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Paper 11
Entered: June 6, 2017

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

VALENCELL, INC.,
Patent Owner.

Case IPR2017-00321
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 14–21 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 14–21 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. 52; Paper 5, 1. Further, the '941 patent is involved in a related petition for *inter partes* review, Case IPR2017-00319, 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 relates generally to physiological monitoring apparatus. Ex. 1001, 1:21–23. Figure 5 of the '941 patent depicts an exemplary embodiment and is reproduced below.

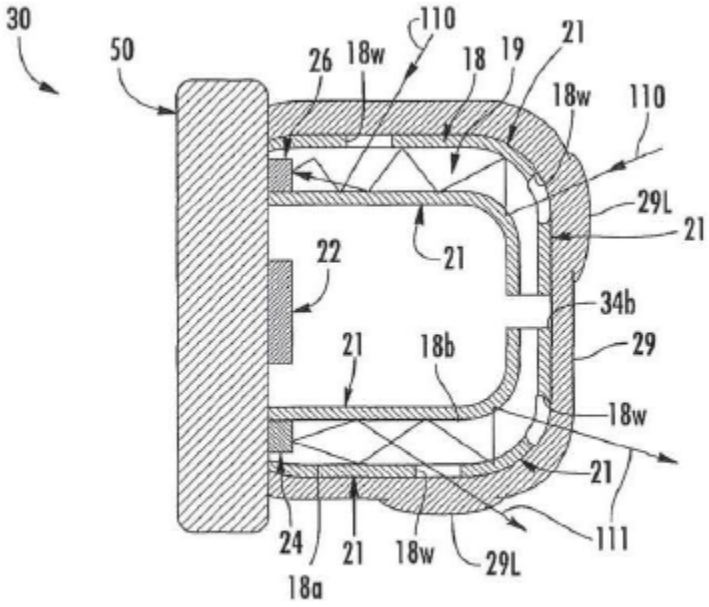

FIG. 5

Figure 5 depicts a side section view of light-guiding earbud 30 for a headset. In particular, earbud 30 includes light guide or cover 18 that serves the

function of a housing. *Id*. at 16:16–19. Light guide 18 includes a plurality of windows 18w formed in cladding material 21 on outer surface 18a of cover 18. *Id*. at 16:19–21. Light 111 emitted from light emitter 24 passes through windows 18w and into the subject's body, and scattered light 110 returning from the subject's body passes into light guide 18 through windows 18w and is directed to light detector 26. *Id*. at 16:21–24. In other embodiments, earbud housing and light guide 18 may be separate components, for example, as shown in Figure 3, which depicts cover 18 surrounding housing 16. *Id*. at 14:6–10. In addition, light guide 18 of Figure 5 is surrounded by layer 29 of light transmissive material. *Id*. at 16:30–31. One or more lenses 29L are formed in layer 29 and are in optical communication with respective windows 18w in the light guide 18, and lenses 29L are configured to collect returning, scattered light 110 and to direct scattered light 110 into light guiding region 19 and to light detector 26. *Id*. at 16:31–41. An earbud, such as earbud 30, may integrate a sensor module containing a plurality of sensor elements for measuring physiological information and at least one noise source for measuring noise information and may include a microprocessor that is in electrical communication with the sensor module or modules. *Id*. at 3:46–55, 4:21–25.

In the apparatus described in the '941 patent, PPG signals may be pre-conditioned by the microprocessor to reduce motion artifacts and signal noise. *Id*. at 4:11–17, 4:25–32, 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 apparatus 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 14 is the challenged independent claim of the '941 patent. Each of claims 15–21 depends directly or indirectly from claim 1. Claim 1 is illustrative and is reproduced below with disputed limitations emphasized.

> 14. A wearable device, comprising:
>
> a housing; and
>
> a chipset enclosed within the housing, the chipset comprising *at least one PPG sensor*, at least one motion sensor, and at least one signal processor configured to process signals from the at least one motion sensor and signals from the at least one PPG sensor to reduce motion artifacts from the PPG signals;
>
> wherein the housing comprises at least one window that optically exposes the at least one PPG sensor to a body of a subject wearing the device, and wherein the housing comprises non-air light transmissive material in optical communication with the at least one PPG sensor and the window.

Id. at 32:1–15 (emphasis 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
1016	U.S. Patent Application Publication No. 2009/0105556 A1 to Fricke *et al.*, filed September 29, 2008, published April 23, 2009 ("Fricke")
1025	Hyonyoung Han *et al.*, *Development of a wearable health monitoring device with motion artifact reduced algorithm*, International Conference on Control, Automation and Systems, IEEE (2007) ("Han")

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