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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JOSHUA R. WHEELER and SCOTT A. AMMAN

Appeal 2019-005588
Application 15/646,412
Technology Center 2600

Before ALLEN R. MacDONALD, JAMES B. ARPIN, and
ADAM J. PYONIN, *Administrative Patent Judges*.

ARPIN, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant¹ appeals under 35 U.S.C. § 134(a), the Examiner’s final rejections of claims 1, 2, 4–14, and 16–20. Final Act. 2.² Claim 3 and 15 are canceled. Amendment, 5 (Nov. 13, 2017). We have jurisdiction under

¹ “Appellant” here refers to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party-in-interest as Ford Global Technologies, LLC. Appeal Br. 1.

² In this Decision, we refer to Appellant’s Appeal Brief (“Appeal Br.,” filed May 13, 2019) and Reply Brief (“Reply Br.,” filed December 21, 2018); the Final Office Action (“Final Act.,” mailed December 4, 2018), the Advisory Action (“Adv. Act.,” mailed March 18, 2019), and the Examiner’s Answer (“Ans.,” mailed July 5, 2019); and the originally-filed Specification (“Spec.,” filed July 11, 2017). Rather than repeat the Examiner’s findings and determinations and Appellant’s contentions in their entirety, we refer to these documents.

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35 U.S.C. § 6(b).

We reverse.

STATEMENT OF THE CASE

Appellant’s claimed systems “relate[] in general to obtaining high signal-to-noise performance of detecting spoken voice with a microphone in a noisy environment, and, more specifically, to active noise cancellation creating a ‘quiet zone’ around a handsfree microphone in an automotive vehicle.” Spec., 1:13–15.

As noted above, claims 1, 2, 4–14, and 16–20 stand rejected. Claims 1 and 12 are independent. Appeal Br. 8 (claim 1), 9 (claim 12) (Claims App.). Claims 2 and 4–11 depend directly or indirectly from claim 1; and claims 13, 14, and 16–20 depend directly or indirectly from claim 12. *Id.* at 8–10.

Claim 1 recites “[a] handsfree voice system,” and claim 12 recites “[a] voice recognition control system in a vehicle, comprising” all of the limitations of claim 1 “and a voice recognizer coupled to the microphone to process an audio signal generated by the microphone to detect commands spoken by a user within the passenger cabin.” *Id.* at 8, 9. The Examiner relies on the same references and substantially similar arguments in rejecting claims 1 and 12 (Final Act. 3–5), and Appellant does not contest the rejections of claims 2, 4–14, and 16–20 separately from claim 1 (Appeal Br. 3–4). Therefore, we focus our analysis on independent claim 1 and the disputed and overlapping limitations recited in independent claim 12.

Claim 1, reproduced below with disputed limitations emphasized, is illustrative.

1. A handsfree voice system, comprising:

a microphone mounted in a passenger cabin;

a pair of speakers each peripherally mounted within 4 inches of the microphone;

a noise sensor outside the cabin configured to characterize intrusive noises into the cabin; and

an active noise cancellation controller responsive to the noise sensor for generating anti-noise in a range from 200 Hz to 3 kHz output by the speakers establishing a quiet zone only within the periphery centered on the microphone and not including any occupant of the cabin.

Id. at 8 (emphasis added).

REFERENCES AND REJECTIONS

The Examiner relies upon the following references in rejecting the claims:

Name³	Number	Publ'd/Issued	Filed
Wenger	US 2002/0031234 A1	Mar. 14, 2002	June 27, 2001
Farrar	US 7,769,187 B1	Aug. 3, 2010	July 14, 2009
Tzirkel-Hancock	US 2013/0185066 A1	July 18, 2013	Jan 17, 2012
Yu	US 2014/0270241 A1	Sept. 18, 2014	Mar. 15, 2013
Nakagawa	US 2015/0170633 A1	June 18, 2015	May 1, 2014
Welch	US 2015/0176989 A1	June 25, 2015	Dec. 23, 2013
Liu	US 2016/0375787 A1	Dec. 29, 2016	June 23, 2015
Konjeti	US 2017/0032806 A1	Feb. 2, 2017	July 29, 2015

³ All reference citations are to the first named inventor only.

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Specifically, claims 1, 2, 11, 12, and 14 stand rejected as unpatentable under 35 U.S.C. § 103 over the combined teachings of Konjeti, Tzirkel-Hancock, Farrar, and Nakagawa (Final Act. 3–5); claims 4, 13,⁴ and 16 stand rejected as unpatentable under 35 U.S.C. § 103 over the combined teachings of Konjeti, Tzirkel-Hancock, Farrar, Nakagawa, and Yu (*id.* at 5–6, 9); claims 5 and 17 stand rejected as unpatentable under 35 U.S.C. § 103 over the combined teachings of Konjeti, Tzirkel-Hancock, Farrar, Nakagawa, and Wenger (*id.* at 6–7); claims 6–9 and 18–20 stand rejected as unpatentable under 35 U.S.C. § 103 over the combined teachings of Konjeti, Tzirkel-Hancock, Farrar, Nakagawa, and Welch (*id.* at 7–8); and claim 10 stands rejected as unpatentable under 35 U.S.C. § 103 over the combined teachings of Konjeti, Tzirkel-Hancock, Farrar, Nakagawa, and Liu (*id.* at 8–9).

Appellant contests the obviousness rejection of independent claim 1 (Appeal Br. 3–4) and relies on the alleged deficiencies in that rejection to overcome the rejection of the independent claim 12 and the dependent claims (*id.* at 4–6). Because we determine that reversal of the rejection of independent claim 1 is dispositive, except for our ultimate decision, we do not discuss the merits of the rejections of claims 2, 4–14, and 16–20 further herein. We review the appealed rejection of independent claim 1 for error based upon the issues identified by Appellant, and in light of the arguments

⁴ Although the Examiner indicates that claim 13 stands rejected over the combined teachings of Konjeti, Tzirkel-Hancock, Farrar, Nakagawa, and Yu (Final Act. 9), the Examiner refers to “Marlowe” in explaining the rejection (*id.*). Because we can find no citation to a “Marlowe” reference in the image file wrapper, we treat this as a typographical error. Because Appellant does not contest the rejection of claim 13 separately from its base claim, we do not address this error further in this Decision. *See* 37 C.F.R. § 41.37(c)(1)(iv).

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and evidence produced thereon. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential). We address the rejection of claim 1 below.

ANALYSIS

1. Obviousness of Claim 1 Over Konjeti, Tzirkel-Hancock, Farrar, and Nakagawa

As noted above, the Examiner rejects independent claim 1 as obvious over the combined teachings of Konjeti, Tzirkel-Hancock, Farrar, and Nakagawa. Final Act. 3–4. In particular, claim 1 recites, “a pair of speakers each peripherally mounted within 4 inches of the microphone.” Appeal Br. 8 (Claims App.). The Examiner finds that Konjeti teaches or suggests, “a pair of speakers mounted at a periphery of the microphone,” but does not teach or suggest that the speakers are mounted “within 4 inches” of the microphone. Final Act. 3 (citing Konjeti, Figs. 1 and 2 (depicting speakers 20a–20n disposed at the periphery of voice recognition microphone 18)); *see* Konjeti ¶ 23 (describing the arrangement of speakers 20a–20n).

Despite this deficiency in Konjeti, the Examiner finds

Farrar et al teaches a concept of where voice microphones and error microphones are within a vicinity of the noise canceling loudspeakers (Farrar et al. fig. 4: voice microphone 1; col. 13. line 67 through col. 14. line 10: voice microphone 1 being *in the same vicinity as noise canceling speaker as illustrated in fig. 4 implies that the voice microphone is around/within 4 inches of the noise canceling speaker*).

Final Act. 4 (emphasis added). Further, the Examiner determines, “[i]t would have been obvious to modify Konjeti such that the microphones are mounted to the periphery of the speaker (i.e. within 4 inches) as taught in Farrar et al *so that the most appropriate noise cancelling effect can be obtained at the position of the user.*” *Id.* (emphasis added). We disagree.

Appellant contends:

The rejection mischaracterizes the teachings of Farrar since microphone M1 may be mounted in the vicinity of speaker SL (the left audio channel) and microphone M2 may be mounted in the vicinity of speaker SR (the right audio channel). Clearly, in the cabin of a vehicle the left and right audio speakers would not, and could not, be located closely enough to both be within 4 inches of a voice microphone. The cited portion of Farrar states “microphones M1 and M2 may pick up ambient noise in the vicinity of speakers SL and SR and may therefore serve as noise cancelling microphones for speakers SL and SR, *respectively*.”

Appeal Br. 3–4 (quoting Farrar, 14:3–5 (emphasis added)); *see* Reply Br. 2.

Further, the Specification explains:

In order to effectively cancel noises within a voice frequency range of *about 200 Hz to about 3 kHz*, the center of each speaker 42 and 43 is preferably mounted *within about 4 inches or less* from the center of [handsfree microphone (HFM 41)]. More preferably, noise cancellation may be extended *up to about 7 kHz* (e.g., as contained in wideband Bluetooth specifications), and the corresponding wavelength would require the speakers to be placed *within about 2 inches* from the microphone. The close proximity of speakers 42 and 43 to HFM 41 also means that the radiated amplitude of the anti-noise signals needed to achieve effective cancellation can be kept sufficiently low to minimize audibility of the anti-noise signals by the occupants.

Spec., 5:20–29 (emphases added). Thus, although Appellant does not characterizing the relationship between the speaker distance and the cancellation frequencies as an unexpected result, Appellant has shown some evidence that the distance is significant for active noise cancellation for the recited range of frequencies, i.e., “from 200 Hz to 3 kHz output.” Appeal Br. 8 (claim 1), 9 (claim 12) (Claims App.) Further, the Specification discloses a different distance, i.e., “within about 2 inches,” for a different range of frequencies, i.e., “up to about 7 kHz.” Spec., 5:23–26.

Based on the cited disclosure of Farrar (Farrar, 14:2–5), the Examiner finds that “voice microphone 1 being in the same vicinity as noise canceling speaker as illustrated in fig. 4 *implies* that the voice microphone is around/within 4 inches of the noise canceling speaker.” Final Act. 4 (emphasis added); *see* Adv. Act. 1; Ans. 12. However, the Examiner provides no evidence whatsoever why “in the vicinity” implies “within 4 inches.”

Any judgment on obviousness is in a sense necessarily a reconstruction based on hindsight reasoning, but so long as it takes into account only knowledge which was within the level of ordinary skill in the art at the time the claimed invention was made and does not include knowledge gleaned only from applicant’s disclosure, such a reconstruction is proper.

In re McLaughlin, 443 F.2d 1392, 1395, (CCPA 1971); *see Alza Corp. v. Mylan Labs., Inc.*, 464 F.3d 1286, 1290 (Fed. Cir. 2006) (“At its core, our anti-hindsight jurisprudence is a test that rests on the unremarkable premise that legal determinations of obviousness, as with such determinations generally, should be based on evidence rather than on mere speculation or conjecture.”). In view of the complete lack of evidence supporting the Examiner’s finding that “in the same vicinity” *implies* “around/within 4 inches,” this finding appears to be based on nothing more than improper hindsight gleaned from Appellant’s claim.

Consequently, we are persuaded that the Examiner erred in rejecting claim 1, and we do not sustain the obviousness rejection of claim 1.

2. *The Remaining Claims*

As noted above, Appellant challenges the rejection of independent claim 12 for the same reasons as claim 1. Appeal Br. 4. Each of claims 2, 4–11, 13, 14, and 16–20 depends directly from independent claim 1 or 12.

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Id. at 8–10 (Claims App.). Appellant does not challenge the rejections of the independent claim 12 or the dependent claims separately from its challenge to the rejection of independent claim 1. *Id.* at 4–6; *see* Reply Br. 3. Because we are persuaded the Examiner erred with respect to the obviousness rejection of claim 1, we also are persuaded the Examiner erred with respect to the obviousness rejections of claims 2, 4–14, and 16–20. For this reason, we do not sustain the rejections of those claims.

DECISIONS

1. The Examiner erred in rejecting claims 1, 2, 4–14, and 16–20 under 35 U.S.C. § 103 as rendered obvious over the combined teachings of Konjeti, Tzirkel-Hancock, Farrar, and Nakagawa, alone or in combination with another reference.
2. Thus, on this record, claims 1, 2, 4–14, and 16–20 are not unpatentable.

CONCLUSION

For the above reasons, we reverse the Examiner’s decision rejecting claims 1, 2, 4–14, and 16–20.

In summary:

Claims Rejected	35 U.S.C. §	References	Affirmed	Reversed
1, 2, 11, 12, 14	103	Konjeti, Tzirkel-Hancock, Farrar, Nakagawa		1, 2, 11, 12, 14
4, 13, 16	103	Konjeti, Tzirkel-Hancock, Farrar, Nakagawa, Yu		4, 13, 16
5, 17	103	Konjeti, Tzirkel-Hancock, Farrar, Nakagawa, Wenger		5, 17
6–9, 18–20	103	Konjeti, Tzirkel-Hancock, Farrar, Nakagawa, Welch		6–9, 18–20
10	103	Konjeti, Tzirkel-Hancock, Farrar, Nakagawa, Liu		10
Overall Outcome				1, 2, 4–14, 16–20

REVERSED