[0095] **FIG. 5**(*d*) shows a combination of the drive voltage waveforms from **5**(*a*) and **5**(*c*). The operator first feels a click at the fingertip, and then hears the operation sound to confirm the pressing operation.

[0096] A portable digital assistant (PDA), or a portable data terminal such as a cellular phone is provided with a display plate for showing entered characters, and the content of an incoming call in addition to a vibrating motor for notifying the incoming call, and a speaker for providing a sound for the incoming call. Since it is desirable to reduce the size and the weight of the device as much as possible, it is impossible to install an additional vibrating part such as a conventional piezoelectric actuator or a vibrating motor for vibrating the display plate. No previous product has been capable of vibrating the display plate. With the present invention, simply attaching the piezoelectric substrate **2** to the display plate, and changing the drive voltage waveform as described, above satisfies all these features.

[0097] Referring now to **FIG. 6, a** second drive circuit **11** is used to generate the waveforms of FIGS. **5**(*a*)-**5**(*d*). An oscillation circuit for vibration **15** shown in **FIG. 6** is substituted for the first drive circuit **10**, for generating the individual drive voltage waveforms shown in FIGS. **5**(*b*) to **5**(*d*) to continuously drive the piezoelectric substrate **2** for a certain period.

[0098] An oscillating circuit for step-up **16** oscillates at 20 to 30 kHz when a DC low voltage power supply of several volts is used in the second drive circuit **11**. A step-up circuit **17** connected with the oscillating circuit for step-up **16** controls switching of a current flowing through a transformer with the period determined by the oscillating circuit for step-up **16**, steps up several volts from the DC low voltage power supply to a DC voltage of several dozens of volts, and provides an amplifier circuit **18** with the voltage.

[0099] The oscillating circuit for vibration **15** generates a drive signal with a frequency for vibrating the support substrate **4**, and provides the amplifier circuit **18** with the drive signal. The amplifier circuit **18** uses the DC voltage provided from the step-up circuit **17** to amplify the drive signal, and the amplified signal to a gate circuit **19**.

[0100] A pulse width generating circuit **20** is also connected to an input of the gate circuit **19**. The pulse width generating circuit **20** generates a pulse with a width for vibrating the support substrate **4** when a pressure is detected. The pulse width generating circuit **20** receives a vibration trigger generated by the pressure detecting circuit. The gate circuit **19** impresses the drive signal from the amplifier circuit **18** as the drive voltage on the drive electrodes **2***a* and **2***b* of the piezoelectric substrate **2** while the gate circuit **18** receives the pulse.

[0101] The second drive circuit **11** allows freely setting the frequency of the drive signal generated from the oscillation circuit for vibration **15**, and the pulse width generated from the pulse width generating circuit **20** for generating an arbitrary drive voltage waveform such as the drive voltage waveforms exemplified in the individual drawings in FIGS. **5**(*a*)-**5**(*d*).

[0102] While the piezoelectric substrate **2** is provided between the movable plate **3** and the support substrate **4** in the first embodiment, the piezoelectric substrate **2** may be fixed to any part on the movable plate **3** or to the support substrate **4** to embody the present invention.

[0103] Referring now to **FIG. 7, a** touch panel input device **30** according to a second embodiment of the present invention employs a piezoelectric substrate **2** fixed to the rear surface of the support substrate **4**. Because the second embodiment is the same as the first embodiment, except for the installation position of the piezoelectric substrate **2**, the same numerals are assigned to the identical parts, and detailed description is omitted.

[0104] The piezoelectric substrate **2** is fixed to a part of a rear surface of the support substrate **4**. A Y impressing side leader electrode **9***a* is formed through one drive electrode **2***a* using an adhesive layer **31**. Because the leads **12***c* and **12***e* on the rear surface of the movable plate **3** are not used for electrically connecting the pair of drive electrodes **2***a* and **2***b* to external circuits including the drive circuit **10** or **11** as in the first embodiment, leads provided independently (not shown) are used for electrical connection.

[0105] Because the Y impressing side leader electrode **9***a*, which is electrically connected with the fixed conductor layer **7**, cannot serve as the drive electrode **2***a*, the Y impressing side leader electrode **9***a* is printed and formed at the position where the drive electrode **2***a* is fixed in the first embodiment **1** as shown in the drawing.

[0106] The drive circuits **10** and **11** impress the drive voltage on the pair of drive electrodes **2***a* and **2***b* when a pressure is detected as in the first embodiment. The contraction and expansion of the piezoelectric substrate **2** vibrates the support substrate **4**. An operator feels the vibration at the fingertip through the movable plate **3** in contact with the support substrate **4**, and recognizes that a pressing operation is conducted.

[0107] The touch panel input device **30** according to the present embodiment uses a conventional touch panel input device without changing its constitution, and simply fixes a piezoelectric substrate **2** to the touch panel input device for adding a vibration feature.

[0108] The adhesive layer **5** for adhering the individual frames **3**A and **4**A of the movable plate **3** and the support substrate **4** to each other may be an adhesive layer for fixing these faces opposing to each other.

[0109] Because both the movable plate **3** and the support substrate **4** are formed with a transparent material in the present embodiment, the touch panel input device **30** is placed on a display device such as a liquid crystal panel and a CRT, an operator presses the input operation surface **3** a while seeing a displayed content, a pressed position is detected, and instruction input data corresponding to the displayed content are provided for a processing device such as a personal computer.

[0110] The display device is placed on the rear surface of the support substrate **4**. A light-emitting element for illumination such as a light-emitting diode is also placed on the rear surface of the support substrate **4** in this application form. The display device, the light-emitting element or the wiring for them may generate high frequency noise. The support substrate **4** which serves as an insulating substrate acts as dielectrics. In this case, the noise is superimposed on the leader electrode **9***a* and **9***b* formed on the support