

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today
(1) was not written for publication in a law journal and
(2) is not binding precedent of the Board.

Paper No. 36

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TERUO SATO and
YASUO TONAMI

Appeal No. 1998-0598
Application 08/278,864

HEARD: FEBRUARY 23, 2000

Before HAIRSTON, FLEMING and DIXON, Administrative Patent
Judges.

HAIRSTON, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1 through 3 and 5 through 11. In an amendment submitted with the Brief, claims 1 and 3 were amended.

The disclosed invention relates to a magnetic reproducing apparatus for playing back a magnetic recording medium on

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which

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digital data have been magnetically recorded through a partial response encoder.

Claim 1 is illustrative of the claimed invention, and it reads as follows:

1. A magnetic reproducing apparatus for playing back a magnetic recording medium on which digital data have been magnetically recorded through a partial response encoder, comprising:

a reproducing system for reproducing said digital data from said magnetic recording medium;

synchronizing signal data detecting means for receiving said digital data from said reproducing system and for detecting a synchronizing signal data part from a reproduced signal data series which has been encoded by said partial response encoder;

transmission path characteristics estimating means for modeling an impulse response between a recording system and said reproducing system based on the synchronizing signal data part encoded by said partial response encoder and detected by said synchronizing signal data detecting means, said synchronizing signal data part being used as a reference signal by said transmission path characteristics estimating means; and

decoding means for decoding said reproduced signal data series according to a Viterbi algorithm based on a transmission model produced by said transmission path characteristics estimating means.

The references relied on by the examiner are:

Kanota et al. (Kanota) 5,122,912 Jun. 16,

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1992		
Ushirokawa	5,323,422	Jun. 21,
1994		
Shimpuku et al. (Shimpuku)	5,357,524	Oct. 18,
1994		

(filed Feb. 23, 1993)

Burden et al. (Burden), "Numerical Analysis," 331-56 (3d ed., PWS Publishers, 1985).

Claims 1, 5 through 7 and 10 stand rejected under 35 U.S.C. § 103 as being unpatentable over Shimpuku in view of Kanota.

Claims 2, 5, 8, 9 and 11 stand rejected under 35 U.S.C. § 103 as being unpatentable over Shimpuku in view of Kanota and Ushirokawa.

Claim 3 stands rejected under 35 U.S.C. § 103 as being unpatentable over Shimpuku in view of Kanota and Burden.

Claim 3 stands rejected under 35 U.S.C. § 103 as being unpatentable over Shimpuku in view of Kanota, Burden and Ushirokawa.

Reference is made to the briefs and the answer for the respective positions of the appellants and the examiner.

OPINION

The obviousness rejection of claims 1 through 3 and

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5 through 11 is reversed.

Shimpuku discloses a maximum likelihood decoding apparatus (Figures 4 and 5) in which the output of the synchronization detecting circuit 27 inputs both a symbol concluding unit 29 and a viterbi decoding unit 30. According to the examiner (paper number 11, pages 2 and 3), Shimpuku discloses all of the limitations of claim 1 except for the partial response encoder.

For such a teaching, the examiner turns to Kanota (Figure 5), and states (paper number 11, page 3) that "[i]t would have been obvious to one of ordinary skill in the art at the same time the invention was disclosed to modify the teachings of Shimpuku et al. to include the teachings of Kanota et al., motivation being to carry out channel coding satisfactorily and to efficiently suppress data redundancy."

Appellants argue (Brief, page 12) that "Shimpuku and Kanota fail to suggest any type of means for modeling an impulse response and furthermore fail to suggest means for modeling an impulse response 'based on the synchronizing signal data part.'"

We agree with appellants' argument. Even if we assume

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for the sake of argument that it would have been obvious to the skilled artisan to use a partial response encoder in Shimpuku, we are still left with the absence of a teaching or a suggestion in the combined teachings of modeling an impulse response between the recording system and the reproduction system based on the synchronization signal data encoded by the partial response encoder. Thus, the obviousness rejection of claims 1, 5 through 7 and 10 is reversed.

The examiner is correct (paper number 11, page 4) that "Ushirokawa discloses the method of least squares [column 2, lines 37 through 40] and a ROM [column 8, lines 36 through 54] for storing coefficient matrices . . . for the purpose of providing coefficient control for determining the tracking property," but appellants are likewise correct (Brief, page 18) that "the combination of Ushirokawa with Shimpuku and Kanota would not suggest the use of a synchronizing signal data part in modeling an impulse response between a recording system and a reproducing system." Accordingly, the obviousness rejection of claims 2, 5, 8, 9 and 11 is reversed.

With respect to claim 3, the examiner states (paper number 11, page 6) that "Burden et al. discloses using L U

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resolution to solve matrices for the purpose of easily calculating determinants," and that it would have been obvious to one of ordinary skill in the art "to modify the teachings of Shimpuku et al. and Kanota et al[.] to include the teachings of Burden et al., motivation being to easily calculate determinants." In response, appellants argue (Brief, page 22) that:

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Even if it would have been obvious to have relied upon Burden's suggestion of using $\underline{L} \underline{U}$ resolution, Burden provides no suggestion that some ROM in an apparatus contain data which "are values produced when the coefficient matrices are subjected to $\underline{L} \underline{U}$ resolution." In other words, Burden provides no suggestion that coefficient matrices be subjected to $\underline{L} \underline{U}$ resolution and then stored within ROM. Since Shimpuku and Kanota also fail to provide this suggestion, the rejection of claim 3 is improper and should not be sustained on appeal.

We agree with appellants' argument. As a result thereof, the obviousness rejection of claim 3 based upon the combined teachings of Shimpuku, Kanota and Burden is reversed.

In the alternative rejection of claim 3 (Answer, pages 4 and 5), the examiner combines the ROM teachings of Ushirokawa to the teachings of Shimpuku, Kanota and Burden. Appellants argue (Reply Brief, pages 3 and 4) that "although Ushirokawa does disclose a ROM for storing coefficients, Ushirokawa does not suggest a ROM for storing coefficient matrices that are subjected to $\underline{L} \underline{U}$ resolution." We agree. The obviousness rejection of claim 3 based upon the combined teachings of Shimpuku, Kanota, Burden and Ushirokawa is reversed.

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DECISION

The decision of the examiner rejecting claims 1 through 3 and 5 through 11 under 35 U.S.C. § 103 is reversed.

REVERSED

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KENNETH W. HAIRSTON))
Administrative Patent Judge)	
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)	BOARD OF PATENT
MICHAEL R. FLEMING)	
Administrative Patent Judge)	APPEALS AND
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)	INTERFERENCES
)	
JOSEPH L. DIXON)	
Administrative Patent Judge)	

KWH:hh

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