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(54) Carrying case

(57) Provided is a carrying case (1) including: a case body (2); a grip (3) gripped when moving the case body (2); a supporting part (4) having a distal end provided with the grip (3); and casters (6) configured to roll in contact with a road when moving the case body (2), wherein the case body (2) has a first sidewall (7), a second sidewall (8) opposed to the first sidewall (7), and a frame wall (9) extending in a thickness direction across edges of the first sidewall (7) and the second sidewall (8), and the supporting part (4) has a proximal end arranged on an outer surface of one of the first sidewall (7) and the second sidewall (8) pivotally about a shaft (15) extending along the thickness direction, the carrying case (1) further including: a holding and releasing mechanism (16) configured to hold and release the proximal end about the shaft (15); and an operating part (20) configured to operate the holding and releasing mechanism (16) to hold and release the proximal end.

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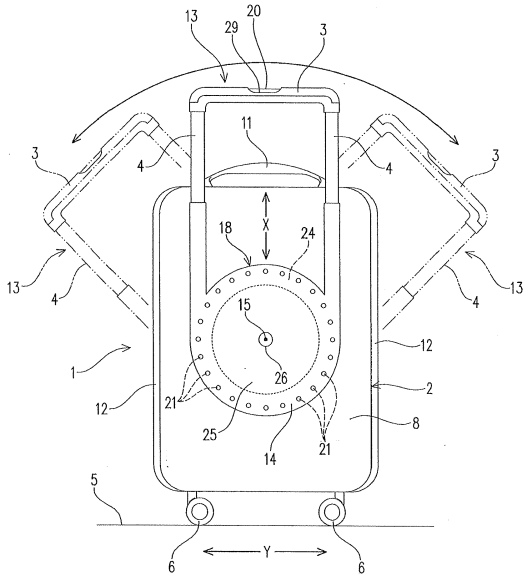


EP 2 888 968 A1

Description

FIELD OF THE INVENTION

[0001] The present invention relates to a carrying case for carrying luggage such as clothes by housing it, for example, in travel.

BACKGROUND ART

[0002] As a carrying case of this type, a technique disclosed in JP 2007-008435 A below is proposed. The carrying case disclosed in JP 2007-008435 A includes a rectangular case body having specific lengths in the up-down direction, the front-rear direction, and the thickness direction, a grip that is gripped, for example, when moving the case body, and supporting parts with their proximal ends pivotally attached to the case body via movable parts. The grip is provided at the distal ends of the supporting parts. The supporting parts are arranged at the upper end of the case body, and the supporting parts are attached thereto so that the pivot angle can be changed about the horizontal shaft extending along the front-rear direction.

[0003] A user of the carrying case makes it easy to move the carrying case by pivoting the supporting parts about the horizontal shaft, as needed, so as to grip the grip at a position suitable for the body shape of the user.

SUMMARY OF THE INVENTION

Technical Problem

[0004] The aforementioned conventional carrying case allows the supporting parts to pivot about the horizontal shaft extending along the front-rear direction when the carrying case is moved in the thickness direction so that the grip is located at a position suitable for the body shape of the user. However, particularly when the carrying case is moved in the front-rear direction, not in the thickness direction, the grip cannot be located at a position suitable for the body shape of the user even if the supporting parts pivot about the horizontal shaft extending along the front-rear direction. Therefore, the carrying case is difficult to move.

[0005] Therefore, it is an object of the present invention to provide a carrying case that is easy to move, particularly, in the width direction. Solution to Problem

[0006] A carrying case of the present invention includes: a rectangular parallelepiped case body; a grip configured to be gripped when moving the case body; a supporting part having a distal end provided with the grip; and casters configured to roll in contact with a road when moving the case body, wherein the case body has a rectangular plate-shaped first sidewall having specific lengths in an up-down direction and a front-rear direction, a rectangular plate-shaped second sidewall opposed to the first sidewall, and a plate frame-shaped frame wall extending in a thickness direction across edges of the first sidewall and the second sidewall, and the supporting part has a proximal end arranged on an outer surface of one of the first sidewall and the second sidewall of the case body so as to be pivotable about a shaft extending along the thickness direction of the case body, the carrying case further including: a holding and releasing mechanism configured to hold and release the proximal end of the supporting part about the shaft; and an operating part configured to operate the holding and releasing mechanism to hold and release the proximal end of the supporting part.

[0007] The carrying case of the present invention may employ a configuration in which the operating part is provided in the grip.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008]

Fig. 1 is a side view showing an overall configuration of a carrying case according to an embodiment of the present invention.
Fig. 2 is a plan view of the carrying case.
Fig. 3 is a front view of the carrying case.
Fig. 4 is an enlarged side view of a pivoting part and a side shaft of the carrying case.
Fig. 5 is a sectional view mainly showing a holding and releasing mechanism of the carrying case as viewed from the rear side.
Fig. 6 is a side view showing how to use the carrying case.
Fig. 7A is a front view of the overall schematic configuration of a carrying case according to a second embodiment of the present invention, Fig. 7B is a side view thereof, and Fig. 7C is a rear view thereof.
Fig. 8A is a plan view of the carrying case in use position, and Fig. 8B is a plan view thereof in storage position.
Fig. 9 is a side view showing the carrying case in use.
Fig. 10 is an enlarged plan view showing the carrying case in a locked state.
Fig. 11 is an enlarged plan view showing the carrying case in an unlocked state.
Fig. 12 is an enlarged side view of the carrying case in the storage position.
Fig. 13 is an enlarged side view of the carrying case in the use position.
Fig. 14A is an enlarged side view of a main part of the carrying case in a locked state, and Fig. 14B is an enlarged side view thereof in an unlocked state.
Fig. 15 is an enlarged side view of a holding mechanism of the carrying case.
Fig. 16A is a schematic side view of the holding mechanism of the carrying case in a locked state, and Fig. 16B is a schematic side view thereof in an unlocked state.
Fig. 17 is a side view of the overall schematic con-

figuration of a carrying case according to a third embodiment of the present invention.

Fig. 18A is a side view showing a part of a holding and releasing mechanism of a carrying case according to a fourth embodiment of the present invention in a locked state, and Fig. 18B is a side view thereof in an unlocked state.

Fig. 19 is a front view showing the overall holding and releasing mechanism of the carrying case.

Fig. 20 is a side view showing a supporting part and a grip of the carrying case in storage position.

Fig. 21 is a side view showing the supporting part and the grip of the carrying case in use position.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0009] Hereinafter, a carrying case according to an embodiment of the present invention is described with reference to the drawings. As shown in Fig. 1 to Fig. 3, a carrying case 1 includes a hollow rectangular parallelepiped case body 2, a carrying grip 3 gripped when moving the case body 2, supporting parts 4 having distal ends provided with the carrying grip 3, and casters 6 that roll in contact with a road 5 when moving the case body 2.

[0010] The case body 2 includes a rectangular plate-shaped first sidewall 7 having specific lengths in an up-down direction X and a front-rear direction Y, a rectangular plate-shaped second sidewall 8 opposed to the first sidewall 7 in a thickness direction Z of the case body 2, and a plate frame-shaped frame wall 9 extending in the thickness direction Z of the case body 2 across the edges of the first sidewall 7 and the second sidewall 8.

[0011] In this embodiment, the up-down direction X is a direction extending along the standing direction of a user H. The front-rear direction Y is a direction extending along the back and forth movement of the user H of the carrying case 1 (see Fig. 6) when the user H moves the carrying case 1 on the user's lateral side. The thickness direction Z is a direction in which the first sidewall 7 and the second sidewall 8 are opposed to each other.

[0012] As shown in Fig. 3, the first sidewall 7 is attached to the frame wall 9, for example, via a slide fastener 10 so as to be openable and closable. A handle 11 is fixed to the upper wall surface of the frame wall 9. The casters 6 are arranged at four sites on the lower wall surface of the frame wall 9. Two ridges of sliding members 12 are attached across the up-down direction to each of the front and rear wall surfaces of the frame wall 9. The sliding members 12 are preferably formed using a synthetic resin having self-lubricating properties. The sliding members 12 are formed to project from each of the front and rear wall surfaces of the carrying case 1 and have arcuate (semicircular) cross sections, thereby having functions to facilitate moving the carrying case 1 by sliding when the carrying case 1 is moved with one of the wall surfaces located on the road 5 (including stairways) side, that is, on the lower side, and to protect the carrying case 1 (the wall surfaces). Therefore, the sliding members 12 may be referred to as protectors or protect bars.

[0013] As shown in Fig. 1, the carrying case 1 includes a pivoting part 13. The pivoting part 13 includes the supporting parts 4, the carrying grip 3, and a pivoting disk 14. The pivoting part 13 (the proximal ends of the supporting parts 4) is arranged on an outer surface of the second sidewall 8 that is one of the first sidewall 7 and the second sidewall 8 of the case body 2.

[0014] As shown in Fig. 4, the supporting parts 4 are coupled to the carrying grip 3, thereby forming an arch shape. The carrying grip 3 has a hollow rectangular cross section in the vertical direction. The supporting parts 4 have hollow rectangular cross sections in the horizontal direction. The internal spaces of the carrying grip 3 and the supporting parts 4 are in communication. The supporting parts 4 and the carrying grip 3 are made of metal such as aluminum.

[0015] As shown by a solid line in Fig. 1, a pair of supporting parts 4 are arranged parallel to each other, and the carrying grip 3 is arranged at the upper ends of the supporting parts 4 so as to bridge them. The supporting parts 4 are located in the same plane as the carrying grip 3, and their axes in the longitudinal direction are orthogonal to the axis in the longitudinal direction of the carrying grip 3. The supporting parts 4 are configured to be telescopic so as to be freely expanded and contracted in the up-down direction by telescopic mechanisms (not shown).

[0016] As shown in Fig. 4 and Fig. 5, the pivoting disk 14 is formed integrally with the proximal ends of the supporting parts 4. The pivoting disk 14 is a part that supports the supporting parts 4 pivotally about a shaft center 15 extending along the thickness direction Z. The pivoting disk 14 is externally fitted to a fixing part that constitutes parts of holding and releasing mechanisms 16, which will be described below, pivotally about the shaft center 15 via a bearing 17 (for example, a slip bearing is used therefor). The shaft center 15 is located, on the outer surface of the second sidewall 8, substantially at the center in the front-rear direction and on the lower side of the center in the up-down direction. The pivoting disk 14 is made of metal such as aluminum.

[0017] The carrying case 1 includes the holding and releasing mechanisms 16. The holding and releasing mechanisms 16 are configured to hold and release the proximal ends of the supporting parts 4 (the pivoting disk 14) by moving about the shaft center 15. The holding and releasing mechanisms 16 include a disk-shaped side shaft (corresponding to the shaft) 18 as the fixing part, an operating rod 19, an operating part 20 configured to operate the operating rod 19 to move (operate the holding and releasing mechanisms 16 to hold and release the proximal ends of the supporting parts 4), and advancing and retracting mechanisms 23 including advancing and retracting members 22 configured to be advanced into and retracted from holding holes 21, which will be described below, by the movement of the operating rod 19.

[0018] The side shaft 18 includes a flat disk-shaped part 24, and a flat columnar shaft part 25 projecting outwardly in the thickness direction from the center of the disk-shaped part 24. The center of the side shaft 18 is fixed to the outer surface of the second sidewall 8 so as to coincide with the shaft center 15 by a fixing means such as a bolt 26. The side shaft 18, for example, is made of metal such as aluminum or Teflon-based synthetic resin.

[0019] The holding holes 21 are formed at equal intervals in the circumferential direction throughout the entire region on the surface on the outer circumferential side of the disk-shaped part 24. The holding holes 21 may pass through the disk-shaped part 24, or may be formed without passing therethrough. Specifically, in this embodiment, the holding holes 21 pass through the disk-shaped part 24 in the thickness direction Z, and twenty-four holding holes 21 are formed. Although the number of the holding holes 21 is twenty-four in this embodiment, the number of the holding holes 21 may be more than twenty-four, or less than twenty-four, as long as they allow the pivoting part 13 to tilt (pivot) in the front-rear direction Y within a specific range.

[0020] The operating rod 19 is internally provided throughout substantially the entire region of the internal spaces of the carrying grip 3 and the supporting parts 4, and includes a transverse rod 27 provided inside the carrying grip 3 and longitudinal rods 28 extending downward respectively from the front and rear ends of the transverse rod 27. Further, an opening 29 is formed on the top surface in the middle in the front-rear direction of the carrying grip 3, where the operating part 20 with which the user H presses the transverse rod 27 downward is formed integrally with the transverse rod 27, and the operating part 20 is exposed through the opening 29. That is, the operating part 20 is provided in the carrying grip 3.

[0021] Pressing members 30 configured to directly press the advancing and retracting members 22 of the advancing and retracting mechanisms 23 are attached to the lower ends of the longitudinal rods 28. Each of the pressing members 30 has a substantially prismatic shape with its longitudinal direction extending in the up-down direction, and has a lower end at which a pressing inclined surface 31 is formed. Further, a flange-shaped limitation member 32 that limits the amount of movement of the pressing member 30 in the up-down direction (in this case, downward) is formed in an upper part of the pressing member 30. The pressing inclined surface 31 is inclined in a direction such that the disk-shaped part 24 side that is a first side in the thickness direction Z is lower than a second side in the thickness direction Z.

[0022] The basic configuration of each of the advancing and retracting mechanisms 23 is arranged inside a supporting part 4. The advancing and retracting mechanism 23 includes an outer housing 33 whose longitudinal direction extends in the thickness direction Z, the advancing and retracting member 22 provided inside the outer housing 33 so as to be movable in the thickness direction Z, and a spring 34 biasing the advancing and retracting member 22 in the thickness direction Z and biasing a longitudinal rod 28 upward.

[0023] The outer housing 33 is hollow and is fixed to the inside of the supporting part 4 so as to extend in the thickness direction Z across the supporting part 4. A stopper 33a that can abut against the limitation member 32 is formed so as to project upward, in an upper part substantially at the center in the thickness direction Z of the outer housing 33. The stopper 33a, for example, has a rectangular cylindrical shape, into which the pressing member 30 is fitted on a constant basis, thereby guiding the pressing member 30 in the up-down direction X.

[0024] The advancing and retracting member 22 includes a projection 36 that is freely advanced into and retracted from (inserted into and removed from) a holding hole 21 at its distal end (on the disk-shaped part 24 side that is the first side in the thickness direction Z). Accordingly, an insertion hole 37 through which the projection 36 is inserted is formed in the supporting part 4. Further, a part of the pressing member 30 including a lower part of the pressing inclined surface 31 enters the advancing and retracting member 22. This part is configured as a locking part 30a that can be locked to the inner surface of the upper wall of the outer housing 33. The advancing and retracting member 22 includes, at its proximal end, an operated part 38 against which the pressing inclined surface 31 abuts on a constant basis. A surface of the operated part 38 in contact with the pressing inclined surface 31 is in the form of an inclined surface that is inclined in the same direction as the pressing inclined surface 31.

[0025] The spring 34 is a coil spring in this embodiment, and is arranged inside the outer housing 33 on the second side in the thickness direction Z of the advancing and retracting member 22 so as to bias the advancing and retracting member 22 toward the disk-shaped part 24 side. A guide rod 39 inserted along the axis direction of the spring 34 is formed in the advancing and retracting member 22, and a guide hole 40 into which a part of the guide rod 39 on the second side can be inserted is formed on a sidewall of the outer housing 33 on the second side.

[0026] In the carrying case 1 configured as above, the advancing and retracting members 22 are biased in the thickness direction Z due to the elasticity of springs 34 of the advancing and retracting mechanisms 23, thereby allowing projections 36 to project into the holding holes 21. More specifically, the advancing and retracting members 22 are biased in the thickness direction Z due to the elasticity of the springs 34 of the advancing and retracting mechanisms 23 provided respectively in the supporting parts 4, thereby allowing the projections 36 to project into the holding holes 21 that are spaced farthest from each other. That is, the pivoting part 13 is held in a non-rotatable state about the shaft center 15.

[0027] When the pivoting part 13 is in a non-rotatable state about the shaft center 15, the advancing and retracting members 22 are biased in the thickness direction

Z due to the elasticity of the springs 34, thereby causing operated parts 38 to press locking parts 30a in the thickness direction Z. Thus, the operated parts 38 and the locking parts 30a are in contact with each other on their inclined surfaces that are inclined in the same direction. Therefore, the pressing members 30 are biased upward, and the locking parts 30a are held locked to the inner surfaces of the upper walls of the outer housings 33. Further, limitation members 32 are spaced upwardly apart from stoppers 33a.

[0028] In order to pivot the pivoting part 13 about the shaft center 15 from the aforementioned state where the pivoting part 13 is held, the user H presses the operating part 20 downwardly against the elasticity of the springs 34. The operating part 20 is pressed to move downwardly, to the extent of which the transverse rod 27 and the longitudinal rods 28 move downwardly, particularly, the longitudinal rods 28 move downwardly, thereby causing the locking parts 30a to press the operated parts 38 via their inclined surfaces toward the second side in the thickness direction Z. Thus, the springs 34 are contracted. This causes the advancing and retracting members 22 to move toward the second side in the thickness direction Z. Accordingly, the projections 36 escape from the holding holes 21. Then, parts of guide rods 39 enter guide holes 40.

[0029] When the projections 36 escape from the holding holes 21, the pivoting part 13 is free to pivot about the shaft center 15. Then, the user H pivots the pivoting part 13 about the shaft center 15 at a preferred angle (angle suitable for the body shape of the user H). At this time, the side shaft 18 is fixed to the second sidewall 8 so as not to pivot, whereas the pivoting disk 14 of the pivoting part 13 pivots about the shaft part 25. When the user H releases the pressure on the operating part 20, the springs 34 are elastically restored, and the advancing and retracting members 22 move toward the first side in the thickness direction Z, so that the projections 36 of the advancing and retracting members 22 are inserted into the holding holes 21 at positions corresponding to the preferred angle of the user H. This allows the position of the pivoting part 13 about the shaft center 15 to be held (see the imaginary lines in Fig. 1).

[0030] In this embodiment, the holding holes 21 are formed at equal intervals in the circumferential direction throughout the entire region on the outer circumferential surface of the disk-shaped part 24. Therefore, the pivoting part 13 can pivot 360° about the shaft center 15.

[0031] It depends on the preference of the user H how to carry the carrying case 1, such as by drawing it behind the user H, allowing it to move along the lateral side of the user H, or pushing it ahead of the user H.

[0032] For example, in the case where the user H carries the carrying case 1 by pressing it ahead, the pivoting part 13 may be pivoted as shown by the imaginary line on the left side in Fig. 1, supposing that the right side of Fig. 1 is the front side. Anyhow, the shaft center 15 is located, on the outer surface of the second sidewall 8, substantially at the center in the front-rear direction and on the lower side of the center in the up-down direction. Therefore, the position on which the force for moving the carrying case 1 acts can be located on the lower side of the case body 2, and thus the case body 2 can be moved in a stable state.

[0033] In the case where the road 5 is in the form of ascending steps shown in Fig. 6, the user H can move the case body 2 by pivoting the pivoting part 13 and by sliding the case body 2 at the corners of the steps. Since the case body 2 is provided with the sliding members 12 on the frame wall 9, there is no need to carry the carrying case 1 by lifting it up so as not to be in contact with the steps. Therefore, the carrying case 1 can be easily moved also in this way.

[0034] In the case of descending steps shown in Fig. 6, the pivoting part 13 is pivoted in the opposite direction to the direction in the case of the ascending steps. Thus, it is possible to carry the case body 2 ahead by sliding it at the corners of the steps. Since the case body 2 is provided with the sliding members 12 on the frame wall 9, there is no need to carry the carrying case 1 by lifting it up so as not to be in contact with the steps. Therefore, the carrying case 1 can be easily moved also in this way. In the case of the flat road 5 as shown at the center in Fig. 6, the carrying case 1 can be moved also by gripping the handle 11.

[0035] The carrying case 1 according to the present invention is not limited to the aforementioned embodiment, and various modifications can be made without departing from the gist of the present invention. For example, in the aforementioned embodiment, the holding and releasing mechanisms 16 configured to hold the pivoting part 13 by the projections 36 projecting into two of the holding holes 21 that are spaced farthest from each other are described.

[0036] However, the projections 36 may be inserted into and removed from two of the holding holes 21 other than those spaced farthest from each other by reducing the distance between the supporting parts 4 in the front-rear direction Y. In this case, the two of the holding holes 21 other than those spaced farthest from each other may be on the upper side of the shaft center 15, or may be on the lower side thereof, in the state where the pivoting part 13 is kept upright. However, when the position on which the force for moving the carrying case 1 acts is located on the lower side of the case body 2, the case body 2 can be moved in a stable state. Therefore, the two of the holding holes 21 other than those spaced farthest from each other are preferably located on the lower side of the shaft center 15.

[0037] The carrying case 1 configured as above has a configuration such that the holding holes 21 are each formed so as to extend along the thickness direction Z, and the projections 36 are advanced into and retracted from the holding holes 21 in the thickness direction Z. However, though not shown in the figure, the configuration may be such that the holding holes are formed in the

fixing part so as to extend along the radial direction of the shaft center 15, and the projections are advanced into and retracted from the holding holes in the radial direction of the shaft center 15, for example.

[0038] In the aforementioned embodiment, the holding and releasing mechanisms 16 composed of the projections 36 and the holding holes 21 are described. However, the configuration for holding and releasing the pivoting part 13 is not limited to the projections 36 and the holding holes 21. For example, the holding and releasing of the pivoting part by the fixing part may be achieved by a mechanism using application and removal of a friction force, or using meshing and unmeshing of gears.

[0039] The aforementioned embodiment describes the case where the shaft center 15 is arranged, on the outer surface of the second sidewall 8, substantially at the center in the front-rear direction portion and on the lower side of the center in the up-down direction, thereby allowing the position on which the force for moving the carrying case 1 acts is located on the lower side of the case body 2, so that the case body 2 is moved in a stable state. However, depending on the circumstances, it is conceivable that the shaft center 15 is arranged, on the outer surface of the second sidewall 8, substantially at the center in the front-rear direction and on the upper side of the center in the up-down direction. It depends on the body shape and preference of the user of the carrying case 1 whether it is easier to move the carrying case 1 when the shaft center 15 is arranged on the lower side of the center in the up-down direction, or it is easier to move the carrying case 1 when the shaft center 15 is arranged on the upper side thereof.

[0040] The carrying case of the present invention may have a configuration including: a case body configured to house articles; a grip configured to be gripped when moving the case body; and supporting parts having distal ends provided with the grip, wherein the case body includes a first sidewall having specific lengths in an up-down direction and a front-rear direction, a second sidewall opposed to the first sidewall, and a frame-shaped frame wall extending in the thickness direction across edges of the first sidewall and the second sidewall, the case body has an edge provided with shafts extending along the thickness direction of the case body, and the supporting parts have proximal ends provided pivotally about the shafts.

[0041] In the aforementioned configuration, the user of the carrying case pivots the supporting parts about the shafts, thereby adjusting the grip to a height or an angle suitable for the body shape of the user, so as to move the case body in the front-rear direction by gripping the grip in use.

[0042] The carrying case of the present invention may have a configuration including: holding and releasing mechanisms configured to hold the proximal ends of the supporting parts about the shafts and release the hold; and an operating part configured to operate the holding and releasing mechanisms to hold and release the proximal ends of the supporting parts.

[0043] In the aforementioned configuration, the user of the carrying case pivots the supporting parts about the shafts, while operating the operating part so that the holding and releasing mechanisms release the hold of the supporting parts about the shafts provided at the edge of the case body, thereby adjusting the grip to a height or an angle suitable for the body shape of the user, and then the user operates the operating part so that the holding and releasing mechanisms hold the supporting parts about the shafts, so as to move the case body in the front-rear direction by gripping the grip, in use.

[0044] The carrying case of the present invention may have a configuration in which the shafts are arranged on a first side in the front-rear direction of the case body. In this configuration, the user pivots the supporting parts on the first side in the front-rear direction of the case body, thereby adjusting the grip to a height suitable for the body shape of the user.

[0045] The carrying case of the present invention may have a configuration in which the operating part is provided in the grip. When the operating part is provided in the grip, as in this configuration, the user can easily operate the operating part.

[0046] The carrying case of the present invention may have a configuration in which the shafts extend along the thickness direction in an upper part of the case body. According to this configuration, the user grips the grip, so as to press it downward or pull it up, thereby moving the carrying case in a stable state.

[0047] The carrying case of the present invention may have a configuration in which the proximal ends of the supporting parts are arranged spaced apart from each other in the thickness direction of the case body. According to this configuration, the user's force acts on positions on both sides in the thickness direction of the case body, when moving the carrying case. Therefore, the carrying case is stabilized, and the carrying case is moved in a stable state.

[0048] The carrying case of the present invention may have a configuration in which at least one of the wall surfaces of the first sidewall and the second sidewall is configured to be openable and closable using an opening and closing means. According to this configuration, even if the proximal ends of the supporting parts are arranged spaced apart from each other in the thickness direction of the case body, the case body can be opened and closed.

[0049] Here, a carrying case according to a second embodiment shown in Fig. 7 to Fig. 16 is described. A carrying case 1 according to the second embodiment includes a hollow rectangular parallelepiped case body 2, a carrying grip 3 gripped when moving the case body 2, supporting parts 4 having distal ends provided with the carrying grip 3, holding and releasing mechanisms 16 configured to hold and release the proximal ends of the supporting parts 4 about shafts 59, and casters 6 that roll in contact with a road 5 when moving the case body 2.

[0050] As shown in Fig. 7, and Fig. 8, the case body 2 includes a rectangular plate-shaped first sidewall 7 having specific lengths in an up-down direction X and a front-rear direction Y, a rectangular plate-shaped second sidewall 8 opposed to the first sidewall 7 in a thickness direction Z of the case body 2, and a plate frame-shaped frame wall 9 extending across edges of the first sidewall 7 and the second sidewall 8 in the thickness direction Z of the case body 2. Hereinafter, an edge means one of the sides (portions that correspond to the sides of the rectangular parallelepiped shape) of the rectangular parallelepiped case body 2.

[0051] As shown in Fig. 9, the up-down direction X is a direction extending along the standing direction of the user H in the second embodiment. The front-rear direction Y is a direction extending along the back and forth movement of the user H of the carrying case 1 when the user H moves the carrying case 1 on the user's lateral side, or the like. The thickness direction Z is a direction in which the first sidewall 7 and the second sidewall 8 are opposed to each other (see Fig. 7).

[0052] As shown in Fig. 7, the wall surface of the first sidewall 7 is configured to be openable and closable by a slide fastener 10 that is an opening and closing means. A handle 11 used for lifting up and down the case body 2 or moving a short distance is fixed to the upper wall surface of the frame wall 9. The casters 6 are composed of small-diameter casters 61 and large-diameter casters 62. The small-diameter casters 61 are arranged at two sites spaced apart from each other in the thickness direction Z on the lower wall surface of the frame wall 9. The large-diameter casters 62 are arranged at the lower corners of the first sidewall 7 and the second sidewall 8. Hereinafter, a corner means one of eight corners of the rectangular parallelepiped case body 2.

[0053] As shown in Fig. 7 and Fig. 8, two ridges of sliding members 12 are attached across the up-down direction to each of the front and rear wall surfaces of the frame wall 9. The sliding members 12 are preferably formed using a synthetic resin having self-lubricating properties. The sliding members 12 are formed to project from each of the front and rear wall surfaces of the carrying case 1 so as to have arcuate (semicircular) cross sections. As shown in Fig. 8, the sliding members 12 have functions to facilitate moving the carrying case 1 by sliding when the carrying case 1 is moved with one of the wall surfaces located on the road 5 (including stairways) side, that is, on the lower side, and to protect the carrying case 1 (the wall surfaces). Therefore, the sliding members 12 may be referred to as protectors or sliding bars.

[0054] As shown in Fig. 10 and Fig. 11, the supporting parts 4 are composed of two rod members 41 parallel to each other in the thickness direction Z. The rod members 41 have linear shapes without being bent. The rod members 41 are configured to have a length slightly shorter than the length in the front-rear direction of the case body 2. The carrying grip 3 is integrally coupled to the rod members 41 so as to bridge the distal ends of the rod members 41. The rod members 41 are located in the same plane as the carrying grip 3, and their axes in the longitudinal direction are orthogonal to the axis in the longitudinal direction of the carrying grip 3. The carrying grip 3 has a hollow rectangular cross section orthogonal to its longitudinal direction. The rod members 41 have hollow rectangular cross sections orthogonal to their longitudinal direction. The internal spaces of the carrying grip 3 and the rod members 41 are in communication. The rod members 41 and the carrying grip 3 are made of metal such as aluminum. The cross sections of the rod members 41 that are orthogonal to their longitudinal direction are not necessarily rectangular, and may be circular, for example.

[0055] The supporting parts 4 and the carrying grip 3 are configured to be located switchably at a storage position I in which they are laid along the upper wall surface of the frame wall 9 of the case body 2 and a use position U in which they are raised up about the proximal ends of the supporting parts 4 from the storage position I. The proximal ends of the supporting parts 4 are fixed to operated members 60, which will be described below (see Fig. 7).

[0056] As shown in Fig. 10 to Fig. 13, the holding and releasing mechanisms 16 include holding mechanisms 57, and a releasing mechanism 58 that can release the locked state by the holding mechanisms 57, as described below. A pair of holding mechanisms 57 are arranged at the respective upper corners of the first sidewall 7 and the second sidewall 8. In this case, the upper corners are the respective upper corners at rear ends of the first sidewall 7 and the second sidewall 8. The proximal ends of the supporting parts 4 are respectively coupled to the holding mechanisms 57.

[0057] Since the holding mechanisms 57 each have the same configuration, a description for one of the holding mechanisms 57 (the holding mechanism 57 provided on the first sidewall 7) also serves for the other of the holding mechanisms 57 (the holding mechanisms 57 provided on the second sidewall 8). With reference to Fig. 10 to Fig. 16, particularly, Fig. 15 and Fig. 16, the configuration of the holding mechanism 57 provided on the first sidewall 7 is described.

[0058] The holding mechanism 57 includes a fixing member 63 in the form of a plate. The fixing member 63 is fixed to a corner of the first sidewall 7 by screws 63a arranged at equal intervals in the circumferential direction. The fixing member 63 is in the form of a circular plate. The holding mechanism 57 includes a shaft 59. The shaft 59 passes through a shaft hole (not shown) formed at the center in the radial direction of the fixing member 63 so as to be pivotally supported by the shaft hole. The shaft 59 is raised in a direction substantially orthogonal to the first sidewall surface at the corner of the first sidewall 7. That is, the axis of the shaft 59 extends along the thickness direction Z.

[0059] The holding mechanism 57 includes a cam

member 64 fixed to the outer circumference of the shaft 59 (or formed integrally with the outer circumference of the shaft 59). A plurality of cam pieces 65 that are arranged adjacent to each other in the circumferential direction are formed on the outer circumferential surface of the cam member 64. The cam pieces 65 each have a circumferential surface with a diameter increasing from a first side in the circumferential direction to a second side in the circumferential direction. In this embodiment, a plurality (six in this embodiment) of cam pieces 65 are provided.

[0060] Specifically, the cam pieces 65 each have a smallest diameter end 65a that is a first end in the circumferential direction, a largest diameter end 65b that is a second end in the circumferential direction, and a curved circumferential surface 65c having a diameter sequentially increasing from the smallest diameter end 65a toward the largest diameter end 65b while curving. The cam pieces 65 that are adjacent to each other in the circumferential direction are continuous with each other via a stepped surface 65d connecting the smallest diameter end 65a and the largest diameter end 65b. The adjacent cam pieces 65 may be in contact with each other or may be spaced apart from each other in the circumferential direction.

[0061] The holding mechanism 57 includes a cylindrical member 66 arranged at a specific distance in the radial direction from the cam member 64. The cylindrical member 66 is concentric with the fixing member 63, and is formed integrally with the plate surface of the fixing member 63. The holding mechanism 57 includes a plurality of brake shoes 67 formed in the radial direction to have the same thickness and rolling elements 68 having the same diameter. The brake shoes 67 and the rolling elements 68 are arranged inside the cylindrical member 66 in the radial direction, in the order of the brake shoes 67 and the rolling elements 68 from the outer side in the radial direction.

[0062] In this embodiment, the rolling elements 68 are rollers, and the number of the rolling elements 68 is equal to the number of the cam pieces 65. The rolling elements 68 are held by holders 69. The rolling elements 68 are arranged at specific intervals (fixed intervals) in the circumferential direction by the holders 69. The holders 69 have a function to hold the rolling elements 68 so as to be movable inwardly and outwardly in the radial direction. The holders 69 are fixed, for example, to the plate surface of the fixing member 63.

[0063] The rolling elements 68 rotate respectively in contact with the curved circumferential surfaces 65c of the cam pieces 65 as the cam member 64 pivots. Specifically, the rolling elements 68 are configured to rotate while moving inwardly and outwardly in the radial direction following the movement of the curved circumferential surfaces 65c of the cam pieces 65 due to the pivoting of the cam member 64.

[0064] The brake shoes 67 are in the form of an arcuate ring. The brake shoes 67 are arranged between an inner circumferential surface 66a of the cylindrical member 66 and the rolling elements 68. In this embodiment, three brake shoes 67 are provided spaced apart from one another in the circumferential direction. The brake shoes 67 each have an inner circumferential surface 67a that is in contact with two of the rolling elements 68. When the rolling elements 68 are located on the smallest diameter end 65a sides (see Fig. 16B), there are gaps 70 between the inner circumferential surface 66a of the cylindrical member 66 and outer circumferential surfaces 67b of the brake shoes 67. When the rolling elements 68 are located on the largest diameter end 65b sides (see Fig. 16A), the gaps 70 are eliminated, so that the inner circumferential surface 66a of the cylindrical member 66 and the outer circumferential surfaces 67b of the brake shoes 67 are brought into pressure contact. Recesses 71 recessed outwardly in the radial direction are formed at the respective centers in the circumferential direction on the inner circumferential surfaces 67a of the brake shoes 67 (see Fig. 15).

[0065] The holding mechanism 57 includes a guide member 72 configured to guide the brake shoes 67 inwardly and outwardly in the radial direction. The guide member 72 includes a main body 73 in the form of a circular ring so as to cover the rolling elements 68 and the cylindrical member 66 from a first side in the axial direction. The main body 73 is fixed, for example, to an end face on the first side in the axial direction of the cylindrical member 66.

[0066] A hole 73a through which the end of the shaft 59 projects is formed at the center in the radial direction of the main body 73. Guide pieces 74 formed to be bent toward the recesses 71 of the brake shoes 67 are formed in parts on the plate surface of the main body 73. The guide pieces 74, which are inserted into the recesses 71 of the brake shoes 67, are members configured to guide the brake shoes 67 to move inwardly and outwardly in the radial direction.

[0067] A locking piece 76 configured to lock a first end 75a of a spring 75, which will be described below, is formed integrally with a part in the circumferential direction of the main body 73. The locking piece 76 is formed to project further outwardly in the radial direction from the outer circumference of the guide member 72.

[0068] The holding mechanism 57 includes an operated member 60 configured to directly operate the shaft 59 to pivot. The operated member 60 is in the form of a plate. In this embodiment, the operated member 60 is in the form of a triangle with its corners chamfered. A first vertex of the operated member 60 is fixed to the end of the shaft 59 projecting through the hole 73a of the main body 73 of the guide member 72. With such a configuration, the shaft 59 (the cam member 64) can pivot only due to the pivoting of the operated member 60. A locking hole 60a configured to lock a second end 75b of the spring 75 is formed at a second vertex of the operated member 60.

[0069] The holding mechanism 57 includes the spring 75. The spring 75 is a member for biasing the operated

member 60 toward the first side in the circumferential direction about the shaft 59. In this case, the first side in the circumferential direction is a direction in which the rolling elements 68 are pressed outwardly in the radial direction by the cam member 64 (see Fig. 14A). The direction in which the rolling elements 68 are pressed outwardly in the radial direction by the cam member 64 is a direction in which the rolling elements 68 are pressed outwardly in the radial direction on the largest diameter end 65b sides of the cam pieces 65, and the brake shoes 67 are pressed outwardly in the radial direction by the rolling elements 68, so that the outer circumferential surfaces 67b of the brake shoes 67 are brought into pressure contact with the inner circumferential surface 66a of the cylindrical member 66 so as to eliminate the gaps 70. Hereinafter, the state where the outer circumferential surfaces 67b of the brake shoes 67 are brought into pressure contact with the inner circumferential surface 66a of the cylindrical member 66 is referred to as a locked state of the operated member 60.

[0070] In the second embodiment, a torsion spring is used as one type of the spring 75. The first end 75a of the torsion spring is locked to the locking piece 76 of the main body 73 of the guide member 72. The second end 75b of the torsion spring is locked to the locking hole 60a at the second vertex of the operated member 60. The intermediate portion of the torsion spring is wound around the cylindrical member 66 so as to be externally mounted on the cylindrical member 66. In this embodiment, a pair of holding mechanisms 57 as configured above are provided.

[0071] As shown in Fig. 10 and Fig. 11, an opening 3a is formed by cutting a part of a substantially middle part in the thickness direction Z of the carrying grip 3. The carrying case 1 includes an operating part 77 configured to release the locked state or restore the locked state. The operating part 77 is provided in the carrying grip 3. The operating part 77 is arranged to be exposed through the opening 3a. The operating part 77 is a member operated to be pressed by a finger of the user H.

[0072] The releasing mechanism 58 is configured to operate each operated member 60 at the third vertex of the operated member 60 to move in a direction in which the locked state of the operated member 60 is released. The releasing mechanism 58 is composed of a link mechanism. The releasing mechanism 58 is provided in the carrying grip 3 and the supporting parts 4. The releasing mechanism 58 includes swing operating rods 78 inserted respectively through the rod members 41 of the supporting parts 4, and swing rods (lever members) 35 provided inside the carrying grip 3.

[0073] At first ends of the swing operating rods 78, bent pieces 78a bent in directions orthogonal to the direction in which the swing operating rods 78 extend is formed. The bent pieces 78a are locked to operation holes 60b formed at the third vertices of the operated members 60, and are configured to cause the operated members 60 to pivot in a direction in which the locked state is released when the swing operating rods 78 are pulled to the carrying grip 3 side against the elasticity of springs 75. In other words, they are each configured so that the cam pieces 65 of the cam member 64 pivot toward the smallest diameter end 65a sides in the circumferential direction.

[0074] Second ends of the swing operating rods 78 are extended to the inside of the ends of the carrying grip 3. First ends of the swing rods 35 are coupled to the second ends of the swing operating rods 78 via end pins 35a. The swing rods 35 are arranged along the longitudinal direction (the thickness direction Z) of the carrying grip 3. Second ends of the swing rods 35 abut the operating part 77 within the carrying grip 3. Intermediate portions in the longitudinal direction of the swing rods 35 are supported by intermediate pins 35b. This configuration allows the swing rods 35 to be swingable about the intermediate pins 35b serving as swing centers, while abutting the operating part 77.

[0075] The bent pieces 78a are locked to the operation holes 60b formed at the third vertices of the operated members 60, and the proximal ends of the supporting parts 4 are fixed to the operated members 60. Therefore, in the aforementioned locked state, the supporting parts 4 are also locked.

[0076] In the carrying case 1 configured as above, the user H presses the operating part 77, so that the locked state (hold) of the supporting parts 4 about the shafts 59 is released by the holding and releasing mechanisms 16, and can adjust the carrying grip 3 to a height suitable for the body shape of the user H by pivoting the supporting parts 4 about the shafts 59.

[0077] Specifically, in the storage position I in which the supporting parts 4 and the carrying grip 3 are laid along the upper wall surface of the frame wall 9 of the case body 2, the operated members 60 and the supporting parts 4 are locked. In such a locked state, the respective rolling elements 68 of the holding mechanisms 57 are located on the largest diameter end 65b sides of the cam pieces 65, as shown in Fig. 16A. That is, the brake shoes 67 are pressed against the inner circumferential surface 66a of the cylindrical member 66 by the rolling elements 68. Further, the supporting parts 4 and the carrying grip 3 are in the storage position I. Therefore, the operated members 60 and the supporting parts 4 provided integrally with the operated members 60 can pivot about the shafts 59 neither toward the first side nor the second side in the circumferential direction.

[0078] Then, operation by a finger of the user H causes the operating part 77 to be pressed inwardly of the carrying grip 3 so as to be moved, as shown in Fig. 11, from the state shown in Fig. 10 where the operating part 77 is exposed through the opening 3a. At this time, at least a pressing force to resist the elasticity of the springs 75 is required. When the operating part 77 is moved by being pressed inwardly of the carrying grip 3, the swing rods 35 abutting the operating part 77 pivot (swing) respectively about the intermediate pins 35b, and the swing op-

erating rods 78 coupled to the swing rods 35 via the end pins 35a are pulled to the front side. Then, the operated members 60 coupled to the bent pieces 78a of the swing operating rods 78 pivot toward a second side in the circumferential direction. Since the operated members 60 are provided integrally with the shafts 59, when the operated members 60 pivot, the shafts 59 also pivot in the same direction, which causes the cam members 64 and the cam pieces 65 that are provided integrally with the shafts 59 to pivot in the same direction.

[0079] The rolling elements 68 are pivotally held by the holders 69 that are fixed. Therefore, even when the cam pieces 65 pivot toward the second side in the circumferential direction, the rolling elements 68 do not move toward the second side in the circumferential direction, and the cam pieces 65 move relative to the rolling elements 68 from their largest diameter end 65b sides to their smallest diameter end 65a sides, thereby allowing the pressing force applied to the rolling elements 68 by the cam pieces 65 outwardly in the radial direction to be released. Then, the pressure contact between the inner circumferential surface 66a of the cylindrical member 66 and the outer circumferential surfaces 67b of the brake shoes 67 made by the rolling elements 68 is released, and the gaps 70 occur. That is, the locked state is released.

[0080] When the locked state is released, the supporting parts 4 and the carrying grip 3 in the storage position I are allowed to pivot toward the first side in the circumferential direction about the shafts 59. After the locked state is released, the user H grips the carrying grip 3 and pivots the supporting parts 4 about the shafts 59 toward the first side in the circumferential direction, in the state where the locked state is released, that is, the operating part 77 is pressed. The supporting parts 4 pivot, thereby changing the position of the carrying grip 3 from the storage position I to the use position U. The use position U is a position in which the carrying grip 3 is raised up from the storage position I. In contrast to the storage position I, the angle of the carrying grip 3 can be adjusted steplessly in the use position U. The user H sets the carrying grip 3 to a height that facilitates gripping, and releases the pressing of the operating part 77.

[0081] When the pressing of the operating part 77 is released, the operated members 60 pivot toward the first side in the circumferential direction due to the elastic restoring force of the springs 75, and the shafts 59 and the cam members 64 pivot toward the first side in the circumferential direction. Then, the largest diameter end 65b sides of the cam pieces 65 are positioned facing the rolling elements 68 so as to press the rolling elements 68 outwardly in the radial direction, and the outer circumferential surfaces 67b of the brake shoes 67 are pressed against the inner circumferential surface 66a of the cylindrical member 66. That is, the supporting parts 4 are brought into the locked state. On the other hand, with the movement of the operated members 60 pivoting toward the first side in the circumferential direction, the supporting parts 4 are pulled backward by the operated members 60. When the supporting parts 4 are pulled backward, the swing rods 35 pivot about the intermediate pins 35b, and maintains contact with the operating part 77.

[0082] In the case where the position of the carrying grip 3 needs to be changed, the user H presses the operating part 77 as described above, and then the locked state is released. Thus, the position of the carrying grip 3 can be changed. Also in the case of returning the carrying grip 3 to the storage position I, the user H presses the operating part 77, and then the locked state is released. Thus, the carrying grip 3 can be returned from the use position U to the storage position I, where the carrying grip 3 is prevented from pivoting.

[0083] It depends on the preference of the user H, after the user H sets the carrying grip 3 to a desired height, how to move the carrying case 1, such as by drawing it behind the user H, allowing it to move along the lateral side of the user H, or pushing it ahead of the user H.

[0084] In the case where the road 5 is in the form of ascending steps as shown in Fig. 9, the user H can move the case body 2 by sliding it at the corners of the steps. Since the case body 2 is provided with the sliding members 12 on the frame wall 9, there is no need to carry the carrying case 1 by lifting it up so as not to be in contact with the steps, if the carrying grip 3 is in the locked state. Therefore, the carrying case 1 can be easily moved also in this way.

[0085] In the case of descending steps, the user H can reverse the front and rear sides of the carrying case 1, so as to carry the case body 2 ahead by sliding it at the corners of the steps. Since the case body 2 is provided with the sliding members 12 on the frame wall 9, there is no need to carry the carrying case 1 by lifting it up so as not to be in contact with the steps. Therefore, the carrying case 1 can be easily moved also in this way. In the case of the flat road 5 as shown at the center in Fig. 9, the user H can move the carrying case 1 also by gripping the carrying grip 3.

[0086] According to the carrying case 1 of this embodiment, the shafts 59 extending along the thickness direction Z are provided with a handle member composed of the supporting parts 4 and the carrying grip 3 extending in a direction orthogonal to the supporting parts 4. In other words, the carrying case 1 can be used by being pressed or pulled by a force acting on the first end side in the front-rear direction Y, instead of being pressed or pulled by a force acting on a first end side in the thickness direction Z.

[0087] In the case where the user H presses or pulls the carrying case 1 in the front-rear direction Y by the force acting on the first end side in the thickness direction Z, an unbalanced force acts on the carrying case 1 in the thickness direction Z. Therefore, it is difficult for the user H to move the carrying case 1. In contrast, when the carrying case 1 is pressed or pulled by the force acting on the first end side in the front-rear direction Y, the force acts uniformly on the carrying case 1 in the thickness

direction Z. Therefore, the user H can move the carrying case 1 stably. Further, in this embodiment, the handle member can pivot about the shafts 59 extending along the thickness direction Z. Therefore, the user H can set the carrying grip 3 to a position that facilitates gripping, and thus the user H can move the carrying case 1 more stably.

[0088] The present invention is not limited to the aforementioned embodiment, and various modifications are possible without departing from the scope of the present invention. Likewise, the specific configurations of the respective components are not limited thereto, and the actions and effects also are not limited to the aforementioned descriptions.

[0089] In the aforementioned embodiment, an example in which the shafts 59 are located at the respective corners of the first sidewall 7 and the second sidewall 8, and extend along directions substantially orthogonal to the first sidewall surface and the second sidewall surface is mentioned. However, the shafts 59 are not necessarily arranged at the respective corners of the first sidewall 7 and the second sidewall 8, as long as a configuration in which they are located at an edge of the case body 2, and the user H can move the carrying case 1 by gripping the carrying grip 3 is employed.

[0090] For example, the shafts 59 can be arranged in the respective intermediate portions in the up-down direction of the first sidewall 7 and the second sidewall 8 at edges of the case body 2. In this case, the supporting parts 4 are laid along the front wall surface or the rear wall surface of the case body 2 in the storage position. In the use position, the supporting parts 4 pivot about the shafts so as to move away from the front wall surface or the rear wall surface. Further, the shafts 59 may be located in intermediate portions in the front-rear direction on the upper wall surface of the case body 2.

[0091] The shafts 59 may be located in intermediate portions in the thickness direction at corners at edges of the case body 2. In this case, the shafts 59 are located closer to the center in the thickness direction Z than the shafts 59 of the carrying case 1 of the second embodiment. Accordingly, the distance at which the supporting parts 4 are spaced is narrowed corresponding to the positions of the shafts 59, as compared to the second embodiment.

[0092] The pair of shafts 59 may be arranged so as to be closer to the first side or the second side in the thickness direction Z. This enables the case body 2 to be divided along the front-rear direction Y at an intermediate portion in the thickness direction Z. Then, the carrying case 1 can be opened and closed not only by providing the slide fastener 10 on the wall surface of the first sidewall 7 so as to open and close the first sidewall 7 but also by dividing the case body 2.

[0093] In the first embodiment, the slide fastener 10 is provided only on the wall surface of the first sidewall 7, so that the first sidewall 7 can be opened and closed. However, the slide fastener 10 may be provided, for example, on the second sidewall 8, so that the second sidewall 8 can be opened and closed. The opening and closing means is not limited to the slide fastener 10, and a hook and loop fastener or a snap button may be employed. Further, the means for opening and closing the case body 2 may be configured by forming an opening on a sidewall and providing a cover that is pivotally attached via a hinge member to the opening portion.

[0094] In the second embodiment, an example in which the pair of holding mechanisms 57 are arranged at the upper corners of the first sidewall 7 and the second sidewall 8 is described. The holding mechanisms 57 are each configured to include the fixing member 63, the shaft 59, the cam member 64, the rolling elements 68, the brake shoes 67, the spring 75, the cylindrical member 66, the guide member 72, the operated member 60, and others. However, the carrying case 1 of the present invention may be configured not to include the pair of holding mechanisms 57a, but to include a holding mechanism configured to exclude the shaft 59 on a first side, and a shaft on a second side, so that the supporting parts 4 are coupled to the shaft.

[0095] In the second embodiment, an example in which the pair of shafts 59 are arranged at the edge is described. However, a configuration provided with one of the shafts 59 extending along the thickness direction Z, without providing the shafts 59 spaced apart in the thickness direction Z, may be employed. In the case of employing such a configuration, one supporting part 4 may be provided without providing the pair of supporting parts 4. Further, the carrying case 1 of the present invention may have a configuration in which the supporting part 4 is configured to expand and contract using an expanding and contracting mechanism (for example, telescopic mechanism).

[0096] In the aforementioned embodiments, an example in which the case body 2 has a rectangular parallelepiped shape is described. However, the shape of the case body 2 is not limited to the rectangular parallelepiped shape, and may be a solid shape having roundness, in consideration of functionality and design properties. Further, a rectangular parallelepiped shape in which a length in the front-rear direction is larger than a length in the up-down direction may be employed. In short, the carrying case of the present invention needs only to have a configuration in which a shaft extends in the thickness direction Z and a supporting part pivots about the shaft. Such a configuration makes it remarkably easy to move the carrying case.

[0097] In the aforementioned embodiments, an example in which the carrying case is provided with the holding and releasing mechanisms 16 is described. However, the holding and releasing mechanisms 16 are not necessarily provided. The carrying case of the present invention needs only to be provided with a shaft extending along the thickness direction Z of the case body 2 at the edge of the case body 2, and to allow a grip to be adjusted to a height or an angle suitable for the body shape of the user by pivoting a supporting part about the shaft.

[0098] In the aforementioned embodiments, a case where the pair of supporting parts 4 are linearly formed without being bent is described. However, as shown in Fig. 17 as a third embodiment, the supporting parts 4 may be configured so as to be bent substantially at right angles in intermediate portions in the longitudinal direction. In this case, the shafts 59 are arranged in intermediate portions in the up-down direction at positions shifted downward from the upper end of the edge of the case body 2. The supporting parts 4 each include a shaft side rod part 4A and a grip side rod part 4B. In the storage position I, the shaft side rod part 4A extends along the up-down direction X above the shaft 59 of the case body 2, and the grip side rod part 4B extends along the front-rear direction Y at the upper edge of the case body 2. In the use position U, the shaft side rod part 4A and the grip side rod part 4B both move away from the case body 2.

[0099] When the shafts 59 are arranged at positions shifted downward from the upper end of the edge of the case body 2 as described above, the shafts 59 are closer to the center of gravity of the carrying case 1, as compared to the case where the shafts 59 are located at the upper end of the edge of the case body 2. Therefore, particularly, in the case where heavy goods are housed in the case body 2, the carrying case 1 can be carried easily.

[0100] The holding and releasing mechanisms 16 are not limited to the aforementioned embodiments. Fig. 18 to Fig. 21 show a fourth embodiment. The carrying case 1 according to the fourth embodiment includes holding and releasing mechanisms 16 configured to hold or release the pivoting of supporting parts 4 using spur gear mechanisms. That is, each of the holding and releasing mechanisms 16 includes a large diameter spur gear 42 (which corresponds to a sun gear) and a small diameter spur gear 43 (which corresponds to a planetary gear), and further includes a link mechanism 44 configured to hold (prevent) or release the rotation of the small diameter spur gear 43 in the state where the small diameter spur gear 43 meshes with the large diameter spur gear 42. The link mechanism 44 is coupled to a swing operating rod 78. The diameter of the large diameter spur gear 42 and the diameter of the small diameter spur gear 43 are arbitrarily set, so that the gear ratio of the large diameter spur gear 42 and the small diameter spur gear 43 is arbitrarily set.

[0101] The large diameter spur gear 42 is attached to the case body 2 via a first center shaft 45 corresponding to the shaft extending along the thickness direction Z, and is fixed to the case body 2 by a bolt 47 as shown in Fig. 19. As shown in Fig. 20 and Fig. 21, the first center shaft 45 is arranged at an edge corner of the case body 2. The small diameter spur gear 43 pivots about the first center shaft 45, while meshing with the teeth of the large diameter spur gear 42. That is, the small diameter spur gear 43 is not fixed to the case body 2, and a second center shaft 46 of the small diameter spur gear 43 is configured to move (pivot about the first center shaft 45) in an orbit in the circumference of the first center shaft 45.

[0102] The link mechanism 44 includes an operated member capable of detachably meshing with the teeth of the small diameter spur gear 43 in the front-rear direction Y and an operating member configured to operate the operated member. The operated member includes a pair of operated pieces 48 arranged to be opposed to the opposite side of the small diameter spur gear 43. On the distal end side (large diameter spur gear side) of each of the operated pieces 48, rotation stopper teeth 49 configured to mesh with the teeth of the small diameter spur gear 43 are formed. The operated piece 48 is swingably attached to a swing center shaft 50 arranged in an intermediate portion between the distal end and the proximal end. The distal end of the operated piece 48 is formed to be arcuate corresponding to the curvature of the large diameter spur gear 42.

[0103] Swing operated shafts 51 are attached to the respective proximal ends of the operated pieces 48. The link mechanism 44 further includes swing operating pieces 52. The distal ends of the swing operating pieces 52 are pivotally attached respectively to the swing operated shafts 51, and the proximal ends of the swing operating pieces 52 are pivotally attached to a swing operating shaft 53 provided in common with the swing operating pieces 52. The swing operating rod 78 is coupled to the swing operating shaft 53. The swing operating rod 78 is biased by a spring (not shown) toward the spur gear mechanism side. In this embodiment, the holding and releasing mechanism 16 configured as above is arranged on each of both sides in the thickness direction Z of the case body 2.

[0104] As shown in Fig. 19 to Fig. 21, covers 54 that correspond to the supporting parts 4 are provided. As shown in Fig. 19, the covers 54 are integrally coupled to each other via the carrying grip 3. Each of the covers 54 is provided on an inner surface with a support plate 55. The first center shaft 45 has a first end passing through the case body 2 so as to be supported, and a second end inserted through the support plate 55 so as to be supported. The first end of the first center shaft 45 is retained to the case body 2 by a snap ring 56. The first center shaft 45, the second center shaft 46, and the swing center shaft 50 pass through the cover 54 so as to be supported. The second center shaft 46 and the swing center shaft 50 are supported by the cover 54 so as not to be movable.

[0105] A part of the large diameter spur gear 42, the small diameter spur gear 43, the swing center shaft 50, the link mechanism 44, and a rod member 41 are covered by the cover 54. The swing operated shafts 51 are provided within the cover 54 so as to be movable close to and away from each other. The swing operating shaft 53 is movably provided in the longitudinal direction of the rod member 41. The operating part 77, the swing rods 35, the end pins 35a, and the intermediate pins 35b, which have been described with reference to Fig. 10 and Fig. 11, are provided inside the carrying grip 3.

[0106] In the aforementioned configuration, as shown in Fig. 18A, when the swing operating rod 78 is pressed toward the link mechanism 44 side due to the elastic force of the spring, which is not shown in the figure, the swing operating shaft 53 is pressed toward the large diameter spur gear 42 side, so that the swing operating pieces 52 move away from each other. This allows the front ends of the operated pieces 48 to swing about the swing center shaft 50 so as to come close to each other, and such position is maintained. That is, the rotation stopper teeth 49 mesh with the teeth of the small diameter spur gear 43, and the anti-rotation of the small diameter spur gear 43 is held. In other words, the user H cannot pivot the swing operating rods 78 (the supporting parts 4 provided with the carrying grip 3 at their distal ends), and the supporting parts 4 and the carrying grip 3 are held in the storage position I in which they are laid along the upper wall surface of the frame wall 9 of the case body 2, for example, as shown in Fig. 20.

[0107] In order to switch the position of the supporting parts 4 and the carrying grip 3 from the storage position I to the use position U in which they are raised about the proximal ends of the supporting parts 4, the user H presses the operating part 77. Then, the swing operating rods 78 are pulled, which causes the swing operating shafts 53 to be pulled toward the swing operating rods 78 side, so that the swing operated shafts 51 coupled to each of the swing operating shafts 53 via the swing operating pieces 52 come close to each other, and the distal ends of the operated pieces 48 move away from the small diameter spur gear 43. Thus, the meshing of the rotation stopper teeth 49 with the teeth of the small diameter spur gear 43 is released. When the meshing of the rotation stopper teeth 49 with the teeth of the small diameter spur gear 43 is released, the small diameter spur gear 43 is released from the state in which the rotation is stopped, so as to be movable in the circumference of the first center shaft 45 while meshing with the teeth of the large diameter spur gear 42. In this way, the user H adjusts the carrying grip 3 to a height or an angle suitable for the body shape of the user H by pivoting the supporting parts 4 about first center shafts 45 (see Fig. 20).

[0108] Thereafter, when the user H releases the pressing of the operating part 77, the swing operating rods 78 are pressed toward the large diameter spur gear 42 sides due to the elasticity of springs, and the swing operated shafts 51 move away from each other, so that the rotation stopper teeth 49 mesh with the teeth of the small diameter spur gear 43. Thus, the use position U is held.

[0109] It should be noted that, by making a difference in diameter between the large diameter spur gear 42 and the small diameter spur gear 43, that is, by arbitrarily setting the numbers of the teeth, the user H can change the inclined angle of the supporting parts 4 in the use position U in small steps or large steps. Further, the means for changing the inclined angle of the supporting parts 4 is not limited to the aforementioned embodiment. For example, a structure called rotary cylinder may be used for it.

REFERENCE SIGNS LIST

[0110]

1:	Carrying Case
2:	Case Body
3:	Carrying Grip
4:	Supporting Parts
7:	First Sidewall
8:	Second Sidewall
9:	Frame Wall
11:	Handle
13:	Pivoting Part
14:	Pivoting Disk
15:	Shaft Center
16:	Holding And Releasing Mechanism
19:	Operating Rod
20:	Operating Part
22:	Advancing And Retracting Member
23:	Advancing And Retracting Mechanism
25:	Shaft Part
30:	Pressing Member
33:	Outer Housing
35:	Swing Rod
38:	Operated Part
39:	Guide Rod
41:	Rod Member
42:	Large Diameter Spur Gear
43:	Small Diameter Spur Gear
44:	Link Mechanism
45:	First Center Shaft
46:	Second Center Shaft
48:	Operated Piece
49:	Rotation Stopper Teeth
50:	Swing Center Shaft
51:	Swing Operated Shaft
52:	Swing Operating Piece
53:	Swing Operating Shaft
54:	Cover
55:	Support Plate
57:	Holding Mechanism
58:	Releasing Mechanism
59:	Shaft
60:	Operated Member
63:	Fixing Member
64:	Cam Member
65:	Cam Piece
65a:	Smallest Diameter End
65b:	Largest Diameter End
66:	Cylindrical Member
67:	Brake Shoe
68:	Rolling Elements
70:	Gap
71:	Recess
72:	Guide Member
73:	Main Body

74: Guide Piece
76: Locking Piece
77: Operating Part
78: Swing Operating Rod
H: User
I: Storage Position
U: Use Position
X: Up-Down Direction
Y: Front-Rear Direction
Z: Thickness Direction

Claims

1. A carrying case comprising:

a rectangular parallelepiped case body;
a grip configured to be gripped when moving the case body;
a supporting part having a distal end provided with the grip; and
casters configured to roll in contact with a road when moving the case body, wherein
the case body has a rectangular plate-shaped first sidewall having specific lengths in an up-down direction and a front-rear direction, a rectangular plate-shaped second sidewall opposed to the first sidewall, and a plate frame-shaped frame wall extending in a thickness direction across edges of the first sidewall and the second sidewall, and
the supporting part has a proximal end arranged on an outer surface of one of the first sidewall and the second sidewall of the case body so as to be pivotable about a shaft extending along the thickness direction of the case body,
the carrying case further comprising:

a holding and releasing mechanism configured to hold and release the proximal end of the supporting part about the shaft; and
an operating part configured to operate the holding and releasing mechanism to hold and release the proximal end of the supporting part.

2. The carrying case according to claim 1, wherein the operating part is provided in the grip.

FIG. 1

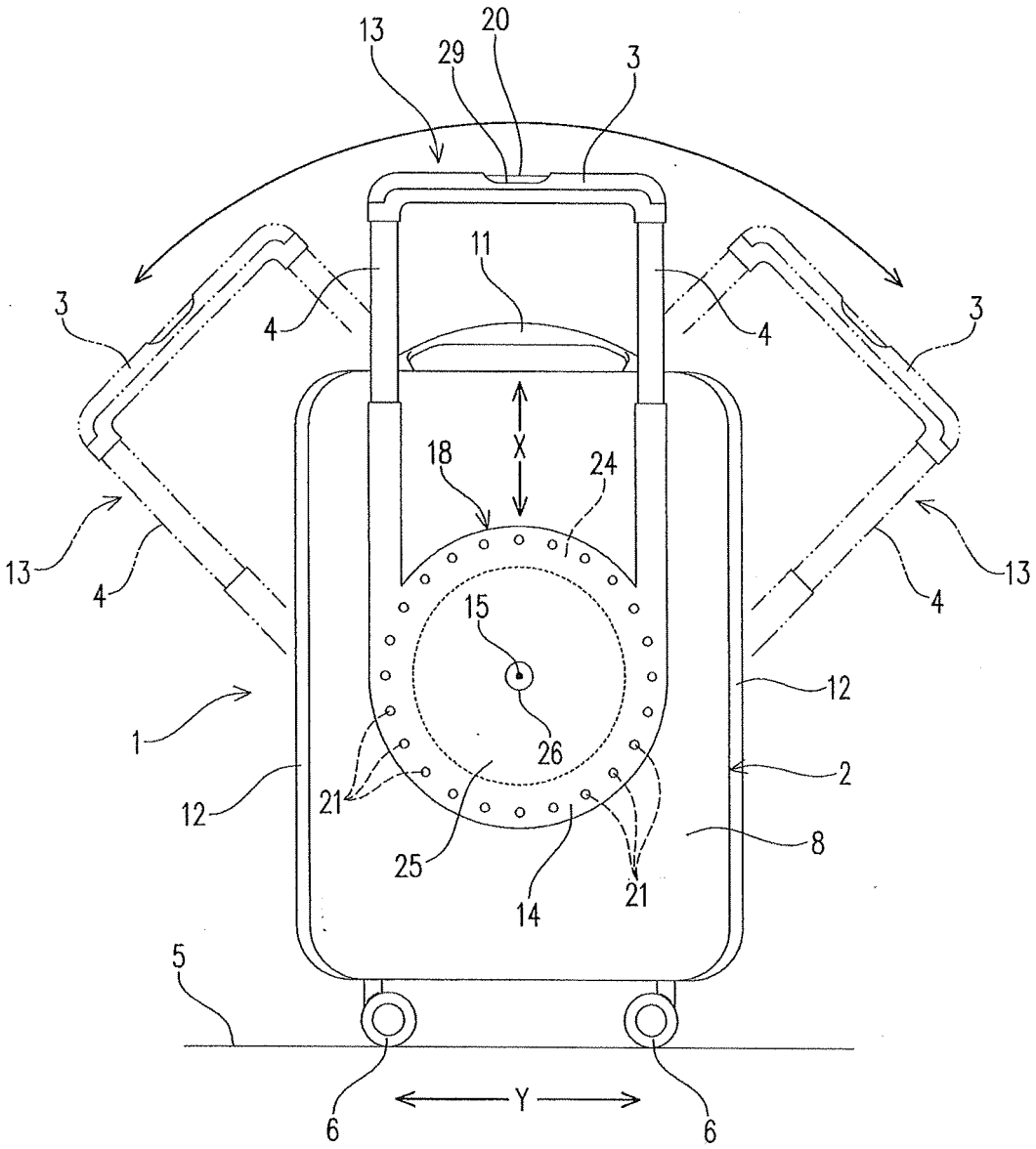


FIG. 2

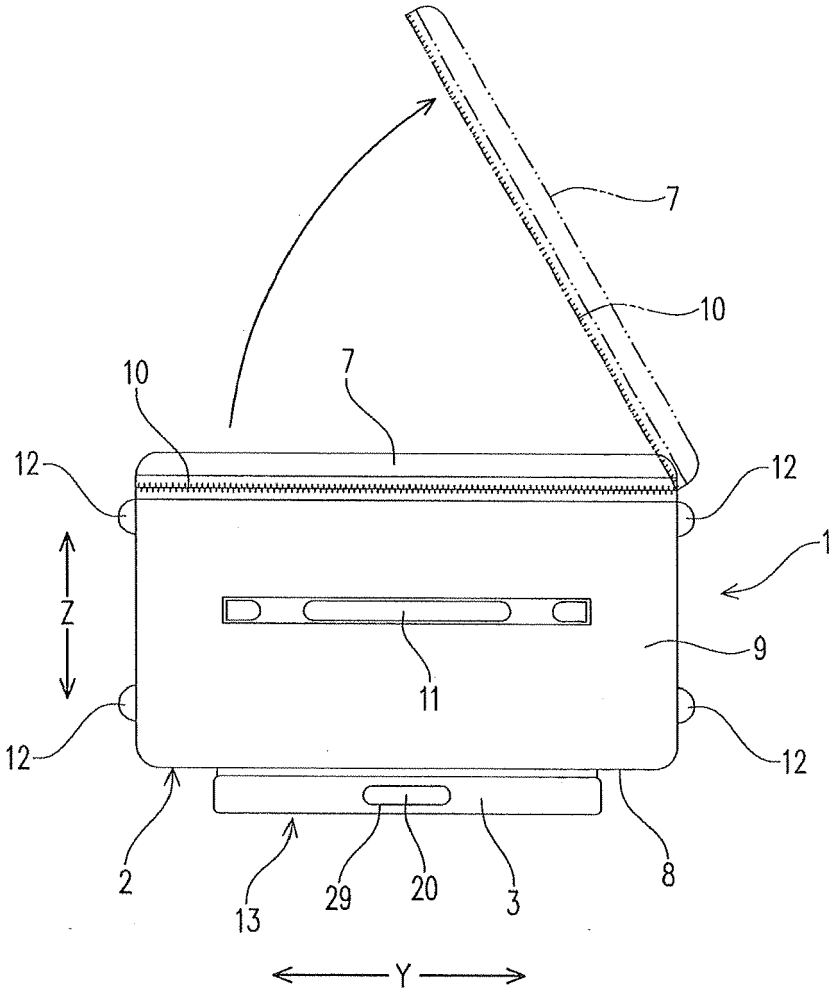


FIG. 3

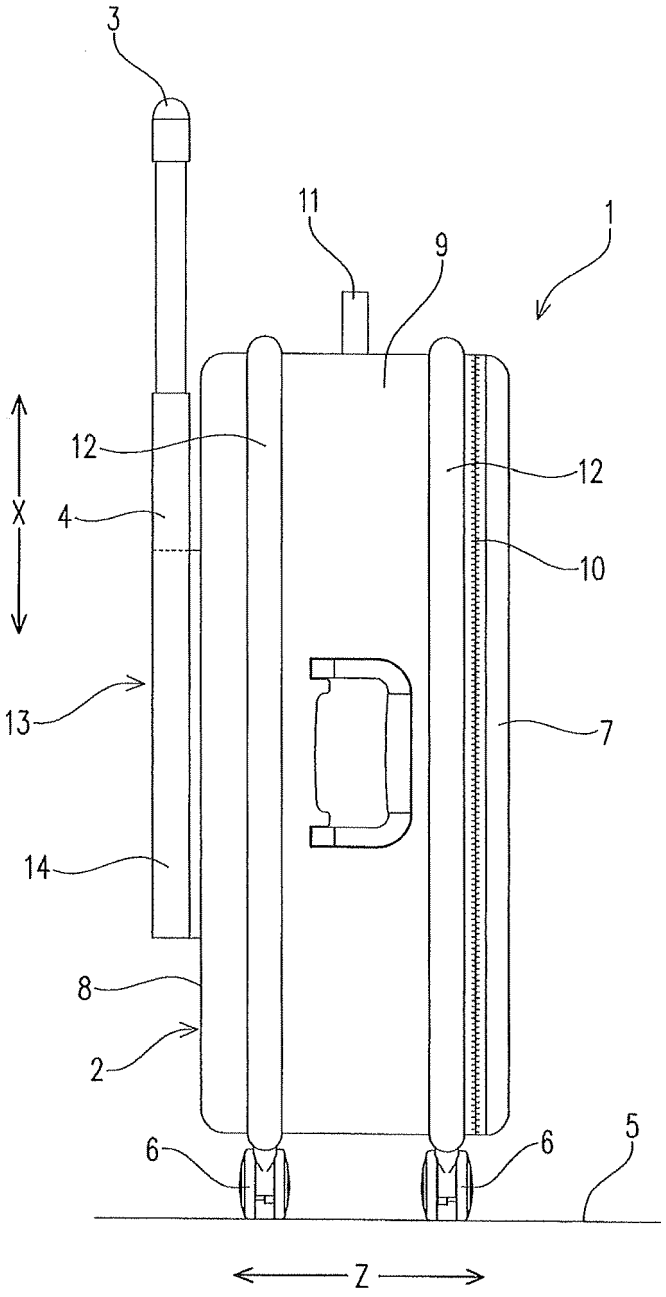
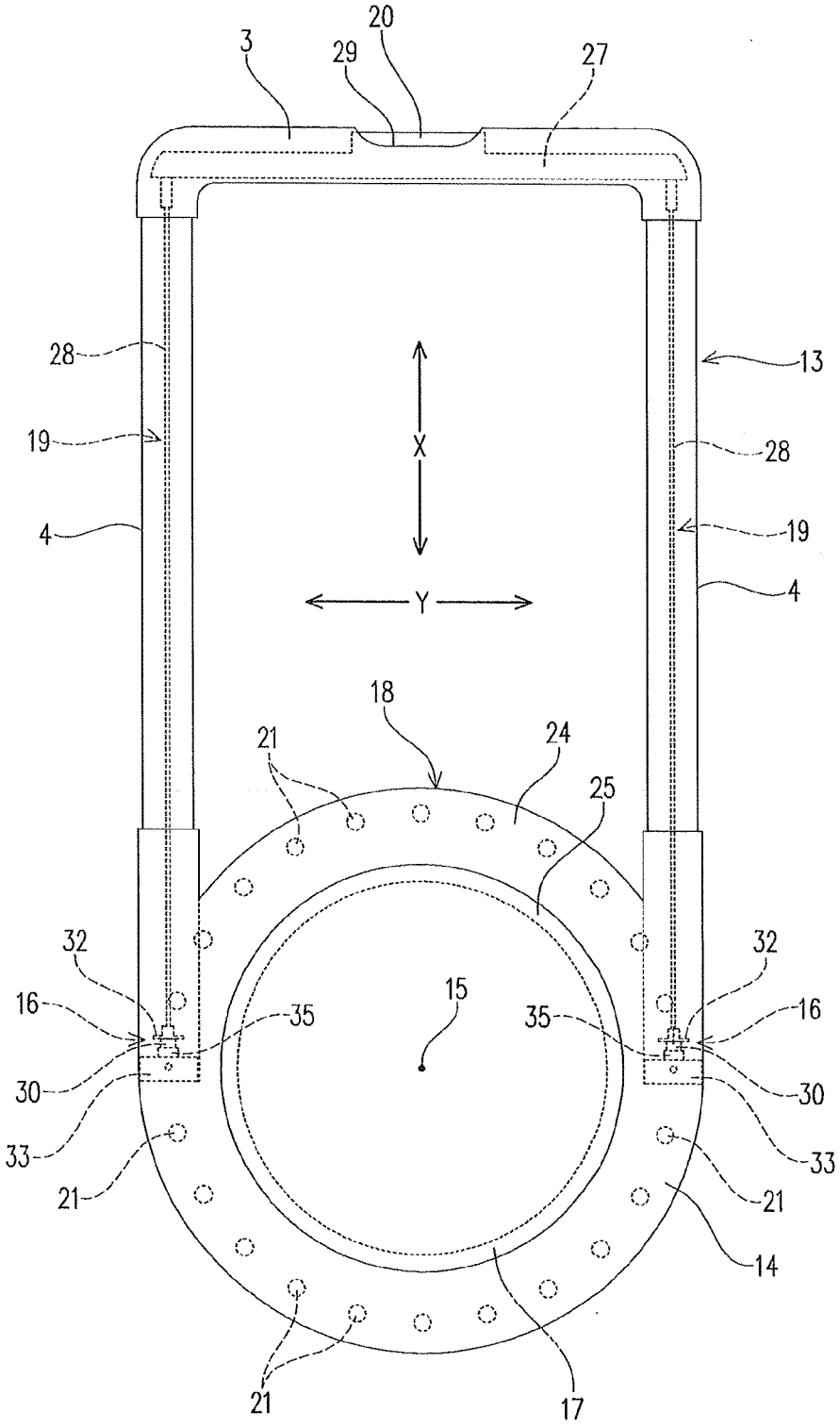


FIG. 4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20
29
27
28
13
19
X
28
19
4
Y
4
18
21
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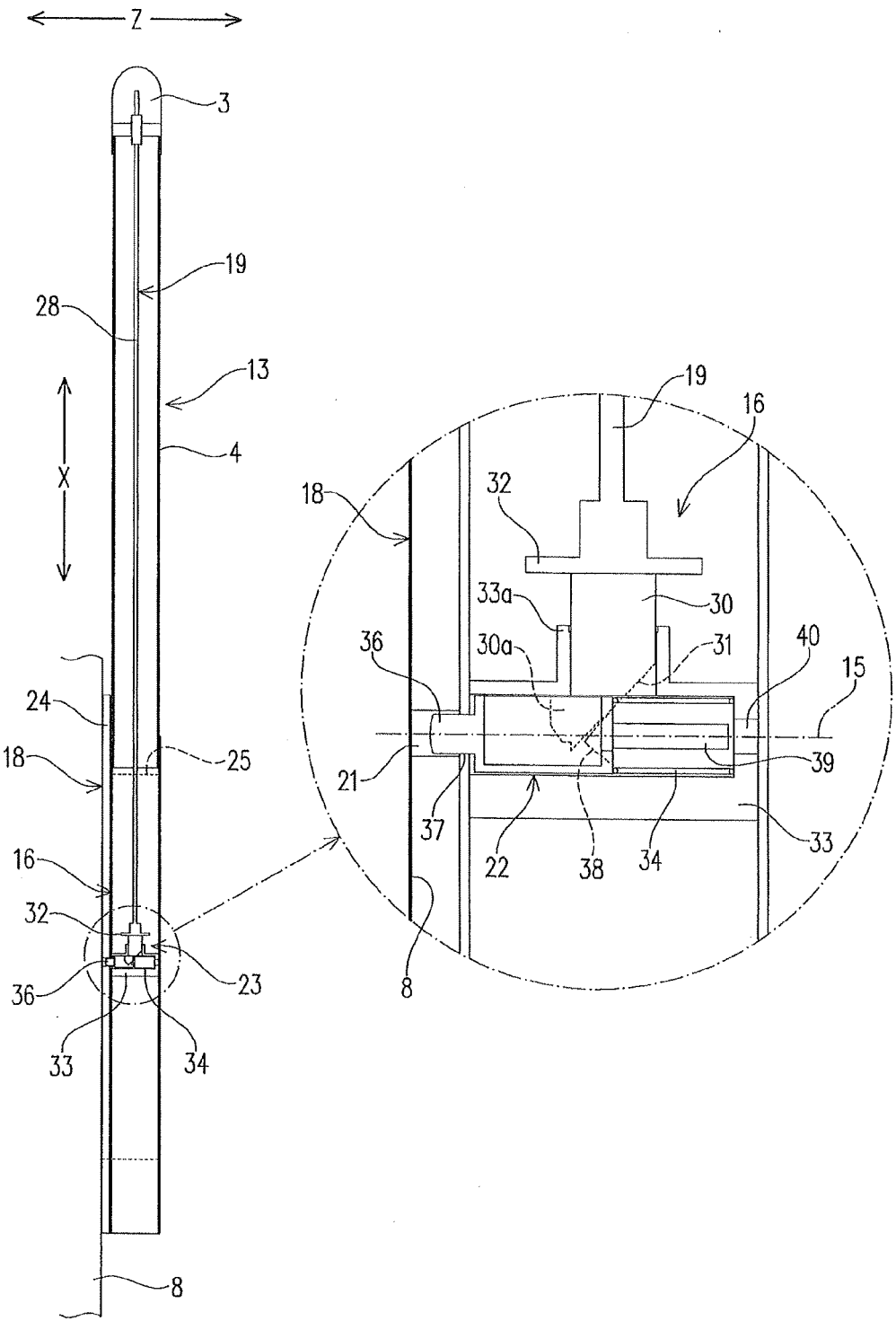
14
21
17

FIG. 5


Z
X
3
19
28
13
4
24
18
25
16
32
23
36
33
34
8
19
16
18
32
33a
30
36
30a
31
40
15
39
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33
8

FIG. 6

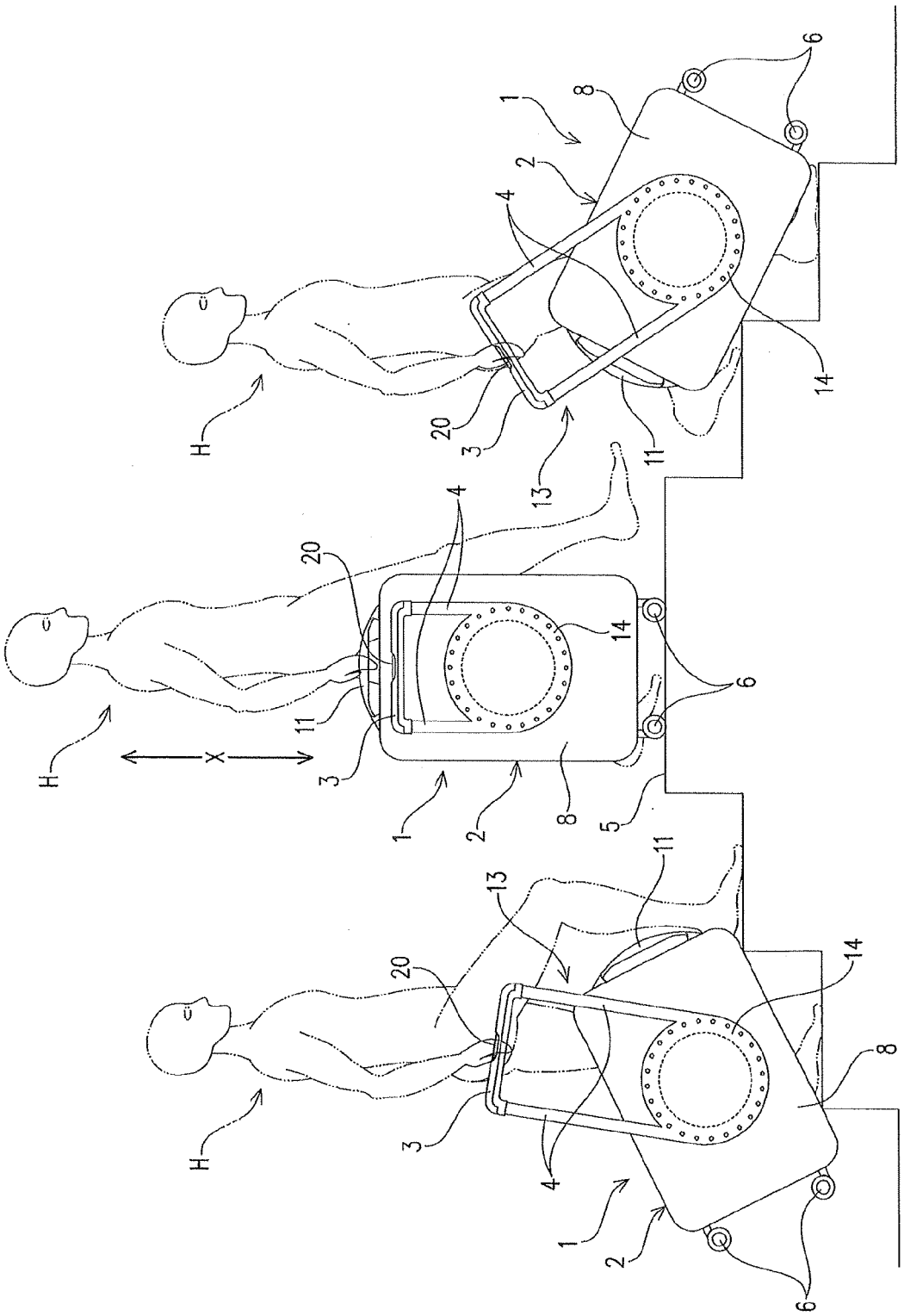


FIG.7C

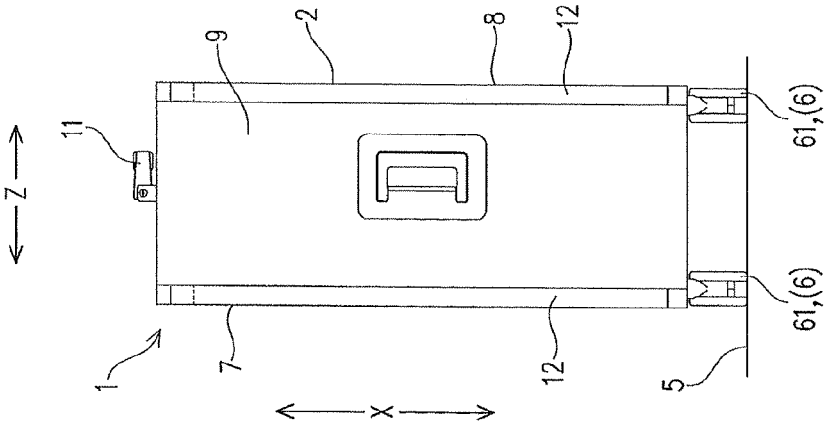


FIG.7B

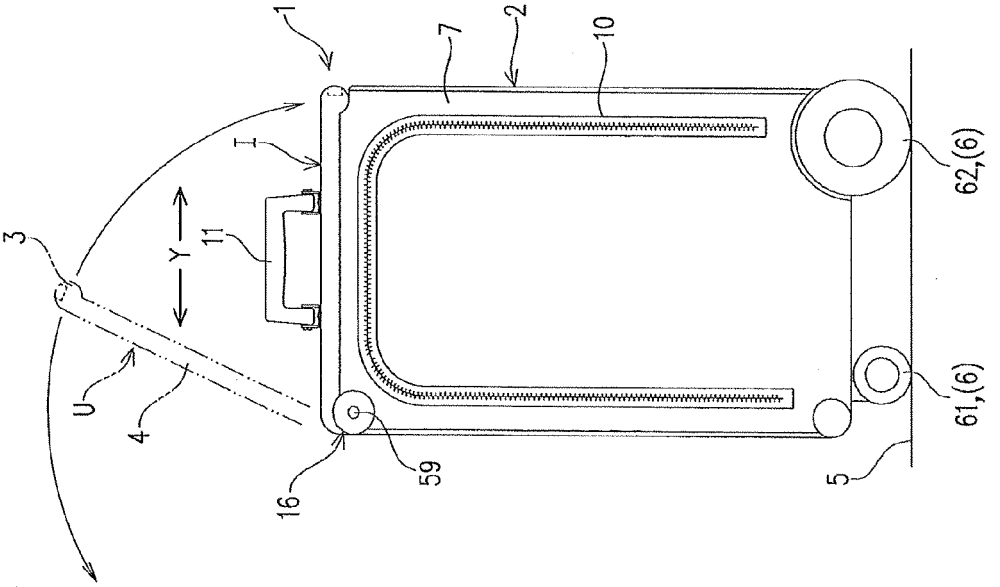


FIG.7A

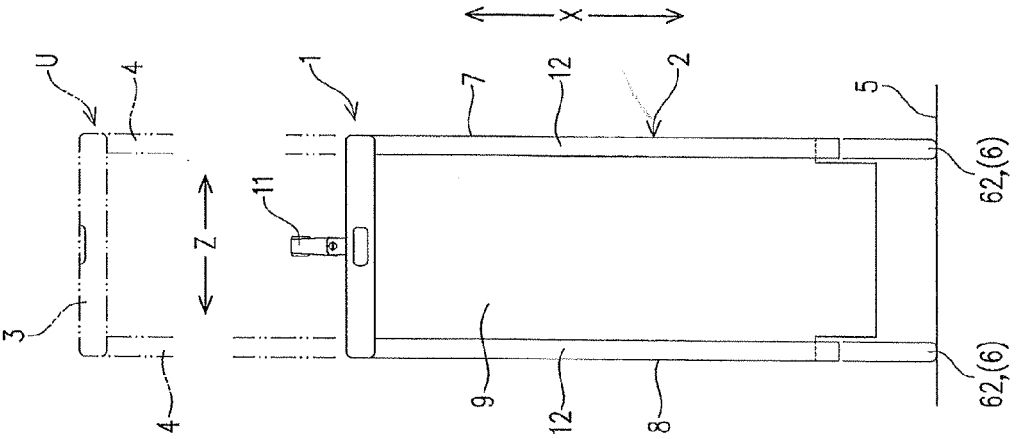


FIG.8B

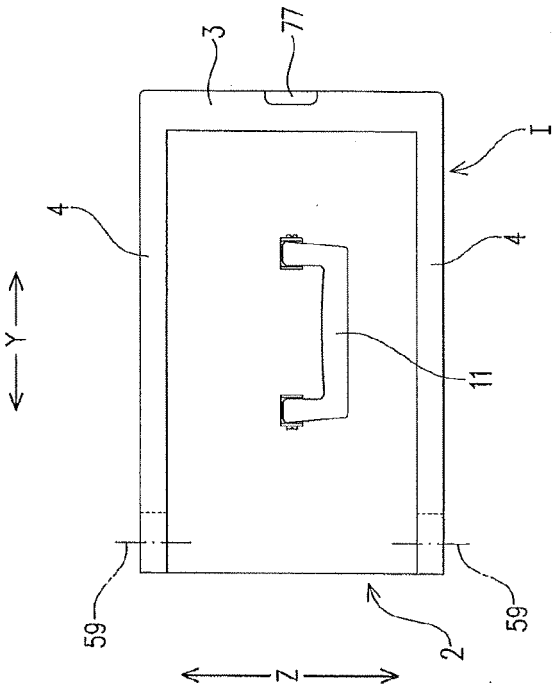


FIG.8A

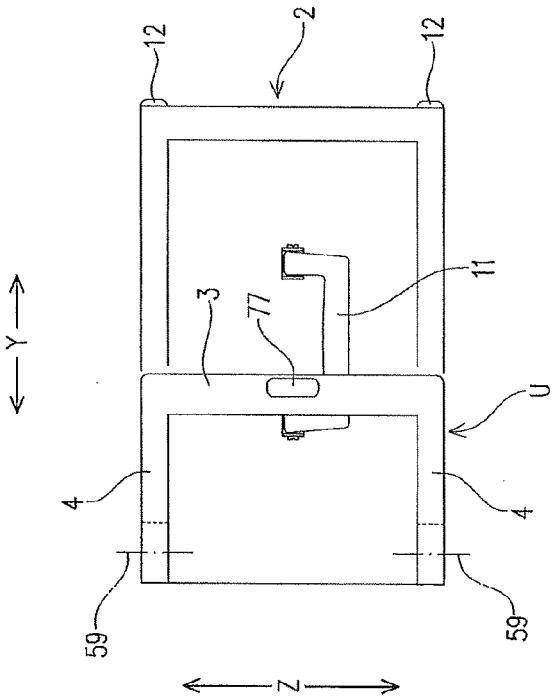


FIG. 9

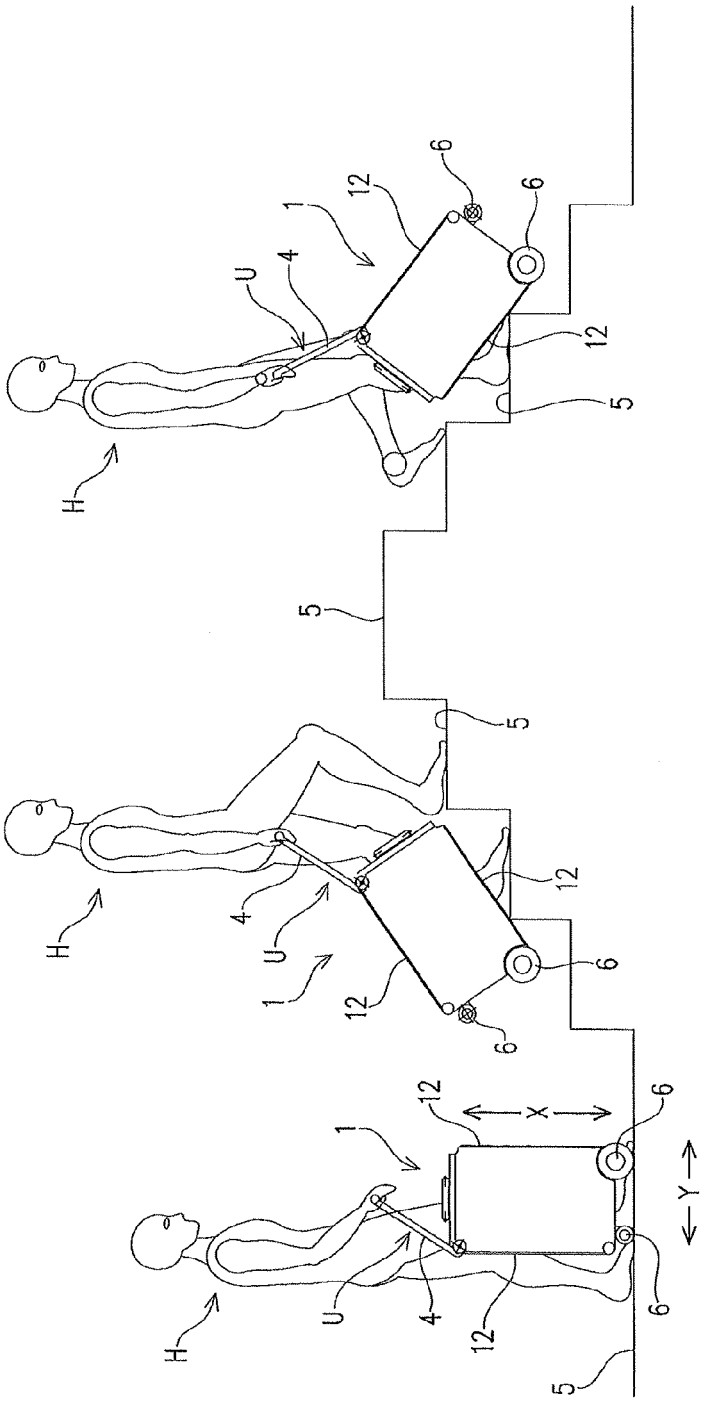
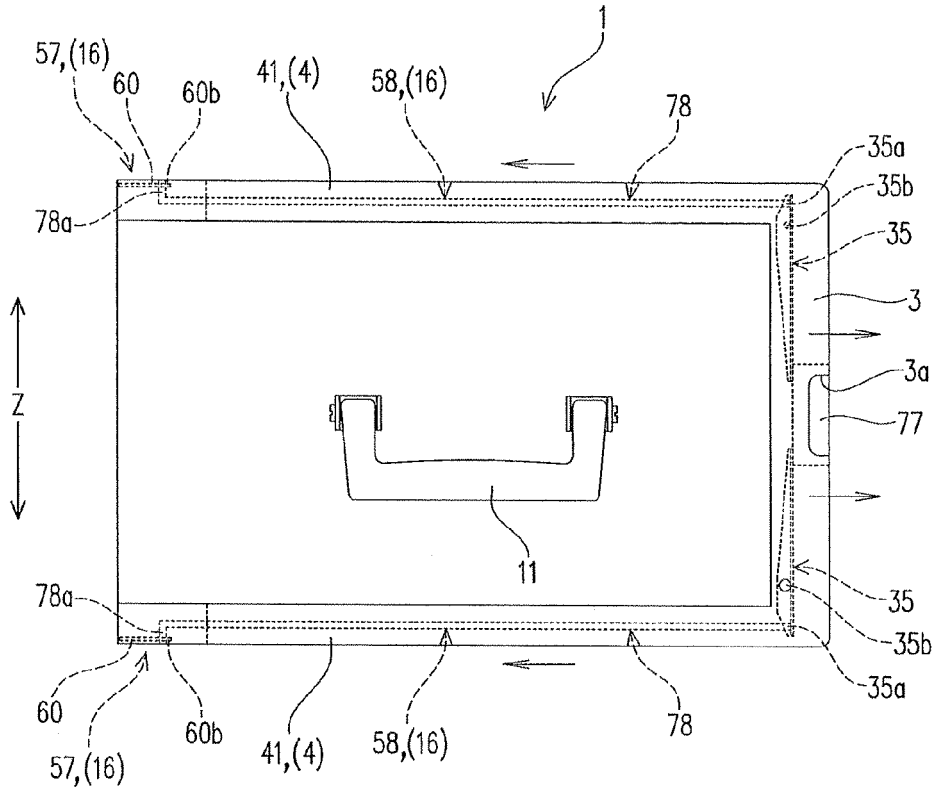


FIG.10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60b
41,(4)
58,(16)
78
35a
35b
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78a
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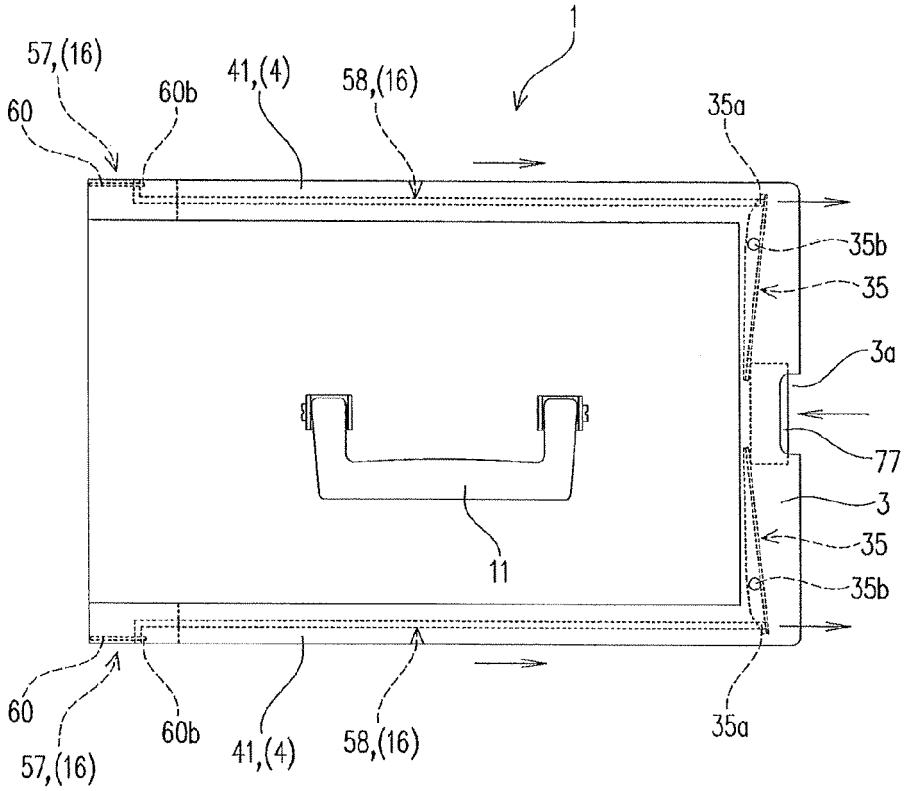
60b
41,(4)
58,(16)
78
35
35b
35a

FIG. 11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60
60b
41,(4)
58,(16)
35a
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11
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57,(16)
60b
41,(4)
58,(16)
35a

FIG.12

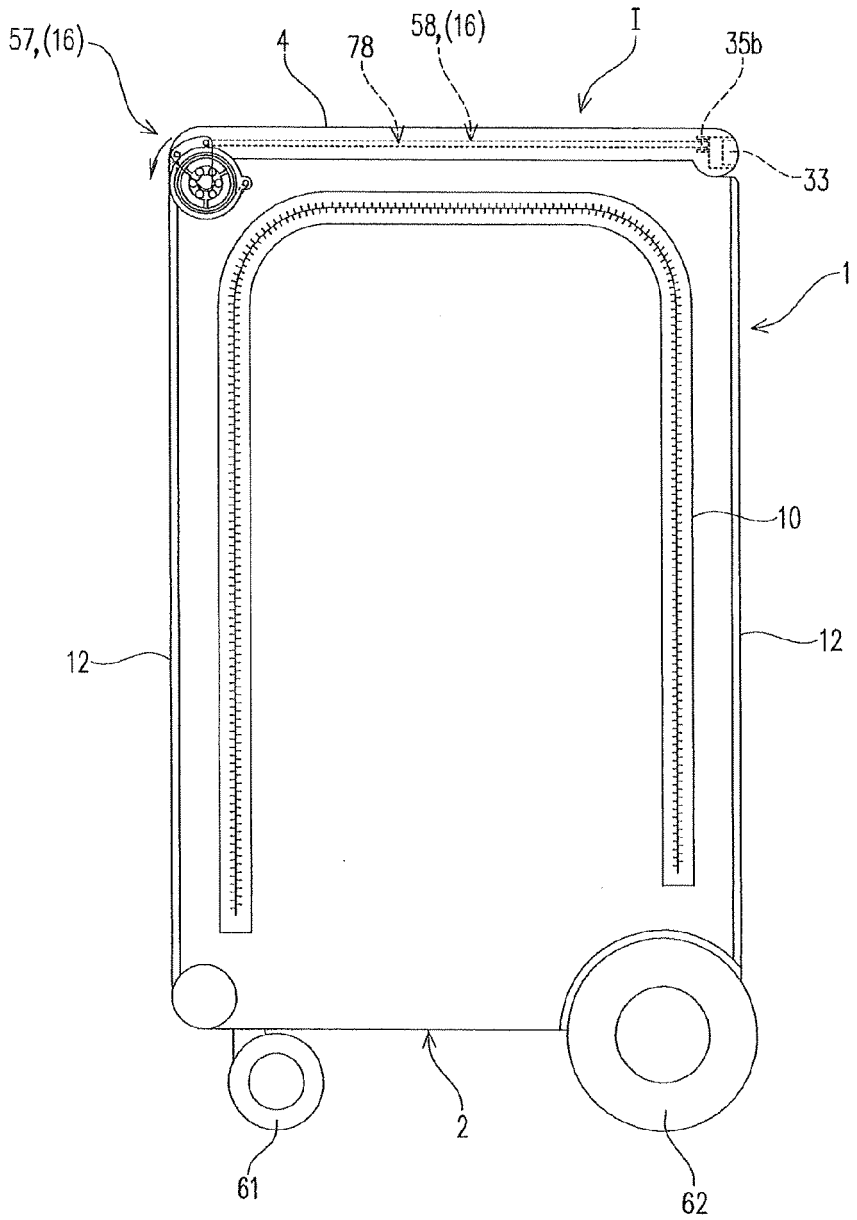


FIG.13

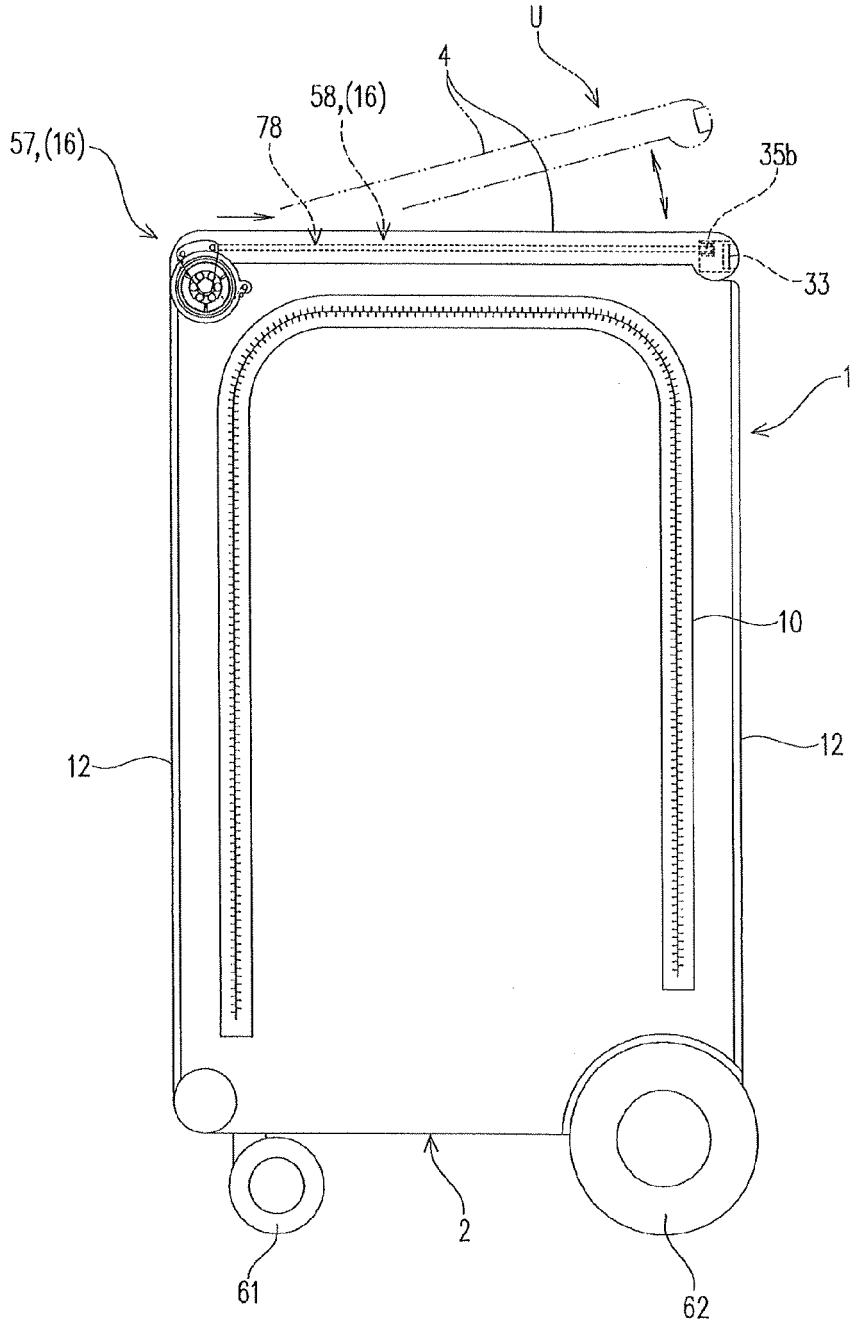


FIG.14B

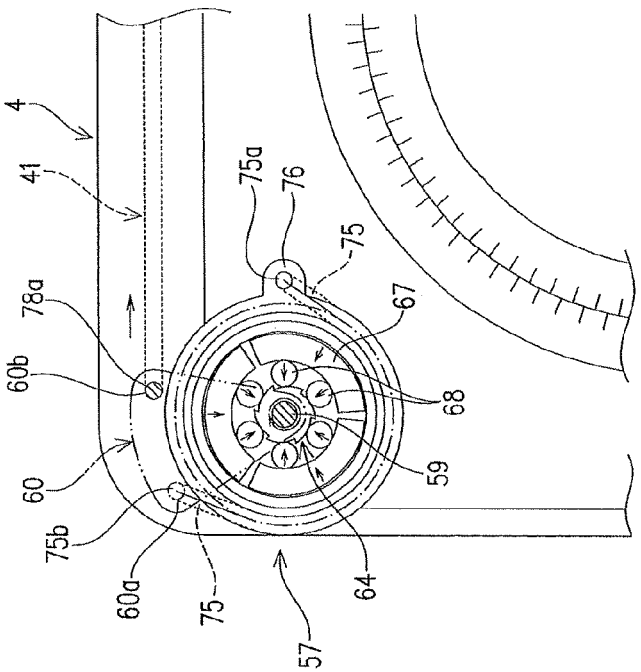


FIG.14A

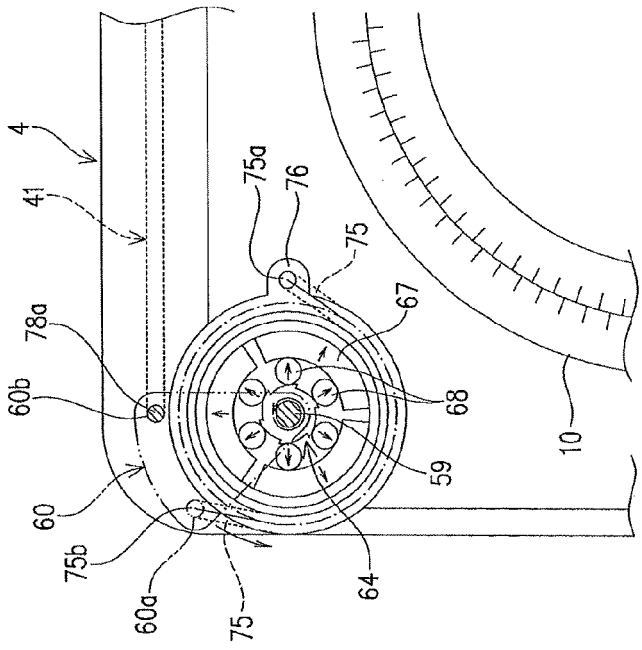
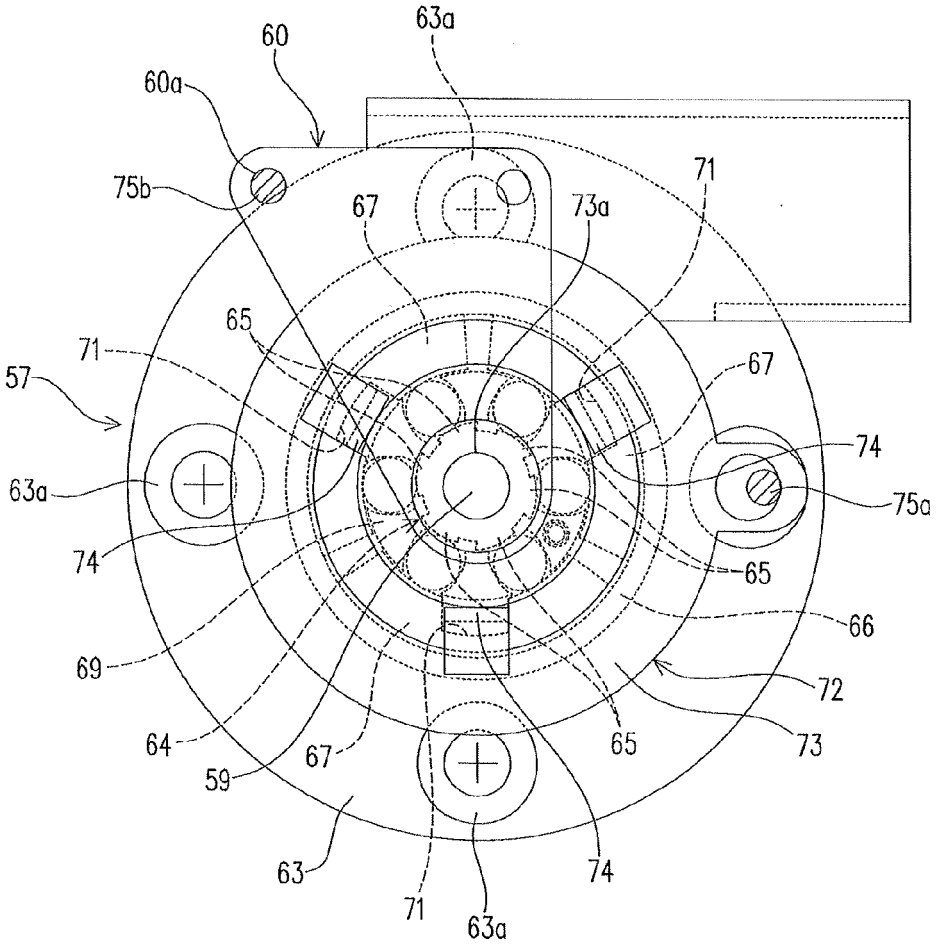


FIG.15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63a

FIG.16A

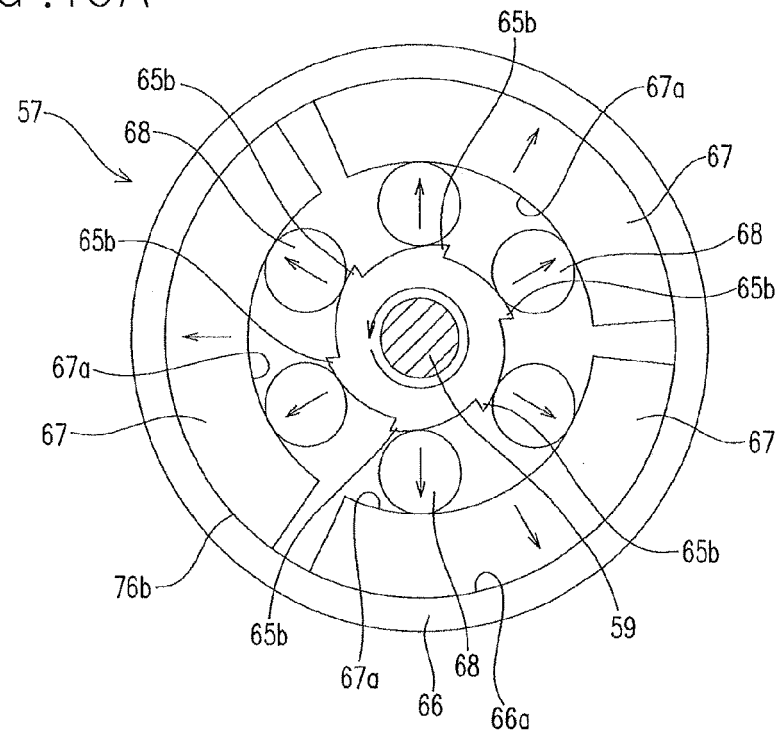

FIG.16B

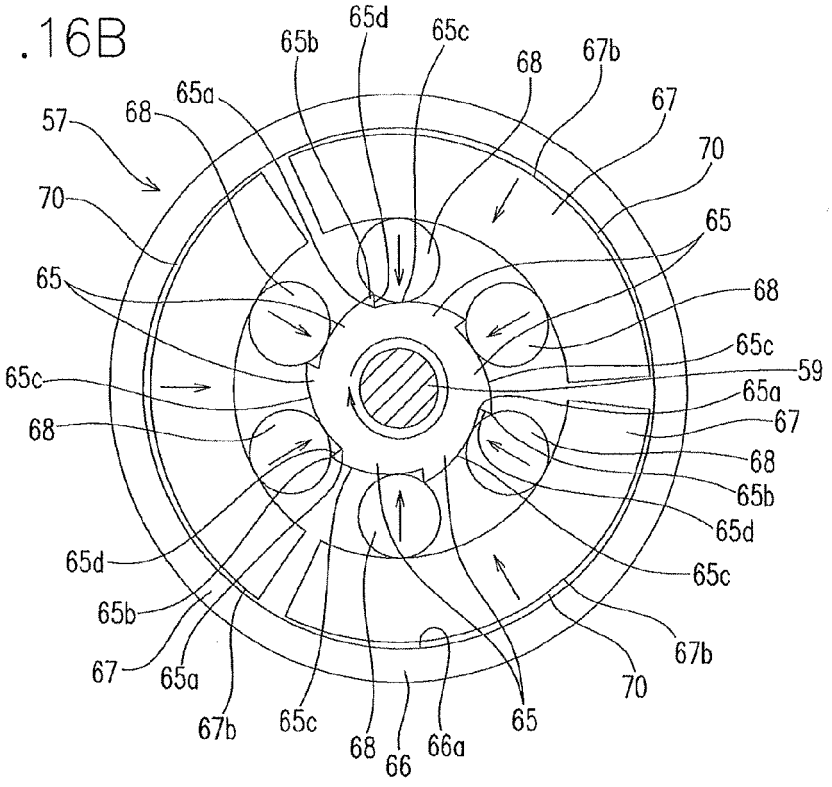

FIG.17

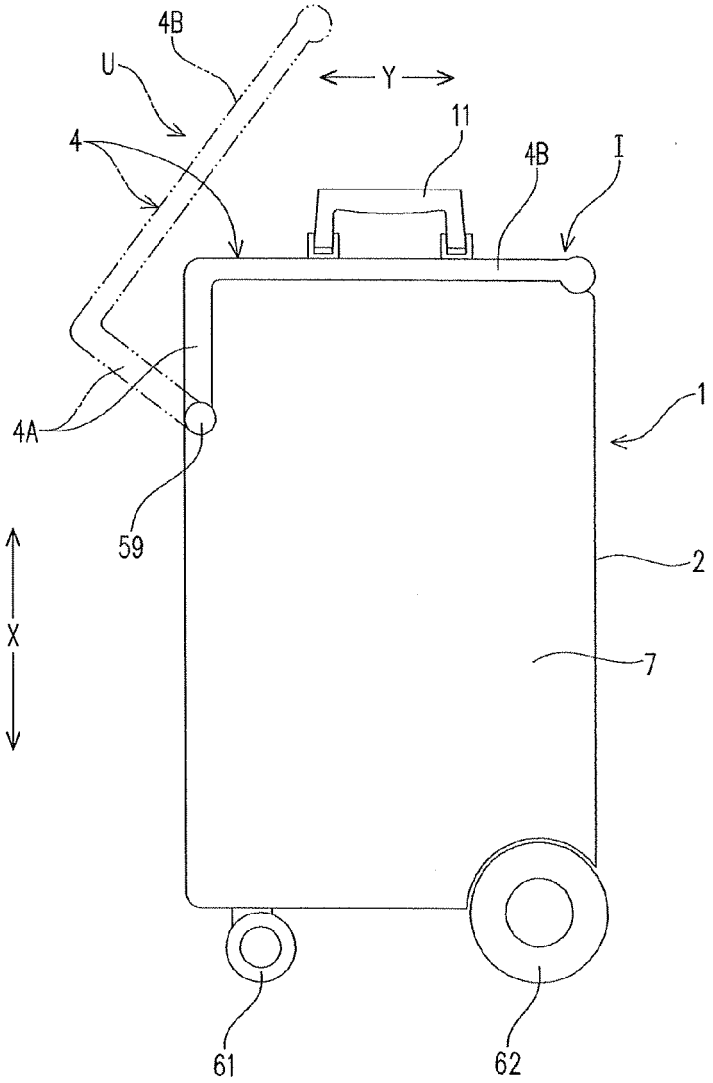

FIG.18A

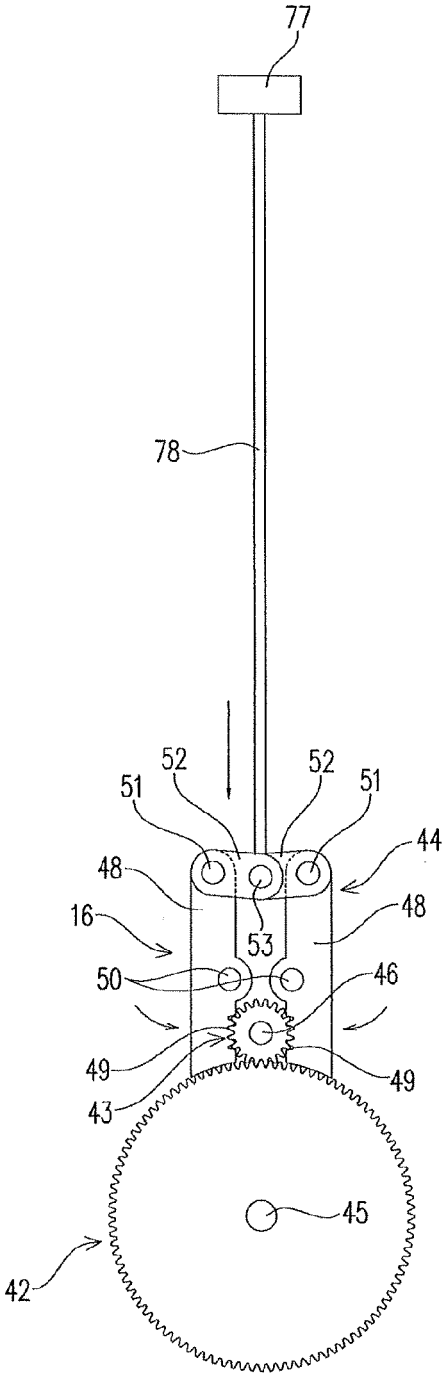

FIG.18B

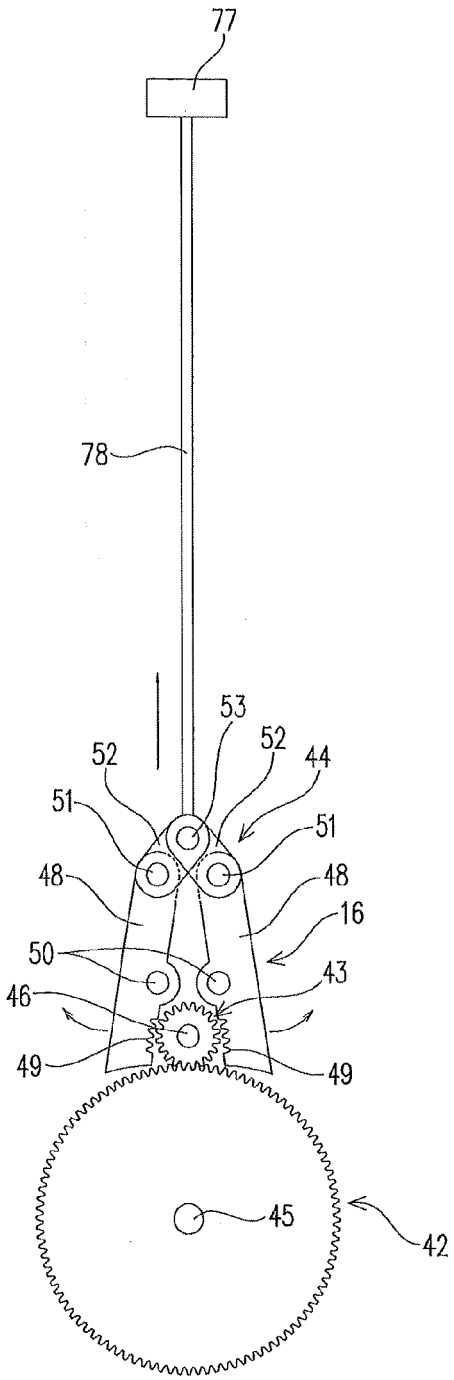

FIG.19

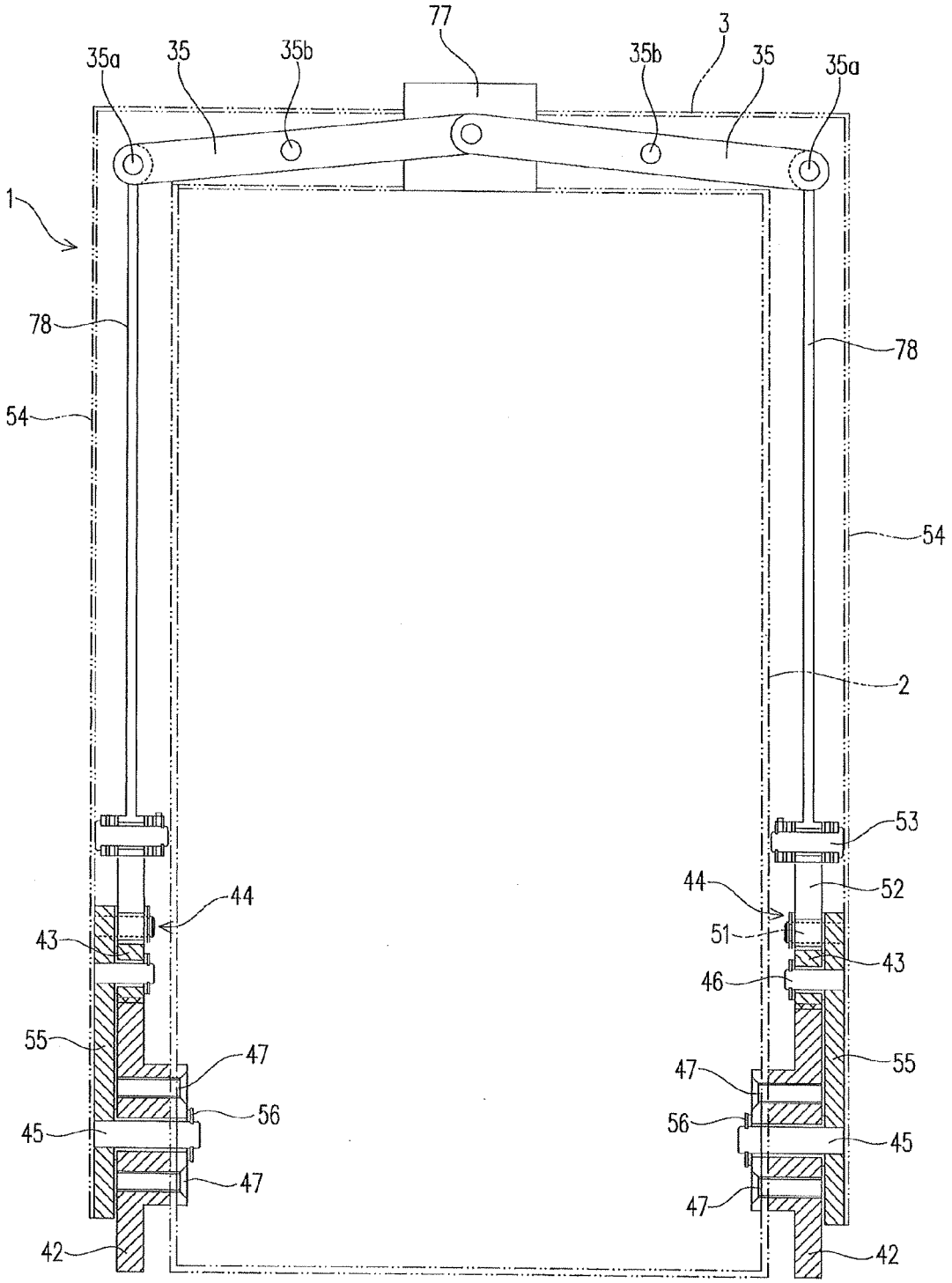
77
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FIG.20

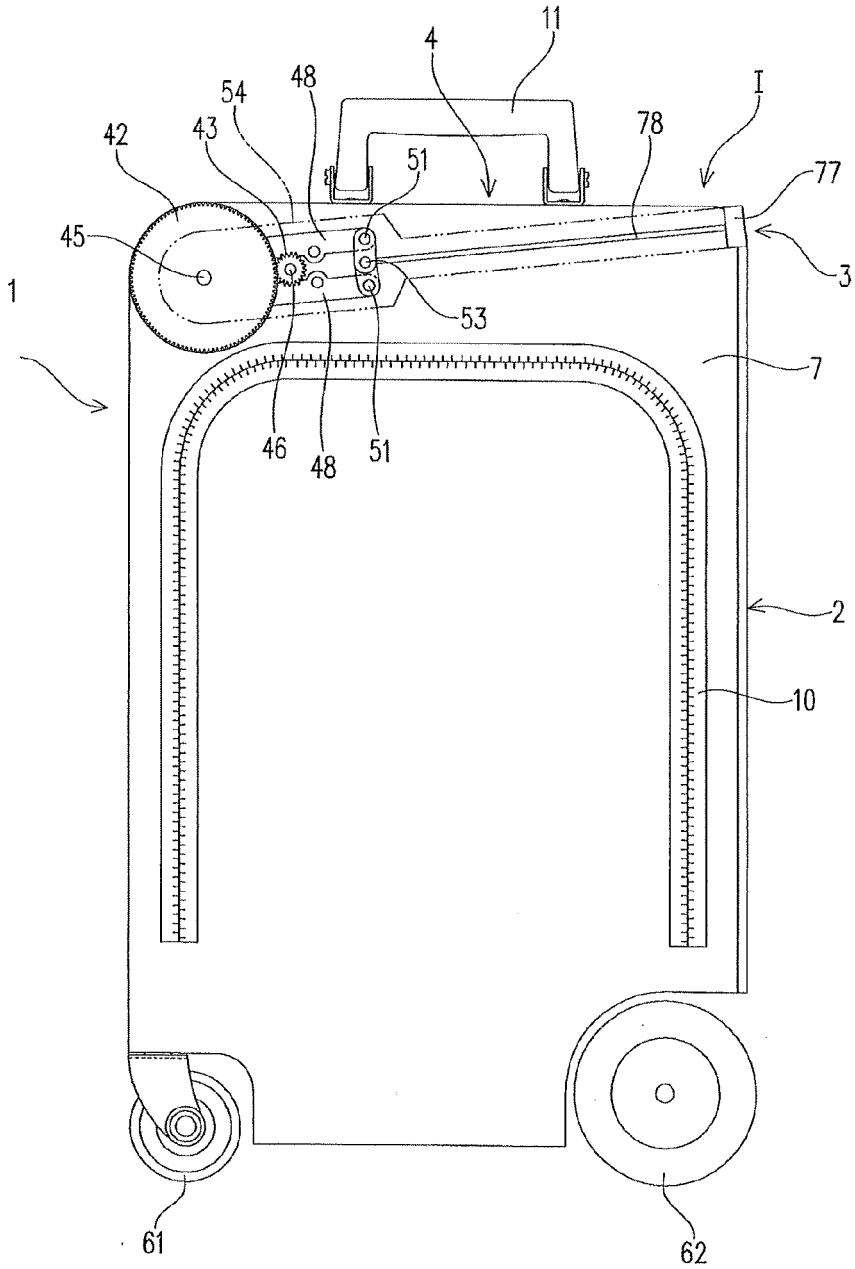
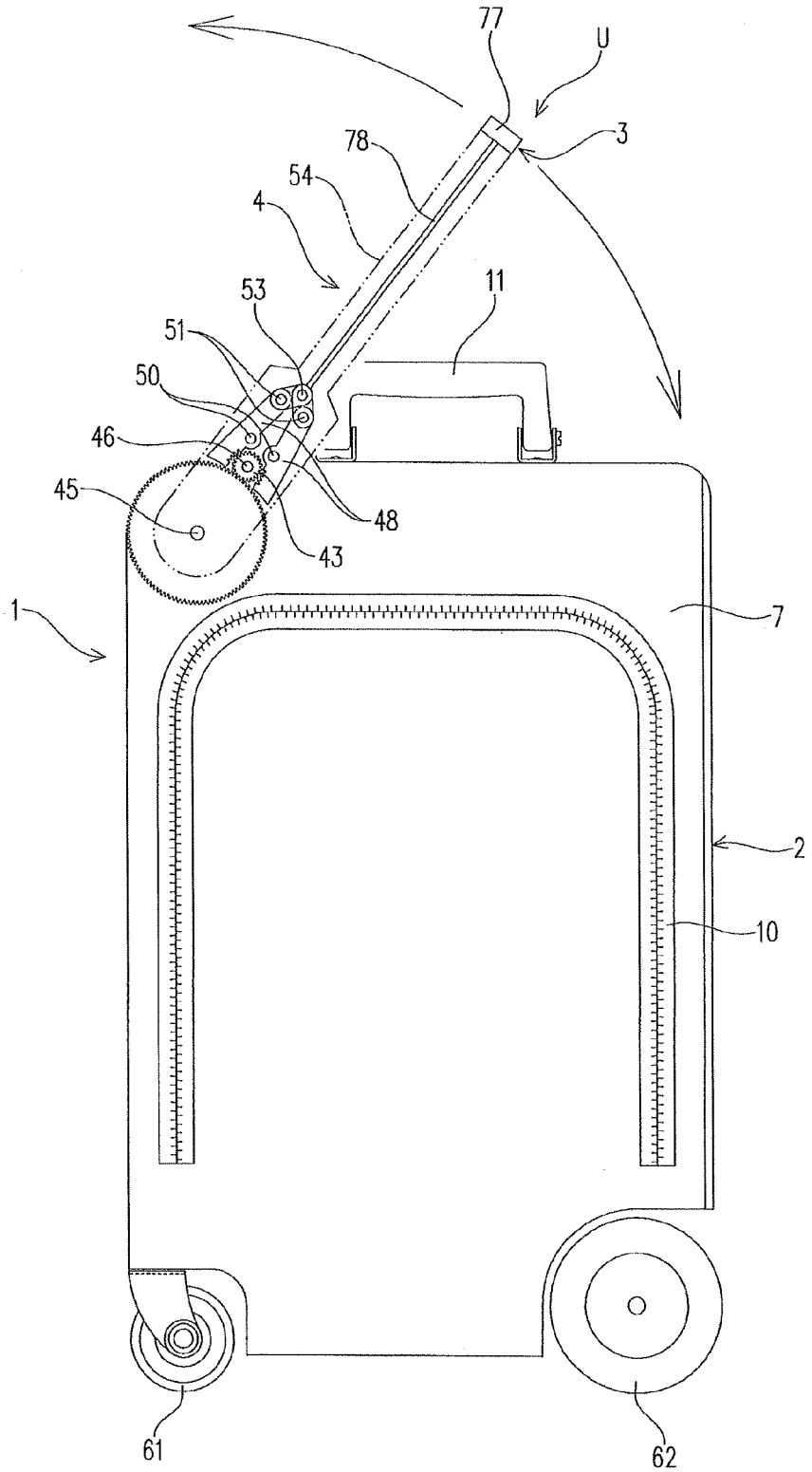


FIG. 21



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EUROPEAN SEARCH REPORT

Application Number
EP 14 19 8729

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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X A	US 6 230 656 B1 (WALACH CHRISTOPHER E [US]) 15 May 2001 (2001-05-15) * column 3, line 30 - column 4, line 52 * * figures 1-10 *	1 2	
X A	EP 2 292 493 A1 (HONDA MOTOR CO LTD [JP]) 9 March 2011 (2011-03-09) * paragraphs [0070] - [0107], [0112] - [0117] * * figures 1-18 *	1 2	
Y	JP 2005 053424 A (KOWA SEISAKUSHO KK) 3 March 2005 (2005-03-03) * abstract * * figures 1-3 *	2	TECHNICAL FIELDS SEARCHED (IPC)
X,P	WO 2014/162138 A1 (IT LUGGAGE LTD [GB]) 9 October 2014 (2014-10-09) * page 5, line 13 - page 8, line 13 * * figures 1,2 *	1,2	A45C B65B B62B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	11 May 2015	Witkowska-Piela, A

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11-05-2015

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