In such a braille display device **30**, as shown in FIG. **4**, the use of a plurality of units **31** arranged in the crosswise direction allows display of a plurality of braille letters in one line. In this case, since the braille display device **30** of this embodiment adopts a linear movement mechanism **17** having the stepper motor **20** and the linear cam **16**, the dimension of the unit **31** in the crosswise direction can be reduced. Therefore, the units **31** are located so that braille letters displayed by the adjoining units **31** are not apart from each other, which makes it possible to reduce the display width and to increase the amount of information to be displayed in one line.

Although the butting surface **14***c* to butt against the front end surface **16***a* of the linear cam **16** is adopted as the reset means **22** in the above-mentioned first and second embodiments, a butting surface **14***c* to butt against a rear end surface **16***b* of the linear cam **16** may be adopted instead. Furthermore, a butting surface **14**c to butt against a stopper (not shown) placed in an arbitrary position on the linear cam **16** may be formed in the casing **14**.

Instead of the butting surface **14***c*, a sensor (not shown), such as a proximity switch or a microswitch, for detecting the predetermined position of the linear cam **16** may be provided so that the original position of the stepper motor **20** is set based on a detection signal from this sensor.

In the above-mentioned embodiments, although the feed screw mechanism **21** composed of the male screw **21***a* formed on the shaft **19** and the female screw **21***b* formed in the linear cam **16** is adopted as a conversion means for converting a rotary motion of the stepper motor **20** into a linear motion of the linear cam **16**, a conversion means composed of, for example, a rack gear **35** and a worm gear **36** shown in FIG. **5** may be adopted instead.

Although four pins **11** are arranged in one row in the above embodiments, three or less, or five or more pins **11** may be arranged in one line instead.

Furthermore, although the movement direction of the pins **11** is the vertical direction and that of the linear cam **16** is the horizontal direction, the movement directions thereof are not limited to the above directions, and to not have to be orthogonal to each other.

As described in detail above, a binary information display device according to the present invention comprises a support member for supporting a plurality of pins arranged in parallel at regular intervals so that the pins can move separately and linearly along the axial direction, and a drive mechanism for pushing one end of each of the pins to extrude and retract the other end of the pin from and into a display surface. The drive mechanism is composed of a linear cam to be moved in a direction orthogonal to the axis of the pins so as to move the pins in the axial direction by recesses and projections on the surface of the linear cam. A linear movement mechanism for moving the linear cam linearly is provided and has a stepper motor for rotating a shaft on the axis orthogonal to the pins, a conversion means for converting a rotary motion of the shaft into a linear motion of the linear cam, and a reset means located near a movement area of the linear cam to set an original position of the stepper motor when the linear cam reaches a reference position. Therefore, the binary information display device has several advantages.

First, since the drive mechanism for driving the pins is embodied by a linear cam, it is possible to cope with the increase in number of pins with the increase in amount of binary information to be displayed without increasing the size of the drive mechanism in the crosswise direction. Therefore, downsizing of the device can be easily achieved, and this is particularly effective in a case in which a plurality of rows of pins are located adjacent to one another as in a braille display device.

The adoption of a reset means makes it possible to set the original position of a stepper motor without using any expensive rotational position detector having a complicated structure. It is thereby possible to get the most out of the greatest advantage of the stepper motor in its capability to achieve high-precision control in a simple structure and to provide an inexpensive device.

Furthermore, the adoption of the stepping motor is also advantageous in that the whole device including a power supply circuit can be downsized.

In the above-mentioned binary information display device, if the reset means is formed by a stopper to be butted against the linear cam, which has reached a reference position from one direction, to stop the further movement of the linear cam in the same direction, in addition to the above effects, the original position of the stepper motor can be reset most simply.

Furthermore, if the reset means is formed by a sensor for sensing the linear cam, which has reached the reference position and for transmitting an original position reset signal to the stepper motor, it is possible to provide a binary information display device having a simple structure similar to above.

I claim:

1. A binary information display device, comprising:

a plurality of pins, each said pin having opposed first and second ends and a longitudinal axis extending between said ends, said pins being arranged at regular intervals with their axes being parallel;

a support member for supporting said pins so that said pins can move separately and linearly along; and

a drive mechanism for pushing the second end of each of said pins to extrude and retract the second end of said pin from and into the display surface on said support member, said drive mechanism comprising a linear cam having an uneven cam surface with recesses and projections and being in sliding contact with the first end of each said pin, said linear cam being movable in a direction orthogonal to the axes of said pins to move said pins in their respective axial directions, and a linear movement mechanism for moving said linear cam linearly, said linear movement mechanism having a shaft extending in the direction orthogonal to the axes of the pins, a stepper motor for rotating the shaft, conversion means located between said shaft and said linear cam for converting rotation of said shaft into a linear motion of said linear cam, and reset means located near a moving area of said linear cam to set an original position of said stepper motor when said linear cam reaches a reference position.

2. A binary information display device according to claim **1**, wherein said reset means is a stopper to be butted against said linear cam, which has reached the reference position from one direction, to stop further movement of said linear cam in the same direction.

3. A binary information display device according to claim **1**, wherein said reset means is a sensor for sensing said linear cam, which has reached the reference position, and for transmitting an original position reset signal to said stepper motor.

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