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(54) SYSTEM AND METHOD FOR AN ON-BOARD ANIMATED FIGURE IN A RIDE ENVIRONMENT

(71) Applicant: **Universal City Studios LLC**, Universal City, CA (US)

(72) Inventors: **Eric Allan Vance**, Orlando, FL (US); **Sarah Anne Kelley**, Orlando, FL (US)

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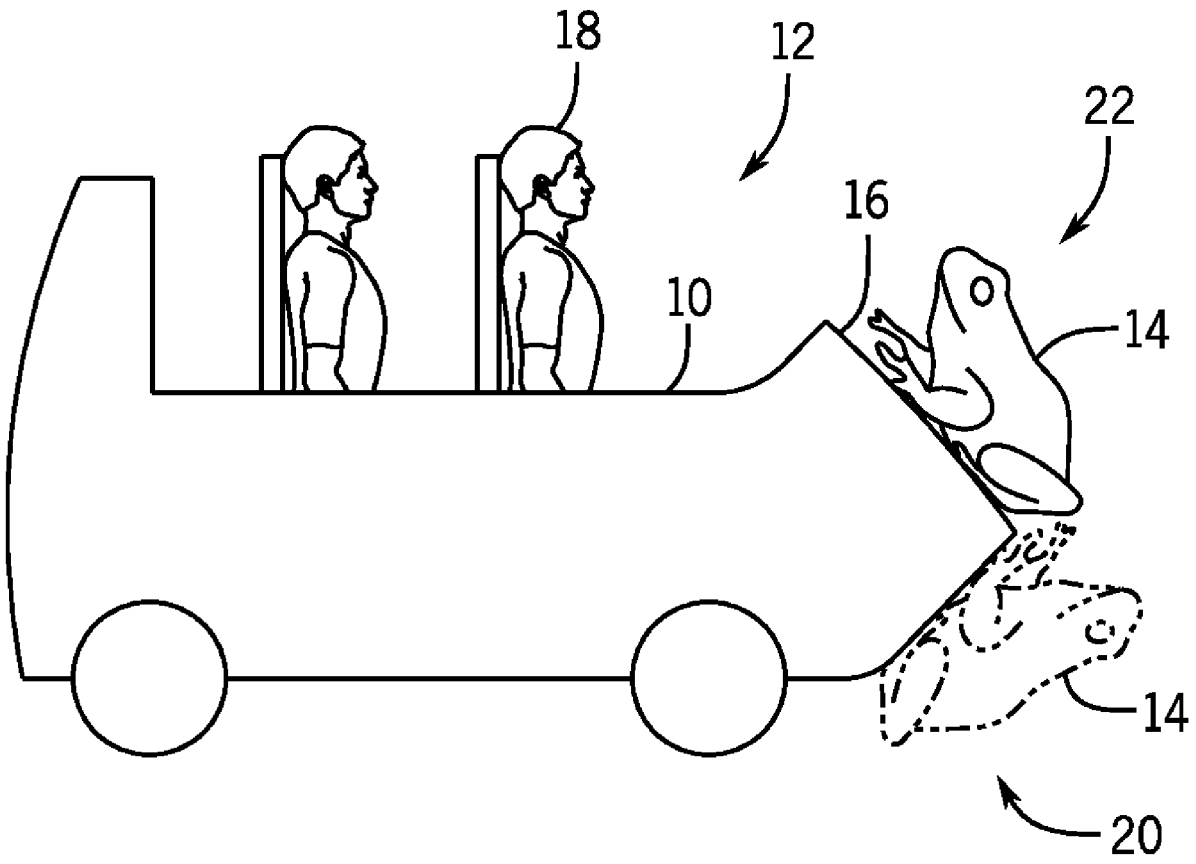
CPC *A63J 5/02* (2013.01); *A63G 25/00* (2013.01)

(57) **ABSTRACT**

An amusement attraction includes a ride vehicle or show action equipment and an animated figure configured to move along a surface of the ride vehicle or the show action equipment. The animated figure includes at least three points of contact configured to engage with the surface, wherein the at least three points of contact include a first point of contact and a second point of contact configured to be alternately engaged with and disengaged from the surface, and a third point of contact configured to maintain contact with the surface. The amusement attraction includes a fixation system configured to keep the animated figure coupled via the at least three points of contact as the animated figure moves along the surface. The amusement attraction includes a controller configured to provide control signals to the fixation system to facilitate control of engagement of the animated figure along the surface.



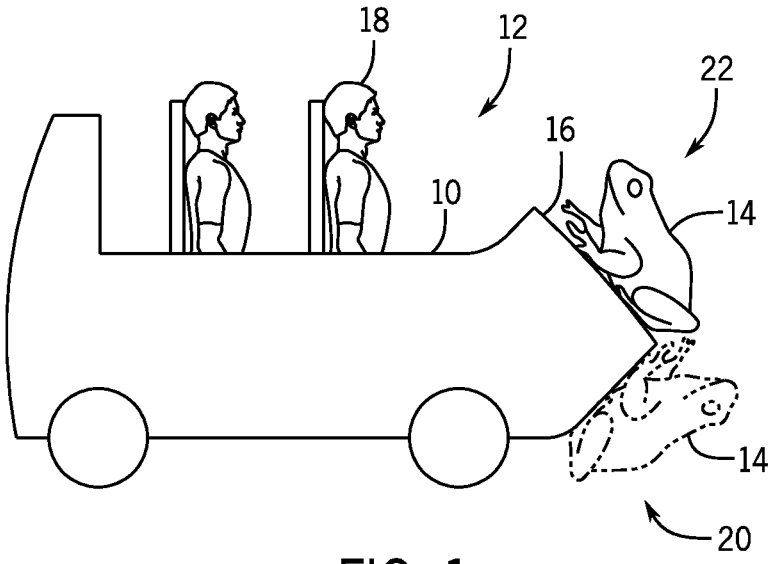


FIG. 1

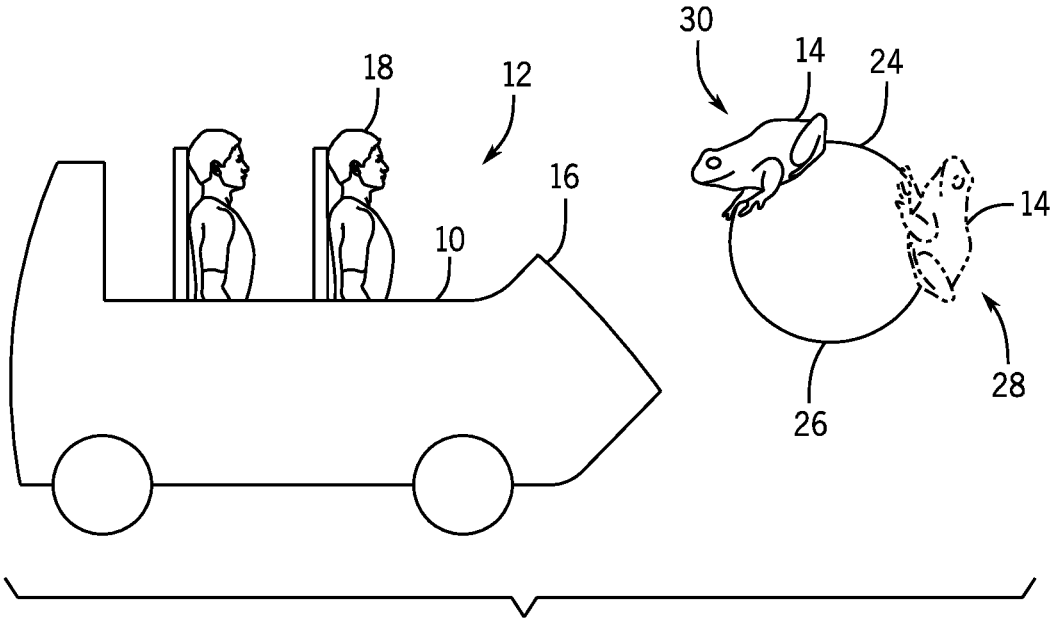


FIG. 2

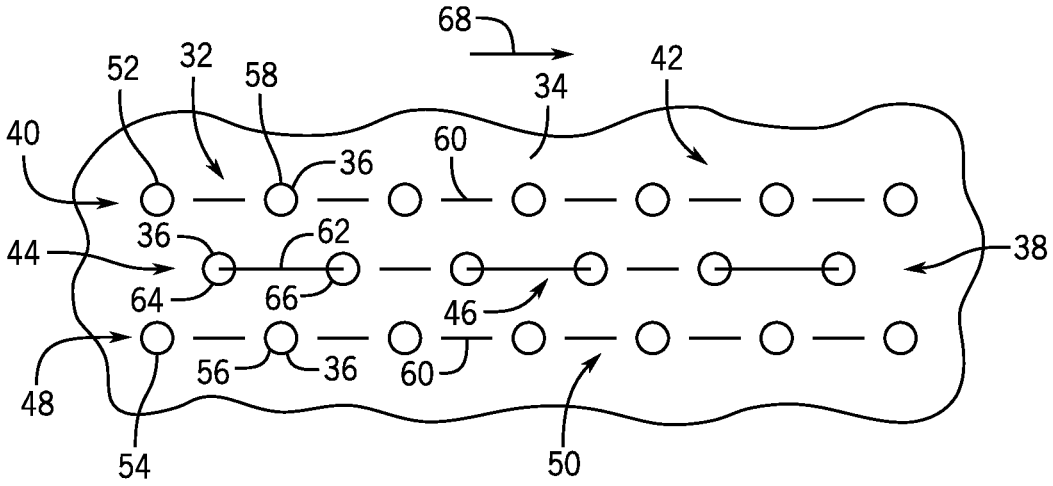

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FIG. 3

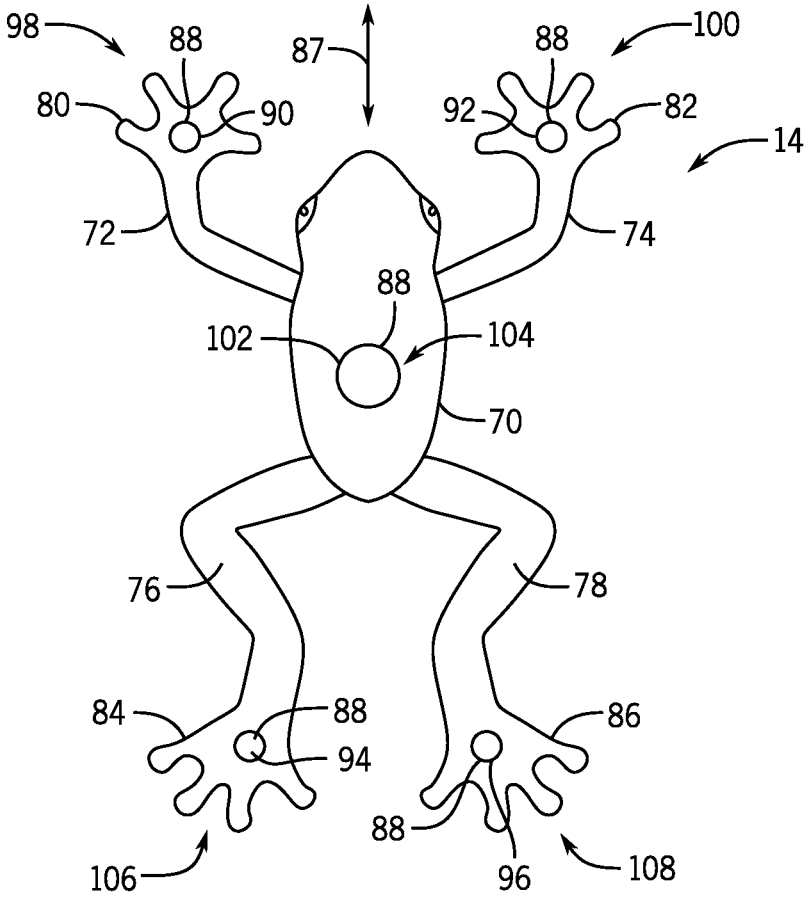
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FIG. 4

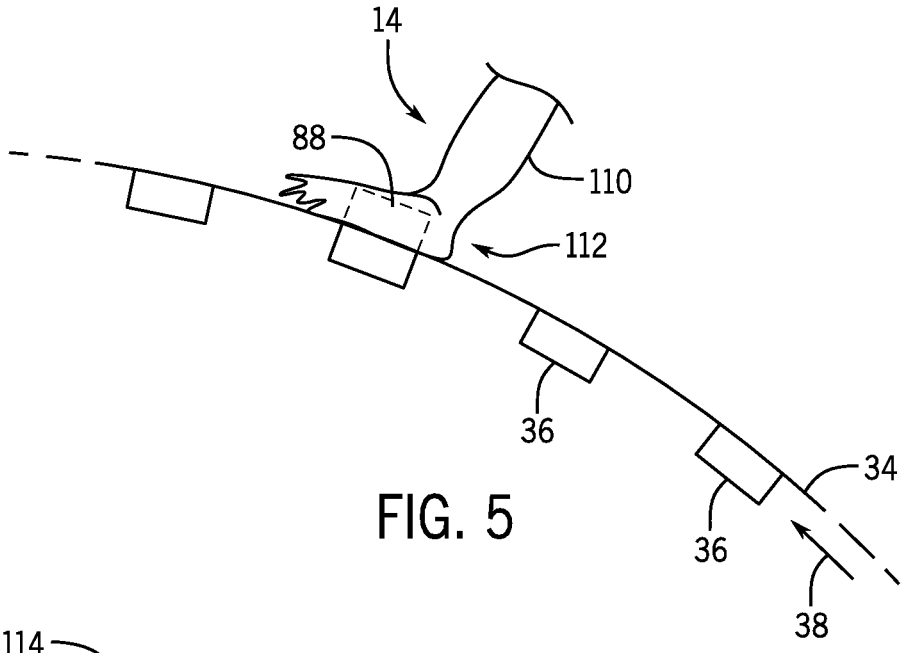


FIG. 5

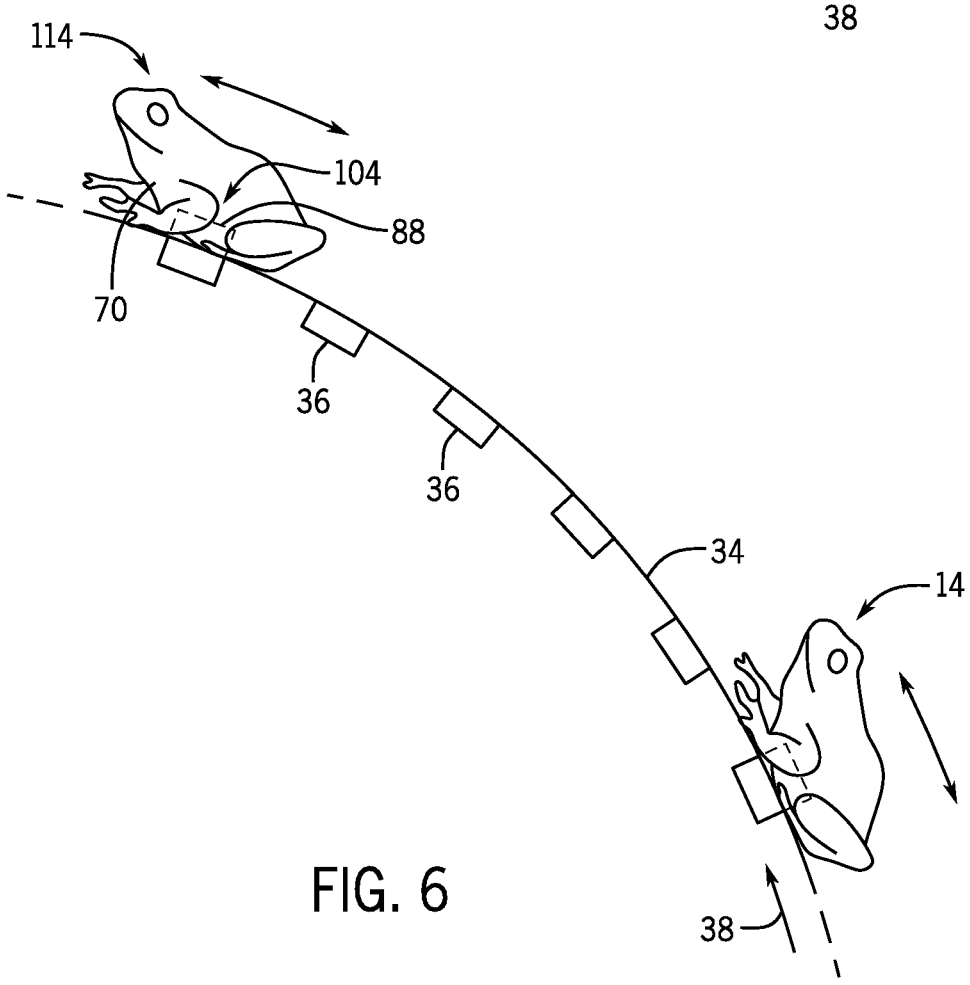
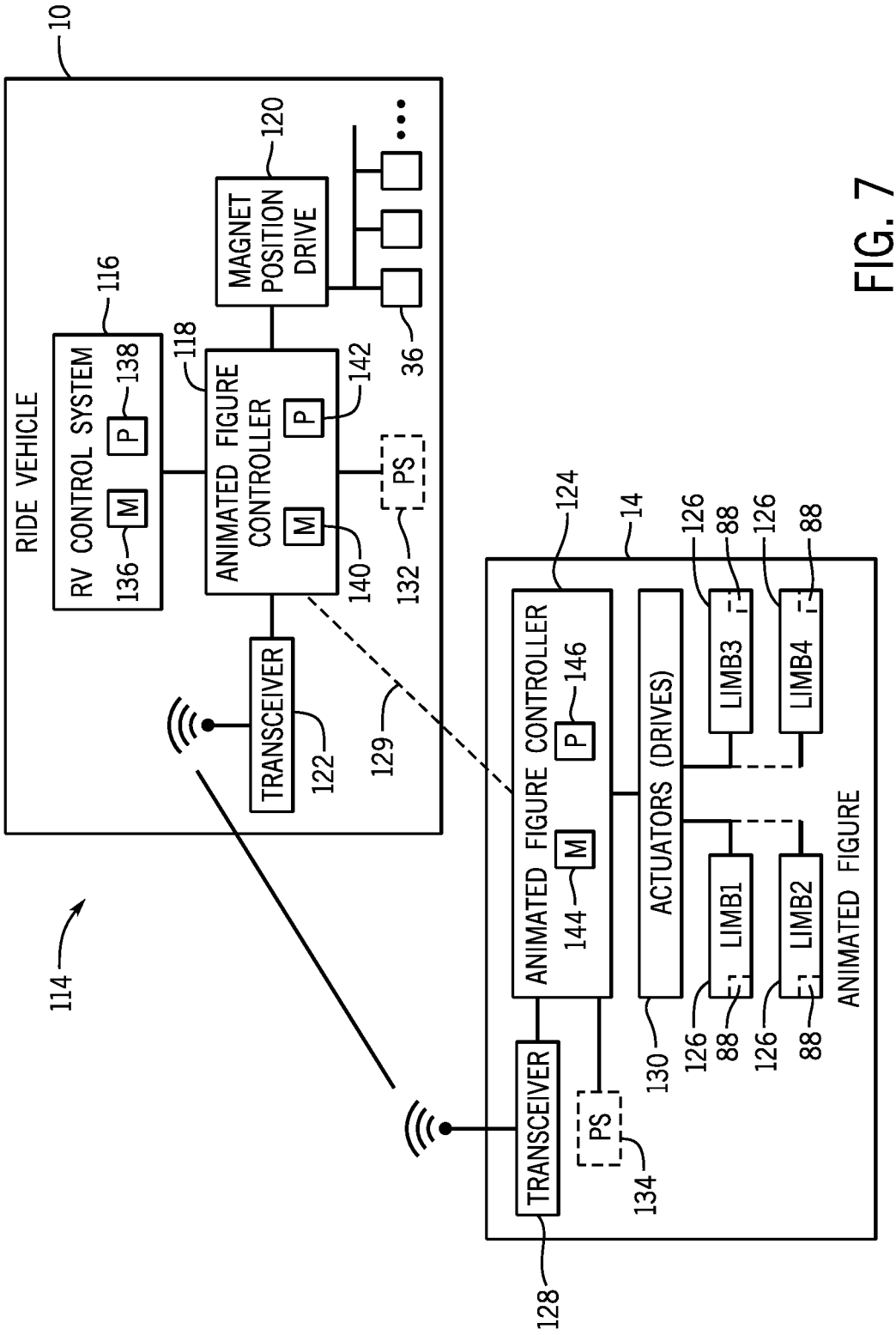


FIG. 6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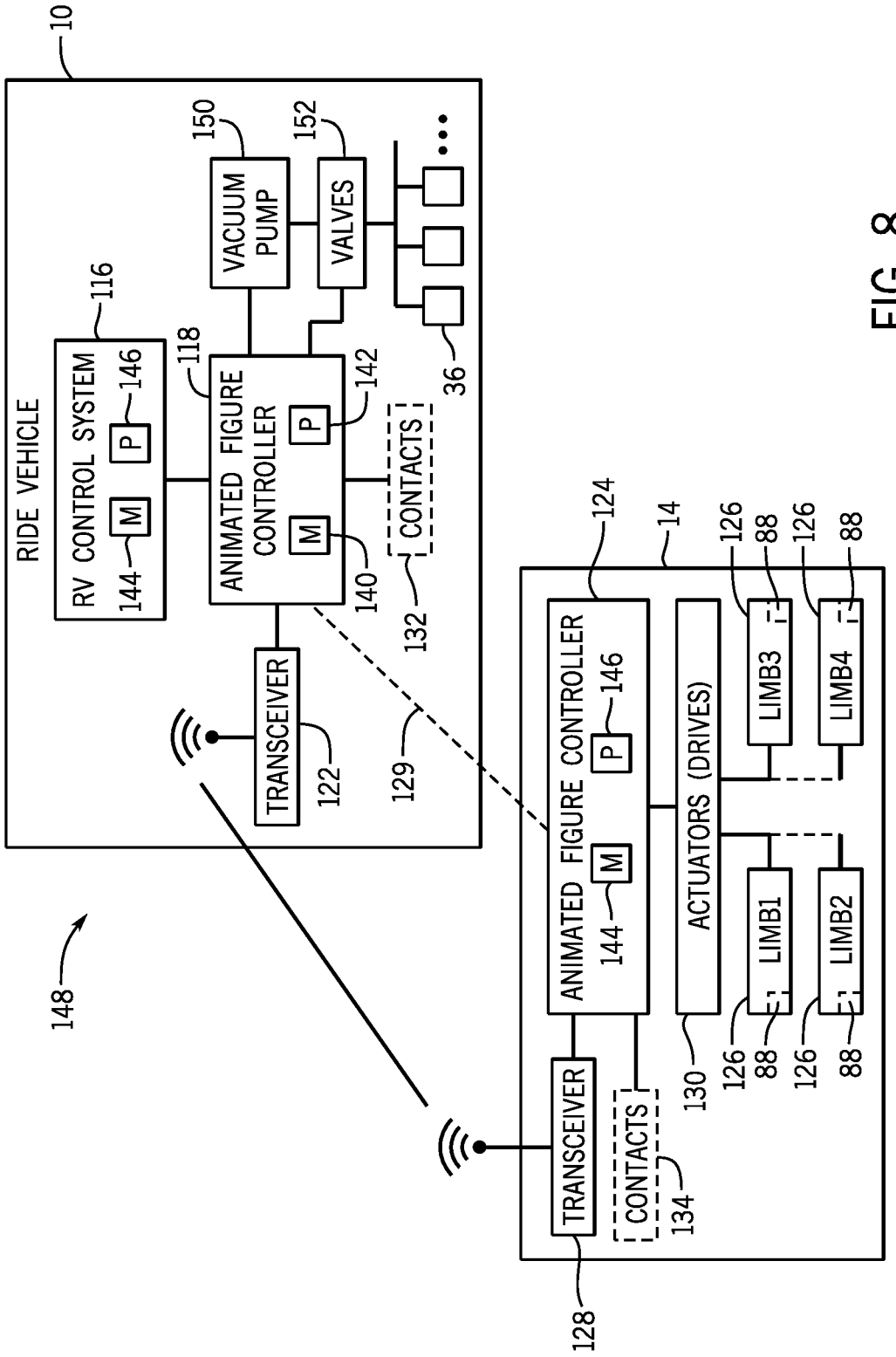
RIDE VEHICLE
RV CONTROL SYSTEM
116
138
P
M
136
118
ANIMATED FIGURE CONTROLLER
P
M
142
140
MAGNET POSITION DRIVE
120
36
PS
132
TRANSCEIVER
122
129
114
124
14
126
88
126
88
ANIMATED FIGURE CONTROLLER
146
P
M
144
ACTUATORS (DRIVES)
LIMB3
LIMB4
LIMB1
LIMB2
130
126
88
126
88
TRANSCEIVER
PS
134
128
ANIMATED FIGURE

FIG. 7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RIDE VEHICLE
RV CONTROL SYSTEM
116
146
P
M
144
118
ANIMATED FIGURE CONTROLLER
142
P
M
140
150
VACUUM PUMP
152
VALVES
36
CONTACTS
132
TRANSCEIVER
122
129
148
124
14
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126
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ANIMATED FIGURE CONTROLLER
146
P
M
144
ACTUATORS (DRIVES)
LIMB3
LIMB4
LIMB1
LIMB2
130
126
88
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TRANSCEIVER
CONTACTS
134
128

FIG. 8

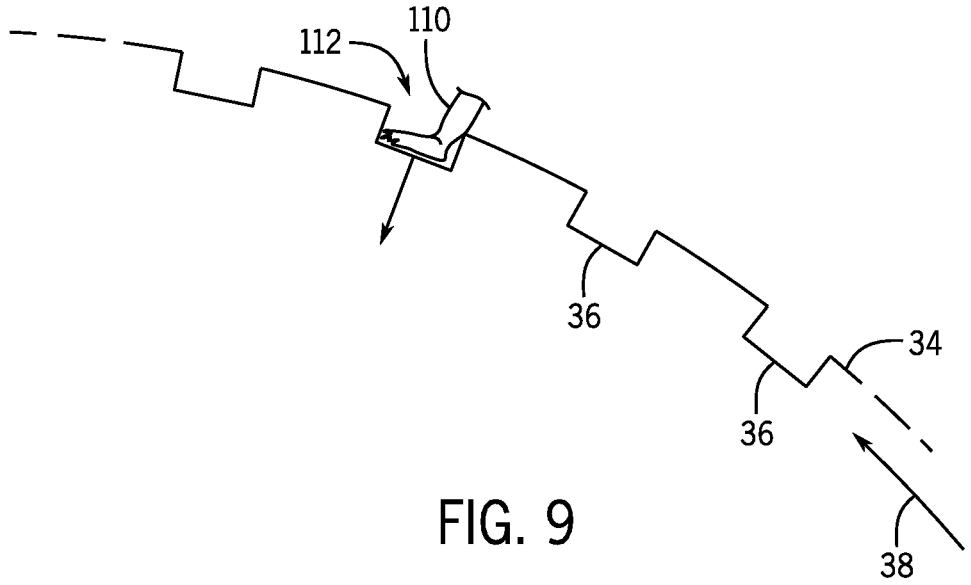
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FIG. 9

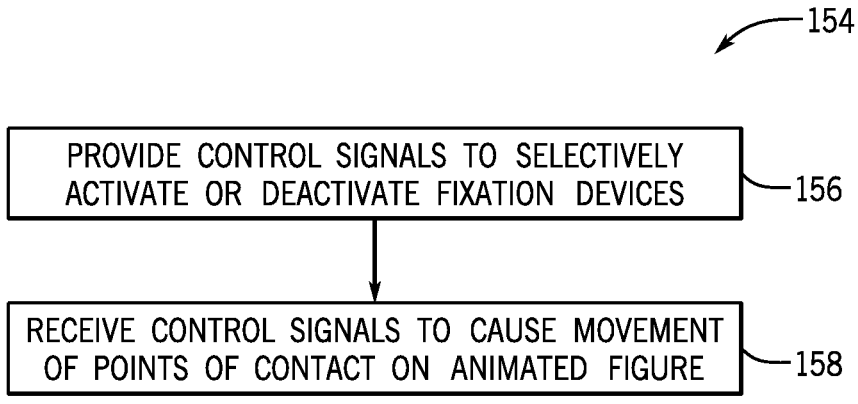
154
PROVIDE CONTROL SIGNALS TO SELECTIVELY ACTIVATE OR DEACTIVATE FIXATION DEVICES
156
RECEIVE CONTROL SIGNALS TO CAUSE MOVEMENT OF POINTS OF CONTACT ON ANIMATED FIGURE
158

FIG. 10

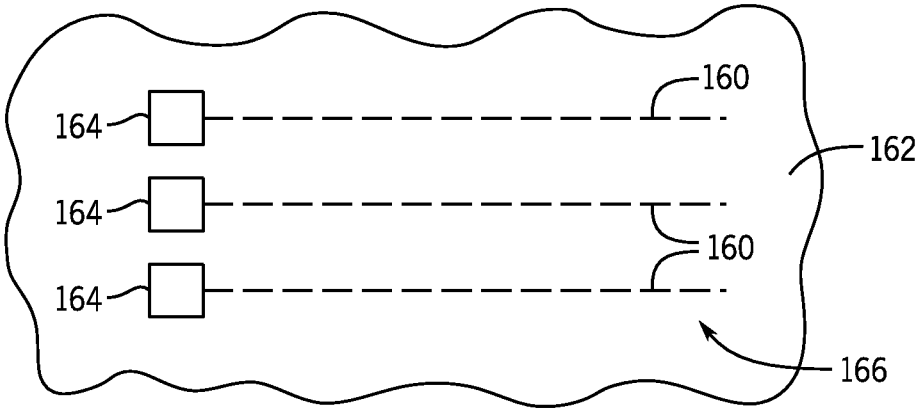

FIG. 11

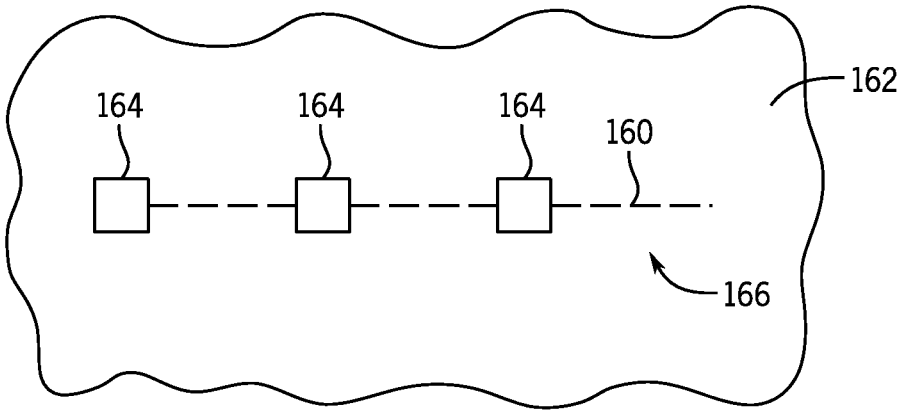

FIG. 12

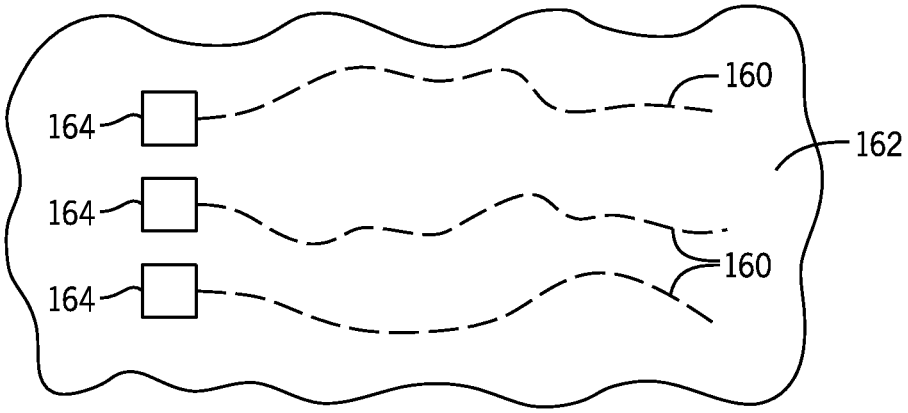

FIG. 13

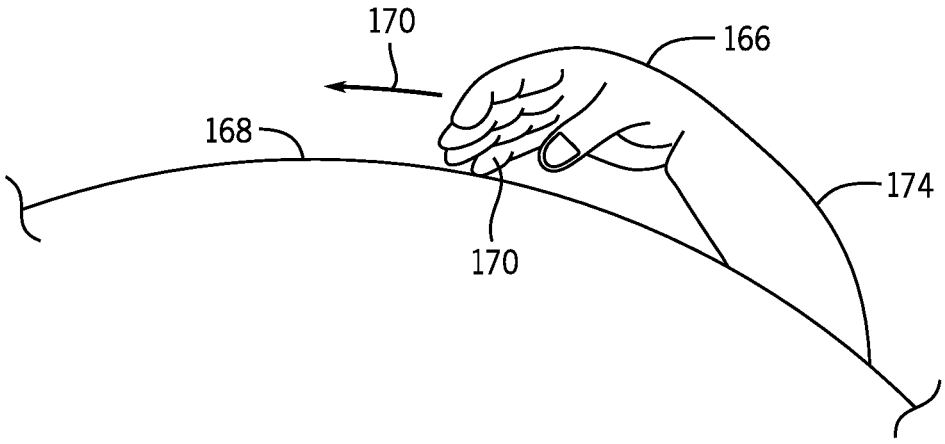

FIG. 14

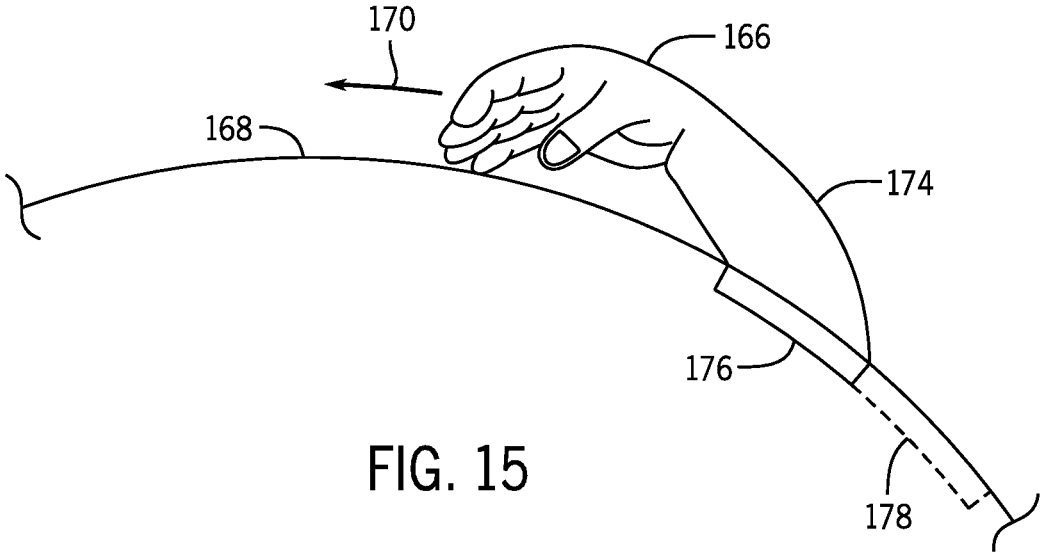

FIG. 15

SYSTEM AND METHOD FOR AN ON-BOARD ANIMATED FIGURE IN A RIDE ENVIRONMENT

BACKGROUND

[0001] 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.

[0002] Since the early twentieth century, amusement parks (or theme parks) have substantially grown in popularity. Amusement parks contain a variety of rides and shows to provide unique experiences to each guest. With the increasing sophistication and complexity of modern attractions, and the corresponding increase in expectations among amusement park and/or theme park guests, improved and more creative attractions are needed to keep attracting guests and to provide unique experiences to the guests.

BRIEF DESCRIPTION

[0003] Certain embodiments commensurate in scope with the originally claimed subject matter are summarized below. These embodiments are not intended to limit the scope of the disclosure, but rather these embodiments are intended only to provide a brief summary of certain disclosed embodiments. Indeed, the present disclosure may encompass a variety of forms that may be similar to or different from the embodiments set forth below.

[0004] In an embodiment, an amusement attraction includes a ride vehicle or show action equipment and an animated figure configured to move along a surface of the ride vehicle or the show action equipment, wherein the animated figure includes at least three points of contact configured to engage with the surface, wherein the at least three points of contact include a first point of contact and a second point of contact configured to be alternately engaged with and disengaged from the surface, and a third point of contact configured to maintain contact with the surface. The amusement attraction further includes a fixation system configured to keep the animated figure coupled to the ride vehicle or the show action equipment via the at least three points of contact as the animated figure moves along the surface. The amusement attraction even further includes a controller configured to provide control signals to the fixation system to facilitate control of engagement of the animated figure along the surface.

[0005] In an embodiment, a ride vehicle includes a surface. The ride vehicle also includes an animated figure disposed on the surface and configured to crawl along the surface along a planned path, wherein the animated figure includes at least three points of contact configured to contact the surface, wherein the at least three points of contact include a first point of contact and a second point of contact configured to be alternately coupled and uncoupled to the surface, and a third point of contact configured to maintain contact with the surface. The ride vehicle further includes a fixation system configured to keep the animated figure coupled to the ride vehicle as the animated figure moves along the surface. The ride vehicle still further includes a controller configured to provide control signals to the fixation system to facilitate control of engagement of the animated figure along the surface.

[0006] In an embodiment, a method for controlling an animated figure in a ride environment includes providing, via a first controller on a ride vehicle, control signals to a selectively activate and deactivate fixation devices disposed on a surface of the ride vehicle that cause the animated figure disposed on the ride vehicle to remain coupled to the surface as the animated figure crawls along the surface along a planned path, wherein the animated figure includes at least three points of contact configured to engage and disengage the surface, wherein the at least three points of contact include a first point of contact, a second point of contact, and a third point of contact, the first point of contact and the second point of contact are configured to be alternately coupled and uncoupled to the surface while the third point of contact is configured to maintain contact with the surface. The method also includes receiving, at a second controller on the animated figure, the control signals to cause one or more actuators on the animated figure to alternately move the first point of contact and the second point of contact along the planned path in coordination with the selective activation and deactivation of the fixation devices to cause the animated figure to move along the surface.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] 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:

[0008] FIG. **1** is a schematic view of a ride vehicle in a ride environment wherein an animated figure is depicted as moving (e.g., crawling) along a surface of the ride vehicle, in accordance with aspects of the present disclosure;

[0009] FIG. **2** is a schematic view of a ride vehicle in a ride environment wherein an animated figure is depicted as moving (e.g., crawling) on a surface along a piece of show action equipment, in accordance with aspects of the present disclosure;

[0010] FIG. **3** is a schematic view of a portion of a fixation system along a surface to enable coupling and movement of an animated figure along the surface, in accordance with aspects of the present disclosure;

[0011] FIG. **4** is a schematic view of an animated figure having another portion of a fixation system, in accordance with aspects of the present disclosure;

[0012] FIG. **5** is a schematic view of an appendage extremity (e.g., a hand or foot) of an animated figure interacting with a surface, in accordance with aspects of the present disclosure;

[0013] FIG. **6** is a schematic view of a central body portion of an animated figure interacting with a surface, in accordance with aspects of the present disclosure;

[0014] FIG. **7** is a schematic view of a system for controlling movement of an animated figure on a surface of a ride vehicle (e.g., utilizing magnets), in accordance with aspects of the present disclosure;

[0015] FIG. **8** is a schematic view of a system for controlling movement of an animated figure on a surface of a ride vehicle (e.g., utilizing a vacuum pump), in accordance with aspects of the present disclosure;

[0016] FIG. **9** is a schematic view of an appendage extremity (e.g., a hand or foot) of an animated figure interacting with a surface (e.g., via a suction effect), in accordance with aspects of the present disclosure;

[0017] FIG. **10** is a flow chart of a method for controlling movement of an animated figure on a surface, in accordance with aspects of the present disclosure; and

[0018] FIG. **11** is a schematic view of a path along a surface for points of contact (e.g., with each point of contact moving along a separate path along a planned path);

[0019] FIG. **12** is a schematic view of a path along a surface for points of contact (e.g., with each point of contact moving along a same path along a planned path);

[0020] FIG. **13** is a schematic view of a path along a surface for points of contact (e.g., with each point of contact moving along a separate path that is unplanned);

[0021] FIG. **14** is a schematic view of an animated figure moving along (and externally coupled to) a surface having at least one permanent point to point connection for a point of contact; and

[0022] FIG. **15** is a schematic view of an animated figure moving along (and externally coupled to) a surface having at least one permanent point to point connection for a point of contact.

DETAILED DESCRIPTION

[0023] The present disclosure relates generally to an animated figure, such as a robotic assembly that operates to create movement that mimics a character (e.g., an animal, futuristic robot, human) for entertainment purposes.

[0024] One or more specific embodiments of the present disclosure will be described below. In an effort to provide a concise description of these embodiments, all features of an actual implementation may not be 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.

[0025] 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.

[0026] Embodiments of the present disclosure are directed to systems and methods for controlling movement of an animated figure in an entertainment environment (e.g., ride system environment). In particular, the animated figure may be disposed on a surface of movable entertainment equipment (e.g., a ride vehicle or show action equipment) in a translatable manner and configured to move (e.g., crawl) along a planned path on the surface. As a specific example, the animated figured may be positioned on a ride vehicle's surface. The animated figure, during operation of the ride vehicle (e.g., while a ride vehicle is traversing a ride path), may initially be located out of a view of a rider on the ride vehicle and then subsequently move into the view of the rider. It should be noted that the term "surface," as used in the present disclosure, may broadly include a unified surface (e.g., a hood of a ride vehicle) or separate components (e.g., pads, tiles, blocks, pipes) that form an outwardly visible aspect of a ride vehicle, show action equipment, or the like.

[0027] In an embodiment, an animated figure includes at least three points (discrete points of contact) for contact with the surface, wherein the at least three points of contact include a first point of contact, a second point of contact, and a third point of contact. Some of these points of contact are movable and allow for engagement (e.g., contact) and disengagement (e.g., removal from contact) with the surface. For example, the first point of contact and the second point of contact may be configured to be alternately coupled and uncoupled to the surface while the third point of contact is configured to maintain constant contact (e.g., sliding or rolling contact) with the surface. The animated figure also includes one or more actuators that, in response to control signals from a controller, cause the first point of contact and the second point of contact to alternately move along the planned path to enable the animated figure to move.

[0028] In accordance with present embodiments, the points of contact are part of or cooperate with a fixation system. The fixation system includes fixation devices that are selectively activated and deactivated, in response to control signals from a controller, to keep the animated figure coupled to the surface as the animated figure moves along the surface. In certain embodiments, the surface includes switchable electromagnets or switchable permanent (e.g., rare earth) magnets disposed along the planned path while the points of contact of the animated figure include magnets. Switchable electromagnets are electromagnets where the power to the electromagnet can be reduced or turned off (e.g., via a switch) to control the electromagnet strength. Switchable permanent magnets are magnets coupled to an actuator that moves the magnet into and out of position to facilitate engagement (e.g., changing the orientation of the magnetic field). In certain embodiments, the points of contact of the animated figure include switchable electromagnets or switchable permanent magnets and the surface includes magnets disposed along the planned path. In certain embodiments, the points of contact of the animated figure include switchable electromagnets or switchable permanent magnets and the surface includes a magnetic material (e.g., ferromagnetic material). In certain embodiments, the surface includes holes that that selectively provide suction (e.g., via a vacuum pump) to hold the points of contact of the animated figure. In certain embodiments, the points of contact selectively provide suction (e.g., via a vacuum pump) to hold the points of contact in holes on the surface. The disclosed embodiments enable unique effects and features to be seen by guests in a ride or show environment.

[0029] FIG. **1** is a schematic view of a ride vehicle **10** in a ride environment **12** (e.g., of an amusement attraction at an amusement or theme park) having an animated FIG. **14** moving (e.g., crawling) on a surface **16** of the ride vehicle **10**. As depicted, the ride vehicle **10** is moving through the ride environment **12**. The ride vehicle **10** includes riders or passengers **18** seated within the ride vehicle **10**. As depicted,

the animated FIG. **14** is disposed on the surface **16** of the ride vehicle **10**. The animated FIG. **14** may be any shape or body type. The animated FIG. **14** may include any number of appendages or limbs. In certain embodiments, the animated FIG. **14** may not include any limbs (e.g., a snake or worm-like body). As depicted, the animated FIG. **14** is a frog. The animated FIG. **14** is coupled to the surface **16** in a non-permanent manner. In certain embodiments, the animated FIG. **14** is coupled to the surface **16** in a permanent manner. As discussed in greater detail below, a system is utilized to control movement (e.g., crawling) of the animated FIG. **14** along a path or route on the ride vehicle **10** (e.g., on an exterior surface of the ride vehicle **10**) while it moves through the ride environment **12**. In particular, the system includes a fixation system (or attachment system) that includes fixation devices (or attachment devices) disposed along a planned path (e.g., on or in the surface **16**) of the ride vehicle **10** and fixation devices disposed on or in the animated FIG. **14** (e.g., on or in the center portion of a body such as abdomen and on or in appendage extremities such as the hands and/or feet of appendages or limbs). One of the sets of fixations devices, either on or in the surface **16** of the ride vehicle **10** or on or in the animated FIG. **14**, are actively controlled to alternately couple or uncouple specific points of contact between the animated FIG. **14** and the surface **16**, while one or more actuators are actively controlled on or in the animated FIG. **14** to move one or more of the appendages (e.g., limbs) or portions of the body of the animated FIG. **14** where the points of contact are located to enable the animated FIG. **14** to move on the surface **16**.

[0030] In certain embodiments, the fixation devices include switchable electromagnets or switchable permanent magnets on or in the surface **16** of the ride vehicle **10** and magnets (e.g., permanent magnets) disposed on or in the animated FIG. **14** at the points of contact. In certain embodiments, the fixation devices include magnets (e.g., permanent magnets) disposed on or in the surface **16** of the ride vehicle **10** and switchable electromagnets or switchable permanent magnets on or in the animated FIG. **14** at the points of contact. In certain embodiments, the animated FIG. **14** may solely include the fixation devices (e.g., switchable electromagnets or switchable permanent magnets) and the surface **16** of the ride vehicle **10** may include magnetic material (e.g., ferromagnetic materials) to interact with fixation devices. In certain embodiments, the fixation devices may include holes in the surface **16** of the ride vehicle **10** that are coupled to a vacuum pump that generates a suction effect to selectively hold the points of contact of the animated FIG. **14** on, in, or covering a respective hole as the animated FIG. **14** moves along the surface **16**. In certain embodiments, the vacuum pump may be coupled to the points of contact on or in the animated FIG. **14** to keep the points of contact held on, in, or covering a respective hole as the animated FIG. **14** moves along the surface **16**.

[0031] In the illustrated embodiment, the animated FIG. **14** includes at least three points of contact with the surface **16**. Two points of contact are configured to be alternately coupled and uncoupled to the surface **16** while another point of contact is configured to maintain constant contact (e.g., sliding or rolling contact) with the surface **16**. In other embodiments, different numbers of points of contact may be employed. In certain embodiments, the animated FIG. **14** and/or the surface **16** may include one or more proximity sensors (e.g., magnetic proximity sensor, capacitive proximity sensor, ultrasonic proximity sensor, etc.). The proximity sensors may provide positional information with respect to the animated figure and/or the surface **16** to coordinate the movement of the animated FIG. **14**.

[0032] As depicted in FIG. **1**, initially during the ride, the animated FIG. **14** is disposed along the surface **16** such that it is out of the view of the passengers **18** (e.g., as indicated in a first position **20**). Eventually during the ride, the animated FIG. **14** moves (e.g., crawls) along the surface **16** along the planned path to appear in the view of the passengers **18** (e.g., as indicated in a second position **22**) to provide a unique visual effect to the passengers **18**. In certain embodiments, the animated FIG. **14** may not be initially on the ride vehicle **10** but attach to the ride vehicle **10** during the ride.

[0033] FIG. **2** is a schematic view of the ride vehicle **10** in the ride environment **12** wherein the animated FIG. **14** is moving (e.g., crawling) on a surface **24** of a piece of show action equipment **26**. Both the embodiment shows in FIG. **1** and the embodiment shown in FIG. **2** utilize a similar system, as described in greater detail below. As depicted in FIG. **2**, the ride vehicle **10** is moving through the ride environment **12** (e.g., of an amusement attraction at an amusement or theme park). Instead of moving (e.g., crawling) along the surface **16** of the ride vehicle **10** as depicted in FIG. **1**, the animated FIG. **14** shown in FIG. **2** moves (e.g., crawls) along the surface **24** of the piece of show action equipment **26**. In certain embodiments, the animated FIG. **14** maneuvers along the surface **24** of the piece of show action equipment **26** as part of a show as opposed to a ride. In certain embodiments, the animated FIG. **14** is attached to the surface **24** in a non-permanent manner. In certain embodiments, the animated FIG. **14** is attached to the surface **24** in a permanent manner. As depicted in FIG. **2**, initially during the ride, the animated FIG. **14** is disposed along the surface **24** out of the view of the passengers **18** (e.g., as indicated in a first position **28**). Eventually during the ride, the animated FIG. **14** moves (e.g., crawls) along the surface **24** along the planned path to appear in the view of the passengers **18** (e.g., as indicated in a second position **30**) to provide a unique visual effect to the passengers **18**.

[0034] FIG. **3** is a schematic view of a portion of a fixation system **32** along a surface **34** to enable attachment and movement (e.g., crawling) of the animated figure (e.g., animated FIG. **14** in FIGS. **1** and **2**) along the surface **34**. The surface **34** may be a surface of a ride vehicle (e.g. surface **16** in FIG. **1**), a surface of a piece of show action equipment (e.g., surface **24** in FIG. **2**), or the like. The fixation system **32** includes fixation devices **36** disposed on or in the surface **34** along a planned path **38**. As depicted, the planned path **38** is straight. In certain embodiments, the planned path **38** is curved or the planned path **38** includes one or more portions that are straight and one or more portions that are curved.

[0035] The fixation system **32** include a first set **40** of fixation devices **36** disposed along a first path **42** of the planned path **38**, a second set **44** of fixation devices **36** disposed along a second path **46** of planned path **38**, and a third set **48** of fixation devices **36** disposed along a third path **50** of the planned path **38**. The fixation devices **36** of the respective sets **40**, **44**, **48** are spaced apart along their respective paths **42**, **46**, **50**. The paths **42**, **46**, and **50** generally extend parallel (e.g., but not necessarily exactly parallel in a rigidly mathematical sense along the entire

planned path **38**) with respect to each other along the planned path **38**. The path **46** is disposed between the paths **42**, **50**. In an embodiment, the planned path **38** may include a different number of paths form those depicted in FIG. **3** (e.g., 4, 5, 6, or another number of paths) associated with fixation devices **36**.

[0036] The first set **40** of fixation devices **36** are configured to interact with a first point of contact (e.g., in an appendage extremity, such as a hand or foot on one side) of the animated figure. The third set **48** of fixation devices **36** are configured to interact with a second point of contact (e.g., another appendage extremity, such as a hand or foot on an opposite side) of the animated figure different from the first point of contact. The second set **44** of fixation devices **36** are configured to interact with a third point of contact (e.g., in the abdomen or central portion of the body located between the first and second points of contact) of the animated figure. In certain embodiments, the first set **40** of fixation devices **36** are configured to interact with a first set of points of contact (e.g., front and rear appendage extremities, such as hands or feet on one side) of the animated figure. In certain embodiments, the third set of 48 of fixation devices **36** are configured to interact with a second set of points of contact (e.g., appendage extremities, such as front and rear hands or feet on the opposite side). In an embodiment, the animated figure may include more than 3 points of contact (e.g., 4, 5, 6, or another number of points of contact). In an embodiment, some of the points of contact may move along a same path. In an embodiment, each point may move along its own separate path.

[0037] The first point of contact and the second point of contact of the animated figure are selectively coupled or uncoupled to the respective sets **40**, **48** of fixation devices **36** as the animated figure moves (e.g., crawls) along the planned path **38**. For example, as the first point of contact of the animated figure is coupled to fixation device **52** of the first set **40** of fixation devices **36**, the second point of contact of the animated figure is uncoupled from the fixation device **54** of the second set **48** of fixation devices **36**, moves toward the fixation device **56** of the second set **48** of fixation devices **36** (e.g., due to an actuator moving a limb having the second point of contact), and couples to the fixation device **56**. Subsequently, as the second point of contact of the animated figure is coupled to fixation device **56** of the second set **48** of fixation devices **36**, the first point of contact of the animated figure is uncoupled from the fixation device **52** of the first set **40** of fixation devices **36**, moves toward the fixation device **58** of the first set **40** of fixation devices **36** (e.g., due to an actuator moving an appendage or limb having the first point of contact), and attaches to the fixation device **58** of the first set **40** of fixation devices **36**. This coupling and uncoupling movements of the first and second point of contact of the animated figure are indicated by lines **60** between adjacent fixation devices **36** of the respective sets **40**, **48** of fixation devices **36**. As the first and second points of contact of the animated figure move along the respective paths **42**, **50**, the third point of contact moves between adjacent fixation devices **36** of the second set **44** of fixation devices via a constant contact (e.g., sliding or rolling contact) as indicated by lines **62** extending from one fixation device **36** to an adjacent fixation device **36**. The sliding or rolling may occur once the feet or hands (of front limbs or back limbs) of the animated figure are even along their respective paths **42**, **46**. For example, once the first point of contact and the second point of contact are at the respective fixation devices **58**, **56**, the third point of contact may slide from a fixation device **64** to a fixation device **66** of the second set **44** of fixation devices **36**. This sequence of movements enables the animated figure to move (e.g., crawl) along the planned path **38** (e.g., in a direction **68**). At least two points of contact of the animated figure maintain contact with the surface **34** during movement (e.g., either the first point of contact or the second point of contact in combination with the third point of contact). At certain points, three points of contact of the animated figure maintain contact with the surface **34** (e.g., while the third point of contact slides between fixation devices **36**).

[0038] In certain embodiments, the fixation devices **36** on or in the surface **34** are switchable electromagnets or switchable permanent magnets that are actively turned on and off to couple or uncouple with the points of contact (which have permanent magnets) on or in the animated figure. In certain embodiments, the fixation devices **36** on or in the surface **34** are permanent magnets that interact with switchable electromagnets or switchable permanent magnets on or in the points of contact in the animated figure that are actively turned on and off to couple or uncouple the points of contact. Engagement between one of the fixation devices **36** and a point of contact may occur when an actuator moves them together such that associated magnetic forces pull them into contact.

[0039] In certain embodiments, the locations of the fixation devices **36** may include magnetic material (e.g., ferromagnetic materials). The magnetic material may interact with fixation devices (e.g., switchable electromagnets or switchable permanent magnets) on or in the animated figure.

[0040] In certain embodiments, the fixation devices **36** are holes on or in the surface **34**. In certain embodiments, the holes are coupled to a vacuum pump that generates a suction effect to selectively hold the points of contact of the animated figure on, in, or covering a respective hole as the animated figure moves along the surface **34**. In certain embodiments, the vacuum pump may be coupled to the points of contact in the animated figure to keep the points of contact held on, in, or covering a respective hole as the animated FIG. **14** moves along the surface **16**. Engagement between one of the fixation devices **36** and a point of contact may occur when an actuator moves them together such that suction forces pull them into contact.

[0041] In certain embodiments, the surface **34** may include one or more proximity sensors (e.g., magnetic proximity sensor, capacitive proximity sensor, ultrasonic proximity sensor, etc.). The proximity sensors may provide positional information with respect to the animated figure and/or the surface **16** to coordinate the movement of the animated figure.

[0042] FIG. **4** is a schematic view (e.g., top view) of the animated FIG. **14** having another portion of the fixation system **32**. As depicted, the animated FIG. **14** is a frog. As noted above, the characteristics (including number of extremities, such as limbs, and number of points of contact) of the animated FIG. **14** may vary. As depicted, the animated FIG. **14** includes a central body portion **70** (e.g., abdomen, belly, or torso) coupled to appendages (e.g., limbs) **72**, **74**, **76**, **78** having appendage extremities (e.g., feet or hands) **80**, **82**, **84**, **86**, respectively. Each appendage **72**, **74**, **76**, **78** may be associated with a respective actuator (see FIG. **7**) to move the appendages **72**, **74**, **76**, **78** in a direction **87** along the

planned path (e.g., planned path **38** in FIG. **3**) on the surface (e.g., surface **34** in FIG. **3**). The fixation system **32** includes fixation devices **88** disposed in the appendage extremities **80**, **82**, **84**, **86**. In particular, fixation devices **90**, **92**, **94**, **96** are disposed on or in the appendage extremities **80**, **82**, **84**, **86**, respectively. The appendage extremity **80** and the fixation device **90** form a first point of contact **98** configured to interact with a first set of fixation devices (e.g., set **40** of fixation devices **36** along path **42** in FIG. **3**) along the planned path (e.g., planned path **38** in FIG. **3**) on the surface (e.g., surface **34** in FIG. **3**). The appendage extremity **82** and the fixation device **92** form a second point of contact **100** configured to interact with a second set of fixation devices (e.g., set **48** of fixation devices **36** along the path **50** in FIG. **3**) along the planned path (e.g., planned path **38** in FIG. **3**) on the surface (e.g., surface **34** in FIG. **3**). The central body portion **70** includes a fixation device **88** (e.g., fixation device **102**) that forms a third point of contact **104** (e.g., constant sliding or rolling point of contact) configured to interact with a third set of fixation devices (e.g., set **44** of fixation devices **36** along the path **46** in FIG. **3**) along the planned path (e.g., planned path **38** in FIG. **3**) on the surface (e.g., surface **34** in FIG. **3**). The appendage extremity **84** and the fixation device **94** form a fourth point of contact **106** configured to interact with a first set of fixation devices (e.g., set **40** of fixation devices **36** along path **42** in FIG. **3**) along a planned path (e.g., planned path **38** in FIG. **3**) on the surface (e.g., surface **34** in FIG. **3**). The appendage extremity **86** and the fixation device **94** form a fifth point of contact **108** configured to interact with a second set of fixation devices (e.g., set **48** of fixation devices **36** along the path **50** in FIG. **3**) along the planned path (e.g., planned path **38** in FIG. **3**) on the surface (e.g., surface **34** in FIG. **3**). Thus, the first and fourth points of contact **98**, **106** move along a same path of fixation devices, while the second and fourth points of contact **100**, **108** move along a same path of fixation devices.

[0043] In certain embodiments, the fixation devices **88** on or in the animated FIG. **14** are permanent magnets configured to interact with the fixation devices **35** of the surface **34** (e.g., switchable electromagnets or switchable permanent magnets in the surface **34**) that are actively turned on and off to couple or uncouple with the points of contact **98**, **100**, **104**, **106**, **108** in the animated FIG. **14**. In certain embodiments, the fixation devices **88** on or in the animated FIG. **14** are the switchable electromagnets or switchable permanent magnets that are actively turned on and off to couple or uncouple the points of contact **98**, **100**, **104**, **106**, **108** of the animated figure with permanent magnets (e.g., fixation devices **36**) in the surface **34**.

[0044] In certain embodiments, the animated FIG. **14** may include one or more proximity sensors (e.g., magnetic proximity sensor, capacitive proximity sensor, ultrasonic proximity sensor, etc.). The proximity sensors may provide positional information with respect to the animated FIG. **14** and/or the surface to coordinate the movement of the animated FIG. **14**.

[0045] FIG. **5** is a schematic view of an appendage extremity **110** (e.g., hand or foot) of the animated FIG. **14** interacting with the surface **34**. The surface **34** may be a surface of a ride vehicle (e.g., surface **16** in FIG. **1**) or a surface of a piece of show action equipment (e.g., surface **24** in FIG. **2**). The appendage extremity **110** includes the fixation device **88**. The fixation device **88** and the appendage extremity **110** form a point of contact **112** (e.g., of point of contact **98**, **100**, **106**, or **108**) on the animated FIG. **14** that interfaces with the surface **34**. The surface **34** includes a set of fixation devices **36** (e.g., set **40** or set **48** in FIG. **3**) disposed along the planned path **38**. The set of fixation devices **36** may be disposed along one of the paths (e.g., path **42** or path **50** in FIG. **3**) of the planned path **38**. An actuator of the extremity (e.g., limb) that the appendage extremity **110** (e.g., hand or foot) is coupled with moves the appendage extremity **110** from one fixation device **36** to an adjacent fixation device **36** when the fixation device **88** is not being actively coupled to a particular fixation device **36**.

[0046] In certain embodiments, the fixation device **88** on or in the appendage extremity **110** is a permanent magnet configured to interact with the switchable electromagnets or switchable permanent magnets (e.g., fixation devices **36**) on or in the surface **34** that are actively turned on and off to couple or uncouple with the point of contact **112** (e.g., fixation device **88**) in the animated FIG. **14**. In certain embodiments, the fixation device **88** on or in the animated FIG. **14** is a switchable electromagnet or switchable permanent magnet that is actively turned on and off to couple or uncouple the point of contact **112** of the animated FIG. **14** with permanent magnets (e.g., fixation devices **36**) on or in the surface **34**.

[0047] FIG. **6** is a schematic view of the central body portion **70** the animated FIG. **14** interacting with the surface **34**. The surface **34** may be a surface of a ride vehicle (e.g. surface **16** in FIG. **1**) or a surface of a piece of show action equipment (e.g., surface **24** in FIG. **2**). The central body portion **70** includes the fixation device **88**. The fixation device **88** and the central body portion form the point of contact **104** on the animated FIG. **14** that interfaces with the surface **34**. The surface **34** includes a set of fixation devices **36** (e.g., set **44** in FIG. **3**) disposed along the planned path **38**. The set of fixation devices **36** may be disposed along one of the paths (e.g., path **46** in FIG. **3**) of the planned path **38**. While the actuators are moving the limbs of the animated figure, the point of contact **104** (e.g., fixation device **88**) remains coupled to a particular fixation device **36** (e.g., in a hold down position) due to the switchable electromagnet or switchable permanent magnet being active. Upon the points of contact of the limbs reaching a fixed position (e.g., when the front limbs are even along the planned path **38**), the point of contact **104** (e.g., fixation device **88**) may slide from the particular fixation device **36** to an adjacent fixation device **36** as the switchable electromagnet or switchable permanent magnet is deactivated. Upon reaching the adjacent fixation device **36**, a hold position is resumed between the point of contact **104** and the surface **34**.

[0048] In certain embodiments, the fixation device **88** in the central body portion **70** is a permanent magnet configured to interact with the switchable electromagnets or switchable permanent magnets (e.g., fixation devices **36**) in the surface **34** that are actively turned on and off to couple or uncouple with the point of contact **104** (e.g., fixation device **88**) in the animated FIG. **14**. In certain embodiments, the fixation device **88** in the animated FIG. **14** is a switchable electromagnet or switchable permanent magnets that is actively turned on and off to couple or uncouple the point of contact **104** of the animated FIG. **14** with permanent magnets (e.g., fixation devices **36**) in the surface **34**. In certain embodiments, the animated figured **14** may interact directly on a matrix of spaced-out fixation devices **36** (i.e., without a surface in between).

[0049] FIG. **7** is a schematic view of a system **114** for controlling movement (e.g., crawling) of the animated FIG. **14** on or in a surface of the ride vehicle **10** (e.g., utilizing magnets). The system **114** includes the ride vehicle **10** and the animated FIG. **14**. The ride vehicle **10** includes a ride vehicle control system **116**. The ride vehicle (RV) control system **116** controls the operations of the ride vehicle **10**. The ride vehicle control system **116** is coupled to a first animated figure controller **118** located on or in the ride vehicle **10**. The ride vehicle control system **116** provides control signals to the first animated figure controller **118** to coordinate operation of the animated FIG. **14** with the ride vehicle **10**. The first animated figure controller **118** is coupled to a magnet position drive **120**. The magnet position drive **120** is coupled to the fixation devices **36** disposed on or in the surface of the ride vehicle **10**. The fixation devices **36** are switchable electromagnets or switchable permanent magnets that can be activated or deactivated (in response to control signals provided to the magnet position drive **120** from the animated figure controller **118**) to cause the selective coupling or uncoupling between fixation devices **36**, located on or in the surface of the ride vehicle **10**, and the fixation devices **88**, located at the points of contact on or in the animated FIG. **14**, to keep the animated FIG. **14** coupled to the ride vehicle as it moves (e.g., crawls) along the planned path.

[0050] The animated figure controller **118** is also coupled to a transceiver **122** (e.g., radio frequency (RF) transceiver) for communicating with the animated FIG. **14**. The animated figure controller **118** may provide control signals to the animated FIG. **14** to control movement of the animated FIG. **14** in coordination with the selective activation and deactivation of the fixation devices **36** on or in the surface of the ride vehicle **10**.

[0051] The animated FIG. **14** includes an animated figure controller **124** that is configured to control the actuation of appendages **126** (e.g., limbs) on the animated FIG. **14** (e.g., to move the points of contacts associated with the appendages **126**). The animated FIG. **14** includes a transceiver **128** (e.g., RF transceiver) coupled to the animated figure controller **124** to enable communication with the animated figure controller **118** to coordinate movement of the appendages **126** with the selective activation and deactivation of the fixation devices **36**. In an embodiment, the animated figure controllers **118**, **124** may be communicatively coupled via a wired connection (e.g., as indicated by dashed line **129**).

[0052] The animated figure controller **124** is coupled to actuators **130** (e.g., drives) that cause movement of movement of the appendages **126** (e.g., limbs) in response to control signals from the animated figure controller **124**. The point of contact (e.g., appendage extremity (e.g., hand or foot)) of each appendage **126** includes a fixation device (e.g., permanent magnet) configured to interact with the fixation devices **36** on or in the surface of the ride vehicle **10**.

[0053] In certain embodiments, the ride vehicle **10** may include one or more proximity sensors **132** (e.g., magnetic proximity sensor, capacitive proximity sensor, ultrasonic proximity sensor, etc.) disposed adjacent to the fixation devices **36**. In certain embodiments, the animated FIG. **14** may also include one or more proximity sensors **134**. The proximity sensors **132**, **134** may provide positional information with respect to the animated FIG. **14** and/or the surface to coordinate the movement of the animated FIG. **14**.

[0054] In certain embodiments, the configuration of the system **114** may vary. For example, the fixation devices **36** on or in the ride vehicle **10** may be the permanent magnets and the fixation devices **88** on or in the animated FIG. **14** may be switchable electromagnets or the switchable permanent magnets. In this embodiment, the magnet position drive **120** is located on or in the animated FIG. **14** and coupled to the fixation devices **88**.

[0055] In certain embodiments, the animated figure controller **118**, the fixation devices **36**, and/or the magnet position device **120** are located on or in a piece of show action equipment. In this embodiment, the animated figure controller **118** may be in communication with the ride vehicle control system **116** (when the show action equipment is part of a ride) or a control system for a show (when the show action equipment is part of a show).

[0056] The ride vehicle control system **116** includes a memory **136** and a processor **138**. The first animated figure controller **118** also includes a memory **140** and a processor **142**. The second animated figure controller **124** further includes a memory **144** and a processor **146**. In some embodiments, the processors **138**, **142**, **146** may include one or more general purpose processors, one or more application specific integrated circuits, one or more field programmable gate arrays, or the like. Additionally, the memories **136**, **140**, **144** may be any tangible, non-transitory, computer readable medium that is capable of storing instructions executable by the respective processors **138**, **142**, **146** and/or data that may be processed by the processors **138**, **142**, **146**. In other words, the memories **136**, **140**, **144** may include volatile memory, such as random-access memory, or non-volatile memory, such as hard disk drives, read only memory, optical disks, flash memory, and the like.

[0057] FIG. **8** is a schematic view of a system **148** for controlling movement (e.g., crawling) of the animated FIG. **14** on a surface of the ride vehicle **10** (e.g., utilizing a vacuum pump). The system **148** is similar to the system **114** in FIG. **7** with a few differences. The fixation devices **36** are holes in the surface of the ride vehicle **10**. The ride vehicle **10** includes a vacuum pump **150** coupled to the fixation devices **36** (e.g., via conduits) to create a suction effect to secure (e.g., hold) the points of contacts (e.g., appendage extremities (e.g., hands or feet)) of the appendages **126** (e.g., limbs) in the fixation devices **36**. Valves **152** are coupled to the respective conduits coupled to the fixation devices **36**. The animated figure controller **118** provides control signals to the valves to selectively create the suction effect in the fixations devices **36** to cause the selective coupling or uncoupling between fixation devices **36** and the points of contact on the animated FIG. **14** to keep the animated FIG. **14** coupled to the ride vehicle as it moves (e.g., crawls) along the planned path. In certain embodiments, the ride vehicle **10** may include an additional vacuum pump as a safety feature to couple the animated FIG. **14** to the ride vehicle **10** if the vacuum pump **150** does not work.

[0058] In certain embodiments, the configuration of the system **148** may vary. For example, the vacuum pump **150** and valves **152** may be located on or in the animated FIG. **14**. The vacuum pump **150** may generate the suction effect at the points of contact (e.g., appendage extremities (e.g., hands or feet)) of the appendages **126** (e.g., limbs) to selectively hold them on or in the fixation devices **36** on the surface of the ride vehicle **10**.

[0059] In certain embodiments, the animated figure controller **118**, the fixation devices **36**, the vacuum pump, and/or valves **152** are located on or in a piece of show action equipment. In this embodiment, the animated figure controller **118** may be in communication with the ride vehicle control system **116** (when the show action equipment is part of a ride) or a control system for a show (when the show action equipment is part of a show).

[0060] FIG. **9** is a schematic view of the appendage extremity **110** (e.g., hand or foot) of the animated FIG. **14** interacting with a surface **34** (e.g., via a suction effect). The surface **34** may be a surface of a ride vehicle (e.g. surface **16** in FIG. **1**) or a surface of a piece of show action equipment (e.g., surface **24** in FIG. **2**). The surface **34** includes a set of fixation devices **36** (e.g., set **40** or set **48** in FIG. **3**) disposed along the planned path **38**. The set of fixation devices **36** may be disposed along one of the paths (e.g., path **42** or path **50** in FIG. **3**) of the planned path **38**. In certain embodiments, the fixation devices **36** are coupled to a vacuum pump to selectively create a suction effect in the fixation devices **36**. In certain embodiments, the point of contact **112** on the appendage extremity **110** (e.g., hand or foot) is coupled to a vacuum pump to selectively create a suction effect in the point of contact **112**. The suction effect couples the point of contact **112** in the fixation device **36** to couple the appendage extremity **110** to the surface **34**. An actuator of the appendage that the appendage extremity **110** is coupled to moves the appendage extremity **110** from one fixation device **36** to an adjacent fixation device **36** when the point of contact **112** is not being actively coupled to a particular fixation device **36**.

[0061] FIG. **10** is a flow chart of a method **154** for controlling movement (e.g., crawling) of an animated figure on a surface (e.g., the surface of a ride vehicle or a piece of shown action equipment). The steps of the method **154** may be performed by one or more of the ride vehicle control system **116**, the animated figure controller **118**, and the animated figure controller **124** in FIGS. **7** and **8**.

[0062] The method **154** includes providing control signals to a selectively activate and deactivate fixation devices that cause the animated figure disposed on the ride vehicle or show action equipment to remain coupled to the surface of the ride vehicle or show action equipment as the animated figure crawls along the surface along a planned path (block **156**). The animated figure includes at least three points of contact with the surface, wherein the at least three points of contact include a first point of contact, a second point of contact, and a third point of contact, the first point of contact and the second point of contact are configured to be alternately coupled and uncoupled to the surface while the third point of contact is configured to maintain constant contact (e.g., sliding or rolling contact) with the surface. In certain embodiments, the fixation devices to be activated and deactivated are located on or in the surface and interact with fixation devices on or in the animated figure. In certain embodiments, the fixation devices to be activated and deactivated are located on or in the animated figure (e.g., at the points of contact) and interact with fixation devices on or in the surface. In certain embodiments, the fixation devices to be activated and deactivated are switchable electromagnets or switchable permanent magnets and the activation devices they interact with are permanent magnets. In certain embodiments, the fixation devices are holes coupled to a vacuum pump that creates a suction effect in the holes.

[0063] The method **154** also includes receiving the control signals at the animated figure to cause one or more actuators on the animated figure to alternately move the first point of contact and the second point of contact along the planned path in coordination with the selective activation and deactivation of the fixation devices to cause the animated figure to move (e.g., crawl) along the surface (block **158**).

[0064] FIGS. **11-13** illustrate schematic views of different ways points of contact **164** of an animated figure may move along a surface **162**. The surface **162** may belong to a ride vehicle or show action equipment. Although not shown, as noted above, fixations devices may be disposed along paths **160** of the points of contact **164**. As depicted in FIG. **11**, each point of contact **164** moves along a separate path **160** along a planned path **166**. As depicted in FIG. **12**, each point of contact **164** is moving along the same path **160**. As depicted in FIG. **13**, each point of contact **164** moves along a separate path **160** that is unplanned.

[0065] In an embodiments, at least point of contact of the animated figure may include a permanent point to point connection along a surface as the animated figured moves. FIGS. **14** and **15** are schematic views of an animated FIG. **166** (e.g., hand coupled to a forearm) moving along a surface **168** having at least one permanent point to point connection for a point of contact. The surface **168** may belong to a ride vehicle or an animated figure. Certain portions **170** (e.g., fingers of the hand) of the animated FIG. **166** may move along a path (as indicated by arrow **172**) as described above in FIG. **3** utilizing fixation devices that are spaced apart while another portion **174** (e.g. portion of forearm further away from hand) is moves in a permanent point to point connection along the surface **162**. As depicted in FIG. **14**, the portion **174** is externally coupled to the surface **168**. As depicted in FIG. **15**, the portion **174** is internally coupled. For example, as depicted in FIG. **15**, the animated FIG. **166** extends through a sleeve seal **176** that slides along a slot **178** (which is entirely or partially concealed from the rider's view).

[0066] 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).

[0067] While only certain features of the disclosed subject matter 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 disclosed subject matter.

1. An amusement attraction, comprising:

a ride vehicle or show action equipment;

an animated figure configured to move along a surface of the ride vehicle or the show action equipment, wherein the animated figure comprises at least three points of contact configured to engage with the surface, wherein the at least three points of contact comprise:

a first point of contact and a second point of contact configured to be alternately engaged with and disengaged from the surface, and

a third point of contact configured to maintain contact with the surface;

a fixation system configured to keep the animated figure coupled to the ride vehicle or the show action equipment via the at least three points of contact as the animated figure moves along the surface; and

a controller configured to provide control signals to the fixation system to facilitate control of engagement of the animated figure along the surface.

2. The amusement attraction of claim **1**, wherein the animated figure is configured to move along a planned path.

3. The amusement attraction of claim **2**, wherein the animated figure comprises one or more actuators, and the controller is configured to provide the control signals to the one or more actuators to cause the first point of contact and the second point of contact to alternately move along the planned path to enable the animated figure to move.

4. The amusement attraction of claim **2**, wherein the fixation system comprises a first plurality of fixation devices disposed on or in the surface along the planned path, wherein the first plurality of fixation devices comprises a first set of fixation devices configured to interact with the first point of contact, a second set of fixation devices configured to interact with the second point of contact, and a third set of fixation devices configured to interact with the third point of contact, wherein the first set of fixation devices are disposed along a first path along the planned path, the second set of fixation devices are disposed along a second path along the planned path, and the third set of fixation devices are disposed along a third path along the planned path.

5. The amusement attraction of claim **4**, wherein the first plurality of fixation devices comprises switchable electromagnets or switchable permanent magnets, the fixation system comprises a second plurality of fixation devices, the second plurality of fixation devices comprises a plurality of magnets, and the first point of contact, the second point of contact, and the third point of contact each comprise a respective magnet of the plurality of magnets, and wherein the controller is configured to provide the control signals to the first plurality of fixation devices to selectively activate and deactivate the switchable electromagnets or switchable permanent magnets to facilitate control of engagement of the animated figure along the surface.

6. The amusement attraction of claim **4**, wherein the first plurality of fixation devices comprises a plurality of magnets, the fixation system comprises a second plurality of fixation devices, the second plurality of fixation devices comprises a plurality of switchable electromagnets or switchable permanent magnets, and the first point of contact, the second point of contact, and the third point of contact each comprise a respective switchable electromagnet or switchable permanent magnet of the plurality of switchable electromagnets or switchable permanent magnets, and wherein the controller is configured to provide the control signals to the second plurality of fixation devices to selectively activate and deactivate the switchable electromagnets or switchable permanent magnets to facilitate control of engagement of the animated figure along the surface.

7. The amusement attraction of claim **4**, wherein the first plurality of fixation devices comprises a plurality of holes, the fixation system comprises a vacuum pump configured to selectively provide suction to hold at least the first point of contact, the second point of contact, or the third point of contact on, in, or covering a respective hole of the plurality of holes, and wherein the controller is configured to provide the control signals to the vacuum pump to facilitate engagement of the animated figure along the surface.

8. The amusement attraction of claim **7**, wherein the vacuum pump is disposed on the ride vehicle or the show action equipment, and the vacuum pump is configured to selectively provide suction to the plurality of holes to hold at least the first point of contact, the second point of contact, or the third point of contact in the respective hole of the plurality of holes.

9. The amusement attraction of claim **7**, wherein the vacuum pump is disposed on the animated figure, and the vacuum pump is configured to selectively provide suction to at least the first point of contact, the second point of contact, or the third point of contact to hold at least the first point of contact, the second point of contact, or the third point of contact on, in, or covering the respective hole of the plurality of holes.

10. The amusement attraction of claim **1**, wherein the animated figure is configured to crawl along the surface.

11. The amusement attraction of claim **10**, wherein the animated figure is configured, during a ride on the ride vehicle, to be initially located out of a view of a rider on the ride vehicle and then subsequently crawl into the view of the rider.

12. A ride vehicle, comprising:

a surface;

an animated figure disposed on the surface and configured to move along the surface along a planned path, wherein the animated figure comprises at least three points of contact configured to contact the surface, wherein the at least three points of contact comprise:

a first point of contact and a second point of contact configured to be alternately coupled and uncoupled to the surface, and

a third point of contact configured to maintain contact with the surface;

a fixation system configured to keep the animated figure coupled to the ride vehicle as the animated figure moves along the surface; and

a controller configured to provide control signals to the fixation system to facilitate control of engagement of the animated figure along the surface.

13. The ride vehicle of claim **12**, wherein the animated figure is configured, during a ride on the ride vehicle, to be initially located out of a view of a rider on the ride vehicle and then subsequently move into the view of the rider

14. The ride vehicle of claim **12**, wherein the animated figure comprises one or more actuators, and the controller is configured to provide the control signals to the one or more actuators to cause the first point of contact and the second point of contact to alternately move along the planned path to enable the animated figure to move.

15. The ride vehicle of claim **14**, wherein the fixation system comprises a first plurality of fixation devices disposed on or in the surface along the planned path, wherein the first plurality of fixation devices comprises a first set of fixation devices configured to interact with the first point of contact, a second set of fixation devices configured to interact with the second point of contact, and a third set of

fixation devices configured to interact with the third point of contact, wherein the first set of fixation devices are disposed along a first path along the planned path, the second set of fixation devices are disposed along a second path along the planned path, and the third set of fixation devices are disposed along a third path along the planned path, wherein the first path, the second path, and the third path extend parallel with respect to each other along the planned path

16. The ride vehicle of claim **15**, wherein the first plurality of fixation devices comprises switchable electromagnets or switchable permanent magnets, the fixation system comprises a second plurality of fixation devices, the second plurality of fixation devices comprises a plurality of magnets, and the first point of contact, the second point of contact, and the third point of contact each comprise a respective magnet of the plurality of magnets, and wherein the controller is configured to provide the control signals to the first plurality of fixation devices to selectively activate and deactivate the switchable electromagnets or switchable permanent magnets to facilitate control of engagement of the animated figure along the surface.

17. The ride vehicle of claim **15**, wherein the first plurality of fixation devices comprises a plurality of magnets, the fixation system comprises a second plurality of fixation devices, the second plurality of fixation devices comprises a plurality of switchable electromagnets or switchable permanent magnets, and the first point of contact, the second point of contact, and the third point of contact each comprise a respective switchable electromagnet or switchable permanent magnet of the plurality of switchable electromagnets or switchable permanent magnets, and wherein the controller is configured to provide the control signals to the second plurality of fixation devices to selectively activate and deactivate the switchable electromagnets or switchable permanent magnets to facilitate control of engagement of the animated figure along the surface.

18. The ride vehicle of claim **15**, wherein the first plurality of fixation devices comprises a plurality of holes, the fixation system comprises a vacuum pump disposed on or in the ride vehicle, the vacuum pump being configured to selectively provide suction to hold at least the first point of contact, the second point of contact, or the third point of contact on, in, or covering a respective hole of the plurality of holes, and wherein the controller is configured to provide the control signals to the vacuum pump to facilitate engagement of the animated figure along the surface.

19. A method for controlling an animated figure in a ride environment, the method comprising:

providing, via a first controller on a ride vehicle, control signals to selectively activate and deactivate fixation devices disposed on a surface of the ride vehicle that cause the animated figure disposed on the ride vehicle to remain coupled to the surface as the animated figure crawls along the surface along a planned path, wherein the animated figure comprises at least three points of contact configured to engage and disengage the surface, wherein the at least three points of contact comprise a first point of contact, a second point of contact, and a third point of contact, the first point of contact and the second point of contact are configured to be alternately coupled and uncoupled to the surface while the third point of contact is configured to maintain contact with the surface; and

receiving, at a second controller on the animated figure, the control signals to cause one or more actuators on the animated figure to alternately move the first point of contact and the second point of contact along the planned path in coordination with the selective activation and deactivation of the fixation devices to cause the animated figure to move along the surface.

20. The method of claim **19**, wherein the fixation devices comprise switchable electromagnets or switchable permanent magnets, and the first point of contact, the second point of contact, and the third point of contact comprise respective magnets configured to interact with the fixation devices.

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