

1). Of course a tactile icon actuator can also be implemented as other kinds of devices, including for example a solenoid or a piezoelectric actuator. In the case of a piezoelectric actuator, not only the frequency of the vibration but also its amplitude could be varied.

[0045] The vibration motor or other means for producing vibration can be located either in the mobile phone as a separate component (as indicated in FIG. 1), or in the battery 116, or as a separate component attachable to the mobile phone, or as a separate component or part of a component coupled only electrically to the mobile phone (to receive commands from the microcontroller 106) but physically attached to the user of the mobile phone so as to communicate vibration patterns to the user, such as a vibratable device (for example, a piezoelectric disk) included in a wristband to be worn by a user and connected electrically to the controller 106.

[0046] The invention is also intended to comprehend other tactile sensations besides those created by actual mechanical vibrations, such as tactile sensations caused by puffs of air or tactile sensations caused by a small electric current (what is called electro-tactile stimulation, using two electrical contact areas on the skin of the user receiving the tactile sensation). As already mentioned, low frequency vibrations can also be produced by artificially shaking some inside parts of a mobile phone such as the battery, or by moving a component of a mobile phone, including for example opening and closing a flip or by sliding back and forth a component that slides.

[0047] Scope of the Invention

[0048] It is to be understood that the above-described arrangements are only illustrative of the application of the principles of the present invention. Numerous modifications and alternative arrangements may be devised by those skilled in the art without departing from the spirit and scope of the present invention, and the appended claims are intended to cover such modifications and arrangements.

What is claimed is:

1. An apparatus, comprising:

- a) means (100) for producing a tactile sensation for a user of the apparatus in response to a control signal; and
- b) a control means (106), responsive to a tactile sensation pattern signal and responsive to an instructions signal for instructing how to interpret a tactile sensation pattern, for providing the control signal;

wherein the tactile sensation is expressive of information intended to be communicated to the user of the apparatus and exclusive of information indicating a call is waiting to be answered.

2. An apparatus as in claim 1, further comprising means (140a) for providing the instructions on how to interpret a tactile sensation pattern.

3. An apparatus as in claim 2, further comprising means (140b 140c 140d 140e) for creating a tactile sensation pattern and at least temporarily storing the tactile sensation.

4. An apparatus as in claim 3, wherein the means (140b 140c 140d 140e) for creating a tactile sensation includes:

- a) means (140b) for composing and editing a tactile sensation;
- b) a data store (140e) for storing a plurality of tactile sensation patterns; and
- c) means (140d) for selecting a tactile sensation pattern from the data store.

5. An apparatus as in claim 3, wherein the means (140b 140c 140d 140e) for creating a tactile sensation includes:

- a) means (140c) for downloading and editing a tactile sensation;
- b) a data store (140e) for storing a plurality of tactile sensation patterns; and
- c) means (140d) for selecting a tactile sensation pattern from the data store.

6. An apparatus as in claim 3, wherein the means (100) for producing a tactile sensation is selected from the group consisting of: an eccentric electric motor, an intermittent source of air flow, an electric signal, a razor-type linear vibrator, a solenoid, a piezoelectric material, means for shaking a component of the apparatus, means for sliding back and forth a component of the apparatus, means for opening and closing a flip of the apparatus, and means for moving a sliding component back and forth.

7. An apparatus as in claim 3, wherein the means for producing a tactile sensation is electrically coupled to the control means but is physically attached to the user of the apparatus.

8. A wireless terminal including an apparatus as in claim 1.

9. A communication system including a base station and also including an wireless terminal as in claim 9.

10. A method for use by a wireless terminal, comprising:

- a) a step (401), responsive to a tactile sensation pattern and responsive to instructions on how to interpret a tactile sensation pattern, of providing a control signal; and
- b) a step (402), responsive to the control signal, of producing a tactile sensation sensible to a user of the mobile phone;

wherein the tactile sensation is expressive of information intended to be communicated to the user of the apparatus and exclusive of information indicating a call is waiting to be answered.

\* \* \* \* \*