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(54) Title: EXERCISE DEVICE HAVING COMMUNICATION LINKAGE FOR CONNECTION WITH EXTERNAL COMPUTING DEVICE

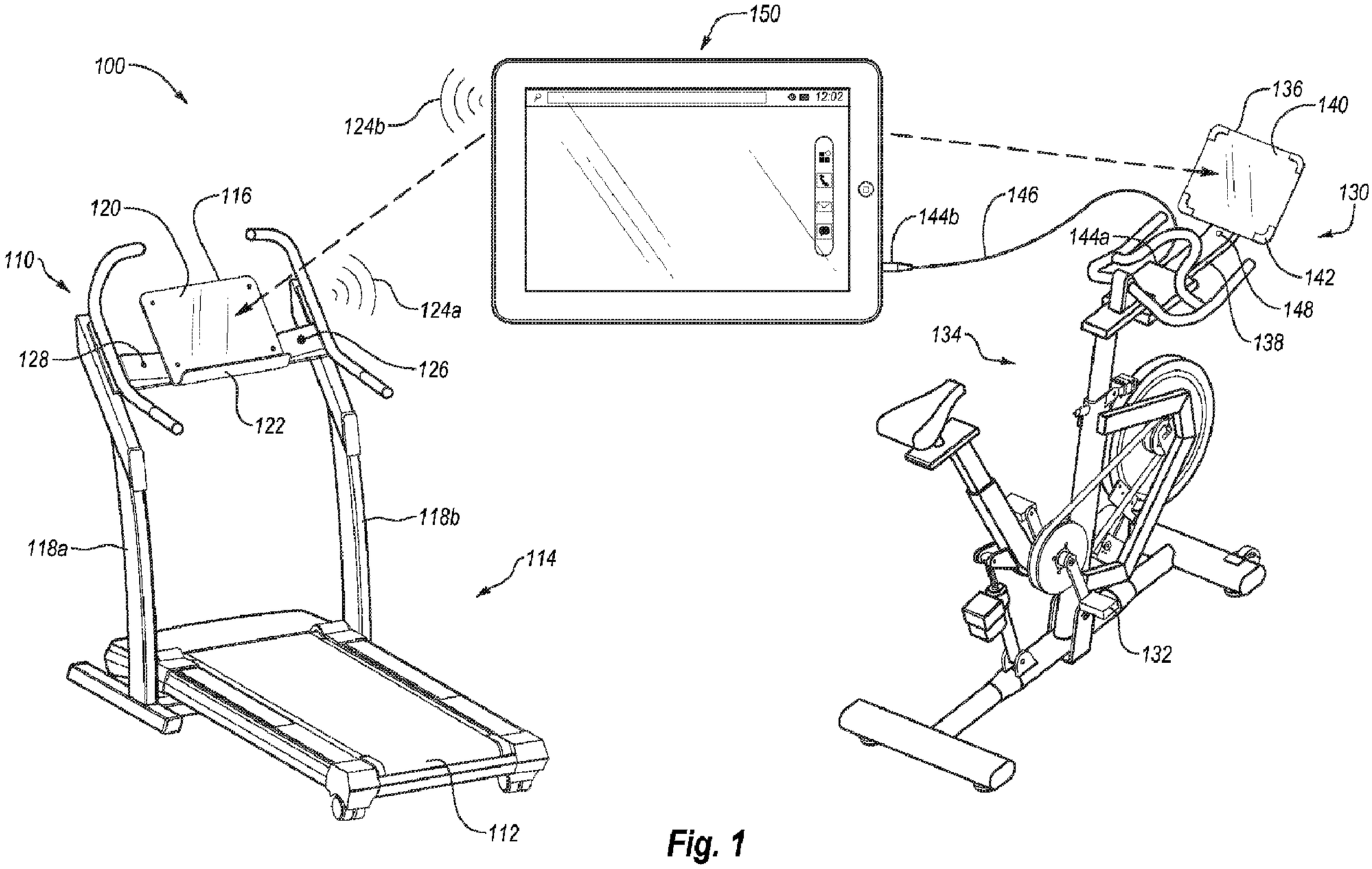

Fig. 1

(57) Abrégé/Abstract:
In general, the present invention relates to exercise devices that lack, in whole or in part, a console. For example, an exercise device of the present invention may lack display screens and/or user input controls that selectively adjust an operating parameter of

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(57) Abrégé(suite)/Abstract(continued):
the exercise device. A console interface, or the portions of a console interface that are absent from an exercise device of the present invention may be provided by an external computing device that is communicatively connected to the exercise device. The external computing device may be individually and selectively connected to multiple exercise devices to as to provide a display screen and user input controls to a number of different exercise devices.

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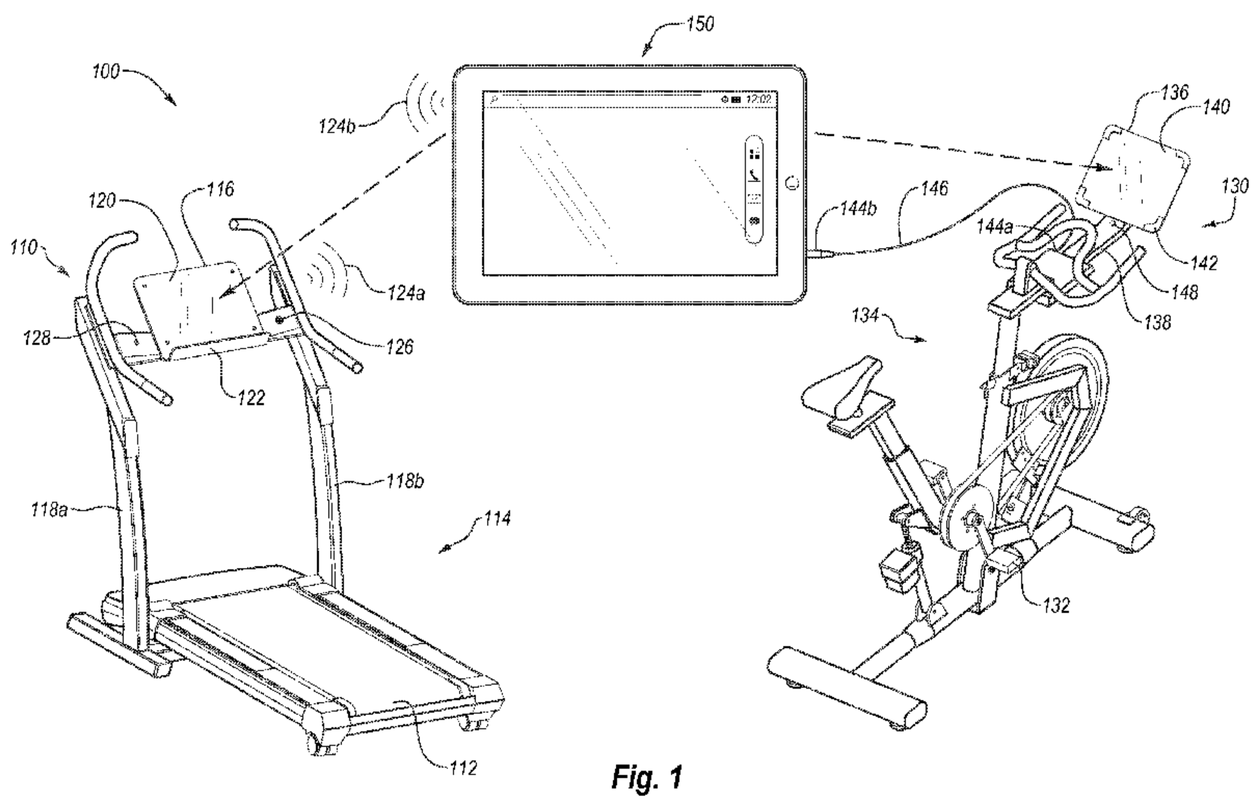

Fig. 1

(57) Abstract: In general, the present invention relates to exercise devices that lack, in whole or in part, a console. For example, an exercise device of the present invention may lack display screens and/or user input controls that selectively adjust an operating parameter of the exercise device. A console interface, or the portions of a console interface that are absent from an exercise device of the present invention may be provided by an external computing device that is communicatively connected to the exercise device. The external computing device may be individually and selectively connected to multiple exercise devices to as to provide a display screen and user input controls to a number of different exercise devices.

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Exercise Device Having Communication Linkage For Connection With External Computing Device

Technical Field

[0001] In general, the present invention relates to exercise equipment. More specifically, the present invention relates to exercise devices that lack integrated display screens and/or user input controls but include a communication linkage for communicating with an external computing device that includes a display screen and/or user input controls that selectively increase and decrease the difficulty level of an exercise being performed.

Background

[0002] Most conventional exercise devices include consoles. Consoles may include internal electronics, such as a memory and a processor. Consoles may also include a user interface. The user interface of an exercise device console may provide a user of the exercise device with one or more display screens and one or more user input controls. User input controls may be used to input data into the exercise device. For example, a user input control may be used to selectively adjust the difficulty level of an exercise being performed on the exercise device. Display screens may be used to show exercise or non-exercise related data.

[0003] Console interfaces have become more sophisticated over time. For example, exercise devices today may have a number of display screens that may be used to show color television programming or a virtual environment in which the user is exercising. User input controls have also become more sophisticated over time. For example, an exercise device may include touch sensitive user input controls. The increase in sophistication of console interfaces has increased the cost to manufacture and purchase exercise devices.

Disclosure Of The Invention

[0004] In one aspect of the disclosure, an exercise device includes a frame.

[0005] In another aspect that may be combined with any of the aspects herein, the exercise device includes a console attached to the frame.

[0006] In another aspect that may be combined with any of the aspects herein, the console lacks display screens.

[0007] In another aspect of the invention that may be combined with any of the aspects herein, the exercise device includes a mounting structure attached to the frame that may be used to selectively secure an external computing device to the exercise device.

[0008] In another aspect of the invention that may be combined with any of the aspects herein, the exercise device includes a communication linkage that selectively and communicatively connects the console with the external computing device.

[0009] In another aspect of the invention that may be combined with any of the aspects herein, the exercise device includes a selectively adjustable actuator that adjusts one or more operating parameters of the exercise device.

[0010] In another aspect of the invention that may be combined with any of the aspects herein, the actuator is communicatively connected to the communication linkage.

[0011] In another aspect of the invention that may be combined with any of the aspects herein, the selectively adjustable actuator receives control commands from the external computing device via the communication linkage when the external computing device is communicatively connected to the console and secured to the mounting structure.

[0012] In another aspect of the invention that may be combined with any of the aspects herein, the console further lacks user input controls that cause the selectively adjustable actuator to adjust the one or more operating parameters of the exercise device.

[0013] In another aspect of the invention that may be combined with any of the aspects herein, the exercise device is communicatively connectable to the external computing device via a wired communication linkage.

[0014] In another aspect of the invention that may be combined with any of the aspects herein, the wired communication linkage comprises a USB port.

[0015] In another aspect of the invention that may be combined with any of the aspects herein, the exercise device is communicatively connectable to the external computing device via a wireless communication linkage.

[0016] In another aspect of the invention that may be combined with any of the aspects herein, the wireless communication linkage comprises either a Bluetooth or Wi-Fi wireless transmitter.

[0017] In another aspect of the invention that may be combined with any of the aspects herein, the mounting structure selectively secures the external computing device through a gravitational attachment.

[0018] In another aspect of the invention that may be combined with any of the aspects herein, the mounting structure includes a bracket that assists in selectively securing the external computing device to the mounting structure.

[0019] In another aspect of the invention that may be combined with any of the aspects herein, the mounting structure includes a magnet that assists in selectively securing the external computing device to the mounting structure.

[0020] In another aspect of the invention that may be combined with any of the aspects herein, the selectively adjustable actuator is a fan motor.

[0021] In another aspect of the invention that may be combined with any of the aspects herein, the exercise device is a treadmill and the selectively adjustable actuator is a belt motor.

[0022] In another aspect of the invention that may be combined with any of the aspects herein, the exercise device is either an elliptical machine or an exercise bike and the selectively adjustable actuator is a brake.

[0023] In another aspect of the invention that may be combined with any of the aspects herein, data relating to an exercise being performed on the exercise device is sent to the external computing device via the communication linkage when the external computing device is communicatively connected to the console.

[0024] In another aspect of the invention that may be combined with any of the aspects herein, the data sent to the external computing device via the communication linkage comprises cadence information, stride length information, or user weight information.

[0025] In another aspect of the invention that may be combined with any of the aspects herein, the console includes electronics which modifies the controls commands received through the communication linkage.

[0026] In another aspect of the invention that may be combined with any of the aspects herein, an exercise system includes an external computing device that is individually and selectively mountable on a first exercise device and a second exercise device.

[0027] In another aspect of the invention that may be combined with any of the aspects herein, the external computing device is individually communicatively connectable to each of the first and second exercise devices, and has user input controls that cause the first actuator to adjust the one or more operating parameters of the first exercise device when the external computing device is communicatively connected to the first exercise device and that cause the second actuator to adjust the one or more operating parameters of the second exercise device when the external computing device is communicatively connected to the second exercise device.

[0028] In another aspect of the invention that may be combined with any of the aspects herein, the first and second consoles of the exercise system each further lack display screens.

[0029] In another aspect of the invention that may be combined with any of the aspects herein, the external computing device of the exercise system comprises a display screen that displays information related to an exercise being performed on the first exercise device when the first exercise device is communicatively connected to the external computing device and displays information related to an exercise being performed on the second exercise device when the second exercise device is communicatively connected to the external computing device.

[0030] In another aspect of the invention that may be combined with any of the aspects herein, the external computing device is a telephone.

[0031] In another aspect that may be combined with any of the aspects herein, a method for controlling an exercise device comprises loading console interface software onto an external computing device.

[0032] In another aspect that may be combined with any of the aspects herein, the method further includes initiating the console interface software on the external computing device.

[0033] In another aspect that may be combined with any of the aspects herein, the method further includes establishing a communication link between the external computing device and an exercise device having a selectively adjustable actuator.

[0034] In another aspect that may be combined with any of the aspects herein, the method further includes securing the external computing device to the exercise device.

[0035] In another aspect that may be combined with any of the aspects herein, the method further includes adjusting the selectively adjustable actuator in response to inputs received via the user input controls on the external computing device.

[0036] In another aspect that may be combined with any of the aspects herein, the method further includes displaying on the external computing device data relating to an exercise being performed on the exercise device.

Brief Description Of The Drawings

[0037] Figure 1 illustrates an exercise system according to one embodiment of the present invention.

[0038] Figure 2 illustrates a block diagram of an exercise system according to one embodiment of the present invention.

[0039] Figure 3 illustrates a flow chart showing steps that may be implemented in a method for controlling an exercise device with an external computing device.

[0040] Figure 4 illustrates a flow chart showing steps that may be implemented in a method for wirelessly connecting an exercise device with an external computing device.

[0041] Figure 5 illustrates a perspective view of a treadmill communicatively connected to an external computing device.

[0042] Figure 6 illustrates a view of an external computing device.

[0043] Figure 7 illustrates a second view of an external computing device.

Best Mode(s) for Carrying Out the Invention

[0044] Figure 1 illustrates an exercise system 100 according to one embodiment of the present invention. Exercise system 100 includes two exercise devices 110 and 130, and an external computing device 150. In exercise system 100, exercise device 110 is a treadmill, exercise device 130 is a stationary bike, and external computing device 150 is a tablet-type computer with a touch sensitive screen.

[0045] Exercise devices 110 and 130 include moveable members 112 and 132, respectively. A moveable member, according to the present invention, can be any part of an exercise device that moves during a user's performance of an exercise on the exercise device. For example, with regard to exercise device 110, moveable member 112 is a belt, which

provides a surface upon which a person using exercise device 110 may walk or run during performance of an exercise. With regard to exercise device 130, moveable member 132 is a set of pedals, which a user may rotate with his or her feet during performance of an exercise. Exercise devices 110 and 130 may include moveable members in addition to those identified herein. For example, exercise devices 110 and 130 may include fans, which may also be considered moveable members according to the present invention.

[0046] Exercise devices 110 and 130 include one or more actuators. Actuators, according to the present invention, selectively adjust an operating parameter on an exercise device. For example, an actuator may adjust the difficulty level of an exercise being performed on the exercise device. On exercise device 110, an actuator comprising a motor may selectively adjust the speed at which moveable member 112 rotates. On exercise device 130, an actuator comprising a brake may selectively adjust the resistance applied to the rotational movement of moveable member 132. An actuator may also adjust the speed of a fan or adjust another operating parameter that is associated with another moveable member on an exercise device.

[0047] Exercise devices 110 and 130 include frames 114 and 134, respectively. A frame, according to the present invention, can be any part of an exercise device that imparts structural support and/or stability to the exercise device. Frames 114 and 134 also provide support to mounting structures 116 and 136, respectively. For example, frame 114 of exercise device 110 includes upright members 118a and 118b, which provide support to mounting structure 116. Frame 134 of exercise device 130 includes an arm member 138, which provides support to mounting structure 136.

[0048] Mounting structures, according to the present invention, can include any structure on which an external computing device may be selectively secured to the exercise device. Mounting structures can selectively secure an external computing device in a number of different ways. For example, an external computing device may be selectively secured to a mounting structure through a gravitational attachment, as is the case with exercise device 110. Specifically, mounting structure 116 includes a flat back panel 120 and a lip portion 122, on which external computing device 150 can be selectively placed. Flat back panel 120 and lip portion 122 may be oriented such that gravitational force maintains external computing device 150 on exercise device 110.

[0049] An external computing device may be selectively secured to a mounting structure through a frictional attachment, as is the case with exercise device 130. Specifically, mounting structure 136 includes a flat back panel 140 and brackets 142, which hold external computing device 150 in place. Flat back panel 140 and brackets 142 may be oriented such that friction maintains external computing device 150 on exercise device 130.

[0050] Most conventional exercise devices include consoles. A console on an exercise device may include a user interface and electronics. A user interface may include one or more user input controls and one or more display screens. The user input controls may be used to input control commands or other data into the exercise device. Specifically, user input controls may be used to select a desired workout program, change the difficulty level of a selected workout, or input other data into the exercise device. User input controls may include one or more buttons, dials, knobs, switches, or other input mechanisms.

[0051] Display screens may display data related to an exercise being performed. For example, a graphical profile may show difficulty level of each time or distance segment of a workout. Display screens may also provide a first person view of a path to be travelled by a user during the course of his or her exercise program. Display screens may further illustrate numerical data, such as the current difficulty level, speed, incline, number of calories burned, or heart rate. Display screens may also display data that is not related to an exercise being performed. For example, display screens may provide entertainment, such as television programming, movies, games, or the Internet.

[0052] The electronics on a console may include a processor and other components that receive and process control commands or other data that is received through the user input controls. The electronics on a console may modify the control commands and deliver signals reflective of the control command to an actuator or another part of the exercise device. For example, if a command is received from the user input control to increase the speed of the belt on a treadmill, the console electronics may process the command and deliver a signal to the belt motor to increase speed.

[0053] Exercise devices 110 and 130 optionally include console electronics. These electronics may be located anywhere on exercise devices 110 and 130. For example, these electronics may be located behind mounting structures 116 and 136 or within a hollow portion of frame 114 or 134. Unlike most conventional exercise devices, however, exercise

devices 110 and 130 lack integrated display screens and user input controls that selectively increase and/or decrease one or more operating parameters on exercise devices 110 and 130.

[0054] Rather, external computing device 150 is communicatively connectable to exercise devices 110 and 130 and can serve as a user interface for exercise devices 110 and 120. External computing device 150 may serve as a user interface for a number of different exercise devices.

[0055] In order for external computing device 150 to serve as the user interface for either exercise device 110 or exercise device 130, external computing device 150 must be communicatively connected to either exercise device 110 or exercise device 130. This connection can be established in a number of different ways. For example, exercise device 110 may communicate with external computing device 150 wirelessly. Exercise device 110 may include a wireless communication linkage 124a, which may be a Bluetooth transmitter, a Wi-Fi transmitter, or another type of wireless communication linkage. Wireless communication linkage 124a communicates with a wireless communication linkage 124b on external computing device 150. Wireless communication linkage 124b may be a Bluetooth transmitter, a Wi-Fi transmitter, or another type of wireless communication linkage. As described in more detail hereafter, exercise device 110 may also includes a wireless connection input mechanism 126, which may be used to create or confirm a connection with external computing device 150 or broadcast a pairing request to external computing device 150.

[0056] Exercise device 130 may communicate with external computing device 150 through a wired connection. Exercise device 130 may include a wired communication linkage 144a, which may be a USB drive or another type of wired communication linkage. Wired communication linkage 144a communicates with a wired communication linkage 144b on external computing device 150. Wired communication linkage 144b may be a USB drive or another type of wired communication linkage. A wire 146 can be used to connect wired communication linkage 144a with wired communication linkage 144b.

[0057] Indicators 128 and 148 on exercise devices 110 and 130, respectively, may provide an alert that the exercise device is communicatively connected to external computing device 150. For example, indicators 128 and 148 may be lights. These lights may illuminate when a communication connection has been established with external computing device 150.

[0058] Figure 2 illustrates a block diagram 200 of an exercise system according to one embodiment of the present invention. An exercise device 210 includes one or more actuators 212. Actuator 212 may selectively adjust one or more operating parameters of exercise device 210. Exercise device 210 also includes one or more moveable members 214. Actuator 212 may selectively adjust the movement of moveable member 214. Exercise device 210 includes a mounting structure 216. Exercise device 210 further includes console electronics 218. Console electronics 218 may comprise a memory 220. Memory 220 may store exercise programs, information relating to a prior or future use of exercise device 210, or other data. Finally, exercise device 210 includes a communication linkage 222.

[0059] An external computing device 250 is also included in block diagram 200. External computing device 250 includes one or more display screens 252. Display screen 252 may be an LED display, an LCD, or another type of display. External computing device 250 also includes user input controls 254. User input controls may comprise a touch screen or a button, a mouse, a keyboard, a dial, a knob, a switch, or another type of input mechanism. External computing device 250 further includes a memory 256. Memory 256 may store exercise programs, other information relating to an exercise performed or to be performed on exercise device 210, or other data. Finally, external computing device 250 includes a communication linkage 258.

[0060] Mounting structure 216 may be used to selectively secure external computing device 250 to exercise device 210. Communication linkages 222 and 258 may communicatively connect exercise device 210 with external computing device 250. This connection may be a wired or wireless connection 224.

[0061] Figure 3 is a flow chart that illustrates steps that may be implemented in a method 300 for using an external computing device as a user interface on an exercise device. In a first step 302, console interface software is loaded onto an external computing device that includes one or more user input controls and a display screen. Software may be loaded onto the external computing device in a number of different ways. For example, the software may be downloaded over the Internet from a website or the software may be uploaded from a storage device, such as a disk or memory stick. Once the software is loaded onto the external computing device, the software may be initiated in a second step 304.

[0062] Next, a communication link is created between the external computing device and an exercise device. This communication link may be a wired link as illustrated in step 306 or a wireless link as illustrated in step 308. In the case of a wired connection, a wire may be inserted into communication linkages on the external computing device and exercise device. Establishing a wireless connection will be discussed in greater detail below in connection with Figure 4.

[0063] In step 310, the exercise device may be placed in a "locked" position, which precludes the exercise device from establishing a communication link with another external computing device. For example, the exercise device may include a processor having control data that allows it to recognize when a connection, either wired or wireless, to an external computing device exists. Once a connection to an external computing device is detected, the exercise device may deny an attempt from another external computing device to establish a connection with the exercise device.

[0064] Next, data may be transmitted from the exercise device to the external computing device in step 312. This data may comprise information regarding the type of exercise device that is connected to the external computing device. For example, the exercise device may transmit data identifying itself as a treadmill, an exercise bike, an elliptical machine or another type of exercise device to the external computing device. The transmitted data may further comprise the types of actuators and moveable members that the exercise device includes. Further, the exercise device may identify a range associated with each operating parameter included in the exercise device. For example, transmitted data may include the speed limits of a belt motor on a treadmill. This information may be necessary so that the external computing device can control actuators that are a part of the exercise device and so that operating parameters can be selectively adjusted within acceptable ranges.

[0065] The external computing device may also be secured to the exercise device in step 314. Step 314 may be accomplished at any point during method 300. For example, securing the external computing device to the exercise device may precede the initiation of the software step 304 and the establishing of a communication link in step 306 or step 308. Following the steps in method 300 in the sequence identified in method 300 is not required in order to use an external computing device as a user interface on an exercise device.

[0066] Once the exercise device is communicatively connected to the external computing device, the user input controls on the external computing device can be used to selectively adjust the actuator(s) on the exercise device in step 316. In addition, in step 318, data relating to an exercise being performed on the exercise device can be displayed on the display screen of the external computing device.

[0067] There are a number of ways that an exercise device can be wirelessly linked to an external computing device. Figure 4 is a flow chart that illustrates steps that may be implemented in method for accomplishing step 308 of Figure 3. Specifically, method 308 provides steps for wirelessly linking an exercise apparatus to an external computing device. In a first step 402, an external computing device that has a wireless communication linkage is brought within wireless range of an exercise device that also has a wireless communication linkage.

[0068] A link may be created between the external computing device and the exercise device by broadcasting a pairing request from the exercise device, as shown in step 404. Such as pairing request may be broadcast by the exercise device through input into a user input device on the exercise device. For example, wireless connection input mechanism 126 (illustrated in Figure 1) may be engaged by a user to broadcast a pairing request. In a step 406, the external computing device can confirm a connection with the exercise device through user input at the external computing device.

[0069] In one embodiment, an exercise device that broadcasts a connection request may be open for pairing for a limited amount of time after the pairing request is broadcast, as shown in step 405. For example, an exercise device may be open for pairing with an external computing device for five seconds after the pairing request is broadcast. If no connection is confirmed within that five seconds, the exercise device may return to step 404 and may not be connected to an external computing device until a new pairing request is broadcast by the exercise device and confirmed at the external computing device within an acceptable amount of time.

[0070] A link may also be created between the external computing device and the exercise device by broadcasting a general pairing request from the external computing device, as shown in step 408. In a step 410, the exercise device can confirm the connection with the external computing device through user input at the exercise device. For example,

wireless connection input mechanism 126 (illustrated in Figure 1) may be engaged by a user to confirm the pairing request broadcast by the external computing device.

[0071] Alternatively, an external computing device may identify any exercise device(s) within its wireless range in a step 412. In a step 414, the external computing device may then broadcast a pairing request to a specific exercise device identified in step 412. Again, in step 410, the exercise device can confirm the connection with the external computing device through user input at the exercise device. Wireless connection input mechanism 126 (illustrated in Figure 1) may be engaged by a user to confirm the connection with the external computing device.

[0072] Once a communication link is established between an exercise device and an external computing device, the external computing device can serve as a control console to the exercise device. Figure 5 illustrates a perspective view of a treadmill 500 with an external tablet computer 550 selectively secured thereto. Treadmill 500 is communicatively connected to external tablet computer 550. Treadmill 500 includes a belt 510. Treadmill 500 also includes at least one actuator, which selectively adjusts an operating parameter of treadmill 500. For example, an actuator on treadmill 500 may selectively adjust the speed at which belt 510 rotates.

[0073] While treadmill 500 may include some console electronics, treadmill 500 lacks integrated user input controls for selectively adjusting the at least one actuator and further lacks an integrated display screen. External tablet computer 550, which is communicatively connected to treadmill 500, provides treadmill 500 with user input controls for selectively adjusting the at least one actuator and also provides a display screen.

[0074] Figure 6 illustrates a more detailed view of external tablet computer 550. External tablet computer 550 includes a touch-sensitive screen 551 with buttons 552, 554, and 556. Buttons 552, 554, and 556 are user input controls that may selectively adjust an actuator on treadmill 500. For example, touching one of buttons 552, 554, 556 may send a signal to treadmill 500 that increases and/or decreases the speed of belt 510. This signal may be sent directly to a belt motor on treadmill 500 or it may be processed by console electronics within treadmill 500 before being delivered to the belt motor.

[0075] In addition to selectively adjusting an actuator on treadmill 500, buttons 552, 554, and 556 may be used to select a workout program or input any other data that may be related

or unrelated to a user or the exercise to be performed on treadmill 500. This data may or may not be modified or processed by console electronics in treadmill 500.

[0076] External tablet computer 550 may also receive data from a user from sources other than buttons 552, 554, and 556. For example, tablet computer 550 may receive data relating to a physiological condition of a user from sensors worn on the body of the user. Sensors worn by a user may sense a user's heart rate, blood pressure, temperature, caloric burn rate, or other condition. This data may be transmitted to tablet computer 550 through a wired or wireless communication linkage.

[0077] External tablet computer 550 also includes display screens 558 and 560. Information relating to a sensed condition of a user may be displayed on screens 558 and/or 560. For example, screens 558 and/or 560 may display information relating to a user's heart rate, blood pressure, temperature, caloric burn rate, or other condition.

[0078] External tablet computer 550 may further receive data from exercise device 500. Information relating to data received from exercise device 500 may also be displayed on screens 558 and/or 560. For example, external tablet computer 550 may receive data from exercise device 500 relating to a user's cadence (or foot falls per unit time), stride length, weight, heart rate or the like.

[0079] Information relating to data received by external tablet computer 550 from treadmill 500 may also be displayed on screens 558 and/or 560. For example, in Figure 6 display screen 560 shows a graphical profile of a workout program. The data used to create this graph may be received from treadmill 500 or may be stored within the memory of tablet computer 550.

[0080] Display screens 558 and 560 may also illustrate a path to be travelled by a person exercising on treadmill 500. For example, a first person view of a trail may be shown. The view of the trail may advance at a speed that corresponds to the speed at which belt 510 is rotating. In addition, exercise device 500 may implement the terrain that is displayed. For example, an area of increased incline that is shown on a display screen may be implemented on treadmill 500 in order to create a more realistic experience.

[0081] Display screens on an external computing device may, but need not display information relating to an exercise being performed on the exercise device to which the computing device is secured. According to the present invention, an external computing

device may display images or information that is unrelated to an exercise being performed. For example, an external computing device may display current event information such as stock information, the news, or weather information.

[0082] In addition, entertainment, including television programming, the internet, movies, games, etc., may be displayed on an external computing device. In one embodiment of the present invention, a display screen may be split between exercise related information and data and non exercise related information and data. For example, Figure 7 illustrates another view of external tablet computer 550. Display 574 provides entertainment while buttons 570 and 572 may be used to increase and/or decrease the speed of belt 510. Buttons 570 and 572 may also be used to control the entertainment that is displayed on display 574. For example, if display 574 illustrates a game, buttons 570 and/or 572 may be used to play the game. Thus, tablet computer 550 includes a non-exercise related display screen and buttons that provide exercise related user input controls and non-exercise related user input controls.

Industrial Applicability

[0083] In general, the present invention relates to exercise devices that lack, in whole or in part, a console. For example, an exercise device of the present invention may lack display screens and/or user input controls that selectively adjust an operating parameter of the exercise device. A console interface, or the portions of a console interface that are absent from an exercise device of the present invention may be provided by an external computing device that is communicatively connected to the exercise device. The external computing device may be individually and selectively connected to multiple exercise devices to as to provide a display screen and user input controls to a number of different exercise devices.

[0084] While the invention has been described in the context of motorized treadmills, and stationary bikes, one of skill in the art will understand that the invention is not limited to any particular type of exercise device. To the contrary, the present invention can be readily adapted to any motorized device or any other device that utilizes motors, solenoids, or any other electrically driven actuators to control any operating parameter of a moveable member on an exercise device.

[0085] For example, exercise devices may include treadmills, exercise bikes, Nordic style skiers, rowers, steppers, hikers, climbers, elliptical machines, and striding exercise machines. Operating parameters may include but are not limited to belt speed, resistance, incline, stride length, fan speed or other similar operating parameter. A moveable member can be any part of an exercise device that moves during the performance of an exercise on that device. An actuator may be any device that selectively adjusts the operating parameters of a moveable member.

[0086] External computing devices according to the present invention need not be tablet-type computers with touch sensitive screens. External computing devices may include lap top personal computers, telephones, or another computing device. Information and commands may be input into an external computing device via one or more buttons, dials, knobs, switches, or another input mechanism.

[0087] Mounting structures can selectively secure an external computing device to an exercise device in a number of different ways. For example, a mounting structure may secure a computing device through a purely gravitational attachment. Alternatively, a computing device may be secured to a mounting structure via a magnet, a suction attachment, a clamp, a strap, or another structure that selectively secures the external computing device to the exercise device. In addition, mounting structure may be adjustable such that external computing devices of all different sizes may be selectively secured to an exercise device.

[0088] An exercise device that is communicatively connected to an external computing device may send and receive information to and from the external computing device. For example, an exercise device may send information regarding the actuators, moveable members, and the range of operating parameters to the external computing device. For example, if a treadmill is communicatively connected to an external computing device, the exercise device may send a signal to the external computing device that identifies a belt motor and incline motor. In addition, the exercise device may send a signal to the external computing device that the belt motor has operating parameters that range from 0 mph to 15 mph. The exercise device may also send a signal to the external computing device that the incline motor has operating parameters that range from 0 degrees to 20 degrees.

[0089] The information that is transmitted from the exercise device to the external computing device may affect the appearance of the display screens and the quantity or type of

user input controls. For example, an external computing device that is acting as the user interface for a treadmill may have user input controls that control the speed of the belt, the incline of the deck, and the speed of a fan. An external computing device that is acting as the user interface for an exercise bike may only have user input controls that control the speed of a fan and the amount of resistance to be applied by a brake to a flywheel.

[0090] An external computing device, according to the present invention, may include a memory capable of storing and implementing workout programs on an exercise device. These workout programs by be acquired by the external computing device over the Internet from a website or from a memory device that is compatible with the external computing device. In addition, workout programs stored within the memory of an external computing device may be uploaded to an exercise device and stored within the memory of the exercise device's console electronics.

[0091] Information regarding an exercise that has been performed on an exercise device may be stored in a memory within the console electronics on the exercise device. Alternatively, this information may be transmitted to an external computing device and stored within memory on the external computing device. Further still, this information may be transmitted, by either the exercise machine or the external computing device to a remote computer to be stored. For example, the external computing device may send this or other data for storage at a website. In this embodiment, a user may access information regarding his or her exercise sessions from any computing device that can access the website. Information that may be gathered and stored may include the type of workout program performed, the number of calories burned, the duration of the workout, the user's heart rate during the workout, etc.

[0092] Once an exercise device is communicatively connected to an external computing device, the exercise device may run exercise programs that are stored within the memory of the console electronics on the exercise device. Alternatively, the exercise device may run exercise programs that are stored within the memory of the external computing device. Further still, an exercise program may be streamed to the exercise device through the external computing device over the Internet.

[0093] In alternative embodiments, an external computing device may display both exercise related and non-exercise related data. For example, an external computing device

may display a graphical profile that shows difficulty level of each time or distance segment of a workout on a first display screen and television programming or other non-exercise related data on a second display screen. The external computing device in this embodiment may include user input controls that control both the exercise device and the non-exercise related data displayed on the second display screen.

CLAIMS

1. An exercise device comprising:

a frame;

a console attached to the frame, the console lacking display screens;

a mounting structure attached to the frame, wherein an external computing device can be selectively secured to the mounting structure;

a communication linkage that selectively and communicatively connects the console with the external computing device; and

a selectively adjustable actuator that adjusts one or more operating parameters of the exercise device and that is communicatively connected to the communication linkage, wherein the selectively adjustable actuator receives control commands from the external computing device via the communication linkage when the external computing device is communicatively connected to the console and secured to the mounting structure.

2. The exercise device of claim 1, wherein the console further lacks user input controls that cause the selectively adjustable actuator to adjust the one or more operating parameters of the exercise device.

3. The exercise device of claim 1, wherein the exercise device is communicatively connectable to the external computing device via a wired communication linkage.

4. The exercise device of claim 3, wherein the wired communication linkage comprises a USB port.

5. The exercise device of claim 1, wherein the exercise device is communicatively connectable to the external computing device via a wireless communication linkage.

6. The exercise device of claim 5, wherein the wireless communication linkage comprises either a Bluetooth or Wi-Fi wireless transmitter.

7. The exercise device of claim 1, wherein the mounting structure selectively secures the external computing device through a gravitational attachment.

8. The exercise device of claim 1, wherein the mounting structure includes either a magnet or a bracket, which assists in selectively securing the external computing device to the mounting structure.

9. The exercise device of claim 1, wherein the selectively adjustable actuator is a fan motor.

10. The exercise device of claim 1, wherein the exercise device is a treadmill and the selectively adjustable actuator is a belt motor.

11. The exercise device of claim 1, wherein the exercise device is either an elliptical machine or an exercise bike and the selectively adjustable actuator is a brake.

12. The exercise device of claim 1, wherein data relating to an exercise being performed on the exercise device is sent to the external computing device via the communication linkage when the external computing device is communicatively connected to the console.

13. The exercise device of claim 12, wherein the data sent to the external computing device via the communication linkage comprises cadence information, stride length information, or user weight information.

14. The exercise device of claim 1, wherein the console includes electronics which modify the control commands received through the communication linkage.

15. An exercise system comprising:

a first exercise device having:

a first actuator that adjusts one or more operating parameters of the first exercise device; and

a first console lacking user input controls that cause the first actuator to selectively adjust the one or more operating parameters of the first exercise device;

a second exercise device having:

a second actuator that adjusts one or more operating parameters of the second exercise device; and

a second console lacking user input controls that cause the second actuator to selectively adjust the one or more operating parameters of the second exercise device; and

an external computing device individually and selectively mountable on each of the first and second exercise devices and individually communicatively connectable to each of the first and second exercise devices, the external computing device having user input controls that cause the first actuator to adjust the one or more operating parameters of the first exercise device when the external computing device is communicatively connected to the first exercise device and that cause the second actuator to adjust the one or more operating parameters of the second exercise device when the external computing device is communicatively connected to the second exercise device.

16. The exercise device of claim 15, wherein the first and second consoles each further lack display screens.

17. The exercise device of claim 16, wherein the external computing device comprises a display screen that displays information related to an exercise being performed on the first exercise device when the first exercise device is communicatively connected to the external computing device and displays information related to an exercise being performed on the second exercise device when the second exercise device is communicatively connected to the external computing device.

18. The exercise device of claim 17, wherein the external computing device is a telephone.

19. A method for controlling an exercise device, the method comprising:

loading console interface software onto an external computing device, the external computing device having a display and one or more user input controls;

initiating the console interface software on the external computing device;

establishing a communication link between the external computing device and an exercise device having a selectively adjustable actuator;

securing the external computing device to the exercise device; and

adjusting the selectively adjustable actuator in response to inputs received via the user input controls on the external computing device.

20. The method of claim 19, further comprising the step of displaying on the external computing device data relating to an exercise being performed on the exercise device.

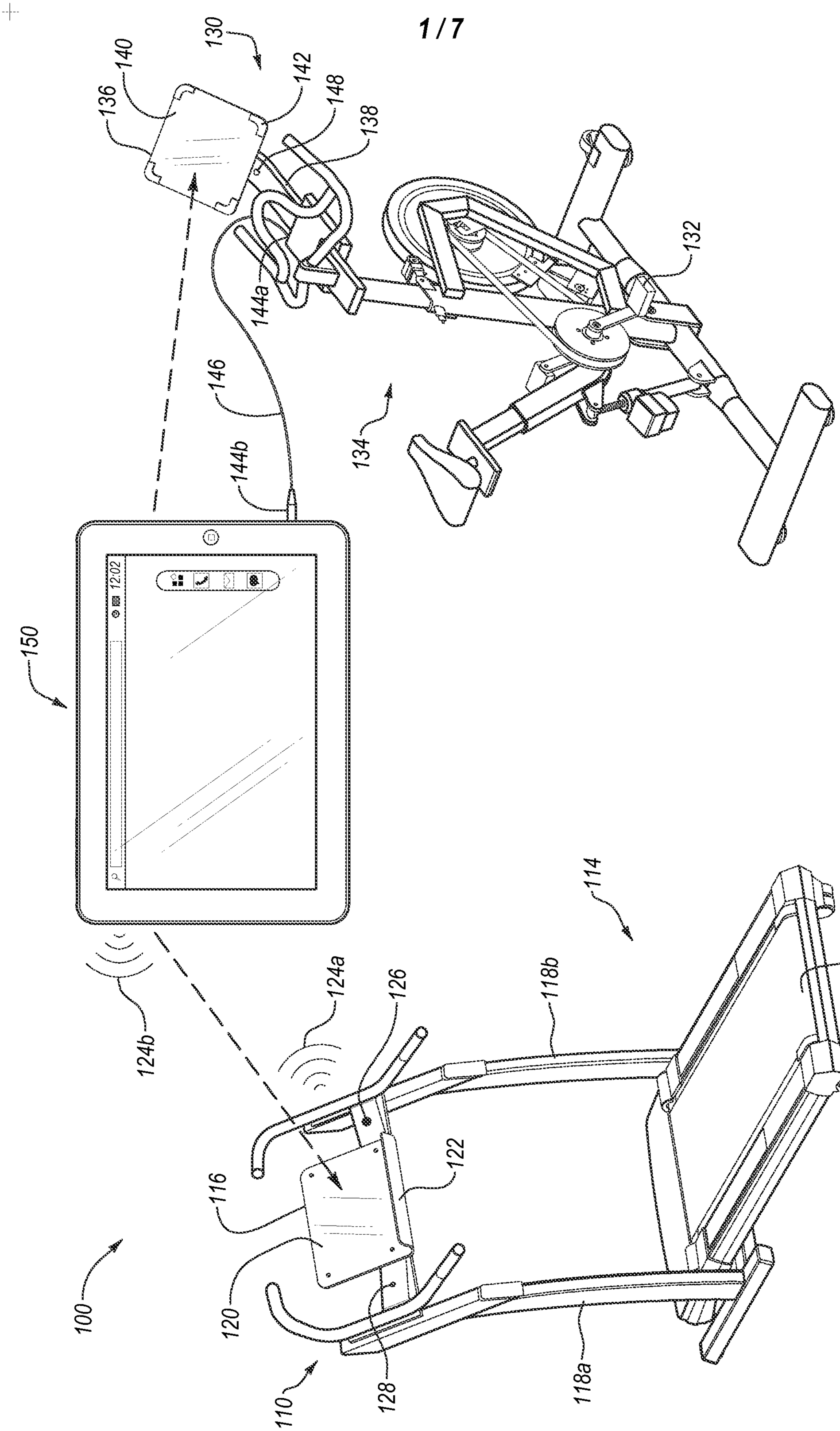
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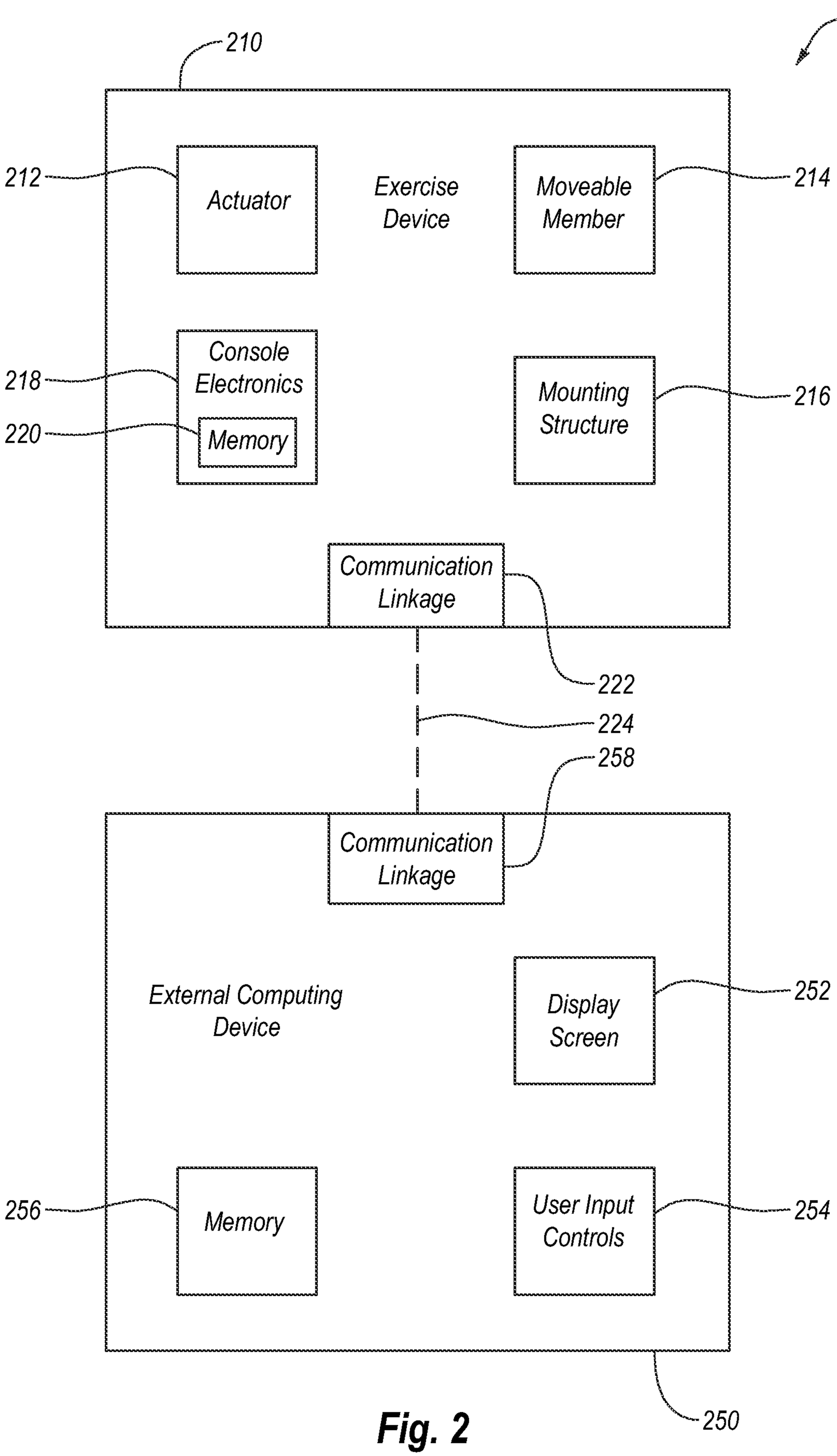
Fig. 1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Actuator
Exercise Device
Moveable Member
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Console Electronics
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Memory
Mounting Structure
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Communication Linkage
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224
258
Communication Linkage
External Computing Device
Display Screen
252
256
Memory
User Input Controls
254
250

Fig. 2

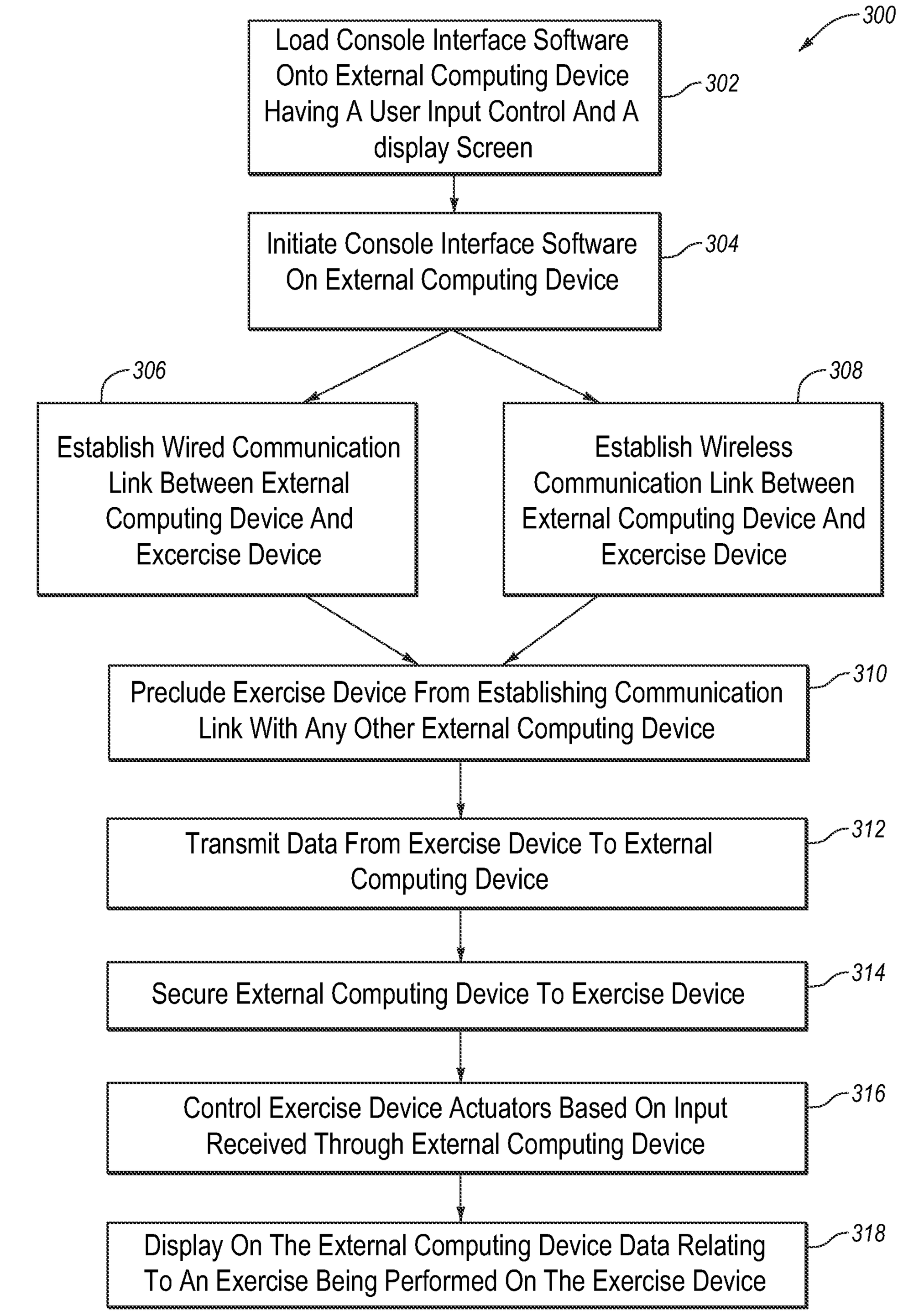
300
Load Console Interface Software Onto External Computing Device Having A User Input Control And A display Screen
302
Initiate Console Interface Software On External Computing Device
304
306
Establish Wired Communication Link Between External Computing Device And Excercise Device
308
Establish Wireless Communication Link Between External Computing Device And Excercise Device
Preclude Exercise Device From Establishing Communication Link With Any Other External Computing Device
310
Transmit Data From Exercise Device To External Computing Device
312
Secure External Computing Device To Exercise Device
314
Control Exercise Device Actuators Based On Input Received Through External Computing Device
316
Display On The External Computing Device Data Relating To An Exercise Being Performed On The Exercise Device
318

Fig. 3

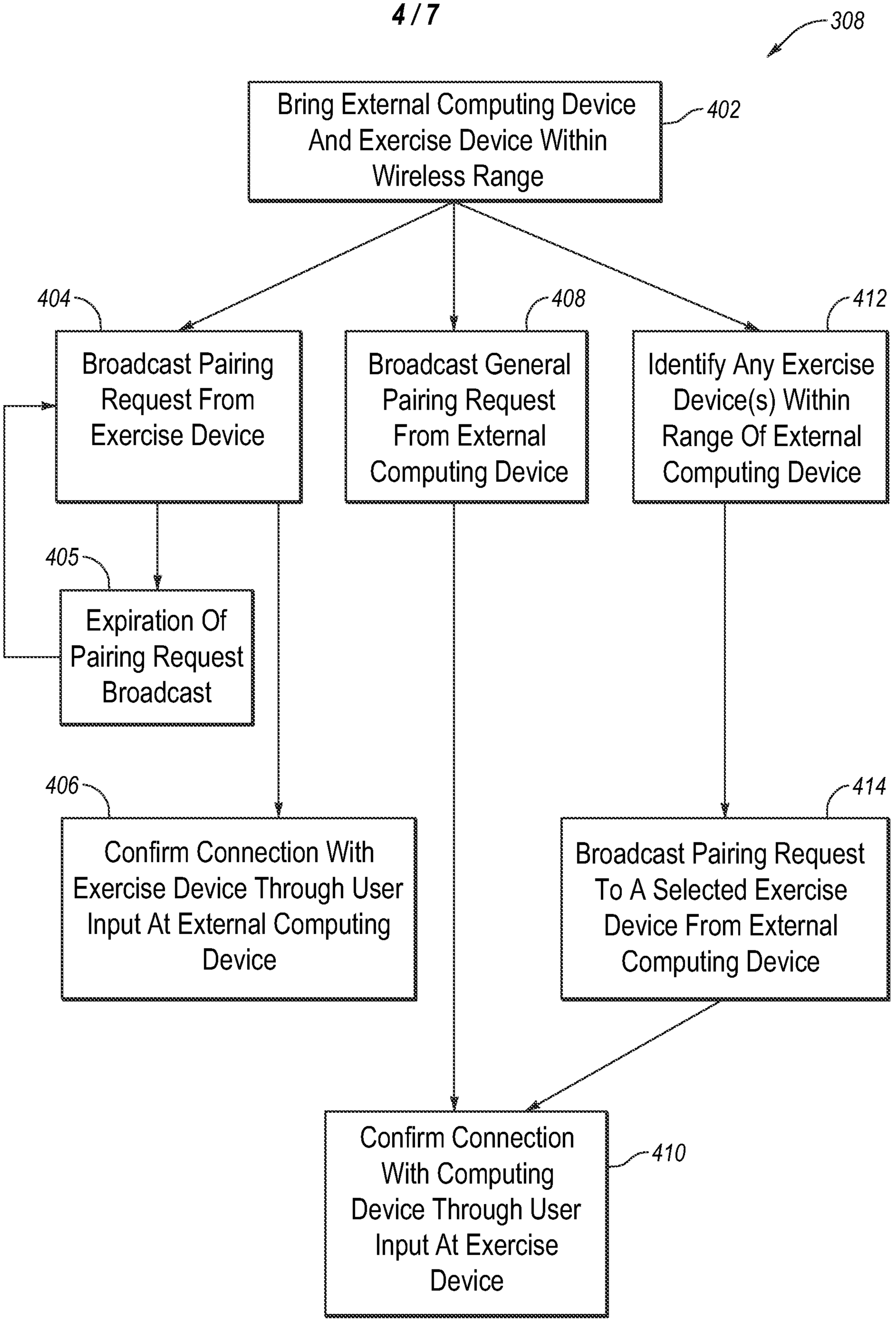
308
Bring External Computing Device And Exercise Device Within Wireless Range
402
404
Broadcast Pairing Request From Exercise Device
408
Broadcast General Pairing Request From External Computing Device
412
Identify Any Exercise Device(s) Within Range Of External Computing Device
405
Expiration Of Pairing Request Broadcast
406
Confirm Connection With Exercise Device Through User Input At External Computing Device
414
Broadcast Pairing Request To A Selected Exercise Device From External Computing Device
Confirm Connection With Computing Device Through User Input At Exercise Device
410

Fig. 4

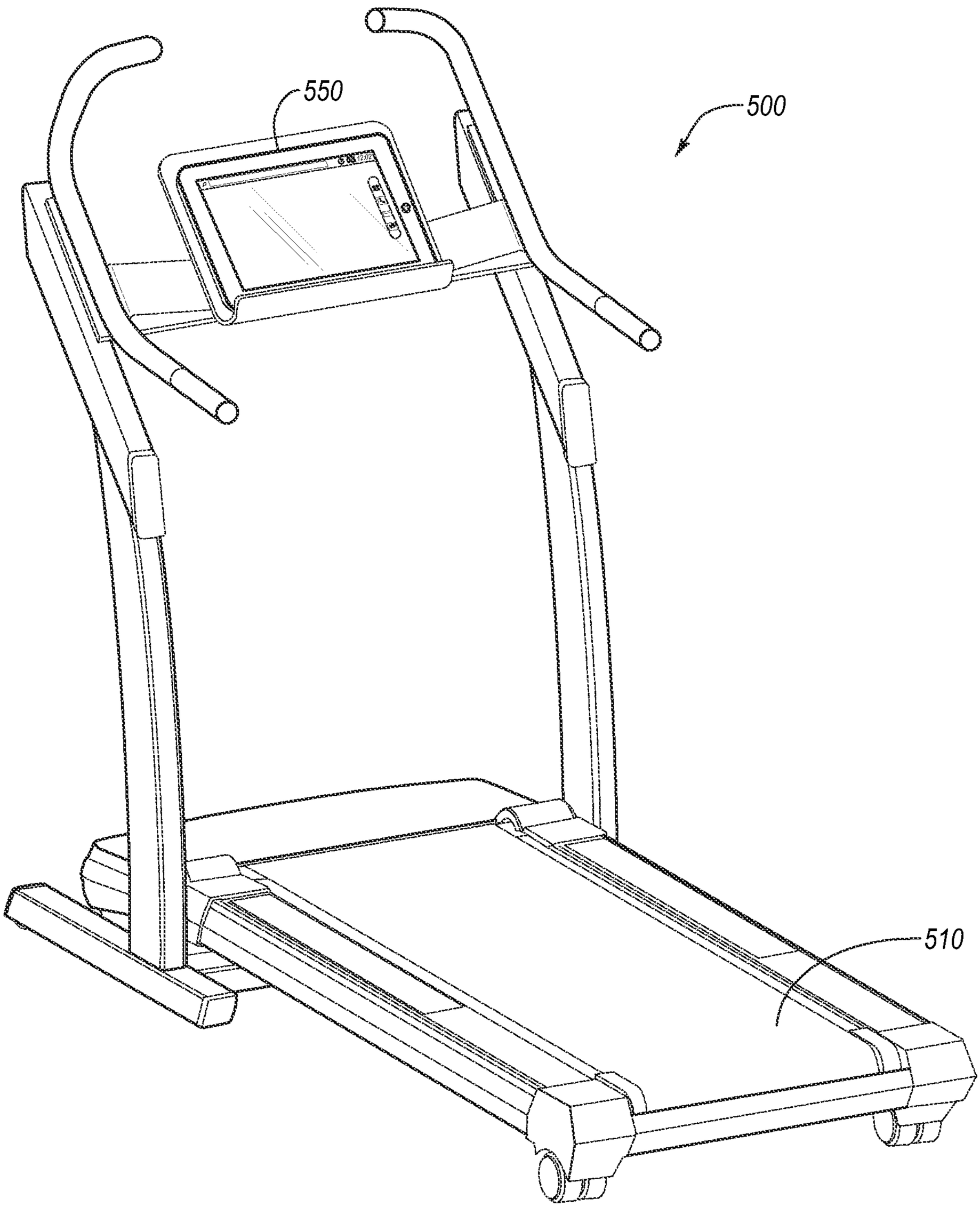

Fig. 5

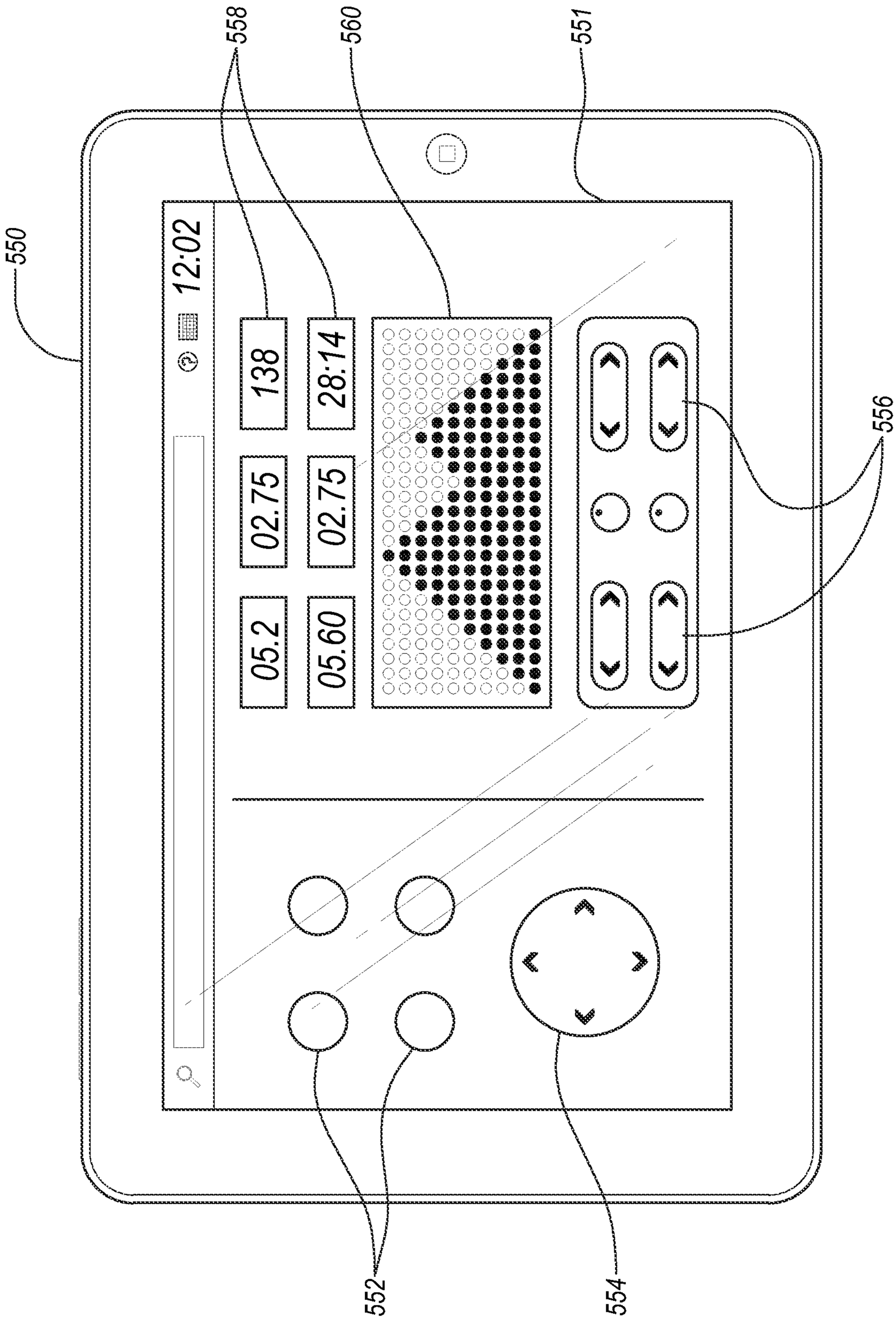

Fig. 6

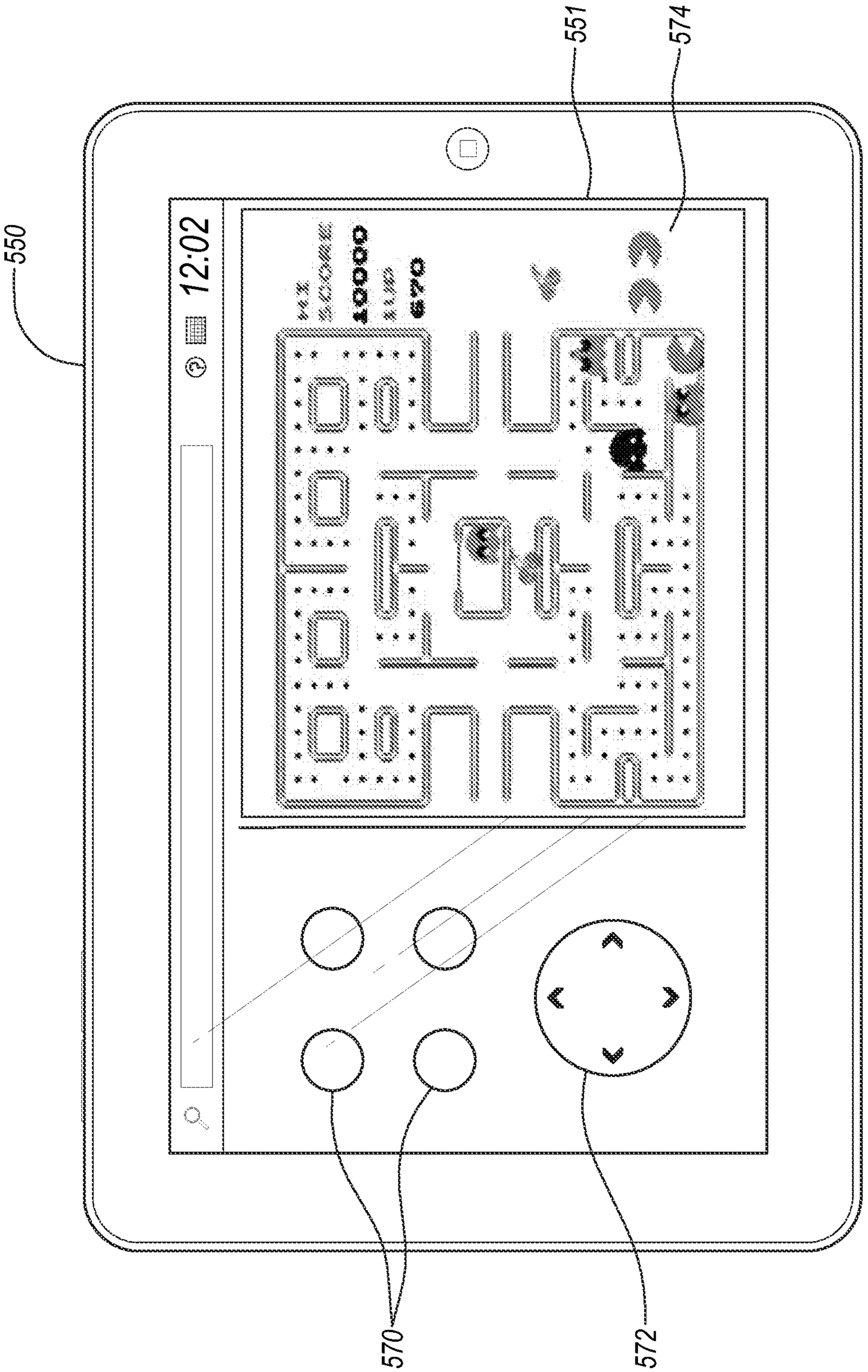

Fig. 7

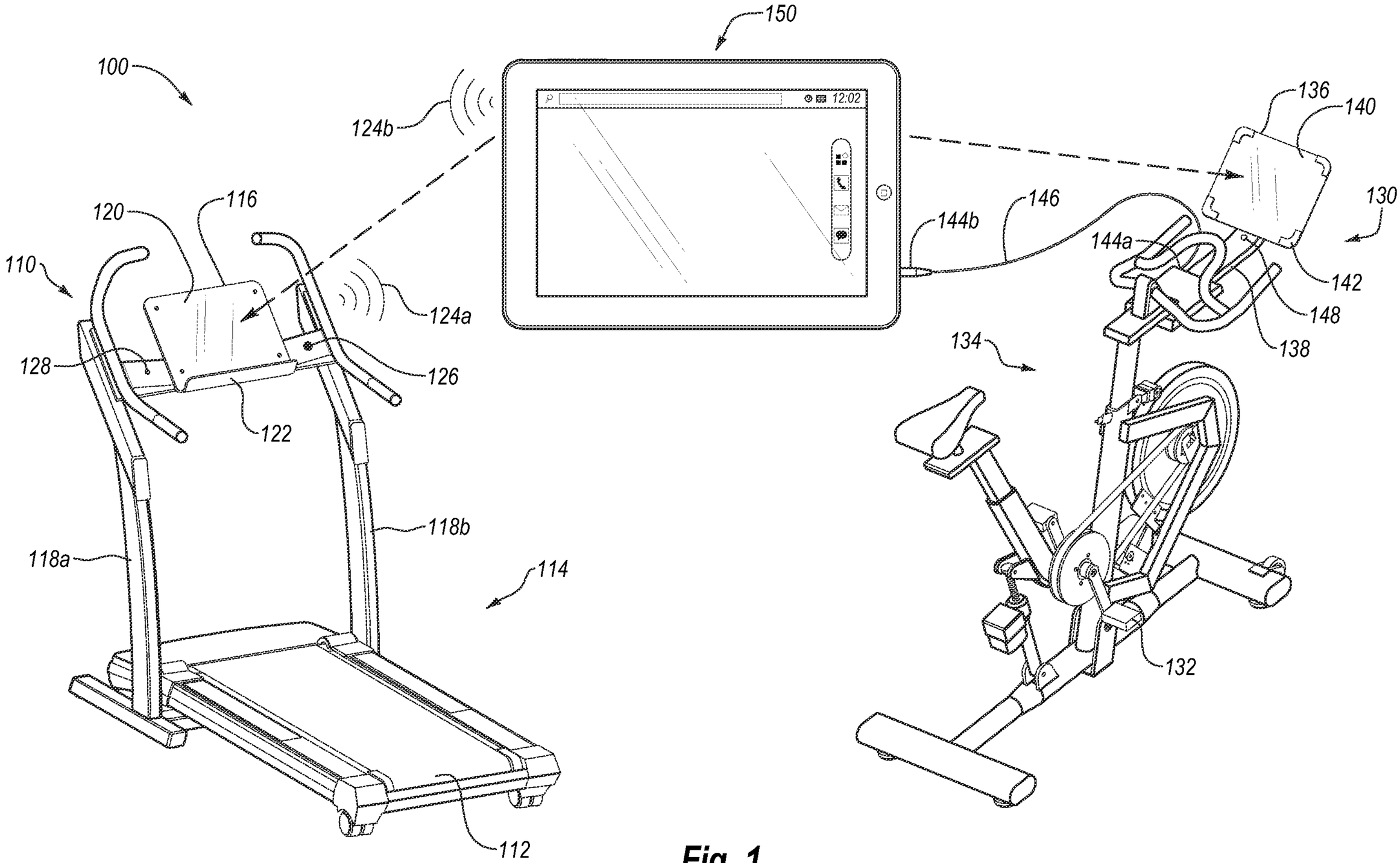
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Fig. 1