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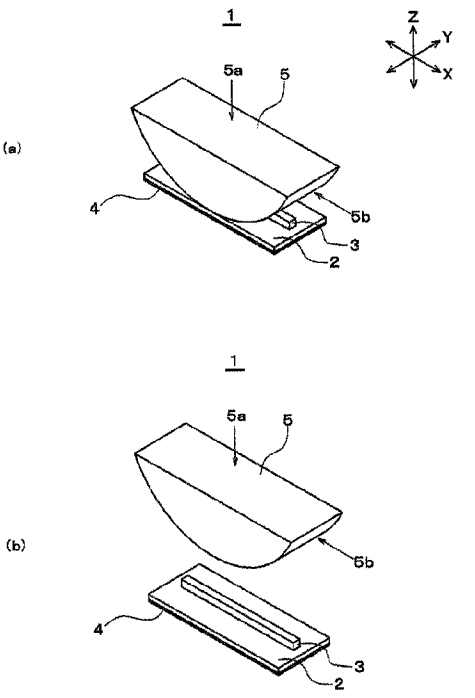
(54) **Title: EXERCISE APPARATUS**



(57) **Abrégé/Abstract:**
Provided is an exercise apparatus which can suppress positional displacement when a user is jiggling. The exercise apparatus includes: a placement part on which both legs of a user are placed; a main body part which rotationally moves over a predetermined range by alternate movement of the legs of the user placed on the placement part; and restraining means which restrains movement of the main body part. The restraining means has a recessed part formed in the main body part, a projection part fitted into the recessed part, and a base part, wherein the projection part is fixed to an upper surface of the base part. The main body is rotatably supported with respect to the base part and the projection part.

Abstract

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EXERCISE APPARATUS

[Technical Field]

[0001]

The present invention relates to an exercise apparatus for exercise in which a user alternately moves both of his or her legs up and down.

[Background Art]

[0002]

It has been said that as simplified means for promoting blood circulation, relieving stress, and eliminating a lack of exercise, exercise or motion in which both legs are alternately jiggled up and down, that is, the so-called "jittering" is effective (hereinafter, this motion is referred to as "jiggling"). In recent years, the jiggling has been attracting attention as means for eliminating a lack of exercise of the elderly who is forced to use a wheelchair.

[0003]

Therefore, conventionally, a foot stepping device which allows the jiggling to be easily performed in a posture in which a user is seated on a wheelchair or the like has been proposed (for example, Patent Literature 1). The foot stepping device shown in Patent Literature

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1 has a shape obtained by cutting a circular cylinder from a direction orthogonal to a smooth surface, and the smooth surface serves as a footrest part. A user brings a vertex portion of an arc thereof into contact with a floor or the like, places both legs on the footrest part in this state, and then, alternately moves the legs up and down. Thus, the user can continuously perform the jiggling.

[Citation List]

[Patent Literature]

[0004]

[Patent Literature 1]

Japanese Patent Application Laid-Open Publication No. 2016-73597

[Summary of Invention]

[Technical Problem]

[0005]

However, in the above-mentioned conventional technology, upon pressing down one side of the foot stepping device by a foot of the user, the foot stepping device shifts to an unexpected direction from a predetermined position by a force exerted upon pressing down (positional displacement within a horizontal plane), thereby causing the situation in which the jiggling cannot be continuously and smoothly performed in a fixed

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position. As described above, in the conventional technology, it is difficult to continuously perform the jiggling while the positional displacement is suppressed.

[0006]

Therefore, an object of the present invention is to provide an exercise apparatus which allows the jiggling to be continuously performed while the positional displacement is suppressed.

[Solution to Problem]

[0007]

An exercise apparatus of the present invention includes: a placement part on which both legs of a user are placed; a main body part which has an arc part and rotationally moves over a predetermined range by alternate movement of the legs of the user placed on the placement part; and restraining means which restrains movement of the main body part within a horizontal plane, the restraining means having a recessed part formed by removing a portion of the arc part of the main body part and a projection part fitted into the recessed part.

[Advantageous Effect of Invention]

[0008]

According to the present invention, jiggling can be continuously performed while positional displacement is suppressed.

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[Brief Description of Drawings]

[0009]

Figure 1 shows schematic perspective views (a) and (b) of a whole exercise apparatus according to Embodiment 1 of the present invention.

Figure 2 shows a schematic front view (a) and schematic side views (b) and (c) of the exercise apparatus according to Embodiment 1 of the present invention.

Figure 3 shows schematic views (a) and (b) of the exercise apparatus, viewed along arrows A-A' and arrows B-B' shown in Figure 2 (b) and (c), respectively, according to Embodiment 1 of the present invention.

Figure 4 shows schematic explanatory diagrams (a) and (b) of a structure of the exercise apparatus according to Embodiment 1 of the present invention.

Figure 5 shows a schematic front view of the exercise apparatus according to Embodiment 1 of the present invention.

Figure 6 shows diagrams (a), (b), and (c) illustrating a usage example of the exercise apparatus according to Embodiment 1 of the present invention.

Figure 7 shows a schematic front view (a), a schematic plan view (b), a schematic side view (c), and a schematic view (d) viewed along arrows C-C' shown in

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Figure 7 (c) of an exercise apparatus according to Embodiment 2 of the present invention.
Figure 8 shows a schematic explanatory diagram of the exercise apparatus according to Embodiment 2 of the present invention.
Figure 9 shows a schematic explanatory diagram of a structure of the exercise apparatus according to Embodiment 2 of the present invention.
Figure 10 shows diagrams (a) and (b) illustrating a usage example of the exercise apparatus according to Embodiment 2 of the present invention.

[Description of Embodiments]

[0010]

(Embodiment 1)

With reference to Figures 1 to 5, an exercise apparatus according to Embodiment 1 of the present invention will be described. Figures 3 (a) and (b) show views of the exercise apparatus, viewed along arrows A-A' and arrows B-B' shown in Figures 2 (b) and (c), respectively. The exercise apparatus 1 is used for exercise or motion in which both legs of a user are alternately jiggled up and down from his or her heel sides, that is, exercise (jiggling) of both legs of the user.

[0011]

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The exercise apparatus 1 includes a rectangular base part 2 which is placed on a floor surface F (Figure 6). On an upper surface of the base part 2, a columnar body 3 as a projection part, which extends in a longitudinal direction of the base part 2, is fixed. In other words, the base part 2 supports the columnar body 3 from below. On a lower surface of the base part 2, a rubber sheet 4 as an anti-skidding member is provided, and thus, the base part 2 does not skid with respect to the floor surface F. Hereinafter, a direction in parallel with a long side of the base part 2 is defined as an X-axis direction, a direction orthogonal to the X-axis direction within a horizontal plane is defined as a Y-axis direction, and a direction orthogonal to an X-Y plane is defined as a Z-axis direction.

[0012]

The base part 2 is provided with a main body part 5 as a rotationally moving body in such a way as to be rotationally movable over a predetermined range with respect to the base part 2. The main body part 5 is formed in an arc shape (semicircular shape) in a front view by cutting, for example, a circular cylinder-shaped member from a direction orthogonal to a smooth surface. Thus, a cut surface of the main body part 5 becomes a smooth surface 5a, and an arc part 5b is formed along a circumferential direction excluding the smooth surface 5a of the main body part 5. In other words, the arc part 5b

has a curved surface. The base part 2, the columnar body 3, and the main body part 5 are formed of, for example, wood.

[0013]

In Figures 2 (b) and (c) and Figures 3 (a) and (b), the main body part 5 has a groove part 5c as a recessed part formed over a predetermined range by partially removing a portion of the arc part 5b (curved surface). In Embodiment 1, by partially removing the portion of the arc part 5b (curved surface) along the circumferential direction with an apex T1 (Figure 3 (b)) as a point of origin, the groove part 5c is formed. It is preferable that a range in which the groove part 5c is formed forms an obtuse angle. In Figure 2 (c), surfaces 5c1, 5c2, and 5c3 of the main body part 5, on which the groove part 5c is formed are, for example, "rough" by rough surface machining.

[0014]

As shown in Figure 2 (b), a length dimension t1 of the groove part 5c in a width direction is set to be substantially the same as a length dimension of the columnar body 3 in a width direction or to be slightly larger than the length dimension of the columnar body 3. As shown in Figure 3 (a), a depth t2 of the groove part 5c is set to be substantially the same as a height of the columnar body 3 (a length dimension thereof in the Z-axis direction). By fitting the columnar body 3 into the

groove part 5c, the main body part 5 is rotatably supported to the base part 2 and the columnar body 3 with a horizontal direction as an axial center.

[0015]

The main body part 5 rotationally moves along the arc part 5b (curved surface) with respect to the base part 2 and the columnar body 3 within the range in which the groove part 5c is formed. Accordingly, as shown in Figures 4 (a) and (b), one end portion 5a1 of the smooth surface 5a of the main body part 5 moves in the Z-axis direction over a predetermined distance S by jiggling of a user. In Embodiment 1, since height positions of both end portions of the groove part 5c are the same as each other, the other end portion 5a2 of the smooth surface 5a of the main body part 5 also moves over the predetermined distance S.

[0016]

The smooth surface 5a of the main body part 5 serves as a placement part on which both legs L1 and L2 (Figure 6) of the user are placed. Note that as shown in Figure 5, in accordance with a physical characteristic of the user (for example, a body height), a plate member 6 which has a length dimension larger than a length dimension of the smooth surface 5a in a longitudinal direction is fixed on the smooth surface 5a, and this plate member 6 may be the placement part. In addition, in positions on the smooth surface 5a which both legs L1 and L2 of the

user contact or in positions on the plate member 6, anti-skidding members such as rubber sheets may be provided.

[0017]

The exercise apparatus 1 according to Embodiment 1 is configured as described above. Next, with reference to Figure 6, a usage example of the exercise apparatus 1 will be described. First, as shown in Figure 6 (a), a user sets the exercise apparatus 1 on the floor surface F. Note that a basic posture of the exercise apparatus 1 prior to starting the jiggling is in a position where the apex T1 of the arc part 5b of the main body part 5 is closest to the base part 2, that is, a position where the smooth surface 5a becomes horizontal.

[0018]

Subsequently, the user places respective one leg L1 and the other leg L2 on both sides of the smooth surface 5a. Subsequently, as shown in Figure 6 (b), the user moves the one leg L1 from a heel side downward (as indicated by an arrow a), whereby the main body part 5 rotationally moves in an arrow b direction while fitting of the groove part 5c and the columnar body 3 is maintained, and the other leg L2 moves upward. In other words, the main body part 5 is not disengaged from the columnar body 3, and movement (positional displacement) in a width direction (Y-axis direction orthogonal to a longitudinal direction of the columnar body 3 within the horizontal plane) is restrained by the columnar body 3.

Note that since the surfaces 5c1, 5c2, and 5c3 of the main body part 5, which form the groove part 5c, are "rough" and upon jiggling, the surfaces 5c1, 5c2, and 5c3 of the main body part 5 slide on a surface of the columnar body 3, skidding of the main body part 5 in the longitudinal direction of the columnar body 3 (X-axis direction) is also suppressed.

[0019]

Subsequently, as shown in Figure 6 (c), the user moves the other leg L2 from a heel side downward (as indicated by an arrow c), whereby the main body part 5 rotationally moves in an arrow d direction while the fitting of the groove part 5c and the columnar body 3 is maintained, and the one leg L1 moves upward. The user alternately jiggles the one leg L1 and the other leg L2 up and down (jiggling), whereby the main body part 5 rotationally moves in a reciprocated manner (the arrow b → the arrow d → the arrow b → the arrow d ...).

[0020]

As described above, the main body part 5 has the arc part 5b (curved surface) and both legs L1 and L2 of the user placed on the placement part alternately move, whereby the main body part 5 rotationally moves over the predetermined range along a circumferential direction of the arc part 5b. In addition, the groove part 5c formed on the base part 2, on the columnar body 3, and in the main body part 5 serves as restraining means which

restrains the movement of the main body part 5 within the horizontal plane. In addition, the groove part (recessed part) 5c is formed along the arc part 5b (curved surface) of the main body part 5, and the columnar body (projection part) 3 is installed on the floor surface F via the base part 2, extends in one direction, and is fitted into the groove part 5c. Furthermore, the base part 2 is installed on the floor surface F and fixes the columnar body 3 on the upper surface thereof.

[0021]

As described above, the exercise apparatus 1 according to Embodiment 1 can suppress the positional displacement of the main body part 5 when the user performs the jiggling, and as a result, the jiggling can be continuously performed in the fixed position.

[0022]

(Embodiment 2)

Next, with reference to Figures 7, 8, and 9, an exercise apparatus according to Embodiment 2 of the present invention will be described. Shapes of a recessed part and a projection part in the exercise apparatus 10 according to Embodiment 2 are different from the shapes of the recessed part and the projection part in the exercise apparatus 1 according to Embodiment 1. In other words, on an upper surface of a base part 11 which the exercise apparatus 10 includes, by cutting a portion of a circular cylinder-shaped member from a

direction orthogonal to a smooth surface, a raised part 12 as a projection part which is formed in a manner of arcing from both sides toward a central portion thereof and of being raised is provided. In other words, the raised part 12 has a curved surface and is formed in a substantially semicircular shape in a front view.

[0023]

A main shape of a main body part 13 is similar to that of the main body part 5 according to Embodiment 1, and on an upper surface thereof, a smooth surface 13a as a placement part is formed. In the main body part 13, in a substantially central portion thereof with an apex T2 (Figure 9) as a center, by partially removing a portion of an arc part 13b (curved surface) in an arcing (circular-arcing) manner, a groove part 13c as a recessed part which is formed in a substantially semicircular shape in a front view is formed. As shown in Figure 7 (c), a length dimension t3 of the groove part 13c in a width direction is substantially the same as a length dimension of the raised part 12 in a width direction or is slightly larger than the length dimension of the raised part 12 in a width direction. Accordingly, in a state in which the main body part 13 is fitted to the raised part 12 via the groove part 13c, movement of the main body part 13 in a width direction (Y-axis direction) is restrained.

[0024]

In Figure 9, a diameter of a virtual circle C1 which is formed along an edge portion of the groove part 13c is set to be larger than a diameter of a virtual circle C2 which is formed along an edge portion of the raised part 12. In addition, when the main body part 13 is fitted to the raised part 12 in such a way as to make a position of the apex T2 closest to the base part 11, the virtual circles C1 and C2 are concentrically located with a center point R as a center. Accordingly, between the edge portion forming the groove part 13c and the raised part 12, a clearance (play allowance) having a fixed width t4 is brought about. In the state in which the main body part 13 is fitted to the raised part 12 via the groove part 13c, movement of the main body part 13 to a direction within a horizontal plane is permitted in a range in accordance with the above-mentioned clearance, and the main body part 13 can rotationally move with respect to the base part 11 and the raised part 12 (as indicated by an arrow e). In Figure 9, for the sake of convenience, the main body part 13 and the base part 11 are illustrated in such a way as to be separated from each other.

[0025]

As shown in Figures 10 (a) and (b), in a state in which a user places both of his or her legs L1 and L2 on the smooth surface 13a of the main body part 13, the user jiggles both of his or her legs L1 and L2 up and down,

whereby the main body part 13 rotationally moves in the range in accordance with the clearance while the arc part 13b (curved surface) is brought into contact with the base part 11 (an arrow f → an arrow g → the arrow f → the arrow g ...). Upon the rotational movement of the main body part 13, the raised part 12 contacts respectively edge parts E1 and E2 of the groove part 13c, whereby movement of the main body part 13 in a longitudinal direction (X-axis direction) is restrained. In other words, the exercise apparatus 10 according to Embodiment 2 can restrain the movement of the main body part 13 in the X and Y directions upon jiggling.

[0026]

The design of the exercise apparatus according to the present invention can be changed without departing from the scope of the invention. For example, the shape of the columnar body 3 may be any shape, and it is only required for the shape of the columnar body 3 to be capable of fitting to the groove part 5c and to be a projecting shape which extends in one direction with respect to the base part 2. In addition, on the upper surface of the main body part 5, recessed parts having sizes which allow feet to be housed may be provided, and with the feet housed in these recessed parts, the jiggling may be performed. In addition, on a surface of the placement part (smooth surface 5a) which the main body part 5 has, recesses and projections may be present.

Furthermore, in the exercise apparatus 10 according to Embodiment 2, the main body part 13 may be provided with a plurality of groove parts 13c, and the base part 11 may be provided with raised parts 12 whose number corresponds to the number of the groove parts 13c.

[Industrial Applicability]

[0027]

According to the present invention, jiggling can be continuously performed while positional displacement is suppressed, and in particular, the present invention is useful as a tool for eliminating a lack of exercise of the elderly.

[Reference Signs List]

[0028]

1, 10 Exercise apparatus

2, 11 Base part

3 Columnar body (Projection part)

5, 13 Main body part

5a, 13a Smooth surface (Placement part)

5b, 13b Arc part

5c, 13c Groove part (Recessed part)

12 Raised part (Projection part)

F Floor surface

Claims

[Claim 1]

An exercise apparatus comprising:

a placement part on which both legs of a user are placed;

a main body part which rotationally moves over a predetermined range by alternate movement of the legs of the user placed on the placement part; and

restraining means which prevents movement of the main body part in a direction orthogonal to the rotational direction of the main body part, and restrains movement of the main body part in the rotational direction,

the restraining means having

a recessed part formed in the main body part,

a projection part fitted into the recessed part, and

a base part, wherein the projection part is fixed to an upper surface of the base part,

wherein the main body is rotatably supported with respect to the base part and the projection part, with a horizontal direction as an axial center.

[Claim 2]

The exercise apparatus according to claim 1, wherein

when the main body part is in rotational movement, horizontal movement of the main body part is restrained

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by the projection part contacting an edge of the recessed part.

[Claim 3]

The exercise apparatus according to any one of claims 1 and 2, wherein the base part is to be placed on a floor surface.

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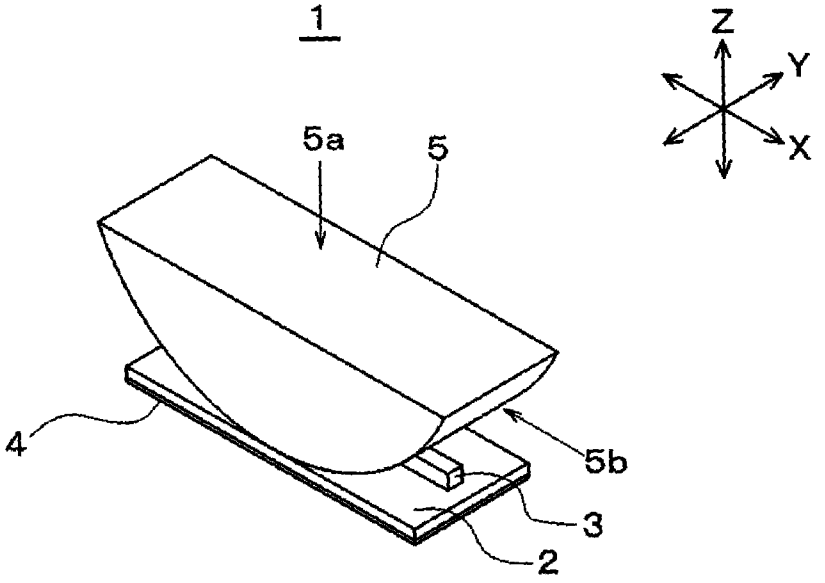
Fig.1

(a)



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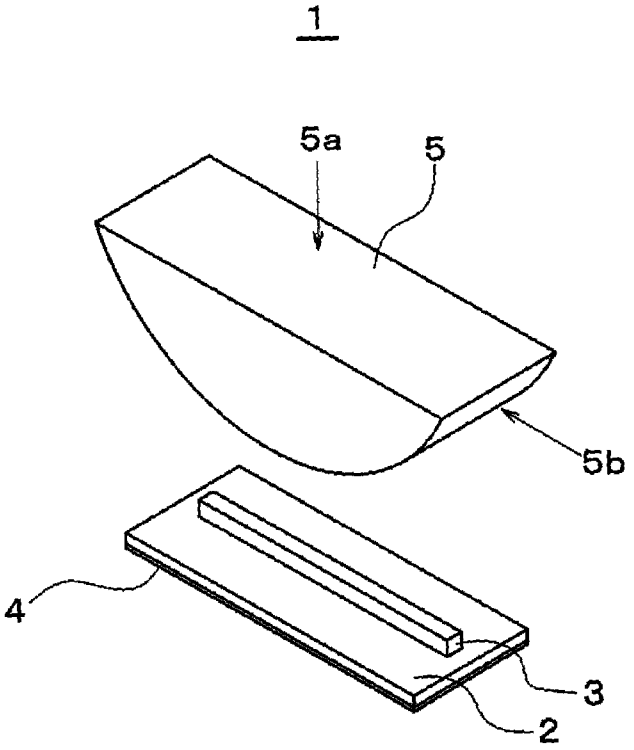

Fig.2

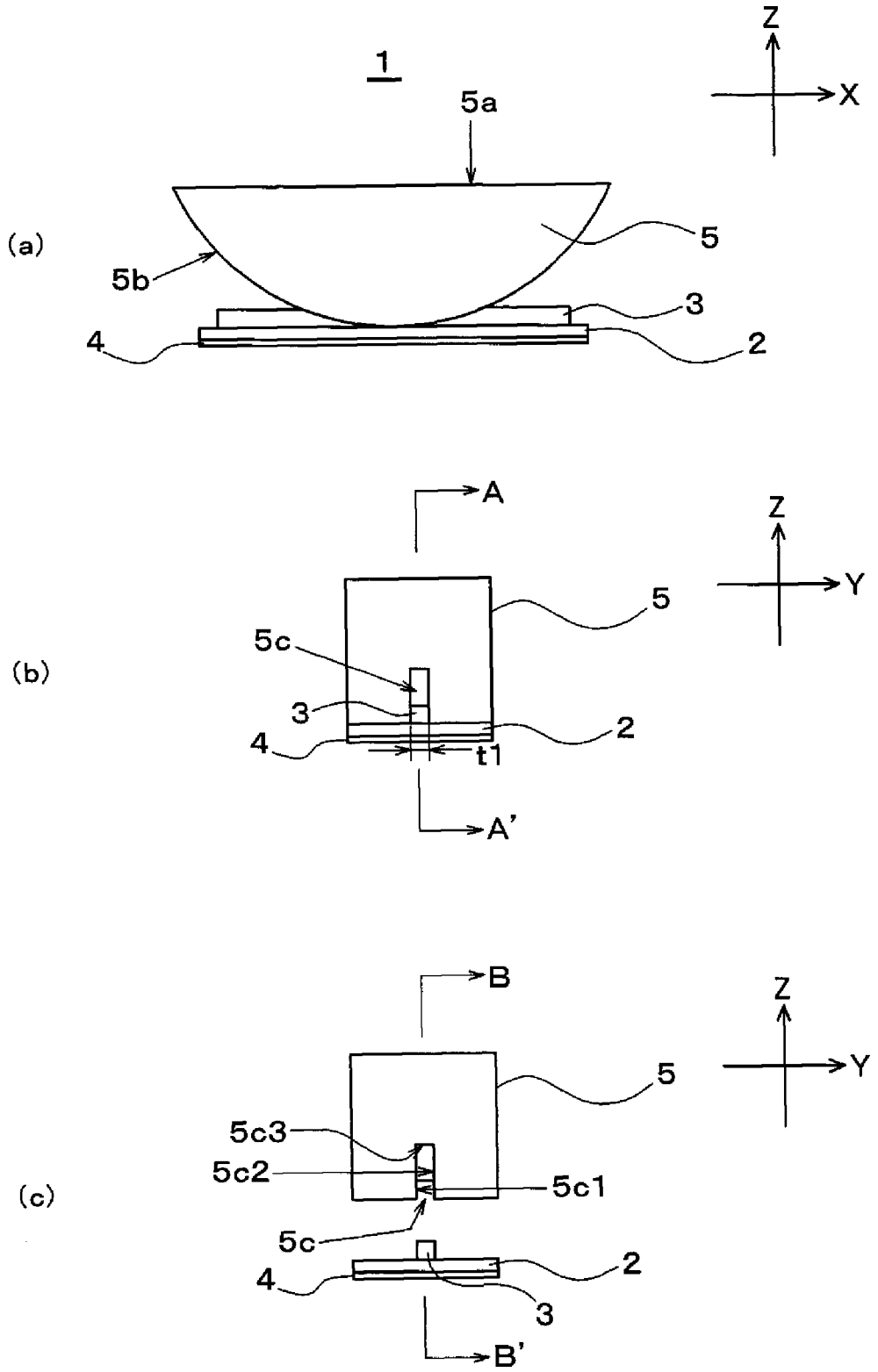

Fig.3

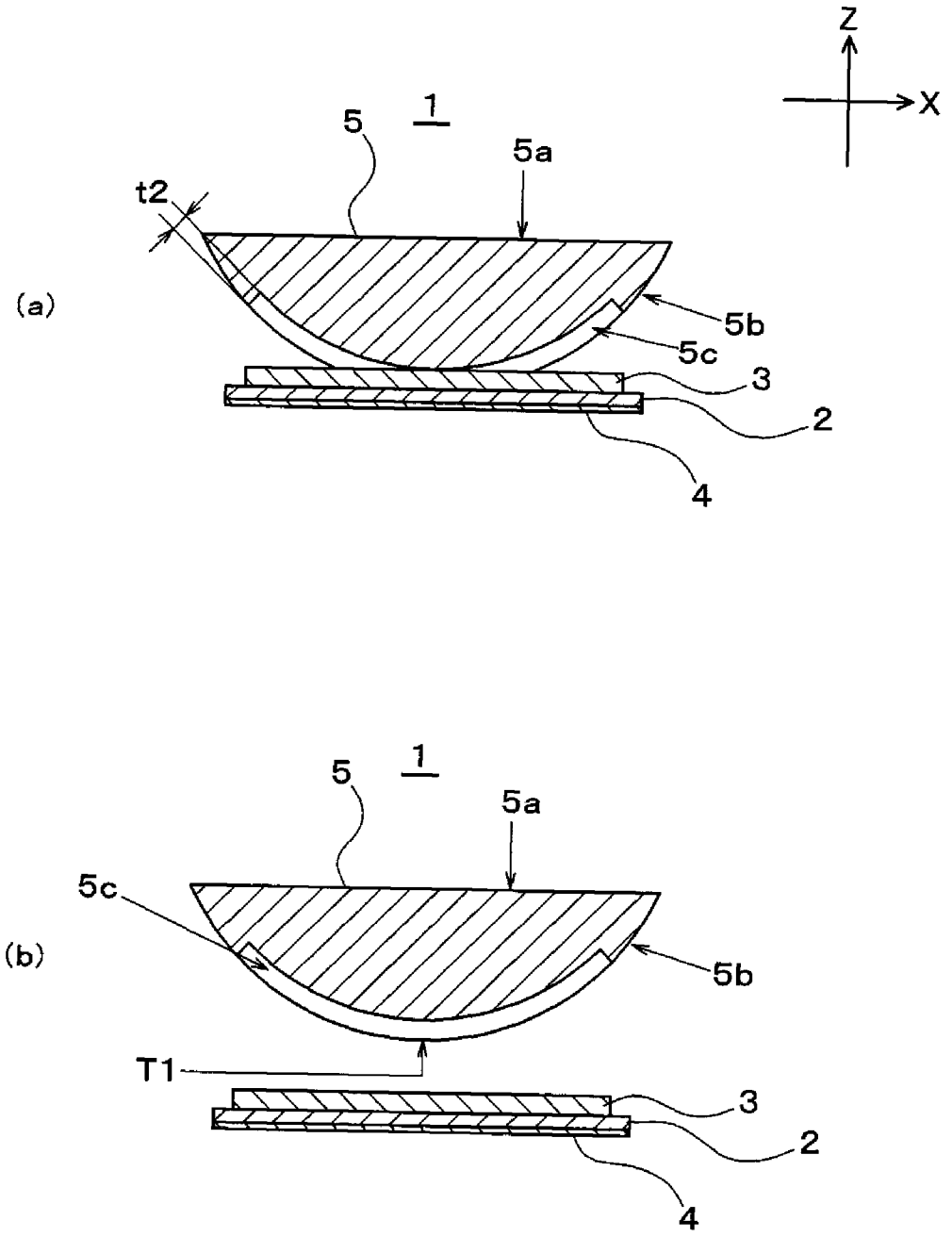

Fig.4

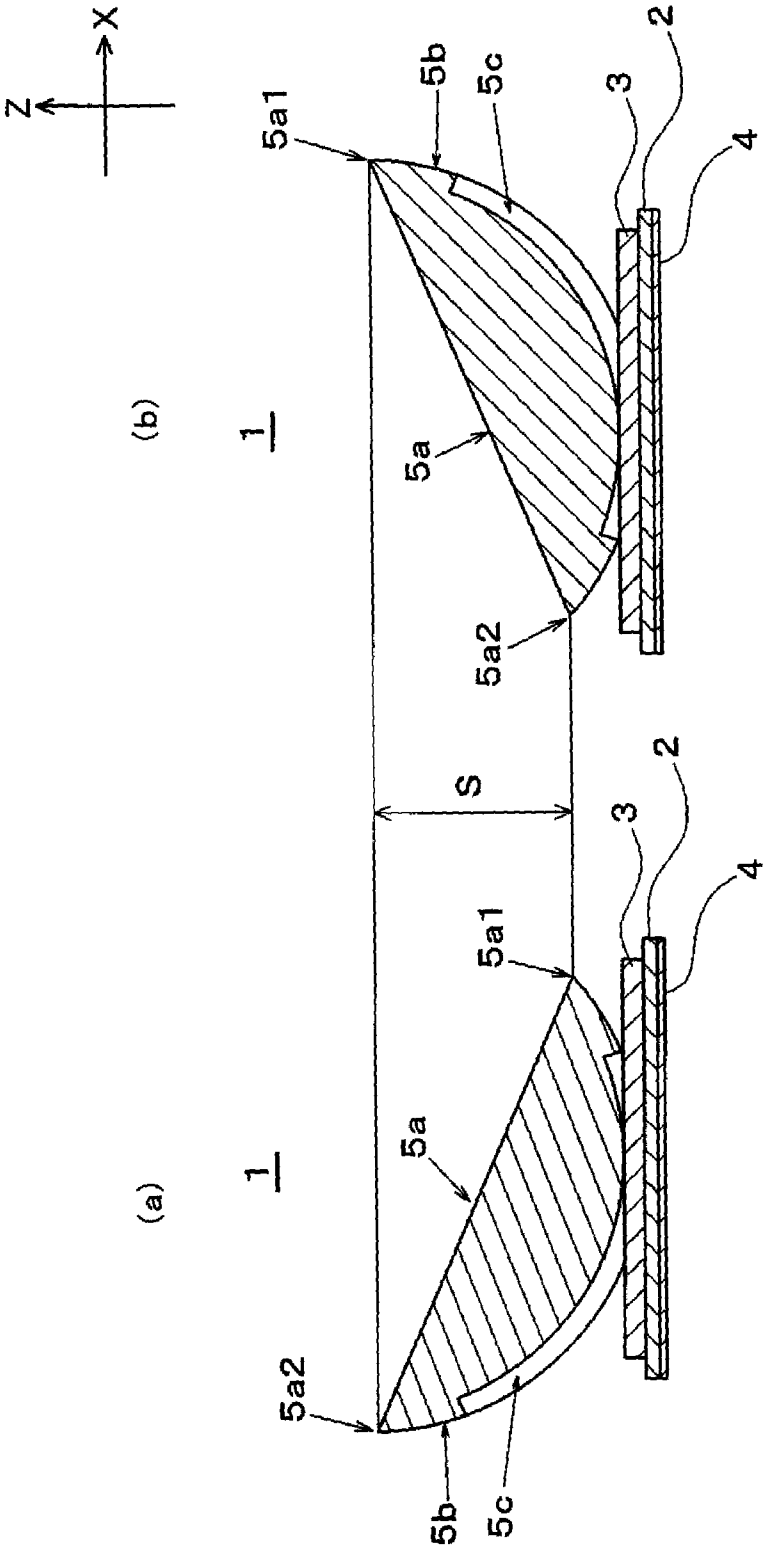

Fig.5

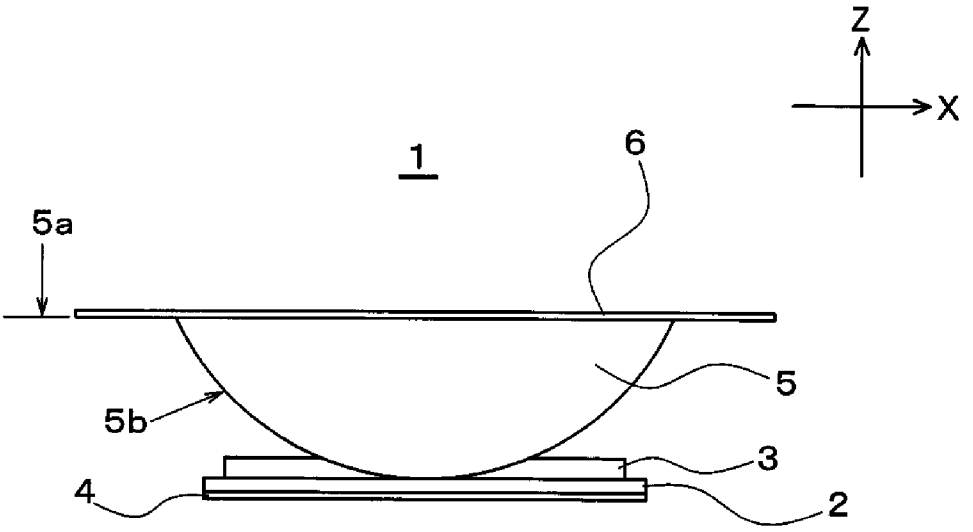

Fig.6

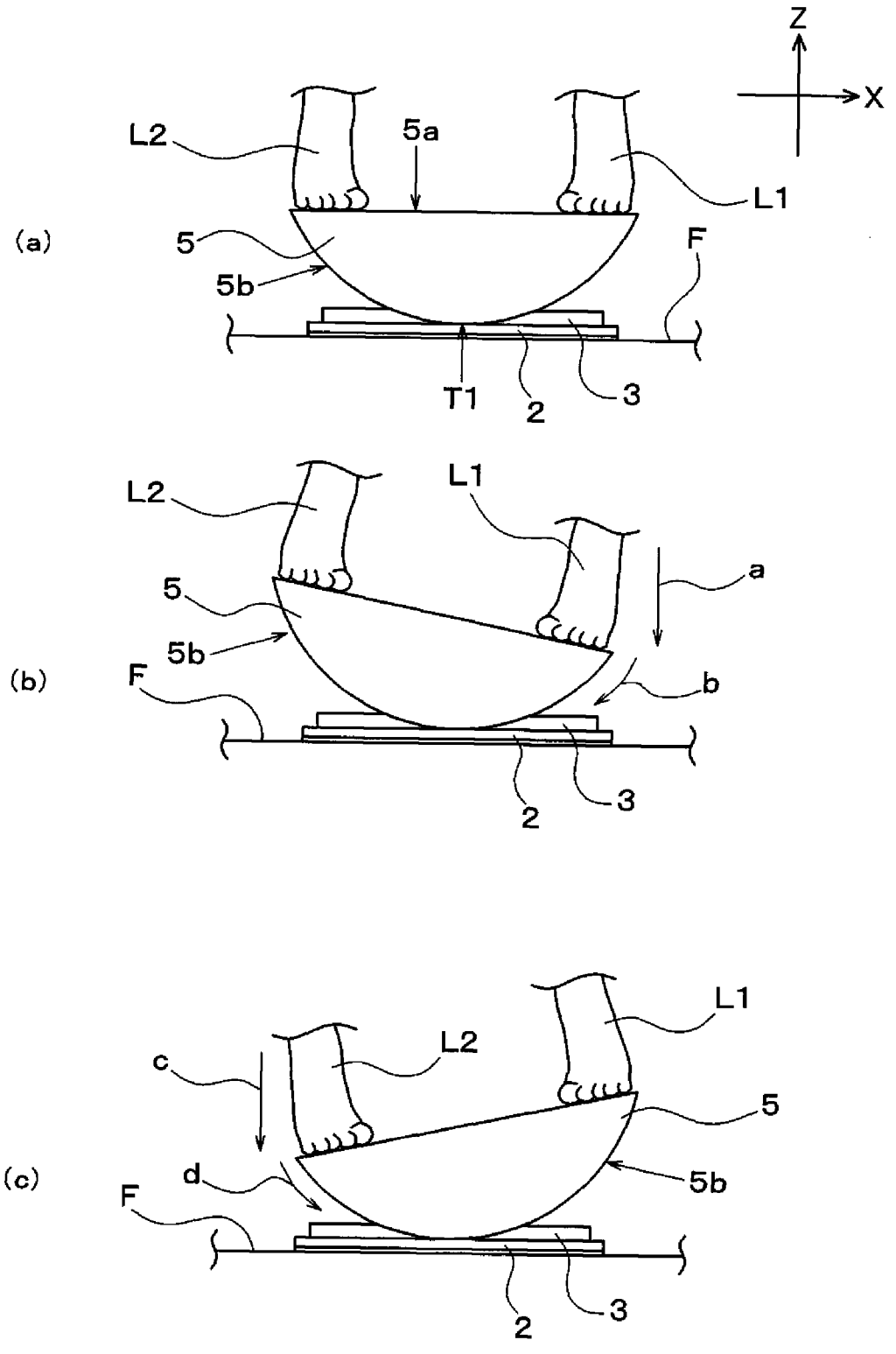

Fig.7

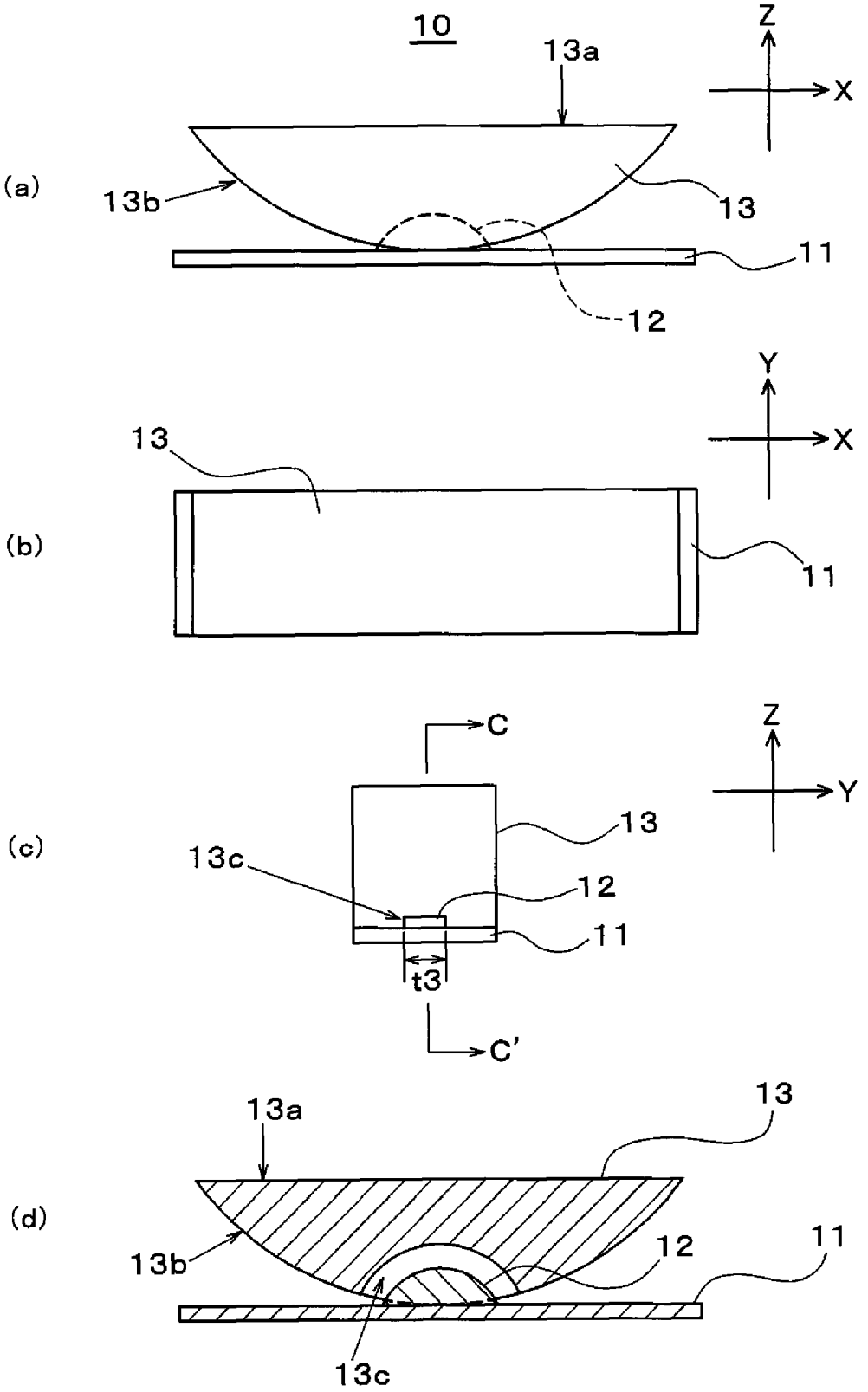
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Fig.8

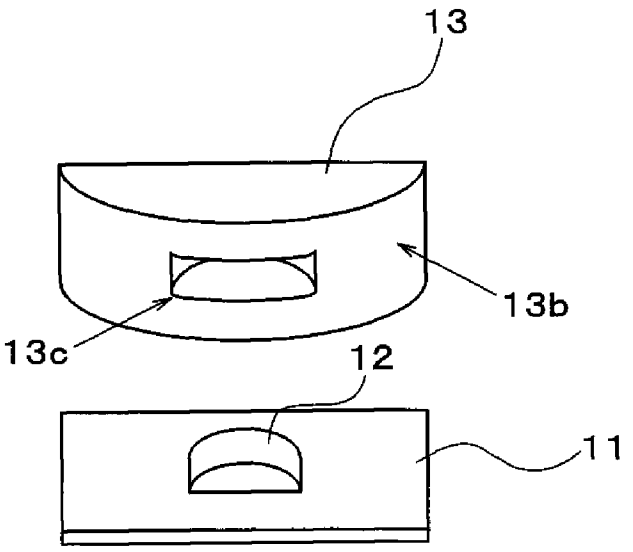

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Fig.9

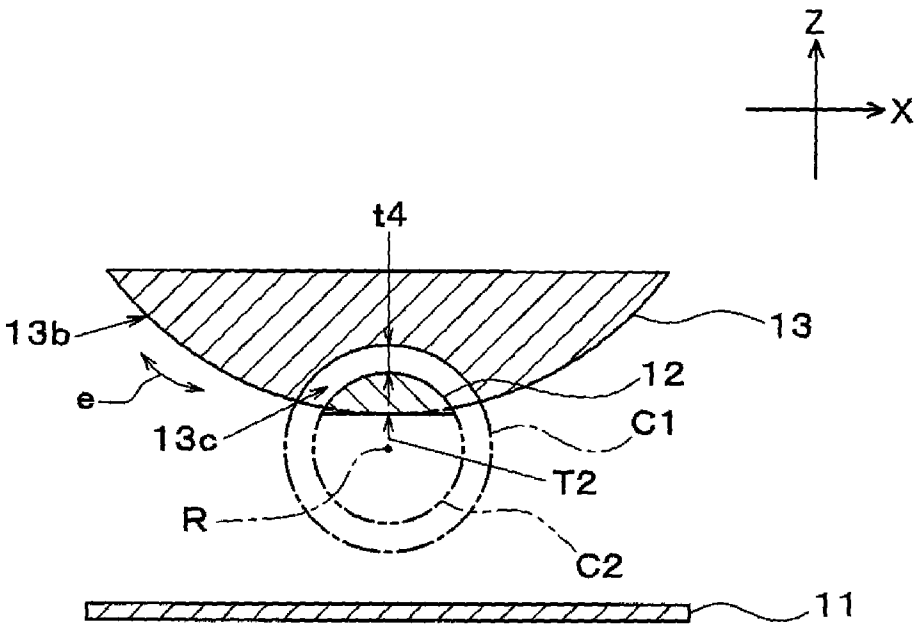
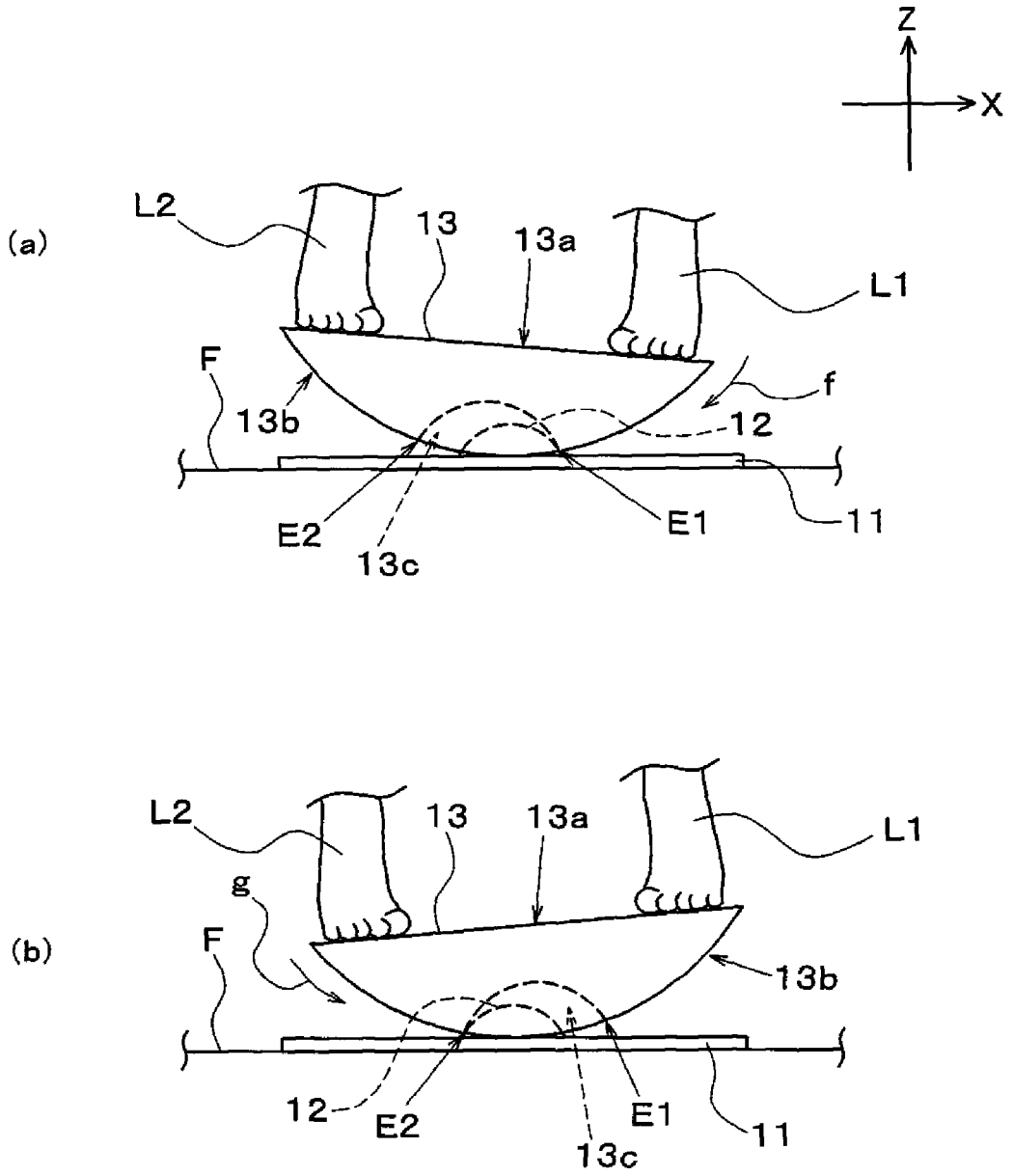


Fig.10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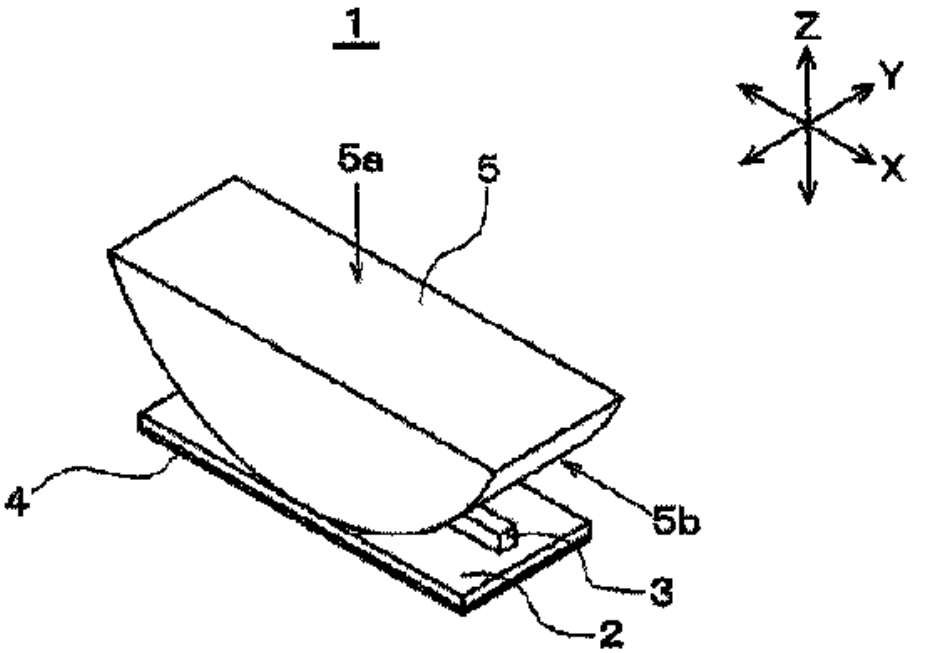

(b)