Paper No. 27

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte ALAN J. ARMSTRONG, RENEE E. WALLERIUS, RICHARD T. BEHRENS and CHARLES J. DUEY

Appeal No. 1998-2713
Application No. 08/583,295

ON BRIEF

Before HAIRSTON, RUGGIERO, and DIXON, Administrative Patent Judges.

HAIRSTON, Administrative Patent Judge.

## DECISION ON APPEAL

This is an appeal from the final rejection of claims 1 through 6, 10, 11, 14 and 16. In an Amendment After Final (paper number 13), claim 11 was amended. Claims 8, 9, 12, 13, 15 and 17 have been allowed (paper number 15).

The disclosed invention relates to a method of calibrating discrete portions of a synchronous read channel IC

used in a magnetic data storage system to achieve an optimum operating mode.

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

1. A method for calibrating a programmable discrete time equalizing filter of a synchronous read channel IC utilized in a magnetic data storage system to achieve an optimum operating mode, comprising the steps of:

(a) programming the discrete time equalizing filter of the synchronous read channel IC with at least one component setting;

(b) reading data from a magnetic storage medium using the synchronous read channel IC;

(c) generating at least one measured error value within the synchronous read channel IC;

(d) repeating steps (a) through (c) at least once; and

(e) programming the discrete time equalizing filter with at least one component setting responsive to the measured error values of step (c).

The reference relied on by the examiner is:

Abbott et al. (Abbott) 5,341,249 Aug. 23, 1994
(filed Aug. 27, 1992)

Claims 1 through 6, 10, 11 and 16 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Abbott.

Claim 14 stands rejected under 35 U.S.C. § 103 as being unpatentable over Abbott.

Reference is made to the brief (paper number 17), several Office Actions (paper numbers 7 and 11), and the answer (paper number 21) for the respective positions of the appellants and the examiner.

OPINION

We have carefully considered the entire record before us, and we will reverse all of the rejections.

According to the examiner (paper number 11, pages 2 and 3), "[t]he reference shows a method for calibrating a discrete time equalizing filter for a magnetic storage system comprising the steps of programming a filter with at least one component setting (col. 18, ll. 34-38, 66-68, col. 19, ll. 1-20), reading data (col. 20, ll. 15-32), generating error values (col. 20, ll. 15-32, col. 21, ll. 2-34), repeating the aforementioned steps and programming the filter with the calculated settings (col. 22, ll. 2-4, col. 24, ll. 14-31)." Appellants argue (brief, pages 6 and 7) that:

> Abbott discloses an "adaptive algorithm" for calibrating the component settings (coefficients) of a discrete equalizer filter in a synchronous read

> channel IC . . . . Abbott discloses that the adaptive update algorithm can be performed during normal operation while reading the recorded user data, or during a "training" mode where the filter is adapted by reading a known test pattern from the disk (Abbott, col. 22, lines 26+). Either way, the adaptive algorithm operates by adjusting the filter coefficients in "real time" using a single error value generated with each data sample read from the disk . . . .
>
> To overcome these drawbacks, the appellant has [sic, appellants have] disclosed a calibration method that is not real-time adaptive. Essentially, the present invention operates by measuring several error values, and specifically accumulating several sample error values, over a range of filter parameter settings, and then programming the filter according to a predetermined criteria based on the measured error values, such as the parameter setting that generates the minimum error value.

We agree with the examiner (paper number 11, pages 2 and 3) that the excised portions of claim 1 are found in Abbott. On the other hand, we agree with appellants' argument that Abbott does not program the filter "with at least one component setting responsive to the measured error values" (brief, page 6) (emphasis added). Abbott expressly states (column 24, lines 14 through 17) that "[d]uring the filter training mode, the error value on the path 215 causes the recursive adaptation circuit 222 to adjust the filter coefficients to minimize the squared-error value" (emphasis

added). Inasmuch as a value is not "values," all of the limitations of claim 1 are not disclosed by Abbott. To anticipate a claim, a prior art reference must disclose every limitation of the claimed invention, either explicitly or inherently. Glaxo Inc. v. Novopharm Ltd., 52 F.3d 1043, 1047, 34 USPQ2d 1565, 1567 (Fed. Cir. 1995). Thus, the 35 U.S.C. § 102(e) rejection of claim 1 through 3 is reversed.

Turning to claims 4 through 6, appellants argue (brief, pages 10 through 12) that Abbott does not disclose the claimed steps for calibrating analog filter parameters, whereas the examiner argues (answer, pages 4 and 5) that Abbott expressly teaches the claimed invention at "col. 18, ll. 34-38, 66-68, col. 19, ll. 1-20, col. 20, ll. 15-32, col. 21, ll. 2-34, col. 24, ll. 14-31 . . . ." Although the referenced portions of Abbott are concerned with calibration of a filter, Abbott does not calibrate a filter in the manner required by claims 4 through 6 on appeal. For this reason, the 35 U.S.C. § 102(e) rejection of claims 4 through 6 is reversed.

With respect to claims 10 and 11, the examiner is of the opinion (answer, page 5) that Figure 4 of Abbott illustrates a calibration system for gain control. Appellants argue (brief,

page 12) that "Abbott does not teach or even suggest to calibrate the gain control circuit, and Abbott does not 'inherently' disclose the calibration process of the present invention." We agree. Accordingly, the 35 U.S.C. § 102(e) rejection of claims 10 and 11 is reversed.

Turning next to claim 16, the examiner indicates (answer, page 5) that "the reference shows a generic calibration system" in response to appellants' argument (brief, page 13) that "Abbott does not disclose appellant's [sic, appellants'] iterative method for calibrating the settings of the sequence detector." In the absence of a description of a calibration method for a sequence detector in Abbott, we agree with appellants' argument. It follows that the 35 U.S.C. § 102(e) rejection of claim 16 is reversed.

Turning lastly to the obviousness rejection of claim 14, the appellants repeat the above-noted "error values" argument (brief, page 14), whereas the examiner states (answer, page 6) that "the reference implicitly, if not expressly, teaches recursive calibration of a disc recovery circuit using . . . time correction elements." In spite of such teachings in

Abbott, the steps of claim 14 are neither taught by nor would have been suggested by Abbott. In summary, the 35 U.S.C. § 103 rejection of claim 14 is reversed.

## DECISION

The decision of the examiner rejecting claims 1 through 6, 10, 11 and 16 under 35 U.S.C. § 102(e), and claim 14 under 35 U.S.C. § 103 is reversed.

## REVERSED

| | |
|---|---|
| KENNETH W. HAIRSTON<br>Administrative Patent Judge | ) |
| JOSEPH F. RUGGIERO<br>Administrative Patent Judge | ) BOARD OF PATENT APPEALS AND INTERFERENCES |

)
JOSEPH L. DIXON )
Administrative Patent Judge )

lp

Appeal No. 1998-2713
Application No. 08/583,295

CIRRUS LOGIC
INTELLECTUAL PROPERTY DEPT
3100 WEST WARREN AVENUE
FREMONT CA  94538-6423

***Leticia***

Appeal No. 1998-2713
Application No. 08/583,295

APJ HAIRSTON

APJ DIXON

APJ RUGGIERO

DECISION: REVERSED
Send Reference(s): Yes No
or Translation (s)
Panel Change: Yes No
Index Sheet-2901 Rejection(s):

Prepared: January 30, 2002

Draft Final

3 MEM. CONF. Y N

OB/HD GAU

PALM / ACTS 2 / BOOK
DISK (FOIA) / REPORT