight member stored in the guide groove in a rolling manner.

[0009] According to the second means, in the first means, the guide groove extends from the rotating shaft side to the outer peripheral side with an upward slope.

[0010] According to the third means, in the first means or the second means, the guide groove includes one groove, which is positioned in the rotating shaft side, and two branch grooves, which are positioned in the outer peripheral side and branch from the one groove, and one of the branch grooves connects with the one groove without a gap and another one of the branch grooves connects with the one groove with a gap.

[0011] According to the fourth means, in the third means, in the guide groove, two weight members are stored.

[0012] According to the fifth means, in the fourth means, at least one of the branch grooves among the two branch grooves is formed in a width which is capable of storing one weight member.

[0013] According to the sixth means, in any one of the first means to the fifth means, a plurality of guide grooves are provided.

[0014] According to the seventh means, in the sixth means, the guide groove is provided in each of sections which are faced each other across the rotating shaft.

Effect of the Invention

[0015] According to the first means, since the weight member stored in the guide groove of the body is moved (rolled) inside the guide groove by increase or decrease of the centrifugal force in response to the rotation speed of the spinning top toy, the inertia moment of the body changes in response to the rotation side. At this point, since the movement of the weight member is restricted by the gap formed in the middle of the guide groove, the inertia moment of the body changes gradually.

[0016] With this, the variation of the inertia moment in response to the rotation speed can be limited in comparison with the conventional one in which the guide groove simply radially extends, so that the rotational stability can be improved.

[0017] Therefore, while improving the rotational stability in comparison with the conventional one, the inertia moment can be appropriately changed in response to the rotation speed.

Brief Description of the Drawings

[0018]

Fig. 1 is a diagram explaining how to play with a spinning top toy according to an embodiment of the present invention;

Fig. 2 is an exploded perspective view showing a spinning top toy according to the present embodiment;

Fig. 3 is an exploded cross-sectional perspective view showing the spinning top toy according to the present embodiment;

Fig. 4 is a plane view showing a body in the spinning top toy according to the present embodiment;

Fig. 5 is an operation diagram indicating an engagement state of a spinning top toy body, a body part, and a flywheel in the spinning top toy according to the present embodiment;

Fig. 6 is a perspective view showing an example of a launcher which rotationally drive the spinning top toy according to the present embodiment;

Fig. 7 is an explanatory diagram showing a movement of weight members in the spinning top toy according to the present invention; and

Fig. 8 is a diagram showing a modification example of the spinning top toy according to the present embodiment.

Preferred Embodiments of the Invention

[0019] Hereinafter, a spinning top toy of the present invention will be described based on embodiments shown the drawings.

<Whole structure>

[0020] Fig. 1(A) is a perspective view explaining a spinning top toy according to an embodiment of the present invention. Fig. 1(B) is a diagram explaining how to play with the spinning top toy. Fig. 2 is an exploded perspective view showing the spinning top toy according to the present embodiment. Fig. 3 is an exploded cross-sectional perspective view of the spinning top toy according the present embodiment. Fig. 4 is a plane view showing a body 40 which will be described later. In the present specification, the terms "top", "bottom", "left", "right", "front", and "back" refer to the corresponding directions in Figs. 2 and 3.

[0021] As shown in Fig. 1(A), the spinning top toy 1 is the spinning top toy which is capable of being used for, so called, battle games. Specifically, the spinning top toys 1 can be used for battle games in which the spinning top toy 1 is collided with and disassembles the spinning top toy 1 of the opponent by the impact force as shown in Fig. 1(B), so that the player wins.

[0022] As shown in Figs. 2 and 3, the spinning top toy 1 is provided with a shaft part 10, which configures a lower part structure, and a performance variable ring 30 and a body 40, which configure an upper part structure.

<Detail structure>

1. Regarding a shaft part 10

[0023] As shown in Figs. 2 and 3, the shaft part 10 is provided with a rotating shaft 11 at the lower part, a flange 12 at the middle region, and a cylindrical part 13 at the upper part.

[0024] Among the parts, the flange 12 and the cylindrical part 13 are integrally formed, so as to configure the upper part of the shaft part, and the flange 12 and the cylindrical part 13 are fixed to the lower part of the shaft part by screws (omitted in the drawings). The diameter of the lower part of the shaft part has a shape narrowing down stepwise in a direction from the flange 12 side to the top end side of the rotating shaft 11, and it is formed in an inverted conical shape as a whole.

[0025] In the flange 12 and the cylindrical part 13, a hole 14 is formed in each of two sections which are faced each other in the front and back direction across an axis Ax of the rotating shaft 11 (hereinafter referred to as "axis Ax"), which corresponds to the axis of the spinning top toy 1 as a whole in the vertical direction. On the other hand, in the lower part of the shaft part, overhanging pieces 11 a are formed radically outward in the positions corresponding to the holes 14 of the flange 12. The overhanging pieces 11a are positioned in the lower side of the holes 14 of the flange 12.

[0026] Further, in the cylindrical part 13, a projection part 15 is formed in each of two sections which are faced each other in the right and left direction across the axis Ax. The outer surface of the projection part 15 becomes flush with the outer peripheral surface of the flange 12. Further, in the lower part of the shaft part, projection parts 11b which overhang radically outward in the positions corresponding to the projection parts 15. The flange 12 and the cylindrical part 13 are fixed to the lower part of the shaft part in the sections of the projection parts 15, 11b by screws (omitted in the drawings).

[0027] Further, a columnar body 16 is vertically installed inside the cylindrical part 13. The base end part of the columnar body 16 is connected to the lower part of the shaft part. The top end of the columnar body 16 is

not particularly limited, but it is arranged higher than the position of the top end of the cylindrical part 13. In the top end part of the columnar body 16, a hook 17 stretching out in the outward radial direction at each of two sections, which are faced each other in the front and back direction across the axis Ax, is formed.

[0028] Further, a cylindrical shaped urging member 18 is provided in the shaft part 10. The urging member 18 is made of a synthetic resin but it may be made of a metal. The urging member 18 is placed to surround the outer peripheral of the columnar body 16 inside the cylindrical part 13.

[0029] The urging member 18 is provided with a cylindrical part 18a, a ceiling part 18b, and a leg part 18c.

[0030] The ceiling part 18b is provided on the top end of the cylindrical part 18a. In the ceiling part 18b, a hole 18d which has a shape corresponding to the top end part of the columnar body 16 is formed.

[0031] Further, leg parts 18c are provided in the outer peripheral lower end part of the cylindrical part 18a. The leg part 18c is formed at each of two sections which are faced each other in the front and back direction across the axis Ax.

[0032] The urging member 18 with such structure is provided in a manner in which the leg parts 18c are inserted to the holes 14. The dimension of the holes 14 in the vertical direction is set larger than the length dimension of the leg parts 18c. The urging member 18 is energized in the upward direction by a coil spring 20. At the upper end of the holes 14, the upward movement of the leg parts 18c of the urging member 18 is restricted, and in the normal condition, the top end of the urging member 18 is positioned at the same height as the top end of the cylindrical part 13.

[0033] Further, at the upper surface of the ceiling part 18b of the urging member 18, a protruding strip (projection) 21, which extends in radial direction, is formed at each of two sections which are faced each other in the right and left direction across the axis Ax.

2. Regarding a performance variable ring 30

[0034] In this embodiment, a flywheel is used as a performance variable ring 30. The performance variable ring 30 has a plate like shape. At the bottom surface of the performance variable ring 30, an annular step part 31, which is capable of storing the flange 12 of the shaft part 10 from the lower side, is formed. Further, in the upper surface of the performance variable ring 30, a projection part 32, which stretches out in the upper direction, is formed at each of two sections which are faced each other in the right and left direction across the axis Ax. In the lower side part of each projection part 32, a recessed part 33, which is capable of storing the projection part 15 of the shaft part 10 from the lower side, is formed. Further, in the upper surface of the performance variable ring 30, a tongue-piece part 34, which extends upward, is formed directly outside each projection part 32. The tongue-piece part 34 is projected more upward than the projection part 32. As the performance variable ring 30, substituting the flywheel or integrating with the flywheel, there may be one having a projection part on the outer peripheral surface, so as to easily attack the spinning top toy 1 of the opponent, or there may be one having a recessed part on the outer peripheral surface, so as to defend from the attack from the spinning top toy 1 of the opponent.

3. Regarding a body 40

[0035] The body 40 has a disk shape and the axis Ax is defined as a central axis. The body 40 is provided with a base 400 and a transparent cover body 401 which has a substantially identical shape with the base 400 viewed from top and which is a lid part covering the top of the base 400.

[0036] In the outer peripheral of the body 40, protrusions and recesses 40a are formed. Further, in the center of the base 400, a circular hole 41 is formed. The aforementioned transparent cover body 401 covers the part except the circular hole 41 and arcuate slits 46 which will be described later. In Fig. 3, the illustration of the transparent cover body 401 is omitted. Further, in the lower surface of the body 40, an annular-shaped recess part 42 which is capable of storing the projection part 32 of the performance variable ring 30 from the lower side is formed.

[0037] At the lower end of the inner circumferential surface of the inner circumferential wall 43a which partitions and forms the annular-shaped recess part 42, a hook 44 which overhangs in the inward radial direction is projected at each of two sections which are faced each other in the front and back direction across the axis Ax.

[0038] At the middle region in the vertical direction of the inner circumferential surface of the inner circumferential wall 43a, a protrusion 47 which overhangs in the inward radial direction is projected at each of two sections which are faced each other in the right and left direction across the axis Ax.

[0039] Further, at the lower end surface of the inner circumferential wall 43a, a raised part 45 in which protrusions and recesses are continuously formed so as to engage with the protruding strips 21 is formed.

[0040] Further, at the ceiling wall 43b which partitions and forms the annular-shaped recess part 42 of the body 40, an arcuate slit 46, which is capable of inserting the tongue-piece part 34 of the performance variable ring 30 from the lower side, is formed in each of two sections which are faced each other across the axis Ax. The circumferential length of the arcuate slit 46 is same as the length in which the tongue-piece part 34 can be sufficiently moved.

[0041] At the upper surface of the base 400 of the body 40, a guide groove 48, which extends from the axis Ax side (inner peripheral side) to the outer peripheral side with an upward slope, is formed at each of two sections which are faced each other in the front and back direction

across the axis Ax. The guide groove 48 is used for guiding ball-shaped weight members 49 in a rolling manner inside the guide groove 48, and in the present embodiment, two weight members 49 are stored.

[0042] Specifically, as shown in Fig. 4, the guide groove 48 has one base end groove 481, which is positioned in the axis Ax side, and two branch grooves 482, which branch from the base end groove 481 and are positioned in the outer peripheral side, so that it is formed in a substantially Y-shape. In any of these grooves, a width in which one weight member 49 is stored, that is, the width corresponding to the dimension of the weight member 49 is formed.

[0043] Among these grooves, the base end groove 481 is formed substantially radially along the radial direction of the base 400.

[0044] The two branch grooves 482 are approximately equally divided (approximately symmetric with respect to the base end groove 481) toward the right and left oblique outer peripheral side in a plane view from the outer peripheral end of the base end groove 481.

[0045] Among the two branch grooves 482, the first branch groove 482a, which is positioned in a rotation direction front side of the body 40 (right side toward the outer peripheral side in a plane view), is connected to the base end groove 481 smoothly without any gap.

[0046] On the other hand, the second branch groove 482b, which is positioned in the rotation direction back side of the body 40 (left side toward the outer peripheral side in a plane view), has a gap 483 and connects with the base end groove 481, so that the bottom becomes higher position than the base end groove 481. The gap 483 is provided in the base end part of the second branch groove 482b in a manner in which the outside of the connection part between the base end groove 481 and the first branch groove 482a in the bending direction is smoothly connected in a plane view. Further, the height of the gap 483 is set as the height of the radius of the weight member 49.

[0047] The base end groove 481 and the two branch grooves 482 are formed in approximately same length. Specifically, each of the base end groove 481 and the first branch groove 482a is formed in the length from the top end to the center of the connection part 484 as approximately 1.5 times of the diameter of the weight member 49, so as to position one of the weight members 49 at the center of the connection part 484 of the three grooves when one of the weight members 49 is positioned at the top end of the grooves (see Figs. 7(A) and 7(B)). Further, the second branch groove 482b is formed in the length from the gap 483 to the top end as the diameter of the weight member 49 (see Fig. 7(C)).

[0048] As shown in Figs. 2 and 3, in the circular hole 41 of the body 40, an identification part 60 is mounted. The identification part 60 is used for the identification of the spinning top toy 1 or the identification of a player.

[0049] As the identification, in the present embodiment, a plurality of identification parts in which decorations and/or colors, etc. are different are offered, and one of the identification parts which is selected by the player is mounted in the circular hole 41.

[0050] The identification part 60 has approximately short cylindrical shape as a whole. The central part of the upper surface of the identification part 60 is formed in a mortar shape, and in the edge part surrounding the recess, a recessed part for operation 61 is formed at two sections which are faced each other across the axis Ax. The recessed part for operation 61 is capable of inserting the flange 12 of the shaft part 10, and the identification part 60 can be operated by moving the shaft part 10 which is inserted in the recessed part for operation 61.

[0051] In the outer peripheral of the identification part 60, at each of two sections which are faced each other across the axis, a groove 62 in which the aforementioned protrusion 47 is inserted when inserting to the circular hole 41 of the body 40 is formed. The groove 62 has a part, which extends in the vertical direction and opens to the lower side of the identification part 60, and a part, which extends along the substantially circumferential direction from the top end of this part. After the protrusions 47 of the circular hole 41 are moved along the groove 62 and the identification part 60 is inserted to the circular hole 41 of the body 40 from the upper side, it is rotated, so that the identification part 60 is mounted to the circular hole 41 of the body 40.

«Assembly method»

[0052] Next, an example of an assembly method of the spinning top toy 1 will be described.

[0053] Fig. 5 is a diagram explaining an engagement state of the shaft part 10, the performance variable ring 30 and the body 40.

[0054] Here, it is assumed that the assembly of the shaft part 10 has been already finished. Further, it is assumed that the assembly of the identification part 60 to the circular hole 41 of the body 40 has been also finished.

[0055] First, the shaft part 10 and the performance variable ring 30 are assembled in a fitting state in a manner in which the projection parts 15 of the shaft part 10 are engaged to the recessed parts 33 of the performance variable ring 30 from the lower side. Next, the assembled body is brought close to the body 40 from the lower side. At this point, the tongue-piece parts 34 of the performance variable ring 30 of the aforementioned assembled body are engaged with a predetermined end of the arcuate slits 46 of the body 40 (Fig. 5(A)). In this state, the hooks 17 of the shaft part 10 are not overlapped with the hooks 44 of the body 40 in the vertical direction. This state is the state capable of being disassembled. After that, the shaft part 10 of the aforementioned assembled body is pressed to the body 40 side. Then, first, the performance variable ring 30 is pressed against the lower surface of the body 40. Further, the coil spring 20 is contracted, so that the hooks 17 of the shaft part 10 are relatively pushed more upward than the hooks 44 of the

body 40. The shaft part 10 is integrally rotated with the performance variable ring 30 with respect to the body 40 until the tongue-piece part 34 moves to the end which is the opposite side of the predetermined end (Fig. 5(B)). In this case of the rotation, it is the relative rotation between the body 40 and the performance variable ring 30 and the shaft part 10, and Fig. 5(B) shows the state in which the body 40 side is rotated with respect to the shaft part 10 and the performance variable ring 30. And then, it becomes the state in which the hooks 17 of the shaft part 10 and the hooks 44 of the body part 40 are vertically overlapped. When a hand is released from the shaft part 10, the lower surface of the hooks 17 of the shaft part 10 and the upper surface of the hooks44 of the body 40 are abutted by the urging force of the coil spring 20.

[0056] This state in which the lower surface of the hooks 17 of the shaft part 10 and the upper surface of the hooks 44 of the body 40 are abutted is the assembled state. With such structure, the shaft part 10, the performance variable ring 30, and the body 40 are assembled, so that the spinning top toy 1 is assembled.

«How to play»

[0057] Next, an example of how to play with the spinning top toy 1 will be described.

[0058] In the example of how to play, by spinning the spinning top toy 1, a battle is performed with the opponent of the spinning top toy 1.

[0059] In this case, a charge of the spinning force of the spinning top toy 1 is performed by the launcher 50 as shown in Fig. 6. In the inside part, the launcher 50 is provided with a disk which is not shown, and the disk is energized in one rotational direction by the power spring which is not shown. When the string, which is not shown, wound around the disk is pulled by a handle 51, the disk is rotated, and therefore, the spinning top holder 53 is rotated. The rotation of the spinning holder 53 is transmitted to the spinning top 1 by the forks 54 projected downward, so that the spinning top toy 1 is rotated. In this case, the forks 54 are inserted to the arcuate slits 46 of the body part 40. When the handle 51 of the launcher 50 is pulled to the end, the rotation of the disk and further, the spinning top holder 53 is stopped, and on the other hand, the spinning top toy 1 is rotated further by the inertia force, so that the spinning top toy 1 is released from the spinning top holder 53 in accordance with the tilting faces 54a of the forks 54. The reference numeral 52 in Fig. 6 denotes a rod which is capable of protruding and retracting with respect to the spinning top holder 53. When the spinning top toy 1 is mounted to the spinning top holder 53, the rod 52 is pressed by the upper surface of the spinning top toy 1 so as to be retracted to the spinning top holder 53. For example, the rod 52 is used to detect whether the spinning top toy 1 is mounted or detached.

[0060] The spinning top toy 1 which is launched in such manner, is rotated in a predetermined direction in a predetermined field. When it is collided with the spinning top toy 1 of the opponent, by the impact fore or the frictional force, etc. of the collision, the opposite direction force, which is opposite to the rotation direction of the shaft part 10 and the performance variable ring 30, is applied to the body 40. With this, the body part 40 is relatively rotated to the direction opposite to the rotation direction of the shaft part 10 and the performance variable ring 30.

[0061] And then, the protruding strips 21 are engaged with the raised parts 45 of the lower surface of the body 40 (see Fig. 5). In this case, since the urging force of the coil spring 20 is applied to the protruding strips 21, every time the impact force is applied by the collision, the shaft part 10 is relatively rotated with respect to the body 40 and the engagement position is changed. When it reaches at the locking releasing position, the hooks 44 of the body 40 are removed from the hooks 17 of the shaft part 10, so that the body 40 is separated from the shaft part 10 by the urging force of the coil spring 20. As shown in Fig. 1(B), the spinning top toy 1 is disassembled.

[0062] Further, in the spinning top toy 1, the weight members 49 which are stored in the guide grooves 48 of the body 40 are moved inside the guide grooves 48 by increase or decrease of the centrifugal force in response to the rotation speed of the spinning top toy 1.

[0063] Specifically, first, at the time of low speed rotation, since it is not enough to apply the centrifugal force to the weight members 49 to climb the tilting surface of the guide grooves 48, as shown in Fig. 7(A), two weight members 49 are positioned in the inner peripheral side of the guide groove 48. Precisely, the weight member 49 of the inner peripheral side is positioned at the top end (inner peripheral edge) of the base end groove 481, and the weight member 49 of the outer peripheral side is positioned at the connection part 484 in a contact state with the weight member 49 of the inner peripheral side. Therefore, at the time of low speed rotation, the inertia moment of the spinning top toy 1 (body 40) is relatively small, so that the spinning top toy 1 is easily rotated.

[0064] After that, when the rotation speed increases, as shown in Fig. 7(B), the centrifugal force, which applies to the weight members 49, increases, and the weight members 49 climb the tilting surface of the guide grooves 48 and are moved toward the outer peripheral side. At this time, since the movement from the base end groove 481 to the second branch groove 482b is restricted by the gap 483, the weight member 49 of the outer peripheral side is moved to the top end (outer peripheral edge) of the first branch groove 482a, and the weight member 49 of the inner peripheral side is moved to the connection part 484 in a contact state with the weight member 49 of the outer peripheral side. With this, since the inertia moment of the spinning top toy 1 (body 40) increases, the variation of the rotation speed is suppressed, and the offensive power (impact force) to the spinning top toy 1 of the opponent increases.

[0065] When the spinning top toy 1 is collided with the spinning top toy of the opponent, or when the rotation speed increases further, as shown in Fig. 7(C), since the

impact at the time of collision or the centrifugal force increases, the weight member 49 of the inner peripheral side climbs over the gap 483 and is moved to the top end of the second branch groove 482b. With this, the inertia moment of the spinning top toy 1 (body 40) increases more, the variation of the rotation speed is further suppressed, and the offensive power (impact force) to the spinning top toy 1 of the opponent increases further.

[0066] As described above, according to the spinning top toy 1 of the present embodiment, since the weight members 49 stored in the guide grooves 48 of the body 40 are moved (rolled) inside the guide grooves 48 by increase or decrease of the centrifugal force in response to the rotation speed of the spinning top toy 1, the inertia moment of the body 40 changes in response to the rotation side. At this time, since the movement of the weight members 49 is restricted by the gap 483 formed in the middle of the guide groove 48, the inertia moment of the body 40 changes gradually.

[0067] With this, the variation of the inertia moment in response to the rotation speed can be limited in comparison with the conventional one in which the guide grooves simply radially extend, so that the rotational stability can be improved.

[0068] Therefore, while improving the rotational stability in comparison with the conventional one, the inertia moment can be appropriately changed in response to the rotation speed, and the attractiveness of the spinning top toy 1 can be enhanced.

«Modification example of the present invention»

[0069] The embodiments of the present invention were described above, but the present invention is not limited to the aforementioned embodiments, and needless to say, various modifications may be made within the scope that does not depart from the essential point of the present invention.

[0070] For example, in the aforementioned embodiments, the weight members 49 are guided by the guide groove 48, which is branched in the Y-shape, but the shape, etc. is not particularly limited as long as the guide groove 48 extends in the direction from the axis Ax side to the outer peripheral side and a gap is formed in the middle.

[0071] For example, as shown in Fig. 8, guide grooves 48A which simply radially extend along the radial direction of the body 40 and have the gap 483A in the middle may be provided. Further, the guide grooves 48 may have a slope which inclines upward in the direction from the axis Ax side to the outer peripheral side.

[0072] Further, the number or the position of the guide grooves 48 is not particularly limited. One guide groove 48 may be provided, or more than three guide grooves 48 may be arranged on the peripheral, etc.

[0073] Further, the number of weight members 49 stored in the guide grooves 48 is not particularly limited. In the case of the guide grooves which are not branched as shown in Fig. 8, only one weight member 49 may be stored.

[0074] Moreover, a plurality of weight members 49 may be moved in series in the guide grooves 48. Among the two branch grooves, it is preferable that at least the first branch groove 482a which does not include the gap 483 has the width which can store one weight member 49.

[0075] Further, the guide grooves 48 may be offset in the tangential direction of the body 40, or the base end groove 481 may be inclined with respect to the radial direction of the body 40.

[0076] Further, in the aforementioned embodiments, among the two branch grooves 482, there is no gap in the first branch groove 482a of the front side of the rotation direction, and the gap 483 is provided in the second branch groove 482b of the back side of the rotation direction. However, it may be reversed, so as to provide the gap 483 in the other one of the branch grooves 482.

Explanation of symbols

[0077]

1	spinning top toy
10	shaft part
11	rotating shaft
40	body
48, 48A	guide groove
481	base end groove
481	branch groove
482a	first branch groove
482b	second branch groove
483, 483A	gap
484	connection part
49	weight member
Ax	axis

Claims

1. A spinning top toy, which includes a shaft part and a body and rotates around a rotating shaft, comprising:

   wherein the body includes
   a guide groove which extends in a direction from a rotating shaft side to an outer peripheral side and forms a gap in a middle, and
   a spherical-shaped weight member stored in the guide groove in a rolling manner.

2. The spinning top toy according to claim 1, wherein the guide groove extends from the rotating shaft side to the outer peripheral side with an upward slope.

3. The spinning top toy according to claim 1 or claim 2, wherein the guide groove includes one groove, which is positioned in the rotating shaft side, and two

branch grooves, which are positioned in the outer peripheral side and branch from the one groove, and one of the branch grooves connects with the one groove without a gap and another one of the branch grooves connects with the one groove with a gap.

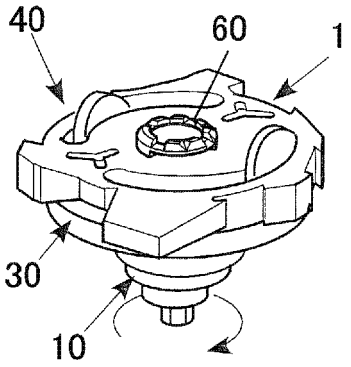
4. The spinning top toy according to claim 3, wherein in the guide groove, two weight members are stored.

5. The spinning top toy according to claim 4, wherein at least one of the branch grooves among the two branch grooves is formed in a width which is capable of storing one weight member.

6. The spinning top toy according to any one of claims 1 to 5, wherein a plurality of guide grooves are provided.

7. The spinning top toy according to claim 6, wherein the guide groove is provided in each of sections which are faced each other across the rotating shaft.

(A)



(B)

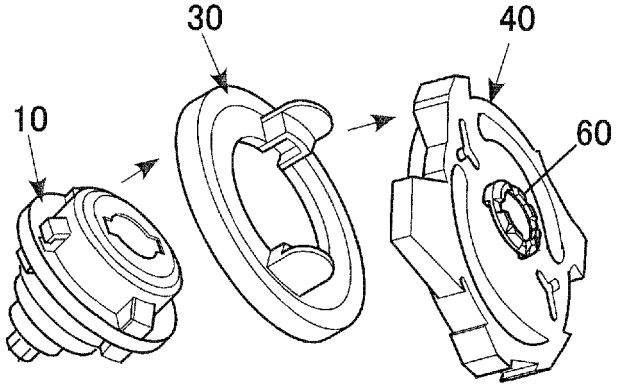
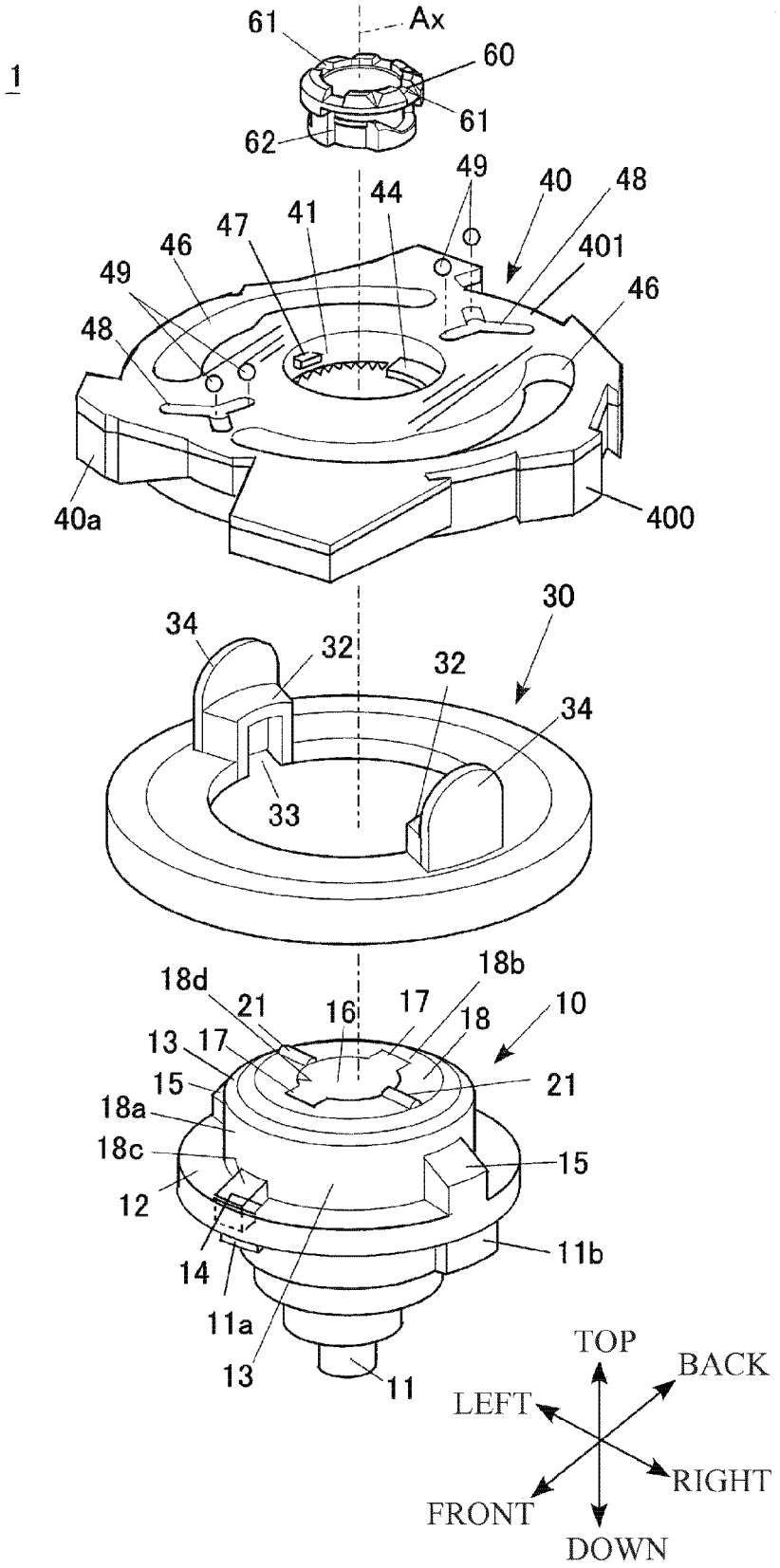


Figure 1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Ax
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400
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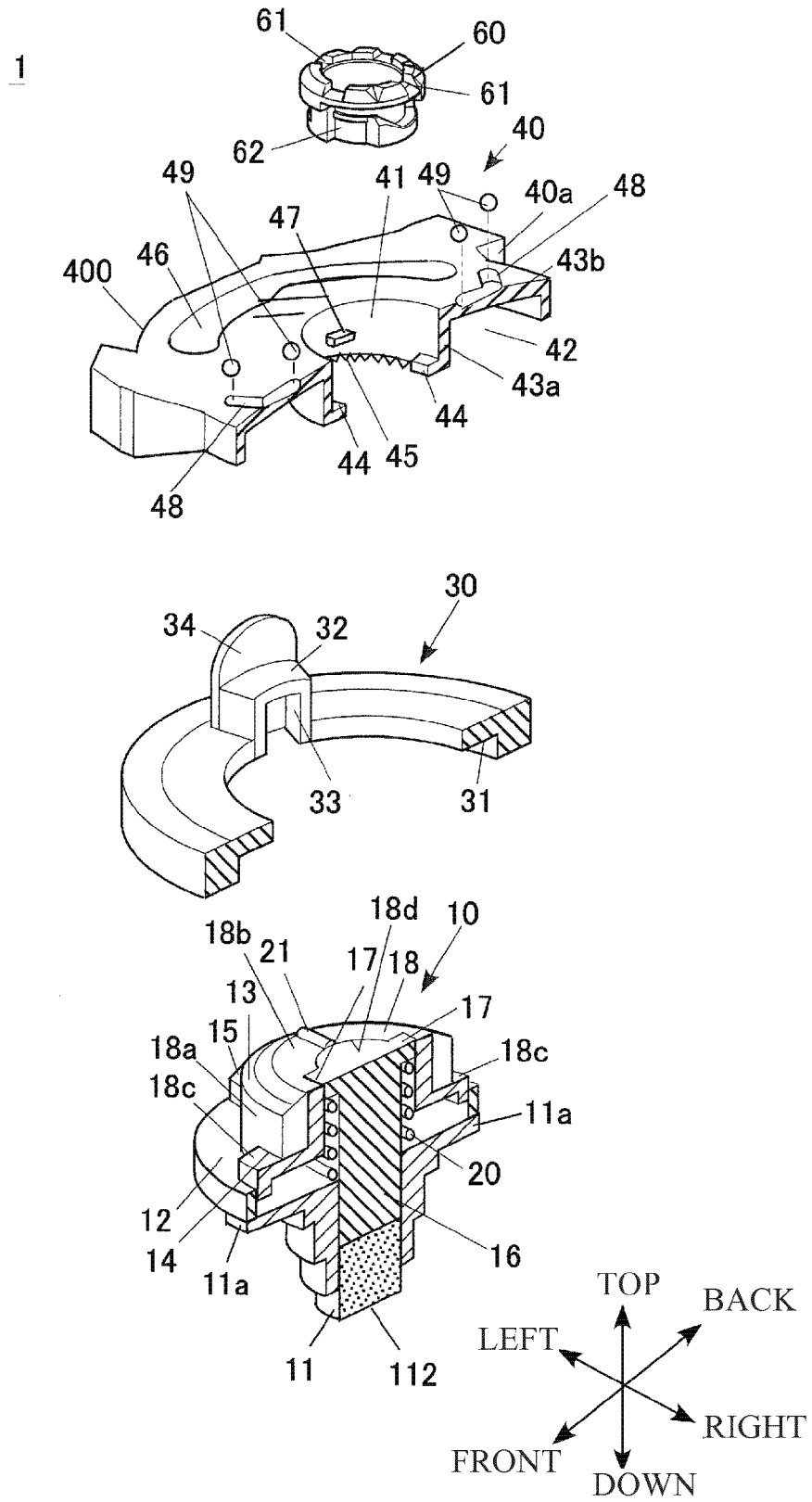
32
32
34
33
18d
21
16
17
18b
18
10
13
17
15
21
18a
18c
15
12
14
11b
11a
13
11
TOP
BACK
LEFT
RIGHT
FRONT
DOWN

Figure 2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31
18d
10
18b
21
17
18
13
17
15
18a
18c
18c
11a
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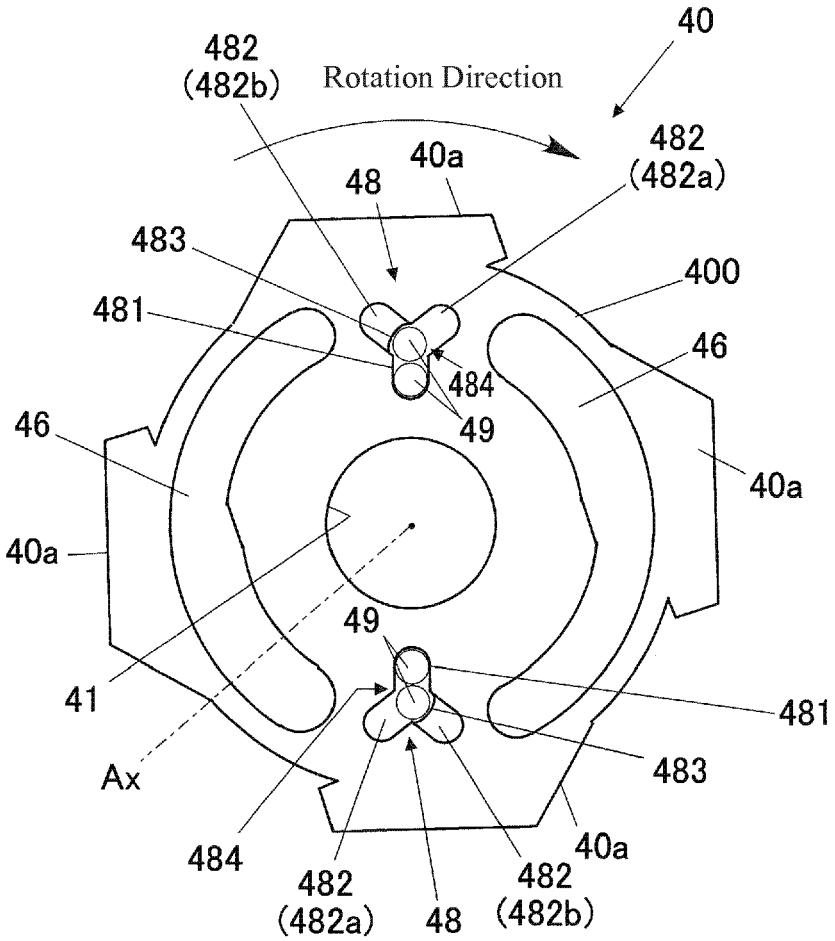
12
14
11a
16
11
112
TOP
BACK
LEFT
RIGHT
FRONT
DOWN

Figure 3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482
(482b)
Rotation Direction
482
(482a)
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48
483
400
481
46
484
49
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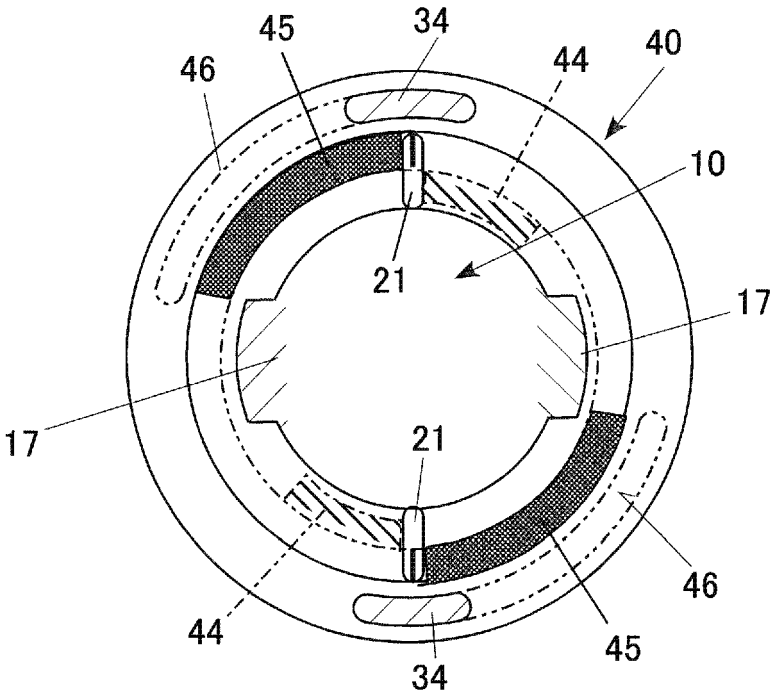
40a
40a
49
41
481
Ax
483
484
40a
482
(482a)
48
482
(482b)

Figure 4

(A)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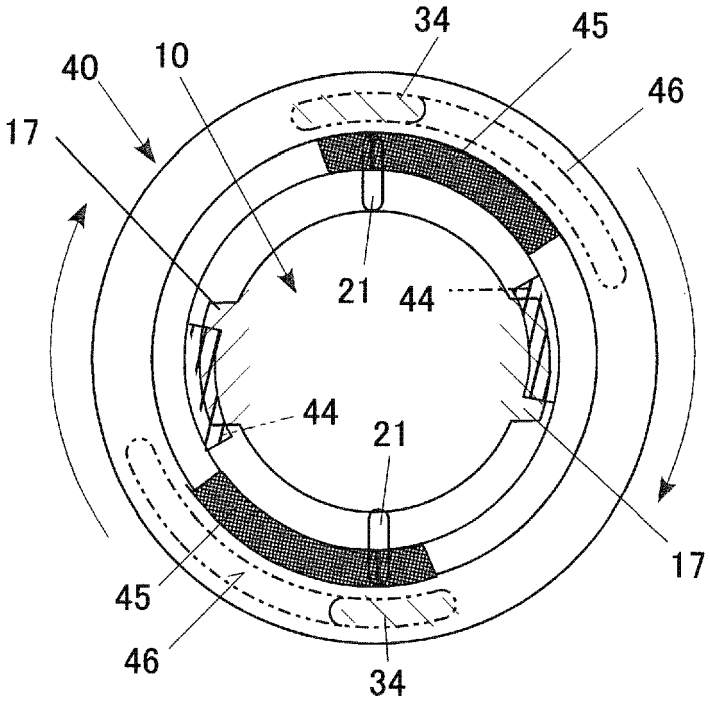
(B)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34

Figure 5

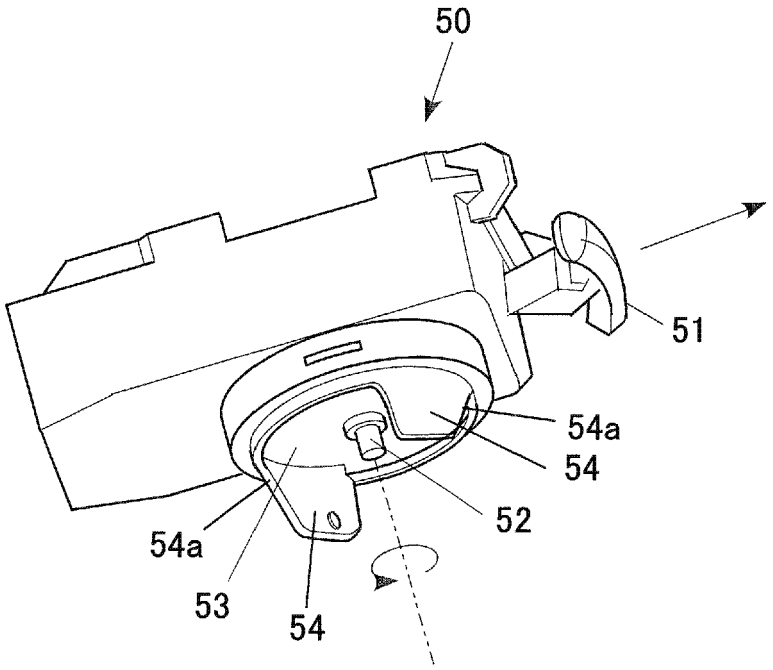
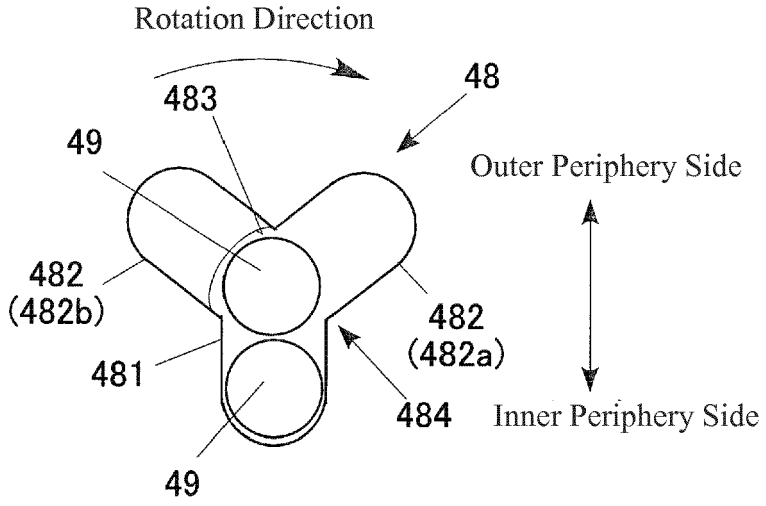


Figure 6

(A)


Rotation Direction
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483
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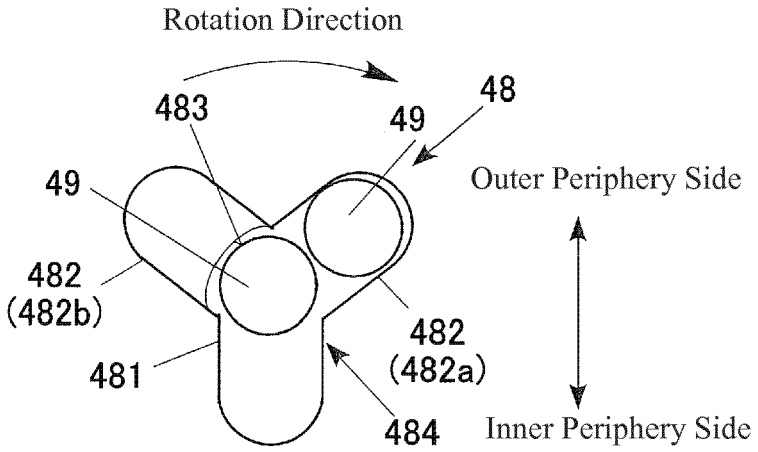
Outer Periphery Side
482
(482b)
482
(482a)
481
484
Inner Periphery Side
49

(B)


Rotation Direction
483
48
49
49
Outer Periphery Side
482
(482b)
482
(482a)
481
484
Inner Periphery Side

(C)

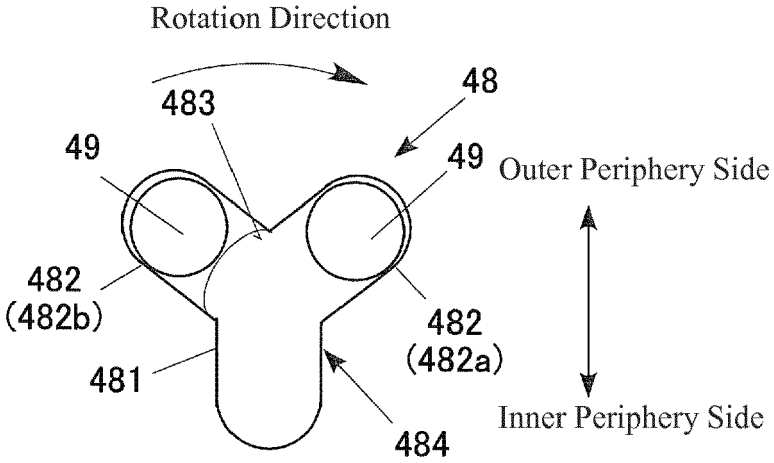

Rotation Direction
48
483
49
49
Outer Periphery Side
482
(482b)
482
(482a)
481
484
Inner Periphery Side

Figure 7

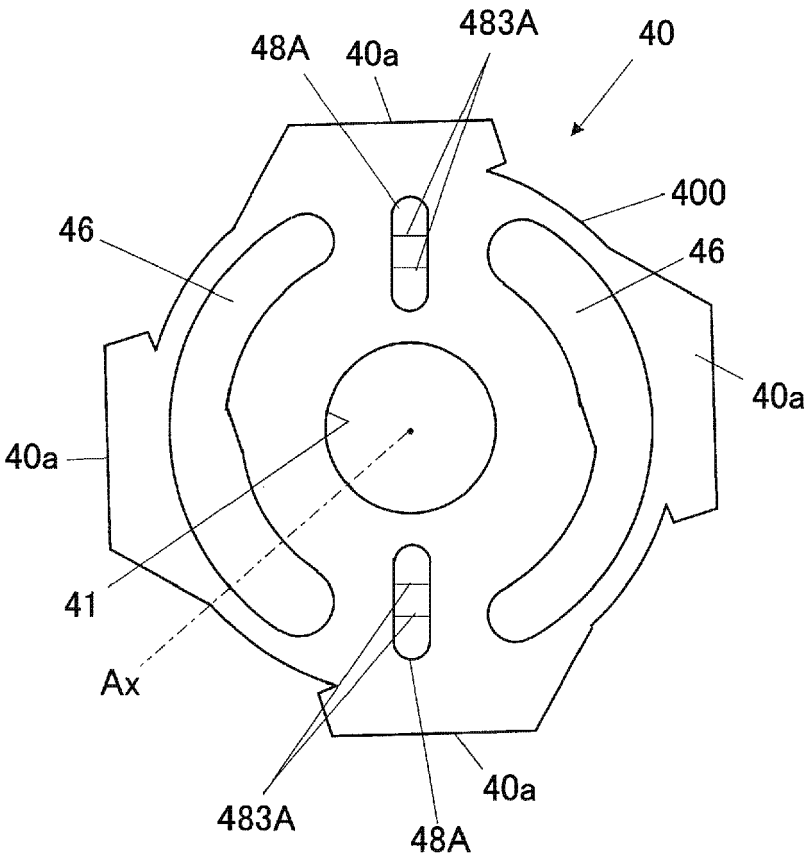


Figure 8

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EUROPEAN SEARCH REPORT

Application Number
EP 18 15 7169

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X A	JP 3 071767 U (TAKARA CORPORATION) 22 September 2000 (2000-09-22) * paragraphs [0006] - [0012], [0019] - [0020], [0024] - [0034]; figures 1,2,3,4,9,10 *	1,2,6,7 3-5	INV. A63H1/00 ADD. A63H1/02
X	CN 202 822 752 U (WUHAN MANDI ANIMATION AND CARTOON CULTURE TRANSMISSION CO LTD) 27 March 2013 (2013-03-27) * paragraphs [0078], [0085] - [0086]; figures 1-3,9 *	1,6,7	
X	US 3 230 662 A (FRIEDRICH FUCHS) 25 January 1966 (1966-01-25) * column 1, line 43 - column 2, line 43; figures *	1,2,4	

TECHNICAL FIELDS SEARCHED (IPC)
A63H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	12 July 2018	Bagarry, Damien

CATEGORY OF CITED DOCUMENTS

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12-07-2018

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 3071767 U	22-09-2000	NONE	
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Patent documents cited in the description

- JP 3071767 B **[0005]**