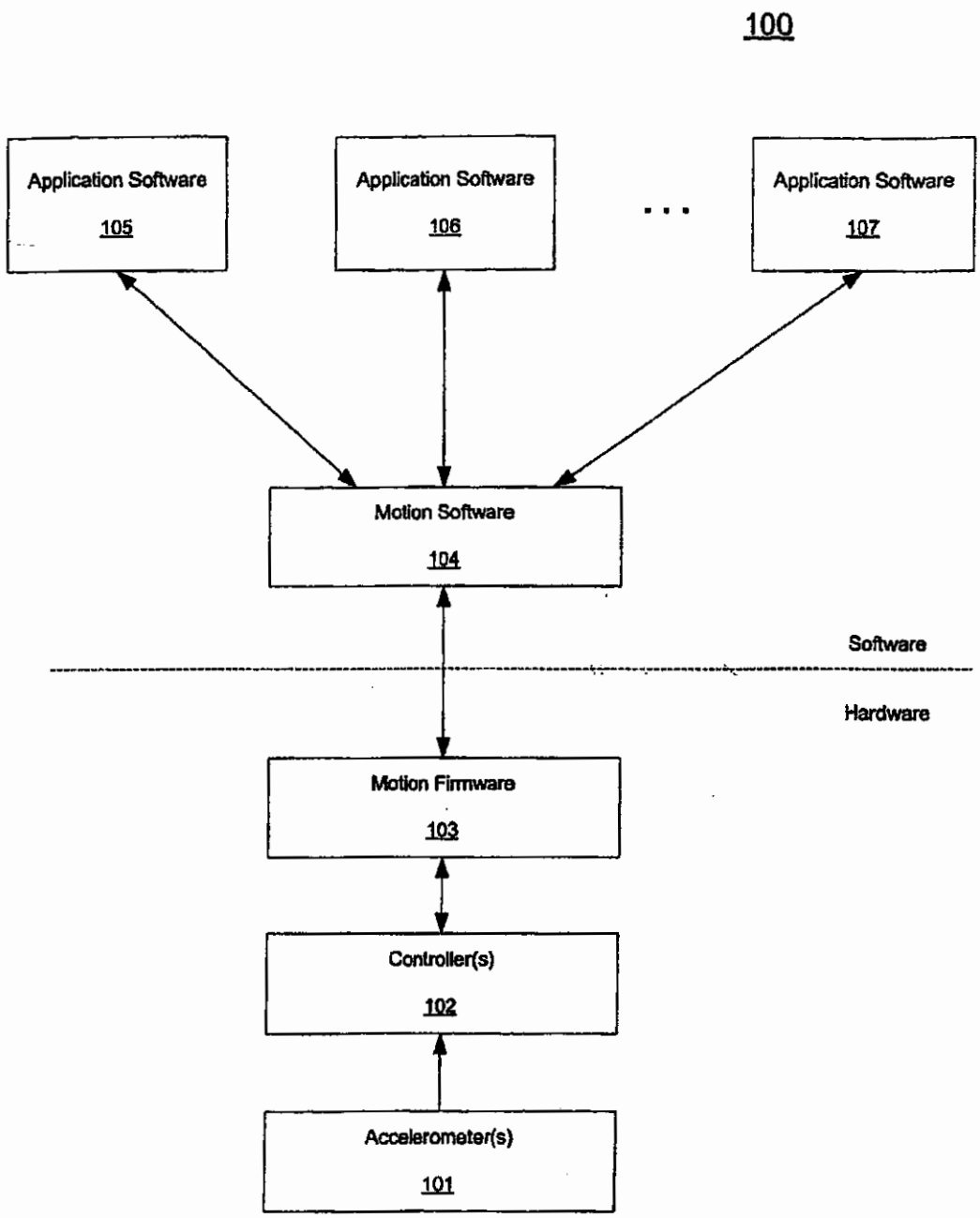

100
Application Software
105
Application Software
106
Application Software
107
Motion Software
104
Software
Hardware
Motion Firmware
103
Controller(s)
102
Accelerometer(s)
101

Fig. 1

200

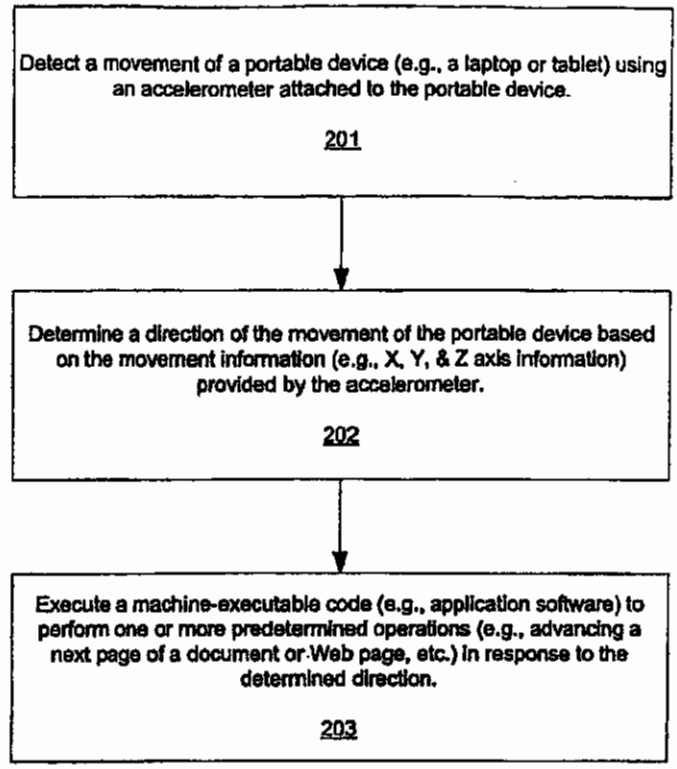

Detect a movement of a portable device (e.g., a laptop or tablet) using an accelerometer attached to the portable device.
201
Determine a direction of the movement of the portable device based on the movement information (e.g., X, Y, & Z axis information) provided by the accelerometer.
202
Execute a machine-executable code (e.g., application software) to perform one or more predetermined operations (e.g., advancing a next page of a document or Web page, etc.) in response to the determined direction.
203

Fig. 2

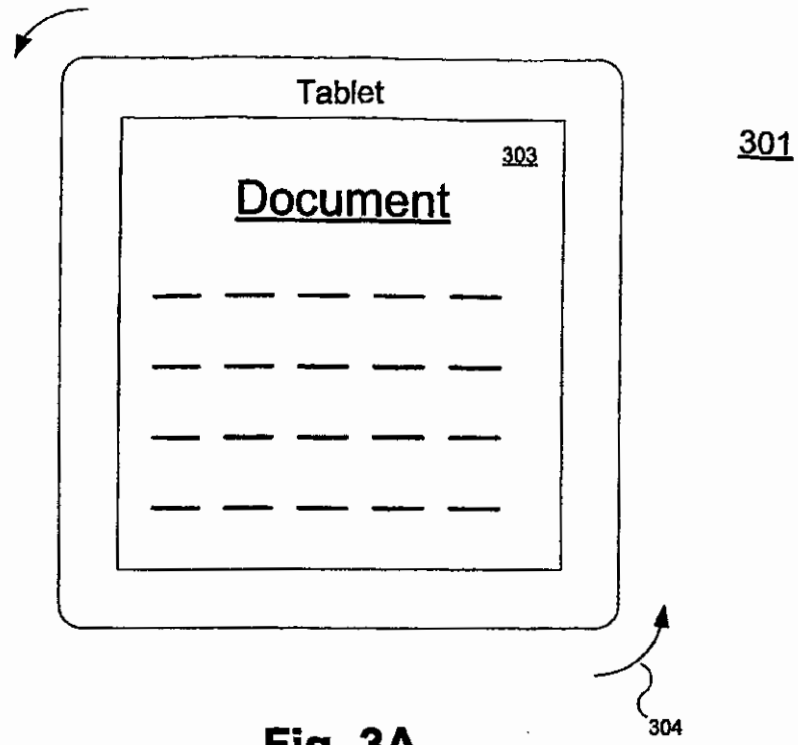


Fig. 3A

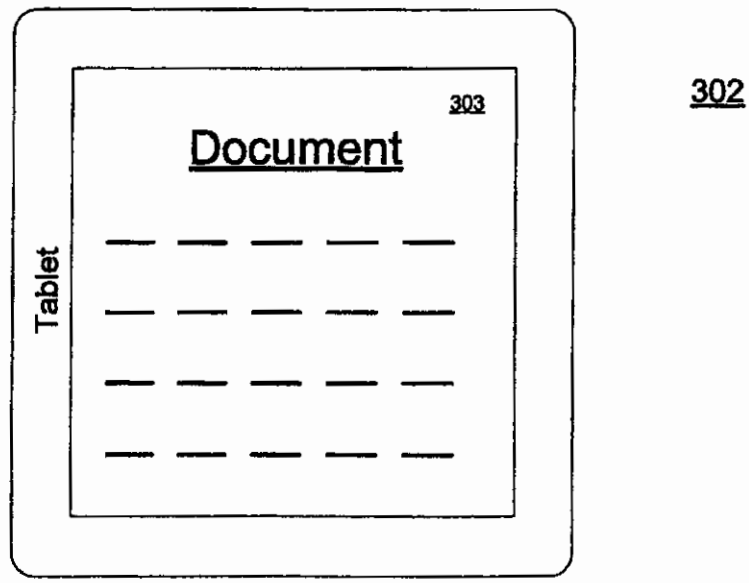


Fig. 3B

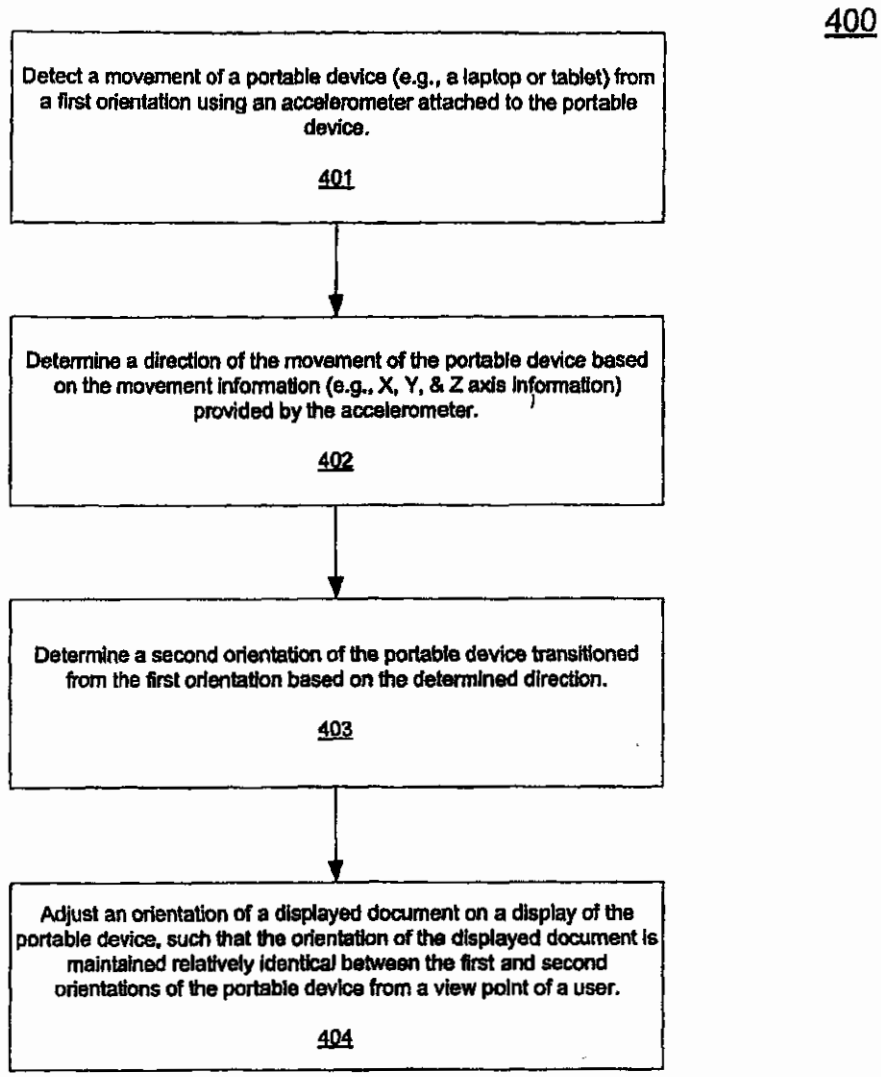

400
Detect a movement of a portable device (e.g., a laptop or tablet) from a first orientation using an accelerometer attached to the portable device.
401
Determine a direction of the movement of the portable device based on the movement information (e.g., X, Y, & Z axis information) provided by the accelerometer.
402
Determine a second orientation of the portable device transitioned from the first orientation based on the determined direction.
403
Adjust an orientation of a displayed document on a display of the portable device, such that the orientation of the displayed document is maintained relatively identical between the first and second orientations of the portable device from a view point of a user.
404

Fig. 4

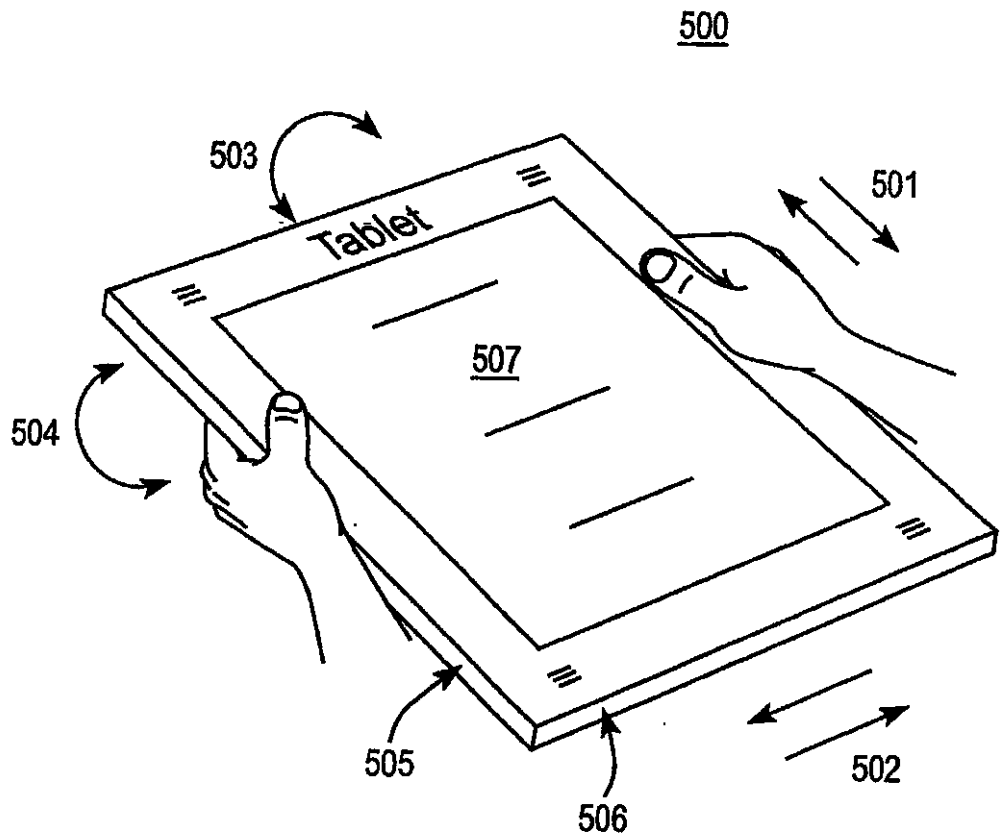


Fig. 5A

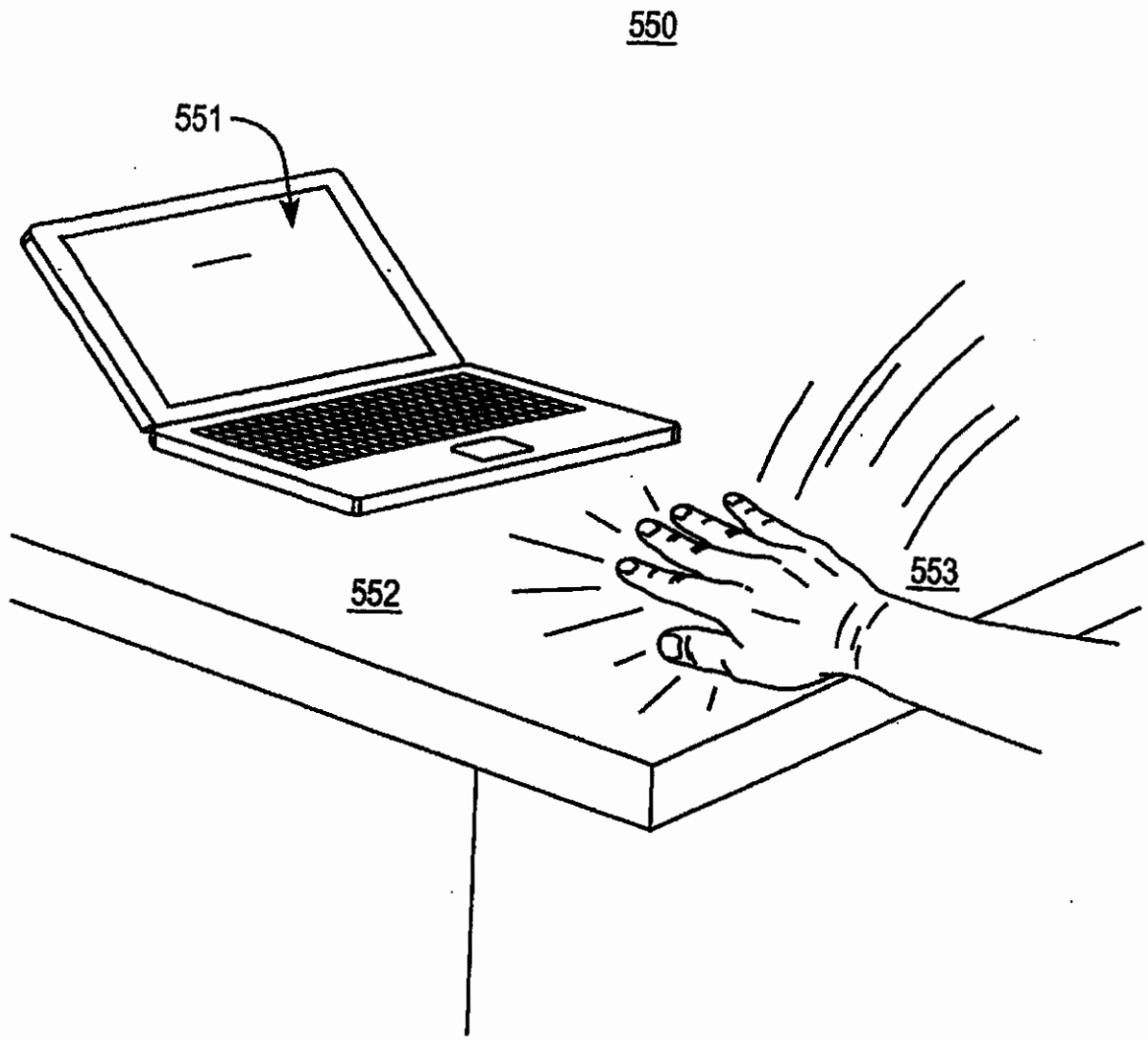


Fig. 5B

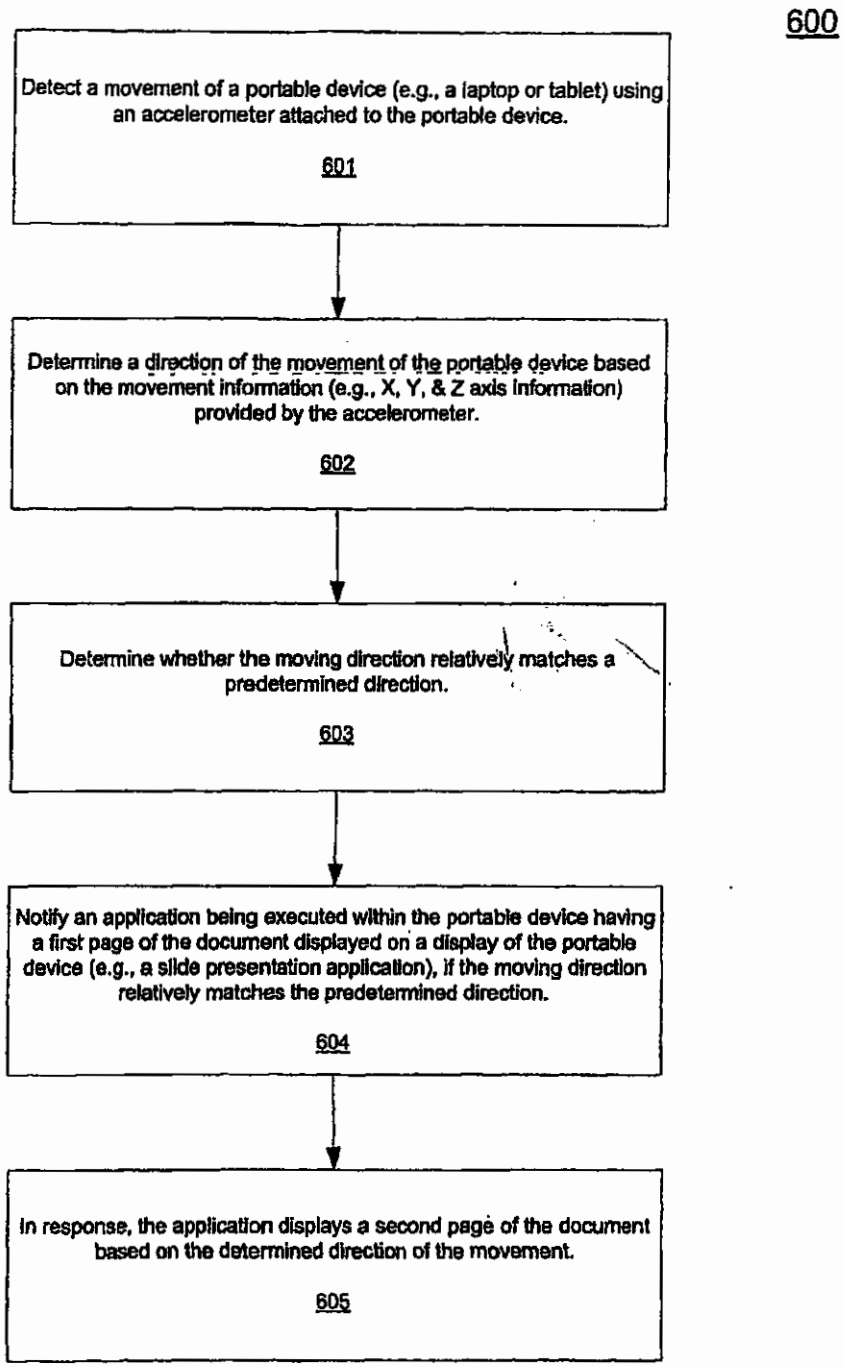

600
Detect a movement of a portable device (e.g., a laptop or tablet) using an accelerometer attached to the portable device.
601
Determine a direction of the movement of the portable device based on the movement information (e.g., X, Y, & Z axis information) provided by the accelerometer.
602
Determine whether the moving direction relatively matches a predetermined direction.
603
Notify an application being executed within the portable device having a first page of the document displayed on a display of the portable device (e.g., a slide presentation application), if the moving direction relatively matches the predetermined direction.
604
In response, the application displays a second page of the document based on the determined direction of the movement.
605

Fig. 6

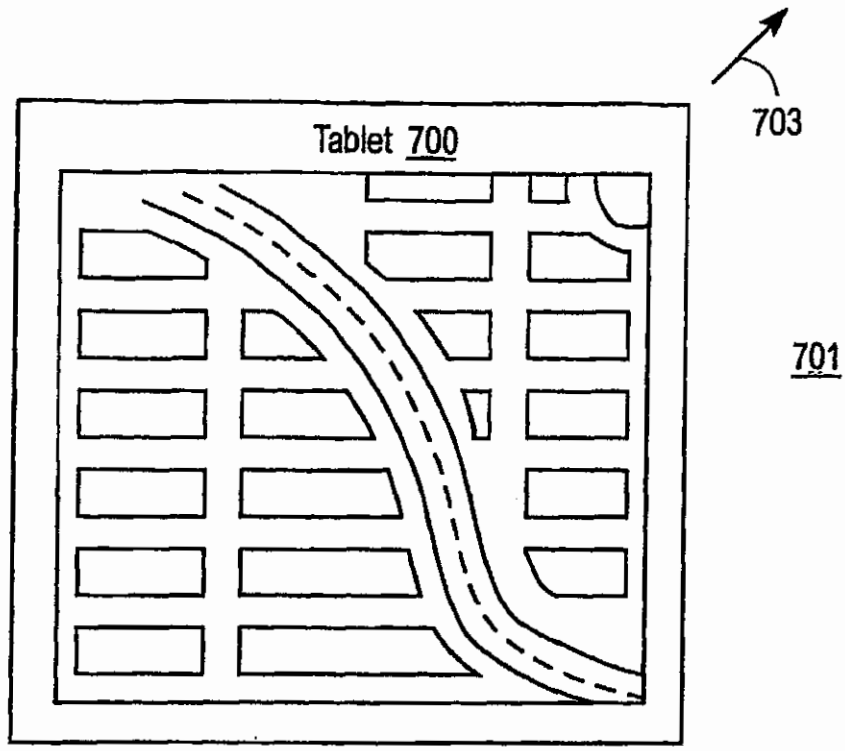


Fig. 7A

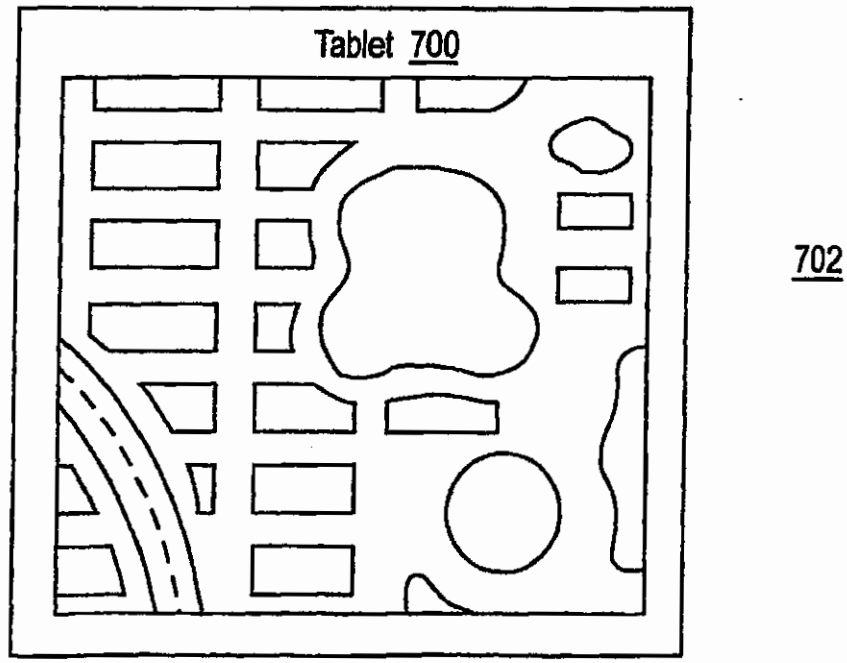


Fig. 7B

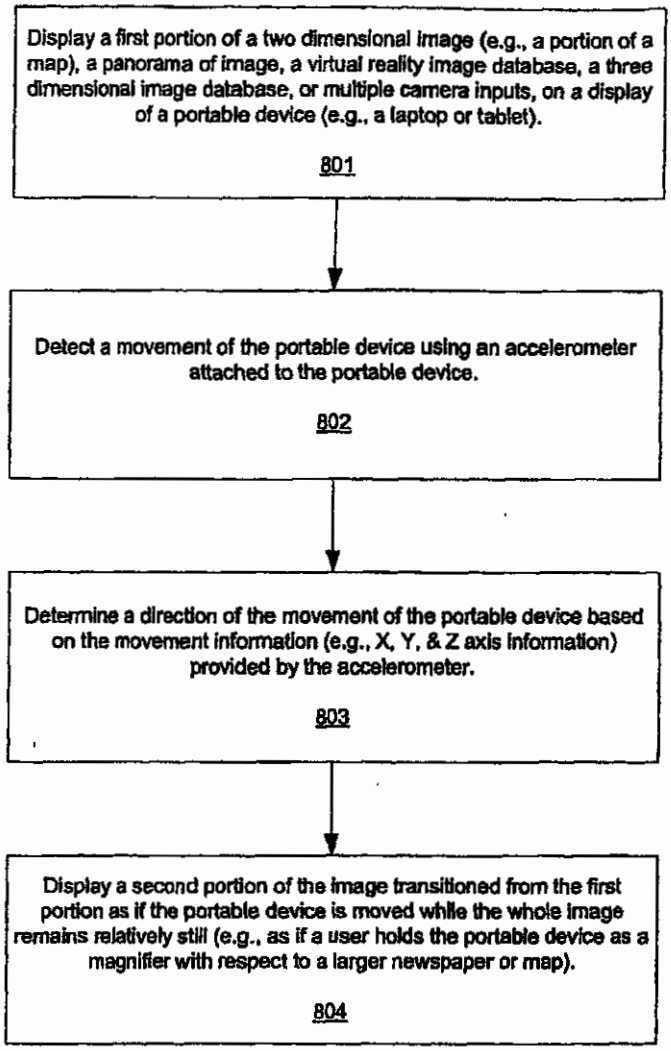

Display a first portion of a two dimensional image (e.g., a portion of a map), a panorama of image, a virtual reality image database, a three dimensional image database, or multiple camera inputs, on a display of a portable device (e.g., a laptop or tablet).
801
Detect a movement of the portable device using an accelerometer attached to the portable device.
802
Determine a direction of the movement of the portable device based on the movement information (e.g., X, Y, & Z axis information) provided by the accelerometer.
803
Display a second portion of the image transitioned from the first portion as if the portable device is moved while the whole image remains relatively still (e.g., as if a user holds the portable device as a magnifier with respect to a larger newspaper or map).
804

Fig. 8

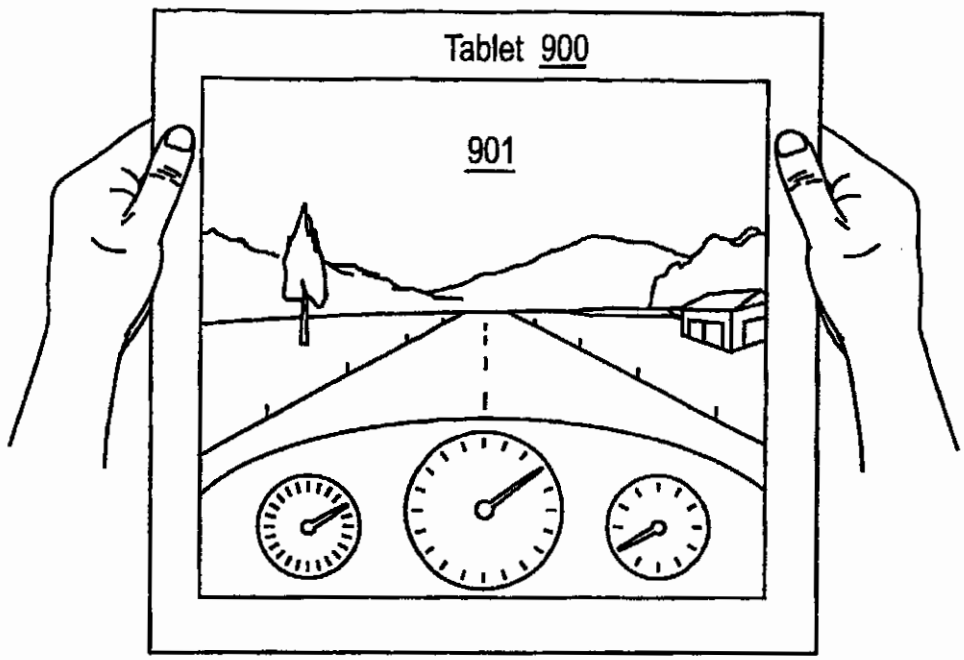


Fig. 9A

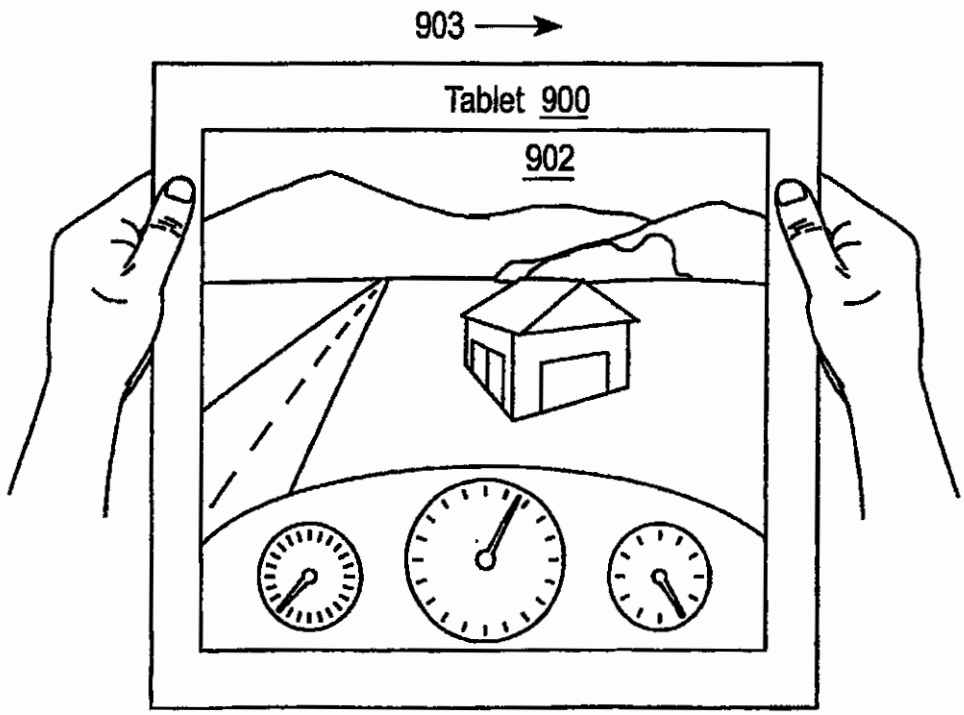


Fig. 9B

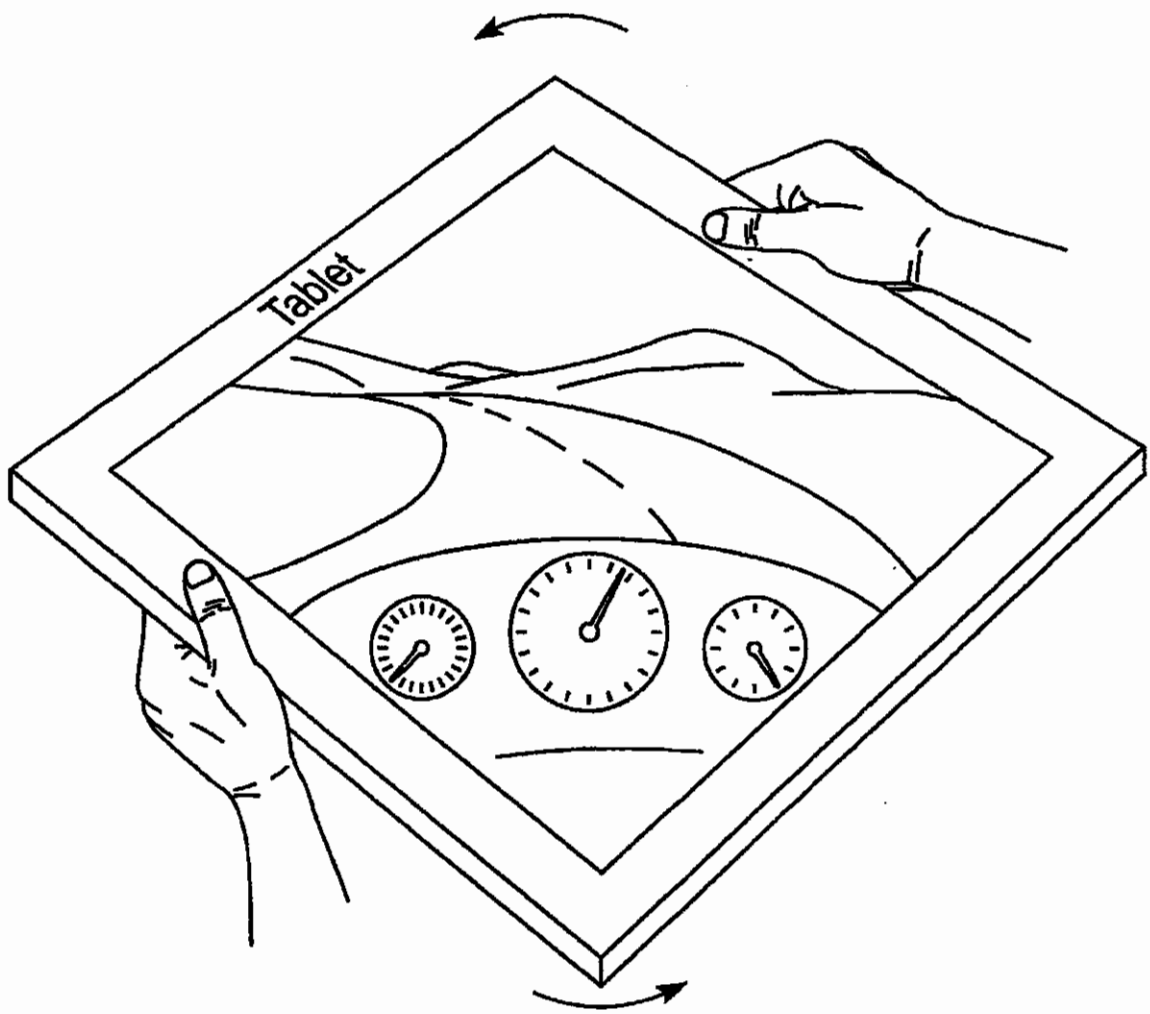


Fig. 10A

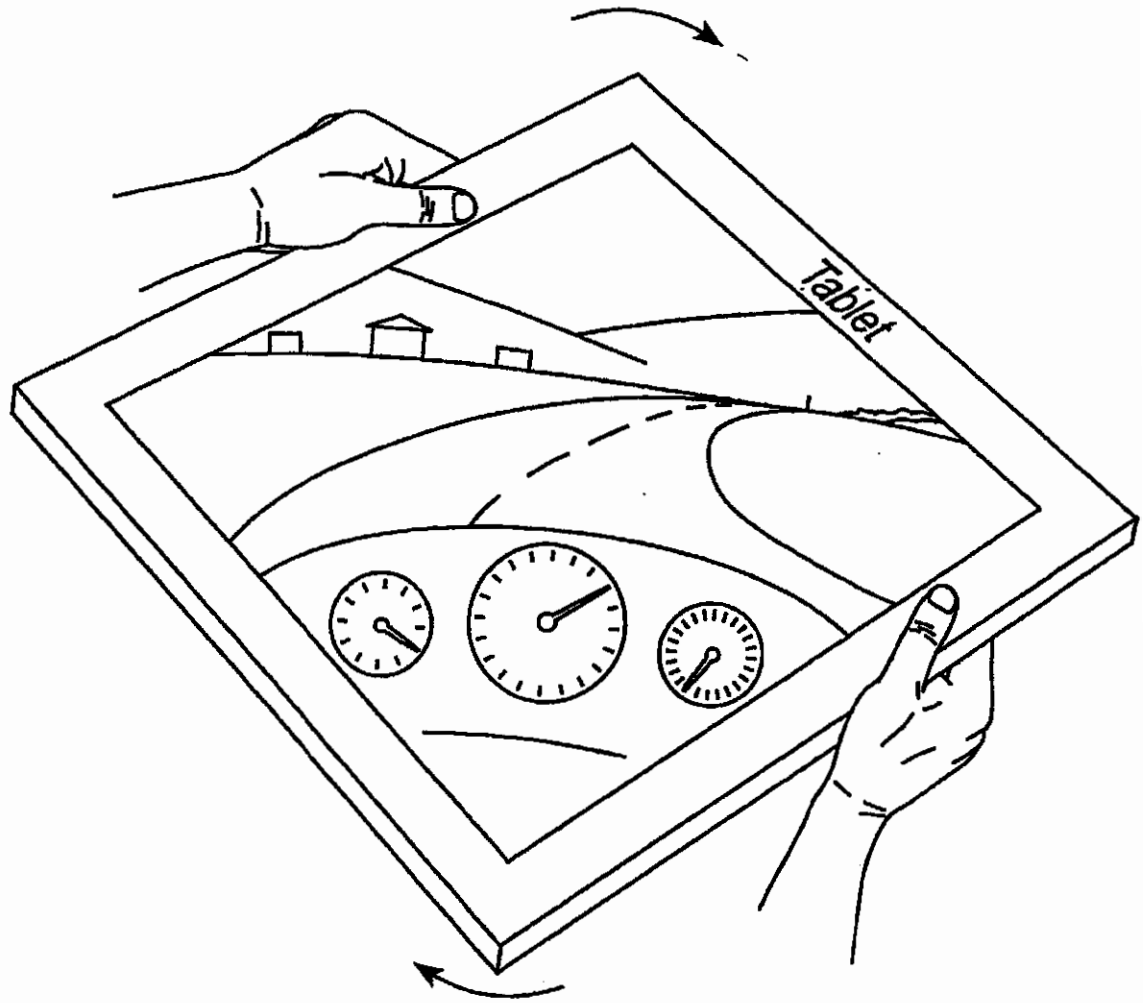


Fig. 10B

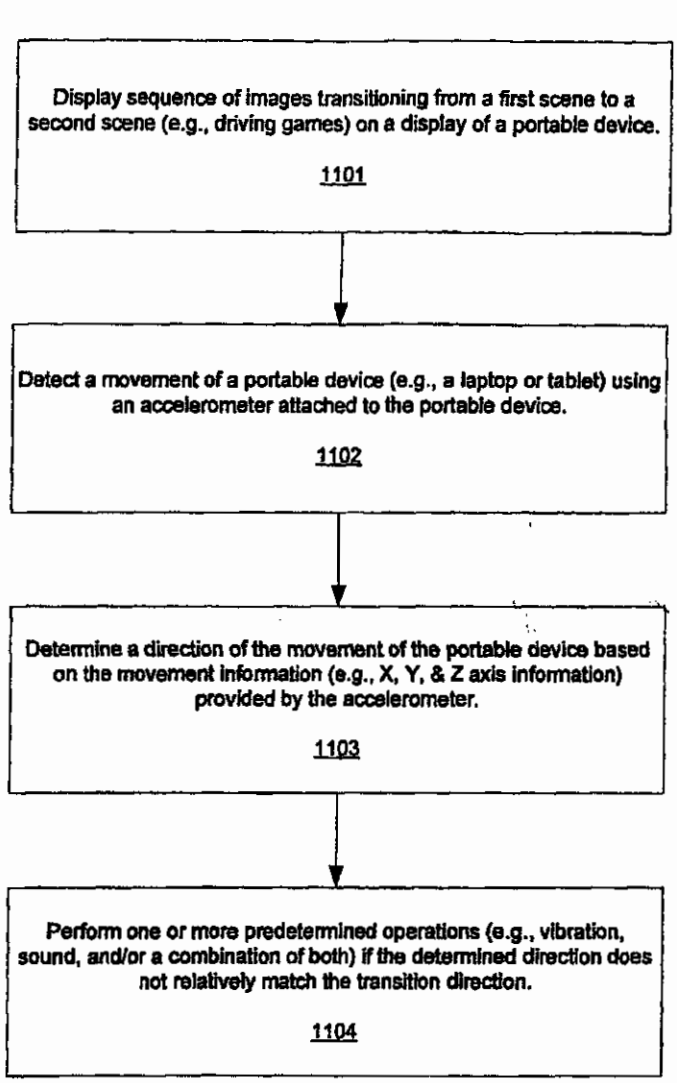

1100
Display sequence of images transitioning from a first scene to a second scene (e.g., driving games) on a display of a portable device.
1101
Detect a movement of a portable device (e.g., a laptop or tablet) using an accelerometer attached to the portable device.
1102
Determine a direction of the movement of the portable device based on the movement information (e.g., X, Y, & Z axis information) provided by the accelerometer.
1103
Perform one or more predetermined operations (e.g., vibration, sound, and/or a combination of both) if the determined direction does not relatively match the transition direction.
1104

Fig. 11

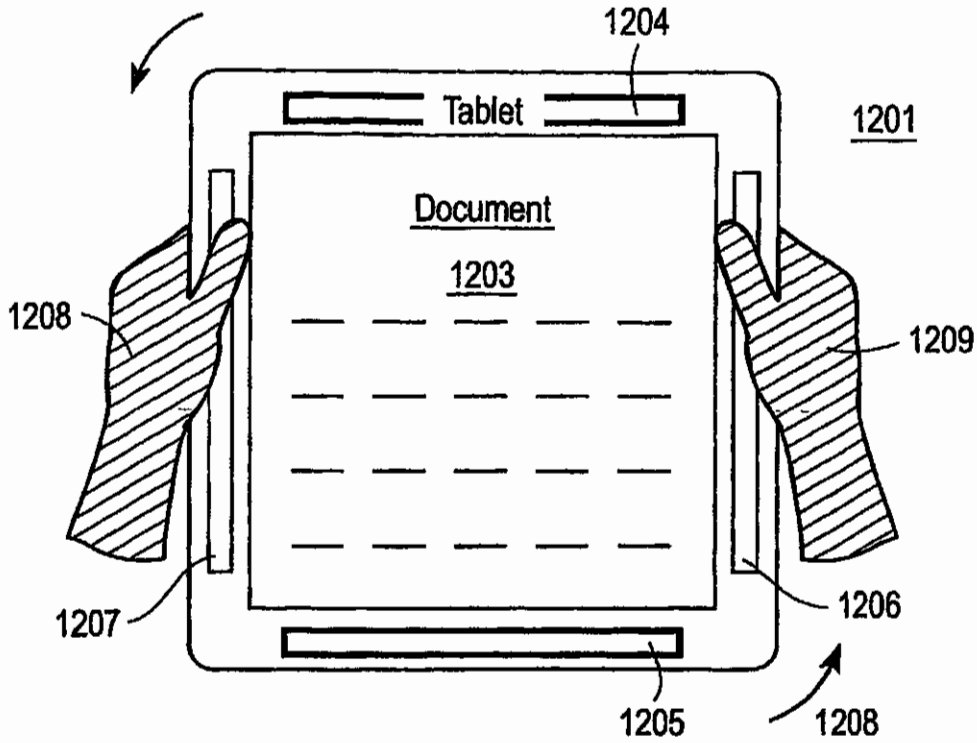


Fig. 12A

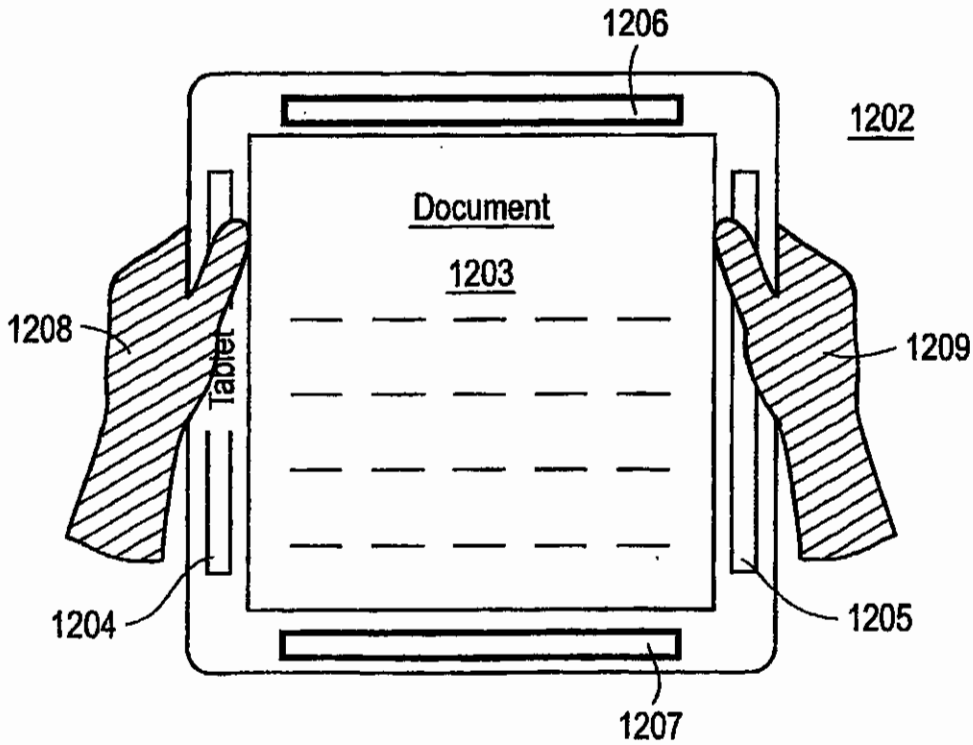


Fig. 12B

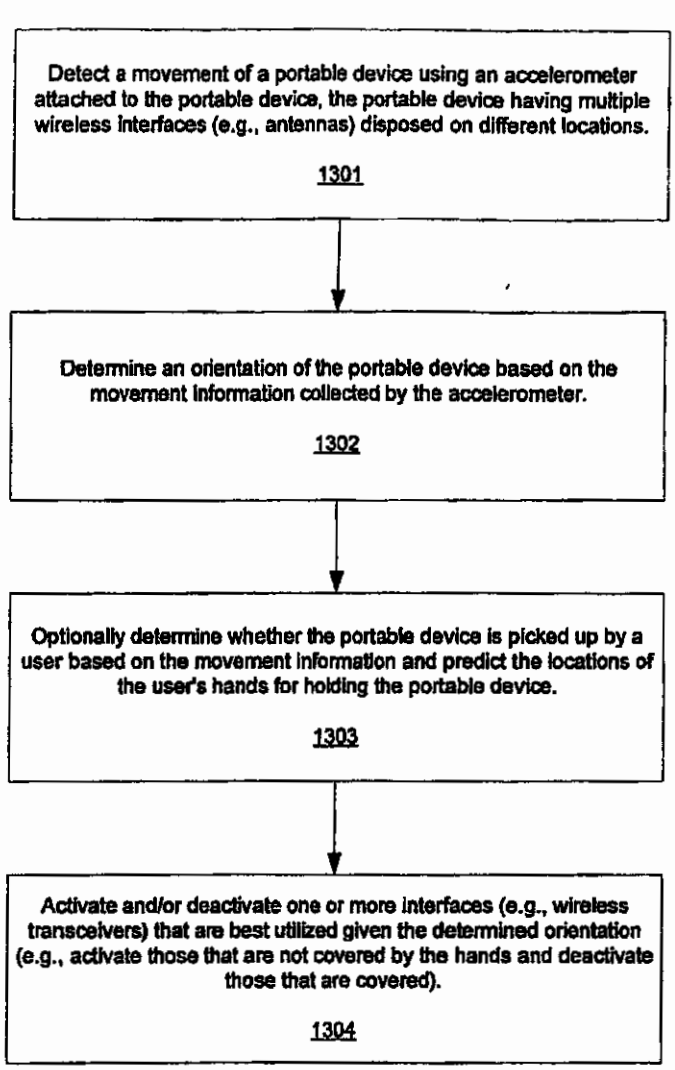

1300
Detect a movement of a portable device using an accelerometer attached to the portable device, the portable device having multiple wireless interfaces (e.g., antennas) disposed on different locations.
1301
Determine an orientation of the portable device based on the movement information collected by the accelerometer.
1302
Optionally determine whether the portable device is picked up by a user based on the movement information and predict the locations of the user's hands for holding the portable device.
1303
Activate and/or deactivate one or more interfaces (e.g., wireless transceivers) that are best utilized given the determined orientation (e.g., activate those that are not covered by the hands and deactivate those that are covered).
1304

Fig. 13

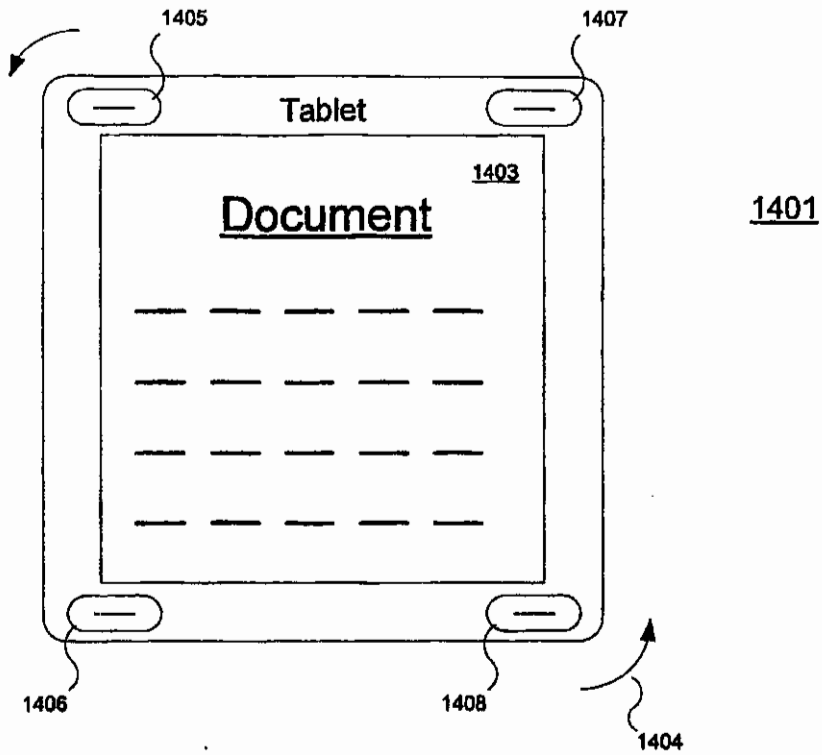


Fig. 14A

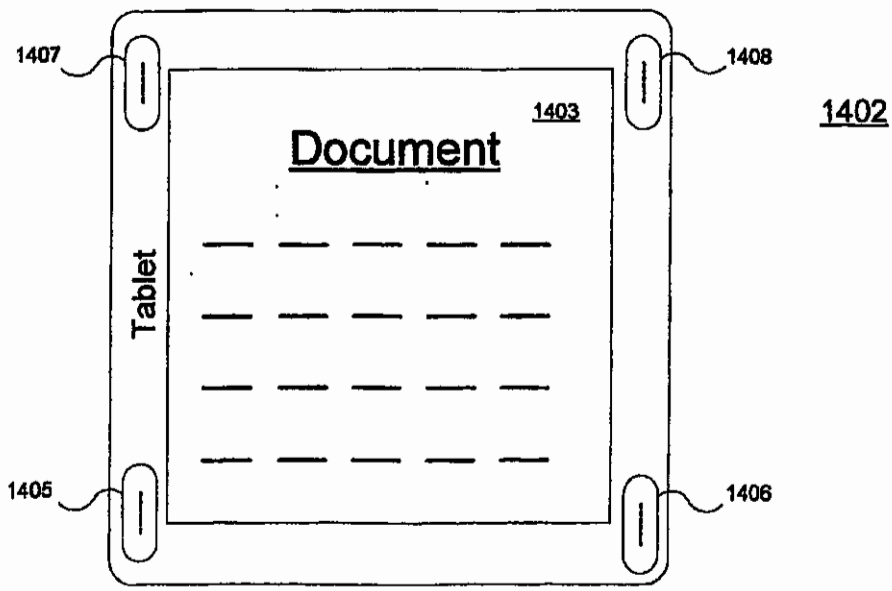


Fig. 14B

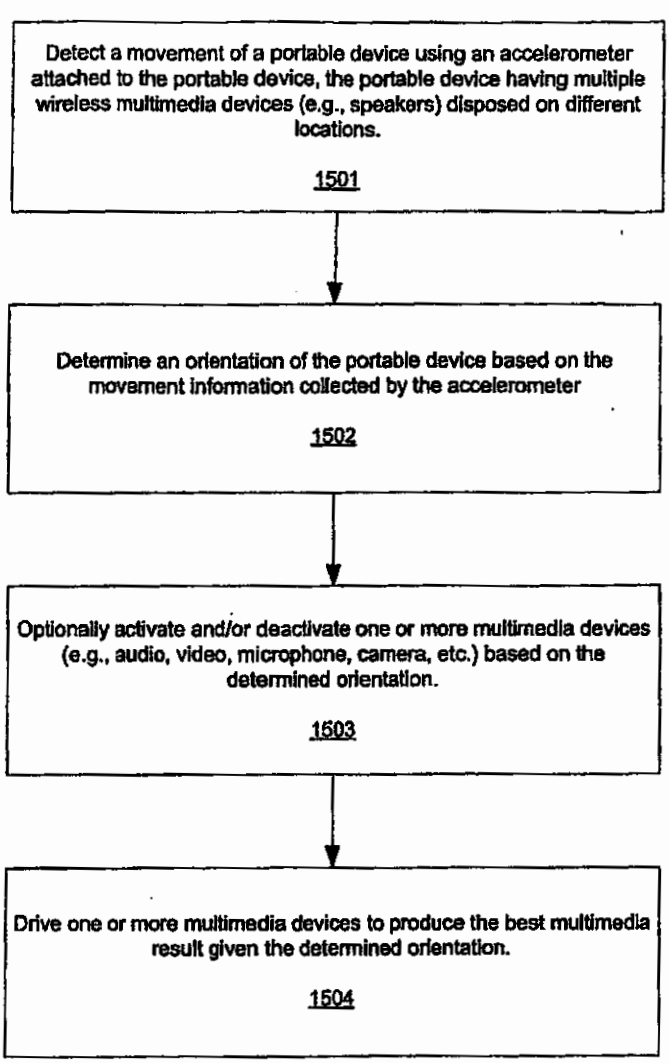

1500
Detect a movement of a portable device using an accelerometer attached to the portable device, the portable device having multiple wireless multimedia devices (e.g., speakers) disposed on different locations.
1501
Determine an orientation of the portable device based on the movement information collected by the accelerometer
1502
Optionally activate and/or deactivate one or more multimedia devices (e.g., audio, video, microphone, camera, etc.) based on the determined orientation.
1503
Drive one or more multimedia devices to produce the best multimedia result given the determined orientation.
1504

Fig. 15

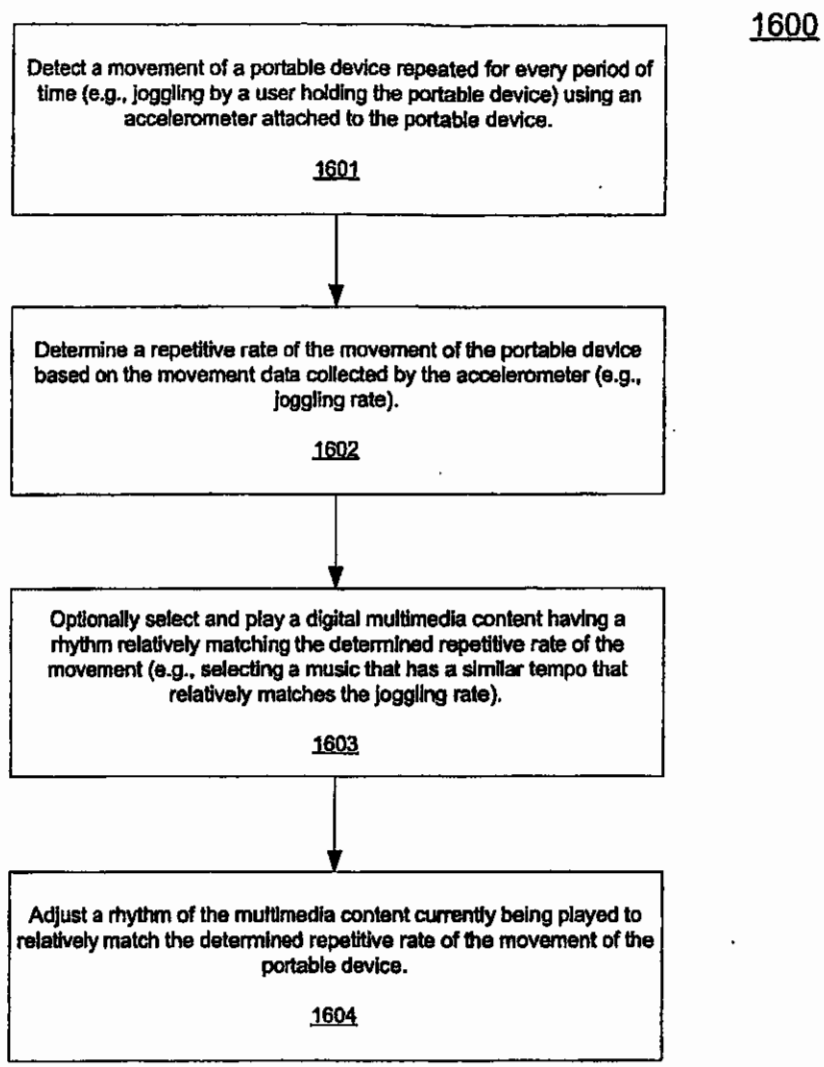

1600
Detect a movement of a portable device repeated for every period of time (e.g., joggling by a user holding the portable device) using an accelerometer attached to the portable device.
1601
Determine a repetitive rate of the movement of the portable device based on the movement data collected by the accelerometer (e.g., joggling rate).
1602
Optionally select and play a digital multimedia content having a rhythm relatively matching the determined repetitive rate of the movement (e.g., selecting a music that has a similar tempo that relatively matches the joggling rate).
1603
Adjust a rhythm of the multimedia content currently being played to relatively match the determined repetitive rate of the movement of the portable device.
1604

Fig. 16

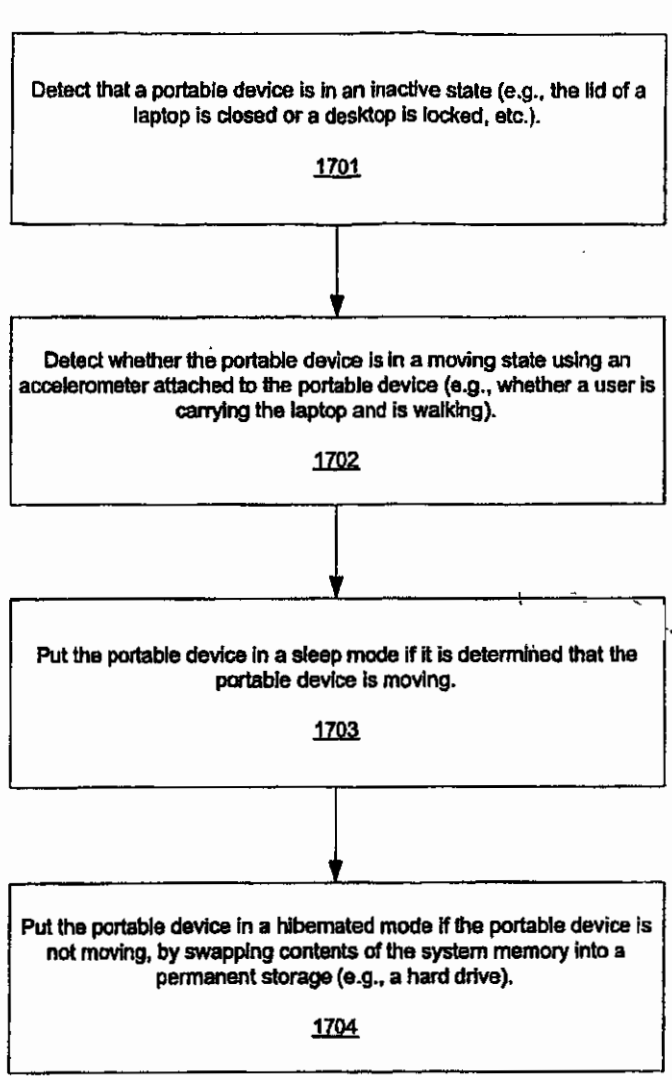

1700
Detect that a portable device is in an inactive state (e.g., the lid of a laptop is closed or a desktop is locked, etc.).
1701
Detect whether the portable device is in a moving state using an accelerometer attached to the portable device (e.g., whether a user is carrying the laptop and is walking).
1702
Put the portable device in a sleep mode if it is determined that the portable device is moving.
1703
Put the portable device in a hibernated mode if the portable device is not moving, by swapping contents of the system memory into a permanent storage (e.g., a hard drive).
1704

Fig. 17

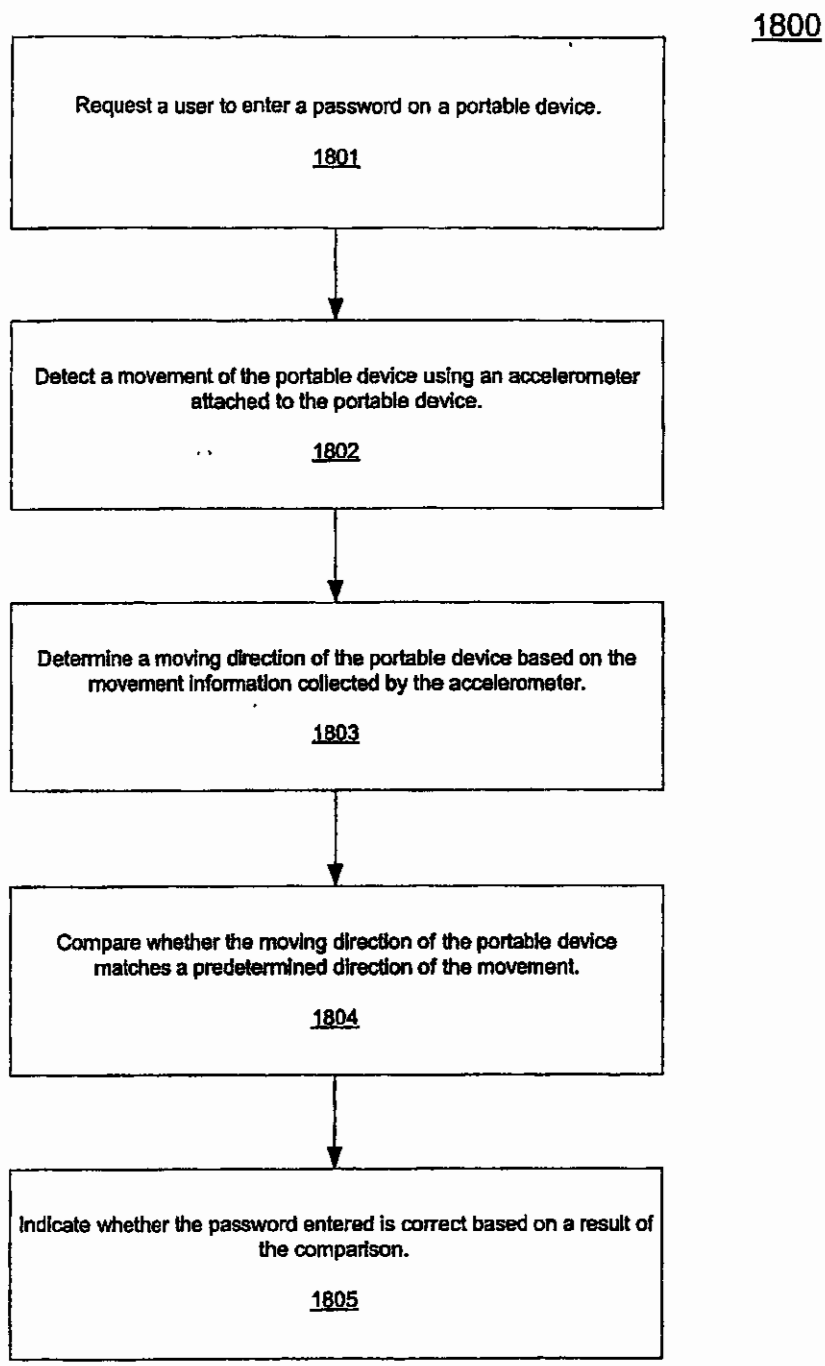

1800
Request a user to enter a password on a portable device.
1801
Detect a movement of the portable device using an accelerometer attached to the portable device.
1802
Determine a moving direction of the portable device based on the movement information collected by the accelerometer.
1803
Compare whether the moving direction of the portable device matches a predetermined direction of the movement.
1804
Indicate whether the password entered is correct based on a result of the comparison.
1805

Fig. 18

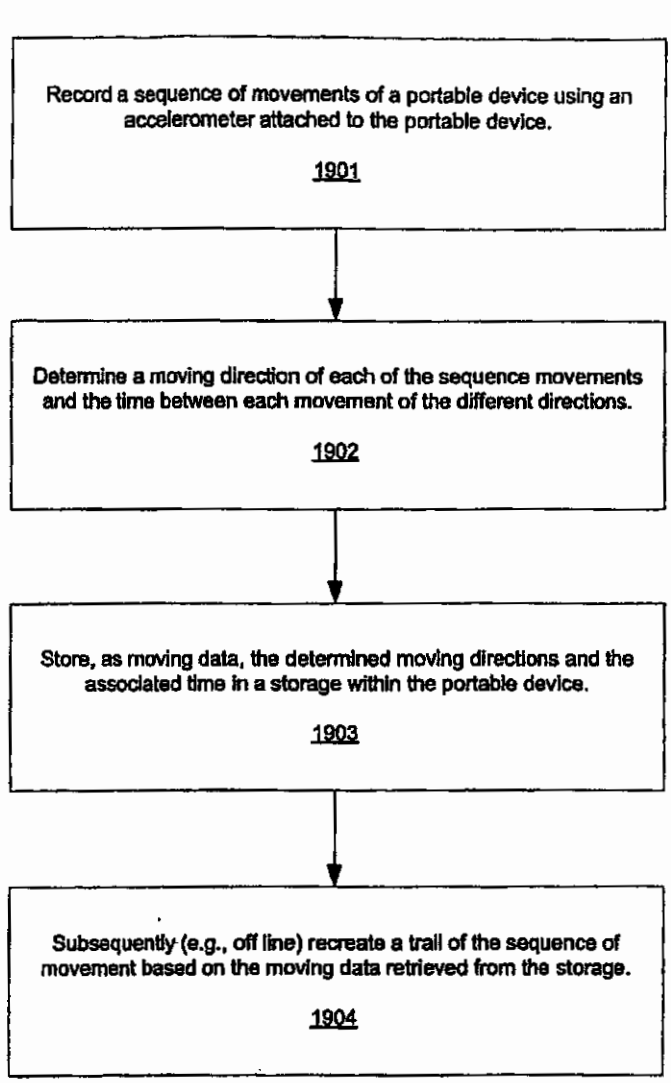

1900
Record a sequence of movements of a portable device using an accelerometer attached to the portable device.
1901
Determine a moving direction of each of the sequence movements and the time between each movement of the different directions.
1902
Store, as moving data, the determined moving directions and the associated time in a storage within the portable device.
1903
Subsequently (e.g., off line) recreate a trail of the sequence of movement based on the moving data retrieved from the storage.
1904

Fig. 19

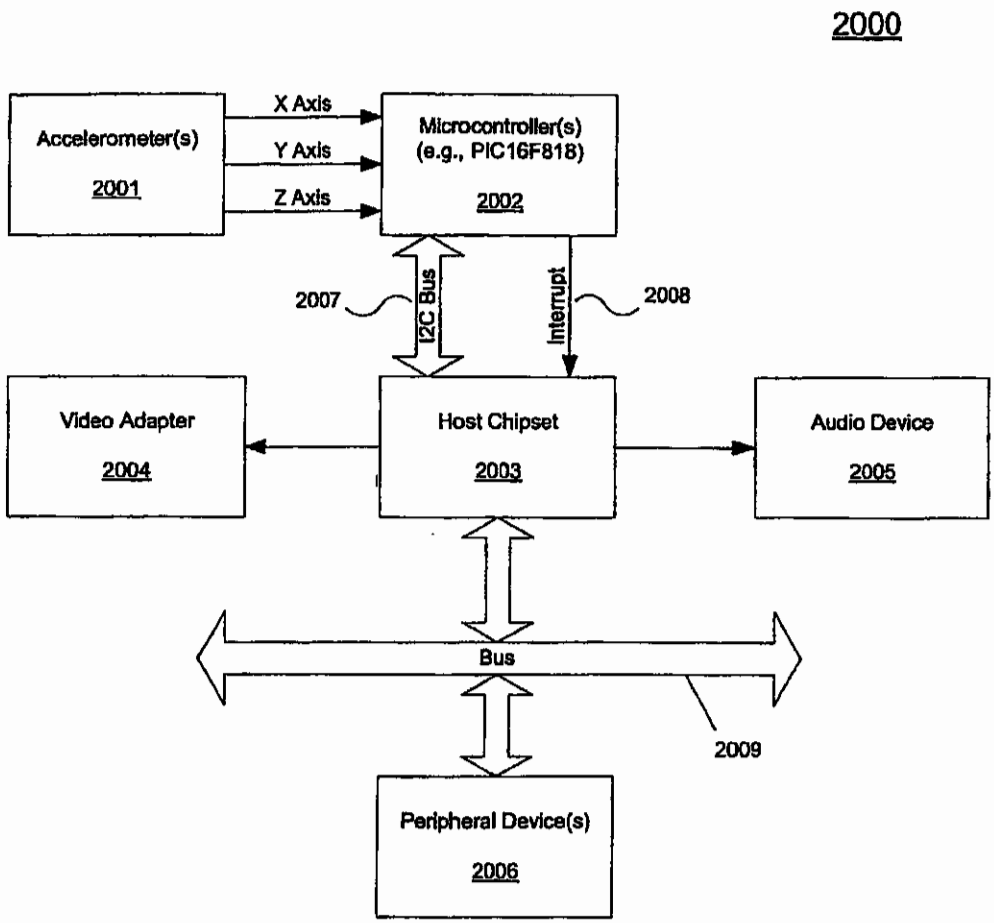

2000
Accelerometer(s)
2001
X Axis
Y Axis
Z Axis
Microcontroller(s)
(e.g., PIC16F818)
2002
2007
I2C Bus
Interrupt
2008
Video Adapter
2004
Host Chipset
2003
Audio Device
2005
Bus
2009
Peripheral Device(s)
2006

Fig. 20

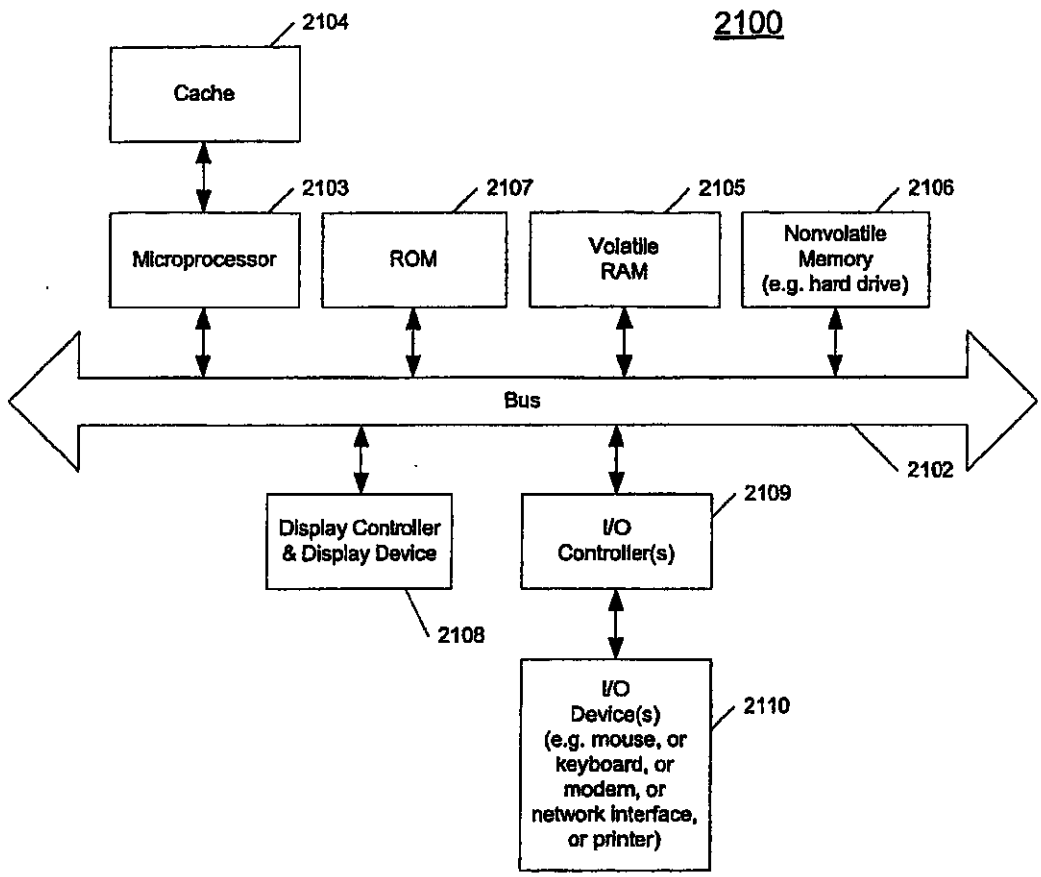

2100
2104
Cache
2103
Microprocessor
2107
ROM
2105
Volatile RAM
2106
Nonvolatile Memory (e.g. hard drive)
Bus
2102
Display Controller & Display Device
2108
I/O Controller(s)
2109
I/O Device(s) (e.g. mouse, or keyboard, or modem, or network interface, or printer)
2110

Fig. 21

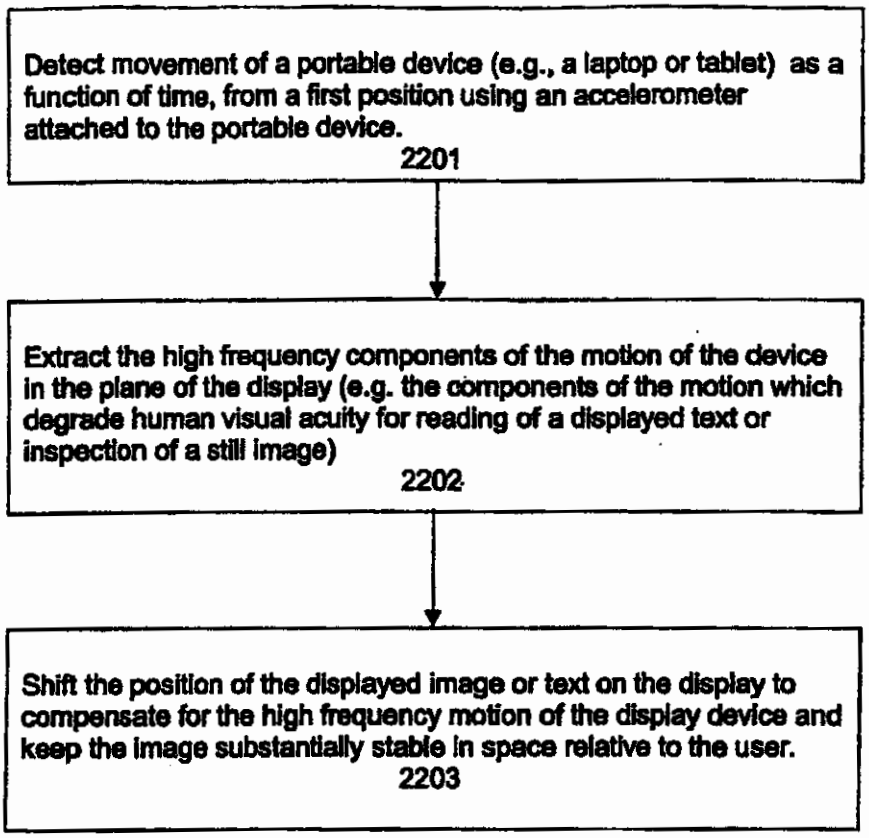

Detect movement of a portable device (e.g., a laptop or tablet) as a function of time, from a first position using an accelerometer attached to the portable device.
2201
Extract the high frequency components of the motion of the device in the plane of the display (e.g. the components of the motion which degrade human visual acuity for reading of a displayed text or inspection of a still image)
2202
Shift the position of the displayed image or text on the display to compensate for the high frequency motion of the display device and keep the image substantially stable in space relative to the user.
2203

Fig. 22

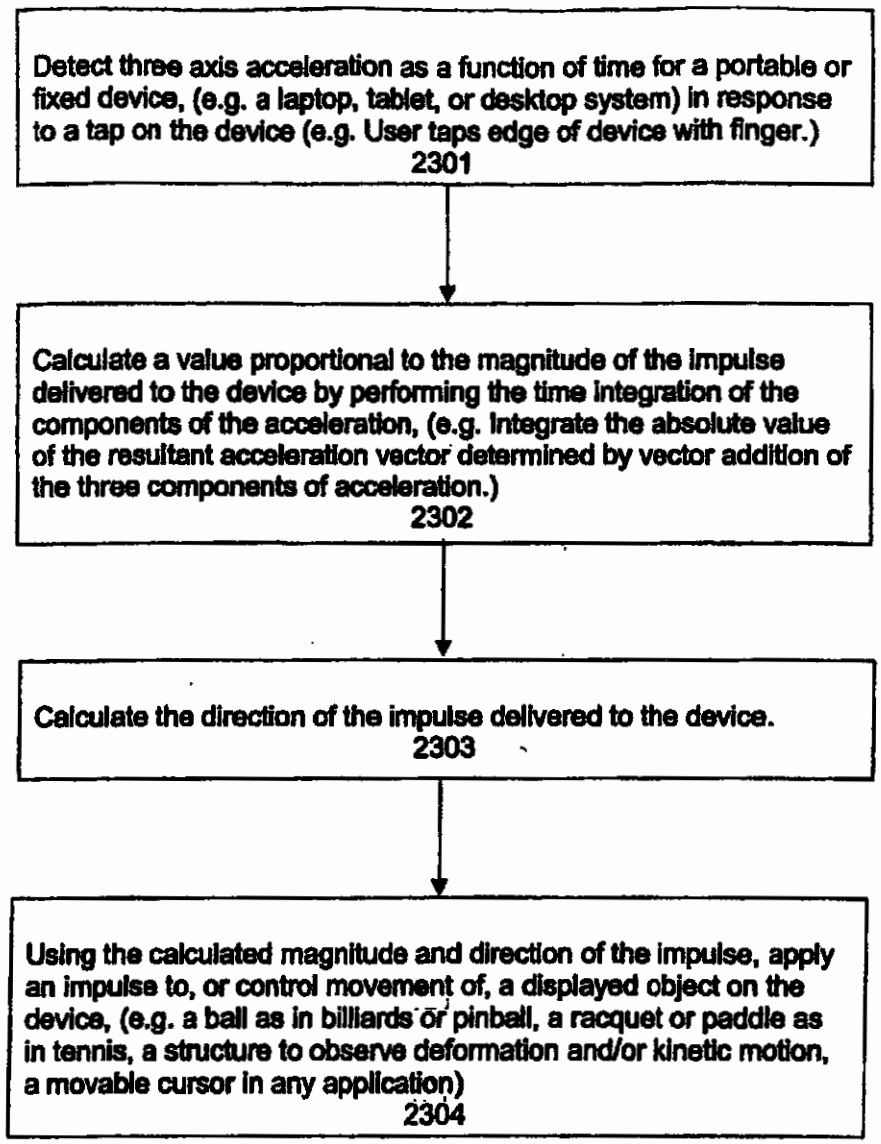

Detect three axis acceleration as a function of time for a portable or fixed device, (e.g. a laptop, tablet, or desktop system) in response to a tap on the device (e.g. User taps edge of device with finger.)
2301
Calculate a value proportional to the magnitude of the impulse delivered to the device by performing the time integration of the components of the acceleration, (e.g. Integrate the absolute value of the resultant acceleration vector determined by vector addition of the three components of acceleration.)
2302
Calculate the direction of the impulse delivered to the device.
2303
Using the calculated magnitude and direction of the impulse, apply an impulse to, or control movement of, a displayed object on the device, (e.g. a ball as in billiards or pinball, a racquet or paddle as in tennis, a structure to observe deformation and/or kinetic motion, a movable cursor in any application)
2304

Fig. 23

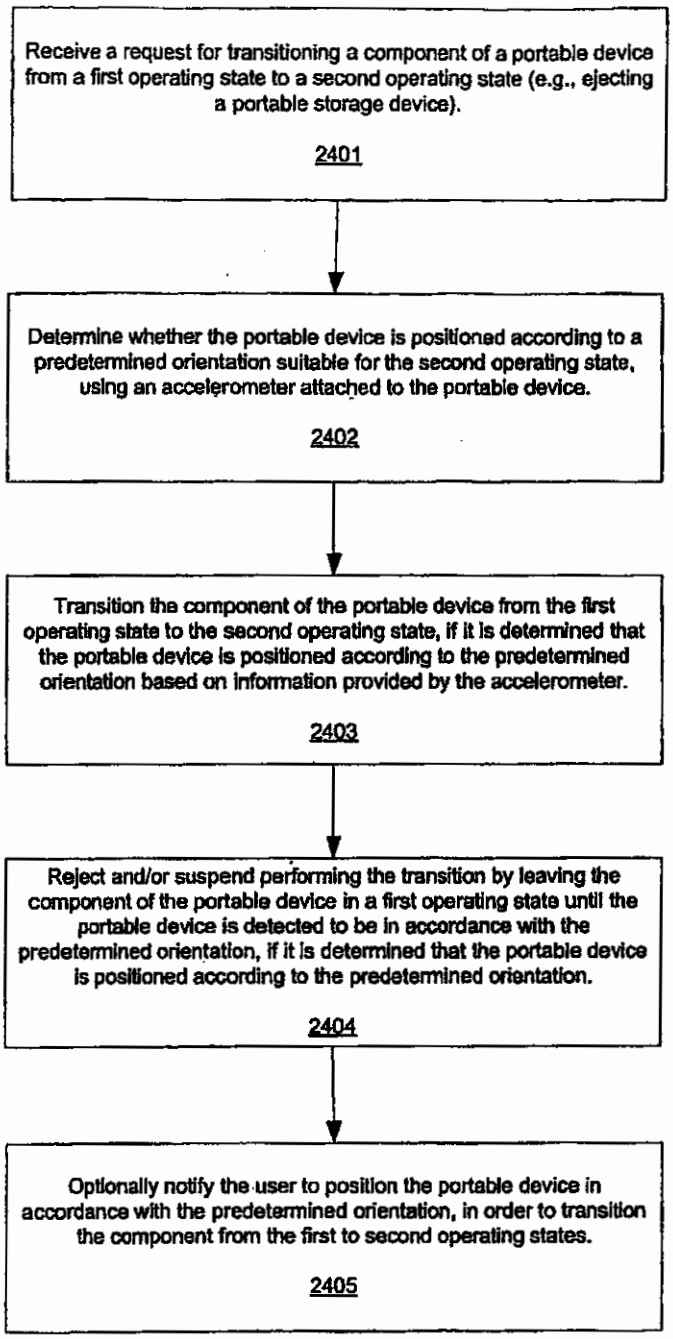

Receive a request for transitioning a component of a portable device from a first operating state to a second operating state (e.g., ejecting a portable storage device).
2401
Determine whether the portable device is positioned according to a predetermined orientation suitable for the second operating state, using an accelerometer attached to the portable device.
2402
Transition the component of the portable device from the first operating state to the second operating state, if it is determined that the portable device is positioned according to the predetermined orientation based on information provided by the accelerometer.
2403
Reject and/or suspend performing the transition by leaving the component of the portable device in a first operating state until the portable device is detected to be in accordance with the predetermined orientation, if it is determined that the portable device is positioned according to the predetermined orientation.
2404
Optionally notify the user to position the portable device in accordance with the predetermined orientation, in order to transition the component from the first to second operating states.
2405

Fig. 24