

ATTRACTION SYSTEM FOR AMUSEMENT PARK

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application claims priority to and the benefit of U.S. Provisional Application No. 63/385,825, entitled “ATTRACTION SYSTEM FOR AMUSEMENT PARK,” filed in December 2, 2022, the disclosure of which is incorporated by reference in its entirety herein.

BACKGROUND

[0002] This section is intended to introduce the reader to various aspects of art that may be related to various aspects of the present disclosure, which are described below. This discussion is believed to be helpful in providing the reader with background information to facilitate a better understanding of the various aspects of the present disclosure. Accordingly, it should be understood that these statements are to be read in this light, and not as admissions of prior art.

[0003] Amusement parks include a variety of features to entertain guests and patrons. For example, an amusement park may include an attraction system, which may have a ride vehicle. A guest may be positioned within the ride vehicle, and the ride vehicle may travel along a path. Movement of the ride, such as along the path, may entertain the guest. For instance, movement of the ride vehicle carrying the guest may impart various sensations onto the guest and/or transport the guest to various locations. The attraction system may also provide show effects to entertain the guest positioned within the ride vehicle.

BRIEF DESCRIPTION

[0004] A summary of certain embodiments disclosed herein is set forth below. It should be understood that these aspects are presented merely to provide the reader with a brief summary of these certain embodiments and that these aspects are not intended to limit the scope of this disclosure. Indeed, this disclosure may encompass a variety of aspects that may not be set forth below.

[0005] In one embodiment, an attraction system includes a ride vehicle configured to travel along a path. The ride vehicle includes a bogie configured to engage with the path, a base coupled to the bogie, an appendage coupled to the base and configured to actuate relative to the base about or along a first axis, a support coupled to the appendage and configured to actuate relative to the appendage about or along a second axis, and a seat coupled to the support and configured to secure a guest therein.

[0006] In one embodiment, a ride vehicle for an attraction system includes a bogie configured to travel along a path of the attraction system, a base coupled to the bogie, a seat configured to secure a guest therein, adjustable between one or more first configurations and one or more second configurations, configured to support a guest standing within the seat in the one or more first configurations, and configured to support a guest sitting within the seat in the one or more second configurations, and an appendage coupled to the base and configured to rotate about one or more axes to rotate the seat about the one or more axes.

[0007] In one embodiment, a ride vehicle includes a support and a seat configured to support a guest in the ride vehicle. The seat includes a seatback, a seat pan configured to transition the seat between one or more first configurations and one or more second configurations, and a linkage configured to couple the seatback to the support. The linkage is configured to adjust the seatback away from the support and to rotate and/or translate the seat pan along or about a first direction, and the linkage is configured to adjust the seatback toward the support and to rotate and/or translate the seat pan in a second direction.

DRAWINGS

[0008] These and other features, aspects, and advantages of the present disclosure will become better understood when the following detailed description is read with reference to the accompanying drawings in which like characters represent like parts throughout the drawings, wherein:

[0009] FIG. 1 is a schematic diagram of an embodiment of an attraction system of an amusement park, in accordance with an aspect of the present disclosure;

[0010] FIG. 2 is a perspective view of an embodiment of a ride vehicle of an attraction system, in accordance with an aspect of the present disclosure;

[0011] FIG. 3 is a perspective view of an embodiment of a ride vehicle of an attraction system, in accordance with an aspect of the present disclosure;

[0012] FIG. 4 is a perspective view of an embodiment of a ride vehicle of an attraction system, in accordance with an aspect of the present disclosure;

[0013] FIG. 5 is a perspective view of an embodiment of a ride vehicle of an attraction system, in accordance with an aspect of the present disclosure;

[0014] FIG. 6 is a perspective view of an embodiment of a ride vehicle of an attraction system in which a seat of the ride vehicle is in an extended configuration, in accordance with an aspect of the present disclosure;

[0015] FIG. 7 is a perspective view of an embodiment of a ride vehicle of an attraction system of an amusement park in which a seat of the ride vehicle is in a retracted configuration, in accordance with an aspect of the present disclosure;

[0016] FIG. 8 is a flowchart of an embodiment of a method for operating an attraction system, in accordance with an aspect of the present disclosure; and

[0017] FIG. 9 is a flowchart of an embodiment of a method for operating an attraction system, in accordance with an aspect of the present disclosure.

DETAILED DESCRIPTION

[0018] When introducing elements of various embodiments of the present disclosure, the articles “a,” “an,” and “the” are intended to mean that there are one or more of the elements. The terms “comprising,” “including,” and “having” are intended to be inclusive and mean that there may be additional elements other than the listed elements. Additionally, it should be understood that references to “one embodiment” or “an embodiment” of the present disclosure are not intended to be interpreted as excluding the existence of additional embodiments that also incorporate the recited features.

[0019] One or more specific embodiments will be described below. In an effort to provide a concise description of these embodiments, not all features of an actual implementation are described in the specification. It should be appreciated that in the development of any such actual implementation, as in any engineering or design project, numerous implementation-specific decisions must be made to achieve the developers' specific goals, such as compliance with system-related and business-related constraints, which may vary from one implementation to another. Moreover, it should be appreciated that such a development effort might be complex and time consuming, but would nevertheless be a routine undertaking of design, fabrication, and manufacture for those of ordinary skill having the benefit of this disclosure.

[0020] As used herein, the terms “approximately,” “generally,” “substantially,” and so forth, are intended to convey that the property value being described may be within a relatively small range of the property value, as those of ordinary skill would understand. For example, when a property value is described as being “approximately” equal to (or, for example, “substantially similar” to) a given value, this is intended to convey that the property value may be within +/- 5%, within +/- 4%, within +/- 3%, within +/- 2%, within +/- 1%, or even closer, of the given value. Similarly, when a given feature is described as being “substantially parallel” to another feature, “generally perpendicular” to another feature, and so forth, this is intended to convey that the given feature is within +/- 5%, within +/- 4%, within +/- 3%, within +/- 2%, within +/- 1%, or even closer, to having the described nature, such as being parallel to another feature, being perpendicular to another feature, and so forth. Mathematical terms, such as “parallel” and “perpendicular,” should not be rigidly interpreted in a strict mathematical sense, but should instead be interpreted as one of ordinary skill in the art would interpret such terms. For example, one of ordinary skill in the art would understand that two lines that are substantially parallel to each other are parallel to a substantial degree, but may have minor deviation from exactly parallel.

[0021] The present disclosure is directed to an amusement or theme park. The amusement park may include a variety of attraction systems, such as rides (e.g., a roller coaster), theatrical shows, set designs, performers, and/or decoration elements, to entertain guests. An attraction system may employ different features to provide guests with a unique experience. For example, the attraction system may include a ride with

a ride vehicle that moves along a path, such as a track. The ride vehicle may carry a guest, and movement of the ride vehicle may impart movement sensations onto the guest carried by the ride vehicle, thereby entertaining the guest.

[0022] More unique ways to entertain amusement park guests are desirable to satisfy the guests' increasing expectations. In other words, an attraction system that entertains guests in a unique manner may increase guest satisfaction. As an example, it may be desirable for an attraction system having a ride vehicle to impart new movement sensations to guests positioned within the ride vehicle, thereby providing a unique experience to the guests.

[0023] Thus, it is now recognized that a creative and improved manner in which a ride vehicle may move (e.g., along a path) may entertain guests in a unique manner to increase guest satisfaction. Accordingly, embodiments of the present disclosure are directed to an attraction system having a ride vehicle configured to move and impart different movement sensations to a guest positioned within the ride vehicle. For example, the ride vehicle may include a bogie configured to travel along a path. The ride vehicle may include an appendage coupled to a base of the bogie and a support coupled to the appendage. The appendage may be configured to move relative to the base about or along a first axis, and the support may be configured to move relative to the appendage about or along a second axis. For example, the first axis may extend along or parallel to the direction of travel of the bogie along the path, and the second axis may extend crosswise to the first axis. In an embodiment, movement about or along the first axis and/or the second axis may be natural (e.g., as a result of a gravitational force, inertia, momentum). In an additional or alternative embodiment, the movement about the first axis and/or the second axis may be actuated, such as via instructions provided by a controller. Such movement of the ride vehicle may provide different movement sensations for a guest positioned in the seat to entertain the guest. The movement sensations caused by movement of the ride vehicle about the first axis and/or about the second axis may provide a unique experience to the guest.

[0024] Furthermore, a seat of the ride vehicle may be adjusted between different configurations, such as an extended configuration to accommodate a guest standing in the ride vehicle and a retracted configuration to accommodate a guest sitting in the ride vehicle. The different configurations of the seat may enable the guest to be oriented in

different manners, such as a manner preferred by or selected by the guest. The different orientations of the guest in the ride vehicle may cause the guest to experience different movement sensations. As such, the attraction system may provide a different experience for each guest during a single ride cycle, such that different guests in a same ride vehicle may be sitting or standing and may, respectively, have different ride experiences.

[0025] With the preceding in mind, FIG. 1 is a schematic diagram of an embodiment of an attraction system 50, such as a roller coaster, a dark ride, or a water ride, that may be used in conjunction with the disclosed embodiments. The attraction system 50 includes a ride vehicle 52 configured to travel (e.g., translate) along a path 54. In an embodiment, the path 54 may include a track 100 to which the ride vehicle 52 may be coupled. In an additional or alternative embodiment, the path 54 may include a general area (e.g., a floor, the ground, a body of fluid, a ceiling) along which the ride vehicle 52 may navigate. For example, the ride vehicle 52 may include a bogie 56 that may engage with the path 54 (e.g., engage via wheels, rollers, sliding surface, treads, magnets, a cam or camshaft, a hull). The ride vehicle 52 may also include a base 58 coupled to the bogie 56. The ride vehicle may further include an appendage 60 coupled to the base 58 and a support 62 coupled to the appendage 60. A seat 64 may be coupled to the support 62 and configured to secure a guest 65 therein to enable the ride vehicle 52 to carry the guest 65. Movement of the bogie 56 may therefore drive movement of the base 58, the appendage 60, the support 62, and the seat 64, thereby moving the guest 65.

[0026] The base 58 may be fixedly coupled to the bogie 56 such that movement of the bogie 56 along the path 54 drives corresponding movement of the base 58 along the path 54. The appendage 60 may be rotationally coupled or coupled in a translatable manner to the base 58 in an embodiment. As an example, the appendage 60 may rotate about a first axis 124 that extends along or generally parallel to a direction of travel (e.g., a forward direction, a reverse direction) of the ride vehicle 52 along the path 54. As another example, the appendage 60 may rotate about an axis that extends at any angle relative to the direction of travel of the ride vehicle 52 along the path 54. Additionally, the support 62 may be rotationally coupled to the appendage 60. For instance, the support 62 may rotate about a second axis 126 that extends crosswise (e.g.,

perpendicularly, obliquely) to the direction of travel of the ride vehicle 52 along the path 54. The support 62 may additionally, or alternatively, rotate about an axis that extends at any other angle relative to the direction of travel of the ride vehicle 52 along the path 54. Rotation of the appendage 60 relative to the base 58 and/or rotation of the support 62 relative to the appendage 60 may drive corresponding movement of the seat 64 and of a guest 65 positioned within the seat 64. In this manner, the movement of the ride vehicle 52 along the path 54, the rotation of the appendage 60 relative to the base 58, and/or rotation of the support 62 relative to the appendage 60 may cooperatively provide movement sensations of the guest 65.

[0027] In an embodiment, the ride vehicle 52 may include an actuator 66 (e.g., a motor, a linear actuator, a rotary actuator). The actuator 66 may be configured to drive motion of different components of the ride vehicle 52. As an example, the actuator 66 may drive movement of the bogie 56 along the path 54, rotation of the appendage 60 relative to the base 58, and/or rotation of the support 62 relative to the appendage 60. Thus, the appendage may be configured to actuate relative to the base 58 and/or the support 62 may be configured to actuate relative to the appendage 60. In an additional or alternative embodiment, the ride vehicle 52 may not include the actuator 66 and instead, the movement of the bogie 56 along the path 54, rotation of the appendage 60 relative to the base 58, and/or rotation of the support 62 relative to the appendage 60 may be naturally induced, such as via a gravitational force (e.g., induced in a lateral or crosswise direction relative to a direction of travel of the ride vehicle 52 along the path 54), inertia, and/or momentum.

[0028] The attraction system 50 may also include or be communicatively coupled to a controller 68 (e.g., a programmable controller, an electronic controller, an automation controller, a cloud computing server, control circuitry). The controller 68 includes a memory 70 and a processor 72 (e.g., processing circuitry). The memory 70 may include volatile memory, such as random-access memory (RAM), and/or non-volatile memory, such as read-only memory (ROM), optical drives, hard disc drives, solid-state drives, or any other non-transitory computer-readable medium that includes instructions to operate the attraction system 50. The processor 72 may be configured to execute such instructions. For example, the processor 72 may include one or more

application specific integrated circuits (ASICs), one or more field programmable gate arrays (FPGAs), one or more general purpose processors, or any combination thereof.

[0029] The controller 68 may be communicatively coupled to the ride vehicle 52. By way of example, the controller 68 may be configured to instruct the actuator 66 to drive movement of the ride vehicle 52. In an embodiment, the controller 68 may include or be communicatively coupled to a user interface (UI) 74, and the controller 68 may instruct operation of the actuator 66 based on one or more inputs received via the UI 74. For instance, the UI 74 may include a touch screen, a turntable, a steering wheel, a button, a lever, a joystick, a dial, a trackpad, or any other suitable component with which a guest 65 (e.g., a guest 65 positioned in the seat 64, a guest 65 positioned outside of the ride vehicle 52) or a ride operator 75 may interact. The UI 74 may transmit an input based on the interaction from the guest 65 or ride operator 75, and the controller 68 may instruct operation of the actuator 66 based on the input. For example, the interaction may indicate a target or desired movement of the ride vehicle 52 (e.g., translation of the bogie 56, rotation of the appendage 60, rotation of the support 62), and the controller 68 may instruct operation of the actuator 66 in accordance with the target movement.

[0030] Additionally or alternatively, the controller 68 may be configured to instruct the actuator 66 to operate based on data received from a sensor 76 (e.g., a position sensor, a timer, an optical sensor) of the attraction system 50. The data may be indicative of a parameter of the attraction system 50, such as a time of operation, a position or orientation of the ride vehicle 52 (e.g., along the path 54, with respect to an additional ride vehicle of the attraction system 50, with respect to a loading or unloading station or platform 80), a position of a guest 65 (e.g., within the ride vehicle 52), a guest activity (e.g., guest movement, a guest imparted force), and the like. The controller 68 may instruct the actuator 66 to operate based on the parameter indicated by the data.

[0031] Moreover, the attraction system 50 may include show effects 78 that may be activated to provide further entertainment for the guests 65. The show effects 78 may include, for instance, at least a visual output (e.g., an image, a video, a light), audio output (e.g., music, a sound effect), a fluid output (e.g., a mist effect, a fog effect, a smoke effect) a solid output (e.g., confetti), or an animated figure. For example, the ride vehicle 52 may move the guest 65 to different locations along the path 54, and

certain show effects 78 adjacent to the ride vehicle 52 may be activated (e.g., via the controller 68) to entertain the guest 65. Thus, the movement of the ride vehicle 52 and the activation of the show effects 78 may cooperatively entertain the guest 65.

[0032] Furthermore, in an embodiment, the seat 64 of the ride vehicle 52 may be adjustable between various configurations. As an example, the seat 64 may transition between a first configuration (e.g., a seated configuration, a retracted configuration, a compact configuration) to support a guest 65 in a generally seated position in the seat 64 and a second configuration (e.g., a standing configuration, an extended configuration, an upright configuration) to support a guest 65 in a generally standing position in the seat 64. The seat 64 may also be adjusted to an intermediate configuration between the first configuration and the second configuration. In one embodiment, the seat 64 may be manually adjustable between the first configuration and the second configuration, such as by an operator or technician of the attraction system 50. In an additional or alternative embodiment, the seat 64 may be automatically adjusted between the first configuration and the second configuration. For instance, the controller 68 may instruct the actuator 66 to displace the seat 64 between the first configuration and the second configuration. By way of example, the controller 68 may receive one or more inputs (e.g., via user (e.g., guest 65 or ride operator 75) interaction with the UI 74, via an alternate controller 82 of the attraction system 50) and instruct the actuator 66 to adjust the seat 64 based on the input(s). Adjustability of the seat 64 may provide a more desirable experience for the guest 65. Indeed, the guest 65 may be provided with different experiences for the different configurations of the seat 64, and a guest 65 may select a particular one of the configurations for travel of the ride vehicle 52 along the path 54 to enable the attraction system 50 to provide a more customized or personalized experience for the guest 65. Further, adjustment of the seat configuration may occur during a ride cycle, such that the seat configuration changes dynamically and, under instructions from the alternate controller 82, of the attraction system 50 based on ride conditions or desired effects.

[0033] FIG. 2 is a perspective view of an embodiment of the ride vehicle 52 of the attraction system 50. In the illustrated embodiment, the ride vehicle 52 is configured to travel along a track 100. For example, the bogie 56 may include wheels 102 (e.g., wheel assemblies) configured to capture the track 100, such as a rail, a channel, or a

bar. The wheels 102 may be configured to rotate to drive movement of the bogie 56 and a remainder of the ride vehicle 52 along the track 100. For instance, the bogie 56 may be configured to translate or rotate about or along directions 104 (e.g., linear directions) along the track 100. In an additional or alternative embodiment, the bogie 56 may be configured to travel (translate or rotate) in a different direction relative to the track 100, such as to rotate about an axis not parallel to the track 100.

[0034] In the illustrated embodiment, the base 58 of the ride vehicle 52 extends in a direction (e.g., a vertical direction) away from the bogie 56 and from the track 100. Additionally, a portion of the appendage 60 coupled to the base 58 may extend generally along the base 58. In an embodiment, the appendage 60 may be coupled to the base 58 at a pivot 106, which may be adjacent to an end 108 of the base 58 distal to the bogie 56. The support 62 may be coupled to another portion of the appendage 60 extending crosswise to the base 58, such as along the bogie 56. The support 62 may have a surface 110 to which the seat 64 may be coupled. For example, the seat 64 may include a foundation 112 secured to the surface 110, a seatback 114 configured to support a first portion 150 (e.g., back, head, upper body) of a guest, a seat pan 116 configured to support a second portion 156 (e.g., upper legs, lower body) of the guest, and a plate 118 configured to support a third portion (e.g., lower legs, lower body) of the guest. In an embodiment, the foundation 112 is fixedly coupled to the support 62 such that an orientation (e.g., an angled formed with respect to the surface 110, a direction of orientation) of the seat 64 relative to the support 62 is fixed while a configuration (e.g., extended vs. retracted) of the seat 64 may be changed. As noted, rotation and/or swinging of the support 62 permits movement of the seat 64 relative to the base 58.

[0035] Although the illustrated ride vehicle 52 includes two seats 64, an additional or alternative embodiment of the ride vehicle 52 may include a single seat 64 or more than two seats 64 (e.g., three seats 64, four seats 64, or more). Furthermore, although the illustrated ride vehicle 52 includes a single appendage 60 coupled to the base 58, the ride vehicle 52 may include multiple appendages 60 coupled to the base 58 in an additional or alternative embodiment. By way of example, the ride vehicle 52 may include an appendage 60 that may be coupled to a support 62 extending in a forward direction of travel of the ride vehicle 52, and the ride vehicle 52 may include another

appendage 60 that may be coupled to another support 62 extending in a backward direction of travel of the ride vehicle 52.

[0036] The seat 64 may include various features to facilitate comfort and securement of a guest within the seat 64. As an example, the seat 64 may include a restraint 120 configured to be deployed to secure a position of the guest with respect to the seat 64. The restraint 120 may include an over-the-shoulder restraint that is coupled to the seatback 114 and may rotate about the guest and capture a portion (e.g., upper body) of the guest. In an embodiment, the restraint 120 may include another component, such as an integral vest that may capture the guest and provide further securement of the guest to the seat 64. As another example, the seat 64 may include a firstommel 122 configured to support the guest. That is, the guest may rest on the firstommel 122 while positioned within the seat 64. As a further example, the seat 64 (e.g., the seatback 114, the seat pan 116, the plate 118) may have a contour or profile to capture the guest within the seat 64. Further still, the seat 64 may be formed from a pliable or compliant material (e.g., foam, gel) to provide comfort for a guest in contact with the seat 64.

[0037] During operation of the attraction system 50, the appendage 60 may rotate about the pivot 106 to rotate relative to the base 58. For example, the appendage 60 may rotate (e.g., roll, pitch, yaw) about a first axis 124 that extends parallel to the directions 104 of travel of the bogie 56 along the track 100. Furthermore, the support 62 may rotate (e.g., another of roll, pitch, yaw different from the rotation about the first axis 124) about a second axis 126 that extends crosswise to the first axis 124 (e.g., crosswise to the directions 104). Additionally, or alternatively, the appendage 60 may move along the first axis 124 and/or the support 62 may move along the second axis 126. As discussed herein, movement of the appendage 60 about or along the first axis 124 and/or rotation of the support 62 about or along the second axis 126 may be naturally induced, such as via a gravitational force imparted onto the appendage 60 and/or onto the support 62 in a direction crosswise (e.g., perpendicular) to the directions 104. For example, the track 100 may have a curved section that induces a lateral load onto the appendage 60 and/or onto the support 62 to drive rotation of the appendage 60 about or along the first axis 124 and/or rotation of the support 62 about or along the second axis 126. Additionally, or alternatively, the controller 68 may be configured to instruct the actuator 66 to actuate the appendage 60 about or along the first axis 124

and/or to actuate the support 62 about or along the second axis 126, thereby actively driving rotation of the appendage 60 and/or of the support 62. For example, the controller 68 may receive data from the sensor 76, such as data indicative of one or more inputs provided by the guest (e.g., a grip force applied to a portion of the restraint 120), and the controller 68 may instruct the actuator 66 to operate based on the data.

[0038] FIG. 3 is a perspective view of an embodiment of the ride vehicle 52 of the attraction system 50. In the illustrated embodiment, a first portion 150 of the appendage 60 coupled to the base 58 (e.g., extending along the base 58) is rotated in a first rotational direction 152 about the first axis 124 and relative to the base 58. Additionally, the support 62 is rotated in a second rotational direction 154 about the second axis 126 and relative to a second portion 156 of the appendage 60 (e.g., extending crosswise to the first portion 150, extending away from the base 58). The rotation of the first portion 150 of the appendage 60 about the first axis 124 and/or rotation of the support 62 about the second axis 126 may be naturally induced (e.g., by gravity) and/or actively effectuated (e.g., by the actuator 66 in accordance with instruction provided by the controller 68). Additionally, the rotation of the first portion 150 of the appendage 60 about the first axis 124 and/or rotation of the support 62 about the second axis 126 may impart unique movement sensations onto the guest positioned within the seat 64 to entertain the guest.

[0039] FIG. 4 is a perspective view of an embodiment of the ride vehicle 52 of the attraction system 50. In the illustrated embodiment, the first portion 150 of the appendage 60 coupled to the base 58 is rotated in a third rotational direction 180, opposite the first rotational direction 152 shown in FIG. 3, about the first axis 124 and relative to the base 58. Additionally, the support 62 is rotated in a fourth rotational direction 182, opposite the second rotational direction 154 shown in FIG. 3, about the second axis 126 and relative to the second portion 156 (not visible) of the appendage 60. As an example, the first portion 150 of the appendage 60 may oscillate (e.g., swing, sway) between rotation in the first rotational direction 152 of FIG. 3 and in the third rotational direction 180 about the first axis 124 and relative to the base 58. Additionally, the support 62 may alternate between rotation in the second rotational direction 154 of FIG. 3 (e.g., during rotation of the first portion 150 of the appendage 60 in the first rotational direction 152 of FIG. 3) and rotation in the fourth rotational

direction 182 (e.g., during rotation of the first portion 150 of the appendage 60 in the third rotational direction 180) about the second axis 126 and relative to the second portion 156 of the appendage 60. Such movement of the first portion 150 of the appendage 60 relative to the base 58 and of the support 62 relative to the second portion 156 of the appendage 60 may provide a unique experience to the guest.

[0040] It should be noted that in the embodiments described in FIGS. 2-4, the seat 64 may be in an extended configuration to support a guest that is standing on the surface 110. For example, in the extended configuration, the seatback 114, the seat pan 116, and/or the plate 118 may generally be arranged in an upright orientation to support a standing guest 218. Indeed, the first pommel 122 may be positioned (e.g., offset from the surface 110) to support the guest and improve comfort of the guest. Additionally, as described herein, the seat 64 may be adjusted to a retracted configuration to support a guest sitting in the seat 64.

[0041] FIG. 5 is a perspective view of an embodiment of the ride vehicle 52 of the attraction system 50. In the illustrated embodiment, the seat 64 is in the retracted configuration to support a guest sitting in the seat 64. In an embodiment, the controller 68 may instruct the actuator 66 to adjust the seat 64 to the retracted configuration, such as in response to one or more user inputs. In the retracted configuration, the seatback 114, the seat pan 116, and the plate 118 may be oriented to support a sitting guest 244. Additionally, the restraint 120 may be deployed to secure the guest sitting within the seat 64. In one embodiment, a second pommel 190 may support the guest in the retracted configuration of the seat 64.

[0042] The first portion 150 of the appendage 60 may rotate about the first axis 124 and relative to the base 58, and the support 62 may rotate about the second axis 126 and relative to the second portion 156 of the appendage 60 while the seat 64 is in the retracted configuration. In this manner, the seat 64 may be moved in a similar manner while the seat 64 is in the retracted configuration relative to while the seat 64 is in the extended configuration. However, because the guest is in a different orientation within the ride vehicle 52 (e.g., a position of the guest relative to the first axis 124 about which the first portion 150 of the appendage 60 rotates is different, a position of the guest relative to the second axis 126 about which the support 62 rotates is different) in the different configurations of the seat 64, the movement sensations being imparted onto

the guest may be different for the different configurations of the seat 64. As such, the attraction system 50 may provide a different experience for the guest based on the configuration of the seat 64.

[0043] FIG. 6 is a side view of the ride vehicle 52 of the attraction system 50 in which the seat 64 is in an extended configuration 200. For example, the seat 64 may include a linkage 202 coupled to the seatback 114 at a mount 204 (e.g., positioned on a side of the seatback 114 opposite a guest engaging side of the seatback 114). In the extended configuration 200, the linkage 202 may be extended to position the seatback 114 relatively farther away from the surface 110 of the support 62 and/or from the first portion 150 of the appendage 60. In an embodiment, the linkage 202 may be coupled to a first foundation 206 secured to the surface 110. The linkage 202 may extend farther away from the first foundation 206 to position the seatback 114 relatively farther away from the surface 110 in the extended configuration 200. For example, the linkage 202 may utilize a telescoping mechanism in which multiple segments (e.g., nested segments) are configured to slide relative to one another to adjust the length of extension of the linkage 202, and the segments may extend farther out from one another in the extended configuration 200. In an additional or alternative embodiment, the linkage 202 may be stored at least partially within a recess of the foundation 112 or the seatback 114 in a retracted position.

[0044] Additionally, the seatback 114 may be coupled to the seat pan 116 via a first joint 208, the seat pan 116 may be coupled to the plate 118 via a second joint 210, and the plate 118 may be coupled to a second foundation 212. In the extended configuration 200, the plate 118 may be positioned away from the surface 110, and the seat pan 116 may be oriented more upright to enable the plate 118 and the seat pan 116 to extend from the second foundation 212 to the seatback 114 positioned relatively farther away from the surface 110. That is, the seatback 114, the seat pan 116, and/or the plate 118 may generally extend upright away from the surface 110 in the extended configuration 200. For example, extension of the linkage 202 may drive rotation of the seat pan 116 in a first rotational direction 214 toward the upright orientation.

[0045] In an embodiment, the first pommel 122 may also be coupled to the seatback 114 via the first joint 208. The first pommel 122 may be configured to rotate about the first joint 208 and relative to the seat pan 116. However, a position of the first pommel

122 may be generally fixed relative to the seatback 114 at the first joint 208. In other words, the first pommel 122 and the seatback 114 may not substantially rotate (e.g., within five and ten degrees, within one to five degrees, within zero to one degree) relative to one another. In the extended configuration 200, the first pommel 122 may extend through the seat pan 116, such as through an opening or a slot 216 formed through the seat pan 116. The extension of the first pommel 122 through the seat pan 116 may enable the first pommel 122 to support a standing guest 218.

[0046] FIG. 7 is a side view of the ride vehicle 52 of the attraction system 50 in which the seat 64 is in a retracted configuration 240. As an example, to transition the seat 64 to the retracted configuration 240 (e.g., from the extended configuration), the linkage 202 may be retracted toward the first foundation 206 (e.g., the telescoping segments of the linkage 202 may be retracted into one another) to adjust the seatback 114 toward the surface 110 and/or toward the first portion 150 of the appendage 60. In an embodiment, the linkage 202 may travel along an arcuate path 241 between the extended configuration 200 of FIG. 6 and the retracted configuration 240 to drive rotation of the seatback 114 and the seat pan 116 relative to one another for desirable orientation of the seat 64. Movement of the seatback 114 toward the surface 110 may also drive movement of the seat pan 116 toward the surface 110, such as to rotate in a second rotational direction 242 about the first joint 208 and about the second joint 210, opposite the first rotational direction 214, toward the surface 110. For example, the seat pan 116 may be oriented crosswise relative to the seatback 114 and/or relative to the plate 118 to support a sitting guest 244 in the retracted configuration 240. Additionally, movement of the seatback 114 and/or of the seat pan 116 toward the surface 110 may drive movement of the plate 118 along the second foundation 212 and toward the surface 110. For example, the plate 118 may move in a first translational direction 246 along the second foundation 212 toward the surface 110, thereby driving movement of the seat pan 116 along the first translational direction 246, during transition of the seat 64 to the retracted configuration 240. Additionally, the plate 118 may move in a second translational direction 248 along the second foundation 212 away from the surface 110, thereby driving movement of the seat pan 116 along the second translational direction 248, during transition of the seat 64 to the extended configuration 200 of FIG. 6.

[0047] Moreover, in the retracted configuration 240, the first pommel 122 may be positioned externally to the seat pan 116. That is, the first pommel 122 may not extend through the seat pan 116. Instead, the first pommel 122 may be positioned between the first foundation 206 and the second foundation 212. In this manner, the first pommel 122 may avoid contact with the sitting guest 244 and facilitate comfortable positioning of the guest onto the seat pan 116.

[0048] The seat 64 may also be adjusted to any intermediate position between the extended configuration 200 of FIG. 6 and the retracted configuration 240. As an example, the seat 64 may be adjusted to a partially extended configuration in which the linkage 202 may partially extend the seatback 114 away from the surface 110 and/or from the first portion 150 of the appendage 60. As another example, the seat 64 may be adjusted to a partially retracted configuration in which the linkage 202 may partially retract the seatback 114 toward the surface 110 and/or toward the first portion 150 of the appendage 60. In an intermediate position, the seatback 114, the seat pan 116, and/or the plate 118 may be in a partially upright position.

[0049] As discussed herein, the controller 68 may be configured to instruct the actuator 66 to transition the seat 64 between the extended configuration and the retracted configuration 240. For example, the actuator 66 may be instructed to extend the linkage 202 and drive the seatback 114 away from the surface 110 and/or from the first portion 150 of the appendage 60 to adjust the seat 64 to the extended configuration, and the actuator 66 may be instructed to retract the linkage 202 and drive the seatback 114 toward the surface 110 and/or toward the first portion 150 of the appendage 60 to adjust the seat 64 to the retracted configuration 240. Such operations of the controller 68 may be performed based on one or more user inputs, which may indicate a requested configuration of the seat 64. Additionally, or alternatively, the seat 64 may be adjusted between the extended configuration and the retracted configuration 240 via a manually applied force, such as from an operator of the attraction system 50 or a guest.

[0050] In an embodiment, the configuration of the seat 64 may be adjustable during a certain operation of the attraction system 50 and/or a certain location of the ride vehicle 52. By way of example, the configuration of the seat 64 may be adjustable at a loading/unloading station of the attraction system 50 at which movement of the ride vehicle 52 along the track 100 may be relatively slower. However, the configuration

of the seat 64 may be locked or fixed outside of the loading/unloading station at which movement of the ride vehicle 52 along the track 100 may be relatively faster. Thus, the configuration of the seat 64 may be blocked from adjustment at certain locations of the ride vehicle 52. In an additional or alternative embodiment, the configuration of the seat 64 may be adjustable throughout operation of the attraction system 50. For example, the configuration of the seat 64 may be adjustable regardless of the location of the ride vehicle 52 or the speed of the ride vehicle 52 along the track 100. Indeed, the configuration of the seat 64 may be adjusted while the ride vehicle 52 moves along the track 100.

[0051] It should also be noted that the configuration of each seat 64 may be independently adjustable. For example, for a ride vehicle 52 having multiple seats 64, any one of the seats 64 may be in the extended configuration 200 of FIG. 6, and any one of the seats 64 may be in the retracted configuration 240. Indeed, the seats 64 of the same ride vehicle 52 may be in a different configuration, such as of that corresponding to a selection provided by a guest. Thus, the attraction system 50 may provide a more suitable experience for each different guest in the ride vehicle 52.

[0052] FIG. 8 is a flowchart of an embodiment of a method 270 for operating a ride vehicle (e.g., the ride vehicle 52 of FIGS. 1-7) of an attraction system. Any suitable device (e.g., the processor 72 of the controller 68 of FIGS. 1-7) may perform the method 270. In one embodiment, the method 270 may be implemented by executing instructions stored in a tangible, non-transitory, computer-readable medium (e.g., the memory 70 of the controller 68 of FIGS. 1-7). For example, the method 270 may be performed at least in part by one or more software components, one or more software applications, and the like. While the method 270 is described as having operations performed in a specific sequence, additional operations may be performed, the described operations may be performed in a different sequence than the sequence illustrated, and/or certain described operations may be skipped or not performed altogether.

[0053] At block 272, a user input (e.g., one or more user inputs) may be received. By way of example, the user input may be received via an interaction between a guest and a user interface and/or via a sensor of the ride vehicle. For instance, the guest may

impart a force onto the sensor, and the sensor may provide data indicative of the force and representative of the user input.

[0054] At block 274, target movement of the ride vehicle may be determined based on the user input. As an example, the user input may indicate travel of the ride vehicle along a path. As another example, the user input may indicate a request for certain movement of the ride vehicle, such as movement of a seat about a first axis extending along or parallel to a direction of travel of the ride vehicle along the path. As a further example, the user input may indicate movement of the seat about a second axis extending crosswise to the direction of travel of the ride vehicle along the path. Indeed, the user input may indicate various movements of the ride vehicle to provide a desirable movement experience for the guest.

[0055] At block 276, the ride vehicle may be instructed to operate in accordance with the target movement determined based on the user input. For example, the ride vehicle may be instructed to travel in a particular direction and/or at a particular speed along the path. Additionally or alternatively, the seat may be instructed to rotate in a particular direction and/or at a particular rotational speed. In an embodiment, an actuator may be instructed to effectuate the movement of the ride vehicle in accordance with the target movement, thereby providing a desirable experience for the guest.

[0056] FIG. 9 is a flowchart of an embodiment of a method 300 for operating a ride vehicle (e.g., the ride vehicle 52 of FIGS. 1-7) of an attraction system. In an embodiment, a device (e.g., the processor 72 of the controller 68 of FIGS. 1-7) may actively perform the method 300. In an additional or alternative embodiment, performance of the method 300 may be naturally induced. It should be noted that additional operations may be performed with respect to the depicted method 300, the described operations may be performed in a different sequence than the sequence illustrated, and/or certain described operations may be skipped or not performed altogether.

[0057] At block 302, a bogie of the ride vehicle may be moved (e.g., actuated) along a path. By way of example, the bogie may translate along the path and/or rotate about the path. The path may include various profiles, such as a hill, a drop, a turn, and a

straightaway to change various movement characteristics (e.g., speed, acceleration, jerk) of the bogie.

[0058] At block 304, an appendage of the ride vehicle may be moved (e.g., actuated) relative to the base. For example, the appendage may be moved relative to the base about or along a first axis. In an embodiment, the first axis may extend in a direction in which the bogie moves along the path. In an additional or alternative embodiment, the first axis may extend in any other suitable direction relative to the direction in which the bogie moves along the path.

[0059] At block 306, a support of the ride vehicle may be moved (e.g., actuated) relative to the appendage. The support may be moved relative to the appendage about or along a second axis. The second axis may extend crosswise to the first axis about or along which the appendage moves relative to the base. Movement of the bogie along the path, movement of the appendage relative to the base, and/or movement of the support relative to the appendage may entertain a guest secured within the ride vehicle. For example, the guest may be secured within a seat of the ride vehicle, and the combination of such movements may drive movement of the seat to impart various unique sensations onto the guest.

[0060] While only certain features of the disclosure have been illustrated and described herein, many modifications and changes will occur to those skilled in the art. It is, therefore, to be understood that the appended claims are intended to cover all such modifications and changes as fall within the true spirit of the disclosure.

[0061] The techniques presented and claimed herein are referenced and applied to material objects and concrete examples of a practical nature that demonstrably improve the present technical field and, as such, are not abstract, intangible or purely theoretical. Further, if any claims appended to the end of this specification contain one or more elements designated as “means for (perform)ing (a function)...” or “step for (perform)ing (a function)...”, it is intended that such elements are to be interpreted under 35 U.S.C. 112(f). However, for any claims containing elements designated in any other manner, it is intended that such elements are not to be interpreted under 35 U.S.C. 112(f).

CLAIMS

1. An attraction system, comprising:
a ride vehicle configured to travel along a path, wherein the ride vehicle comprises:
a bogie configured to engage with the path;
a base coupled to the bogie;
an appendage coupled to the base, wherein the appendage is configured to actuate relative to the base about or along a first axis;
a support coupled to the appendage, wherein the support is configured to actuate relative to the appendage about or along a second axis; and
a seat coupled to the support, wherein the seat is configured to secure a guest therein.
2. The attraction system of claim 1, wherein the seat is configured to transition between one or more first configurations and one or more second configurations.
3. The attraction system of claim 2, wherein the seat comprises a seat pan, and the seat pan is configured to adjust toward an upright orientation during transition of the seat from the one or more second configurations to the one or more first configurations.
4. The attraction system of claim 1, wherein the appendage comprises a first portion extending along the base and a second portion extending away from the base, the first portion of the appendage is coupled to the base, and the support is coupled to the second portion of the appendage.
5. The attraction system of claim 4, wherein the first portion of the appendage is configured to rotate about the first axis, and the support is configured to rotate about the second axis.

6. The attraction system of claim 1, comprising an actuator and a controller communicatively coupled to the actuator, wherein the controller is configured to:
 - instruct the actuator to rotate the appendage about the first axis;
 - instruct the actuator to rotate the support about the second axis; or
 - both.
7. The attraction system of claim 6, wherein the controller is configured to:
 - receive one or more user inputs; and
 - instruct the actuator to rotate the appendage about the first axis, instruct the actuator to rotate the support about the second axis, or both based on the one or more user inputs.
8. A ride vehicle for an attraction system, the ride vehicle comprising:
 - a bogie configured to travel along a path of the attraction system;
 - a base coupled to the bogie;
 - a seat configured to secure a guest therein, wherein the seat is adjustable between one or more first configurations and one or more second configurations, wherein the seat is configured to support a guest standing within the seat in the one or more first configurations, and wherein the seat is configured to support a guest sitting within the seat in the one or more second configurations; and
 - an appendage coupled to the base, wherein the appendage is configured to rotate about one or more axes to rotate the seat about the one or more axes.
9. The ride vehicle of claim 8, comprising a support coupled to the appendage, wherein the seat is coupled to the support, and rotation of the appendage about the one or more axes drives rotation of the support and the seat about the one or more axes.
10. The ride vehicle of claim 9, wherein the seat comprises a seatback and a linkage configured to couple the seatback to the support, the linkage is configured to extend to position the seatback away from the support in the one or more first configurations of the seat, and the linkage is configured to retract to position the seatback adjacent to the seat in the one or more second configurations of the seat.

11. The ride vehicle of claim 9, wherein the support is configured to rotate about an additional one or more axes.

12. The ride vehicle of claim 9, wherein the appendage comprises a first portion coupled to and extending along the base and a second portion extending from the first portion, and the support is coupled to the second portion of the appendage.

13. The ride vehicle of claim 8, wherein the base extends from the bogie and away from the path.

14. A ride vehicle, comprising:
a support; and
a seat configured to support a guest in the ride vehicle, the seat comprising:

a seatback;
a seat pan configured to transition the seat between one or more first configurations and one or more second configurations; and
a linkage configured to couple the seatback to the support, wherein the linkage is configured to adjust the seatback away from the support and to rotate and/or translate the seat pan along or about a first direction, and wherein the linkage is configured to adjust the seatback toward the support and to rotate and/or translate the seat pan in a second direction.

15. The ride vehicle of claim 14, comprising a plate and a foundation, the foundation is coupled to the support, the plate is coupled to the foundation and to the seat pan such that the foundation, the plate, and the seat pan adjust towards and/or to the seatback.

16. The ride vehicle of claim 15, wherein the seat pan is coupled to the seatback at a first joint, the seat pan is coupled to the plate at a second joint, and the seat pan is configured to rotate via the first joint and to rotate via the second joint to rotate in the first direction and in the second direction.

17. The ride vehicle of claim 15, wherein the linkage is configured to adjust the seatback away from the support and drive movement of the plate along the foundation away from the support, and the linkage is configured to adjust the seatback toward the support and drive movement of the plate along the foundation toward the support.

18. The ride vehicle of claim 14, wherein the linkage is configured to extend and retract via a telescoping mechanism.

19. The ride vehicle of claim 14, comprising a pommel, wherein the linkage is configured to extend to rotate the seat pan in the first direction and to drive the pommel through the seat pan.

20. The ride vehicle of claim 14, wherein the linkage travels along an arcuate path to extend and to retract.