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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte VICTOR-FLORIN CRASMARIU, ANDREI ALEXANDRU
ENESCU, and MARIUS OCTAVIAN ARVINTE

Appeal 2019-003497
Application 15/411,054
Technology Center 2600

Before ROBERT E. NAPPI, JUSTIN BUSCH, and JOHN D. HAMANN
Administrative Patent Judges.

NAPPI, *Administrative Patent Judge.*

DECISION ON APPEAL

Appellant¹ appeals under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 1 through 20. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

¹ We use the word Appellant to refer to “applicant” as defined in 37 C.F.R. § 1.42(a). According to Appellant, NXP USA, Inc. is the real party in interest. Appeal Br. 1.

INVENTION

Appellant's invention is directed to a method for use with a transmitter which uses plural user specific channels to communicate with different user receivers. The transmitter precodes the channel using a matrix and reuses portions of the precoding matrix for other channels. Abstract, Specification ¶ 9. Claim 1 is illustrative of the invention and is reproduced below.

1. A method comprising:
 - generating, at a transmitter device, a first set of rotational matrices for a set of channels of the transmitter device;
 - precoding first data for transmission based on the first set of rotational matrices to generate first precoded data;
 - transmitting the first precoded data via a first channel of the set of channels at the transmitter device;
 - generating, at the transmitter device, a second set of rotational matrices for the set of channels based on the first set of rotational matrices;
 - precoding second data for transmission based on the second set of rotational matrices to generate second precoded data; and
 - transmitting the second precoded data via a second channel of the set of channels at the transmitter device.

Appeal Br. 13 (Claims Appendix).

EXAMINER'S REJECTIONS²

The Examiner rejected claims 1 through 5 and 15 through 19 under 35 U.S.C. § 103 as being unpatentable over Forenza (US 2011/0003608 A1, published Jan. 6, 2011), Ikram (US 2006/0039489 A1, published Feb. 23, 2006) and Bala (US 2009/0323849 A1, published Dec. 31, 2009). Final Act. 6–11.

The Examiner rejected claims 6 through 14 and 20 under 35 U.S.C. § 103 as being unpatentable over Forenza, Ikram, Bala and Ko (US 2010/0310000 A1, published Dec. 9, 2010). Final Act. 11–16.

ANALYSIS

We have reviewed Appellant's arguments in the Briefs, the Examiner's rejections, and the Examiner's response to Appellant's arguments. Appellant's arguments have persuaded us of error in the Examiner's rejections of all of the disputed claims under 35 U.S.C. § 103.

Obviousness Rejection Based upon Forenza, Ikram, and Bala

Appellant's arguments directed to the Examiner's obviousness rejection based upon Forenza, Ikram, and Bala, present us with several issues. Appeal Br. 3–7. The dispositive issue presented by these arguments is, did the Examiner err in finding the combination of Forenza, Ikram, and Bala teaches generating a second set of rotational matrices for the set of

² Throughout this Decision we refer to the Appeal Brief filed October 18, 2018 (“Appeal Br.”); Reply Brief, filed April 1, 2018 (Reply Br.); Final Office Action mailed June 15, 2018 (“Final Act.”); and the Examiner's Answer mailed February 1, 2019 (“Ans.”).

channels based upon the first set of rotational matrices as recited in each of independent claims 1 and 15? Appeal Br. 5–7.

The Examiner finds that Forenza teaches generating a second set of rotational matrices for a set of channels, but does not teach generating the second set based upon the first set. Final Act 7–8 (citing Forenza ¶¶ 348, 353, 354 and Figs. 5–9); *see also* Ans. 4–5. The Examiner finds that Bala teaches generating codebooks, and checking if one is a subset of the other. Final Act 8–9 (citing Bala ¶¶ 47–50); *see also* Ans. 5 (citing Bala ¶¶ 45, 47, 48 and 57). Based upon these findings, the Examiner considers the disputed limitation directed to generating a second set of rotational matrices for the set of channels based upon the first set of rotational matrices to be obvious. Final Act. 9.

Appellant’s arguments have persuaded us of error in the Examiner’s rejection. Initially we note that the Examiner appears to make conflicting findings as to whether Forenza teaches generating a second precoding matrix (which in combination with Ikram, and Bala the Examiner equates to the claimed rotational matrix) based upon the first precoding matrix. In the Final Action on page 8, the Examiner states “Forenza in view of Ikram fail to teach generating the second set of rotational matrices for the set of channels based on the first set of rotational matrices.” Final Act. 8; *see also* Ans. 4. However, on page 5 of the Answer, the Examiner states the Action clearly points out that Forenza teaches generating a second precoding matrix from a first by upgrading the first matrix. Nonetheless, we have reviewed paragraphs 348, 353, and 354 and Figures 5–9 of Forenza cited by the Examiner and do not find a teaching of generating a second rotational matrix from a first rotational matrix—i.e., we concur with the Examiner’s finding

on page 8 of Final Action and not the conflicting statement on page 5 of the Answer. Further, we have reviewed the cited teachings of Bala, which discuss determining if the MU-MIMO (multi user multiple input multiple output) codebook used to precode data is a subset of the SU-MIMO (single user multiple input multiple output) codebook, and do not consider this to teach or suggest generating a second set of rotational matrices for the set of channels based upon the first set of rotational matrices. As argued by Appellant in the Reply Brief, the claim recites “generating” (bringing into existence) the second code based upon the first. Reply Br. 3. We consider this interpretation of generating to be consistent with the Specification, which discusses the second matrix is generated by reusing some columns of the first matrix and generating (bringing into existence) other matrices. *See* Spec. ¶ 19 and Fig. 2. The teachings in the paragraphs of Bala cited by the Examiner merely teach that one codebook may be a subset of the other (e.g., if the subset is in the set, it is not generated but already exists), but we do not find Bala to teach or suggest that one codebook is generated (brought into existence or created) based upon the other codebook. Accordingly, we do not find that the Examiner has demonstrated the combination of Forenza, Ikram, and Bala teaches all of the limitations of independent claims 1 and 15. Accordingly, we do not sustain the Examiner’s obviousness rejection of Claims 1 through 5, and 15 through 19.

Obviousness Rejection Based upon Forenza, Ikram, Bala, and Ko

The Examiner’s rejection of dependent claims 6 through 8 and 20 relies upon similar findings concerning the limitations of independent claims 1 and 15. Final Act. 11. With respect to claim 8 the Examiner states that it

contains the same limitations as claims 1 and 6 and is similarly rejected.
Final Act 14. The Examiner has not shown that the teachings of Ko remedy the deficiencies noted in the rejection of claim 1 and 15. Accordingly, we do not sustain the Examiner's obviousness rejection of claims 6 through 14 and 20 for the same reasons discussed with respect to claims 1 and 15.

CONCLUSION

We reverse the Examiner's rejections of claims 1 through 20 under 35 U.S.C. § 103.

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1-5, 15-19	103	Forenza, Ikram, Bala		1-5, 15-19
6-14, 20	103	Forenza, Ikram, Bala, Ko		6-14, 20
Overall Outcome				1-20

REVERSED