APPEAL DECISION

Appeal No. 2013-6730

USA

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The case of appeal against the examiner's decision of refusal of Japanese Patent Application No. 2010-527017, entitled "Multi-Touch Device with a Dynamic Haptic Effect" (international publication dated April 2, 2009, International Publication No. WO 2009/042424; national publication of the translated version dated December 24, 2010, National Publication of International Patent Application No. 2010-541071) has resulted in the following appeal decision:

Conclusion

The appeal of the case was groundless.

Reason

1. History of the procedures

The application was originally filed on September 8, 2008 as an international filing date (priority claim under the Paris Convention, September 28, 2007, US), and in response to notification of reasons for refusal dated August 13, 2012, a written amendment was submitted on November 9, 2012. However, an examiner's decision of refusal was issued on December 11, 2012. Against the examiner's decision of refusal, an appeal of the case was made on April 12, 2013 and simultaneously, a written amendment was submitted on the same day.

2. The Invention

The inventions relating to Claims 1-22 of the present application are acknowledged as described in Claims 1-22 of the scope of claims, as viewed from the descriptions of the Description, scope of claims, or drawings which have been amended by the written amendment dated November 9, 2012 and the written amendment dated April 12, 2013; and the invention relating to Claim 22 (hereinafter, referred to as the "the Invention") is as follows:

"A system for generating a haptic effect, comprising:

means for sensing at least two substantially simultaneous touches on a touchscreen; and

means for generating, in response to the sensing, a dynamic haptic effect; wherein

the dynamic haptic effect is a vibration that varies based on variations in at least one parameter."

3. Invention described in publication

(1) Described matters in Publication 1

International Publication No. WO 2006/42309 (hereinafter, referred to as "Publication 1," which was cited in the reason of the examiner's decision and is a publication distributed before the application was filed, includes the following description with drawings. Note that the translation is made with reference to National Publication of International Patent Application No. 2008-516348.

"[0003] The present invention relates generally to interfacing with computer and mechanical devices by a user, and more particularly to devices used to interface with computer systems and electronic devices and which provide haptic feedback to the user."

"[0008] The present invention is directed to a haptic feedback planar touch input device used to provide input to a computer system. The touch input device can be a touchpad provided on a portable computer, or it can be a touch screen found on any of a variety of devices, or it may be implemented with similar input devices. The haptic sensations output on the touch input device enhance interactions and manipulations in a displayed graphical environment or when using the touch input device to control an electronic device.

[0009] More specifically, the present invention relates to a haptic feedback touch input device for inputting signals to a computer and for outputting forces to a user of the touch input device. The touch input device includes an approximately planar (planar or near-planar) touch surface operative to input a position signal to a processor of said computer based on a location of user contact on the touch surface. The position signal may be used in a number of ways; for example, it may be used to position a cursor in a graphical environment displayed on a display device based at least in part on the position signal. It may be used to rotate, reposition, enlarge, and/or shrink an image of an object displayed on a display device based at least in part on the position signal. It may be used to provide other desired inputs to a computing device. These inputs may include scroll-inputs causing text or displayed images to move up, down, right, or left, to rotate, or to be made larger or smaller in the graphical environment. At least one actuator is also coupled to the touch input device and outputs a force on the touch input device to provide a haptic sensation to the user contacting the touch surface. The actuator outputs the force based on force information output by the processor to the actuator. Most touch input devices also will include an ability to measure the relative pressure applied to the touch input device while touching it and that relative pressure may also be used for control and may be used at least in part to create haptic output to the user.

[0010] The touch input device can be a touchpad separate from a display screen of the computer, or can be included in a display screen of the computer as a touch screen. The touch input device can be integrated in a housing of the computer or handheld device, or provided in a housing that is separate from the computer. The user contacts the touch surface with a finger, a stylus, or other object. The actuator can include a piezo-electric actuator, a voice coil actuator, a pager motor, a solenoid, or other type of actuator. In one embodiment, the actuator is coupled between the touch input device and a grounded surface. In another embodiment, the actuator is coupled to an inertial mass. The actuator may be coupled to cause relative movement between a display screen and a transparent touch input panel disposed over the display screen in a touch screen device. A touch device microprocessor which may be separate from the main processor of the computer can receive force information from the host computer and provide control signals based on the force information to control the actuator."

"[0024] In the present invention, the touch input device (touchpad 16 or touch screen) is provided with the ability to output haptic feedback such as tactile sensations to the user who is physically contacting the touch input device. Various embodiments detailing the structure of the haptic feedback touch input device are described in greater detail below. Preferably, the forces output on the touch input device are linear (or approximately linear (near-linear)) and oriented along the z-axis, perpendicular or approximately (near) perpendicular to the surface of the touch input device and a surface of the computer 10. In a different embodiment, forces can be applied to the touch input device to cause side-to-side (e.g., x-y) motion of the touch input device in the plane of its surface in addition to or instead of z-axis motion, although such motion is not presently preferred.

[0025] Using one or more actuators coupled to the touch input device, a variety of haptic sensations can be output to the user who is contacting the touch input device. For example, jolts, vibrations (varying or constant amplitude), and textures can be output. Forces output on the touch input device can be at least in part based on the location of the finger on the touch input device or the state of a controlled object in the graphical environment of the host computer 10, and/or independent of finger position or object state. Such forces output on the touch input device are considered "computer-controlled," since a microprocessor or other electronic controller uses electronic signals to control the magnitude and/or direction of the force output of the actuator(s). Preferably, the entire touch input device is provided with haptic sensations as a single unitary member; in other embodiments, each of individually-moving portions of the pad can be provided with its own haptic feedback actuator and related transmissions so that haptic sensations can be provided for only a particular portion. For example, some embodiments may include a touch input device having different portions that may be flexed or otherwise moved with respect to other portions of the touch input device."

"[0035] The frequency of a vibration output by an actuator 42 can be varied by providing different control signals to an actuator 42. Furthermore, the magnitude of a pulse or vibration can be controlled based on the applied control signal. If multiple actuators 42 are provided, a stronger vibration can be imparted on the touchpad by activating two or more actuators simultaneously. Furthermore, if an actuator is positioned at an extreme end of the touchpad and is the only actuator that is activated, the user may experience a stronger vibration on the side of the touchpad having the actuator than on the opposite side of the touchpad. Different magnitudes and localized effects can be obtained by activating some but not all of the actuators. Since the tip of a user's finger that is touching the pad is fairly sensitive, the output forces do not have to be of a high magnitude for the haptic sensation to be effective and compelling."

"[0053] Another type of force sensation that can be output on the touchpad 16 is a texture force. This type of force is similar to a pulse force, but depends on the position of the user's finger on the area of the touchpad and/or on the location of the cursor in the graphical environment. Thus, texture bumps are output depending on whether the cursor has moved over a location of a bump in a graphical object. This type of force is spatially-dependent; i.e., a force is output depending on the location of the cursor as it moves over a designated textured area; when the cursor is positioned between "bumps" of the texture, no force is output, and when the cursor moves over a bump, a force is output. This can be achieved by host control (e.g., the host sends the pulse signals as the cursor is dragged over the grating). In some embodiments, a separate touchpad microprocessor can be dedicated for haptic feedback with the touchpad, and the texture effect can be achieved using local control (e.g., the host sends a high level command with texture parameters and the sensation is directly controlled by the touchpad processor). In other cases a texture effect can be performed by presenting a vibration to a user, the vibration being dependent upon the current velocity of the user's finger (or other object) on the touchpad. When the finger is stationary, the vibration is deactivated; as the finger is moved faster, the frequency and magnitude of the vibration is increased. This sensation can be controlled locally by the touchpad processor (if present), or can be controlled by the host. Local control by the pad processor may eliminate communication burden in some embodiments. Other spatial force sensations can also be output. In addition, any of the described force sensations herein can be output simultaneously or otherwise combined as desired."

"[0096] FIG. 27 is a flow diagram illustrating a method for generating a haptic effect in accordance with one embodiment of the present invention. A process for generating haptic sensation starts in block 802. In one embodiment, the process can be activated by a user who touches a touch-sensitive panel possibly in a predetermined location or locations. In another embodiment, the process is activated by a touch signal or contact signal sent by the touch-sensitive panel, which indicates that a selection has been made by a user."

(2) Invention described in Publication 1

(2-1) "Computer system"

Publication 1 includes the description "The present invention is directed to a haptic feedback planar touch input device used to provide input to a computer system" ([0008]), and therefore, in Publication 1, a "computer system" is described.

(2-2) "A touch input device that can be a touch pad or touch screen including a touch surface operative to input a position signal to a processor of said computer based on a location of user contact on the touch surface"

Publication 1 includes the description of "the present invention relates to a haptic feedback touch input device for inputting signals to a computer and for outputting forces to a user of the touch input device. The touch input device includes an approximately planar (planar or near-planar) touch surface operative to input a position signal to a processor of said computer based on a location of user contact on the touch surface." ([0009]), and therefore, the computer system in Publication 1 is provided with a touch input device including a touch surface operative to input a position signal to a processor of said computer based on a location of user contact on the touch surface. In addition, "The touch input device can be a touchpad provided on a portable computer, or it can be a touch screen found on a variety of devices, or it may be implemented with similar input devices." ([0008]), and therefore, the touch input device can be a touch pad or touch screen.

Thus, the computer system in Publication 1 is provided with a "touch input device that can be a touch pad or touch screen including a touch surface operative to input a position signal to a processor of said computer based on a location of user contact on the touch surface."

(2-3) "one or more actuators provided with the ability to output haptic feedback such as tactile sensations to the user who is physically contacting the touch input device"

Publication 1 includes the description of "In the present invention, the touch input device (touchpad 16 or touch screen) is provided with the ability to output haptic feedback such as tactile sensations to the user who is physically contacting the touch input device." ([0024]), in addition, it includes the description of "Using one or more actuators coupled to the touch input device, a variety of haptic sensations can be output to the user who is contacting the touch input device." ([0025]); and therefore, the computer system in Publication 1 is provided with "one or more actuators provided with the ability to output haptic feedback such as tactile sensations to the user who is physically contacting the touch input device."

(2-4) "using actuators, a variety of haptic sensations, such as varying vibrations and textures, can be output to the user"

Publication 1 includes the description of "Using one or more actuators coupled to the touch input device, a variety of haptic sensations can be output to the user who is contacting the touch input device. For example, jolts, vibrations (varying or constant amplitude), and textures can be output. " ([0025]), and therefore, the computer system in Publication 1 is one in which "using actuators, a variety of haptic sensations, for example, varying vibrations and textures can be output to the user."

(2-5) "The frequency of a vibration output by an actuator can be varied by providing different control signals, and furthermore, the magnitude of a pulse or vibration can be controlled based on the applied control signal"

Publication 1 includes the description "the frequency of a vibration output by an actuator 42 can be varied by providing different control signals to an actuator 42. Furthermore, the magnitude of a pulse or vibration can be controlled based on the applied control signal." ([0035]), and therefore, the computer system in Publication 1 is one in which "the frequency of a vibration output by an actuator can be varied by providing different control signals, and furthermore, the magnitude of a pulse or vibration can be controlled based on the applied control signal."

(2-6) "In other cases, a texture can be performed by presenting a vibration to a user, the vibration being dependent upon the current velocity of the user's finger on the touchpad, and as the finger is moved faster, the frequency and magnitude of the vibration are increased."

Publication 1 includes the description "In other cases a texture effect can be performed by presenting a vibration to a user, the vibration being dependent upon the current velocity of the user's finger (or other object) on the touchpad. When the finger is stationary, the vibration is deactivated; as the finger is moved faster, the frequency and magnitude of the vibration are increased." ([0053]), and therefore, the computer system in Publication 1 is one in which "in other cases, a texture effect can be performed by presenting a vibration to a user, the vibration being dependent upon the current velocity of the user's finger on the touchpad, and as the finger is moved faster, the frequency and magnitude of the vibration are increased."

(2-7) "A process for generating haptic sensation can be activated by a user who touches a touch-sensitive panel possibly in a predetermined location or locations"

Publication 1 includes the description of "a process for generating haptic sensation starts in block 802. In one embodiment, the process can be activated by a user who touches a touch-sensitive panel possibly in a predetermined location or locations." ([0096]), and therefore, the computer system in Publication 1 is one in which "a process for generating haptic sensation can be activated by a user who touches a touch-sensitive panel possibly in a predetermined location or locations."

(2-8) Invention described in Publication 1

Consequently, it is recognized that the following invention (hereinafter, referred to as "Invention described in Publication 1") is described in Publication 1.

[Invention described in Publication 1]

A computer system comprising:

a touch input device that can be a touch pad or touch screen including a touch surface operative to input a position signal to a processor of said computer based on a location of user contact on the touch surface; and

one or more actuators provided with the ability to output haptic feedback such as tactile sensations to the user who is physically contacting the touch input device; wherein

using actuators, a variety of haptic sensations, such as varying vibrations and textures, can be output to the user;

the frequency of a vibration output by an actuator can be varied by providing different control signals, and furthermore, the magnitude of a pulse or vibration can be controlled based on the applied control signal;

in other cases, a texture can be performed by presenting a vibration to a user, the vibration being dependent upon the current velocity of the user's finger on the touchpad, and as the finger is moved faster, the frequency and magnitude of the vibration are increased; and

a process for generating haptic sensation can be activated by a user who touches a touch-sensitive panel possibly in a predetermined location or locations.

4. Comparison

(1) Regarding a "system for generating a haptic effect" in the Invention

The computer system in Invention described in Publication 1 is one to "output haptic feedback such as tactile sensations to the user" and has a "process for generating haptic sensation," and therefore, it can be said to be a "system for generating a haptic effect."

Accordingly, the Invention and Invention described in Publication 1 correspond in terms of being a "system for generating a haptic effect."

(2) Regarding "means for sensing at least two substantially simultaneous touches on a touchscreen" in the Invention

The touch input device included in the computer system in Invention described in Publication 1 can be a "touch screen" and the touch surface thereof is one "operative to input a position signal to a processor of said computer based on a location of user contact on the touch surface" and therefore, the computer system in Invention described in Publication 1 can be said to include "means for sensing one or more touches on a touch screen."

Accordingly, the Invention and Invention described in Publication 1 correspond in terms of including "means for sensing one or more touches on a touch screen."

However, they are different in that means for sensing one or more touches on a touch screen senses "at least two substantially simultaneous touches" in the Invention and on the other hand, whether or not the means senses "at least two generally simultaneous touches" is not clear in Invention described in Publication 1.

(3) Regarding "means for generating, in response to the sensing, a dynamic haptic effect" in the Invention

Invention described in Publication 1 is provided with "one or more actuators provided with the ability to output haptic feedback such as tactile sensations to the user who is physically contacting the touch input device" and the haptic feedback in this case means the outputting of a variety of haptic sensations, such as varying vibrations and textures to the user in response to a user input by a touch operation. And it is obvious that the computer system includes means for generating this haptic feedback and therefore, it can be said that Invention described in Publication 1 is provided with means for generating haptic feedback (that corresponds to a "haptic effect" in the Invention) in response to a user input by a touch operation (that corresponds to "the sensing" in the Invention).

In addition, the haptic feedback in Invention described in Publication 1 is one that is output by using an actuator, such as a varying vibration, a vibration whose frequency can be varied by providing different control signals, a vibration whose magnitude can be controlled on the basis of the provided control signals, and a vibration which is dependent upon the current velocity of the user's finger on the touchpad and whose frequency and magnitude are increased as the finger is moved faster, and therefore, it can be said to be a variable vibration; that is, a "dynamic" one.

Thus, it can be said that Invention described in Publication 1 is provided with means for generating "dynamic" haptic feedback (that corresponds to a "haptic effect" in the Invention) in response to a user input by a touch operation (that corresponds to "the sensing" in the Invention).

Accordingly, the Invention and Invention described in Publication 1 correspond in terms of including "means for generating, in response to the sensing, a dynamic haptic effect."

(4) Regarding "the dynamic haptic effect is vibrations that vary based on variations in at least one parameter" in the Invention

As mentioned in the above (3), the "dynamic" haptic feedback in Invention described in Publication 1 is one that is output by using an actuator; for example, a varying vibration, a vibration whose frequency can be varied by providing different control signals, a vibration whose magnitude can be controlled on the basis of the provided control signals, and a vibration which is dependent upon the current velocity of the user's finger on the touchpad whose frequency and magnitude are increased as the finger is moved faster.

Those vibrations vary on the basis of parameters such as control signals for the magnitude and frequency, and the current velocity of the user's finger; and therefore, they can be said to be "vibrations that vary based on variations in at least one parameter."

Accordingly, the Invention and Invention described in Publication 1 correspond in that "the dynamic haptic effect is vibrations that vary based on variations in at least one parameter."

(5) Corresponding features and the different feature

Therefore, the corresponding features and different feature between the Invention and Invention described in Publication 1 are as follows:

[The corresponding features]

A system for generating a haptic effect, comprising:

means for sensing one or more touches on a touch screen; and

means for generating, in response to the sensing, a dynamic haptic effect; wherein

the dynamic haptic effect is vibrations that vary based on variations in at least one parameter."

[The different feature]

Means for sensing one or more touches on a touch screen senses "at least two substantially simultaneous touches" in the Invention and on the other hand, whether or not the means senses "at least two generally simultaneous touches" is not clear in Invention described in Publication 1.

5. Judgment by the body

Invention described in Publication 1 is one in which "a process for generating haptic sensation can be activated by a user who touches a touch-sensitive panel possibly in a predetermined location or locations" and therefore, it implies that touches are made on a plurality of locations of the touch input device.

In addition, Invention described in Publication 1 describes, as an aspect of using a position signal when a touch surface is operated to input the position signal to a processor of the computer based on the location of user contact on the touch surface, "It may be used to rotate, reposition, enlarge, and/or shrink an image of an object displayed on a display device based on the position signal" and "It may be used to provide other desired inputs to a computing device. These inputs may include scroll-inputs causing text or displayed images to move up, down, right, or left, to rotate, or to be made larger or smaller in the graphical environment."

As such methods for rotating and enlarging a displayed image by a position signal when the touch screen is operated, methods for rotating and enlarging an image displayed by sensing at least two substantially simultaneous touches are well-known by a person skilled in the art (for example, refer to (*) described later), and as described above, Invention described in Publication 1 implies that touches are made on a plurality of locations of the touch input device, and therefore, it could have been easily conceived by a person skilled in the art that the means for sensing one or more touches on a touch screen is configured so as to be capable of "sensing at least two substantially simultaneous touches on a touchscreen" in Invention described in Publication 1. In addition, the effects that can be achieved by such a configuration could also be predicted by a person skilled in the art.

Thus, the Invention could have been easily made by a person skilled in the art on the basis of Invention described in Publication 1 and well-known arts.

(*) In International Publication No. WO 2006/020304, the following is described together with FIG. 10, FIGS. 11A-H, FIG. 14, and FIGS. 15A-C.

"[0066] Fig. 10 is a diagram of a zoom gesture method 350, in accordance with one embodiment of the present invention. The zoom gesture may be performed on a multipoint touch screen. The zoom gesture method 350 generally begins in block 352 where the presence of at least a first finger and a second finger are detected on a touch sensitive surface at the same time. The presence of at least two fingers is configured to indicate that the touch is a gestural touch rather than a tracking touch based on one finger. In some cases, the presence of only two fingers indicates that the touch is a gestural touch. In other cases, any number of two or more fingers indicates that the touch is a gestural touch. In fact, the gestural touch may be configured to operate whether two, three, four or more fingers are touching, and even if the numbers change during the gesture; i.e., only a minimum of two fingers are needed at any time during the gesture.

[0067] Following block 352, the zoom gesture method 350 proceeds to block 354 where the distance between at least the two fingers is compared. The distance may be from finger to finger or from each finger to some other reference point such as the centroid. If the distance between the two fingers increases (spread apart), a zoom-in signal is generated as shown in block 356. If the distance between two fingers decreases (close together), a zoom-out signal is generated as shown in block 358. In most cases, the set down of the fingers will associate or lock the fingers to a particular GUI object being displayed. For example, the touch sensitive surface can be a touch screen, and the GUI object can be displayed on the touch screen. This typically occurs when at least one of the fingers is positioned over the GUI object. As a result, when the fingers are moved apart, the zoom-in signal can be used to increase the size of the embedded features in the GUI object and when the fingers are pinched together, the zoom-out signal can be used to decrease the size of embedded features in the object. The zooming typically occurs within a predefined boundary such as the periphery of the display, the periphery of a window, the edge of the GUI object, and/or the like. The embedded features may be formed on a plurality of layers, each of which represents a different level of zoom. In most cases, the amount of zooming varies according to the distance between the two objects. Furthermore, the zooming typically can occur substantially simultaneously with the motion of the objects. For instance, as the fingers spread apart or close together, the object zooms in or zooms out at the same time. Although this methodology is directed at zooming, it should be noted that it may also be used for enlarging or reducing. The zoom gesture method 350 may be particularly useful in graphical programs such as publishing, photo, and drawing programs. Moreover, zooming may be used to control a peripheral device such as a camera; i.e., when the fingers are spread apart the camera zooms out, and when the fingers are closed the camera zooms in.

[0068] Figs. 11A-11H illustrate a zooming sequence using the method described above. Fig. 11A illustrates a display presenting a GUI object 364 in the form of a map of North America with embedded levels which can be zoomed. In some cases, as shown, the GUI object is positioned inside a window that forms a boundary of the GUI object 364. Fig. 11B illustrates a user positioning their fingers 366 over a region of North America 368, particularly the United States 370 and more particularly California 372. In order to zoom in on California 372, the user starts to spread his/her fingers 366 apart as shown in Fig. 11C.

As the fingers 366 spread apart further (distance increases), the map zooms in further on Northern California 374, then to a particular region of Northern California 374, then to the Bay area 376, then to the peninsula 378 (e.g., the area between San Francisco and the San Jose Area), and then to the city of San Carlos 380 located between San Francisco and San Jose as illustrated in Figs. 11D-11H. In order to zoom out of San Carlos 380 and back to North America 368, the fingers 366 are closed back together following the sequence described above, but in reverse."

"[0071] Fig. 14 is a diagram of a rotation method 450, in accordance with one embodiment of the present invention. The rotate gesture may be performed on a multipoint touch screen. The rotation method 450 generally begins in block 452 where the presence of a first object and the presence of a second object are detected at the same time. The presence of at least two fingers is configured to indicate that the touch is a gestural touch rather than a tracking touch based on one finger. In some cases, the presence of only two fingers indicates that the touch is a gestural touch. In other cases, any number of two or more fingers indicates that the touch is a gestural touch; in fact, the gestural touch may be configured to operate whether two, three, four or more fingers are touching, and even if the numbers change during the gesture; i.e., only need a minimum of two fingers.

[0072] Following block 452, the rotation method 450 proceeds to block 454 where the angle of each of the fingers is set. The angles are typically determined relative to a reference point. Following block 454, rotation method 450 proceeds to block 456 where a rotate signal is generated when the angle of at least one of the objects changes relative to the reference point. In most cases, the set down of the fingers will associate or lock the fingers to a particular GUI object displayed on the touch screen. Typically, when at least one of the fingers is positioned over the image on the GUI object, the GUI object will be associated with or locked to the fingers. As a result, when the fingers are rotated, the rotate signal can be used to rotate the object in the direction of finger rotation (e.g., clockwise, counterclockwise). In most cases, the amount of object rotation varies according to the amount of finger rotation; i.e., if the fingers move 5 degrees then so will the object. Furthermore, the rotation typically can occur substantially simultaneously with the motion of the fingers. For instance, as the fingers rotate, the object rotates with the fingers at the same time.

[0073] Figs. 15A-15C illustrate a rotating sequence based on the method described above. Using the map of Fig. 11, Fig. 15A illustrates a user positioning his/her fingers 366 over the map 364. Upon being set down, the fingers 366 are locked to the map 364. As shown in Fig. 15B, when the fingers 366 are rotated in a clockwise direction, the entire map 364 is rotated in the clockwise direction in accordance with the rotating fingers 366. As shown in Fig. 15C, when the fingers 366 are rotated in a counterclockwise direction, the entire map 364 is rotated in the counter clockwise direction in accordance with the rotating fingers 366."

6. Closing

As described above, the appellant should not be granted a patent for the invention relating to Claim 22 of the present application in accordance with the provisions of Article 29(2) of the Patent Act.

Accordingly, the present application should be rejected without examining other claims.

Therefore, the appeal decision shall be made as described in the conclusion.

June 10, 2014

Chief administrative judge: WADA, Shiro

Administrative judge: CHIBA, Teruhisa

Administrative judge: YAMADA, Masafumi