

ROTATING MOTION PLATFORM AND VIEWING SYSTEM

BACKGROUND OF THE INVENTION

Technical Field

[0001] The present invention is generally related to a motion platform, and more particularly to a rotating motion platform that can increase passenger carrying capacity and improve passenger riding experience

Description of Related Art

[0001] The motion platforms have begun to be used in many entertainment venues such as amusement parks, cinemas, or 3D theaters to replace conventional fixed seats. The motion platform generally includes a seat and a motion mechanism. The front side of the seat is for passengers to sit on, and the bottom of the seat is connected to the motion mechanism. The motion mechanism can drive the seat to vibrate or swing, etc. In this way, passengers sitting on the seat can experience sensory stimulation other than visual stimulation as the seat moves, thereby enhancing the richness of entertainment.

[0002] However, the number of passengers that can be accommodated on the front side of the seat is limited, and when the next group of passengers want to board the motion platform, they must wait for the previous group of passengers on the seat to leave the seat before they can continue to board. When there are many passengers, the long waiting time can easily affect the passengers' riding experience. Therefore, the conventional motion platform still needs to be improved.

BRIEF SUMMARY OF THE INVENTION

[0003] In view of the above, the primary objective of the present invention is to provide a rotating motion platform that can increase passenger carrying capacity and improve passenger riding experience.

[0004] The present invention provides a rotating motion platform, wherein an active area and a preparation area are defined, the active area and the preparation area are relatively set, the rotating motion platform comprising a first seat unit, a second seat unit, a rotating mechanism and a first

motion mechanism; wherein the first seat unit is for passengers to sit on; wherein the second seat unit is for passengers to sit on; wherein the rotating mechanism comprising a base and a driving member, wherein the driving member is connected to the base to drive the base to rotate around a rotation axis, the first seat unit and the second seat unit are respectively arranged on opposite sides of the base, the base can rotate around the rotation axis and drive the first seat unit and the second seat unit to rotate and displace between the active area and the preparation area; and a first motion mechanism, wherein the first motion mechanism comprising a first connecting member and a first actuating system, the first connecting member is pivotally connected to the base and the first seat unit respectively; the first actuating system is pivotally connected to the base and the first seat unit respectively; the first actuating system can drive the first seat unit to pivot around a first pitch axis; the first actuating system can drive the first seat unit to pivot around a first roll axis relative to the first connecting member.

[0005] The present invention further provides a viewing system, wherein the viewing system comprising a dome screen and the rotating motion platform, wherein the rotating motion platform is disposed on one side of the dome screen, and one of the first seat unit and the second seat unit located in the activity area faces the dome screen, while the other of the first seat unit and the second seat unit located in the preparation area faces away from the dome screen.

[0006] The effect of the present invention is that, through the arrangement of the first seat unit and the second seat unit, the passenger carrying capacity can be greatly increased. In addition, through the arrangement of the first seat unit and the second seat unit on opposite sides of the base and the arrangement of the first motion mechanism, the first seat unit can be driven by the first motion mechanism to move, and the base can rotate around the rotation axis and drive the first seat unit and the second seat unit to rotate and move between the activity area and the preparation area. For example, when passengers sitting on the first seat unit are performing activities such as watching a movie in the activity area, the first motion mechanism can drive the first seat unit to cooperate with the activity; at this time, the next group of passengers can sit on the second seat unit in the preparation

area to prepare for watching the movie; When the passengers sitting on the first seat unit finish watching the movie, the base can rotate and drive the first seat unit to move to the preparation area and drive the second seat unit to move to the activity area; at this time, the first motion mechanism can drive the first seat unit to move to a position suitable for passengers to leave, so that the passengers sitting on the first seat unit can smoothly leave the first seat unit and facilitate the next group of passengers to board. In this way, when there are many passengers, the waiting time of passengers can be greatly reduced to effectively improve the riding experience.

[0007] In addition, the design of the rotating motion platforms being able to operate independently of each other allows them to be controlled to rotate asynchronously when there are many people leaving or when the crowd is very crowded, thereby staggering the flow of people leaving. If there are fewer people, only the rotating platforms on a certain level can be selectively opened for rotation, thereby saving operating energy.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0008] The present invention would be best understood by referring to the following detailed description of some illustrative embodiments in conjunction with the accompanying drawings, in which

[0009] FIG. 1 is a side view of a rotating motion platform a preferred embodiment of the present invention.

[0010] FIG. 2 is a top view of the rotating motion platform of the preferred embodiment of the present invention in use.

[0011] FIG. 3 is a perspective view of the first seat unit of the preferred embodiment of the present invention.

[0012] FIG. 4 is a side view of the rotating platform of the preferred embodiment of the present invention.

[0013] FIG. 5 is a perspective view of a viewing system of another preferred embodiment of the present invention.

[0014] FIG. 6 is a side view of the rotating motion platform of another preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0015] Please refer to FIG. 1 to FIG. 4, which shows a rotating motion platform 1 of a preferred embodiment of the present invention, defining an activity area Z1 and a preparation area Z2 arranged relatively to each other. The rotating motion platform 1 includes a first seat unit 10, a second seat unit 10', a rotating mechanism 20, a first motion mechanism 30 and a second motion mechanism 30'.

[0016] As shown in FIG. 1, the first seat unit 10 and the second seat unit 10' both have seats for passengers to sit on. The rotating mechanism 20 includes a base 22 and a driving member 24. The driving member 24 is connected to the base 22 to drive the base 22 to rotate around a rotation axis A1. In this embodiment, the first seat unit 10 and the second seat unit 10' are respectively arranged on opposite sides of the base 22, and the first seat unit 10 and the second seat unit 10' are arranged opposite to each other, but the present invention is not limited to this. The base 22 can rotate around the rotation axis A1 and drive the first seat unit 10 and the second seat unit 10' to rotate and displace between the active area Z1 and the preparation area Z2; wherein the driving member 24 can be a motor and the base 22 can be a turntable.

[0017] As shown in FIG. 1, the first motion mechanism 30 includes a first connecting member 32 and a first actuating system 34. The first connecting member 32 is pivotally connected to the base 22 and the first seat unit 10, respectively. As shown in FIG 3, the first connecting member 32 includes a first frame 321 and two first extension sections 322. In this embodiment, the first connecting member 32 includes two first extension sections, but the present invention is not limited to this. The number of first extension sections can also be one or more than three. The first frame 321 is coupled to the first seat unit 10. The two first extension sections 322 extend from below the first frame 321 and are pivotally connected to the base 22 around a first pitch axis X1.

[0018] As shown in FIG. 3, the first actuating system 34 is pivotally connected to the base 22 and the first seat unit 10, and the first actuating system 34 is pivotally connected to the rear of the first seat unit 10. The first actuating system 34 can drive the first seat unit 10 to pivot about the first pitch axis X1 and can also drive the first seat unit 10 to pivot about a first roll axis X2 relative to the first connecting member 32. Further, the first actuating system 34 includes two first actuators 341, the two first actuators 341 are symmetrically arranged on opposite sides of the first roll axis X2, and each of the two first actuators 341 is pivotally connected to the base 22 and the first seat unit 10, the first connecting member 32 is pivotally connected to the rear of the first seat unit 10 around the first roll axis X2 and the two first actuators are inclined relative to the first pitch axis. For example, the two first actuators could be linear actuators. Thus, when the two first actuators are actuated, the two first actuators can drive the first seat unit 10 to pivot around the first roll axis X2 relative to the first connecting member 32, that is, drive the first seat unit 10 to roll, and drive the first seat unit 10 to pivot around the first pitch axis X1, that is, drive the first seat unit 10 to pitch.

[0019] As shown in FIG. 1, the second motion mechanism 30' includes a second connecting member 32' and a second actuating system 34'. The second connecting member 32' is pivotally connected to the base 22 and the second seat unit 10', respectively. The second connecting member 32' includes a second frame 321' and two second extensions 322'. In this embodiment, the second connecting member 32' includes two second extensions 322', but the present invention is not limited thereto. The number of second extensions may also be one or more than three. The second frame 321' is coupled to the second seat unit 10', and the two second extension sections 322' extend from the bottom of the second frame 321' and are pivotally connected to the base 22 around a second pitch axis X1'.

[0020] The second actuating system 34' is pivotally connected to the base 22 and the second seat unit 10', and is pivotally connected to the rear of the second seat unit 10'. The second actuating system 34' can drive the second seat unit 10' to pivot about the second pitch axis X1' and can also drive the second seat unit 10' to pivot about a second roll axis X2' relative to the second connecting

member 32'. Furthermore, the second actuating system 34' includes two second actuators 341', the two second actuators 341' are symmetrically arranged on opposite sides of the second roll axis X2', and each of the two second actuators 341' is pivotally connected to the base 22 and the second seat unit 10', respectively. The second connecting member 32' is pivotally connected to the rear of the second seat unit 10' around the second roll axis X2' and the two second actuators are inclined relative to the second pitch axis. The second actuators can be, for example, linear actuators. Thus, when the two second actuators are actuated, the two second actuators can drive the second seat unit 10' to pivot about the second roll axis X2' relative to the second connecting member 32', that is, drive the second seat unit 10' to roll, and drive the second seat unit 10' to pivot about the second pitch axis X1', that is, drive the second seat unit 10' to pitch. In this embodiment, the first roll axis X2 and the second roll axis X2' are different axes. In other embodiments, it is not ruled out that the first roll axis X2 and the second roll axis X2' are the same axis.

[0021] As shown in FIG. 4, the rotating motion platform 1 includes a frame 40 having a side opening 40a. The rotating mechanism 20 is disposed on the frame 40 and located at the side opening 40a. The activity area Z1 is located outside the side opening 40a, and the preparation area Z2 is located within the interior space of the frame 40. The rotating motion platform 1 further includes a partition 50 arranged on the base 22 and located between the first seat unit 10 and the second seat unit 10'. The base 22 can drive the partition 50 to rotate. When the first seat unit 10 and the second seat unit 10' are respectively located in the activity area Z1 and the preparation area Z2, the partition 50 closes the side opening 40a, thereby effectively separating the space of the preparation area Z2 and the activity area Z1.

[0022] In this embodiment, the first seat unit 10 and the second seat unit 10' can be driven by the first motion mechanism 30 and the second motion mechanism 30' respectively to move independently, and the base 22 can rotate about the rotation axis A1 and drive the first seat unit 10 and the second seat unit 10' to rotate and move between the activity area Z1 and the preparation area Z2. For example, when a passenger on the first seat unit 10 is performing an activity such as watching

a movie in the activity area Z1, the first motion mechanism 30 can drive the first seat unit 10 to cooperate with the activity; at this time, the next group of passengers can board the second seat unit 10' located in the preparation area Z2 to prepare for watching the movie, and the second motion mechanism 30' can drive the second seat unit 10' to a position suitable for passengers to board. When the passengers on the first seat unit 10 finish watching the movie, the base 22 can rotate and drive the first seat unit 10 to move to the preparation area Z2 and the second seat unit 10' to move to the activity area Z1, and the second motion mechanism 30' can drive the second seat unit 10' to move in conjunction with the movie-watching activity. At this time, the first motion mechanism 30 can drive the first seat unit 10 to move to a position suitable for passengers to leave, so that the passengers sitting on the first seat unit 10 can smoothly leave the first seat unit 10 and facilitate the next group of passengers to board. In this way, when there are a large number of passengers, the waiting time of passengers can be greatly reduced to effectively improve the riding experience.

[0023] Please refer to FIG. 5, which shows a viewing system 2 according to another preferred embodiment of the present invention, comprising a dome screen 3 and the rotating motion platform 1 of the preferred embodiment described above. The rotating motion platform 1 is disposed on one side of the dome screen 3. One of the first seat unit 10 and the second seat unit 10' located in the activity area Z1 faces the dome screen 3, and the other of the first seat unit 10 and the second seat unit 10' located in the preparation area Z2 faces away from the dome screen 3.

[0024] Furthermore, in this embodiment, the frame 40 includes a plurality of layers 42 and has a plurality of side openings 40a. The layers 42 are arranged in the longitudinal direction and spaced apart. The rotating motion platforms 1 are correspondingly arranged on the layers 42 and correspondingly arranged at the side openings 40a. The activity area Z1 is located outside the side openings 40a, and the preparation area Z2 is located in the internal space of the frame 40. The number of the rotating motion platforms 1 is plural, and the rotating motion platforms 1 are arranged in the longitudinal direction and spaced apart corresponding to the side openings 40a. The rotating motion platforms 1 can be actuated independently of each other.

[0025] In this way, the rotating motion platforms 1 can rotate synchronously or asynchronously according to needs. For example, under normal circumstances, the rotating motion platforms 1 can rotate synchronously on each floor. However, if there are a large number of people leaving or the crowd is crowded, the rotating motion platforms 1 can be changed to asynchronous rotation, thereby achieving the effect of staggering the leaving crowd. In addition, if the number of people in the amusement park is small during the off-season or on weekdays, only the rotating motion platforms 1 on a certain layer can be selectively opened for rotation, without the need for all the rotating motion platforms 1 to operate, thereby achieving the effect of saving operating energy. In addition, in this embodiment, the distances between each rotating motion platform 1 and the spherical screen 3 are the same, and the rotation axes A1 of different rotating motion platforms 1 are the same, but the present invention is not limited thereto. In other embodiments, as shown in FIG. 6, the distances between each rotating motion platform 1 and the spherical screen 3 may also be different, that is, the rotation axes A1, A1', A1'' of each rotating motion platform 1 may be different rotation axes. For example, the rotating motion platform 1 located at the bottom layer of the frame 40 may be set at a position farther away from the spherical screen 3, and the rotating motion platform 1 located at the top layer of the frame 40 may be set at a position closer to the spherical screen 3. At this time, the rotation axes A1 of each rotating motion platform 1 are not the same.

[0026] In summary, the arrangement of the first seat unit 10 and the second seat unit 10' can significantly increase the passenger carrying capacity. Furthermore, by disposing the first seat unit 10 and the second seat unit 10' on opposite sides of the base 22, and by disposing the first motion mechanism 30 and the second motion mechanism 30', the first seat unit 10 and the second seat unit 10' can be driven by the first motion mechanism 30 and the second motion mechanism 30', respectively, to move independently. Furthermore, the base 22 can rotate about the rotation axis A1 and drive the first seat unit 10 and the second seat unit 10' to rotate and displace between the activity area Z1 and the preparation area Z2. In addition, the design of the rotating motion platforms 1 being able to move independently of each other allows the rotating motion platforms 1 to be controlled to

rotate asynchronously when there are a large number of people leaving or when the crowd is very crowded, thereby achieving the effect of staggering the number of people leaving. If there are fewer people, only the rotating platforms 1 on a certain layer can be selectively opened for rotation, thereby achieving the effect of saving operating energy.

[0027] It must be pointed out that the embodiments described above are only some preferred embodiments of the present invention. All equivalent structures which employ the concepts disclosed in this specification and the appended claims should fall within the scope of the present invention.

WHAT IS CLAIMED IS:

1. A rotating motion platform, wherein an active area and a preparation area are defined, the active area and the preparation area are relatively set, the rotating motion platform comprising:

a first seat unit, wherein the first seat unit is for passengers to sit on;

a second seat unit, wherein the second seat unit is for passengers to sit on;

a rotating mechanism, wherein the rotating mechanism comprising a base and a driving member, wherein the driving member is connected to the base to drive the base to rotate around a rotation axis, the first seat unit and the second seat unit are respectively arranged on opposite sides of the base, the base can rotate around the rotation axis and drive the first seat unit and the second seat unit to rotate and displace between the active area and the preparation area; and

a first motion mechanism, wherein the first motion mechanism comprising a first connecting member and a first actuating system, the first connecting member is pivotally connected to the base and the first seat unit respectively; the first actuating system is pivotally connected to the base and the first seat unit respectively; the first actuating system can drive the first seat unit to pivot around a first pitch axis; the first actuating system can drive the first seat unit to pivot around a first roll axis relative to the first connecting member.

2. The rotating motion platform as claimed in claim 1, further comprising a second motion mechanism comprising a second connecting member and a second actuating system, wherein the second connecting member is pivotally connected to the base and the second seat unit respectively; wherein the second actuating system is pivotally connected to the base and the second seat unit respectively; wherein the second actuating system can drive the second seat unit to pivot around a second pitch axis; wherein the second actuating system can drive the second seat unit to pivot around a second roll axis relative to the second connecting member.

3. The rotating motion platform as claimed in claim 1, further comprising a frame, wherein the frame having a side opening, the rotating mechanism is arranged on the frame and located at the side opening, the active area is located outside the side opening, and the preparation area is located in an

inner space of the frame.

4. The rotating motion platform as claimed in claim 3, further comprising a partition, wherein the partition is provided on the base and located between the first seat unit and the second seat unit; wherein the base drives the partition to rotate; wherein when the first seat unit and the second seat unit are respectively located in the active area and the preparation area, the partition closes the side opening.

5. The rotating motion platform as claimed in claim 1, wherein the first seat unit and the second seat unit are arranged opposite to each other.

6. The rotating motion platform as claimed in claim 2, wherein the first actuating system includes two first actuators, the two first actuators are symmetrically arranged on opposite sides of the first roll axis, and each of the two first actuators is pivotally connected to the base and the first seat unit respectively; the second actuating system includes two second actuators, the two second actuators are symmetrically arranged on opposite sides of the second roll axis, and each of the second actuators is pivotally connected to the base and the second seat unit respectively.

7. The rotating motion platform as claimed in claim 6, wherein the two first actuators are inclined relative to the first pitch axis, and the two second actuators are inclined relative to the second pitch axis.

8. The rotating motion platform as claimed in claim 2, wherein the first actuating system is pivotally connected to a rear of the first seat unit, and the second actuating system is pivotally connected to a rear of the second seat unit.

9. The rotating motion platform as claimed in claim 2, wherein the first connecting member is pivotally connected to a rear of the first seat unit around the first roll axis, and the second connecting member is pivotally connected to a rear of the second seat unit around the second roll axis.

10. The rotating motion platform as claimed in claim 2, wherein the first roll axis and the second roll axis are the same axis.

11. The rotating motion platform as claimed in claim 2, wherein the first connecting member

includes a first frame and two first extensions, the first frame is pivotally connected to the first seat unit, the two first extensions extend from the bottom of the first frame and are pivotally connected to the base around a first pitch axis, and the second connecting member includes a second frame and two second extensions, the second frame is pivotally connected to the second seat unit, the two second extensions extend from the bottom of the second frame and are pivotally connected to the base around a second pitch axis.

12. A viewing system, comprising:

a dome screen; and

the rotating motion platform as claimed in claim 1, wherein the rotating motion platform disposed on one side of the dome screen, with one of the first seat unit and second seat unit located in the activity area facing the dome screen, and the other of the first seat unit and second seat unit located in the preparation area facing away from the dome screen.

13. The viewing system as claimed in claim 12, wherein the number of the rotating motion platforms is plural, and the rotating motion platforms are arranged in a longitudinal direction and spaced apart from each other.

14. The viewing system as claimed in claim 13, further comprising a frame, the frame comprising a plurality of layers and having a plurality of side openings, the plurality of layers being arranged in a longitudinal direction and spaced apart, the rotating motion platforms being correspondingly arranged on the plurality of layers and correspondingly arranged at the plurality of side openings, the active area being located outside the side openings, and the preparation area being located in an inner space of the frame.

15. The viewing system as claimed in claim 13, wherein the rotating motion platforms can move independently of each other.

16. The viewing system as claimed in claim 12, wherein the number of the rotating motion platforms is plural, and the base of each of the rotating action platforms rotates around different rotation axes.