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Paper 22
Entered: October 28, 2020

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AMAZON.COM, INC.,
Petitioner,

v.

VOCALIFE LLC,
Patent Owner.

IPR2020-00864
Patent RE47,049 E

Before AMANDA F. WIEKER, MONICA S. ULLAGADDI, and JASON M. REPKO, *Administrative Patent Judges*.

REPKO, *Administrative Patent Judge*.

DECISION
Denying Institution of *Inter Partes* Review
35 U.S.C. § 314

I. INTRODUCTION

Amazon.com, Inc. ("Petitioner") filed a petition to institute *inter partes* review of claims 1–8, 19, 20, 22–25, and 30 of U.S. Patent No. RE47,049 E (Ex. 1001, "the '049 patent"). Paper 1 ("Pet."). Vocalife LLC ("Patent Owner") filed a Preliminary Response. Paper 8 ("Prelim. Resp."). We authorized additional briefing to address Patent Owner's argument that we should deny institution of the Petition under § 314(a). Paper 9. Petitioner filed a Reply. Paper 10 ("Reply"). Patent Owner filed a Sur-reply. Paper 12 ("Sur-reply"). After the conclusion of the parallel trial in district court, we authorized the parties to file another set of briefs. Paper 19 ("Pet. Post-Trial Brief"), Paper 21 ("PO Post-Trial Brief").

To institute an *inter partes* review, we must determine "that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a). But the Board has discretion to deny a petition even when a petitioner meets that threshold. *Id.*; *see, e.g.*, *Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2140 (2016) ("[T]he agency's decision to deny a petition is a matter committed to the Patent Office's discretion."); *NHK Spring Co. v. Intri-Plex Techs., Inc.*, IPR2018-00752, Paper 8 (PTAB Sept. 12, 2018) (precedential); Patent Trial and Appeal Board Consolidated Trial Practice Guide 64 (Nov. 20, 2019), http://www.uspto.gov/TrialPracticeGuideConsolidated (identifying considerations that may warrant exercise of this discretion).

For the reasons discussed below, we exercise our discretion under § 314(a) to deny institution.

A. Related Matters

According to the parties, the '049 patent is involved in *Vocalife LLC v. Amazon.com, Inc.*, No. 2:19-cv-00123-JRG (E.D. Tex. filed Apr. 16, 2019). Pet. 90; Paper 4, 2.

B. The '049 Patent

The '049 patent generally relates to enhancing a target sound signal, such as a speech signal, while suppressing ambient noise. *See* Ex. 1001, 2:5–11. This enhancement can be applied to signals from a microphone array, like those in mobile phones, for example. *See, e.g.*, *id.* at 18:49–55. According to the patent, conventional microphone arrays are used for radar and sonar. *Id.* at 1:42–46. Narrow-band techniques used by these systems, though, are unsuitable for speech signals captured by smaller devices because those signals have an extremely wide bandwidth relative to the center frequency. *Id.* at 1:46–50. And conventional arrays for broadband speech are too bulky to be used in mobile devices. *Id.* at 1:50–55.

To enhance the target sound signal in broadband-speech applications, the '049 patent uses sound-source localization, adaptive beamforming, and noise reduction. *Id.* at 2:11–14. Figure 2, below, shows an example system. *Id.* at 3:66–67.

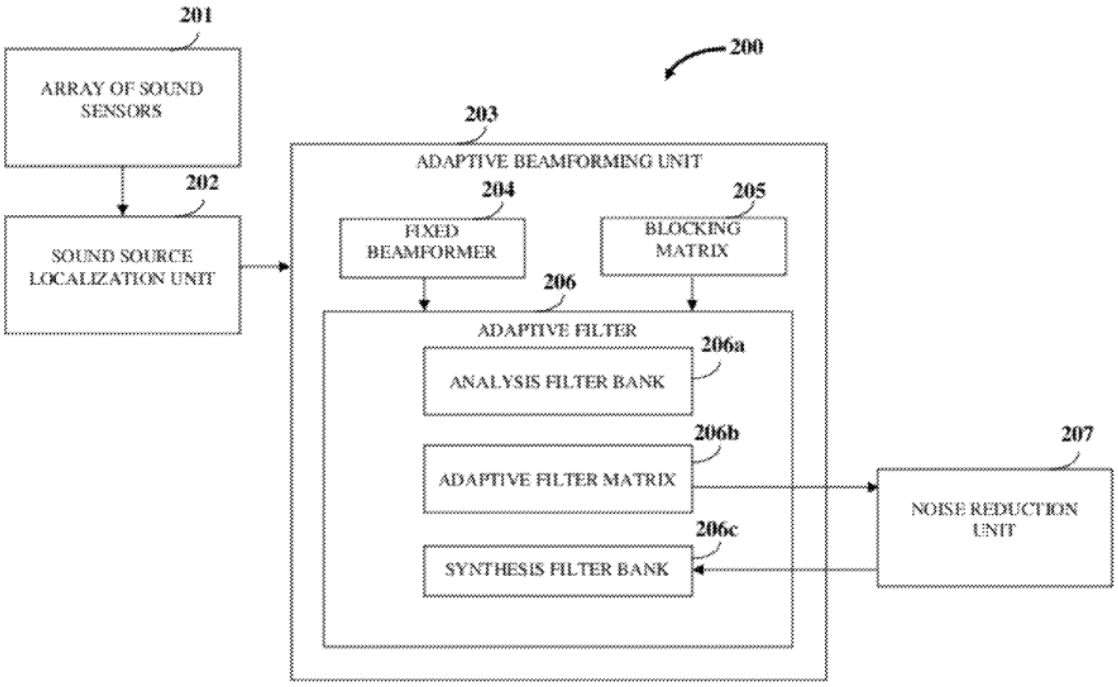

FIG. 2

Figure 2, above, shows system 200 with sound-source localization unit 202, adaptive-beamforming unit 203, and noise-reduction unit 207. *Id.* at 6:32–38.

In system 200, array 201 receives the sound signal. *Id.* at 6:48–53. Sound source localization unit 202 estimates a target sound signal's location. *Id.* at 6:54–56. Adaptive beamforming unit 203 steers the array's directivity pattern to the target sound signal. *Id.* at 6:60–64. This enhances the target sound signal and partially suppresses ambient noise signals. *Id.* Noise reduction unit 207 then further suppresses the ambient noise signals. *Id.* at 7:9–11.

Claims 1, 20, 22, and 30 are independent. Claim 1 is reproduced below.

> 1. A method for enhancing a target sound signal from a plurality of sound signals, comprising:
>
> providing a microphone array system comprising an array of sound sensors positioned in **[**an arbitrary**]** *a linear, circular,*

or other configuration, a sound source localization unit, an adaptive beamforming unit, and a noise reduction unit, *wherein said sound source localization unit, said adaptive beamforming unit, and said noise reduction unit are integrated in a digital signal processor, and* wherein said sound source localization unit, said adaptive beamforming unit, and said noise reduction unit are in operative communication with said array of said sound sensors;

receiving said sound signals from a plurality of disparate sound sources by said sound sensors, wherein said received sound signals comprise said target sound signal from a target sound source among said disparate sound sources, and ambient noise signals;

determining a delay between each of said sound sensors and an origin of said array of said sound sensors as a function of distance between each of said sound sensors and said origin, a predefined angle between each of said sound sensors and a reference axis, and an azimuth angle between said reference axis and said target sound signal, when said target sound source that emits said target sound signal is in a two dimensional plane, wherein said delay is represented in terms of number of samples, and wherein said determination of said delay enables beamforming for **[**arbitrary numbers of**]** said *array of* sound sensors **[**and**]** *in* a plurality of **[**arbitrary**]** configurations **[**of said array of said sound sensors**]**;

estimating a spatial location of said target sound signal from said received sound signals by said sound source localization unit;

performing adaptive beamforming for steering a directivity pattern of said array of said sound sensors in a direction of said spatial location of said target sound signal by said adaptive beamforming unit, wherein said adaptive beamforming unit enhances said target sound signal and partially suppresses said ambient noise signals; and

suppressing said ambient noise signals by said noise reduction unit for further enhancing said target sound signal.

Ex. 1001, 21:27–22:3

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