

CLAIMS:

1. An apparatus for an amusement park, comprising:
a bogie system positioned on a track;
an arm extending radially outward from the bogie system, wherein the arm is rotatably coupled to a body of the bogie system;
a vehicle configured to carry a passenger and positioned on the arm, wherein the bogie system is configured to move in an operation direction along the track and the vehicle is configured to rotate about the bogie system to change a position of the vehicle with respect to the bogie system; and
an actuator configured to move the arm and the vehicle in a vertical direction substantially crosswise to the operation direction along the track.
2. The apparatus of claim 1, wherein the actuator comprises an adjustable swash plate configured to rotate the arm about an axis defined by the operation direction along the track.
3. The apparatus of claim 1, comprising a controller coupled to the actuator, wherein the controller is configured to control the actuator to adjust a position of the arm and the vehicle with respect to the vertical direction.
4. The apparatus of claim 3, comprising a sensor communicatively coupled to the controller, wherein the sensor is configured to provide feedback to the controller indicative of a position of the vehicle relative to the bogie system, and wherein the controller is configured to adjust the actuator based on the feedback.
5. The apparatus of claim 1, comprising a plurality of arms extending radially outward from the bogie system, each arm of the plurality of the arms having a corresponding vehicle coupled thereto.
6. The apparatus of claim 5, wherein each arm of the plurality of arms is configured to independently rotate about the bogie system with respect to remaining arms of the plurality of arms.

7. The apparatus of claim 1, comprising an additional actuator configured to rotate the vehicle about a vehicle axis.

8. The apparatus of claim 7, wherein the additional actuator comprises a gear assembly driven by an electric motor.

9. The apparatus of claim 1, wherein the arm is a telescoping arm configured to enable radial movement of the vehicle with respect to the bogie system.

10. The apparatus of claim 1, wherein the arm comprises a dogleg, a bend, a curvature, or a combination thereof, along a length of the arm.

11. A system, comprising:
a bogie system positioned on a track, wherein the bogie system is configured to move along the track in an operating direction;
a plurality of arms extending radially outward from the bogie system, wherein each arm of the plurality of arms is rotatably coupled to a body of the bogie system;
a plurality of vehicles, wherein each vehicle of the plurality of vehicles is positioned on a corresponding arm of the plurality of arms, and wherein the bogie system is configured to move the plurality of arms and the plurality of vehicles together along the operating direction;
and
a plurality of swash plates, wherein each swash plate of the plurality of swash plates is coupled to a corresponding arm of the plurality of arms, and wherein each swash plate of the plurality of swash plates is configured to move a corresponding vehicle of the plurality of vehicles in a vertical direction that is substantially crosswise to the operating direction.

12. The system of claim 11, wherein a first arm of the plurality of arms is vertically offset from a second arm of the plurality of arms with respect to the vertical direction.

13. The system of claim 11, comprising a plurality of rotatable plates, wherein each rotatable plate of the plurality of rotatable plates is coupled to a corresponding swash plate of the plurality of swash plates and to the corresponding arm of the plurality of arms, and wherein each rotatable plate of the plurality of rotatable plates is configured to rotate with respect to the

corresponding swash plate of the plurality of swash plates to rotate the corresponding arm of the plurality of arms about the body of the bogie system.

14. The system of claim 13, wherein each rotatable plate of the plurality of rotatable plates forms a ring along a perimeter of the corresponding swash plate of the plurality of swash plates.

15. The system of claim 11, comprising a controller configured to control rotation of each arm of the plurality of arms about the body of the bogie system and to control each swash plate of the plurality of swash plates to adjust a position of each vehicle of the plurality of vehicles with respect to the vertical direction.

16. The system of claim 15, comprising a plurality of actuators, wherein each actuator of the plurality of actuators is coupled to a corresponding vehicle of the plurality of vehicles, wherein each actuator of the plurality of actuators is configured to rotate the corresponding vehicle of the plurality of vehicles about a vehicle axis and to rotate the corresponding vehicle of the plurality of vehicles with respect to the corresponding arm of the plurality of arms.

17. The system of claim 16, wherein the controller is configured to control each actuator of the plurality of actuators to adjust a position of each vehicle of the plurality of vehicles with respect to a corresponding vehicle axis.

18. An apparatus for an amusement park, comprising:
a bogie system positioned on a track;
an arm extending radially outward from the bogie system, wherein the arm is rotatably coupled to a body of the bogie system;
a vehicle configured to carry a passenger and positioned on the arm, wherein the bogie system is configured to move in an operation direction along the track and the vehicle is configured to rotate about the bogie system to change a position of the vehicle with respect to the bogie system; and
an actuator coupled to the arm, wherein the actuator is configured to move the arm and the vehicle in a vertical direction substantially crosswise to the operation direction along the track; and

rollers disposed between a body of the vehicle and the actuator, wherein the rollers are configured to move the vehicle in a radial direction along the arm when the actuator moves in the vertical direction.

19. The apparatus of claim 18, wherein the actuator comprises an adjustable swash plate configured to rotate the arm about an axis defined by the operation direction along the track.

20. The apparatus of claim 18, comprising an additional actuator configured to rotate the vehicle about a vehicle axis.