

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* MATHIAS LANG and CORNELIS PIETER JANSE

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Appeal 2007-3337  
Application 10/498,295  
Technology Center 2600

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Decided: February 20, 2008

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Before KENNETH W. HAIRSTON, JOSEPH F. RUGGIERO, and KARL EASTHOM, *Administrative Patent Judges*.

RUGGIERO, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134 from the Final Rejection of claims 1, 6-8, and 11-17. Claims 2-5, 9, and 10 have been canceled. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

Appellants' claimed invention relates to an echo canceller which includes a far end signal input, a distorted desired signal audio input, an echo estimator coupled to the signal input, and a spectral subtracter coupled to the echo estimator and the audio input. The echo estimator, which includes a digital filter operating over a time span of at least a portion of the echo to be canceled, calculates at least a tail part of the echo with echo tail part compensation then taking place by spectral filtering. (Specification 2-4).

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

1. Echo canceller, comprising:
  - a signal input for a far end signal;
  - an audio input for a distorted desired signal, said distorted desired signal including an echo signal;
  - an adaptive filter coupled to said signal input, said adaptive filter having a limited length for modeling a first, pre-tail part of the echo signal;
  - a combination circuit having a first input coupled to said audio input and a second input coupled to an output of said adaptive filter, said combination circuit subtracting the output of said adaptive filter from said distorted desired signal;
  - an echo estimator coupled to the signal input, said echo estimator comprising a digital filter covering a time span of a second, tail part of the echo signal, said echo estimator estimating a magnitude spectrum of the second, tail part of the echo signal; and
  - a spectral subtracter coupled to an output of the echo estimator and an output of the combination circuit, said spectral subtracter

supplying an output signal in which the echo tail part is cancelled by the signal from the echo estimator, and the echo pre-tail part is cancelled by the output of the adaptive filter.

The Examiner relies on the following prior art references to show unpatentability:

Vary	US 4,623,980	Nov. 18, 1986
Amano	US 5,136,577	Aug. 4, 1992
Williams	US 5,249,225	Sep. 28, 1993
Takagi	US 5,937,379	Aug. 10, 1999

Claims 1, 6, 7, 11, 12, and 15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Takagi in view of Williams.

Claim 8 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Takagi in view of Williams and further in view of Vary.

Claims 13, 14, 16, and 17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Takagi in view of Williams and further in view of Amano.

Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the Brief and Answer for the respective details. Only those arguments actually made by Appellants have been considered in this decision. Arguments which Appellants could have made but chose not to make in the Brief have not been considered and are deemed to be waived [see 37 C.F.R. § 41.37(c)(1)(vii)].

## ISSUES

- (i) Under 35 U.S.C § 103(a), with respect to appealed claims 1, 6, 7, 11, 12, and 15, would one of ordinary skill in the art at the time of the

invention have found it obvious to combine Takagi and Williams to render the claimed invention unpatentable?

(ii) Under 35 U.S.C § 103(a), with respect to appealed claim 8, would one of ordinary skill in the art at the time of the invention have found it obvious to modify the combination of Takagi and Williams by adding the teachings of Vary to render the claimed invention unpatentable?

(iii) Under 35 U.S.C § 103(a), with respect to appealed claims 13, 14, 16, and 17, would one of ordinary skill in the art at the time of the invention have found it obvious to modify the combination of Takagi and Williams by adding the teachings of Amano to render the claimed invention unpatentable?

#### PRINCIPLES OF LAW

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073 (Fed. Cir. 1988). In so doing, the Examiner must make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). “[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability.” *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). Furthermore, “there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness’ . . . [H]owever, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR Int'l Co. v. Teleflex Inc.*, 127

S. Ct. 1727, 1741 (2007)(quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

## ANALYSIS

With respect to the Examiner's 35 U.S.C. § 103(a) rejection of appealed independent claims 1 and 11 based on the combination of Takagi and Williams, Appellants' arguments in response assert a failure to set forth a *prima facie* case of obviousness since all of the claimed limitations are not taught or suggested by the applied prior art references. Appellants' arguments do not attack the Examiner's position as to the combinability of the applied Takagi and Williams references but, rather, focus on the alleged deficiency of Williams in disclosing an adaptive filter as claimed.

Our review of Appellants' arguments (Br. 13), however, reveals that Appellants have simply reiterated the adaptive filter feature recited in independent claims 1 and 11 and drawn a conclusion, without more, that the structure in Williams identified by the Examiner does not correspond to such claimed feature. Such arguments do not, in our view, satisfy Appellants' burden of providing evidence and/or arguments which show how the Examiner has erred in finding that the adaptive impedance network 12-14 and 17 of Williams satisfies the claimed adaptive filter limitations.

In our view, the balancing impedance network, illustrated in Figure 8 of Williams functions as a filter since it eliminates, i.e., filters out, the transmitted signal TX OUT from the received signal TX OUT + RX IN at the input of receive amplifier 11. This filtering operation of Williams is also "adaptive" since the impedance of the balancing network is automatically adjusted in response to the undesired presence of any TX OUT signal

component input to receive amplifier 11 being present at the output of amplifier 11. (Williams, col. 5, ll. 12-49 and col. 8, ll. 37-68.)

We also find no arguments from Appellants which convince us of any error in the Examiner's finding (Ans. 5) that the adaptive filter of Williams is modeling only a pre-tail part of the echo signal as claimed. Similarly, we find no error, and there are no convincing arguments to the contrary from Appellants, in the Examiner's finding (Ans. 4-5) that the adaptive characteristic of the balancing impedance filter feature taught by Williams would have served as an obvious enhancement to the echo cancelling system of Takagi.

In view of the above discussion, since it is our opinion that the Examiner's prima facie case of obviousness has not been overcome by any convincing arguments from Appellants, the Examiner's 35 U.S.C. § 103(a) rejection, based on the combination of Takagi and Williams, of independent claims 1 and 11, as well as dependent claims 6, 7, 12, and 15 not separately argued by Appellants, is sustained.

We also sustain the Examiner's obviousness rejections of claim 8, in which the Vary reference is added to Takagi and Williams, and of claims 13, 14, 16, and 17, in which Amano is added to the combination of Takagi and Williams. Appellants' arguments reiterate those made with respect to independent claims 1 and 11, which arguments we found to be unpersuasive as discussed *supra*.

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## CONCLUSION

In summary, we have sustained the Examiner's 35 U.S.C. § 103(a) rejections of all of the claims on appeal. Therefore, the decision of the Examiner rejecting claims 1, 6-8, and 11-17 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

**AFFIRMED**

tdl/gw

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