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Lee et al.

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(54) **RATE-7/8 MAXIMUM TRANSITION RUN CODE ENCODING AND DECODING METHOD AND APPARATUS**

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(51) **Int. Cl.**
H03M 7/00 (2006.01)

(52) **U.S. Cl.** 341/59; 341/50; 341/58

(58) **Field of Classification Search** 341/50, 341/58, 59
See application file for complete search history.

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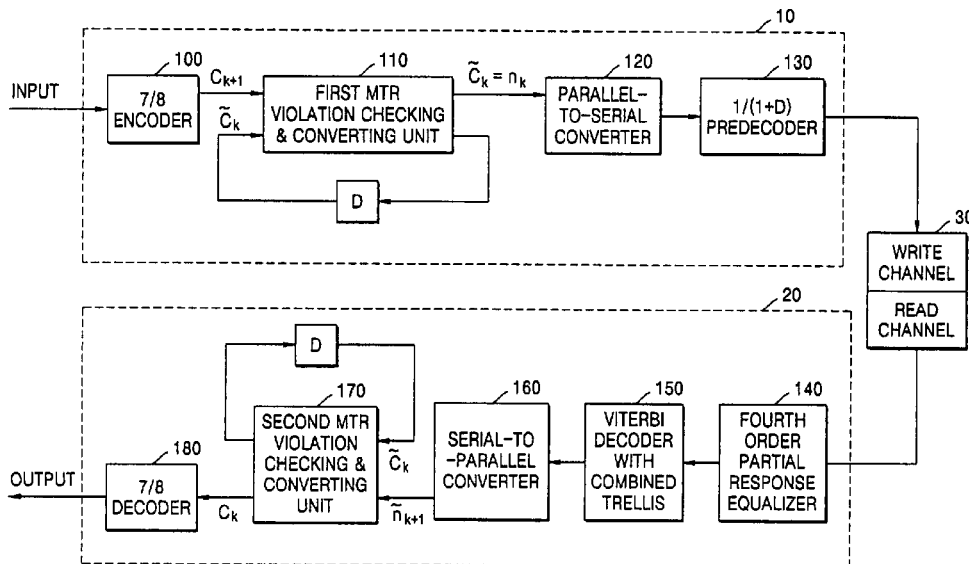
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(57) **ABSTRACT**

A rate 7/8 MTR code encoding/decoding method and apparatus. The encoding method includes: generating a rate-7/8 MTR code for inputting 7-bit data and outputting a predetermined 8-bit codeword; checking whether codewords satisfy a predetermined constraint condition by connecting the 8-bit codeword and a subsequent 8-bit codeword; and if the codewords do not violate the constraint condition, not converting the codewords. The decoding method includes: checking whether the codewords satisfy a predetermined MTR constraint condition by connecting a current 8-bit codeword $c(k)$ and a subsequent 8-bit codeword $c(k+1)$; if the codewords violate the constraint condition, converting the codewords, and if the codewords do not violate the constraint condition, not converting the codewords; and decoding each converted 8-bit codeword into 7-bit data using a predetermined MTR code. Data is reliably reproduced with high write density, and large amounts of data are stored in and reproduced from a magnetic recording information storage medium.

14 Claims, 7 Drawing Sheets



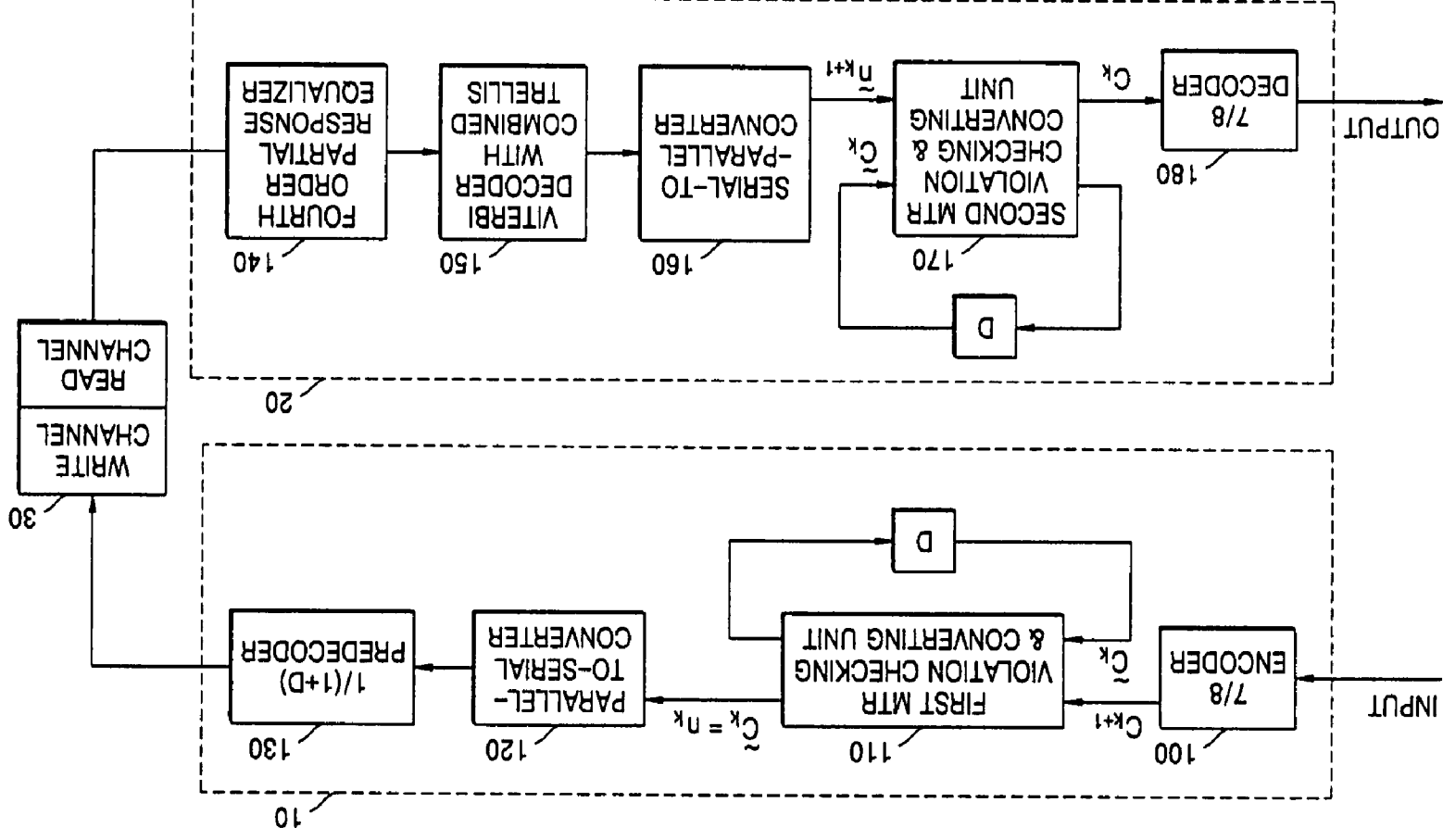


FIG. 1

FIG. 2

Source	Codeword	Source	Codeword	Source	Codeword	Source	Codeword
0000000	00000010	0100000	00110101	1000000	10000010	1100000	10110101
0000001	00000100	0100001	00110110	1000001	10000100	1100001	10110110
0000010	00000101	0100010	01000001	1000010	10000101	1100010	00000011
0000011	00000110	0100011	01000010	1000011	10000110	1100011	00001011
0000100	00001000	0100100	01000100	1000100	10001000	1100100	00010011
0000101	00001001	0100101	01000101	1000101	10001001	1100101	00100011
0000110	00001010	0100110	01000110	1000110	10001010	1100110	00101011
0000111	00001100	0100111	01001000	1000111	10001100	1100111	00110011
0001000	00001101	0101000	01001001	1001000	10001101	1101000	01000011
0001001	00010000	0101001	01001010	1001001	10010000	1101001	01001011
0001010	00010001	0101010	01001100	1001010	10010001	1101010	01010011
0001011	00010010	0101011	01001101	1001011	10010010	1101011	01100011
0001100	00010100	0101100	01010000	1001100	10010100	1101100	01101011
0001101	00010101	0101101	01010001	1001101	10010101	1101101	10000011
0001110	00010110	0101110	01010010	1001110	10010110	1101110	10001011
0001111	00011000	0101111	01010100	1001111	10011000	1101111	10010011
0010000	00011001	0110000	01010101	1010000	10011001	1110000	10100011
0010001	00011010	0110001	01010110	1010001	10011010	1110001	10101011
0010010	00100001	0110010	01011000	1010010	10100001	1110010	10110011
0010011	00100010	0110011	01011001	1010011	10100010	1110011	11010001
0010100	00100100	0110100	01011010	1010100	10100100	1110100	11010010
0010101	00100101	0110101	01100001	1010101	10100101	1110101	11010011
0010110	00100110	0110110	01100010	1010110	10100110	1110110	11010100
0010111	00101000	0110111	01100100	1010111	10101000	1110111	11010101
0011000	00101001	0111000	01100101	1011000	10101001	1111000	11010110
0011001	00101010	0111001	01100110	1011001	10101010	1111001	11011000
0011010	00101100	0111010	01101000	1011010	10101100	1111010	11011001
0011011	00101101	0111011	01101001	1011011	10101101	1111011	11011010
0011100	00110000	0111100	01101010	1011100	10110000	1111100	00011011
0011101	00110001	0111101	01101100	1011101	10110001	1111101	01011011
0011110	00110010	0111110	01101101	1011110	10110010	1111110	10011011
0011111	00110100	0111111	10000001	1011111	10110100	1111111	11011011

FIG. 3

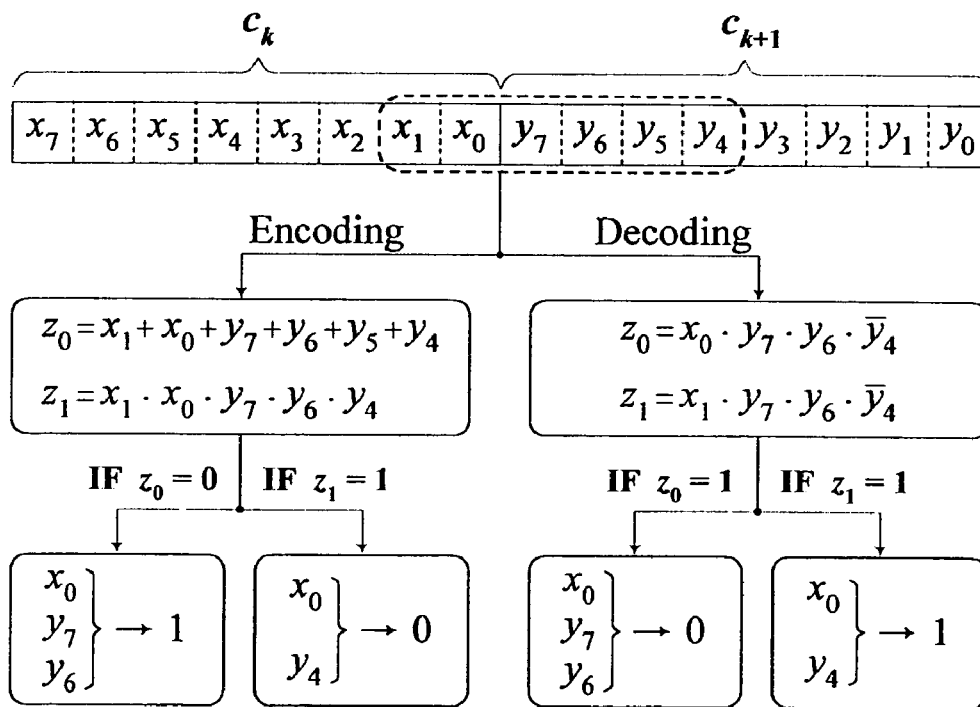
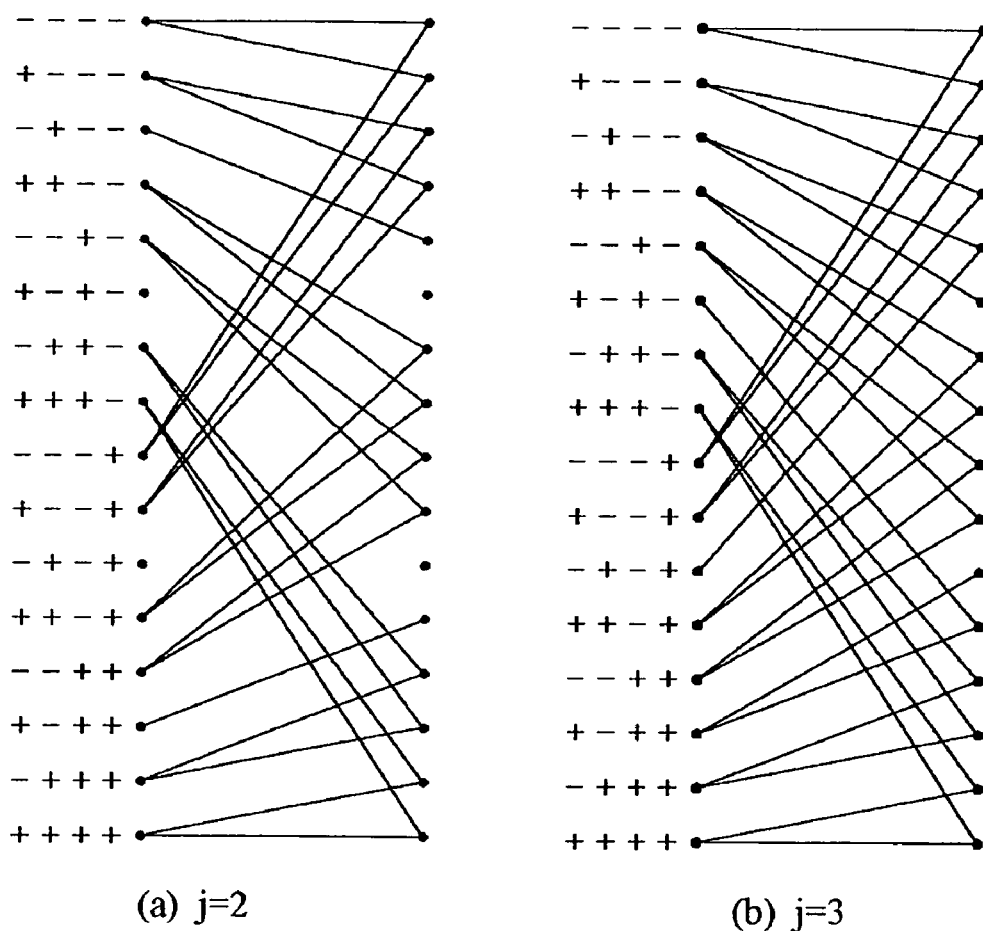


FIG. 4



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