

DESCRIPTION

TITLE OF INVENTION

PORTABLE SLOPE

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FIELD OF INVENTION

[0001] The present invention relates to a portable slope and a landing apparatus included therein.

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BACKGROUND

[0002] A portable slope is often used to allow a wheelchair to pass over a step. When only a single flat slope is used, the slope needs to be bridged from below the front of the step onto the step. However, there is not always a sufficient space for installing the slope below the front of the step. To address such a situation, JP 2016-44430 A
15 discloses a landing apparatus capable of coupling two slopes, for example. The landing apparatus has two bases stacked one on the other, each fitted with a slope. The two bases can turn relative to each other, and the passage formed by the two slopes and the landing apparatus can be bent by adjusting the turning angle between the two bases. Accordingly, even when there is not a sufficient space below the front of the step, a
20 slope can be installed.

SUMMARY of INVENTION

[0004] Incidentally, when the landing apparatus as described above is used, it is necessary to change direction of a course of a wheelchair toward a slope side to be
25 advanced on the landing. To change direction of the course of a wheelchair, the wheelchair needs to be turned while being moved, and thus, the landing needs to have a large area to some extent. In such a case, the landing apparatus itself increases in size,

so that the landing apparatus may be difficult to be installed in a narrow place. Thus, the landing apparatus is not suitable for portability.

[0005] It is an object of the present invention to provide a small landing apparatus and a portable slope including the same.

5 [0006] A portable slope according to a first aspect includes a landing apparatus including a top plate having a top face, and a leg supporting the top plate from below, a first slope, and a second slope. The top plate includes a main body having an upper face forming a part of the top face, a first side, and a second side forming an angle with the first side in plan view, and a turntable having an upper face forming a part of the top
10 face, being disposed surrounded by the main body in plan view and rotatable in a plane parallel to the top face with respect to the main body. The first slope is bridged between the first side and a first position. The second slope is bridged between the second side and a second position higher than the first position.

[0007] A portable slope according to a second aspect is the portable slope according to
15 the first aspect, wherein one end of the first slope is detachably coupled to a portion near the first side of the main body. One end of the second slope is detachably coupled to a portion near the second side of the main body.

[0008] A portable slope according to a third aspect is the portable slope according to the first aspect or the second aspect, wherein the upper face of the main body and the upper
20 face of the turntable are substantially flush with each other.

[0009] A portable slope according to a fourth aspect is the portable slope according to any one of the first to third aspects, wherein at least one of the turntable and the main body is formed with a protrusion protruding upward along an outer peripheral edge of the turntable.

25 [0010] A portable slope according to a fifth aspect is the portable slope according to any one of the first to forth aspects, wherein the first side and the second side are substantially orthogonal to each other.

[0011] A portable slope according to a sixth aspect is the portable slope according to any one of the first to fifth aspects, wherein the landing apparatus further includes a lock mechanism that switches between a locked state to stop turning of the turntable with respect to the main body and an unlocked state to allow turning of the turntable with respect to the main body.

[0012] A portable slope according to a seventh aspect is the portable slope according to the sixth aspect, wherein the lock mechanism includes an operation part, a lever member that is coupled to the operation part, and that turns from a position corresponding to the locked state to a position corresponding to the unlocked state when an external force is applied to the operation part, and a biasing member that biases the lever member to the position corresponding to the locked state.

[0013] A portable slope according to an eighth aspect is the portable slope according to the seventh aspect, wherein the lever member has a locking part. The turntable is formed with a plurality of locked parts that can be hooked on the locking part. The plurality of locked parts is disposed around a turning shaft of the turntable at an interval of the angle formed between the first side and the second side.

[0014] A landing apparatus according to a ninth aspect of the present invention is used together with a first slope and a second slope, and includes a top plate having a top face and a leg for supporting the top plate from below. The top plate includes a main body having an upper face forming a part of the top face, a first side, and a second side forming an angle with the first side in plan view, and a turntable having an upper face forming a part of the top face, being disposed surrounded by the main body in plan view and rotatable in a plane parallel to the top face with respect to the main body. The main body is formed with a portion near the first side, the portion being capable of coupling to one end of the first slope. The main body is formed with a portion near the second side, the portion being capable of coupling to one end of the second slope.

[0015] According to the present invention, the first slope and the second slope are each

bridged in a different direction from the top plate serving as the landing included in the landing apparatus. The top plate is disposed with a turntable. Accordingly, a course of a wheelchair can be changed on the landing using the turntable. This method for changing direction does not require a landing with a large area. Thus, a small landing apparatus and a portable slope including the same are provided.

BRIEF DESCRIPTION OF DRAWINGS

[0016] FIG. 1 is a plan view of a portable slope according to an embodiment of the present invention;

10 FIG. 2 is a front view of the portable slope of FIG. 1;

FIG. 3 is a perspective view of a landing apparatus viewed from above;

FIG. 4 is a perspective view of a landing apparatus viewed from below;

FIG. 5 is a perspective view of main components of a lock mechanism;

15 FIG. 6A is a lateral cross-sectional view around a lock mechanism in a locked state;

FIG. 6B is a lateral cross-sectional view around the lock mechanism in an unlocked state; and

FIG. 7 is a lateral cross-sectional view around a coupled portion between a first slope and a top plate.

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DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0017] Hereinafter, a portable slope according to an embodiment of the present invention and a landing apparatus included therein will be described with reference to the drawings.

25 [0018] 1. General structure of portable slope

FIG. 1 illustrates a plan view of a portable slope 1 according to the present embodiment, and FIG. 2 illustrates a front view thereof. FIGS. 1 and 2 each illustrate

a state where the portable slope 1 is installed below the front of a step 5. While not limited to this, the step 5 is a staircase having one step, or two or more steps, for example. As illustrated in these drawings, the portable slope 1 forms a passage connecting between a first position P1 at a certain height and a second position P2 vertically higher than the first position P1. While being gently sloped, the passage is not limited to this, and is typically used to allow a wheelchair to pass over the step 5. The first position P1 is set at a side of a position immediately after getting off the step 5, and the second position P2 is a position immediately after climbing the step 5.

[0019] The portable slope 1 includes a first slope 10, a second slope 20, and a landing apparatus 30 used with these slopes 10 and 20. The landing apparatus 30 includes a top plate 31, and the top plate 31 has a top face 31a serving as a landing (hereinafter, the landing also may be denoted by a reference sign 31a). The first slope 10 is bridged between a first side L1 of the landing 31a and the first position P1, and the second slope 20 is bridged between a second side L2 of the landing 31a and the second position P2. The landing 31a is a horizontal face coupling a slope formed by the first slope 10 and a slope formed by the second slope 20, and serves as a space used for changing direction of a course of a passage formed by the portable slope 1. In the present embodiment, the passage formed by the portable slope 1 has an L-shape and is bent at a right angle on the landing. Hereinafter, structure of each part included in the portable slope 1 will be described in order.

[0020] 2. Structure of each part

2-1. Landing apparatus

FIG. 3 is a perspective view of the landing apparatus 30 viewed from above, and FIG. 4 is a perspective view of the landing apparatus 30 viewed from below. As illustrated in these drawings, the landing apparatus 30 includes not only the top plate 31 but also a plurality of legs 40 for supporting the top plate from below. While not limited to this, the top plate 31 of the present embodiment has a substantially square

plate shape in plan view, and the legs 40 are disposed near respective four corners of a bottom face 31b of the top plate 31. The legs 40 each have the same structure, and include a linear shaft 41 fixed to the bottom face 31b and a wheel 42 attached to a lower end of the linear shaft 41. The wheel 42 improves portability of the landing apparatus 30. It is preferable that the legs 40 be each fitted with a lock mechanism for locking turning of the wheel 42 to stabilize a position of the landing apparatus 30 in use. Various structures of such a lock mechanism are known, thus detailed description will be eliminated here.

[0021] The top plate 31 includes a main body 32 in the shape of a plate, being formed with a circular recess in plan view, and a turntable 33 in the shape of a disk, being disposed in the circular recess. FIG. 2 illustrates a position of the turntable 33 that cannot normally be viewed from the front of the landing apparatus 30 with a dotted line, for reference. As described above, the turntable 33 is embedded in an upper face 32a of the main body 32 and is disposed surrounded by the main body 32 in plan view as illustrated in FIG. 1. The upper face 33a of the turntable 33 constitutes a part of the top face 31a serving as a landing. The upper face 32a of the main body 32 has a portion that is not covered with the turntable 33 and that also constitutes a part of the top face 31a. In the present embodiment, the upper face 33a of the turntable 33 is substantially flush with the upper face 32a of the main body 32, surrounding the upper face 33a. The turntable 33 has a lower face 33b covered with the main body 32. The bottom face 31b of the top plate 31 is formed of a lower face 32b of the main body 32.

[0022] The turntable 33 can turn in a horizontal plane with respect to the main body 32. The turntable 33 is used for changing direction of a course of a wheelchair on the landing 31a. The turntable 33 turns about a turning shaft 34 disposed along its central axis. As with the turntable 33, FIG. 2 illustrates a position of the turning shaft 34 that cannot normally be viewed from the front of the landing apparatus 30 with a dotted line, for reference. The turning shaft 34 extends vertically and is embedded and fixed in the

main body 32. The turntable 33 and the main body 32 are disposed substantially coaxially with each other, and the turning shaft 34 is disposed near the center of the main body 32 in plan view.

[0023] The main body 32 is substantially square in plan view, and has a first side L1, a second side L2, a third side L3, and a fourth side L4. The first side L1 and the second side L2 are substantially orthogonal to each other. Likewise, the second side L2 and the third side L3, the third side L3 and the fourth side L4, and the fourth side L4 and the first side L1, are substantially orthogonal to each other.

[0024] One end of the first slope 10 is detachably coupled to a portion near the first side L1 of the main body 32. One end of the second slope 20 is detachably coupled to a portion near the second side L2 of the main body 32. More specifically, a slot 35 extending along the first side L1 is formed in a portion near the first side L1 of the upper face 32a of the main body 32. When a hook 16 described below of the first slope 10 is inserted into the slot 35, the top plate 31 and the first slope 10 are coupled to each other. Likewise, a slot 36 extending along the second side L2 is formed in a portion near the second side L2 of the upper face 32a of the main body 32, and when the hook 16 described below of the second slope 20 is inserted into the slot 36, the top plate 31 and the second slope 20 are coupled to each other. As described above, the slot 35 and the hook 16 of the first slope 10 constitute a coupling mechanism between the top plate 31 and the first slope 10, and the slot 36 and the hook 16 of the second slope 20 constitute a coupling mechanism between the top plate 31 and the second slope 20.

[0025] As illustrated in FIG. 3, the slots 35 and 36 are each disposed on a bottom of a recess in the main body 32, the recess being slightly recessed from the top face 31a. The recess is disposed along the corresponding one of the first side L1 and the second side L2, and reaches the corresponding one of the first side L1 and the second side L2. Accordingly, when top plate 31 and the first slope 10 are coupled to each other, a depth of the recess absorbs a thickness of the first slope 10 to allow the landing 31a and an

inclined face formed by an upper face of the first slope 10 to be almost flush with each other. Likewise, even when top plate 31 and the second slope 20 are coupled to each other, a thickness of the second slope 20 is absorbed to allow the landing 31a and an inclined face formed by an upper face of the second slope 20 to be almost flush with each other. Thus, a wheelchair can move smoothly from the first slope 10 to the landing 31a and further from the landing 31a to the second slope 20. As a matter of course, the wheelchair can move smoothly from the second slope 20 to the landing 31a and further from the landing 31a to the first slope 10.

[0026] At a portion near the third side L3 of the upper face 32a of the main body 32, a fence 37 extending along the third side L3 is disposed. Likewise, a fence 38 extending along the fourth side L4 is disposed at a portion near the fourth side L4 of the upper face 32a of the main body 32. These fences 37 and 38 both protrude upward from the upper face 32a to function as a fall prevention mechanism for preventing a wheelchair having climbed on the top face 31a as a landing from falling from the top face 31a.

[0027] The upper face 33a of the turntable 33 is formed with a protrusion 39 near an outer peripheral edge of the turntable 33, the protrusion 39 protruding upward along the outer peripheral edge. The protrusion 39 has a height allowing a wheelchair to easily pass over. The protrusion 39 enables at least one of a person in the wheelchair and a person pushing the wheelchair to perceive that the wheelchair climbs on the turntable 33, on the basis of vibration transmitted to the wheelchair when the wheelchair passes over the protrusion 39. In view of such a function, it is preferable that the protrusion 39 have a height of about several millimeters to several centimeters. While continuously extending without interrupting throughout a circumferential direction, the protrusion 39 of the present embodiment may extend intermittently.

[0028] The turntable 33 can easily change a direction of a wheelchair on the landing 31a. For example, as in the example of FIGS. 1 and 2, there is conceived a case of traveling from the first slope 10 forming an upward inclined face to the second slope 20 also

forming an upward inclined face after passing through the landing 31a. At this time, the wheelchair having traveled the first slope 10 first climbs on the landing 31a backed by the first side L1. After that, when the turntable 33 is turned from the second side L2 toward the first side L1 by an angle formed by the first side L1 and the second side L2 (by 90° in the present embodiment), the front of the wheelchair faces the second side L2. Such an operation enables the wheelchair to be easily guided to the second slope 20. Such a method for changing direction enables the wheelchair to be easily turned on the landing 31a by simply disposing the turntable 33, having a size enough to mount the entire wheelchair, on the landing 31a. Thus, the landing 31a does not need to be excessively increased in area, so that the landing apparatus 30 can be downsized.

[0029] Usually, a wheelchair travels toward a course when climbing an inclined face, and travels by turning its back to a course when descending an inclined face. Thus, depending on whether the first slope 10 and the second slope 20 are individually an upward inclined face or a downward inclined face, or whether wheelchair travels from the first slope 10 to the second slope 20 or from the second slope 20 to the first slope 10, a turning direction required on the landing 31a differs. On this point, the turntable 33 of the present embodiment can turn 360 degrees, and can further turn in two directions. Accordingly, a turning direction and the amount of turning can be freely adjusted on the landing 31a, so that the wheelchair can be oriented in a desired direction with a minimum amount of turning.

[0030] As illustrated in FIG. 4, a lock mechanism 50 for the turntable 33 is attached to the lower face 32b of the main body 32 of the top plate 31. FIG. 5 is a perspective view of main components of the lock mechanism 50. The lock mechanism 50 can switch between a locked state in which turning of the turntable 33 with respect to the main body 32 is stopped and an unlocked state in which the turning is permitted. FIG. 6A is a lateral cross-sectional view around the lock mechanism 50 in the locked state, and FIG. 6B is a lateral cross-sectional view around the lock mechanism 50 in the

unlocked state. The lock mechanism 50 is useful for properly adjusting a turning direction of a wheelchair on the landing 31a.

[0031] The lock mechanism 50 has a lever member 51. The lever member 51 is a rod-like member, and is fixed to the lower face 32b of the main body 32 of the top plate 31 in a vertically rotatable manner. In the present embodiment, as illustrated in FIG. 4, the lever member 51 extends from a predetermined position of the lower face 32b toward one corner of the top plate 31 in a radial direction with respect to the turning shaft 34 of the turntable 33. The lever member 51 is provided at its inner end portion 51a with a hole 511 passing through the lever member 51 horizontally, and a turning shaft 512 extending horizontally is inserted into the hole 511. The turning shaft 512 is stably fixed to the lower face 32b of the main body 32 with a pair of hanging members 513 at an interval from the lower face 32b.

[0032] Meanwhile, the lever member 51 is coupled at its outer end portion 51b to an operation part 52. The operation part 52 has a V-shape in plan view. The lever member 51 extends to a portion near the wheel 42 attached to one corner of the lower face 32b of the main body 32, and pedals 521 and 522 of the operation part 52 are bifurcated from the portion to avoid the wheel 42.

[0033] Another operation part 53 is coupled to a predetermined position near the outer end 51b of the lever member 51. The operation part 53 has a bar member 531 extending upward from the lever member 51, as illustrated in FIGS. 6A and 6B. The bar member 531 is inserted into a through hole 321 formed in the main body 32, and passes through it. The bar member 531 has an upper portion protruding upward from the upper face 32a of the main body 32. A pedal 532 in the shape of an umbrella is fixed to the upper portion of the bar member 531. The pedal 532 has a lower face having an area more than a cross-sectional area of the through hole 321 to prevent the bar member 531 from falling off the through hole 321. In addition, a biasing member 55 is disposed between the upper face 32a of the main body 32 and the lower face of the

pedal 532. The biasing member 55 is a spring in the present embodiment, and biases the pedal 532 to lift the pedal 532 in a state of natural length where no external force is applied. At least one of the operation parts 52 and 53, and the lever member 51, may be integrally formed.

5 [0034] A locking part 54 is fixed at a predetermined position between the inner end 51a and the outer end 51b of the lever member 51. As illustrated in FIGS. 6A and 6B, the locking part 54 is a rod-like member extending upward from the lever member 51 and inserted into the through holes 322 and 331 formed in the main body 32 and the turntable 33, respectively. The locking part 54 has an upper portion having a
10 hemispherical shape. When the through hole 331 (or a portion defining the through hole 331) formed in the turntable 33 is hooked to the upper portion of the locking part 54 (or the upper portion of the locking part 54 is hooked), the locked state is formed in which the turntable 33 cannot be turned. As illustrated in FIG. 3, the turntable 33 is formed with a plurality of the through holes 331 along a circumferential direction with
15 respect to the turning shaft 34 thereof. The through holes 331 are disposed at an interval of an angle (90° in the present embodiment) formed by the first side L1 and the second side L2 of the top plate 31. Thus, each time the turntable 33 turns by the angle formed by the first side L1 and the second side L2, the locking part 54 is hooked in the corresponding one of the through holes 331 to form the locked state.

20 [0035] The lock mechanism 50 described above functions as follows. The locked state illustrated in FIG. 6A is a state in which the upper portion of the locking part 54 is inserted into any of the through holes 331 of the turntable 33. At this time, a face defining the through hole 331 in the turntable 33 is brought into contact with the upper portion of the locking part 54, so that turning of the turntable 33 is prevented. The
25 biasing member 55 biases the lever member 51 including the locking part 54 to a position corresponding to the locked state, unless an external force is applied. Thus, momentum generated when the wheelchair climbs on the turntable 33, or the like, does

not cause the turntable 33 to turn unexpectedly.

[0036] When the turntable 33 is desired to be turned, a downward external force is applied to one of the pedals 521, 522 and 532 by stepping the pedal, for example. The external force at this time causes the biasing member 55 to contract, so that force caused by the biasing member 55, pushing up the pedal 532 in the shape of an umbrella and the entire lever member 51 coupled to the pedal 532, is cancelled. Accordingly, the lever member 51 is turned downward around the turning shaft 512 from the position corresponding to the locked state illustrated in FIG. 6A to the position corresponding to the unlocked state illustrated in FIG. 6B, and then the upper portion of locking part 54 falls off the through hole 331. The unlocked state is a state in which the upper portion of the locking part 54 is not inserted into any through hole 331 of the turntable 33. In this state, there is no obstacle blocking turning of the turntable 33, so that the turntable 33 can turn around the turning shaft 34.

[0037] When a direction of a wheelchair is changed on the landing 31a, a force is applied to the wheelchair toward a desired turning direction while external force is applied to any one of the pedals 521, 522 and 532 as described above. As a result, frictional force between the wheelchair and the upper face 33a of the turntable 33 causes the turntable 33 to be dragged by the wheelchair and turn in the desired turning direction together with the wheelchair. When the turntable 33 starts to turn, operation on the corresponding one of the pedals 521, 522 and 532 is stopped to release the external force. As a result, the biasing member 55 tends to return to the natural length to apply an upward force to the pedal 532 in the shape of an umbrella and the entire lever member 51 coupled the pedal 532. However, this force is held down on the lower face 33b of the turntable 33 colliding with the upper portion of the locking part 54 until the next through hole 331 turns to a position right above the locking part 54, and thus the turntable 33 cannot return to the locked state. When the next through hole 331 turns to a position right above the locking part 54, the lever member 51 turns upward

around the turning shaft 512 using restoring force of the biasing member 55, and then the locking part 54 is lifted and inserted into the through hole 331. As described above, the turntable 33 returns to the locked state again.

[0038] Each part of the landing apparatus 30 can be made of various materials.

5 However, from the viewpoint of portability, it is preferable that the main body 32 occupying most of the landing apparatus 30 be made of a lightweight and high-strength material. As such a material constituting the main body 32, for example, a fiber reinforced plastic can be selected, and in particular, it is preferable to select a carbon fiber reinforced plastic from the viewpoint of lightness. However, from the viewpoint
10 of cost, a mixture of a carbon fiber reinforced plastic and a glass fiber reinforced plastic may be selected. As a material constituting the turntable 33, for example, stainless steel or other metals can be selected, particularly from the viewpoint of strength. Alternatively, a fiber reinforced plastic can be selected from the viewpoint of lightness and strength also for the material constituting the turntable 33, and in particular, a
15 carbon fiber reinforced plastic or a mixture of a carbon fiber reinforced plastic and a glass fiber reinforced plastic can be preferably selected. The turntable 33 also may be made of both a carbon fiber reinforced plastic and metal. As a material constituting the lock mechanism 50, for example, metal such as stainless steel or aluminum can be selected from the viewpoint of lightness and strength.

20 [0039] 2-2. First slope and second slope

Next, the first slope 10 and the second slope 20 will be described. In the present embodiment, these slopes 10 and 20 each have the same structure. Thus, only the first slope 10 will be described below. However, the first slope 10 and the second slope 20 each may have a different slope length.

25 [0040] As illustrated in FIG. 1, the first slope 10 includes a flat plate portion 11 having a rectangular shape in plan view, and a pair of side wall portions 12 and 13 extending along respective opposite ends in a width direction of the flat plate portion 11. The flat

plate portion 11 has a width enough to allow a wheelchair to pass through. The flat plate portion 11 is provided with nonslip parts 14 and 15 that extend along the width direction and that is fixed at respective opposite ends in its lengthwise direction.

[0041] The flat plate portion 11 of the present embodiment is foldable. More specifically, the flat plate portion 11 includes a pair of flat plate portions 111 and 112 disposed adjacent to each other in the width direction. The flat plate portions 111 and 112 each have a substantially symmetrical shape with respect to opposing faces of the respective flat plate portions. The flat plate portions 111 and 112 are fitted with a hinge mechanism or the like (not illustrated), and thus the flat plate portions 111 and 112 can be folded so that their upper faces face each other. As a result, when the portable slope 1 is not in use, the first slope 10 can be improved in portability and storability.

[0042] FIG. 7 is a lateral cross-sectional view around a coupled portion between the first slope 10 and the top plate 31. As illustrated in FIG. 7, the flat plate portion 11 is fitted at its portion near one end in the longitudinal direction with the hook 16 extending along the width direction. In the present embodiment, the hook 16 protrudes downward from a lower face of the nonslip part 14. The hook 16 has substantially the same lateral cross-sectional shape as each of the slots 35 and 36 formed in the main body 32 of the landing apparatus 30, and can be inserted into any of the slots. When the hook 16 is inserted into the slot 35 or 36, the first slope 10 is coupled to the top plate 31 of the landing apparatus 30. The hook 16 can also be attached so as to protrude downward from a lower face of an end portion of the flat plate portion 11.

[0043] From the viewpoint of portability, it is preferable that the flat plate portion 11 and the side wall portions 12 and 13 be each made of a lightweight and high-strength material. As such a material constituting these portions 11 to 13, for example, a fiber reinforced plastic can be selected, and in particular, it is preferable to select a carbon fiber reinforced plastic from the viewpoint of lightness. However, from the viewpoint

of cost, a mixture of a carbon fiber reinforced plastic and a glass fiber reinforced plastic may be selected. In addition, the inside of the flat plate portion 11 may be formed of a foam layer such as urethane foam, or a panel having a honeycomb structure made of resin, aluminum, paper, or the like. As a preferable material constituting the nonslip parts 14 and 15, rubber can be selected, for example. As a preferable material constituting the hook 16, metal such as stainless steel can be selected, for example. It is preferable that the nonslip parts 14 and 15 be each made of a flexible material such as the rubber described above. In this case, the nonslip parts 14 and 15 can be deformed relatively easily, so that an angle of each of the slopes 10 and 20 with respect to the top plate 31 can be adjusted. As a result, the portable slope 1 can be stably bridged over the steps 5 having various heights.

[0044] 3. Modification

While one embodiment of the present invention is described above, the present invention is not limited to the embodiment described above, and various modifications are possible unless departing from the essence of the present invention. For example, the following modifications are possible. In addition, the essence of each of the following modifications can be combined as appropriate.

[0045] 3-1

While the top face 31a of the landing apparatus 30 is generally square in the above embodiment, the shape of the top face 31a is not limited thereto, and may be a triangle, a polygon having five or more sides, a sector, or the like. As is apparent from such an example, the first side L1 and the second side L2 to which the slopes 10 and 20 are attached, respectively, may form an angle smaller than 90° or larger than 90°. In addition, the first side L1 and the second side L2 to which the slopes 10 and 20 are attached, respectively, may not be adjacent to each other in the top face 31a.

[0046] 3-2

While the two slopes 10 and 20 are coupled to the top plate 31 in the above

embodiment, three or more slopes may be coupled thereto.

[0047] 3-3

While the slopes 10 and 20 are configured to be detachable from the landing apparatus 30 in the above embodiment, a slope may be configured such that a part or the whole of the slope cannot be removed. In this case, for example, the slope may be foldable with respect to the top face 31a.

[0048] 3-4

The structure for coupling the landing apparatus 30 to the slopes 10 and 20 is not limited to that described above. For example, a slot may be formed in a slope, and a hook to be inserted into the slot may be formed in the top plate 31 of the landing apparatus 30. Alternatively, instead of forming the slot, a protrusion protruding upward may be formed at a position similar to that of the slot in the top plate 31, so that the hook described above and the protrusion may be engaged with each other to fix the slope. Alternatively, one of a slope and the landing apparatus 30 may be fitted with a hook, and the other may be formed with a ring or a hole to be hooked by the hook. Alternatively, an edge portion like each of the nonslip parts 14 and 15 on the corresponding slopes 10 and 20 may be simply placed on a portion near the first side L1 and a portion near the second side L2 of the top plate 31 to couple the landing apparatus 30 to the slopes 10 and 20.

[0049] 3-5

The structure of the lock mechanism 50 is not limited to the one described above. For example, at least one of the pedals 532, 521, and 522 may be eliminated. Instead of the biasing member 55 as described above, a turning spring may be attached around the turning shaft 512 to bias the lever member 51 for the locked state.

[0050] 3-6

In the above embodiment, the protrusion 39 is disposed on the turntable 33 to easily find that a wheelchair climbs on the turntable 33. However, instead of or in

addition to this, a protrusion protruding upward may be formed at a portion near the outer peripheral edge of the turntable 33 along the outer peripheral edge on the upper face 32a of the main body 32.

5	Reference Signs List		
	[0051]	1	Portable slope
		10	First slope
		20	Second slope
		30	Landing apparatus
10		31	Top plate
		31a	Top face
		32	Main body
		32a	Upper face
		33	Turntable
15		33a	Upper face
		331	Through hole (locked part)
		39	Protrusion
		50	Lock mechanism
		51	Lever member
20		52, 53	Operation part
		54	Locking part
		55	Biasing member
		40	Leg
		L1	First side
25		L2	Second side
		P1	First position
		P2	Second position

CLAIMS

1. A portable slope comprising:
 - a landing apparatus including a top plate having a top face, and a leg
 - 5 supporting the top plate from below;
 - a first slope; and
 - a second slope,
 - the top plate including:
 - a main body having an upper face forming a part of the top face, a first
 - 10 side, and a second side forming an angle with the first side in plan view; and
 - a turntable having an upper face forming a part of the top face, being disposed surrounded by the main body in plan view and rotatable in a plane parallel to the top face with respect to the main body,
 - the first slope being bridged between the first side and a first position, and
 - 15 the second slope being bridged between the second side and a second position higher than the first position.
2. The portable slope according to claim 1, wherein
 - one end of the first slope is detachably coupled to a portion near the first side
 - 20 of the main body, and
 - one end of the second slope is detachably coupled to a portion near the second side of the main body.
3. The portable slope according to claim 1 or 2, wherein the upper face of the
- 25 main body and the upper face of the turntable are substantially flush with each other.
4. The portable slope according to any one of claims 1 to 3, wherein at least one

of the turntable and the main body are formed with a protrusion protruding upward along an outer peripheral edge of the turntable.

5. The portable slope according to any one of claims 1 to 4, wherein the first side
5 and the second side are substantially orthogonal to each other.

6. The portable slope according to any one of claims 1 to 5, wherein the landing
apparatus further includes a lock mechanism that switches between a locked state to
stop turning of the turntable with respect to the main body and an unlocked state to
10 allow turning of the turntable with respect to the main body.

7. The portable slope according to claim 6, wherein
the lock mechanism includes:

an operation part;

15 a lever member that is coupled to the operation part, and that turns
from a position corresponding to the locked state to a position corresponding to the
unlocked state when an external force is applied to the operation part; and

a biasing member that biases the lever member to the position
corresponding to the locked state.

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8. The portable slope according to claim 7, wherein
the lever member has a locking part,

the turntable is formed with a plurality of locked parts that is hooked on the
locking part, and

25 the plurality of locked parts is disposed around a turning shaft of the turntable
at an interval of the angle formed between the first side and the second side.

9. A landing apparatus used together with a first slope and a second slope, the landing apparatus comprising:

a top plate having a top face; and

a leg for supporting the top plate from below,

5 the top plate including:

a main body having an upper face forming a part of the top face, a first side, and a second side forming an angle with the first side in plan view; and

a turntable having an upper face forming a part of the top face, being disposed surrounded by the main body in plan view and rotatable in a plane parallel to

10 the top face with respect to the main body,

the main body being formed with a portion near the first side, the portion being capable of coupling to one end of the first slope, and

the main body being formed with a portion near the second side, the portion being capable of coupling to one end of the second slope.

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