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(54) Titre : TWIST BOARD
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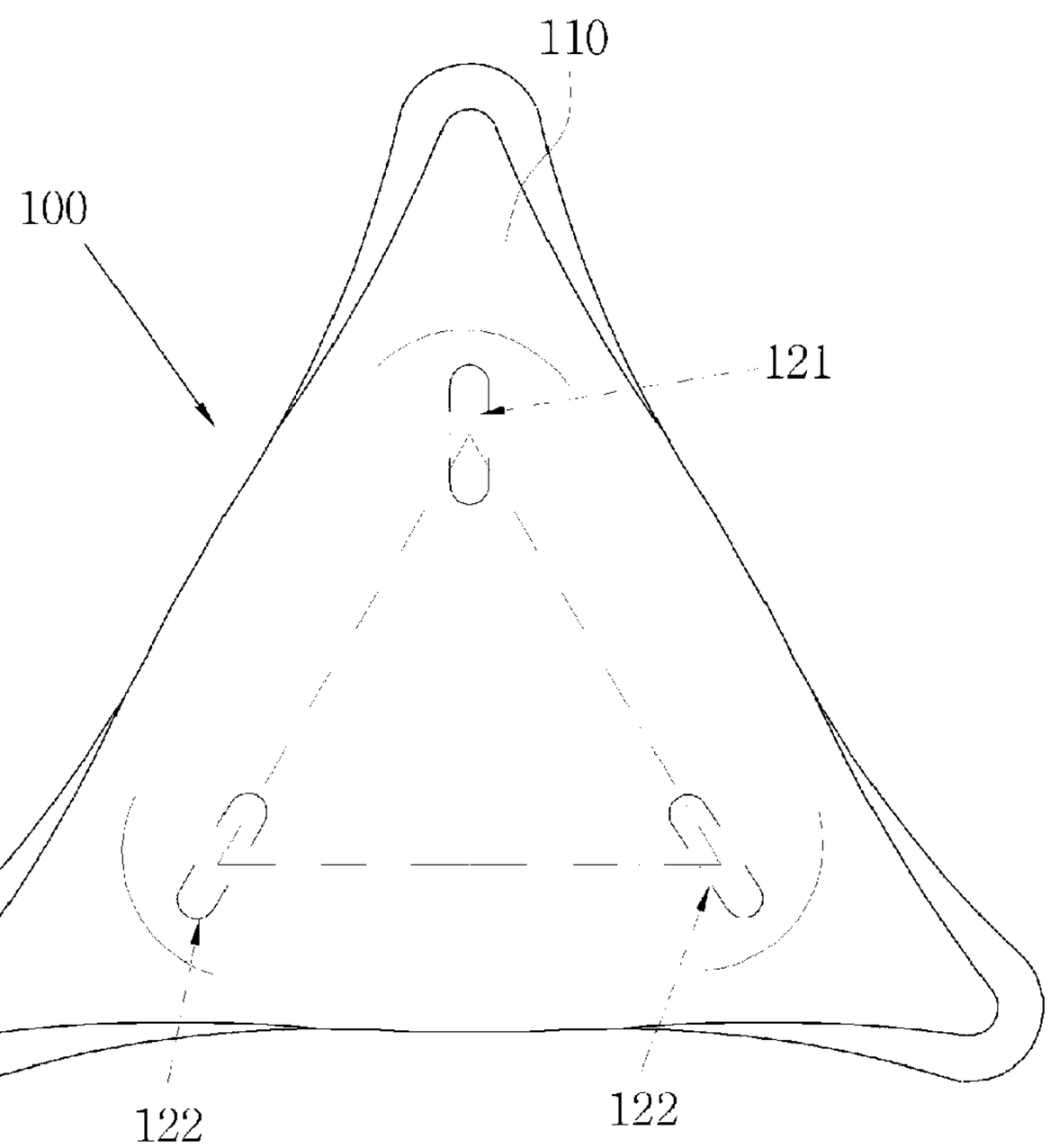
[Fig. 2]



(57) Abrégé/Abstract:
The present invention relates to a board, on the bottom surface of which casters are mounted, wherein the aim of the present invention is to provide a twist board which is configured with simple components to prevent even minor troubles. To accomplish the

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(57) Abrégé(suite)/Abstract(continued):
above aim, the technical features of the twist board of the present invention comprise: a footing on which a user stands upright; a first caster mounted on one side of the bottom surface of the footing; and two second casters mounted to cooperate with the first caster to form an isosceles triangle structure, wherein the second casters have wheels twisted at the angle corresponding to the two oblique sides of the isosceles triangle structure.

Abstract

The present invention relates to a board, on the bottom surface of which casters are mounted, wherein the aim of the present invention is to provide a twist board which is configured with simple components to prevent even minor troubles. To accomplish the above aim, the technical features of the twist board of the present invention comprise: a footing on which a user stands upright; a first caster mounted on one side of the bottom surface of the footing; and two second casters mounted to cooperate with the first caster to form an isosceles triangle structure, wherein the second casters have wheels twisted at the angle corresponding to the two oblique sides of the isosceles triangle structure.

Title: TWIST BOARD

Technical Field

[1] The present invention relates to a twist board with a caster at its bottom surface, and in particular to a twist board which causes less failures with the aid of a simple geometrical construction.

Background Art

[2] A conventional board consists of a numerous number of parts, which leads to a low productivity and frequent failures due to a damage of part which occurs owing to the use of a numerous number of parts.

Disclosure of Invention

[3] Accordingly, it is an object of the present invention to provide a twist board which overcomes the problems encountered in the conventional art, while significantly reducing failures and obtaining excellent durability because a twist board is made from simple geometry parts.

[4] It is another object of the present invention to provide a twist board which can significantly reduce unit costs as the number of parts is minimized.

[5] It is further another object of the present invention to provide a twist

board the traveling direction of which can be freely changed in the forward and backward directions, and a user can ride standing or sitting on the board.

[6] It is still further another object of the present invention to provide a twist board which makes it possible to keep a safety of a rider and prevent any damages of a board, and when a rider gets off from the board, the board is designed to return toward a rider with the aid of inertia force.

[7] To achieve the above objects, there is provided a twist board comprising a footing for a rider to step on and stand on; a first caster engaged at one side of a bottom surface of the footing; and two second casters which are engaged to form an isosceles triangle together with the first caster, wherein the wheels of the second casters are arranged obliquely at an angle corresponding to two sides of the isosceles triangle.

[8] In addition, according to a preferred embodiment of the present invention, the first caster and the second caster are orientation casters being oblique at one side from the engaged portions.

[9] According to a preferred embodiment of the present invention, the footing is divided into two parts, with the second caster being engaged at one footing part, with the first caster being engaged at the other footing part, with the divided footing being connected via a torsion bar.

[10] According to a preferred embodiment of the present invention, the

first caster is engaged at an extended line of the torsion bar, and the second casters are symmetrically engaged about the extended line of the torsion bar.

[11] According to a preferred embodiment of the present invention, there are further provided a sitting plate engaged at an upper surface of the footing; and a third caster which is engaged at a bottom surface of the sitting plate with the sitting plate being extended toward the outer side of the footing.

[12] According to a preferred embodiment of the present invention, the front end of the sitting plate is rotatable at the center of the footing by means of a rotating shaft and is extended toward a rear side of the footing, and a plate is formed at an outer side of the footing, and a third caster is engaged at a bottom surface of the plate.

[13] According to a preferred embodiment of the present invention, the number of the casters are two, with an auxiliary wheel being engaged at a bottom surface of the footing while matching with two hypotenuses connected from the first caster to the second caster.

[14] According to a preferred embodiment of the present invention, the auxiliary wheel of one side among the auxiliary wheels engaged at two hypotenuses is heavier than that of the auxiliary wheel of the other side.

[15] According to a preferred embodiment of the present invention, when the wheels of the first and second casters come into contact with the

ground, the auxiliary wheel does not come into contact with the ground.

ADVANTAGEOUS EFFECTS

[16] As described above, the twist board according to the present invention consists of simple geometry parts, so there are less failures, and durability is excellent.

[17] The twist board according to the present invention needs a least number of parts, which results in reducing unit costs, and productivity can be enhanced.

[18] The conventional S-board is designed in such a way that two casters are provided, so it is not easy for a rider to gen on a board, stepping on a footing, which consequently leads to an easier tumbling before traveling; however the twist board according to the present invention consists of three casters, which helps a rider to easily get on a board, stepping on a footing.

[19] The twist board according to the present invention makes it possible to prevent the damages of a board which might occur as a footing collides with the ground when a footing is over tilted while obtaining a traveling force by tilting a footing. It is possible to prevent a rider from falling which used to happen in the conventional art due to an over tilting.

[20] In the conventional art, when a rider gets off from a traveling board,

the board keeps moving with the aid of inertia force. In this case, a rider is needed to move far in order to collect the board; however in the present invention, when a rider gets off from the board in the course of traveling, the twist board is designed to return back toward a rider with the aid of a one-side weighted balance of a footing, so a rider does not need to move far toward the board.

Brief Description of the Drawings

The present invention will become better understood with reference to the accompanying drawings which are given only by way of illustration and thus are not limitative of the present invention, wherein;

[21] Figure 1 is a front view illustrating a twist board according to a first embodiment of the present invention;

[22] Figure 2 is a plane view illustrating a twist board of Figure 1;

[23] Figure 3 is a left side view illustrating a twist board of Figure 1;

[24] Figure 4is a right side view illustrating a twist board of Figure 1;

[25] Figures 25 and 26 are right side views illustrating an operation relationship of a twist board according to the present invention;

[26] Figures 7 and 8 are conception views illustrating the direction of a caster depending on the operation of Figure 6;

[27] Figure 9 is a front view illustrating a twist board according to a second embodiment of the present invention;

[28] Figures 10 and 11 are conception views illustrating a traveling direction of a cast depending on the operation of a twist board of Figure 9;

[29] Figure 12 is a front view illustrating a caster of a twist board according to a third embodiment of the present invention;

[30] Figure 13 is a plane view illustrating an operation relationship of a twist board of Figure 12;

[31] Figure 14 is a front view illustrating a state that a rider stands on a twist board according to a fourth embodiment of the present invention;

[32] Figure 15 is a conception view illustrating the positions of a caster and auxiliary wheels of a twist board of Figure 14; and

[33] Figure 16 is a front view illustrating a board tilted when a rider gets off from a twist board of Figure 14.

[34] Descriptions of key elements of the drawings

[35] 100: twist board 110, 110a, 110b: footings

[36] 121, 122, 123: casters 121w, 122w: wheels

[37] 130: torsion bar 140: sitting plate

[38] 141:rotating shaft 143: plate

[39] 151: first auxiliary wheel 152: second auxiliary wheel

Modes for carrying out the invention

[40] The twist board according the preferred embodiments of the present invention will be described with reference to the accompanying drawings.

[41] [First embodiment]

[42] Figure 1 is a front view illustrating a twist board according to a first embodiment of the present invention, Figure 2 is a plane view illustrating a twist board of Figure 1, Figure 3 is a left side view illustrating a twist board of Figure 1, Figure 4 is a right side view illustrating a twist board of Figure 1, Figures 5 and 6 are right side views illustrating an operation relationship of a twist board according to the present invention, and Figures 7 and 8 are conception views illustrating the direction of a caster depending on the operation of Figure 6.

[43] As shown in Figures 1 to 4, the twist board 100 comprises a triangle footing 110, and a pair of casters 121 and 122 arranged in a triangle shape at a bottom surface of the footing 110.

[44] In more details, in the triangle footing 110, a caster 121, 122 is engaged at a lower inner side of the footing 110 corresponding to each vertex of the triangle footing 110, and the front caster disposed at a traveling side are called as a first caster 121, and two casters disposed at the rear side are called

as a second caster 122. The first caster 121 and the second caster 122 are arranged in a triangle shape, and the second caster 122 is engaged at the bottom surface of the footing 110 in order for two hypotenuses of the triangle defined by three casters 121 and 122 in terms of the orientations of the second caster 122 to match with the wheels 122w of the second caster 122. The wheels 122w of two second casters 122 are engaged in such a way to be slightly oblique in the inward direction of the wheel 121w of the first caster 121. There is an elastic member in the interior in order for the first and second casters 121 and 122 to have certain orientations, thus keeping the directions of the casters. Since the orientation casters are commercially available, the descriptions of the same will be omitted.

[45] The first and second casters 121 and 122 are obliquely installed toward one side of a vertical line with respect to the portion where the footing 110 is engaged, and the wheels 121w and 122w of the casters 121 and 122 are rotatable in the left and right directions at its front side, and when force being applied to the casters 121 and 122 is removed, the wheels take their orientations with the aid of the recovery force of the elastic member built in.

[46] When a rider is about to get on the twist board 100, the rider first gets on the footing 110. At this time, when the weight center of the rider matches with the weight center of the triangle connecting the casters 121 and

122, the rider can keep a state that the rider remains stood on the footing 110. In this state, when the rider biases the weight in either the left direction or the right direction, a traveling force is generated as the first caster 121 and the second caster 122 are driven.

[47] The rider generates a traveling force in such a way to bias the weight in one direction, and then to move the weight to the opposite side while preventing the rider from tumbling. As the weight alternately moves from one side to the other side and vice versa, the first caster 121 and the second caster 122 are driven, thus generating a traveling force. As the above operations are repeatedly performed, the twist board 100 is forced to move forward in a S-shape.

[48] The principle that the orientation casters generate a traveling force has been proved in the past, and the products using such a principle are already commercially available in the markets (product names are S-board and step board), so the detailed descriptions on the traveling force generation principles will be omitted.

[49] The above-described twist board 100 is designed to travel forward with one vertex of the footing 110 being positioned at its front side; however when a twist board is designed to move in the opposite direction, one side of the footing with two second casters is designed to travel forward, for which it is

needed to change the wheel phases of each wheel engaged at the footing to 180 degrees.

[50] [Second embodiment]

[51] In the second embodiment of the present invention, there are provided two footings for the left foot and the right foot to be positioned, and two footings are connected with a torsion bar, so two footings can alternately tile in the left and right directions of the length of the torsion bar. The structures and arrangements of the first and second casters of the second embodiment are same.

[52] Figure 9 is a front view illustrating a twist board according to a second embodiment of the present invention, and Figures 10 and 11 are conception views illustrating a traveling direction of a cast depending on the operation of a twist board of Figure 9.

[53] As shown in Figure 9, the twist board 100 comprises two footings 110a and 110b which are connected via a torsion bar 130. The footings 110a and 110b connected via the torsion bar 130 can tilt in a left or right direction about the extended length of the torsion bar 130. The first caster 121 is engaged at the bottom surface of one footing 110a, and two second casters 122 are engaged at the other footing 110b. One first caster 121 and two second casters 122 are arranged in a triangle shape, so the first caster 121 is engaged

at the extended line of the torsion bar 130, and the second casters 122 are symmetrically engaged about the extended line of the torsion bar 130.

[54] When a rider gets on the twist board 100, the rider is needed to stand up, stepping two feet on two footrings 110a and 110b, respectively. At this time, as described in the first embodiment of the present invention, when the weight center of the rider matches with the weight center of the triangle casters 121 and 122, the rider can keep a standing-up posture without moving in one direction.

[55] In this state, the rider is needed to step one of his feet in one direction with the other foot stepping in the opposite direction. In other words, when the rider tilts one footing 110a in the left direction about the extended line, the rider tilts the other footing 100b in the right direction.

[56] As the rider keeps alternately tilting the footings(110a, 110b), the twist board 100 starts traveling forward based on the operation principle like the conventional S-board.

[57] [Third embodiment]

[58] The twist board according to the third embodiment of the present invention is implemented in such a way that a rotatable sitting plate is further provided to the twist board of the first embodiment, so the rider generates a traveling force like the rider sits on the sitting plate and moves the pelvis and

legs with two feet being placed on the footings.

[59] In the drawings, Figure 12 is a front view illustrating a caster of a twist board according to a third embodiment of the present invention, and Figure 13 is a plane view illustrating an operation relationship of a twist board of Figure 12.

[60] As shown in Figures 12 and 13, the twist board 100 comprises a footing 110, a sitting plate 140 rotatable about the center of the upper surface of the footing, a pair of casters 121 and 122 arranged at a bottom surface of the footing 110 in a triangle shape, and another caster 123 engaged at a bottom surface of the sitting plate 140.

[61] In more details, two front casters positioned at the traveling side is called as a second caste 122, and the caster positioned at a rear side is called as a first caster 121, and another caster 123 positioned at the bottom surface of the sitting plate 140 is called as a third caster 123. The first caster 121 and two second casters 122 are arranged in a triangle shape, and the engaged direction of the second caster 122 matches with two hypotenuses of a triangle formed by the first and second casters 121 and 122. In other words, two second casters 122 are engaged obliquely in an inward direction where the first caster 121 is positioned. The third caster 123 is positioned at the rear side of the first caster 121.

[62] The sitting plate 140 is engaged with its front end being rotatable by means of the rotating shaft 141 at the center of the footing 110 and is extended in the rear direction of the footing 110, and a wider plate 143 is formed at an outer side of the footing 110. The rider generates a traveling force in such a way that the rider sits on the sitting plate and steps two feet on the footing 110 and moves the footings 110 and the sitting plate 140 in the left or right direction depending on the traveling direction, thus generating a traveling force.

[63] The twist board 100 according to a third embodiment of the present invention helps strength a user's lower body muscle, a pelvis muscle and a waist muscle.

[64] [Fourth embodiment]

[65] The fourth embodiment of the present invention is directed to engaging two auxiliary wheels at the twist board of the first embodiment. When a user does not stand on the footings by moving the weight center of the twist board with the auxiliary wheels being engaged, one side of the twist board is designed to be lifted up.

[66] In the drawings, Figure 14 is a front view illustrating a state that a rider stands on a twist board according to a fourth embodiment of the present invention, Figure 15 is a conception view illustrating the positions of a caster and auxiliary wheels of a twist board of Figure 14, and Figure 16 is a front view

illustrating a board tilted when a rider gets off from a twist board of Figure 14.

[67] As shown in Figures 14 and 15, the twist board 100 comprises a triangle footing 110, and a first caster 121 and a second caser 122 engaged at a bottom surface of the footing 110 in a triangle shape. The footing 110, the first caster 121 and the second caster 122 are the same as those of the first embodiment, so the descriptions thereon will be omitted.

[68] A first auxiliary wheel 151 and a second auxiliary wheel 152 are engaged at the lower inner sides of two hypotenuses of the footing 110. One first wheel 151 is equipped with a weight 155, so it is larger than the second auxiliary wheel 152. The auxiliary wheels 151 and 152 are preferably installed at the center of two hypotenuses of the footing 110.

[69] The heights of the auxiliary wheels 151 and 152 are higher than those of the wheels 121w and 122w of the first and second casters 121 and 122, so when a rider gets on the footing 110, the wheels 121w and 122w of the first and second wheels 121 and 122 come into contact with the ground by means of the weight of the rider, and the first and second auxiliary wheels 151 and 152 are spaced apart from the ground; however when the rider gets off from the footing 110, as shown in Figure 12, the first auxiliary wheel 151 with the weight 155 comes into contact with the ground.

[70] When the first auxiliary wheel 151 comes into contact with the

ground by means of the weight of the first auxiliary wheel 151, the first and second caster 121 and 122 positioned at the hypotenuse where the first auxiliary wheel 151 is engaged come into contact with the ground as well; however the other second caster remains lifter from the ground, in other words, the footing 110 remains inclined.

[71] In terms of the twist board 100, the first and second auxiliary wheels 151 and 152 serve to prevent the rider from falling from the footing 110 during the travel, thus increasing stability as well as to prevent the footing 110 from colliding with the ground and being damaged as it collides with the ground.

[72] When a rider gets off from the traveling twist board 100, the second caster 122 of one side is lifted up. In this state, only the first caster 121, the second caster 122 and the first auxiliary wheel 151 which are all positioned at the hypotenuse in the traveling direction come into contact with the ground and rotate, so the twist board 100 with inertia force returns back toward the rider.

[73] In a state that a rider god off from the twist board 100, since the twist board 100 returns back to the rider, the rider does not need to go far to take the twist board.

Claims:

1. A twist board, comprising:

a footing for a rider to step on and stand on;

a first caster engaged at one side of a bottom surface of the footing; and

two second casters which are engaged to form an isosceles triangle together with the first caster, wherein the wheels of the second casters are arranged obliquely at an angle corresponding to two hypotenuses of the isosceles triangle.

2. A twist board of claim 1, wherein the first caster and the second caster are orientation casters being oblique at one side from the engaged portions.

3. A twist board of claim 2, wherein the footing is divided into two parts, with the second caster being engaged at one footing part, with the first caster being engaged at the other footing part, with the divided footings being connected via a torsion bar.

4. A twist board of claim 3, wherein the first caster is engaged at an extended line of the torsion bar, and the second casters are symmetrically

engaged about the extended line of the torsion bar.

5. A twist board of claim 1, further comprising:

a sitting plate engaged at an upper surface of the footing; and

a third caster which is engaged at a bottom surface of the sitting plate with the sitting plate being extended toward the outer side of the footing.

6. A twist board of claim 5, wherein the front end of the sitting plate is rotatable at the center of the footing by means of a rotating shaft and is extended toward a rear side of the footing, and a plate is formed at an outer side of the footing, and a third caster is engaged at a bottom surface of the plate.

7. A twist board of claim 1, wherein the number of the second casters are two, with an auxiliary wheel being engaged at a bottom surface of the footing while matching with two hypotenuses connected from the first caster to the second caster.

8. A twist board of claim 7, wherein the auxiliary wheel of one side among the auxiliary wheels engaged at two hypotenuses is heavier than that of the auxiliary wheel of the other side.

9. A twist board of either claim 7 or claim 8, wherein when the wheels of the first and the second casters come into contact with the ground, the auxiliary wheel does not come into contact with the ground.

Application number / Numéro de demande: KR 2010 000492

Figures: 1 to 16

Pages:

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[Fig. 2]