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United States Patent [19]

Kato

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[45] Date of Patent: Feb. 21, 1995

[54] **METHOD AND APPARATUS FOR ENCODING AND DECODING**

[75] Inventor: **Shiro Kato**, Osaka, Japan

[73] Assignee: **Matsushita Electric Industrial Co., Ltd.**, Osaka, Japan

[21] Appl. No.: **885,940**

[22] Filed: **May 20, 1992**

[30] **Foreign Application Priority Data**

May 21, 1991 [JP] Japan 3-116008
Aug. 31, 1991 [JP] Japan 3-302847
Feb. 21, 1992 [JP] Japan 4-34659

[51] **Int. Cl.**[6] **H03M 13/00**

[52] **U.S. Cl.** **341/67**; 341/94; 341/76

[58] **Field of Search** 341/94, 76, 67; 375/26, 375/27, 34

[56] **References Cited**

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"An Experimental Study for a Home-Use Digiral VTR" by C. Yamamitsu, et al. IEEE Trans. CE-35 No. 3, Aug. 1989, pp. 450-457.

Primary Examiner—Sharon D. Logan

Attorney, Agent, or Firm—Lowe, Price, LeBlanc & Becker

[57] **ABSTRACT**

In an encoding side, an estimate of input data is generated. An estimation error which is equal to a difference between the estimate and the input data is calculated. The estimation error is classified, thereby generating a category index indicative of a category corresponding to the estimation error. The input data is divided by a divisor, and a remainder of a result of the dividing is generated. The divisor is equal to a given value which is greater than a difference between an upper limit value and a lower limit value defining a range of the category. The category index and the remainder are encoded into corresponding codes which are outputted. In a decoding side, input data is decoded into a category index and a remainder. An estimate is generated from previous output data. A divisor is generated in accordance with the category index. An offset is generated in accordance with the divisor and the estimate. The offset is equal to the divisor multiplied by an integer. The offset and the remainder are added, and thereby new output data is generated in accordance with the offset and the remainder. In the presence of a control signal, the estimate is generated by a prediction process which differs front a prediction process in an encoding side. In the presence of the control signal, the offset is generated so as to increase a correlation between output data and the estimate.

26 Claims, 6 Drawing Sheets

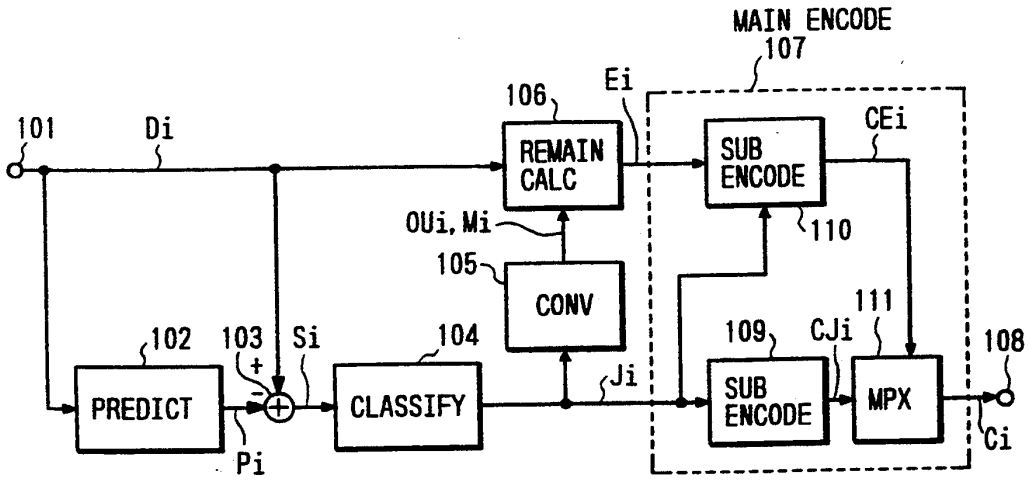

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FIG. 1(a)

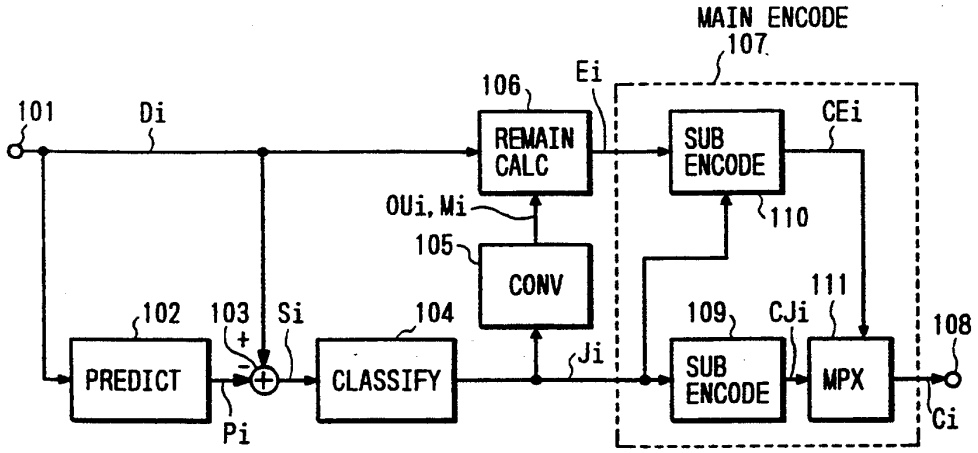

FIG. 1(b)

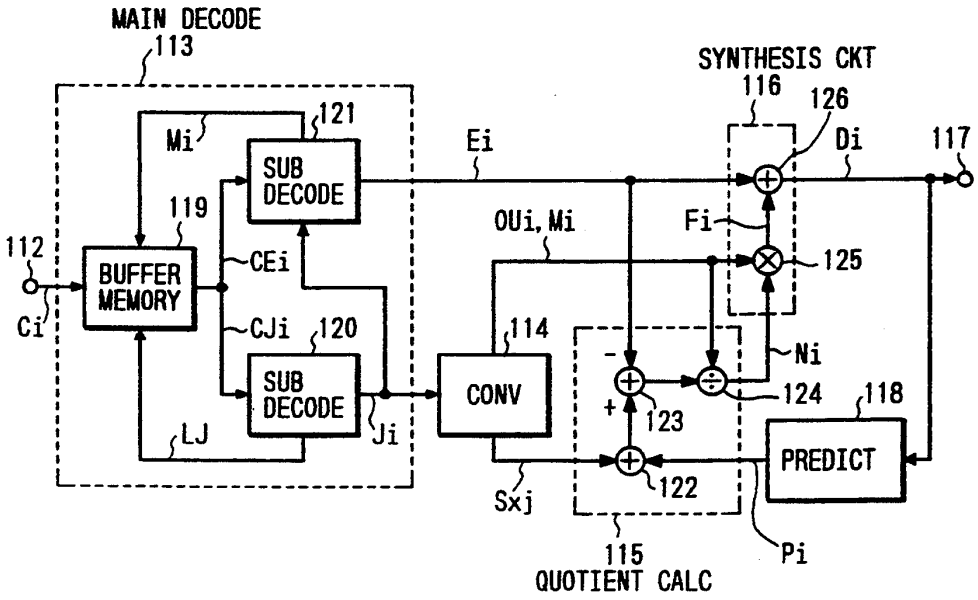

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FIG. 2

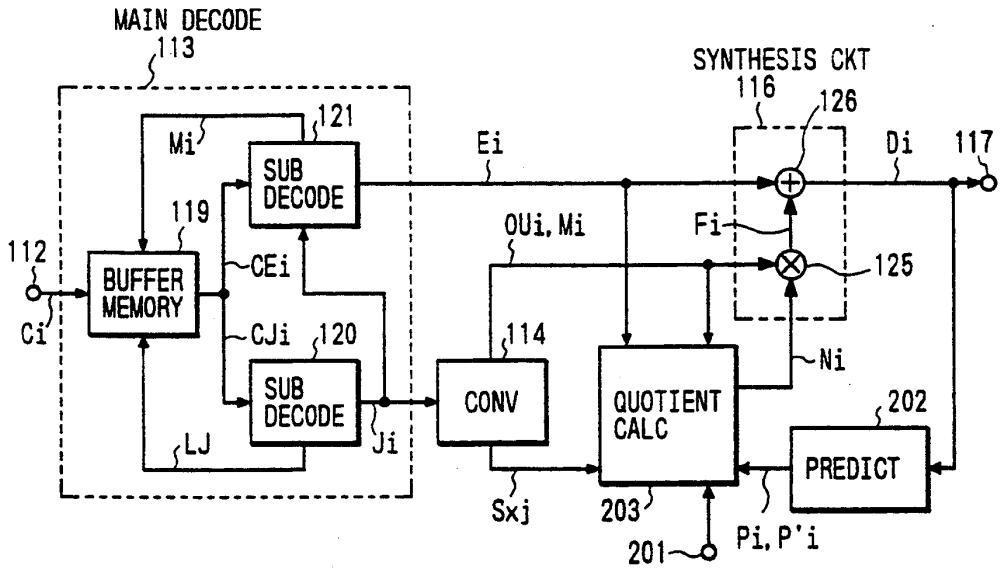

FIG. 5

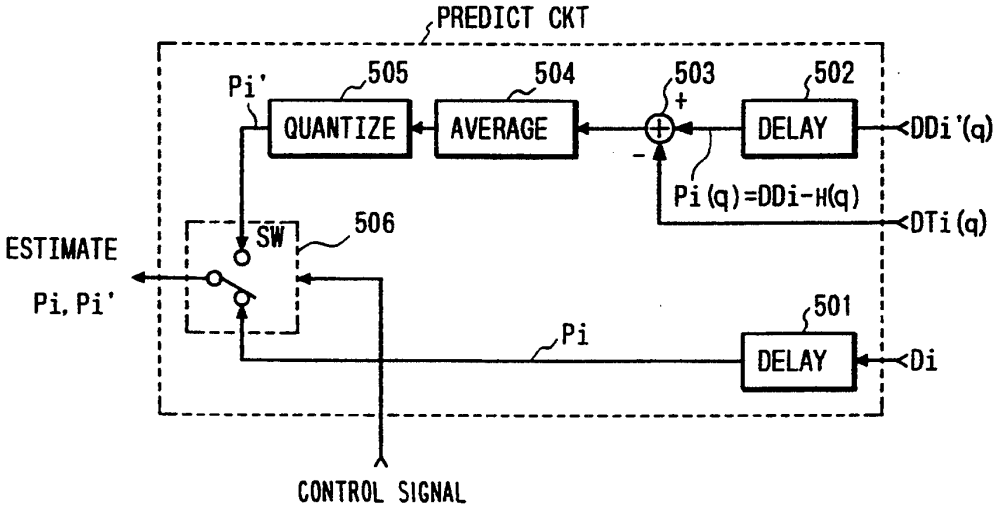

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FIG. 3(a)

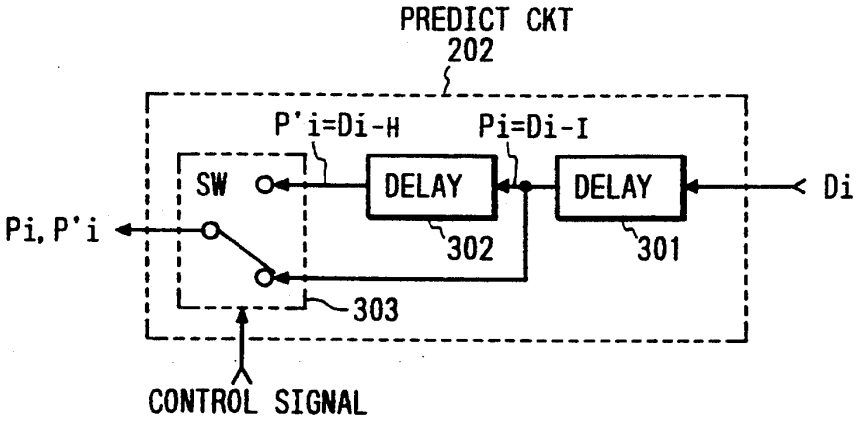

FIG. 3(b)

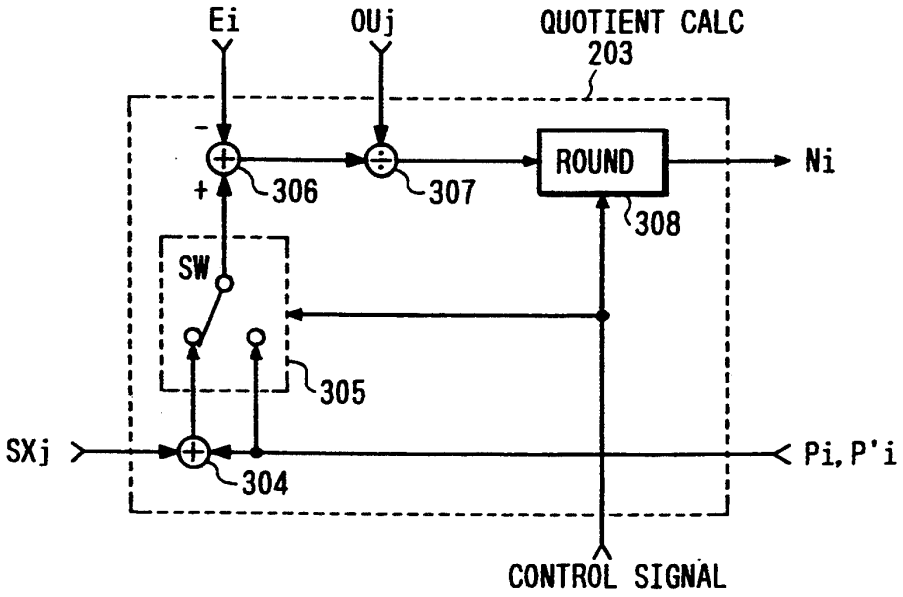

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FIG. 4(a)

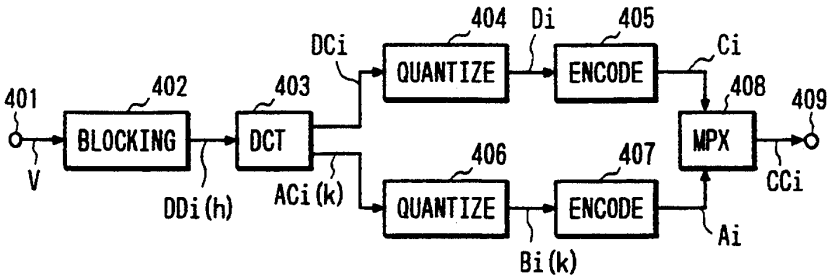
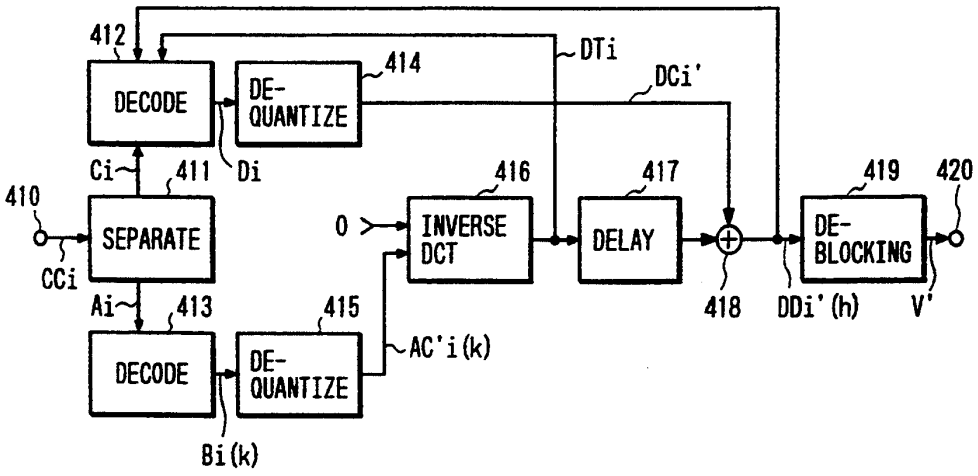


FIG. 4(b)



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