

[0085] The present invention is applicable to a portable terminal capable of successively pressing a plurality of movable pins to represent Braille characters.

[0086] It is needless to say that the present invention is not limited to the foregoing embodiments. It is therefore understood that numerous modifications and variations can be devised by those skilled in the art without departing from the scope of the appended claims. Accordingly, such modifications and variations are, unless they depart from the scope of the present invention as delivered from the claims appended hereto, to be construed as included therein.

[0087] In the second and third embodiments, for example, a shift direction of Braille characters is adjusted without use of a separate switch. However, the present invention is not limited to this example. For example, the respective switches on the portable terminal **100** may be used as follows. That is, Braille characters corresponding to two hiragana characters are displayed on the movable pin array **116**, and then Braille characters corresponding to subsequent two hiragana characters are displayed in such a manner that a user presses an optional switch of the operating part **120**.

1. A Braille-character display device comprising:
 - a movable pin array having a plurality of movable pins arranged in a matrix form;
 - a plurality of movable pin pressing parts pressing the plurality of movable pins, respectively;
 - a Braille-character generating part generating Braille characters; and
 - a movable pin controlling part allowing the movable pin pressing parts to press the movable pins corresponding to a pattern of the generated Braille characters.
2. The Braille-character display device according to claim 1, wherein
 - the movable pin controlling part shifts the pattern of the Braille characters formed by the movable pins in a certain direction.
3. The Braille-character display device according to claim 2, wherein
 - the movable pins move successively in a vertical direction to form a sentence.
4. The Braille-character display device according to claim 3, wherein
 - the certain direction is one of an up direction, a down direction, a left direction and a right direction each corresponding to the arrangement direction of the movable pin.
5. The Braille-character display device according to claim 4, further comprising
 - a plurality of tilt detecting parts detecting a tilt direction and a tilt angle of the movable pins, wherein
 - the movable pin controlling part shifts the pattern of the Braille characters formed by the movable pins, in a direction opposite to the tilt direction detected by the tilt detecting parts, at a shift speed corresponding to the tilt angle.

6. The Braille-character display device according to claim 4, further comprising
 - a movement detecting part detecting a movement direction and a movement amount of the Braille-character display device itself, wherein
 - the movable pin controlling part shifts the pattern of the Braille characters formed by the movable pins, in a direction opposite to the movement direction detected by the movement detecting part, by the movement amount.
7. The Braille-character display device according to claim 1, wherein
 - the movable pin has a section smaller than a bottom surface of each dot of the Braille characters,
 - the plurality of movable pins form the respective dots of the Braille characters, and
 - a contour formed by the plurality of movable pins is a substantially hemispherical shape.
8. The Braille-character display device according to claim 1, wherein
 - the Braille-character generating part generates the pattern of the Braille characters from data of a character string in the Braille-character display device.
9. The Braille-character display device according to claim 1, further comprising
 - a voice recognizing part recognizing voice of audio data in the Braille-character display device, wherein
 - the Braille-character generating part generates the pattern of the Braille characters from the recognized voice.
10. The Braille-character display device according to claim 1, wherein
 - the movable pin pressing part presses the movable pin by an electromagnetic force.
11. A Braille-character display device comprising
 - a plurality of movable pins, wherein
 - the plurality of movable pins are adjusted in height at not less than three levels to form one character.
12. The Braille-character display device according to claim 11, wherein
 - the plurality of movable pins are adjusted in height at four levels.
13. The Braille-character display device according to claim 12, wherein
 - a hemispherical shape is substantially formed by the movable pins with different levels in height.
14. The Braille-character display device according to claim 11, wherein
 - the plurality of movable pins move successively in a vertical direction to form a sentence.
15. A portable terminal comprising
 - the Braille-character display device according to claim 1,
 - the portable terminal having portability.

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