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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ABIGAIL ACTON FLOWER

Appeal 2020-000340
Application 15/300,318
Technology Center 3700

Before ANTON W. FETTING, NINA L. MEDLOCK, and PHILIP J. HOFFMANN, *Administrative Patent Judges*.

HOFFMANN, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the Examiner's rejection of claims 1–20. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

According to Appellant, the disclosure relates to "monitoring a perfusion[2] of a patient." Spec., Abstract. Claims 1, 11, and 20 are the

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[1] We use the word "Appellant" to refer to "applicant" as defined in 37 C.F.R. § 1.42. In the Appeal Brief, Appellant does not identify a real party in interest. The Application Data Sheet filed with the application identifies the applicant as KONINKLIJKE PHILIPS N.V.

[2] Perfusion is pumping a liquid into an organ or tissue.

independent claims on appeal. Below, we reproduce independent claim 1 as illustrative of the appealed claims.

> 1. A method for monitoring a perfusion of a patient, comprising:
>
> receiving, with a processor, an indication of a voltage applied across a chest of the patient via a first electrode;
>
> receiving, with the processor, a measurement of a current across the chest of the patient resulting from the applied voltage via a second electrode;
>
> generating, with the processor, an impedance-based respiratory rate waveform based on the applied voltage and the measured current;
>
> generating, with the processor, a Fourier Transform in a heartbeat-based time domain of the impedance-based respiratory rate waveform by using a heartbeat of the patient as a clock;
>
> isolating, with the processor, cardiac artifacts in the Fourier Transform; and
>
> generating, with the processor, a perfusion waveform indicating a perfusion of a chest cavity of the patient based on the isolated cardiac artifacts.

REJECTIONS AND PRIOR ART

The Examiner rejects the claims as follows:

I. Claims 1, 6–9, 11, 15–18, and 20 under 35 U.S.C. § 103 as unpatentable over Ackmann[3] and Delos[4];

II. Claims 2–5 and 12–14 under 35 U.S.C. § 103 as unpatentable over Ackmann, Delos, and Skrabal[5]; and

[3] Ackmann et al., US 5,178,154, issued Jan. 12, 1993 ("Ackmann").
[4] Delos et al., US 2012/0172730 A1, published July 5, 2012 ("Delos").
[5] Skrabal, US 2009/0216140 A1, published Aug. 27, 2009.

III. Claims 10 and 19 under 35 U.S.C. § 103 as unpatentable over Ackmann, Delos, and Harris.[6]

ANALYSIS

Rejection I—Obviousness rejection of claims 1, 6–9, 11, 15–18, and 20

Based on our review of the record, the Examiner does not support adequately that claim 1 would have been obvious based on Ackmann and Delos.

As set forth above, independent claim 1 recites a method for monitoring a perfusion of a patient comprising, in relevant part,

> generating, with the processor, an impedance-based respiratory rate waveform based on the applied voltage and the measured current;
>
> generating, with the processor, a Fourier Transform in a heartbeat-based time domain of the impedance-based respiratory rate waveform by using a heartbeat of the patient as a clock;
>
> isolating, with the processor, cardiac artifacts in the Fourier Transform; and
>
> generating, with the processor, a perfusion waveform indicating a perfusion of a chest cavity of the patient based on the isolated cardiac artifacts.

Appeal Br., Claims App. To summarize, the claimed method isolates cardiac artifacts from a respiratory waveform, and generates a perfusion waveform indicating a patient's chest cavity's perfusion based on those isolated cardiac artifacts.

The Examiner does not rely on Ackmann to disclose isolating cardiac artifacts from a respiratory waveform, and does not rely on Ackmann to

[6] Harris et al., US 3,909,792, issued Sept. 30, 1975 ("Harris").

generate a perfusion waveform indicating a patient's chest cavity's perfusion based on those isolated cardiac artifacts. *See, e.g.*, Final Action 3–4. Instead, the Examiner relies on Delos to disclose isolating cardiac artifacts from a respiratory waveform, and determines that after isolating these artifacts, it would have been obvious to modify Ackmann to use the isolated cardiac artifacts to generate a perfusion waveform indicating a patient's chest cavity's perfusion based on those isolated cardiac artifacts. *See, e.g.*, *id.* at 4–5.

As Appellant points out, however, "Delos filters out cardiac components instead of passing them." Appeal Br. 7; *see also id.* at 8. "Delos . . . disclos[es] 'filter[ing] out electrical functions resulting from the heartbeat such that chest impedance measurements more accurately track the respiratory rate.'" Reply Br. 2 (emphases omitted) (citation to Delos omitted). That is, to the extent that Delos isolates cardiac artifacts, Delos discloses discarding those artifacts but not using those artifacts to determine perfusion. Without providing further explanation or evidence, the Examiner does not support adequately that it would have been obvious to modify Ackmann to use isolated cardiac artifacts from a respiratory waveform to generate a perfusion waveform indicating a patient's chest cavity's perfusion, as claimed.

Accordingly, we do not sustain the Examiner's obviousness rejection of independent claim 1. We also do not sustain the Examiner's obviousness rejection of independent claims 11 and 20 that include a similar recitation as, and the Examiner rejects with, claim 1. Further, we do not sustain the obviousness rejection of claims 6–9 and 15–18 that depend from claims 1 and 11.

Rejections II and III—Obviousness rejections of claims 2–5, 10, 12–14, and 19

Claims 2–5, 10, 12–14, and 19 depend from independent claims 1 and 11. As discussed above, we do not sustain the independent claims' rejection. The Examiner does not rely on Skrabal or Harris to disclose anything that would remedy the above-discussed deficiency in the independent claim's rejection. Thus, we also do not sustain the Examiner's obviousness rejections of dependent claims 2–5, 10, 12–14, and 19.

CONCLUSION

We REVERSE the Examiner's § 103 rejections of claims 1–20.

In summary:

Claims Rejected	35 U.S.C. §	Basis/Reference(s)	Affirmed	Reversed
1, 6–9, 11, 15–18, 20	103	Ackmann, Delos		1, 6–9, 11, 15–18, 20
2–5, 12–14	103	Ackmann, Delos, Skrabal		2–5, 12–14
10, 19	103	Ackmann, Delos, Harris		10, 19
Overall Outcome				1–20

REVERSED