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Paper 43
Date: December 9, 2015

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ERICSSON INC. and
TELEFONAKTIEBOLAGET LM ERICSSON,
Petitioner,

v.

INTELLECTUAL VENTURES I LLC,
Patent Owner.

Case IPR2014-00921
Patent 6,023,783

Before JOSIAH C. COCKS, WILLIAM A. CAPP, and
DAVID C. MCKONE, *Administrative Patent Judges.*

COCKS, *Administrative Patent Judge.*

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

Ericsson Inc. and Telefonaktiebolaget LM Ericsson ("Ericsson"), filed a Petition (Paper 1, "Pet.") requesting *inter partes* review of claims 1–5, 23, 24, 38–42, 60, and 61 of U.S. Patent No. 6,023,783 ("the '783 patent"). We issued a Decision to institute an *inter partes* review of claims 23, 24, 60, and 61 of the '783 patent on the following grounds: (1) claims 23, 24, 60, and 61 as unpatentable under 35 U.S.C. § 103 as unpatentable over Robertson[1] and Ungerboeck[2]; (2) claims 23 and 60 as anticipated under 35 U.S.C . § 102 by Palicot[3]; (3) claims 23 and 60 as unpatentable under 35 U.S.C . § 103 over Palicot; and (4) claims 24 and 61 as unpatentable under 35 U.S.C . § 103 over Palicot and Ungerboeck. Paper 8 ("Inst. Dec.").[4]

After institution of trial, Intellectual Ventures I LLC ("Intellectual Ventures") filed a Patent Owner's Response (Paper 26, "PO Resp."), to which Ericsson replied (Paper 28, "Pet. Reply"). Ericsson also filed a Motion to Exclude portions of Exhibit 2006 (Paper 34), to which Intellectual Ventures filed an Opposition (Paper 36).

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[1] Patrick Robertson et al., *A Comparison of Optimal and Sub-Optimal MAP Decoding Algorithms Operating in the Log Domain*, PROCEEDINGS of IEEE INTERNATIONAL CONFERENCE ON COMMUNICATIONS 1009–13 (June 1995). ("Robertson") (Ex. 1012).

[2] Gottfried Ungerboeck, *Trellis-Coded Modulation with Redundant Signal Sets Part 1: Introduction*, 25 IEEE COMMUNICATIONS MAGAZINE NO. 2 5–11 (Feb. 1987). ("Ungerboeck") (Ex. 1007).

[3] J. Palicot & J. Veillard, *Possible Coding and Modulation Approaches to Improve Service Availability for Digital HDTV Satellite Broadcasting at 22 GHz*, 39 IEEE TRANSACTIONS ON CONSUMER ELECTRONICS NO. 3 660–67 (Aug. 1993). ("Palicot") (Ex. 1008).

[4] We did not institute trial on any grounds directed to claims 1–5 and 38–42.

Oral argument was conducted on August 26, 2015. A transcript of that argument has been made of record. Paper 42.

We have jurisdiction under 35 U.S.C. § 318(a). After considering the evidence and arguments of both parties, and for the reasons set forth below, we determine that Ericsson has met its burden of showing, by a preponderance of the evidence, that claims 23, 24, 60, and 61 of the '783 patent are unpatentable.

A. Related Matters

Intellectual Ventures has asserted the '783 patent against various companies in the following lawsuits filed in the United States District Court for the District of Delaware:

Intellectual Ventures I LLC et al. v. AT & T Mobility LLC et al., No. 1:13-cv-01668-LPS (D. Del.), filed October 7, 2013;

Intellectual Ventures I LLC et at. v. Leap Wireless International Inc. et al., No. 1:13-cv-01669-LPS (D. Del.), filed October 7, 2013;

Intellectual Ventures I LLC etal. v. Nextel Operations Inc. et al., No. 1:13-cv-01670-LPS (D. Del.), filed October 7, 2013;

Intellectual Ventures I LLC et al. v. T-Mobile USA Inc. et al., No. 1:13-cv- 01671-LPS (D. Del.), filed October 7, 2013; and

Intellectual Ventures I LL et al. v. United States Cellular Corp., No. 1:13- cv-01672-LPS (D. Del.), filed October 7, 2013.

Pet. 1; Paper 5, 1.

B. The '783 Patent (Ex. 1001)

The '783 patent is titled "Hybrid Concatenated Codes and Iterative Decoding," and is expressed as relating to "error correcting codes."

Ex. 1001, 1:12. In that respect, the "Related Art" is described as being concerned with "[t]urbo codes," which are "binary error-correcting codes built from the parallel concatenation of two recursive systematic convolutional codes and using a feedback decoder." *Id.* at 1:14–17. The patent characterizes its disclosed invention as "encompass[ing] several improved turbo code apparatuses and methods." *Id.* at 1:66–67.

By way of explanation, the '783 patent presents the following figure, which is represented as "Prior Art":

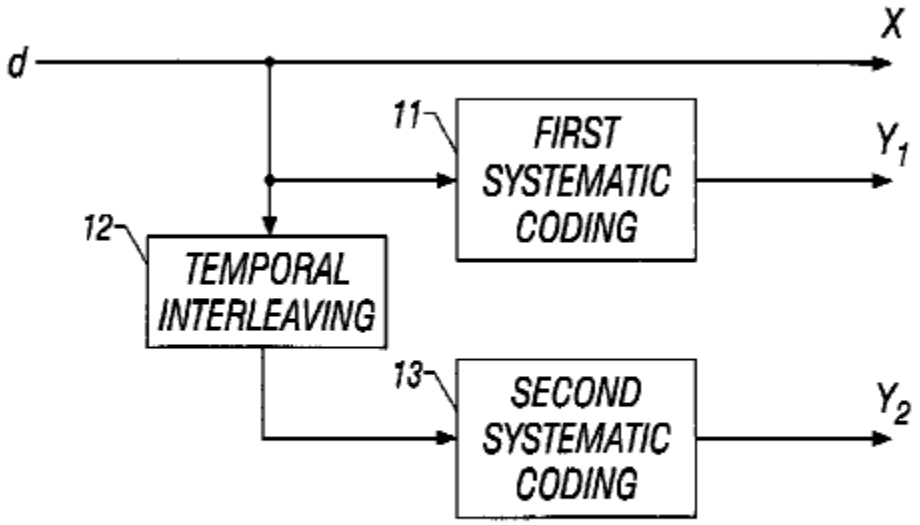

FIG. 1
(Prior Art)

Figure 1 is a block diagram of a prior art turbo code encoder. *Id.* at 2:48.

As shown in the above-noted figure:

> Each source data element d to be coded is coupled to a first systematic coding module 11 and, through a temporal interleaving module 12, to a second systematic coding module 13. The coding modules 11 and 13 may be of any known systematic type, such as convolutional coders, that take into account at least one of the preceding source data elements in order to code the source data element d.

Id. at 1:27–34.

The ’783 patent further explains that “an important aspect of prior art turbo code encoders is that they transmit a data element X equal to input source data element d.” *Id.* at 1:53–55.

Figure 5 of the ’783 patent is reproduced below and depicts an embodiment according to the invention of that patent:

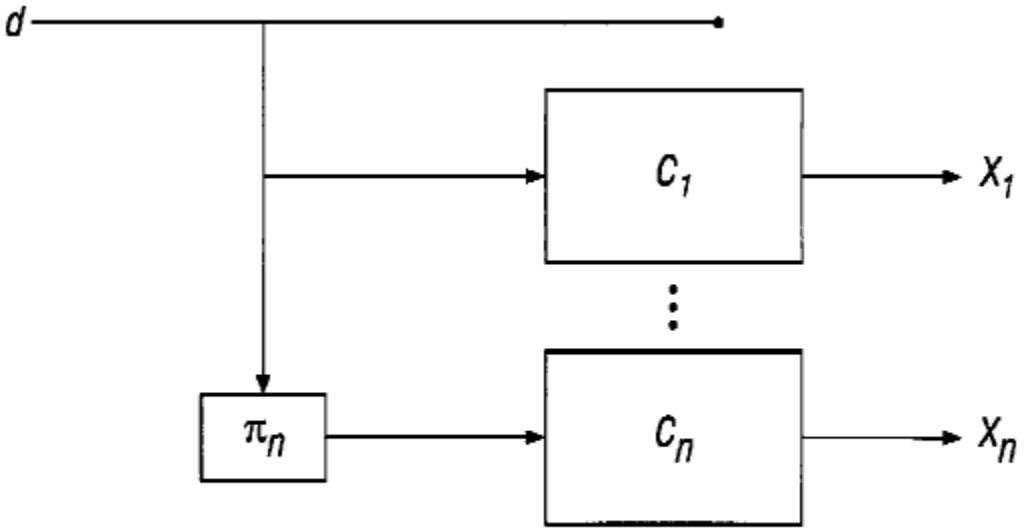

FIG. 5

The figure above illustrates a diagram of a turbo encoder that includes similar features to those of the prior art. The ’783 patent describes that “encoded parity elements X_n,” i.e., encoded data, are transmitted from coding modules C, with at least one interleaver π_n. *Id.* at 13:59–66. According to the ’783 patent, the invention disclosed therein is distinguished from the prior art because the turbo encoder structure of the patent “outputs *only* encoded parity elements X_n from the coding modules C—the original data source elements d are not transmitted or stored.” *Id.* (emphasis added).

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