

For the representation of characters, only the inner character fields 6 are used, while the character elements framing these are cleared. Thus, the inner character fields 6 have a distinct spacing apart from one another, so that the Braille characters do not flow together. As was already described above, the arrangement and number of character fields on the reading table 2 correspond to the arrangement and number of characters n a viewing screen page in the video or viewing screen text system. Accordingly, 24 lines of 40 outer character fields 8 each are provided.

The segment of the reading table 2 represented in FIG. 2 corresponds to the segment represented in FIG. 1. In turn, individual fields can be defined in the totality of the character elements. In the present case these fields correspond to the outer character fields 8 according to FIG. 1. Each of these character fields can be considered as a matrix block 8a with 2×3 matrix elements 10 each, as is represented in FIG. 2, upper left. Each matrix element 10 in turn is formed by a 2×2 matrix of character elements 4. It may be mentioned once more at this point that the division of the totality of character elements into single fields is to be understood as purely organizational and for example is done by way of constructional details or control technique. The boundary lines of the separate fields as represented in FIGS. 1 and 2 do not really exist but rather serve only for better visibility. The matrix block 8a in FIG. 2 is particularly suited for reproducing the graphic symbols used in video text and viewing screen text pages which as is known show 2×3 picture elements each and which likewise occupy the area of a print character. Accordingly, all of the graphic symbols can be readily displayed on the reading table 2, for example, by having dark picture elements represented by set character elements and bring picture elements represented by cleared and character elements.

FIGS. 3 to 6 respectively show a character field 8 and 8a with characters represented in these character fields. In FIG. 3 only the inner character field 6 is used for representing a character in Braille code.

Dark points correspond to set character elements, bright points to cleared character elements. The character represented is the capital letter Z in Braille print. The character elements 4 framing the inner character field 6 are cleared. In this way each Braille form is separated by two point spacings from the adjacent form, so that the separate characters do not flow into each other.

FIG. 4 shows a character field 8a in which symbols which go out beyond the Braille form but are displayable within one character field can be reproduced. FIG. 4 shows as an example the reproduction of the arrow symbol 12 displayed beside the character field.

In FIG. 5 the character field according to FIG. 2, upper left, is divided into 2×3 matrix blocks. The graphic symbol 14 displayed beside the character field 8a, which symbol is used on viewing screen pages for displaying large-area graphics, is displayed on the reading table in the manner presented in FIG. 5.

FIG. 6 shows a character field 8a in which the graphic symbol 16 displayed at the right next to this character field is reproduced from the enlarged video text character set provided.

Only a coarse definition of graphic symbols is possible with the character field of 4×6 character elements, mentioned only as an example. 4×6 points represent the minimum number of points. A better definition is possible

by increasing the number of points; an odd number of rows and columns permits a symmetrical structure of characters with oblique lines, but rectangular symbols are distorted. Since the point spacing cannot be reduced to below a certain minimum without impairing the readability, an increase in the number of points is attainable only by enlarging the reproduction field. The danger here is that the character field will become indistinct.

FIG. 7 diagrammatically shows a control unit 17 for driving a tactile reading table intended for the reproduction of viewing screen pages. Under the control of a microprocessor 18, the picture information signals applied to the input terminals 20 are loaded into the page memory 22. From there they reach a character generator 24 which converts the picture information signals into the dot screen code of the reading table. The character generator, in a suitable manner described in more detail below, drives the operating drive for the character elements until the viewing screen page is transferred to the reading table.

In order to accommodate the number of characters required for the display of one viewing screen page, on a reading table with ergonomically rational dimensions, the character elements and especially their operating drive must be made in a very simple form. FIG. 8 shows a lengthwise section of a character element 4, which is in the form of a cap-like knob made of an elastic material and projecting out of the reading table 2 in its set position. For clearing, this knob can retract, a FIG. 9 shows. Simple pistons acting on the setting direction and the clearing direction may, for example, be used for operating the knobs, the lateral space requirement for which pistons does not extend out beyond the knobs. The knobs 4 are made integral with the reading table 2 and made of an elastic material. A solid base plate 26 serves for supporting the elastic reading table, for example.

FIG. 10 shows a reading table 2 which is made as an endless belt moving in the line direction. This is guided over two deflector rollers 28,30. In the reading region the belt runs over a solid base plate 26. Pistons 27 arranged under the top side of the belt 2 in the column direction serve for setting the character elements 4, which pistons at the same time can operate the character elements of one column. After the setting of one column, the belt 2 moves on in the direction of the arrow 32 by the amount of one point spacing, so that the next column can be written, until the whole reading table is written. A clearing roller 34 situated against the lower side of the belt 2 serves for clearing the character elements, the surface of which roller is equipped with projections 36 corresponding to the arrangement of character elements on the belt 2. These projections retract the character elements 4 back into their cleared position, as FIG. 9 shows. The projected or retracted position of the knobs 4 is inherently stable, so that they cannot be reset by the feeling pressure of the finger of the person reading. Therefore, any measures for holding the knobs stationary in their respective positions are unnecessary.

FIG. 11 shows a reading table 102 which is formed as an endless belt moving in the column direction. It is guided over deflector rollers 128,130 and is moved in any desired manner, not represented in detail, in the direction of the arrow 132. Operating pistons 127 are arranged under the top side of the belt 102 in the line direction, which pistons can respectively set a line of knobs at the same time. By this arrangement, the picture