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EXAMINER
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ADESANYA, OLUJIMI A

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* DOMINIK GROSSE-SCHULTE, MOHAMED KRINI, and  
GERHARD UWE SCHMIDT

Appeal 2015-000121<sup>1</sup>  
Application 11/928,251  
Technology Center 2600

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Before JEAN R. HOMERE, NABEEL U. KHAN, and  
AMBER L. HAGY, *Administrative Patent Judges*.

HOMERE, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants seek our review under 35 U.S.C. § 134(a) of the Examiner's Final Rejection of claims 1–24, which constitute all of the claims pending in this appeal. App. Br. 2. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

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<sup>1</sup> Appellants identify the real party in interest as Nuance Communications, Inc. App. Br. 2.

*Appellants' Invention*

Appellants' invention is directed to a signal processing method and system for enhancing the quality of a speech input signal. Spec. ¶ 5. In particular, a noise reduction circuit (110) is utilized to filter out unwanted noise from the input signal (104), thereby producing a noise reduced signal. Further, a signal reconstruction circuit (120) extracts from the input speech signal (104) an excitation portion and a spectral envelope, which are then combined to reconstruct the input speech signal (104). *Id.* Subsequently, a signal combining circuit (140) combines the noise-reduced signal and the reconstructed speech signal to thereby generate an enhanced speech output wherein perturbed portions of the noise-reduced signal are replaced with corresponding portions of the reconstructed speech signal based on their respective signal to noise ratios. *Id.* ¶¶ 19–23.

*Illustrative Claim*

Independent claim 1 is illustrative, and reads as follows:

1. A method for processing a speech input signal, comprising:
  - estimating an input-signal-to-noise ratio or a signal-to-noise ratio of the speech input signal;
  - generating an excitation signal corresponding to the speech input signal;
  - extracting a spectral envelope of the speech input signal;
  - reconstructing the speech input signal based on the excitation signal and the extracted spectral envelope;
  - filtering the speech input signal with a noise reduction circuit to generate a noise reduced signal; and
  - replacing perturbed portions of the noise reduced signal with the corresponding portions of the reconstructed speech signal based on the input-signal-to-noise ratio or the signal-to-noise ratio to generate an enhanced speech output signal.

*Rejections on Appeal*

Claims 1–3, 6, 10–13, 16, 20–22, and 24 stand rejected under 35 U.S.C. § 103 (a) as being unpatentable over the combination of Dreiseitel et al, “Evaluation of Algorithms for Speech Enhancement” and Tilp “Single-Channel Noise Reduction with Pitch-Adaptive Post-Filtering.”

Claims 5, 15, and 23 stands rejected under 35 U.S.C. § 103 (a) as being unpatentable over the combination of Dreiseitel, Tilp, and Pyke “Extrapolation of Wideband Speech From the Telephone Band.”

Claims 7–9 and 17–19 stand rejected under 35 U.S.C. § 103 (a) as being unpatentable over the combination of Dreiseitel, Tilp, and Zakarauskas (US 2005/0222842 A1, published Oct. 6, 2005).

#### ANALYSIS

We consider Appellants’ arguments *seriatim*, as they are presented in the Appeal Brief, pages 4–13, and the Reply Brief, pages 2–10.<sup>2</sup>

We have reviewed the Examiner’s rejections in light of Appellants’ arguments. We are unpersuaded by Appellants’ contentions. Except as otherwise indicated herein below, we adopt as our own the findings and reasons set forth in the Examiner’s Answer in response to Appellants’ Appeal Brief. Ans. 2–49. However, we highlight and address specific arguments and findings for emphasis as follows.

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<sup>2</sup> Rather than reiterate the arguments of Appellants and the Examiner, we refer to the Appeal Brief (filed March 4, 2014), the Reply Brief (filed September 11, 2014) and the Answer (mailed July 11, 2014) for their respective details. We have considered in this Decision only those arguments Appellants actually raised in the Briefs. Any other arguments Appellants could have made but chose not to make in the Briefs are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(iv) (2012).

Regarding the rejection of claim 1, Appellants argue that the combination of Dreiseitel and Tilp does not teach or suggest “replacing portions of the noise reduced signal with the corresponding portions of the reconstructed speech signal based on the input-signal-to-noise ratio or the signal to-noise ratio to generate an enhanced speech output signal.” App. Br. 5–12, Reply Br. 2–9. In particular, Appellants argue Dreiseitel teaches a bandwidth extension system with a bandpass path and a bandstop path while Tilp teaches a system having an attenuated highpass path and a lowpass path filtered with pitch frequency. App. Br. 3. According to Appellants, Dreiseitel simply extends telephone bandwidth by combining non-overlapping frequency bands without regards to signal to noise ratio (SNR). *Id.* at 7. Likewise, Appellants submit the noise reduction and filtering disclosed in Tilp merely attenuates noise components below the pitch frequency and between the harmonics of voiced speech, as opposed to replacing any portion of a filtered signal. *Id.* at 8–11. Appellants therefore submit that because “reconstructing a signal is performed on a signal without any noise reduction, it would not make sense to reconstruct the signal after noise reduction in the context of the claimed invention since the signal is performed **due to low SNR.**” *Id.* at 12. This argument is not persuasive.

As correctly noted by the Examiner, Appellants’ argument is tantamount to an individual attack against Dreiseitel and Tilp, as opposed to an argument against the combination thereof. Ans. 30. In particular, we agree with the Examiner that Dreiseitel’s disclosure of splitting an input speech into overlapping blocks to thereby filter out unwanted noise components based on the SNR therein teaches filtering an speech input signal to generate a noise reduced signal. Ans. 30 (citing Dreiseitel 433).

Likewise, we agree with the Examiner that Dreiseitel's disclosure of combining the extracted spectral envelope with the excitation portion of the speech input signal teaches combining complementary portions of the input signal to produce a reconstructed speech signal. *Id.* at 32–33 (citing Dreiseitel, Fig. 11.11). Additionally, we agree with the Examiner that Tilp's disclosure of combining a noise reduced input signal with a reconstructed input signal wherein the different portions thereof have been weighted to determine whether the SNR exceeds a predetermined threshold teaches replacing perturbed portions in the noise reduced signal to produce an enhanced input signal. *Id.* at 37–38 (citing Tilp, sec. 2.2, Fig. 2). In other words, we agree with the Examiner that the proposed combination of Dreiseitel and Tilp would predictably result in the noise reduced signal and reconstructed signal covering the same frequency range such that noise reduced signal portions identified as being perturbed based on their SNR can be replaced with corresponding ones from the reconstructed signal. *Id.* at 41–47. Accordingly, we are not persuaded the Examiner erred in rejecting claim 1.

Regarding the rejection of claim 2, Appellants argue the Examiner erred in finding the combination of Dreiseitel and Tilp teaches or suggests all the limitations recited in the claim. App. Br. 13. This argument is not persuasive because it fails to identify an error in the Examiner's finding. Appellants are reminded that merely reciting the claim limitations and findings relied upon by the Examiner in the rejection is not a responsive argument. Such a response to the Examiner's findings is insufficient to persuade us of Examiner error, as mere attorney arguments and conclusory statements that are unsupported by factual evidence are entitled to little

probative value. *In re Geisler*, 116 F.3d 1465, 1470 (Fed. Cir. 1997); see also *In re De Blauwe*, 736 F.2d 699, 705 (Fed. Cir. 1984); *Ex parte Belinne*, No. 2009-004693, slip op. at 7–8 (BPAI Aug. 10, 2009) (informative); see also *In re Lovin*, 652 F.3d 1349, 1357 (Fed. Cir. 2011) (“[W]e hold that the Board reasonably interpreted Rule 41.37 to require more substantive arguments in an appeal brief than a mere recitation of the claim elements and a naked assertion that the corresponding elements were not found in the prior art.”); cf. *In re Baxter Travenol Labs.*, 952 F.2d 388, 391 (Fed. Cir. 1991) (“It is not the function of this court to examine the claims in greater detail than argued by an appellant, looking for [patentable] distinctions over the prior art.”) Accordingly, we sustain the rejection of claim 2.

Regarding claims 3–24, because Appellants reiterate substantially the same arguments as those previously discussed for patentability of claims 1, and 2 above, claims 3–24 fall therewith. See 37 C.F.R. § 41.37(c)(1)(iv).

#### DECISION

For the above reasons, we affirm the Examiner’s rejections of claims 1–24.

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