shown in FIG. **2** are connected to the operable element **410**. Such processing modules are realizable by means of a PC, for example.

[0117] Factors such as the position and pressure of the user's finger are detected by the sensor **413**, with the information detected by the sensor being acquired by an information processing apparatus (PC), for example. The information processing apparatus determines a voltage and frequency in accordance with the acquired sensor information, and then outputs an electrical signal to the conducting wire **411**. For example, the information processing apparatus may derive the motion of the user's finger from the information detected by the sensor, determine a voltage and frequency in accordance with the results, and then output the resulting electrical signal to the conducting wire **411**.

[0118] When the user's finger is moved over the conducting wire **411** while touching the insulating plate **412**, friction is felt whose magnitude varies according to the electrical signal fed to the conducting wire **411**. The user thus experiences unique user interface feedback in the form of unique frictions set by the electrical signals.

[0119] Similarly to the configuration described earlier, the voltage and frequency of the electrical signal output from the information processing apparatus (PC) or similar device to the conducting wire **411** may be set to arbitrary values in accordance with factors such as the position, motion, and pressure of the user's finger. For example, it is possible to configure an embodiment such that signals with different set values for voltage and frequency are respectively output to a plurality conducting wires installed in the insulating plate **412**.

[0120] As a result of such a configuration, electrical signals having various voltage values and frequencies are input according to the position of the user's finger, thereby causing the user to experience different frictional forces according to the position of his or her finger.

[0121] (b) Exemplary Configuration of a String-Shaped Operable Element

[0122] FIG. **10**B illustrates an exemplary configuration of a string-shaped operable element. The operable element **420** shown in FIG. **10**B includes: a conducting wire **421** made of a conducting material; an insulating layer **422** made of an insulating material; and a sensor **423**.

[0123] An external electrical signal is applied to the conducting wire **421**. If the user then drags his or her finger over the insulating layer **422** while the external electrical signal is being applied to the conducting wire **421**, a predetermined friction is produced.

[0124] The conducting wire **421** and the insulating layer **422** in the configuration shown in FIG. **10**B correspond to the electrode sheet **111** and the insulator **112** in the configuration shown in FIG. **2**. Although only the operable element **420** is shown in FIG. **10**B, processing modules similar to those shown in FIG. **2** are connected to the operable element **420**. Such processing modules are realizable by means of a PC, for example.

[0125] Factors such as the position and pressure of the user's finger are detected by the sensor **423**, with the information detected by the sensor being acquired by an information processing apparatus (PC), for example. The information processing apparatus determines a voltage and frequency in accordance with the acquired sensor information, and then outputs an electrical signal to the conducting wire **421**.

[0126] When the user's finger is moved over the conducting wire **421** while touching the surrounding insulating layer **422**, friction is felt whose magnitude varies according to the electrical signal fed to the conducting wire **421**. The user thus experiences unique user interface feedback in the form of unique frictions set by the electrical signals.

[0127] Similarly to the configuration described earlier, the voltage and frequency of the electrical signal output from the information processing apparatus (PC) or similar device to the conducting wire **421** may be set to arbitrary values in accordance with factors such as the position, motion, and pressure of the user's finger. Consequently, it is possible, for example, to configure an embodiment such that signals with different set values for voltage and frequency are output according to the position of the user's finger on the insulating layer **422**. By inputting electrical signals having various voltage values and frequencies depending on the position of the user's finger, the user is able to experience different frictional forces according to the position of his or her finger.

[0128] The foregoing thus describes a plurality of specific exemplary configurations with reference to FIGS. **6** to **10**B. As described above, in an embodiment of the present invention, factors such as the position and applied pressure of the user's finger are detected by sensors. On the basis of the information detected by the sensors or motion information derived therefrom, an electrical signal with a modified voltage and frequency (such as an alternating voltage signal) is output to a conducting sheet or conducting wire included in the operable element. As a result, it becomes possible to vary the frictional force in accordance with factors such as the position, motion, and applied pressure of the user's finger, thereby enabling the user to experience diverse user interface feedback.

[0129] In an embodiment of the present invention, the operable element may have a two-layer structure made up of a conducting sheet or wire together with an insulator, and may be configured without disposing a large number of electrodes as described earlier with reference to FIG. **1**. Consequently, it is possible to miniaturize the configuration and significantly reduce costs. Moreover, the operable element may also be configured having a flexible structure, and may be utilized in a variety of devices.

[0130] In an embodiment of the present invention, it is possible to independently modify the voltage and frequency to be applied to the conducting sheet or wire of the operable element, thereby enabling the user to experience a variety of user interface feedback variations.

[0131] It is thus possible to appropriately modify the voltage and frequency in accordance with user input conditions such as the position and motion of the user's finger, and in accordance with the information displayed on the operable element. It is thus also possible to provide different user interface feedback depending on the above input conditions or displayed information.

[0132] A processing sequence executed in a user interface feedback apparatus in accordance with an embodiment of the present invention will now be described with reference to the flowchart shown in FIG. **11**. The processing sequence will be described in relation to the processes executed by the respective processing modules shown in FIG. **2**.

[0133] First, in step **S101** the data acquisition module **123** (see FIG. **2**) acquires the sensor information detected by the sensors disposed with respect to the operable element **110**. Herein, the sensor information expresses position, pressure,