

## CONVEYOR SYSTEMS WITH ANIMATED ELEMENTS

### CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority to and the benefit of U.S. Provisional Application No. 63/282,022, entitled “CONVEYOR SYSTEMS WITH ANIMATED ELEMENTS,” filed November 22, 2021, which is hereby incorporated by reference in its entirety for all purposes.

### BACKGROUND

[0002] The present disclosure relates generally to conveyor systems that carry animated elements. More particularly, the present disclosure relates to conveyor systems that provide power to the animated elements via a bus bar.

[0003] This section is intended to introduce the reader to various aspects of art that may be related to various aspects of the present disclosure. 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 noted that these statements are to be read in this light and not as admissions of prior art.

[0004] Amusement parks include various attractions that entertain guests. For example, an amusement park may have ride attractions and show attractions that entertain guests. The amusement park may include, such as in the ride attractions and the show attractions, animated figures that move, illuminate, and/or output sounds to entertain the guests. However, it is now recognized that the animated figures and/or other animated elements (e.g., lights) may be designed and operated in a way that more fully immerses the guests within a particular attraction.

### SUMMARY

[0005] A summary of certain embodiments disclosed herein is set forth below. It should be noted 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.

**[0006]** In one embodiment, a conveyor system for an attraction in an amusement park includes a bus bar configured to provide power, a conveyor configured to move relative to the bus bar, and an animated element assembly configured to be transported by the conveyor to move relative to the bus bar. The animated element assembly includes a bus bar arm that is configured to contact and move along the bus bar as the animated element assembly is transported by the conveyor and a powered component that is configured to receive the power from the bus bar via the bus bar arm.

**[0007]** In one embodiment, a conveyor system for an attraction in an amusement park includes a bus bar configured to provide power, a conveyor configured to move relative to the bus bar, and multiple animated element assemblies configured to be transported by the conveyor. Each animated element assembly of the multiple animated element assemblies includes a bus bar arm that is configured to contact the bus bar as the animated element assembly is transported by the conveyor. Each animated element assembly of the multiple animated element assemblies also includes a powered component that is configured to receive the power from the bus bar via the bus bar arm. The conveyor system further includes a controller configured to control the power through the bus bar to turn on and off the multiple animated element assemblies

**[0008]** In one embodiment, a method of operating a conveyor system includes instructing, with a controller, a conveyor drive system to drive a conveyor to move relative to a bus bar. The method also includes instructing, with the controller, a voltage source to flow a current through the bus bar that extends along at least a portion of the conveyor. The method further includes transporting, with the conveyor, an animated element assembly to move relative to the bus bar. The method further includes directing, via a bus bar arm that extends between the bus bar and the animated element assembly, the current to provide power to a powered component of the animated element assembly.

#### BRIEF DESCRIPTION OF THE DRAWINGS

**[0009]** 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:

[0010] FIG. 1 is a perspective view of a conveyor system that may be used in an attraction of an amusement park, in accordance with an embodiment of the present disclosure;

[0011] FIG. 2 is a perspective view of a portion of the conveyor system of FIG. 1, in accordance with an embodiment of the present disclosure;

[0012] FIG. 3 is a method of operating the conveyor system of FIG. 1, in accordance with an embodiment of the present disclosure; and

[0013] FIG. 4 is a schematic top view of a conveyor system that may be used in an attraction of an amusement park, wherein the conveyor system includes a charging section, in accordance with an embodiment of the present disclosure.

#### DETAILED DESCRIPTION

[0014] 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 noted 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 noted 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.

[0015] Conveyor systems and methods disclosed herein provide an efficient way to transport and provide power to animated elements (e.g., animated or movable figures, lights, speakers). In one embodiment, the conveyor systems transport the animated elements via a conveyor and provide power to the animated elements via a bus bar. A controller (e.g., electronic controller) may control a conveyor drive system to adjust movement of the conveyor and may also control delivery of the power to the animated

elements via the bus bar. For example, the controller may instruct the conveyor drive system to start, stop, and/or adjust a rate of movement of the conveyor and may also control a flow of current from a voltage source to turn on and off the power to the animated elements via the bus bar.

**[0016]** The controller may execute show instructions to control the conveyor system and provide the power to the animated elements via the bus bar in a manner that provides a show with coordinated movement of the animated elements, lights, sounds, and/or other outputs from the animated elements. Furthermore, the controller may execute the show instructions in a manner that provides the show that coordinates the outputs from the animated elements with other attraction features, such as ride vehicles, projected or displayed images, animated elements that are separate from the conveyor system (e.g., not transported by the conveyor), and so on. The conveyor system may also enable additional programming functionality, such as to individually control each of the animated elements via locally stored programming sequences, targeted instructions via the bus bar, wireless communication (e.g., WiFi, Bluetooth), or the like.

**[0017]** With the foregoing in mind, FIG. 1 is a perspective view of an embodiment of a conveyor system 10 that may be utilized in an attraction 12 of an amusement park or other entertainment venue. As shown, the conveyor system 10 includes a conveyor 14, a conveyor drive system 16, a bus bar 18 (e.g., electrical conductor), and a controller 20 (e.g., electronic controller). The controller 20 includes a processor 22, a memory device 24, a storage device 26, a communication device 28 (e.g., to send and/or receive signals/data via a network), and an output device 30 (e.g., display and/or speaker). The conveyor system 10 may also include one or more animated elements 32 that are coupled to and carried by the conveyor 14. For example, a first animated element may be an animated or movable figure (e.g., bear-shaped body with actuators that move arms), a second animated element may be a light emitter that outputs light (e.g., star-shaped body that houses the light emitter), and a third animated element may be a speaker that outputs sound (e.g., spherical body that houses the speaker).

**[0018]** In FIG. 1, the animated elements 32 are suspended from the conveyor 14 via arms 34 (e.g., bars); however, it should be appreciated that the animated elements 32 may be coupled to and/or transported by the conveyor 14 via any suitable technique. For example, the animated elements 32 may include light emitters or speakers that are

housed within bodies (e.g., disc-shaped bodies) that are adhered or fastened directly to the conveyor 14 without the arms 34. As another example, the animated elements 32 may be supported and carried on top of the conveyor 14, with or without being coupled, adhered, or fastened to the conveyor 14.

**[0019]** In any case, the animated elements 32 are also in contact (e.g., electrical contact) with the bus bar 18 via bus bar shoes 36 (e.g., arms) that are configured to brush (e.g., slide or roll along) the bus bar 18. The animated elements 32, the arms 34, and the bus bar shoes 36 may be considered to form animated element assemblies (e.g., a first animated element assembly includes a first body of a first animated element, a first arm, and a first bus bar shoe; a second animated element assembly includes a second body of a second animated element, a second arm, and a second bus bar shoe; and so on). In operation, the animated assemblies are carried by and/or travel with the conveyor 14 (e.g., as shown by arrow 33) relative to the bus bar 18 and relative to a frame 38, which supports the conveyor 14 and the bus bar 18 (e.g., suspends the conveyor 14 and the bus bar 18 from a ceiling of the attraction 12). As shown, the frame 38 includes a main frame portion 40 (e.g., loop) that directly supports and contacts the conveyor 14 and a support frame portion 42 (e.g., arms) that suspends or supports the main frame portion 40 relative to other structures in the attraction 12 (e.g., the ceiling, a floor, and/or walls, of the attraction 12).

**[0020]** The conveyor system 10 provides various show effects and features to provide entertainment to guests. As noted herein, at least one of the animated elements 32 may be considered to be an animated figure that has an external appearance of an animal, a character, and/or an object (e.g., vehicle, ball, lamp, plant). Additionally, the animated elements 32 may be configured to provide one or more powered effects, such as motion, light, and/or sound effects, via one or more powered components, such as actuators, light emitters, and/or speakers. At least one of the animated elements 32 may include an actuator that, upon being powered and/or controlled, drives one part (e.g., arm) of the animated element 32 to move relative to another part (e.g., torso) of the animated element 32. Additionally or alternatively, at least one of the animated elements 32 may include an actuator that, upon being powered and/or controlled, drives a body of the animated element 32 to move relative to the arm 34 and/or the frame 38. Additionally or alternatively, at least one of the animated elements 32 may include a

light emitter that, upon being powered and/or controlled, emits light in a manner that is visible to the guests. Additionally or alternatively, at least one of the animated elements 32 may include a speaker, that upon being powered and/or controlled, outputs sounds that are audible to the guests. Indeed, the animated elements 32 may include any of a variety of powered components, including, but not limited to, actuators, light emitters, speakers, displays, projectors, sensors (e.g., location sensors, image sensors/cameras), processing circuitry, or the like.

**[0021]** Furthermore, the animated elements 32 may include the powered components in any of a variety of arrangements or configurations, such as one animated element 32 with an actuator (and no light emitter) and one animated element 32 with a light emitter (and no actuator), and so on. It should be appreciated that the animated elements 32 may be the same (e.g., substantially the same) or different. For example, all of the animated elements 32 may have bodies in a particular shape (e.g., animal) and with a particular powered component (e.g., actuator). However, the conveyor system 10 may include one or more animated elements 32 with respective bodies in a particular shape (e.g., animal) and with particular powered component(s) (e.g., actuator), and one or more other animated elements 32 with respective bodies in another shape (e.g., star) and with other powered component(s) (e.g., sensor).

**[0022]** The controller 20 may control the conveyor system 10, such as by providing control signals to the conveyor drive system 16 to start, stop, and/or control a rate of movement of the conveyor 14 relative to the bus bar 18 and the frame 38. The conveyor drive system 16 may include a motor (e.g., electric motor) that may be turned on to start the movement of the conveyor 14 and turned off to stop the movement of the conveyor 14. In some cases, the motor may be a variable speed motor and/or may be coupled to a gear system or similar system that enables adjustment of the rate of the movement of the conveyor 14. It should be appreciated that the conveyor 14 may carry or move the animated elements 32 when no power is supplied via the bus bar 18 and/or the bus bar 18 may supply power to the animated elements 32 when the animated elements 32 are not being carried or moved by the conveyor 14.

**[0023]** The controller 20 may also control the conveyor system 10 by controlling power delivered through the bus bar 18. In particular, the controller 20 may provide control signals to a power or voltage source 44 (e.g., current source) to provide a flow

of current (e.g., electrical current) through the bus bar 18 to enable the bus bar 18 to deliver power to the animated elements 32 and/or to stop the flow of current through the bus bar 18 to block the bus bar 18 from delivering power to the animated elements 32. Thus, the controller 20 may control the conveyor drive system 16 to control gross movement (e.g., throughout a room of the attraction) of the conveyor 14 and the animated element assemblies that are carried by the conveyor 14, as well as the flow of current to the bus bar 18 to control (e.g., turn off/on) the powered components of the animated elements 32 in a coordinated manner to produce a show to entertain the guests.

**[0024]** In one embodiment, the animated elements 32 do not include any power storage components (e.g., devoid of battery or capacitor). Thus, upon blocking the flow of current through the bus bar 18, the animated elements 32 along the bus bar 18 are not powered and are unable to provide any of the powered effects. In this way, the controller 20 may efficiently turn off the animated elements 32 along the bus bar 18 and stop the powered effects by shutting off the flow of current through the bus bar 18. For example, all of the animated elements 32 along the bus bar 18 and the powered effects provided by the animated elements 32 along the bus bar 18 may be controlled to turn off simultaneously and in real-time (e.g., substantially simultaneously and in real-time; within milliseconds or seconds) in response to blocking the flow of current through the bus bar 18. It should be appreciated that the controller 20 may block the flow of current through the bus bar 18 in response to receipt of operator input or instructions to stop the show, receipt of sensor signals or error signals that indicate maintenance (e.g., inspection or repair) operations are due, based on a timing schedule (e.g., at the end of every ride cycle; at the end of every day), and/or any other suitable input.

**[0025]** Similarly, if the animated elements 32 do not include any power storage components, the controller 20 may efficiently turn on the animated elements 32 along the bus bar 18 and enable the powered effects by providing the flow of current through the bus bar 18. For example, all of the animated elements 32 along the bus bar 18 and the powered effects provided by the animated elements 32 along the bus bar 18 may be controlled to turn on simultaneously and in real-time (e.g., substantially simultaneously and in real-time; within milliseconds or seconds) in response to providing the flow of current through the bus bar 18. It should be appreciated that the controller 20 may

provide the current flow through the bus bar 18 in response to receipt of operator input or instructions to begin the show, receipt of sensor signals that indicate maintenance (e.g., inspection or repair) operations are complete, based on the timing schedule (e.g., at the beginning of every ride cycle; at the beginning of every day), and/or any other suitable input.

**[0026]** In one embodiment, the animated elements 32 may include power storage components for only some of the powered effects, such as only for light and not for motion or sound. Thus, in response to blocking the flow of current through the bus bar 18, some of the powered effects are not powered (e.g., turn off) and some of the powered effects remain powered (e.g., on) via the power storage components for some period of time (e.g., until the power storage components are drained). Furthermore, in some cases, the animated elements 32 may include power storage components that support all of the powered effects. Thus, in response to blocking the flow of current through the bus bar 18, all of the powered effects are powered via the power storage components for some period of time (e.g., until the power storage components are drained). In this way, even upon loss of power through the bus bar 18, at least certain powered effects may continue to run for some period of time to provide at least limited aspects of the show to the guests, to facilitate the maintenance operations (e.g., lights to enable the operator to visualize the animated elements 32 during the maintenance operations), or the like.

**[0027]** Furthermore, in such cases, all of the animated elements 32 along the bus bar 18 and the powered effects provided by the animated elements 32 along the bus bar 18 may be controlled to turn on (or to remain on, if currently powered via the power storage components) in response to providing the flow of current through the bus bar 18. It should be appreciated that the bus bar 18 may power the powered effects of the animated elements 32 and may also charge the power storage components of the animated elements 32 while the flow of current passes through the bus bar 18 and while the animated elements 32 are supported (or transported) by the conveyor 14 such that the bus bar shoes 36 contact the bus bar 18. Additionally, it should be appreciated that the controller 20 may block or enable the flow of current through the bus bar 18 in response to receipt of operator input or instructions, receipt of sensor signals, based on the timing schedule, and/or any other suitable input.

**[0028]** In one embodiment, at least one of the animated elements 32 may include a simple conductive circuit (e.g., wire) that delivers the flow of current, when present through the bus bar 18 and the bus bar shoe 36, to the powered component(s) to cause the powered effect(s) (e.g., the light emitter to emit light). However, in one embodiment, at least one of the animated elements 32 may include processing circuitry (e.g., local electronic controller or microprocessor; each of the animated elements 32 may have respective on-board processing circuitry). In some such cases, the processing circuitry may be powered by the flow of current through the bus bar 18, and then the processing circuitry may control (e.g., instruct) some or all of the powered components to provide the powered effects (e.g., to turn on in response to receipt of the flow of current; according to a programmed sequence, which may be stored on-board).

**[0029]** In one embodiment, the animated element 32 may include the processing circuitry and the power storage component, which enables a variety of show options. For example, upon loss of the flow of current through the bus bar 18, the processing circuitry may direct the power from the power storage component to only a subset of the powered components in an effort to conserve the power. Moreover, the processing circuitry may utilize the power from the power storage component to provide a show with the powered effects. For example, even without the flow of current through the bus bar 18, the processing circuitry may control the powered components according a programmed sequence stored on-board for some period of time (e.g., until the power storage component is drained).

**[0030]** Indeed, in addition to various techniques to provide power and on/off control to the animated elements 32, the conveyor system 10 may also provide more advanced and complex shows. In one embodiment, one or more of the animated elements 32 may include the processing circuitry that includes a local memory device that stores one or more programmed sequences (e.g., show sequences) and a local processor that executes the one or more programmed sequences to provide the shows. For example, one of the programmed sequences may cause the light emitter to blink at a particular rate and/or with a particular color, one of the programmed sequences may cause the actuator to move one portion of the animated element 32 through a series of movements (e.g., wave arm back and forth), one of the programmed sequences may cause the light emitter to illuminate with a particular color while the speaker outputs a particular song, and so

forth. The programmed sequences may repeat one or two powered effects (e.g., only wave arm back and forth) or the programmed sequences may string together multiple powered effects (e.g., 10, 20, 50, 100 or more) that are carried out as the animated elements 32 are transported by the conveyor 14 and/or powered by the bus bar 18, for example. In any case, when powered, the processing circuitry of the animated elements 32 may select and execute the programmed sequences to provide the shows.

**[0031]** In one embodiment, the processing circuitry may include a communication component that enables the processing circuitry to receive the programmed sequences via wireless communication techniques (e.g., WiFi, Bluetooth). In one embodiment, the processing circuitry may be configured to receive the programmed sequences via the bus bar 18. For example, the controller 20 may communicate the programmed sequences to the respective processing circuitry for each of the animated elements 32 via a communication line of the bus bar 18. In some such cases, the programmed sequences may be the same for each of the animated elements 32. However, in other such cases, the programmed sequences may be different for at least some of the animated elements 32 (e.g., one illuminates with a red color and one illuminates with a blue color). Accordingly, the controller 20 may label the programmed sequences in a manner that enables the processing circuitry for each of the animated elements 32 to identify an appropriate or targeted one of the programmed sequences. For example, a first programmed sequence may be tagged with a first code (e.g., identifier) that may be interpreted by the processing circuitry of one or more animated elements 32 to assign the first programmed sequence to the one or more animated elements 32, and a second programmed sequence may be tagged with a second code (e.g., identifier) that may be interpreted by the processing circuitry of one or more other animated elements 32 to assign the second programmed sequence to the one or more other animated elements 32. In this way, the conveyor system 10 may separately control the powered effects of each animated element 32 and/or groups of animated elements 32 to efficiently provide a variety of complex shows to entertain the guests.

**[0032]** In one embodiment, the controller 20 may be configured to enable the operator to generate and/or to set the show in real-time (e.g., substantially real-time). For example, the operator may view a library of programmed sequences and/or shows (e.g., groups of programmed sequences) via the output device 30, and the operator may

select certain programmed sequences and/or shows via the output device 30 (e.g., touchscreen input). The operator may arrange or order (e.g., queue) the programmed sequences and/or shows, and the controller 20 may then provide instructions to the conveyor drive system 16, the bus bar 18, and/or the animated elements 32 to carry out the programmed sequences and/or shows.

**[0033]** It should be appreciated that the controller 20 may be communicatively coupled to a remote device (e.g., accessible to and/or carried by the guest, such as a mobile phone carried by the guest), and thus, the remote device may display the programmed sequences and enable selection of the programmed sequences. Then, the selected programmed sequences may be communicated to the controller 20, which then provides the instructions to the conveyor drive system 16, the bus bar 18, and/or the animated elements 32 to carry out the programmed sequences and/or shows. In this way, the operator, the guest(s), and/or any other user may control the conveyor system 10, such as prior to and/or during a visit to the attraction 12 (e.g., while in a line to enter the attraction 12; while seated at a table in the attraction 12; while traveling in a ride vehicle through the attraction 12).

**[0034]** Furthermore, it should be appreciated that the controller 20 may be configured to coordinate show effects provided by the conveyor system 10 with other show effects in the attraction 12. For example, the controller 20 may coordinate movement (e.g., on, off, rate) of the conveyor 14 with movement (e.g., on, off, rate) of a ride vehicle 50 that travels through the attraction 12, such as along a path as indicated by arrow 52. As another example, the controller 20 may coordinate movement (e.g., on, off, rate) of the conveyor 14 and/or the powered effects of the animated elements 32 with movement (e.g., on, off, rate) of the ride vehicle 50 and/or an additional animated element 54 (e.g., animated figure, lights, speakers, projected or displayed images; not transported by the conveyor 14) in the attraction 12.

**[0035]** In one embodiment, the controller 20 may turn on and/or change the rate (e.g., speed up or slow down) of the conveyor 14 as the ride vehicle 50 approaches and/or travels by the conveyor 14 (e.g., while the animated elements 32 are in viewing range of the guests carried by the ride vehicle 50). In one embodiment, the controller 20 may turn off and/or change the rate (e.g., speed up or slow down) of the conveyor 14 as the ride vehicle 50 travels away from the conveyor 14 (e.g., while the animated

elements 32 are out of viewing range of the guests carried by the ride vehicle 50). In one embodiment, the controller 20 may coordinate movement of the animated elements 32 with movement of the additional animated element 54 (e.g., perform same wave or dance), or the controller 20 may coordinate audio outputs so that the animated elements 32 appear to carry out a spoken conversation with the additional animated element 54. It should be appreciated that any of a variety of coordinated show effects may be created by operating the conveyor system 10 and other features in the attraction 12 in a coordinated manner.

[0036] As shown in FIG. 1, the conveyor 14 forms a loop (e.g., continuous loop) and transports the animated elements 32 in the loop. However, it should be appreciated that the conveyor 14 may have any of a variety of other shapes or configurations, such as a linear shape that transports the animated elements 32 back and forth along the conveyor 14 (e.g., between opposed ends of the conveyor 14).

[0037] FIG. 2 is a perspective view of an embodiment of a portion of the conveyor system 10 and illustrates certain components that may be supported within the animated elements 32. In particular, FIG. 2 illustrates the conveyor 14, the bus bar 18, the frame 38 with the main frame portion 40 and the support frame portion 42. FIG. 2 also illustrates two animated elements 32, and each of the animated elements 32 is associated with a respective bus bar shoe 36 that contacts and slides along the bus bar 18 to convey power and/or communication signals from the bus bar 18 to the animated element 32. Each of the animated elements 32 is also suspended from the conveyor 14 by a respective arm 34; however, as noted herein, the animated elements 32 may be coupled to and/or supported by the conveyor 14 in any suitable manner.

[0038] As shown to facilitate discussion, a first animated element 32 includes a first housing 60, and a second animated element 32 includes a second housing 62. It should be appreciated that the housings 60, 62 may have any suitable shape. Additionally, as shown, the first animated element 32 includes a light emitter 64, and the second animated element 32 includes a speaker 66 and multiple actuators 68. The first and second animated elements 32 also each include respective processing circuitry 70, and details of components that may be included in the respective processing circuitry 70 are shown as a processor 72, a memory device 74, a storage device 76, a communication device 78, and a power storage component 80. Thus, the flow of current from the bus

bar 18 may travel through the bus bar shoe 36, through conductors 82 to directly activate the powered effects and/or to the processing circuitry 70 to cause the processing circuitry 70 to activate the powered effects. In this way, the conveyor system 10 may provide varied and enjoyable entertainment for the guests.

**[0039]** As noted herein, the first and second animated elements 32 may also include one or more sensors as one or more of the powered components. For example, the one or more sensors may include a motion sensor that detects motion of the respective animated element 32 and/or a location sensor that detects a location of the respective animated element 32 (e.g., with respect to global coordinates or local coordinates). Additionally or alternatively, one or more sensors 65 may be positioned off-board the animated elements 32, such as along the conveyor 14 and/or nearby the conveyor 14. In any case, the one or more sensors on the animated elements 32 and/or off-board the animated elements 32 may provide data (e.g., feedback) to the processors 22, 72. The data may be utilized to instruct certain powered effects at certain locations, determine whether maintenance operations should be conducted to inspect the conveyor system 10, or the like.

**[0040]** With reference to FIGS. 1 and 2, the processors 22, 72 may be any type of computer processor or microprocessor capable of executing computer-executable code. The memory devices 24, 74 and the storage devices 26, 76 may be any suitable articles of manufacture that can serve as media to store processor-executable code, data, or the like. These articles of manufacture may represent computer-readable media (e.g., any suitable form of memory or storage) that may store the processor-executable code used by the processors 22, 72 to perform various techniques disclosed herein. The memory devices 24, 74 and the storage devices 26, 76 may represent non-transitory computer-readable media (e.g., any suitable form of memory or storage). It should be noted that non-transitory merely indicates that the media is tangible and not a signal. Programmed sequences may be stored in one or more databases, which may be accessible to the controller 70 and the processing circuitry 70 (e.g., stored within one or both of the storage devices 26, 76).

**[0041]** The output device 30 may operate as a human machine interface (HMI) to depict visualizations associated with software or executable code being processed by the processor 22. In one embodiment, the output device 30 may be a display, such as a

touch display capable of receiving inputs from a user of the controller 20. The output device 30 may be any suitable type of display, such as a liquid crystal display (LCD), plasma display, or an organic light emitting diode (OLED) display, for example. It should be noted that the components described above with regard to the controller 20 and the processing circuitry 70 are merely examples, and the controller 20 and the processing circuitry 70 may include additional or fewer components. The controller 20 may include a personal computer, a mobile computer, or the like that may be positioned within the building and/or be carried by the user. In some embodiments, the controller 20 may be a distributed computing system that includes multiple processors (e.g., including one or more cloud computing systems having multiple processors 22). Indeed, as used herein, the term “controller” refers to an electronic controller or computing device such as, but not limited to, a single computer, virtual machine, virtual container, host, server, laptop, and/or mobile device, or to multiple electronic computing devices working together to perform the function described as being performed on or by the controller.

**[0042]** FIG. 3 is a flow diagram of an embodiment of a method 100 of operating the conveyor system 10. The following description of the method 100 is described as being performed by a controller (e.g., the controller 20), but it should be noted that any suitable processor-based device may be specially programmed to perform any of the methods described herein. Moreover, although the following description of the method 100 is described as including certain steps performed in a particular order, it should be understood that the steps of the method 100 may be performed in any suitable order, that certain steps may be omitted, and/or that certain steps may be added.

**[0043]** In step 102, the method 100 may begin by instructing, with a controller, a conveyor drive system to drive a conveyor. In particular, the controller 20 may provide control signals to the conveyor drive system to start, stop, and/or control a rate of movement of the conveyor relative to a bus bar and/or a frame that supports the conveyor. As discussed herein, the conveyor drive system may include a motor (e.g., electric motor) that may be turned on to start the movement of the conveyor and turned off to stop the movement of the conveyor.

**[0044]** In step 104, the method 100 may include instructing, with the controller, a voltage source to flow a current (e.g., electrical current) through the bus bar that extends

along at least a portion of the conveyor. In particular, the controller may provide control signals to the voltage source to provide current flow through the bus bar 18 to enable the bus bar to power an animated element and/or to stop the current flow through the bus bar to block the bus bar from powering the animated element.

**[0045]** In step 106, the method 100 may include transporting, with the conveyor, the animated element. In particular, the conveyor may be coupled to or otherwise carry the animated element, such as via an arm, fastener, adhesive, surface, or the like. Then, the animated element may travel with the conveyor (e.g., in a continuous loop) relative to the bus bar and/or the frame.

**[0046]** In step 108, the method 100 may include directing, via a bus bar shoe that extends between the bus bar and the animated element, the current flow to power a powered component of the animated element. The powered component may include a light emitter, a speaker, an actuator, a display, a projector, a sensor, processing circuitry, or the like.

**[0047]** In step 110, the method 100 may include executing a programmed sequence to operate the powered component of the animated element to provide a show. For example, upon being powered via the bus bar and the bus bar shoe, the processing circuitry of the animated element may access the programmed sequence stored in a local memory or storage device of the animated element and execute the programmed sequence to cause the powered component of the animated element to output certain powered effects (e.g., illuminate with a certain color, move portions in certain ways, speak certain words). As noted herein, the components of the conveyor system may cooperate to control the animated elements to provide the powered effects in other ways, such as via receipt of instructions for the programmed sequence via wireless communication (e.g., WiFi) and/or via a communication line of the bus bar.

**[0048]** Additionally, as discussed herein, the controller may also block the flow of the current through the bus bar, which may turn off the powered effects of the animated element. Furthermore, the conveyor may support multiple animated elements, and the controller may efficiently control numerous animated elements (e.g., to turn on/off and/or perform programmed sequences) as a group to produce a show to entertain the guests.

**[0049]** In FIG. 1, the bus bar 18 extends along an entirety of the conveyor 14 (e.g., along an entirety of the loop; forms an additional loop). However, the bus bar 18 may extend along only part of the conveyor 14. In some cases, multiple bus bars 18 may be arranged along the conveyor 14 to enable sections of the animated elements 32 to be controlled together (e.g., to leave a group of animated elements 32 along one part of the conveyor 14 off, while turning on another group of animated elements 32 along another part of the conveyor 14). Furthermore, it may be desirable to provide the bus bar(s) 18 along only a limited portion of the conveyor 14 to thereby form a charging section of the conveyor 14.

**[0050]** FIG. 4 is a schematic top view of an embodiment of a conveyor system 120 that may be used in an attraction 122 of an amusement park, wherein the conveyor system 120 includes a charging section 124. One or more animated elements 126 with the power storage components may be transported by a conveyor 128. A bus bar 130 may be present along the charging section 124, and a bus bar shoe 132 (e.g., arm) may transfer power from the bus bar 130 for storage in the power storage component as the animated element 126 travels over the charging section 124. The power stored in the power storage component may then be used to provide the powered effects (e.g., motion, lights, audio) as the one or more animated elements 126 travel through a remainder 134 (e.g., a non-charging section) of the conveyor system 120. The conveyor system 120 may be designed so that the charge provided to the power storage component is sufficient to provide the powered effects as the one or more animated elements 126 travel through the remainder 134 of the conveyor system 120.

**[0051]** As noted herein, more than one charging section 124 (e.g., more than one bus bar 130) may be provided about the conveyor 128 to enable sections of the animated elements 32 to be controlled together and/or to recharge the power storage component at multiple locations about the conveyor 128. For example, two bus bars 130 may be provided on diametrically opposite sides of a loop formed by the conveyor 128 and/or at regular intervals along the conveyor 128. Additionally, the charging section(s) 124 may be positioned at any suitable location along the conveyor 128 and/or relative to other features of the attraction 122 (e.g., along a portion of conveyor 128 closest to a ride path and/or the guests to reduce a chance of the power storage component draining

and failing to provide the power to the animated elements 126 when the animated elements 126 are most visible to the guests).

**[0052]** While only certain features of the invention 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 invention.

**[0053]** 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. A conveyor system for an attraction in an amusement park, the conveyor system comprising:
  - a bus bar configured to provide power;
  - a conveyor configured to move relative to the bus bar; and
  - an animated element assembly configured to be transported by the conveyor to move relative to the bus bar, wherein the animated element assembly comprises:
    - a bus bar arm that is configured to contact and move along the bus bar as the animated element assembly is transported by the conveyor; and
    - a powered component that is configured to receive the power from the bus bar via the bus bar arm.
2. The conveyor system of claim 1, wherein the animated element assembly comprises a housing with an appearance of an animal or a character.
3. The conveyor system of claim 1, wherein the bus bar extends along an entirety of the conveyor.
4. The conveyor system of claim 1, wherein the animated element assembly comprises a power storage component that is configured to receive the power from the bus bar via the bus bar arm and to store the power for subsequent use by the powered component.
5. The conveyor system of claim 1, wherein the powered component comprises an actuator, a light emitter, or a speaker.
6. The conveyor system of claim 1, wherein the powered component comprises an actuator that is configured to drive one portion of the animated element assembly to move relative to another portion of the animated element assembly.

7. The conveyor system of claim 1, wherein the animated element assembly comprises processing circuitry that is configured to execute a programmed sequence to control the powered component to perform a show.

8. The conveyor system of claim 7, wherein the processing circuitry is configured to receive an indication of the programmed sequence via a communication line of the bus bar.

9. The conveyor system of claim 1, comprising a central controller that is configured to block delivery of the power through the bus bar.

10. The conveyor system of claim 1, comprising an additional animated element assembly configured to be transported by the conveyor to move relative to the bus bar, wherein the additional animated element assembly comprises:

an additional bus bar arm that is configured to contact and move along the bus bar as the additional animated element assembly is transported by the conveyor; and

an additional powered component that is configured to receive the power from the bus bar via the additional bus bar arm.

11. A conveyor system for an attraction in an amusement park, the conveyor system comprising:

a bus bar configured to provide power;

a conveyor configured to move relative to the bus bar; and

a plurality of animated element assemblies configured to be transported by the conveyor, wherein each animated element assembly of the plurality of animated element assemblies comprises:

a bus bar arm that is configured to contact the bus bar as the animated element assembly is transported by the conveyor; and

a powered component that is configured to receive the power from the bus bar via the bus bar arm; and

a controller configured to control the power through the bus bar to turn on and off the plurality of animated element assemblies.

12. The conveyor system of claim 11, wherein at least one animated element assembly of the plurality of animated element assemblies is devoid of a power storage component.

13. The conveyor system of claim 11, wherein the powered component comprises an actuator, a light emitter, or a speaker.

14. The conveyor system of claim 11, wherein the powered component comprises an actuator that is configured to drive one portion of the respective animated element assembly to move relative to another portion of the respective animated element assembly.

15. The conveyor system of claim 11, wherein at least one animated element assembly of the plurality of animated element assemblies comprises processing circuitry that is configured to execute programmed sequences to control the powered component to perform a show.

16. A method of operating a conveyor system, the method comprising:  
instructing, with a controller, a conveyor drive system to drive a conveyor to move relative to a bus bar;  
instructing, with the controller, a voltage source to flow a current through the bus bar, wherein the bus bar extends along at least a portion of the conveyor;  
transporting, with the conveyor, an animated element assembly to move relative to the bus bar; and  
directing, via a bus bar arm that extends between the bus bar and the animated element assembly, the current to provide power to a powered component of the animated element assembly.

17. The method of claim 16, wherein the powered component comprises a light emitter, and the method comprises illuminating, using the power, the light emitter of the animated element assembly.

18. The method of claim 16, comprising instructing, with the controller, the voltage source to stop flow of the current through the bus bar.

19. The method of claim 16, comprising:  
transporting, with the conveyor, an additional animated element assembly to move relative to the bus bar; and  
directing, via an additional bus bar arm that extends between the bus bar and the additional animated element assembly, the current to provide the power to an additional powered component of the additional animated element assembly.

20. The method of claim 16, comprising directing, via the bus bar arm that extends between the bus bar and the animated element assembly, the current to provide the power to an additional powered component of the animated element assembly.