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Fukumoto et al.

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(54) **ELECTRONIC DEVICE, VIBRATION GENERATOR, VIBRATION-TYPE REPORTING METHOD, AND REPORT CONTROL METHOD**

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G09G 5/00 (2006.01)

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345/158, 179, 173, 161, 169; 702/56; 703/7;
715/771, 773; 381/111; 720/624; 700/245;
318/568.11; 361/179, 182; 178/18.04

See application file for complete search history.

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Primary Examiner—Richard Hjerpe

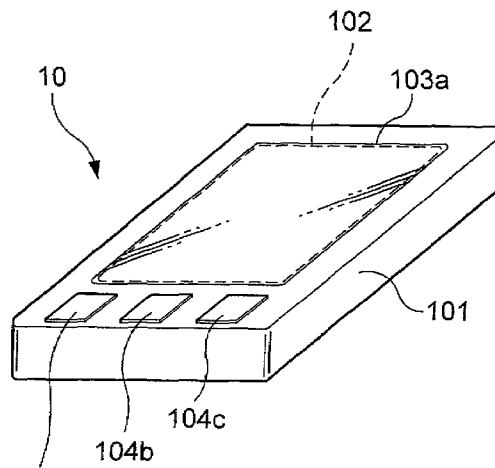
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(57) **ABSTRACT**

An electronic device drives an oscillatory actuator to cause generation of vibration when it is detected that an operation input to a touch panel or operation key has been received. The electronic device causes, by this vibration, the touch panel and operation key to vibrate in a direction perpendicular to their respective front surfaces. Alternatively, the housing of the electronic device is made to vibrate. Further, the oscillatory actuator has a weight, a support member for supporting the weight to allow it to reciprocate, and connected to the touch panel or housing or other vibratory member of the electronic device, or vibratory member of the base member of the oscillatory actuator in contact with the vibratory member, and a mechanism for imparting a magnetic force or electrostatic force to cause reciprocal movement of the weight.

82 Claims, 53 Drawing Sheets



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FIG. 1

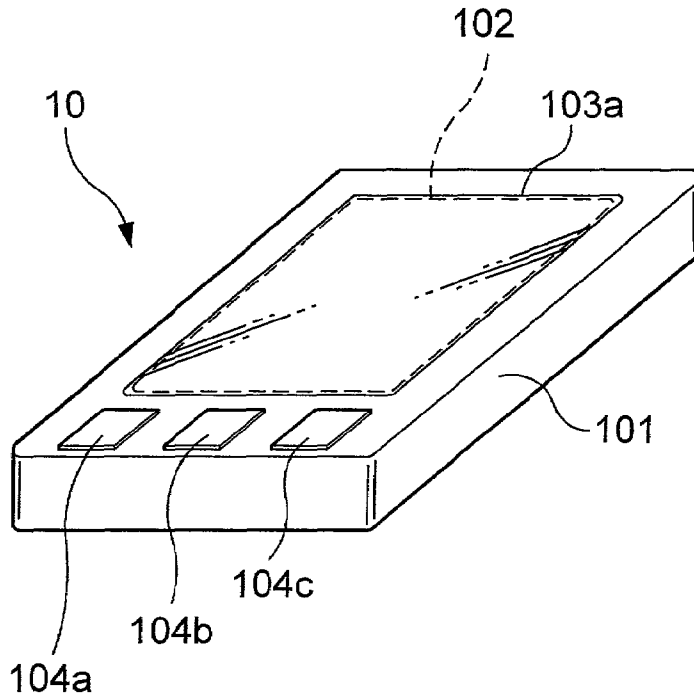


FIG. 2

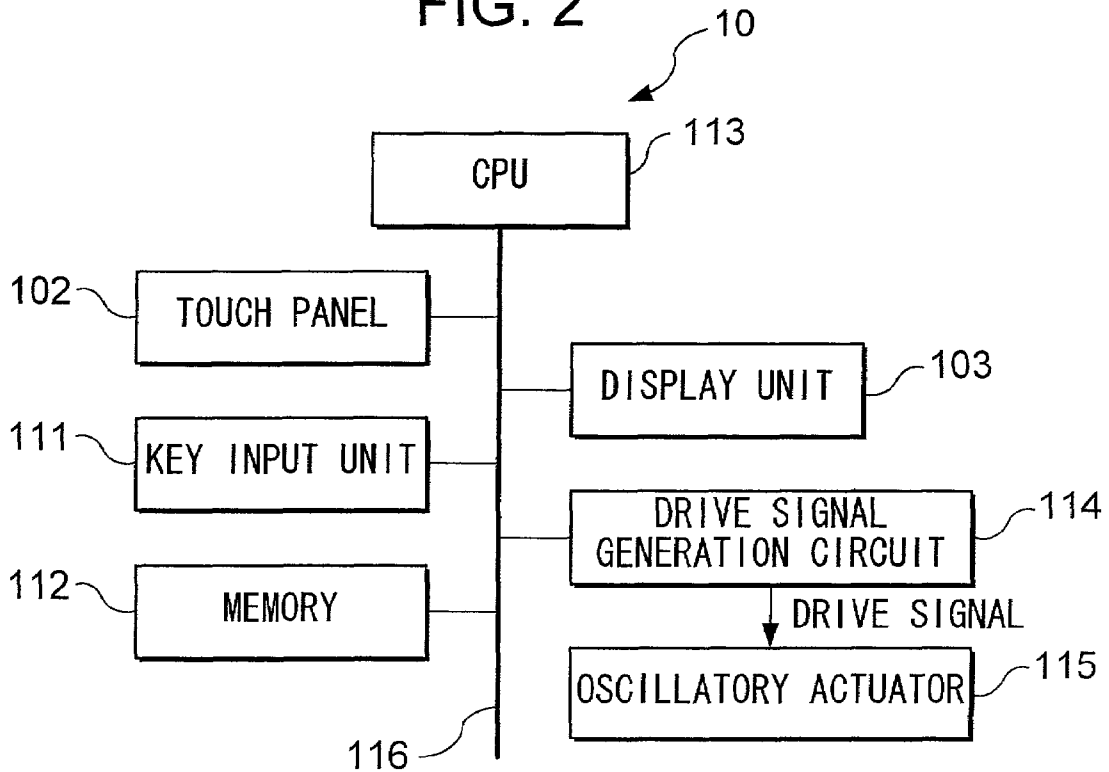


FIG. 3

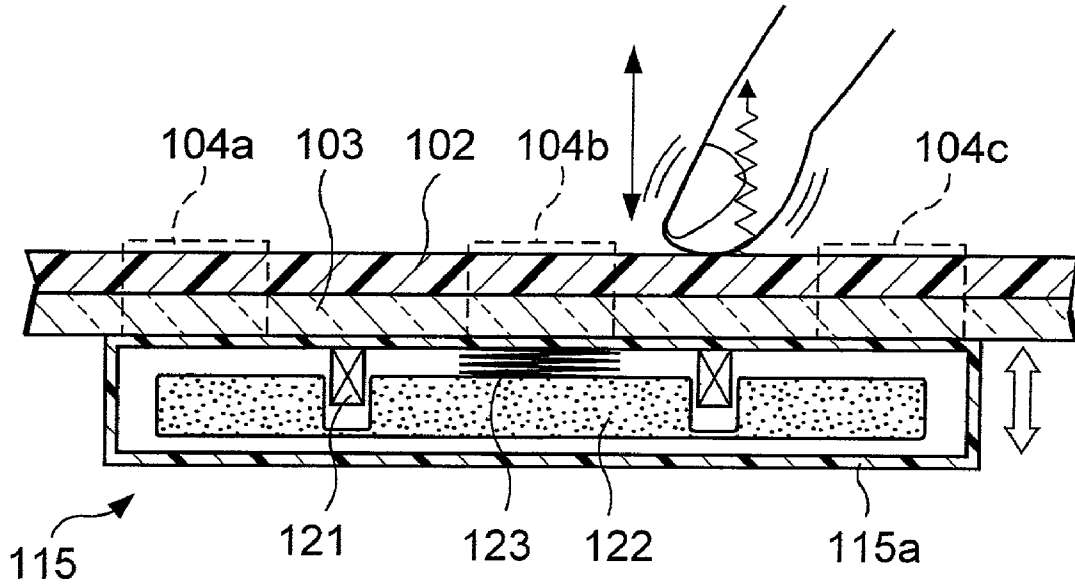


FIG. 4

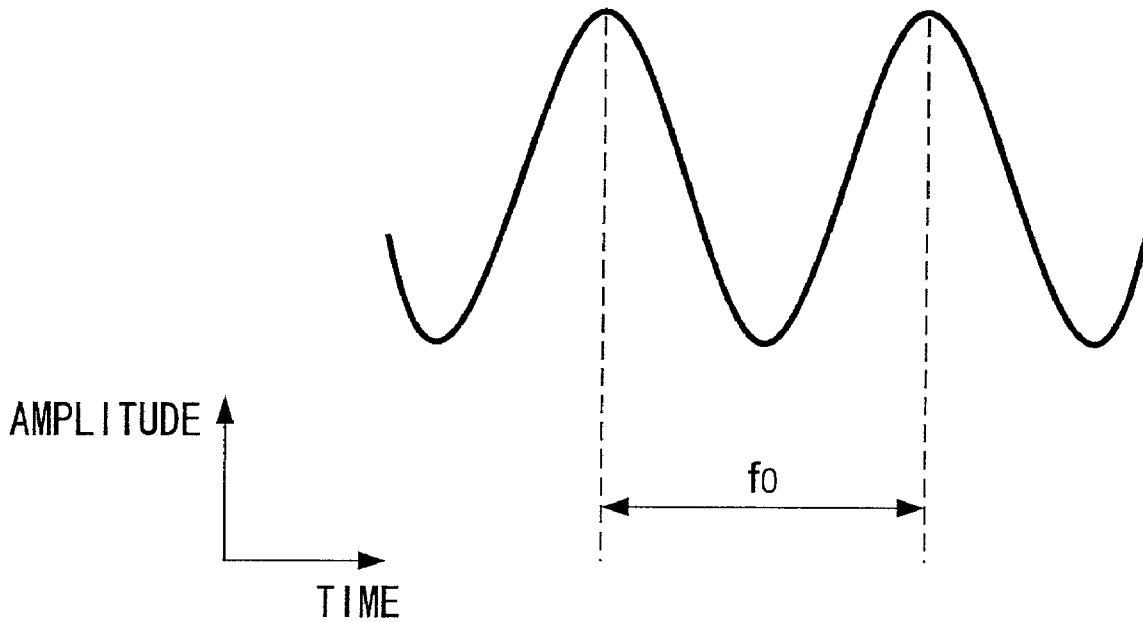
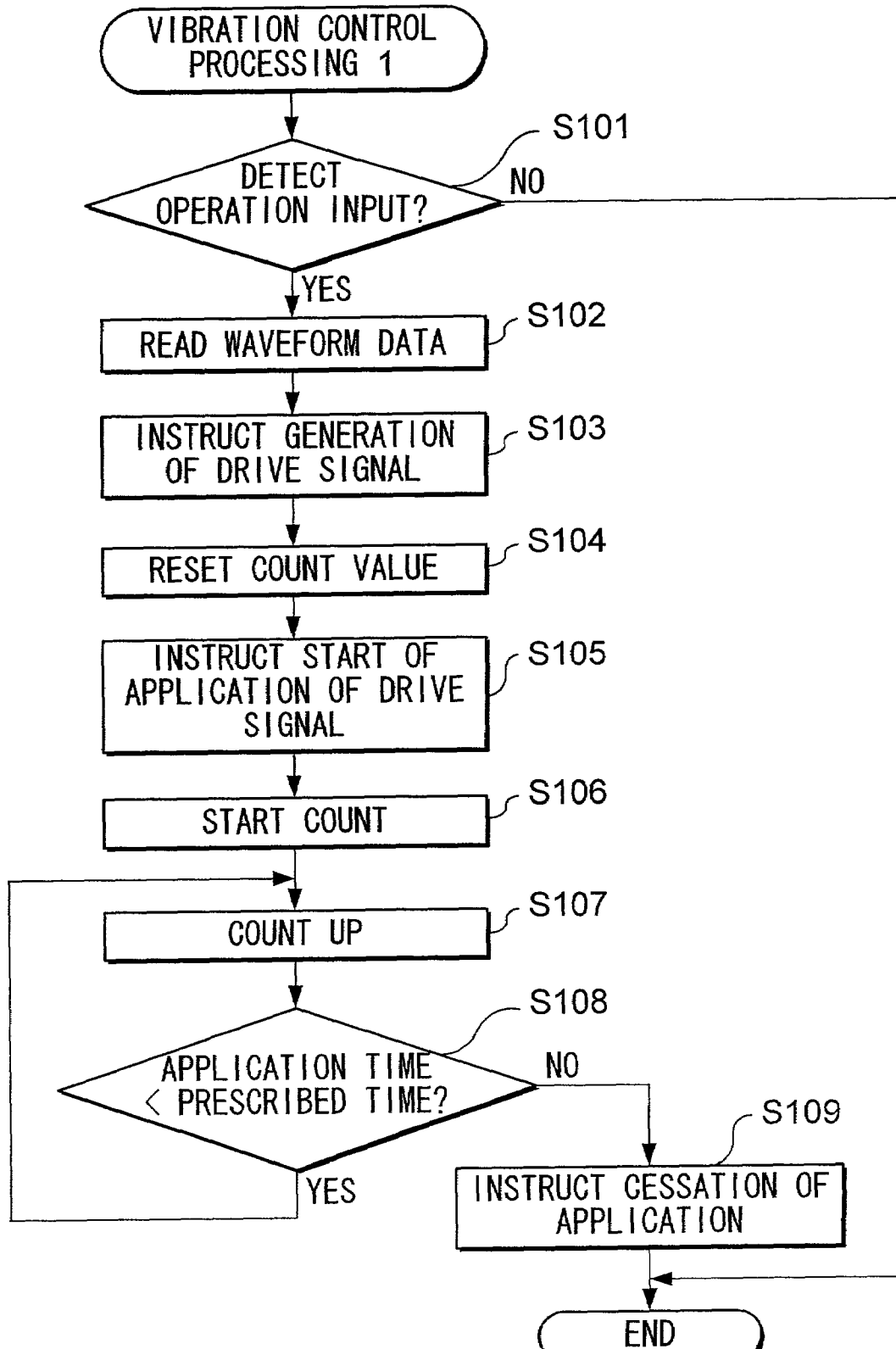


FIG. 5



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