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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte FREDERIK NAGEL, SASCHA DISCH,
and ANDREAS NIEDERMEIER¹

Appeal 2018-008530
Application 14/811,722
Technology Center 2600

Before BRADLEY W. BAUMEISTER, SHARON FENICK, and
RUSSELL E. CASS, *Administrative Patent Judges*.

BAUMEISTER, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134(a) from the Examiner’s final rejection of claims 1, 2, 4, 6–10, 12, 15, and 19–23. Appeal Br. 19–36. Claims 5 and 13 stand object to, but indicated as containing allowable subject matter. Final Action mailed Oct. 11, 2017 (“Final Act.”) 26. 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. Appellant identifies the real party in interest as Fraunhofer-Gesellschaft zur Foerderung der angewandten Forschung e.V. Appeal Brief filed April 6, 2018 (“Appeal Br.”) 3.

STATEMENT OF THE CASE

Appellant describes the present invention as follows:

A decoder for generating a frequency enhanced audio signal, includes: a feature extractor for extracting a feature from a core signal; a side information extractor for extracting a selection side information associated with the core signal; a parameter generator for generating a parametric representation for estimating a spectral range of the frequency enhanced audio signal not defined by the core signal, wherein the parameter generator is configured to provide a number of parametric representation alternatives in response to the feature, and wherein the parameter generator is configured to select one of the parametric representation alternatives as the parametric representation in response to the selection side information; and a signal estimator for estimating the frequency enhanced audio signal using the parametric representation selected.

Abstract.

Claims 1, 2, 4, 6–10, 12, 15, and 19–23 stand rejected under 35 U.S.C. § 102(a)(1) as anticipated by Neuendorf (US 2011/0202353 A1; published Aug. 18, 2011). Final Act. 12–26.

Independent claim 1 illustrates the subject matter that pertains to Appellant's decoder:

1. A decoder for generating a frequency enhanced audio signal, comprising:
 - a feature extractor configured for extracting a feature from a core signal;
 - a side information extractor configured for extracting a selection side information associated with the core signal;
 - a parameter generator configured for generating a parametric representation for estimating a spectral range of the frequency enhanced audio signal not defined by the core signal, wherein the parameter generator is configured to provide a number of parametric representation alternatives in response to

the feature, and wherein the parameter generator is configured to select one of the parametric representation alternatives as the parametric representation in response to the selection side information;

a signal estimator configured for estimating the frequency enhanced audio signal using the parametric representation selected; and

a signal classifier configured for classifying a frame of the core signal,

wherein the parameter generator is configured to use a first statistical model, when a signal frame is classified to belong to a first class of signals and to use a second different statistical model, when the frame is classified into a second different class of signals

wherein one or more of the feature extractor, the side information extractor, the parameter generator, the signal estimator and the signal classifier is implemented, at least in part, by one or more hardware elements of the apparatus.

We review the appealed rejection for error based upon the issues identified by Appellant, and in light of the arguments and evidence produced thereon. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential). We address the rejection of the decoder claims (e.g., claim 1) separately from the rejection of the encoder claims (e.g., claim 15).

DISCUSSION

The Examiner cites multiple rationales for why Neuendorf discloses every element of the decoder recited in independent claim 1. Final Act. 2–14. We address these rationales separately.

I.

The Examiner initially relies on Neuendorf’s Figure 5 as disclosing the claimed decoder. *Id.* at 12. Appellant, in turn, points out the

Neuendorf's Figure 5 is directed to an *encoder* as opposed to a *decoder*, as claimed. Appeal Br. 19. The Examiner finds this argument unpersuasive because, in the Examiner's opinion, the term decoder is only used in the preamble of claim 1, and the Examiner determines that the term should not be given patentable weight. Ans. 18–19.

The Examiner's decision to ignore the recitation of a decoder is unreasonable. As the Examiner acknowledges, "the preamble serve[s] to further define the structure of the article produced" when "it is only by that phrase that it can be known that the subject matter defined by the claims is comprised as [the type of article recited in the preamble]." Ans. 19 (citing *Kropa v. Robie*, 187 F.2d 150, 152 (CCPA 1951)). By the Examiner's own finding, it is only by the preamble's recitation of the decoder that it can be known that the subject matter defined by the claims comprises a decoder, as opposed to comprising an encoder or a combination of a decoder and encoder. See Ans. 18 (explaining that other than the preamble, the terms of the claim can be applied interchangeably to an encoder or a decoder). So if we were to adopt the Examiner's reasoning, the preamble would have to be given patentable weight.

The Examiner alternatively reasons that even if one gives patentable weight to the claim term "decoder," the decoder of Neuendorf's Figure 6 "is the inherent equivalent to" the encoder of Neuendorf's Figure 5. *Id.* at 25. The Examiner explains that Figure 6's decoder contains all of the elements of Figure 5's encoder and, therefore, must perform all of the encoder's functionality in reverse order. *Id.* at 20.

The Examiner's reasoning is unsupported. Even if we were to assume, solely for the sake of argument, that Neuendorf's decoder contains

all of the same elements as Neuendorf's encoder, the Examiner still does not explain sufficiently why it is inherent—or necessarily the case—that components of the decoder must be arranged in a manner that processes the encoded core signals, as claimed. In fact, if Neuendorf's decoder provides all of the functionality recited in claim 1, the Examiner should be able to cite to passages of Neuendorf that describe this functionality—either directly in relation to Neuendorf's decoder or inferentially by pointing to a disclosure that Neuendorf's decoder performs mirror operations of the encoder. The Examiner has not done so.

Furthermore, the Examiner's determination that Neuendorf's decoder inherently performs the same steps as the encoder, but in reverse order, is undercut by the fact that the Examiner's rejection is *not* premised on a theory that Neuendorf's *encoder* of Figure 5 performs its encoding functionality in the reverse order of the present decoder's operations, as claimed. Final Act. 12–13. Rather, the rejection is based on the disclosure of the forward direction of the encoder's operations. *Id.*

Even if we were to agree with the Examiner that the preamble of claim 1 does not limit the claimed subject matter to a decoder, that would not be the end of the inquiry. The body of claim 1, itself, reasonably indicates that the scope of claim 1 is limited to a decoder and not written broadly enough to encompass an encoder.

More specifically, claim 1 recites, in relevant part,

a feature extractor configured for extracting a feature *from a core signal*;

a side information *extractor* configured for extracting a selection side information associated with the core signal;

a parameter generator configured for generating a parametric representation for estimating a spectral range of the frequency enhanced audio signal *not defined by the core signal*.

Claim 1 (emphasis added).

The language in claim 1 stating that a spectral range is estimated for the frequency enhanced audio signal that is not defined by the core signal indicates that the “core signal” is a core signal within the decoder. This is because Appellant’s Specification renders it reasonably clear that the *encoder* employs a side information *generator*, whereas the *decoder* employs a side information *extractor*. Spec. 7:29–32, 8:27–32. Appellant’s Specification additionally renders it reasonably clear that it is the core signal within the decoder that needs spectral range estimates—not the core signal prior to being encoded within the encoder:

At the receiver, the decoder side information is used to support the estimation of the wideband envelope within the bandwidth extension algorithm. The message *m* is obtained by several procedures. A spectral representation of frequencies from [3.4] kHz to 7 kHz is extracted from the wideband signal available only at the sending side.

Spec. 3:4–8 (emphasis added).

Appellant’s disclosure may be used to determine the proper meaning of the terms used in the claims. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979–80 (Fed. Cir. 1995) (en banc). “[I]nterpreting what is *meant* by a word *in* a claim is not to be confused with adding an extraneous limitation appearing in the specification, which is improper.” *In re Cruciferous Sprout Litigation*, 301 F.3d 1343, 1348 (Fed. Cir. 2002) (internal quotation marks and citations omitted; emphasis in original).

II.

The Examiner also purportedly maps “the features, parametric elements, enhancements, classification, estimation, and other elements . . . in *a simplified manner* in view of the amendments to reflect the type of encoding in the claims in a broader capacity known in the art” and “[w]ithout altering the previous rejection.” Final Act. 7–8 (emphasis added). The Examiner then again points to Neuendorf’s *encoder* as providing support for disclosing the claimed signal classifier of claim 1’s decoder. *Id.* at 8 (citing Neuendorf ¶ 42, Fig. 5). The Examiner also explains that speech model and perception based model of Neuendorf’s encoder purportedly correspond to the decoder’s parameter generator, as well as how Neuendorf discloses the feature extractor, the side information extractor, the parameter generator, the signal estimator, and the signal classifier, as recited in claim 1:

wherein the parameter generator is configured to use a first statistical model, when a signal frame is classified to belong to a first class of signals and to use a second different statistical model, when the frame is classified into a second different class of signals (*the use of statistical models are present in the form of two models 1) speech model for speech signals and 2) perception based model for non-speech, music, etc., as in 0048 with fig. 2 overview... this specifically tackles various classifications of an input signal as well as it's transformed or bandwidth extended equivalent*)[.]

Id. at 8.

The Examiner’s “simplified manner” of mapping the claim elements is insufficient to support an anticipation rejection. As one example, the Examiner maps the claimed “feature extractor” to Neuendorf’s surround/joint stereo 101 that outputs an unencoded mono signal to Neuendorf’s encoder. Final Act. 12. The Examiner, however, does not

explain how the surround/joint stereo extracts a feature from an encoded core signal.

For these reasons, we do not sustain the anticipation rejection of independent claim 1 or of claims 2, 4, 6–10, 12, 20, and 22, which either depend from claim 1 or otherwise recite similar limitation.

Claims 15, 19, 21, and 23

Independent claim 15 is directed to “[a]n encoder for generating an encoded signal” that comprises “a core encoder,” “an output interface,” and “a core decoder.” Appeal Br. 44–46 (Claims Appendix). Claim 15 recites that the output interface is configured to output an encoded signal that, in turn, comprises an encoded audio signal and selection side information. The portion of claim 15 that is directed to the “core decoder” includes sub-limitations that more specifically are directed to a “feature extractor,” a “statistical model processor,” a “signal estimator,” and a “comparator” that “compar[es] the frequency enhanced audio signals to the original signals.”

The rejection of independent claim 15, then, suffers similar deficiencies to those of claim 1. *See, e.g.*, Final Act. 9–11 (wherein the Examiner maps the claimed core decoder to Neuendorf’s encoder of Figure 5). For similar reasons as set forth above in relation to claim 1, then, we do not sustain the anticipation rejection of independent claim 15, of claim 19, which depends from claim 15, or of claims 21 and 23, which recite similar limitations.²

² We note that claim 15 first recites a selection side information generator that is “configured for generating selection side information . . . in response to a feature extracted from the original signal or from the encoded audio signal or from a decoded version of the encoded audio signal.” Claim 15 (emphasis added). But claim 15 subsequently states, more narrowly, that the

CONCLUSION

In summary:

Reference(s)	Basis	Claims	Affirmed	Reversed
Neuendorf	§ 102(a)(1)	1, 2, 4, 6–10, 12, 15, and 19–23		1, 2, 4, 6–10, 12, 15, and 19–23

REVERSED

selection side information generator comprises “a feature extractor configured for extracting *a feature from the decoded core signal.*” *Id.* (emphasis added). Upon any further prosecution, the Examiner should consider whether the metes and bounds of claim 15 are reasonably definite in light of claim 15 seemingly setting forth conflicting requirements for the scope of the manner by which the feature is extracted.