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(71) Applicant: **Yamashita, Yoshinobu**
Sakai-shi, Osaka 590-0157 (JP)

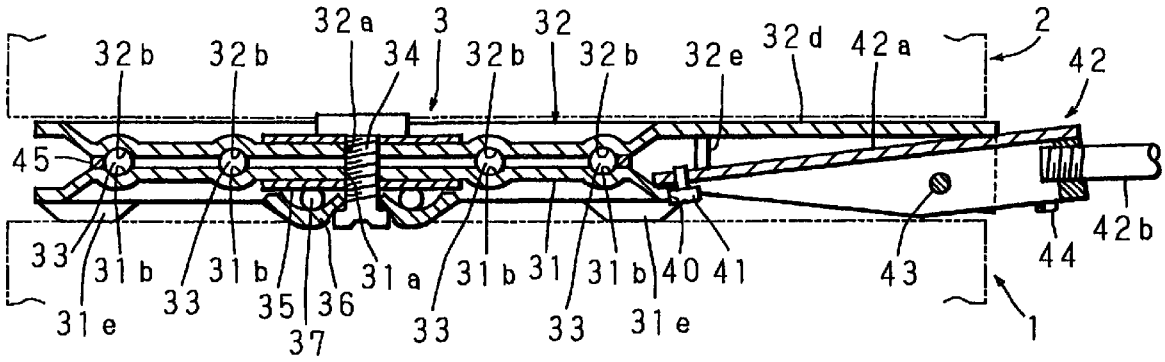
(72) Inventor: **Yamashita, Yoshinobu**
Sakai-shi, Osaka 590-0157 (JP)

(74) Representative:
Bertrand, Didier et al
c/o S.A. FEDIT-LORIOT & AUTRES
CONSEILS EN PROPRIETE INDUSTRIELLE
38, Avenue Hoche
75008 Paris (FR)

(54) CHAIR AND ITS ROTATING TABLE

(57) A leg body and seat body of a chair are supported by a rotary base intervened between them so as to freely rotate relative to each other, and the rotary base has a leg-body-side member and seat-body-side member that rotate relative to each other and a connecting member intervened between them. The leg-body-side member is provided with a plurality of engaging portions that are prepared thereon along the rotational direction of the seat-body-side member with predetermined intervals, and the seat-body-side member is provided with a swingable operating lever that has a holding portion for holding the engaging portion. Thereby, a person can seat on the seat body with its rotation being locked, and also can rotate the seat body by only a simple operation of the operating lever.

FIG. 1



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Description

FIELD OF THE INVENTION

[0001] The present invention relates to a chair in which a seat body is made to be rotatable on a leg body, and also concerns a rotary base used for such a chair.

BACKGROUND OF THE INVENTION

[0002] Commonly-used chairs can be classified into those of a movable type, mainly applied for office-use, in which a seat body is rotatably attached to a leg body with wheels; those of a stationary type, mainly used as table chairs, in which a seat body is integrally secured to a leg body without wheels, and those of a rotary type, mainly used as study chairs, in which a seat body is rotatably attached to a leg body without wheels.

[0003] Since the movable type can be easily moved as a whole, it is convenient for office-use in which a seater makes a lot of movements thereon, and since the rotary type is easily rotatable, it is convenient for study-use. However, these types have a problem in that they are unstable for supporting seaters when used as table chairs, therefore it makes the seaters uncomfortable during meals. As for this reason, in general, those of the stationary type are used as table chairs. When a person uses a chair of this stationary type for meals, the person has to move the chair backward from the table prior to seat and then has to move the chair toward the table so that the person's knees locate under the table. On contrast, when the person leaves the table after meal, the person has to move the chair backward from the table. For these reasons, when particularly a handicapped person uses a chair of the stationary type, it is difficult to make movements necessary to seat at or to leave the table.

[0004] The present invention has been devised to solve the above-mentioned problem, and its objective is to provide a chair and a chair-use rotary base in which: a rotary base for rotating a seat body is provided, and engaging portions are provided in either a leg-body-side member or seat-body-side member on the rotary base, and an operating lever that allows an engagement/disengagement to or from the other where the engaging portions are provided, whereby a person is allowed to seat on the seat body with its rotation being locked and the rotation of the seat body being again made available by carrying out a simple movement of the operating lever.

[0005] Moreover, another objective of the present invention is to provide a chair and chair-use rotary base in which a pair of grip portions, which are placed on both sides of the seat body, are attached to the other end of the operating lever so that even if a person has been handicapped in either the right or left hand, the person still can rotate the seat body with a naturally seated posture.

DISCLOSURE OF THE INVENTION

[0006] The chair according to the first invention, comprising a seat body on which a person seats; a leg body for supporting the seat body; and a rotary base for connecting the seat body and leg body relatively rotatable to each other, characterized in that the rotary base having a first member (a leg-body-side member or seat-body-side member) which is attached to either one of the leg body or seat body; a second member (a leg-body-side member or seat-body-side member) which is attached to the other; and a connecting member which is intervened between these members and which connects these relatively rotatable to each other, wherein a plurality of engaging portions are provided with the first member along the relative rotational direction separated to each other and an operating lever, which holds the engaging portion by being operated, is provided with the second member, whereby the relative rotation between the first and second members is prevented when the operating lever holds the engaging portion.

[0007] The chair-use rotary base according to the ninth invention is characterized by comprising a first member (a leg-body-side member or seat-body-side member) which is attached to either one of a leg body or seat body; a second member (a leg-body-side member or seat-body-side member) which is attached to the other; and a connecting member which is intervened between these members and which connects these relatively rotatable to each other, wherein a plurality of engaging portions are provided with the first member along the relative rotational direction separated to each other, and an operating lever, which holds the engaging portion by being operated, is provided with the second member, whereby the relative rotation between the first and second members is prevented when the operating lever holds the engaging portion.

[0008] In the first and ninth inventions, the operating lever can prevent the relative rotation (rotation of the seat body since the leg body is generally fixed) of the leg body and seat body, that is, the relative rotation of the first and second members by holding the engaging portion. Furthermore, the engagement of the operating lever to the engaging portion can be released and thus the seat body can be rotated, thereby even if a handicapped person uses the chair, the person can rotate the seat body with a predetermined angle and take/leave the seat only by simple operation of the operating lever with one hand. Therefore, it can reduce burden imposed on the user; moreover, the rotation of the seat body is securely prevented when being seated and thus the person can have a meal, etc. comfortably.

[0009] The chair according to the second invention and chair-use rotary base according to the tenth invention, wherein the operating lever has a holding portion which is provided to one end thereof and which holds the engaging portion, and is supported by the second member so as to be swingable on an axis (a lever shaft)

which is provided in its intermediate section along the relative rotational direction.

[0010] In the second and tenth inventions, rotation of the seat body can be allowed or prevented (or vice-versa) by a simple operation of only pushing the swingable operating lever downwardly or pulling the operating lever upwardly. Furthermore, since the force required for operating the operating lever can be smaller, it is possible to further reduce burden imposed on the user.

[0011] The chair according to the third invention and chair-use rotary base of the eleventh invention, wherein the operating lever has a holding portion which is provided to one end thereof and which holds the engaging portion, and grip portions which are provided to the other end, and which are placed on both sides of the second member.

[0012] In the third and eleventh inventions, since the operating lever can be operated on both sides of the second member; particularly when the second member is designed to be attached on the seat-body side (on the rotation side), the seat body can be easily rotated while a person being seated in a natural seated posture, even if the person is handicapped in one of the right or left hand. Moreover, in the case when the second member is attached on the leg-side (fixed side), although the grip portion comes to a position offset from the both right and left sides as the seat body rotates, the grip portion does not interfere with the user during the rotation by locating the grip portion within area of the seat body. In this case, with an arrangement in which, for example, the grip portion is located at a front or rear position at the time of leaving a seat, the front-side grip portion can be operated by using either one of the right or left hand, thereby the operating lever can be easily operated from bend-over posture as the user is leaving the seat.

[0013] The chair according to the fourth invention and chair-use rotary base according to the twelfth invention, wherein the operating lever has a pair of the other ends branched at its intermediate section in the lengthwise direction.

[0014] In the fourth and twelfth inventions, since the operating lever has a pair of the other ends branched from its intermediate section in the lengthwise direction, a simple, inexpensive construction is achieved as compared with the construction that requires two operating levers.

[0015] The chair according to the fifth invention and chair-use rotary base according to the thirteenth invention, wherein the operating lever is constituted by an one-end-side member provided with the holding portion and an other-end-side member provided with the grip portion, the other-end-side member includes a pressing portion for pressing the one-end-side member by operating the grip portion, and for moving the holding portion to a leaving direction from the engaging portion.

[0016] In the fifth and thirteenth inventions, even if the chairs vary in their kind, as well as in their size among the same kind, the grip portion of the operating lever can be placed at a suitable position of a specific chair by replacing the other-end-side member having the grip portion without the need for replacing the entire operating lever; therefore, it is possible to reduce the cost of the operating lever, and consequently to reduce the entire cost.

[0017] The chair according to the sixth invention and chair-use rotary base according to the fourteenth invention, wherein the first member, consists of a metal plate, and has a plurality of mounting bases, each of which includes a hole for mounting to a leg body, the hole is provided on a protruding portion which is provided by forming in the proximity of the peripheral edge of the metal plate so as to protrude toward the side opposite to the second member.

[0018] In the sixth and the fourteenth inventions, the mounting bases, mounting holes, and engaging portion of the first member can be easily press-formed at low costs. Since the mounting base is provided in a protruding manner toward the side opposite to the second member, it is possible to take a larger movable area for the holding portion in the up-and-down directions in the proximity of the mounting base, and consequently to lengthen the engaging area between the holding portion and engaging portion; therefore, as long as the operating lever is not operated more than a necessary amount of operation, it is possible to effectively prevent an unintentional rotation of the seat body, and the first member can be attached without interference from the second member.

[0019] The chair according to the seventh invention and chair-use rotary base according to the fifteenth invention, wherein the engaging portion is provided by forming a notch between the mounting bases in the peripheral edge of the first member, and the holding portion is a protrusion.

[0020] In the seventh and fifteenth inventions, since the engaging portions are formed by notching and since the holding portion is formed on the operating lever by joining a protruding member thereto through a joining method such as welding; therefore, it is possible to keep it at low costs.

[0021] The chair according to the eighth invention, wherein the rotary base has a spring for pressing the operating lever toward a holding direction of the engaging portion.

[0022] The chair-use rotary base according to the sixteenth invention, further comprising a spring for pressing the operating lever toward a holding direction of engaging portion.

[0023] In the eighth and sixteenth inventions, since the operating lever is pushed in the direction so as to hold the engaging portion, it is possible to effectively prevent the seat body from being unintentionally rotating. Moreover, after the push-pull operation of the operating lever for allowing or preventing rotation of the seat body, the operating lever can be resumed to its initial position before the operation when the user releases

the operating lever.

BRIEF DESCRIPTIONS OF THE DRAWINGS

[0024] FIG. 1 is an enlarged longitudinal cross-sectional front view showing an essential part of a chair according to embodiment 1 of the present invention; FIG. 2 is a bottom view showing a chair-use rotary base according to embodiment 1 of the present invention; FIG. 3 is a plan view showing the chair-use rotary base according to embodiment 1 of the present invention; FIG. 4 is a front view showing the chair-use rotary base according to embodiment 1 of the present invention; FIG. 5 is an enlarged cross-sectional view taken along line X-X of FIG. 3; FIG. 6 is a perspective view showing the chair according to embodiment 1 of the present invention; FIG. 7 is an enlarged longitudinal cross-sectional front view showing an essential part of a chair according to embodiment 2 of the present invention; FIG. 8 is a bottom view showing a chair-use rotary base according to embodiment 2 of the present invention; FIG. 9 is a perspective view showing a chair according to embodiment 3 of the present invention; FIG. 10 is a plan view showing the chair-use rotary base according to embodiment 3 of the present invention; FIG. 11 is an enlarged longitudinal cross-sectional front view showing an essential part of the chair according to embodiment 3 of the present invention; FIG. 12 is a front view showing the chair-use rotary base according to embodiment 3 of the present invention; and FIG. 13 is a bottom view showing a chair-use rotary base according to embodiment 4 of the present invention.

BEST MODES FOR CARRYING OUT THE INVENTION

[0025] Referring to Figures, the following description will discuss embodiments of the present invention more specifically.

(Embodiment 1)

[0026] FIG. 1 is an enlarged longitudinal cross-sectional front view showing a chair according to embodiment 1 of the present invention, FIG. 2 is a bottom view only showing a rotary base, FIG. 3 is a plan view only showing the rotary base, FIG. 4 is a front view only showing the rotary base, FIG. 5 is an enlarged cross-sectional view taken along line X-X of FIG. 3, and FIG. 6 is a perspective view showing the whole chair.

[0027] This chair is provided with a leg body 1 having four leg portions 11, 11,... that are placed on four corners in plan view, and a connecting portion 12 which has a square shape in plan view and which connects upper ends of the leg portions 11,11,..., a seat body 2 having a seat portion 21 which has a square shape in plan view which faces the connecting section 12, and a back-rest portion 22 that extends upward from one side of the seat portion 21; and a rotary base 3 which is intervened between the leg body 1 and seat body 2 and which allows the seat body 2 to be supported by the leg body 1 in a freely rotating manner.

[0028] This rotary base 3 is provided with a leg-body-side member 31 and seat-body-side member 32 which have approximately a square shape in plan view and which consist of metal plates, and a plurality of smoothing members 33 intervened between them. Each of the leg-body-side member 31 and seat-body-side member 32 is respectively provided with through holes 31a and 32a in the center thereof, and annular recess portions 31b and 32b in a peripheral edge and intermediate portions. The above-mentioned smoothing members 33, consists of rolling bodies such as balls, are intervened between the annular recess portions 31b and 32b so as to improve the rotating characteristic of the seat-body-side member 32.

[0029] A shaft body 34 having a collar portion at its one end is inserted through the through holes 31a and 32a from the side of the seat-body-side member 32, and the other end is inserted through a washer plate 35 and rolling-body holder 36 so as to support them; then, the plurality of rolling bodies 37 are intervened between the washer plate 35 and rolling-body holder 36, and the other and of the shaft 34 is caulked so that the leg-body-side member 31 and seat-body-side member 32 are connected. Thus, it becomes possible to prevent degradation of the rotating characteristic of the seat-body-side member 32 due to the shaft body 34, and consequently to further improve the rotating characteristic of the seat-body-side member 32.

[0030] Moreover, the leg-body-side member 31 and seat-body-side member 32 have a wider opposing gap at their peripheral edge portions than that at their center sides, and mounting holes 31c and 32c are formed at the four corner portions of the leg-body-side member 31 and seat-body-side member 32. Thus, the leg-body-side member 31 and seat-body-side member 32 are detachably attached to the connecting portion 12 and seat portion 21 respectively by mounting screws 38 and 39 that are inserted through these mounting holes 31c and 32c. Moreover, mounting bases 31e, which protrude toward the side opposite to the seat-body-side member 32, are formed on the corners of the leg-body-side member 31, and the above-mentioned mounting holes 31c are formed in the protruding portions of the mounting bases 31e.

[0031] Recessed engaging portions 40, are formed by notching, are provided on four sides along the peripheral edge of the leg-body-side member 31 with a phase difference of approximately 90 degrees; thus, the leg-body-side member 31 is provided as the first member.

[0032] A lever-supporting piece 32d, which has a U-shaped cross-section, is provided in a protruding manner on one peripheral side of the seat-body-side member 32 that serves as the second member, and an

intermediate portion of an operating lever 42 having a protruding holding portion 41 that can engage/disengage the engaging portion 40 at its one end is attached between the opposing side walls of the lever-supporting piece 32d in a manner so as to swing in the thickness direction of the seat-body-side member 32, via a lever shaft 43 that extends along the rotation range of the seat-body-side member 32, and a spring 44, which is a line spring that presses the operating lever 42 in a direction so as to allow the holding portion 41 to constantly hold the engaging portion 40, is also attached between them. Moreover, a lever-guiding piece 32e is formed by lancing at the base end portion of the lever-supporting piece 32d, and designed so that the operating lever 42, which swings in response to the downward pressing operation, is guided so as to allow the holding portion 41 to engage/disengage the engaging portion 40.

[0033] Additionally, in a manner reversed to the above-mentioned arrangement, the seat-body-side member 32 may be formed as the first member to which the engaging portion 40 are provided, and the leg-body-side member 31 may be formed as the second member to which the operating lever 42 is provided.

[0034] The operating lever 42 is formed into approximately a U-shape in cross-section corresponding to the lever-supporting piece 32d, and provided with a lever main body 42a having the holding portion 41 at its one end portion and an operating portion 42b that is connected to the other end portion of the lever main body 42a; thus, the proximity of the other end portion of the lever main body 42a is attached to the lever shaft 43 so that the portion of the operating lever 42 on the holding portion 41 side can be operated within the opposing gap between the peripheral portions of the leg-body-side member 31 and seat-body-side member 32.

[0035] Here, in FIG. 1, reference numeral 45 is a seal ring, made of synthetic resin, for sealing the gap between the leg-body-side member 31 and seat-body-side member 32.

[0036] In the chair which is arranged as described above, the rotary base 3 is attached to the leg body 1 and seat body 2 with mounting screws 38 that are inserted through the mounting holes 31c of the leg-body-side member 31, as well as and mounting screws 39 that are inserted through the mounting holes 32c of the seat-body-side member 32. In this case, the mounting holes 31c are provided on the mounting bases 31e that protrude toward the side opposite to the seat-body-side member 32; therefore, the head portion of each mounting screw 38 is placed inside the recess of each mounting base 31e so that the leg-body-side member 31 can be attached to the leg body 1 without interference from the seat-body-side member 32. Moreover, since the operating lever 42 is pressed by the spring 44 toward the seat-body-side member 32, with the result that the holding portion 41 always holds the engaging portion 40; thus, the rotation of the seat body 2 is securely prevented.

[0037] For example, in the case when a handicapped person uses the chair as a table chair, while the back rest 22 is turned so as to be orthogonal to the table from the normal position in which the back rest 22 faces the table, the person seats on the seat body 2, and then by gripping the operating portion 42b of the operating lever 42 and pushing it downward, whereby the operating lever 42 is allowed to swing and releasing the engagement of the holding portion 41 from the engaging portion 40; thus, the seat body 2 becomes rotatable. Therefore, by only turning torso by 90 degrees while operating the operating lever 42 while being seated, the person can rotate the seat body 2 with the operating lever 42, can swing the person's knees into under-space of the table for ready-to-eat position. When the operating lever 42 is released in this state, the operating lever 42 is allowed to swing by force of the spring 44 so that the holding portion 41 is allowed to engage another engaging portion 40 having a phase difference of 90 degrees, thereby preventing the rotation of the seat body 2. Therefore, the person can have a meal comfortably with the seat body 2 being locked.

[0038] In the case when the person leaves the table after the meal, by gripping the operating portion 42b of the operating lever 42 and pushing it downward, whereby the operating lever 42 is allowed to swing and releasing the engagement of the holding portion 41 from the engaging portion 40; thus, the seat body 2 becomes rotatable. Therefore, by only turning torso by 90 degrees after operating the operating lever 42 while being seated, the person can rotate the seat body 2 to get the person's knees out from under-space of the table for ready-to-stand-up position. When the operating lever 42 is released in this state, the operating lever 42 is allowed to swing by force of the spring 44 so that the holding portion 41 is allowed to engage another engaging portion 40 having a phase difference of 90 degrees, thereby preventing the rotation of the seat body 2. Therefore, the person can leave the table comfortably with the seat body 2 being locked. Moreover, since the mounting bases 31e, which protrude toward the side opposite to the seat-body-side member 32, are provided on the leg-body-side member 31 having the engaging portions 40, the engaging range between the holding portion 41 and engaging portion 40 can be lengthened, with the result that it becomes possible to effectively prevent the seat body 2 from unintentional rotation, as long as the operating lever 42 is not operated more than a necessary amount of operation. Furthermore, the annular recess portions 31b, mounting holes 31c, mounting bases 31e, and engaging portions 40 of the leg-body-side member 31 can be easily press-formed, thereby it can be provided at low costs.

[0039] Here, another arrangement may be proposed in which: the operating lever 42 is pressed by the spring 44 in the reverse direction so that the holding portion 41 of the operating lever 42 holds the engaging portion 40 from below, and the engagement of the hold-

ing portion 41 to the engaging portion 40 is released by pulling the operating lever 42 upward.

(Embodiment 2)

[0040] FIG. 7 is an enlarged longitudinal cross-sectional front view showing an essential part of a chair according to embodiment 2 of the present invention, and FIG. 8 is a bottom view only showing a chair-use rotary base.

[0041] In this chair, instead of the arrangement in which the operating lever 42 is swingably supported by the lever shaft 43, the operating lever 42 is designed to be slidable in the lengthwise direction so that the moving operation of the operating lever 42 in the sliding direction allows the holding portion 41 to engage/disengage the engaging portion 40. Since the other constructions and functions are the same as those described in embodiment 1 by reference to FIGS. 1 through 6, the common parts are indicated by the same reference numerals, and thus the description thereof is omitted.

[0042] In embodiment 2, with respect to the operating lever 42, a shaft hole 42c through which the lever shaft 43 is inserted is provided as an elongated hole, and thus the operating lever 42 is made to be slidable along the shaft hole. Moreover, a spring 44, which is a coil spring that presses the operating lever 42 toward one of the sliding directions, is provided.

(Embodiment 3)

[0043] FIG. 9 is a perspective view showing a chair according to embodiment 3 of the present invention, FIG. 10 is a plan view only showing the chair-use rotary base, FIG. 11 is an enlarged longitudinal cross-sectional front view showing an essential part of the chair, and FIG. 12 is a front view only showing the chair-use rotary base.

[0044] In this chair, instead of the arrangement in which a grip portion (operating portion) 42b, provided to the other end portion of the operating lever 42, is placed on either one side or the other side of the seat body 2, the operating lever 42 is designed to branch out at its intermediate portion in the lengthwise direction to form a pair of the other end portions, and grip portions 42b are provided to the other end portions in a manner so as to be placed on both sides of the seat body 2; thus, the operating lever 42 can be operated from both sides of the seat body 2 while a person being seated. Since the other constructions and functions are the same as those described in embodiment 1, the common parts are indicated by the same reference numerals, and thus the description thereof is omitted.

[0045] The operating lever 42 of this embodiment 3 is separated into one-end-side member 4a having the lever main body 42a and the other-end-side member 4b having the grip portion 42b, and the lever main body 42a is the same as that of embodiment 1.

[0046] The other-end-side member 4b is provided with a first lever portion 46a that extends in a direction orthogonal to the lengthwise direction of the lever main body 42a; a pair of second lever portions 46b and 46b that are bent at approximately right angles in the same direction from both ends of the first lever portion 46a; and a pressing portion 46c that extends along the lever main body 42a from a center portion of the first lever portion 46a in the lengthwise direction; thus, the second lever portions 46b and 46b are provided as the grip portions 42b.

[0047] In this other-end-side member 4b, a portion in the proximity of the pressing portion 46c of the first lever portion 46a is supported at the opposing walls of the aforementioned lever-supporting piece 32d that is formed into a U-shaped cross-section so as to be pivotable between the walls, the paired grip portions 42b and 42b are placed on both sides of the seat body 2, and the pressing portion 46c is placed below the lever main body 42a; thus, tip of the pressing portion 46c is allowed to contact lower surface of the lever main body 42a so as to prevent the free pivotal movement of the other-end-side member 4b. Here, the other-end-side member 4b is divided at the center in the lengthwise direction, and after inserting the divided end portions into a through hole provided in the lever-supporting piece 32d, both the divided end portions and pressing portion 46c are joined into an integral part by a joining method such as welding.

[0048] With the arrangement of embodiment 3 in which the grip portions 42b are placed on both sides of the seat body 2, when a person, seats on the seat body 2, and then grips the left-side grip portion 42b or right-side grip portion 42b of the operating lever 42 and pulls it upwards, the other-end-side member 4b is allowed to swing, the pressing portion 46c presses the lever main body 42a upwards, the lever main body 42a is allowed to swing, and engagement of the holding portion 41 to the engaging portion 40 is released, thereby making the seat body 2 rotatable. In this manner, since the operating lever 42 can be operated from either side of the seat body 2 while a person being seated, it is possible to easily rotate the seat body 2 from a natural seated posture even if the person is handicapped in either the right hand or left hand.

[0049] Here, instead of the arrangement in which the other-end-side member 4b is pivotably supported on the seat body 2, embodiment 3 may have another arrangement in which: the other-end-side member 4b is designed to be slidable in the same manner as embodiment 2, and the above-mentioned pressing portion 46c is allowed to change in its contacting position with the one-end-side member 4a by push-pull operations of the grip portions 42b and 42b placed on both sides of the seat body 2 so that the lever main body 42a is allowed to swing, thereby making the holding portion 41 engage/disengage the engaging portion 40.

(Embodiment 4)

[0050] FIG. 13 is a bottom view showing a chair-use rotary base according to embodiment 4 of the present invention.

[0051] In this chair, in the arrangement in which the grip portions 42b of the operating lever 42 are placed on both sides of the seat body 2, instead of separating the operating lever 42 into the one-end-side member 4a and other-end-side member 4b, the other-end-side member 4b is joined to the one-end-side member 4a by a joining method such as welding. Here, since the other constructions and functions are the same as those described in embodiments 1, 2, and 3, the common parts are indicated by the same reference numerals, and thus the description thereof is omitted.

[0052] In embodiment 4, the operating lever 42 may be designed to be slidable in the same manner as embodiment 2, and engagement/disengagement of the holding portion 41 to or from the engaging portion 40 may be done by push-pull operation of the grip portions 42b and 42b placed both sides of the seat body 2.

[0053] In the above-mentioned embodiments 1 through 4, each of the engaging portions 40 is formed into a recessed shape, and the operating lever 42 is provided with a holding portion 41 having a protruding shape; however, a reversed construction may be used in which each of the engaging portions 40 is formed into a protruding shape, and the operating lever 42 is provided with a holding portion 41 having a recessed shape. Moreover, in addition to the engaging portions 40 having a phase difference of approximately 90 degrees, another construction of the engaging portions 40 may be used in which a plurality of them are successively placed along an arc concentric with the center of rotation of the seat-body-side member 32, or those of a recessed or protruding shape are placed with predetermined intervals. Here, the number and the shape thereof are not particularly limited.

[0054] Moreover, the chair of the present invention is preferably used, in particular, for the handicapped; however, the use of the present invention is not particularly limited.

INDUSTRIAL APPLICABILITY

[0055] As described above, in the chair and chair-use rotary base of the present invention, the operating lever allows the engaging portion to be held so that the relative rotation of the first and second members is prevented, and further the engagement of the operating lever to the engaging portion is released by operating the operating lever, thus the seat body can be rotated. Therefore, even when the chair is used by a handicapped person, the person can easily take or leave a seat by rotating the seat body with a necessary angle after only an easy operation in which the operating lever is operated by one hand, thereby making it possible to reduce burden imposed on the person. Moreover, when the person has been seated, the rotation of the seat body can be securely prevented so that it is possible for the person to have a meal, etc. comfortably.

[0056] Moreover, by only a simple operation in which the swingable operating lever is pushed downward or pulled upward, the rotation of the seat body is allowed or prevented (or reversely operated), and since a force required for operating the operating lever can be minimized, it is possible to further reduce burden imposed on the person.

[0057] Furthermore, the operating lever is designed so as to be operated on both sides of the second member; this arrangement allows the person to always rotate the seat body with ease in a natural seated posture, even if the person is handicapped in either the right or left hand.

[0058] Since the operating lever has the pair of the other end portions that branch from its intermediate portion in the lengthwise direction, a simple, inexpensive construction is achieved as compared with the construction that requires two operating levers.

[0059] Moreover, even if the chairs vary in their kind, as well as in their size among the same kind, the grip portion of the operating lever can be placed at a suitable position of a specific chair by replacing the other-end-side member having the grip portion without the need for replacing the entire operating lever; therefore, it is possible to reduce the cost of the operating lever, and consequently to reduce the entire cost.

[0060] Furthermore, the mounting bases, mounting holes, and engaging portions of the first member can be easily press-formed at low costs. Since the mounting base is provided in a protruding manner toward the side opposite to the second member, it is possible to take a larger movable area for the holding portion in the up-and-down directions in the proximity of the mounting base, and consequently to lengthen the engaging area between the holding portion and engaging portion; therefore, as long as the operating lever is not operated more than a necessary amount of operation, it is possible to effectively prevent an unintentional rotation of the seat body, and the first member can be attached without interference from the second member. Since the engaging portions are formed by notching and since the holding portion is formed on the operating lever by joining a protruding member thereto through a joining method such as welding; therefore, it is possible to keep it at low costs.

[0061] Moreover, since the operating lever is pushed in the direction so as to hold the engaging portion, it is possible to effectively prevent the seat body from being unintentionally rotating. Furthermore, after the push-pull operation of the operating lever for allowing or preventing rotation of the seat body, the operating lever can be resumed to its initial position before the operation when the user releases the operating lever.

Claims

1. A chair, comprising a seat body on which a person seats; a leg body for supporting the seat body; and a rotary base for connecting the seat body and leg body relatively rotatable to each other, characterized in that the rotary base having a first member which is attached to either one of the leg body or seat body; a second member which is attached to the other; and a connecting member which is intervened between the first member and second member and which connects them relatively rotatable to each other, wherein a plurality of engaging portions are provided to the first member along the relative rotational direction separated to each other, and an operating lever, which holds the engaging portions, is provided to the second member, whereby the relative rotation between the first and second members is prevented when the operating lever holds the engaging portion.

2. The chair according to claim 1, wherein the operating lever has a holding portion which is provided to one end thereof and which holds the engaging portion, and is supported by the second member so as to be swingable on an axis which is provided in its intermediate section along the relative rotational direction.

3. The chair according to claim 1, wherein the operating lever has a holding portion which is provided to one end thereof and which holds the engaging portion; and grip portions which are provided to the other end, and which are placed on both sides of the second member.

4. The chair according to claim 3, wherein the operating lever has a pair of the other ends branched at its intermediate section in the lengthwise direction.

5. The chair according to claim 3 or 4, wherein the operating lever has an one-end-side member provided with the holding portion; and an other-end-side member provided with the grip portions, the other-end-side member includes a pressing portion for pressing the one-end-side member by operating the grip portion, and for moving the holding portion to a leaving direction from the engaging portion.

6. The chair according to claim 1 to 5, wherein the first member, consists of a metal plate, and has a plurality of mounting bases, each of which includes a hole for mounting to the leg body, the hole is provided on a protruding portion which is provided by forming in the proximity of the peripheral edge of the metal plate so as to protrude toward the side opposite to the second member.

7. The chair according to claim 6, wherein the engaging portion is provided by forming a notch between the mounting bases along the peripheral edge of the first member, and the holding portion is a protrusion.

8. The chair according to claim 1 to 7, wherein the rotary base has a spring for pressing the operating lever toward a holding direction of the engaging portion.

9. A chair-use rotary base, characterized by comprising a first member which is attached to either one of a leg body or seat body of a chair; a second member which is attached to the other; and a connecting member which is intervened between the first member and second member and which connects them relatively rotatable to each other, wherein a plurality of engaging portions are provided to the first member along the relative rotational direction separated to each other, and an operating lever, which holds the engaging portion, is provided to the second member, whereby the relative rotation between the first and second members is prevented when the operating lever holds the engaging portion.

10. The chair-use rotary base according to claim 9, wherein the operating lever has a holding portion which is provided to one end thereof and which holds the engaging portion, and is supported by the second member so as to be swingable on an axis which is provided in its intermediate section along the relative rotational direction.

11. The chair-use rotary base according to claim 9, wherein the operating lever has a holding portion which is provided to one end thereof and which holds the engaging portion; and grip portions which are provided to the other end, and which are placed on both sides of the second member.

12. The chair-use rotary base according to claim 11, wherein the operating lever has a pair of the other ends branched at its intermediate section in the lengthwise direction.

13. The chair-use rotary base according to claim 11 or 12, wherein the operating lever has an one-end-side member provided with the holding portion; and an other-end-side member provided with the grip portions, the other-end-side member includes a pressing portion for pressing the one-end-side member by operating the grip portion, and for moving the holding portion to a leaving direction from the engaging portion.

14. The chair-use rotary base according to claim 9 to 13, wherein the first member, consists of a metal

plate, and has a plurality of mounting bases, each of which includes a hole for mounting to the leg body, the hole is provided on a protruding portion which is provided by forming in the proximity of the peripheral edge of the metal plate so as to protrude toward the side opposite to the second member.

15. The chair-use rotary base according to claim 14, wherein the engaging portion is provided by forming a notch between the mounting bases along the peripheral edge of the first member, and the holding portion is a protrusion.

16. The chair-use rotary base according to claim 9 to 15, further comprising a spring for pressing the operating lever toward a holding direction of the engaging portion.

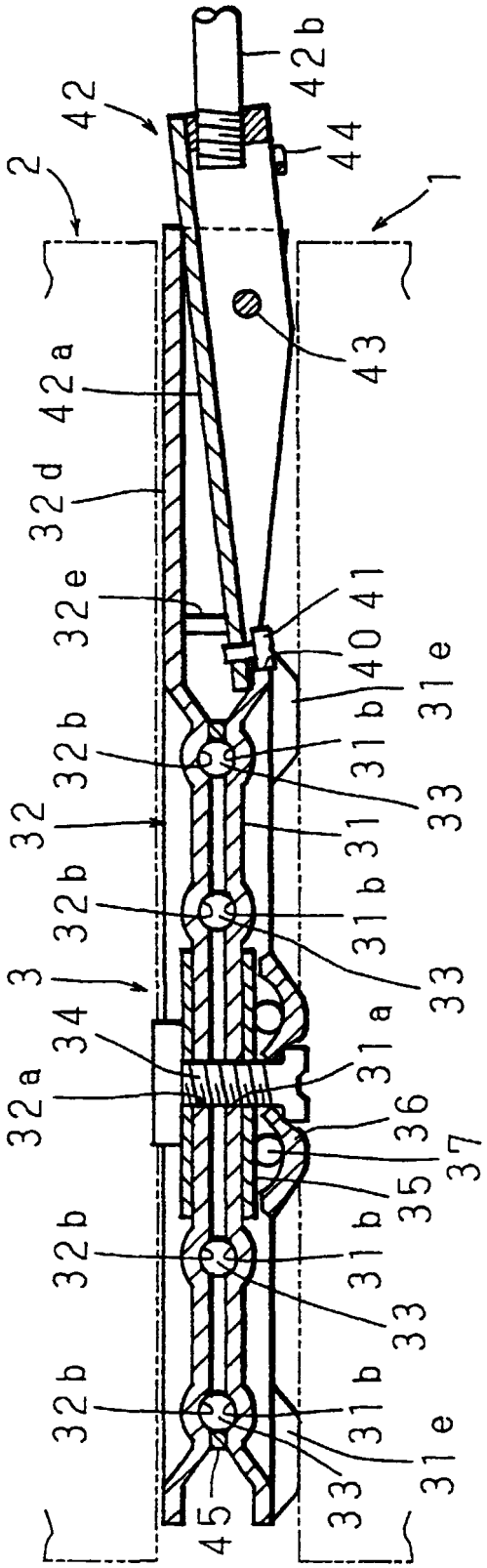
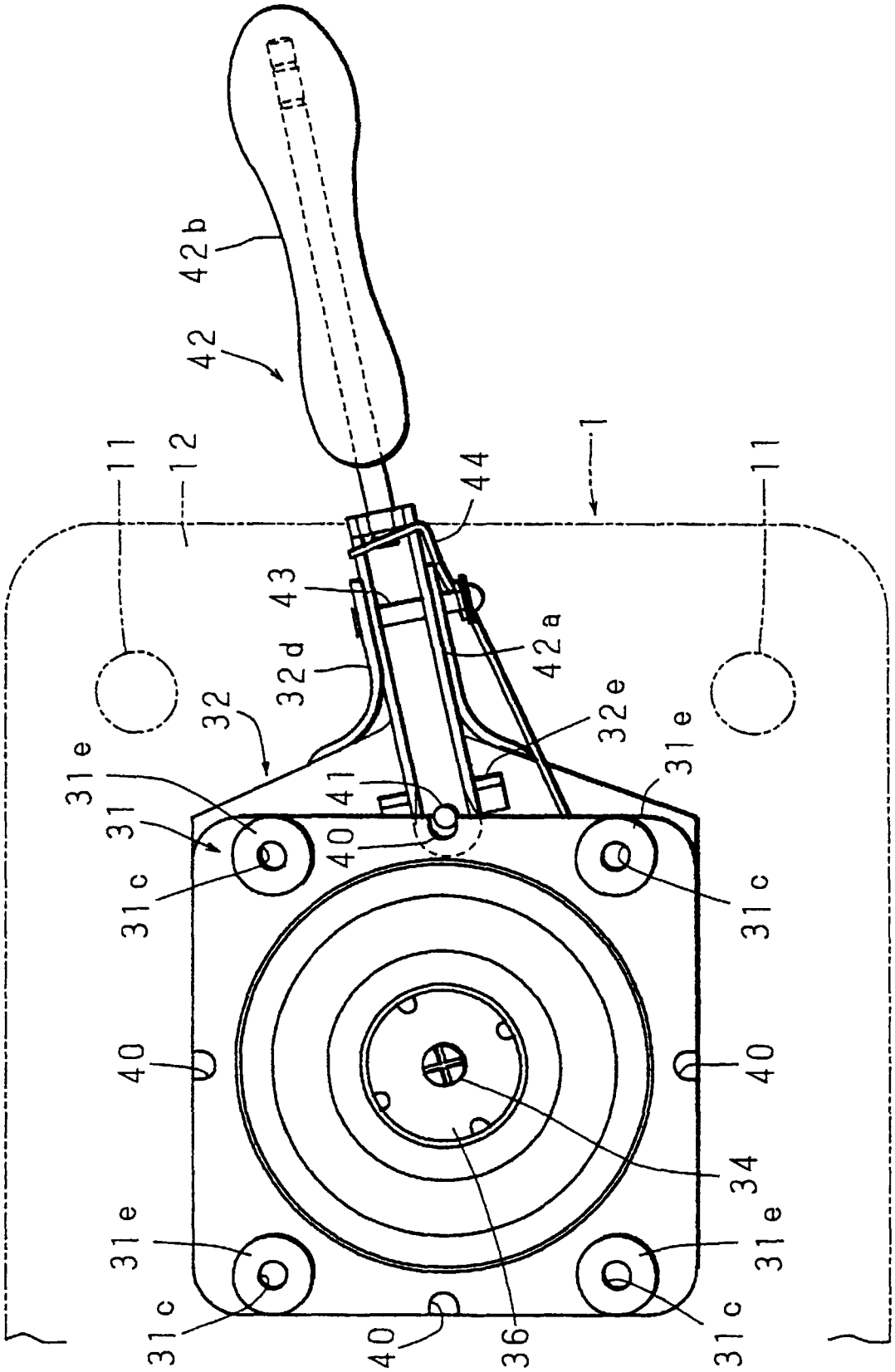

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FIG. 1

FIG. 2



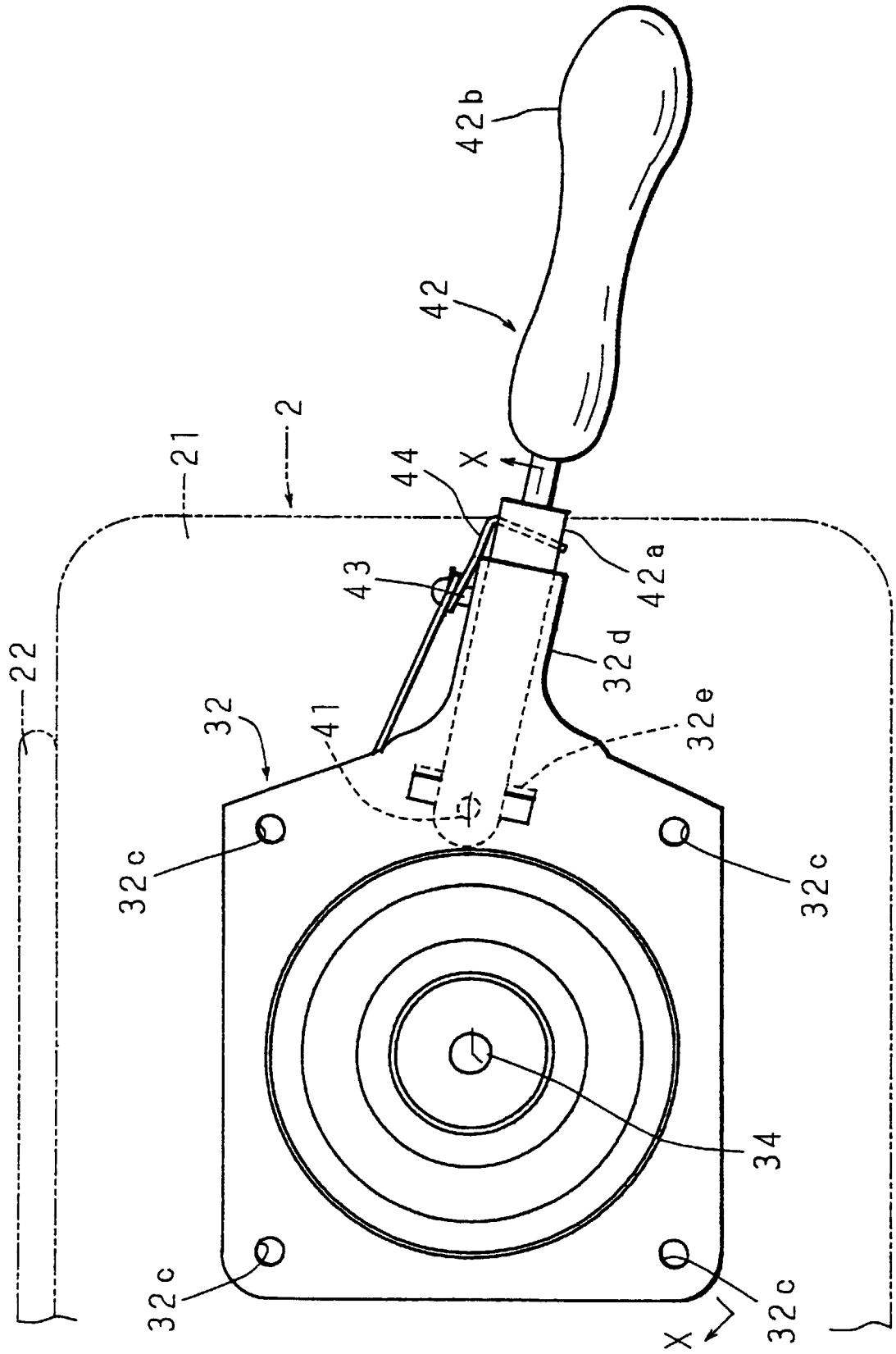


FIG. 3

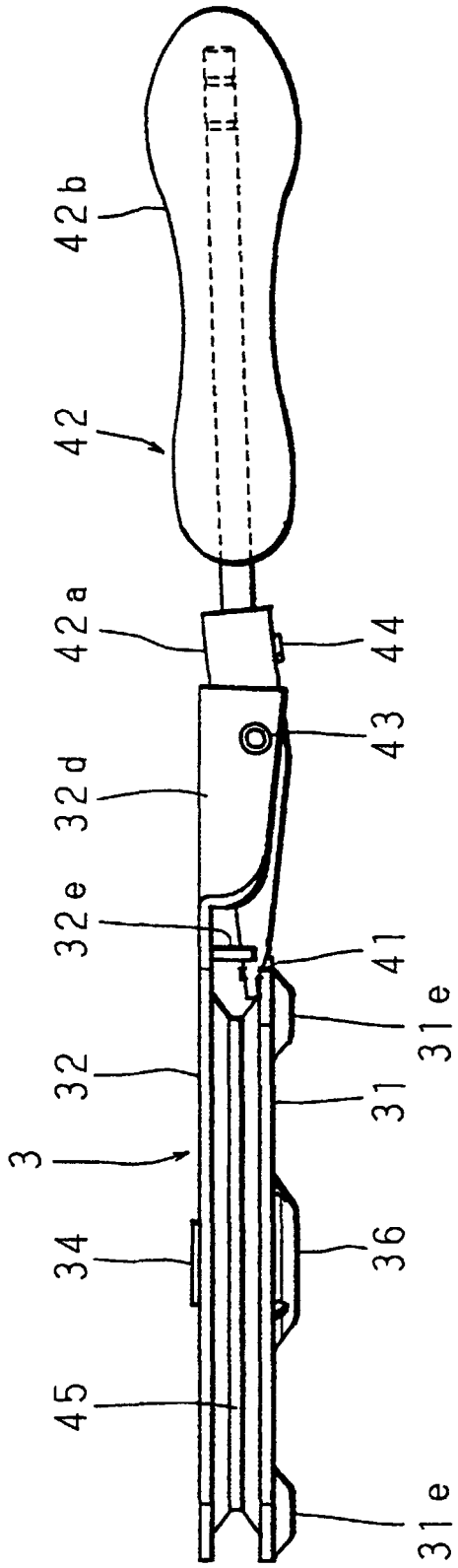
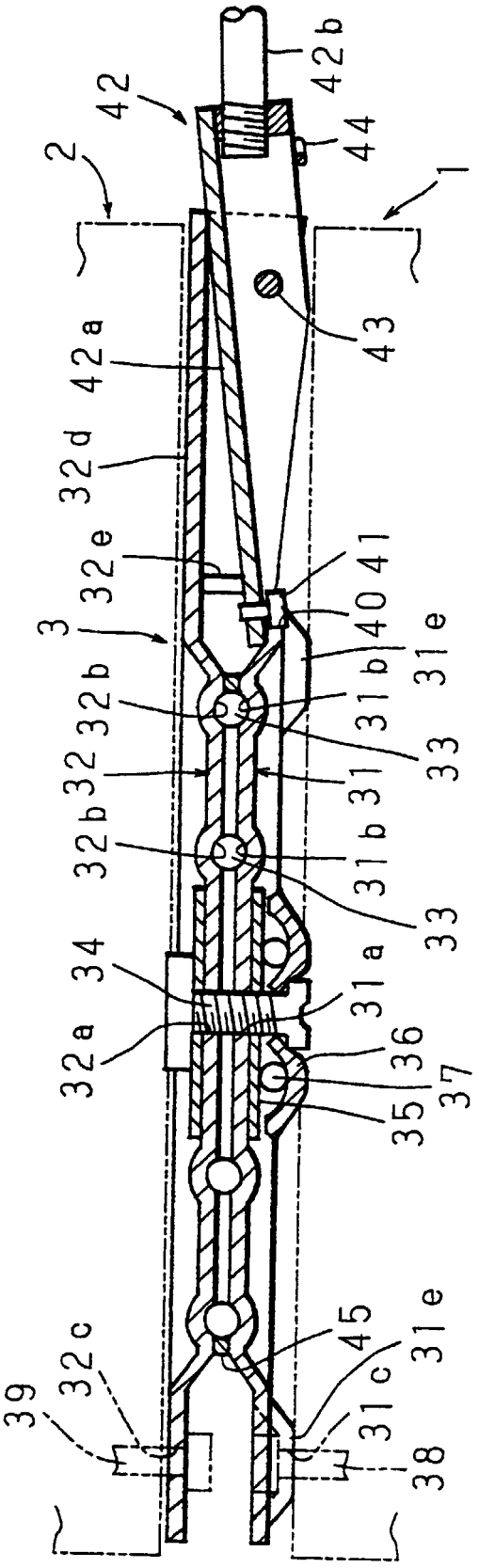


FIG. 4

FIG. 5


42b
42
44
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42a
32d
32e
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31e
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31b
33
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32c
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31c
31e
38

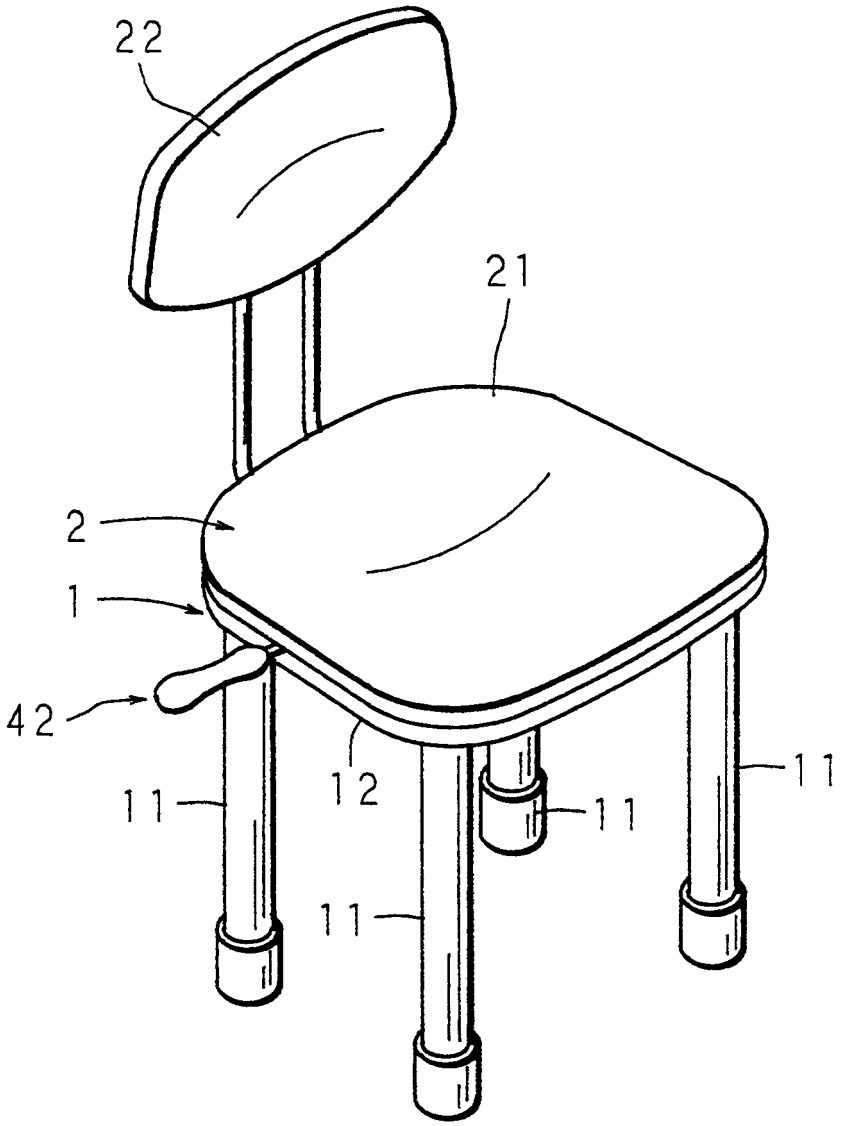


FIG. 6

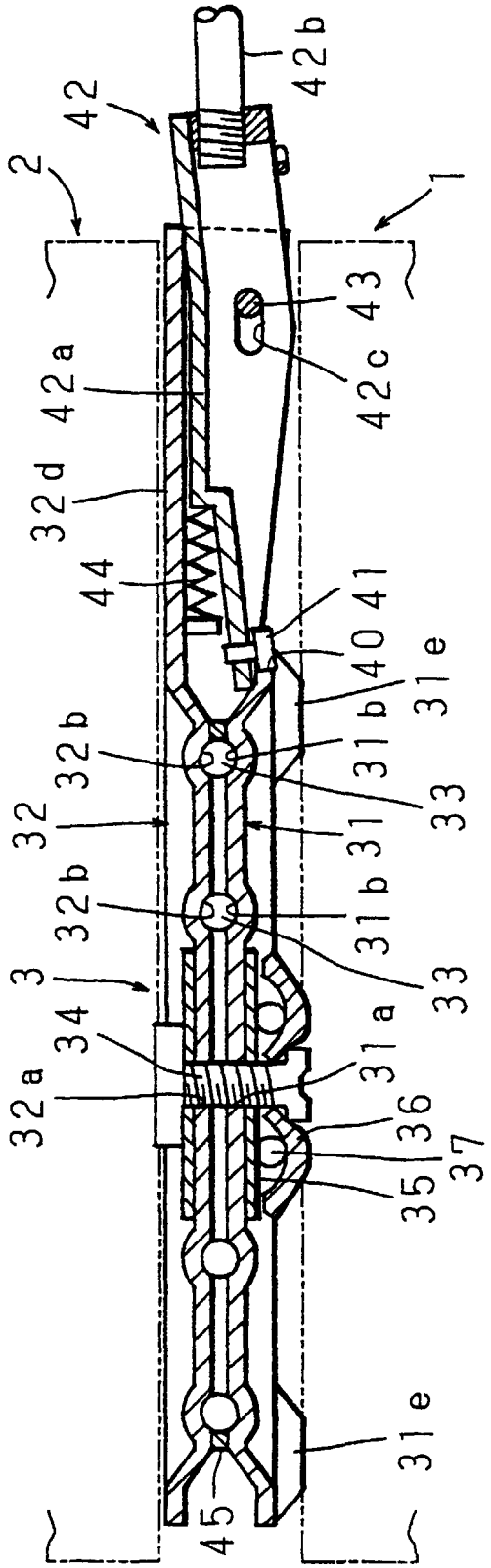
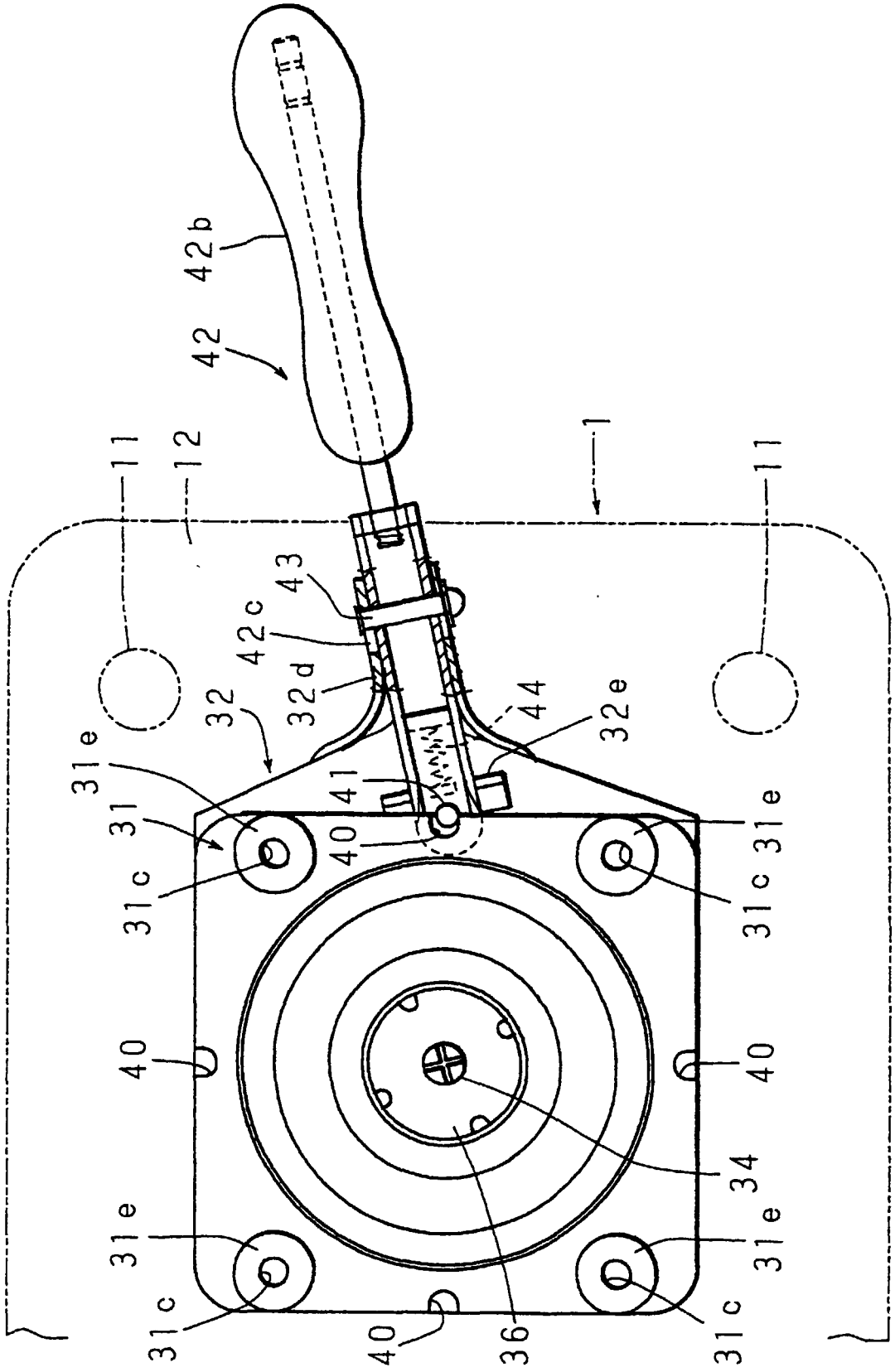

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42c
42a
32d
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31e
31b
32b
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31a
32a
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FIG. 7

FIG. 8


42b
42
11
12
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42c
32d
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32e
31e
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31c
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31c
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31e
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31e
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36
31c

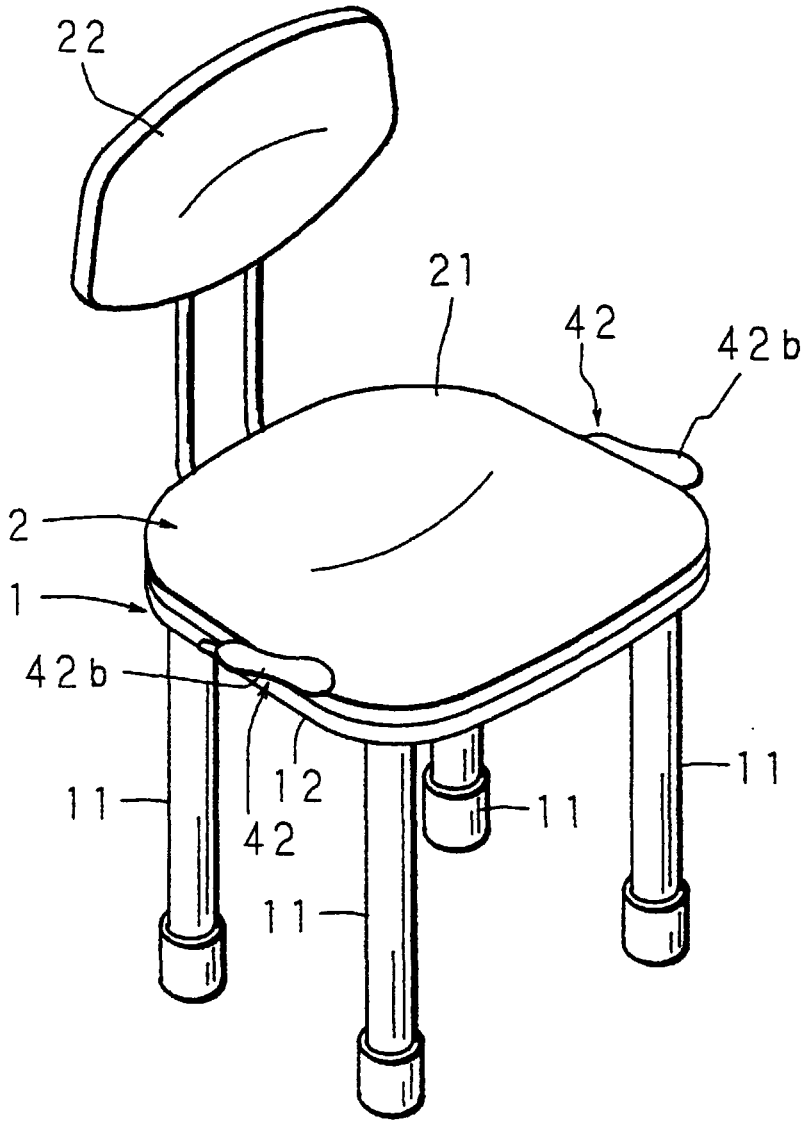


FIG. 9

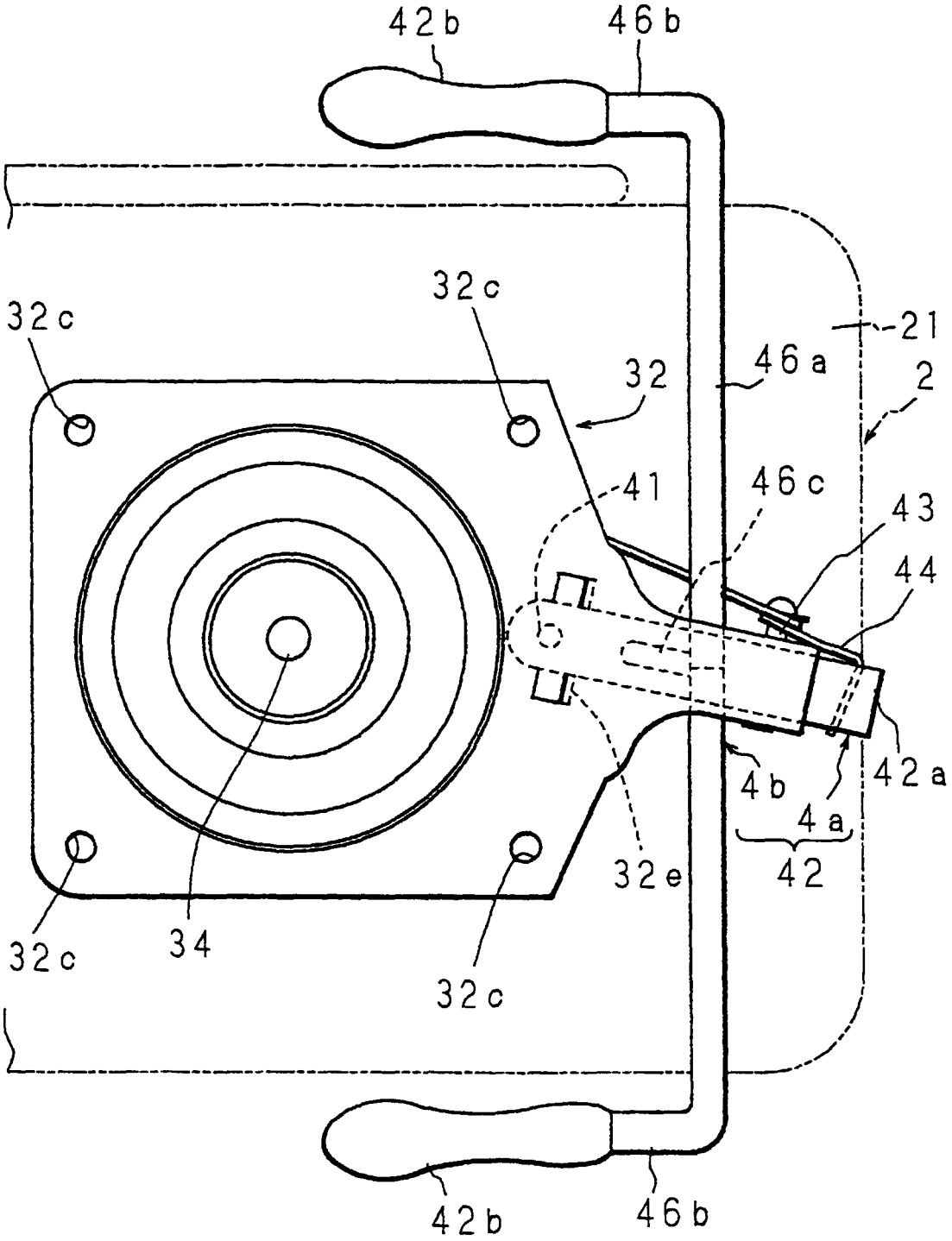
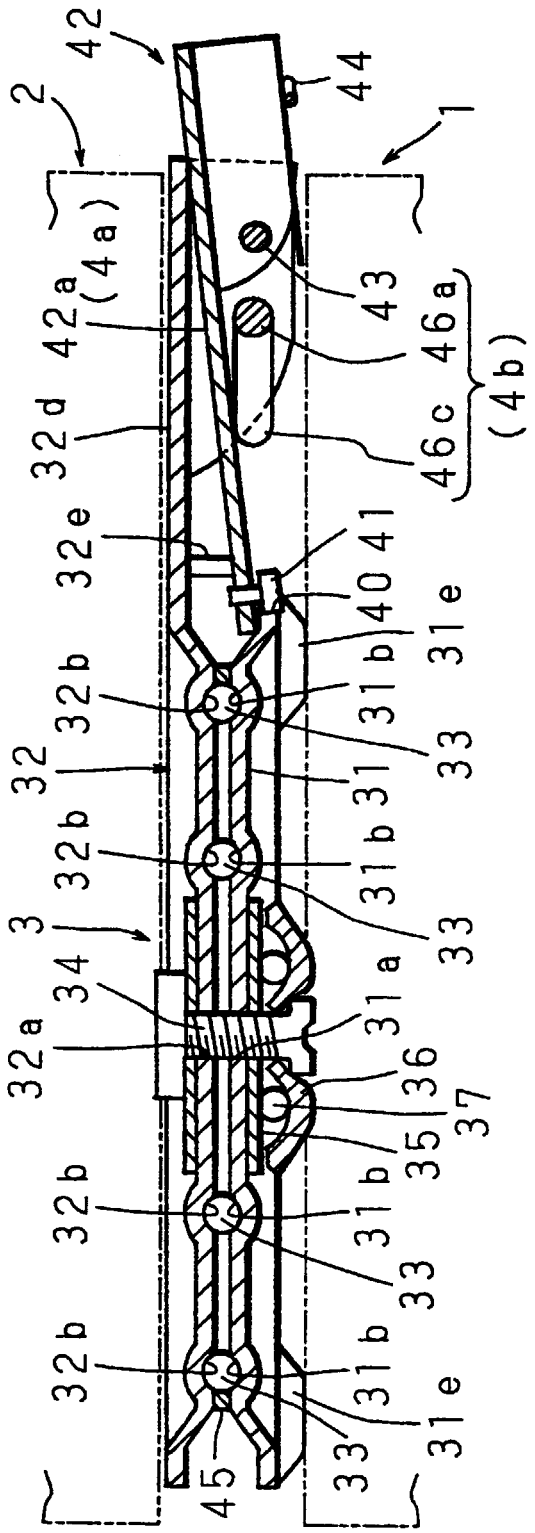

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42a
4b
4a
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32e
32c
34
32c
42b
46b

FIG. 10

FIG. 11


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(4a)
42a
43
46a
(4b)
32d
46c
32e
41
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31e
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31b
33
32
31
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31b
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31e
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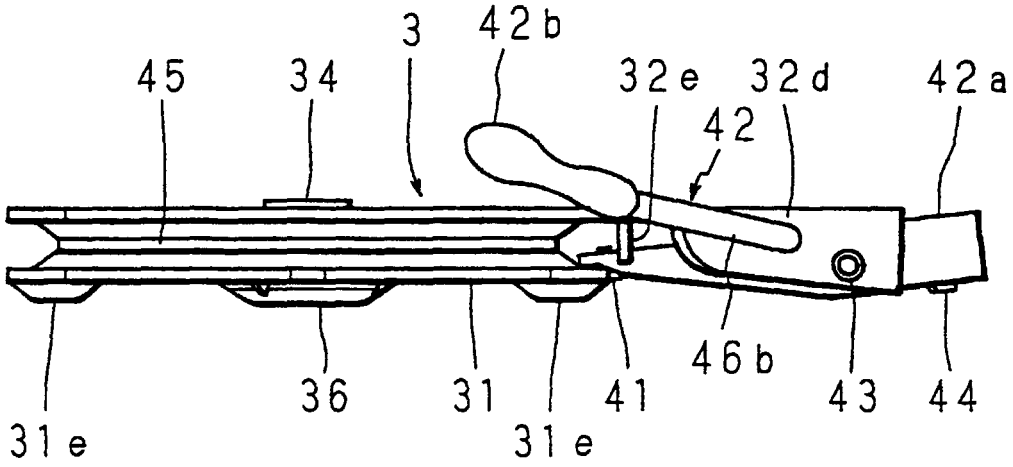


FIG. 12

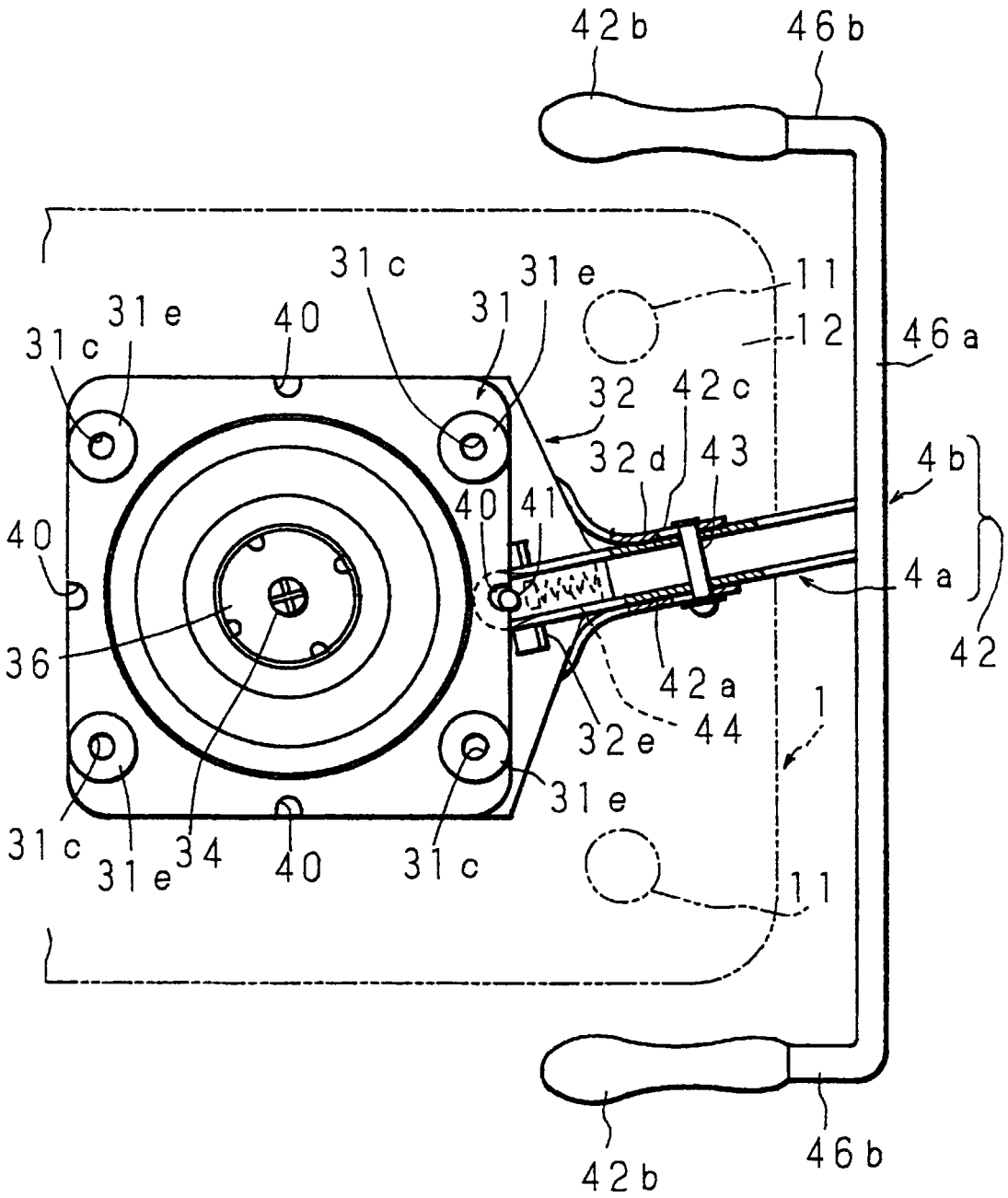

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42a
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32e
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31c
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31c
11
42b
46b

FIG. 13

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP99/02929

A. CLASSIFICATION OF SUBJECT MATTER
Int.Cl[6] A47C3/18

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)
Int.Cl[6] A47C3/18

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1926-1996 Toroku Jitsuyo Shinan Koho 1994-1999
Kokai Jitsuyo Shinan Koho 1971-1995 Jitsuyo Shinan Toroku Koho 1996-1999

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 47-115948 (Laid-open No. 49-72506) (Tenryuu Kougyou K.K.), 24 June, 1974 (24. 06. 74), Figs. 1 to 3 ; page 1, lines 5 to 18 (Family: none)	1-16
Y	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 48-141892 (Laid-open No. 50-88214) (Nikki UOB Bosutoromu K.K.), 26 July, 1975 (26. 07. 75), Figs. 2 to 5 ; page 3, line 4 to page 5, line 5 (Family: none)	1-16
Y	JP, 55-11720, Y2 (Kokuyo Co., Ltd.), 13 March, 1980 (13. 03. 80), Fig. 2 ; page 1, right column, lines 17 to 25 (Family: none)	3-5, 11-13

[X] Further documents are listed in the continuation of Box C. [ ] See patent family annex.

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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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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
10 June, 1999 (10. 06. 99)	22 June, 1999 (22. 06. 99)
Name and mailing address of the ISA/ Japanese Patent Office	Authorized officer
Facsimile No.	Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP99/02929

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CD-ROM of the specification and drawings annexed to the request of Japanese Utility Model Application No. 5-60745 (Laid-open No. 7-28450) (Koizumi Sangyou K.K.), 30 May, 1995 (30. 05. 95), Figs. 4, 7 ; Par. No. [0008], lines 1 to 6 (Family: none)	6-7, 14-15
Y	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 3-3097 (Laid-open No. 4-93217) (Koito Industries,Ltd.), 13 August, 1992 (13. 08. 92), Figs. 8, 9 ; Par. No. [0017], lines 1 to 15 (Family: none)	7, 15

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