A manipulation input device structure includes a foundation base and an operating base. The foundation base has a rotation slot, such that the operating base is pivoted therein, and the operating base may relatively pivots to the foundation base and is fixed at a using position or a packaging position. When the operating base pivotally rotates to the packaging position, a space occupied by the manipulation input device is smaller than a space occupied by the manipulation input device when the operating base is located on the using position.
FIG. 1 (Prior art)
FIG. 2A
MANIPULATION INPUT DEVICE STRUCTURE

CROSS-REFERENCE TO RELATED APPLICATIONS


BACKGROUND OF THE INVENTION

[0002] 1. Field of Invention

[0003] The present invention relates to a manipulation input device, and more particularly to a manipulation input device structure having a pivotally rotating operating base.

[0004] 2. Related Art

[0005] Recently, multi-media entertainment market is rapidly developed, software and hardware manufacturers continuously propose newer and better game software and game hosts, so as to occupy gigantic market business opportunity. As the newer and more special game software and hardware are proposed, the game joystick, as the main game manipulation interface, definitely must be continuously developed and modified, so as to meet the demand of the pleasant sensation of the user during manipulation.

[0006] Particularly, in the racing game, in order to search for the realistic operation sensation, a game wheel for dedicatedly performing the manipulation in the racing game is proposed on the market, so as to enable game players fully enjoy the realistic sensation during the game, such that the game wheel has become one of the indispensable game devices used by the gamer players.

[0007] Referring to FIG. 1, after being manufactured, a recently existing game wheel 10 is packaged in a packaging paper case A1 in shape of an elongated cube or an elongated rectangular block, such that it is convenient for the conveying personnel to convey, and the game wheel is protected from being damaged by impacting. However, a game steering wheel 11 for manipulating the game interface follows the size of the steering wheel used on the real car, so the game steering wheel 11 has a certain volume. Further, the game steering wheel 11 is fixed on a base plate 12, and is maintained on a using operation position to form an inclined angle with the base plate 12, such that the appearance of the game wheel 10 cannot be changed, and the whole volume of the game wheel 10 is too large to be minimized.

[0008] Referring to FIG. 1, in order to be convenient for the game player to immediately use the game wheel after purchasing it, the manufacturer pre-assembly and fixes the game steering wheel 11 on the base plate 12 before delivery. However, during packaging for delivery, a large-scale packaging paper case A1 is required to completely wrap the game wheel 10 after being assembled, thus increasing the manufacturing cost and wasting the packaging material, which not only departs from the requirement of cost benefit, but also causes severer problem on recycling due to the too many discarded packaging materials.

[0009] In addition, the game steering wheel 11 is fixed on the base plate 12 with an inclined angle, so the invalid space generated by the conventional game wheel 10 in the packaging paper case A1 is large, which results in a large whole space occupied by the packaging paper case A1. Therefore, during conveying or saving, the enough space is required to place the game wheels 10, or the number of the game wheels 10 capable of being loaded or saved in the unit space may not be increased.

SUMMARY OF THE INVENTION

[0010] In view of the above problems, the present invention provides a manipulation input device structure, capable of modifying the problem that the game steering wheel of the conventional game wheel is fixed on the base plate and forms an inclined angle with the base plate, resulting in large occupied space and increased manufacture cost.

[0011] The present invention provides a manipulation input device structure, which includes a foundation base and an operating base. The foundation base has a rotation slot, the operating base is pivoted in the rotation slot, and the operating base relatively pivots to the foundation base and is fixed at a using position or a packaging position. When the operating base pivotingly rotates to the packaging position, a space occupied by the manipulation input device is smaller than a space occupied by the manipulation input device when the operating base is fixed at the using position.

[0012] The efficacy of the present invention is that the operating base relatively rotaries to the foundation base to the packaging position, and at this time, the space occupied by the manipulation input device is smaller than the space occupied by the manipulation input device when the operating base is fixed at the using position, such that the packaging cost is greatly reduced, and convenient conveying may be achieved.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] The present invention will become more fully understood from the detailed description given herein and the accompanying drawings, and thus the description of the present invention, and wherein:

[0014] FIG. 1 is a plan view of the conventional art;

[0015] FIG. 2A is an exploded view of a first embodiment of the present invention;

[0016] FIG. 2B is a partial exploded view of the first embodiment of the present invention;

[0017] FIG. 3 is a schematic view of the first embodiment of the present invention at a using position;

[0018] FIG. 4 is a cross-sectional view of the first embodiment of the present invention;

[0019] FIG. 5 is plan view of the first embodiment of the present invention at a using position;

[0020] FIG. 6 is a schematic view of the first embodiment of the present invention at a packaging position;

[0021] FIG. 7 is a cross-sectional view of the first embodiment of the present invention;

[0022] FIG. 8 is a partial view of the first embodiment of the present invention at a packaging position;

[0023] FIG. 9A is an exploded view of a second embodiment of the present invention;

[0024] FIG. 9B is a partial exploded view of a second embodiment of the present invention;

[0025] FIG. 10 is a schematic view of the second embodiment of the present invention at a using position;

[0026] FIG. 11 is a cross-sectional view of the second embodiment of the present invention;

[0027] FIG. 12 is a schematic view of the second embodiment of the present invention at the packaging position;
FIG. 13 is a schematic view of a third embodiment of the present invention at the using position; and FIG. 14 is a plan view of the third embodiment of the present invention at the packaging position.

DETAILED DESCRIPTION OF THE INVENTION

The manipulation input device provided by the present invention includes, but not limited to, a joystick, a game controller, and other computer input devices capable of being operated by the users to generate vector signals. In embodiments as follows, the game controller is used as the embodiment of the present invention.

Referring to schematic views of FIGS. 2A to 3, a manipulation input device 100 according to a first embodiment of the present invention includes a foundation base 110 and an operating base 120. The foundation base 110 has a rotation slot 111 with a size matching the operating base 120. The rotation slot 111 has a pivot hole 112 at one side thereof, and a positioning unit at the other side opposite to the pivot hole 112. The positioning unit has a releasing button 113 with one end exposed out of the foundation base 110 and may axially slide relative to the foundation base 110, and the other end having a first tooth 1131 surrounded on an outer periphery.

The operating base 120 has a manipulation unit, for example, a joystick, a key set, or a steering wheel 121, for the game players to hold and perform the manipulation. The operating base 120 has a pivot shaft 122 at one side thereof, and the pivot shaft 122 is inserted in the pivot hole 112 of the foundation base 110. The operating base 120 has a combining body 123 at the other side opposite to the pivot shaft 122. A through-hole 1231 is opened at the central position of the combining body 123, which is provided for the releasing button 113 to pass through. A second tooth 1232 is protruded on a periphery of the through-hole 1231. The manipulation input device 100 of the present invention further includes a first tension spring 130 having two ends respectively leaving against the releasing button 113 and the operating base 120. The first tension spring 130 normally pushes the releasing button 113, such that the first tooth 1131 of the releasing button 113 is engaged with the second tooth 1232 of the combining body 123. The operating base 120 is pivoted in the rotation slot 111 of the foundation base 110 through the pivot shaft 122 and the combining body 123, and the operating base 120 pivotally rotates relative to the foundation base 110 to an angle for operation (that is, the steering wheel is fixed at a using position), or at a packaging position for accommodation.

Referring to FIGS. 3 to 5, when the operating base 120 is fixed at the using position (that is, an operating surface 1211 of the steering wheel 121 rotates to be located above the foundation base 110, for the game player to perform the manipulation), the first tension spring 130 normally pushes the releasing button 113, the first tooth 1131 is engaged with the second tooth 1232 of the combining body 123, so as to limit the operating base 120 from pivotally rotating relative to the foundation base 110. Referring to FIG. 5, if it intends to package the manipulation input device 100 of the present invention in a state that the operating base 120 is fixed at the using position, a packaging paper case A2 with the same size as shown in FIG. 1 is required for packaging. That is to say, the operating base 120, the steering wheel 121, and the foundation base 110 form a first volume together.

Referring to FIGS. 6 and 8, if it intends to pivotally rotate the operating base 120 to the packaging position (that is, the operating surface 1211 of the steering wheel 121 rotates to a bottom part of the foundation base 110, and the operating surface 1211 is approximately parallel with the bottom surface of the foundation base 110), it is firstly necessary to apply an external force to push the releasing button 113 exposed out of the foundation base 110, such that the first tooth 1131 is separated from the second tooth 1232, and the first tension spring 130 is forced to be compressed. At this time, the operating base 120 may pivotally rotate relative to the foundation base 110, and rotate to one side or the bottom side (i.e., the packaging position) together with the steering wheel 121. Finally, the external force applied on the releasing button 113 is released, the first tension spring 130 returns to an initial state and pushes the releasing button 113, such that the first tooth 1131 is engaged with the second tooth 1232, and the operating base 120 is fixed at the packaging position and does not rotate.

Referring to FIG. 8, when the packaging is performed as the operating base 120 pivotally rotates to the packaging position, the size of the used packaging paper case A3 is smaller than that of the packaging paper case A2, so when the operating base 120 pivotally rotates to the packaging position, the space occupied by the manipulation input device 100 (that is, a second volume occupied by the foundation base 110, the operating base 120, and the steering wheel 121 together) is smaller than the space occupied by the manipulation input device 100 when the operating base 120 pivotally rotates to the using position (that is, the second volume is smaller than the first volume). Therefore, the volume proportion of the manipulation input device 100 is smaller, such that convenient packaging for the manufacturer and convenient accommodation for the user may be achieved.

In addition, the operating base 120 may pivotally rotate relative to the foundation base 110, so the user may correspondingly adjust the angle between the operating base 120 and the foundation base 110 according to the using habit and demand thereof, thereby obtaining the best using angle and the best using position.

FIGS. 9A to 10 are schematic views of a second embodiment of the present invention. The manipulation input device 100 according to the second embodiment of the present invention includes a foundation base 110 and an operating base 120. The foundation base 110 has a rotation slot 111 with a size matching the operating base 120. The rotation slot 111 has a pivot hole 112 at one side thereof and a positioning unit at the other side opposite to the pivot hole 112, and the positioning unit has a releasing button 113. The positioning unit has a releasing button 113 with one end exposed out of the foundation base 110 and may axially slide relative to the foundation base 110, and the other end having a first tooth 1131 surrounded on an outer periphery.

The operating base 120 has a manipulation unit, for example, a joystick, a key set, or a steering wheel 121, for the game players to hold and perform the manipulation. The operating base 120 has a pivot shaft 122 at one side thereof, and the pivot shaft 122 is inserted in the pivot hole 112 of the foundation base 110. The operating base 120 has a combining body 123 at the other side opposite to the pivot shaft 122. A through-hole 1231 is opened at the central position of the combining body 123, which is provided for the releasing button 113 to pass through. A second tooth 1232 is protruded on a periphery of the through-hole 1231. The manipulation input device 100 of the present invention further includes a first tension spring 130 having two ends respectively leaving against the releasing button 113 and the operating base 120. The first tension spring 130 normally pushes the releasing button 113, such that the first tooth 1131 of the releasing button 113 is engaged with the second tooth 1232 of the combining body 123. The operating base 120 is pivoted in the rotation slot 111 of the foundation base 110 through the pivot shaft 122 and the combining body 123, and the operating base 120 pivotally rotates relative to the foundation base 110 to an angle for operation (that is, the steering wheel is fixed at a using position), or at a packaging position for accommodation.

Referring to FIGS. 3 to 5, when the operating base 120 is fixed at the using position (that is, an operating surface 1211 of the steering wheel 121 rotates to be located above the foundation base 110, for the game player to perform the manipulation), the first tension spring 130 normally pushes the releasing button 113, the first tooth 1131 is engaged with the second tooth 1232 of the combining body 123, so as to limit the operating base 120 from pivotally rotating relative to the foundation base 110. Referring to FIG. 5, if it intends to package the manipulation input device 100 of the present invention in a state that the operating base 120 is fixed at the using position, a packaging paper case A2 with the same size as shown in FIG. 1 is required for packaging. That is to say, the operating base 120, the steering wheel 121, and the foundation base 110 form a first volume together.

Referring to FIGS. 6 and 8, if it intends to pivotally rotate the operating base 120 to the packaging position (that is, the operating surface 1211 of the steering wheel 121 rotates to a bottom part of the foundation base 110, and the operating surface 1211 is approximately parallel with the bottom surface of the foundation base 110), it is firstly necessary to apply an external force to push the releasing button 113 exposed out of the foundation base 110, such that the first tooth 1131 is separated from the second tooth 1232, and the first tension spring 130 is forced to be compressed. At this time, the operating base 120 may pivotally rotate relative to the foundation base 110, and rotate to one side or the bottom side (i.e., the packaging position) together with the steering wheel 121. Finally, the external force applied on the releasing button 113 is released, the first tension spring 130 returns to an initial state and pushes the releasing button 113, such that the first tooth 1131 is engaged with the second tooth 1232, and the operating base 120 is fixed at the packaging position and does not rotate.

Referring to FIG. 8, when the packaging is performed as the operating base 120 pivotally rotates to the packaging position, the size of the used packaging paper case A3 is smaller than that of the packaging paper case A2, so when the operating base 120 pivotally rotates to the packaging position, the space occupied by the manipulation input device 100 (that is, a second volume occupied by the foundation base 110, the operating base 120, and the steering wheel 121 together) is smaller than the space occupied by the manipulation input device 100 when the operating base 120 pivotally rotates to the using position (that is, the second volume is smaller than the first volume). Therefore, the volume proportion of the manipulation input device 100 is smaller, such that convenient packaging for the manufacturer and convenient accommodation for the user may be achieved.

In addition, the operating base 120 may pivotally rotate relative to the foundation base 110, so the user may correspondingly adjust the angle between the operating base 120 and the foundation base 110 according to the using habit and demand thereof, thereby obtaining the best using angle and the best using position.
Referring to FIGS. 10 to 12, when the operating base 120 is fixed at the using position (that is, the steering wheel 121 rotates to be located above the foundation base 110), the latch 1143 of the inserting part 114 is inserted in one of the positioning holes 1241, and is normally pushed by the second tension spring 1144, so as to limit the operating base 120 from pivotally rotating relative to the foundation base 110.

If it intends to pivotally rotate the operating base 120 to the packaging position (that is, the operating surface of the steering wheel 121 rotates to the bottom part of the foundation base 110, and the operating surface is approximately parallel with the bottom surface of the foundation base 110), it is firstly necessary to apply an external pulling force on the operating portion 1141 exposed out of the foundation base 110, such that the latch 1143 is separated from the positioning hole 1241, and the second tension spring 1144 is forced to be compressed. At this time, the operating base 120 may pivotally rotate relative to the foundation base 110, and rotate to one side or the bottom side (i.e. the packaging position) together with the steering wheel 121, and the latch 1143 is aligned with the other positioning hole 1241 of the positioning tray 124. Finally, the external force applied on the operating portion 1141 is released, the second tension spring 1140 returns to an initial state and pushes the latch 1143 to insert in the positioning hole 1241 of the positioning tray 124 corresponding to the packaging position, such that the operating base 120 is fixed at the packaging position and does not rotate.

In the present invention, the manipulation unit may be a joystick, and the remaining structures are the same as those of the first or the second embodiment. At this time, the joystick may be folded on an inclined side position of the foundation base 110, such that the joystick is approximately parallel with the foundation base, thereby effectively reducing the second volume occupied during accommodation.

In the present invention, the operating base of the manipulation input device structure may pivotally rotate relative to the foundation base. When the operating base pivotally rotates to the packaging position, the space occupied by the manipulation input device is smaller than the space occupied by the manipulation input device when the operating base is fixed at the using position, such that the volume occupied by the manipulation input device is much smaller, and convenient packaging for manufactures and convenient accommodation for users are thus achieved. Further, the user may correspondingly adjust the angle between the operating base and the foundation base according to the using habit thereof, thereby satisfying the different using positions and the demands of different users.

What is claimed is:

1. A manipulation input device structure, comprising:
   a foundation base; and
   an operating base, pivoted on the foundation base, pivotally rotating relative to the foundation base, and further having a manipulation unit;
   wherein the manipulation unit relatively pivots to the foundation base and is fixed at a using position above the foundation base, and the foundation base, the operating base, and the manipulation unit form a first volume together; the manipulation unit relatively pivots to the foundation base and is fixed at a packaging position which is at the side of the foundation base, and the foundation base, the operating base, and the manipulation unit form a second volume together; the second volume is smaller than the first volume.

2. The manipulation input device structure according to claim 1, wherein the foundation base has a rotation slot, and the operating base is pivoted in the rotation slot; the rotation slot has a pivot hole at one side thereof, the operating base has a pivot shaft at one side thereof, and the pivot shaft is inserted in the pivot hole, such that the operating base pivotally rotates relative to the foundation base.

3. The manipulation input device structure according to claim 2, wherein the rotation slot has a releasing button at the other side opposite to the pivot hole; the operating base has a combining body at the other side opposite to the pivot shaft, the releasing button has a first tooth, the combining body has a second tooth, the releasing button shifts relative to the foundation base, and the first tooth is selectively engaged with the second tooth.

4. The manipulation input device structure according to claim 3, further comprising a first tension spring, wherein two ends of the first tension spring respectively lean against the releasing button and the operating base, and the first tension spring normally pushes the releasing button, such that the first tooth is engaged with the second tooth.

5. The manipulation input device structure according to claim 2, wherein the rotation slot has an inserting part at the other side opposite to the pivot hole, the operating base has a positioning tray at the other side opposite to the pivot shaft, the positioning tray has at least two positioning holes corresponding to the using position and the packaging position, the inserting part shifts relative to the foundation base and is selectively inserted in one of the positioning holes, such that the operating base is fixed at the using position or the packaging position.

6. The manipulation input device structure according to claim 5, wherein the inserting part further has an operating portion, a connecting rod, a latch, and a second tension spring, the operating portion is exposed out of the foundation base, the connecting rod has two ends respectively connected to the operating portion and the latch, the second tension spring is sleeved on the connecting rod and has two ends respectively lean against the foundation base and the latch, so as to normally push the latch to insert in one of the positioning holes.

7. The manipulation input device structure according to claim 1, wherein the manipulation unit is a steering wheel, a key set, or a joystick.

8. An manipulation input device structure, comprising:
   an operating base, with one side pivoted on a foundation base, and the other side having a manipulation unit disposed thereon; wherein a positioning unit is disposed between the operating base and the foundation base, the manipulation unit pivotally rotates relative to the foundation base and is caught on a position with an angle; the manipulation unit pivotally rotates relative to the foundation base to one side of the foundation base, so that the manipulation unit is approximately parallel with the foundation base.

9. The manipulation input device structure according to claim 8, wherein the manipulation unit is a steering wheel, a key set, or a joystick.