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| 15/418,687 | 01/28/2017 | Amir Moghimi | 22706-00160/ RS-16-217-US | 8447 |
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte AMIR MOGHIMI, WILLIAM BERARDI, and DAVID CRIST

Appeal 2019-004382
Application 15/418,687
Technology Center 2600

Before CATHERINE SHIANG, JOYCE CRAIG, and SCOTT E. BAIN,
Administrative Patent Judges.

BAIN, *Administrative Patent Judge.*

DECISION ON APPEAL

Appellant¹ appeals under 35 U.S.C. § 134(a) from the Examiner's decision to reject claims 1–26, which constitute all pending claims. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as Bose Corporation. Appeal Br. 2.

BACKGROUND

The Claimed Invention

The invention relates to an audio device having a microphone array and filter topology “to improve collection of desired sound and suppress undesired sound.” Spec. ¶¶ 2–4. Claims 1, 24, and 25 are independent. Claim 1 is illustrative of the invention and the subject matter in dispute, and is reproduced below:

1. An audio device, comprising:
 - a plurality of spatially-separated microphones that are configured into a microphone array, wherein the microphones are adapted to receive sound; and
 - a processing system in communication with the microphone array and configured to:
 - derive a plurality of audio signals from the plurality of microphones;
 - use prior audio data to operate a filter topology that processes audio signals so as to make the array more sensitive to desired sound than to undesired sound;*
 - categorize received sounds as one of desired sounds or undesired sounds; and
 - use the categorized received sounds, and the categories of the received sounds, to modify the filter topology.

Appeal Br. 7 (Claims App.) (emphasis added).

References

The references relied upon by the Examiner are:

| Name | Reference | Date |
|-------------------------------|--------------------|---------------|
| Joshi et al. (“Joshi”) | US 2012/0191447 A1 | Jul. 26, 2012 |
| Gopalan et al. (“Gopalan”) | US 9,373,338 B1 | Jun. 21, 2016 |
| Yang | US 9,685,171 B1 | Jun. 20, 2017 |

The Rejections on Appeal

Claims 1–5 and 16–23 stand rejected under 35 U.S.C. § 102(a)(1) as anticipated by Yang. Final Act. 3–7.

Claims 6–8 and 24 stand rejected under 35 U.S.C. § 103 as unpatentable over Yang and Gopalan. Final Act. 8–12.

Claims 9–15 stand rejected under 35 U.S.C. § 103 as unpatentable over Yang and Joshi. Final Act. 12–16.

Claims 25 and 26 stand rejected under 35 U.S.C. § 103 as unpatentable over Yang, Gopalan, and Joshi. Final Act. 16–19.

DISCUSSION

We have reviewed the Examiner’s rejections in light of Appellant’s arguments presented in this appeal. Arguments that Appellant could have made but did not make in the Brief² are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(iv). For the reasons discussed below, Appellant has not persuaded us of error. We adopt as our own the findings and reasons set forth in the rejections and in the Examiner’s Answer, and we provide the following for highlighting and emphasis.

² No reply brief was filed.

Appellant argues that the Examiner erred in finding the prior art teaches or suggests “us[ing] prior audio data to operate a filter topology that processes audio signals so as to *make the array more sensitive to desired sound than to undesired sound*,” as recited in claim 1. Appeal Br. 3–4 (emphasis added). Specifically, Appellant argues that Yang only discloses using a voice print to “*identify* a user,” not to make the microphone array more sensitive to desired sound (such as the user’s voice) than to undesired sound. *Id.* (emphasis added). We are not persuaded by Appellant’s argument.

As the Examiner finds, Yang not only discloses identifying a user based on voice print, but also discloses using a microphone array to detect “other noises (e.g., voices of other users)” and “adaptive filters to *enhance the target voice and to suppress the other noise*.” Yang 6:67–7:9 (emphasis added); Ans. 16–17; *see also* Yang Fig. 1, 2:20–26 (disclosing background devices which “enhance” user commands and “suppress” ambient noise), 2:59–67 (same). Specifically, Yang discloses using an “audio modification engine,” “audio detection module,” and “adaptive filtering module” to accomplish desired sensitivity to a target sound and suppression of other noise. Ans. 16–17 (citing Yang 6:43–57).

Accordingly, we are unpersuaded of error regarding the Examiner’s anticipation rejection of claim 1.

Appellant argues the anticipation rejection of claim 3 separately, contending the Examiner errs in finding Yang discloses the “audio signals derived from a voice-based sound source [are] not . . . used to modify the filter topology,” as recited in claim 3. Appeal Br. 4. Appellant asserts the

Examiner relies on Yang’s disclosure of “using voice print data to operate a filter topology that processes audio signals,” which Appellant argues is contrary to claim 3. Again, we are unpersuaded.

As the Examiner finds, Yang discloses “in response to the first microphone 302 detecting the target voice and/or the second microphone 304 detecting the ambient noise, an *adaptive filter 314 may be frozen until the target voice is detected.*” Yang 9:15–18 (emphasis added); *see also id.* 9:5–12; Ans. 17. Thus, because the adaptive filter is “frozen,” Yang’s audio signals are “not . . . modify[ing] the filter topology,” just as claim 3 recites. We, therefore, discern no error in the Examiner’s rejection of claim 3, as well as claim 4 argued therewith. Appeal Br. 4.

Appellant argues that the remaining rejections are erroneous “for the same reasons” as the rejections of claims 1, 3, and 4. Appeal Br. 4–5. For the reasons discussed above, however, we are unpersuaded of error.

Accordingly, for the foregoing reasons, we are not persuaded the Examiner erred. We sustain anticipation rejection of claims 1–5, 16–23, and sustain the Examiner’s obviousness rejections of claims 6–15 and 24–26.

CONCLUSION

We affirm the Examiner’s decision rejecting claims 1–26.

DECISION SUMMARY

In summary:

| Claims Rejected | 35 U.S.C. § | Reference(s)/Basis | Affirmed | Reversed |
|------------------------|--------------------|---------------------------|-----------------|-----------------|
| 1–5, 16–23 | 102(a)(1) | Yang | 1–5, 16–23 | |
| 6–8, 24 | 103 | Yang, Gopalan | 6–8, 24 | |

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Application 15/418,687

| Claims Rejected | 35 U.S.C. § | Reference(s)/Basis | Affirmed | Reversed |
|------------------------|--------------------|---------------------------|-----------------|-----------------|
| 9-15 | 103 | Yang, Joshi | 9-15 | |
| 25, 26 | 103 | Yang, Gopalan, Joshi | 25, 26 | |
| Overall Outcome | | | 1-26 | |

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). *See* 37 C.F.R. § 41.50(f).

AFFIRMED