

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

VALENCELL, INC.,
Patent Owner.

Case IPR2017-00319
Patent 8,923,941 B2

Before BRIAN J. McNAMARA, JAMES B. ARPIN, and
SHEILA F. McSHANE, *Administrative Patent Judges*.

ARPIN, *Administrative Patent Judge*.

DECISION
Institution of *Inter Partes* Review
37 C.F.R. § 42.108

I. INTRODUCTION

Apple Inc. (“Petitioner”) filed a Petition requesting *inter partes* review of claims 1–13 of U.S. Patent No. 8,923,941 B2 (Ex. 1001, “the ’941 patent”) under 35 U.S.C. §§ 311–319. Paper 2 (“Pet.”). Valencell, Inc. (“Patent Owner”) filed a Preliminary Response. Paper 6 (“Prelim. Resp.”). Under 35 U.S.C. § 314, an *inter partes* review may not be instituted “unless . . . the information presented in the petition . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.”

For the reasons set forth below, we institute *inter partes* review of claims 1, 2, and 6–13 of the ’941 patent.

A. Related Proceedings

According to the parties, the ’941 patent is involved in the following civil actions: *Valencell, Inc. v. Apple Inc.*, Case No. 5-16-cv-00010 (E.D.N.C. 2016); *Valencell, Inc. v. Bragi Store, LLC et al.*, Case No. 5-16-cv-00895 (E.D.N.C. 2016); and *Valencell, Inc. v. Fitbit, Inc.*, Case No. 5-16-cv-00002 (E.D.N.C. 2016). Pet. 70; Paper 5, 1. Further, the ’941 patent is involved in a related petition for *inter partes* review, Case IPR2017-00321, filed by Petitioner on the same day as the instant Petition.¹

¹ Neither party identified the related petition in its Mandatory Notices or in an updated Mandatory Notice. We caution each party to comply with its obligation to update its Mandatory Notices, as required. 37 C.F.R. § 42.8(a)(3); Office Trial Practice Guide, 77 Fed. Reg. 48756, 48759–60 (Aug. 12, 2012); *see* 37 C.F.R. § 42.12(a)(1).

B. The '941 Patent

The '941 patent is entitled “Methods and Apparatus for Generating Data Output Containing Physiological and Motion-Related Information,” filed February 19, 2014, and issued December 30, 2014. Ex. 1001 at [22], [45], [54]. The '941 patent is a continuation of U.S. Patent Application No. 12/691,388, filed January 21, 2010, now issued as U.S. Patent No. 8,700,111 B2 (*id.* at [63]), and claims priority to four provisional patent applications: U.S. Provisional Patent Application Nos. 61/208,567, filed February 25, 2009; 61/208,574, filed February 25, 2009; 61/212,444, filed April 13, 2009; and 61/274,191, filed August 14, 2009 (*id.* at [60]).

The '941 patent discloses methods related generally to “physiological monitoring” and, in particular, methods for generating a serial data string containing both physical or motion-based activity information and physiological information. *Id.*, Abstract, 1:20–23. The '941 patent describes using a motion sensor to capture physical or motion-based activity information and a photoplethysmography (PPG) sensor to capture physiological information. *Id.* The PPG sensor uses an optical emitter to emit light into a subject, for example, via a light-guiding cover made from “light transmissive material.” *Id.* at 2:3–17. An optical detector then detects scattered light produced upon the emitted light penetrating the subject. *See id.* at 13:4–14; 14:40–49.

The '941 patent discloses determining multiple physical activity and physiological parameters based on information obtained from the respective sensors. *Id.*, Abstract. Specifically, “[a] plurality of subject physiological parameters can be extracted from the physiological information, and a plurality of subject physical activity parameters can be extracted from the

motion-related information.” *Id.* The physiological and motion-related information may be processed into a serial string. *Id.* at 26:4–7. The serial string then may be parsed, such that an application-specific interface (API) may use both sets of data to generate statistical relationships between the physiological parameters and the physical activity parameters. *Id.* at 26:15–19; Fig. 18.

In the methods described in the ’941 patent, PPG signals may be pre-conditioned to reduce motion artifacts and signal noise. *Id.* at 30:44–48; *see id.* at 32:1–15, 3:47–55. In particular, the physiological information may be filtered to remove signal noise by using various, known signal processing techniques. *See id.* at 3:56–67. Thus, the ’941 patent discloses methods for removing motion-related noise artifacts, such as subject footstep noise. *See id.* at 3:65–4:5; 31:18–19.

C. Illustrative Claim

Claim 1 is the challenged independent claim of the ’941 patent. Each of claims 2–13 depends directly or indirectly from claim 1. Claim 1 is illustrative and is reproduced below with disputed limitations emphasized.

1. A method of generating data output containing physiological and motion-related information, the method comprising:

sensing physical activity and physiological information from a subject via a single monitoring device attached to the subject, wherein the monitoring device comprises at least one motion sensor for sensing the physical activity and *at least one photoplethysmography (PPG) sensor* for sensing the physiological information; and

processing signals from the at least one motion sensor and signals *from at least one PPG sensor* via a processor of the monitoring device into a serial data output

of physiological information and motion-related information, wherein the serial data output is configured *such that a plurality of subject physiological parameters comprising subject heart rate and subject respiration rate* can be extracted from the physiological information and *such that a plurality of subject physical activity parameters* can be extracted from the motion-related information.

Id. at 30:35–54 (emphases added).

D. Applied References and Declaration

Petitioner relies on the following references and declaration in support of its asserted grounds of unpatentability.

Exhibit	References and Declaration
1003	Declaration of Dr. Majid Sarrafzadeh
1004	Curriculum Vitae of Dr. Majid Sarrafzadeh
1009	Japanese Patent Application Publication No. 2005/040261 A to Numaga <i>et al.</i> , published February 17, 2005
1010	Certified English-language translation of Numaga ² (“Numaga”)
1016	U.S. Patent Application Publication No. 2009/0105556 A1 to Fricke <i>et al.</i> , filed September 29, 2008, published April 23, 2009 (“Fricke”)
1025	Hyonyoung Han <i>et al.</i> , <i>Development of a wearable health monitoring device with motion artifact reduced algorithm</i> , International Conference on Control, Automation and Systems, IEEE (2007) (“Han”)
1031	U.S. Patent Application Publication No. 2005/0059870 A1 to Aceti, published March 17, 2005

² Citations to Numaga are to this English-language translation.

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