UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AMAZON.COM, INC.,

Petitioner,

v.

JAWBONE INNOVATIONS, LLC,

Patent Owner.

Patent No. 11,122,357
Filing Date: August 5, 2013
Issue Date: September 14, 2021

Inventor: Gregory C. Burnett
Title: FORMING VIRTUAL MICROPHONE ARRAYS USING DUAL OMNIDIRECTIONAL MICROPHONE ARRAY (DOMA)

PATENT OWNER'S PRELIMINARY RESPONSE

Case No. IPR2023-00251

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B. Ground 1: Brandstein and Gannot Do Not Render Obvious Claims 1-20 5

1. Petitioner's Combination Does Not Disclose or Render Obvious "a signal processor. . . to apply a varying linear transfer function between the first and second microphone signals;" as Required by Claims 1-20 5

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I. INTRODUCTION

On November 21, 2022, Amazon.com, Inc. ("Petitioner") filed a Petition requesting *inter partes* review of claims 1-20 ("Challenged Claims") of U.S. Patent No. 11,122,357 (the "'357 Patent") (Ex. 1001). Paper 1 ("Petition" or "Pet."). The declaration of Richard M. Stern, Ph.D. (Ex. 1002) accompanied the Petition. On December 8, 2022, the Board issued a Notice of Filing Date Accorded for the Petition and set the time for filing patent owner's preliminary response. Paper 5.

The Board should deny the Petition because the Petition fails to show a reasonable probability of success as to any claim. In particular, the Petition does not show that Brandstein and Gannot render obvious "a signal processor . . . to apply a varying linear transfer function between the first and second microphone signals" as recited in both independent claims of the '357 Patent.

II. THE '357 PATENT

The '357 Patent discloses and claims apparatuses for implementing "dual omnidirectional microphone array noise suppression." '357 Patent, Abstract. The prior art was concerned with "nulling out noise sources" to reduce noise. *Id.* By contrast, the '357 Patent seeks to remove ***speech*** from its noise signal. *Id.*; *see also id.*, 4:61-5:4. This highly effective removal of speech from the noise signal enables the invention to effectively remove noise from its speech signal. *Id.*, Abstract.

The ’357 Patent uses at least two physical microphones to generate virtual microphones which have similar noise responses and dissimilar speech responses. ’357 Patent, Abstract; 3:54-67. In embodiments, one of the signals will have a null in the direction of speech, which results in a “clean” noise signal. *Id.*, 4:1-13, 5:1-4. With speech removed from the noise signal, the noise signal can then, in turn, be used to effectively remove noise from the speech. *Id.*, 13:1-13.

III. THE RELEVANT ALLEGED PRIOR ART

A. Brandstein (Ex. 1003)

Microphone Arrays: Signal Processing Techniques and Applications, (Ex. 1003, “Brandstein”) is a collection of articles discussing topics in microphone arrays. Ex. 1003 at 5. Brandstein purports to have been published in 2001. *Id.* at 4.

Petitioner primarily relies on the paper “Robust Adaptive Beamforming” as reproduced in Brandstein. *See* Brandstein at 87-99.

B. Gannot (Ex. 1004)

Signal Enhancement Using Beamforming and Nonstationarity with Applications to Speech by Sharon Gannot, David Burshtein, and Ehud Weinstein (Ex. 1004, “Gannot”) is a paper purportedly published in August 2001. Gannot discusses a “sensor array located in an enclosure, where arbitrary transfer functions (TFs) relate the source signal and the sensors.” Ex. 1004 at 1614. Rather than

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