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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte REGIS GUILLEMAUD and YANIS CARITU

Appeal 2016-007322[1]
Application 11/962,944[2]
Technology Center 3700

Before MICHAEL C. ASTORINO, JAMES A. WORTH, and TARA L. HUTCHINGS, *Administrative Patent Judges*.

HUTCHINGS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 7–22. An oral hearing was held on July 12, 2018. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

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[1] Our decision references Appellants' Appeal Brief ("App. Br.," filed Nov. 5, 2015) and Reply Brief ("Reply Br.," filed July 22, 2016), and the Examiner's Answer ("Ans.," mailed May 23, 2016) and Non-Final Office Action ("Non-Final Act.," mailed Jan. 5, 2015). The record includes a transcript of the hearing held July 12, 2018.

[2] Appellants identify Commissariat a L'Energie Atomique as the real party in interest. App. Br. 1.

CLAIMED INVENTION

Appellants' claimed invention relates to "a method to measure the movements of a person wearing a portable detector." Spec. 1:13–14.

Claims 7 and 15 are the independent claims on appeal. Claim 7, reproduced below, is illustrative of the claimed subject matter:

> 7. A process for detecting an external activity signal and a separated physiological activity signal of a person, the process comprising:
>
> obtaining a signal from a sensor measuring movements of a person to which the sensor is attached, the signal composed of a first component due to physiological activity of the person and a second component due to external activity of the person;
>
> repeatedly computing a value of a criterion of either a minimal level or a minimal instability of the signal obtained from the sensor; and
>
> filtering, in a filter, the signal from the sensor to derive a filtered signal representative of the person's external activity, the filtering comprising a partition of the signal from the sensor into a low frequency component and a high frequency component, the filtered signal comprising the low frequency component of the signal of the sensor and a portion of the high frequency component, the portion being variable in the signal obtained from the sensor and depending, in each time portion of the filtered signal, on the value of the criterion, the position of the high frequency component being greater when either the minimal level or the minimal instability of the signal of the sensor is reached; and
>
> subtracting the filtered signal from the signal obtained from the sensor, to obtain the first component of the signal due to physiological activity separated from the external activity signal.

REJECTIONS

Claims 7–22 are rejected under 35 U.S.C. § 101 as directed to non-statutory subject matter.

Claims 7–11, 14–19, and 22 are rejected under 35 U.S.C. § 103(a) as unpatentable over Kadhiresan (US 5,935,081, iss. Aug. 10, 1999), Nakajima (US 2002/0062204 A1, pub. May 23, 2002), and Freeman (US 2005/0101889 A1, pub. May 12, 2005).

Claims 12, 13, 20, and 21 are rejected under 35 U.S.C. § 103(a) as unpatentable over Kadhiresan, Nakajima, Freeman, and Alt (US 5,354,317, pub. Oct. 11, 1994).

ANALYSIS

Non-Statutory Subject Matter

Under 35 U.S.C. § 101, an invention is patent eligible if it claims a "new and useful process, machine, manufacture, or composition of matter." 35 U.S.C. § 101. The Supreme Court, however, has long interpreted § 101 to include an implicit exception: "[l]aws of nature, natural phenomena, and abstract ideas" are not patentable. *See, e.g.*, *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2354 (2014).

The Supreme Court, in *Alice*, reiterated the two-step framework previously set forth in *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 566 U.S. 66 (2012), "for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts." *Alice*, 134 S. Ct. at 2355. The first step in that analysis is to "determine whether the claims at issue are directed to one of those patent-ineligible concepts." *Id.* If the claims are not directed to a patent-ineligible concept, e.g., an abstract idea, the inquiry ends. Otherwise, the inquiry proceeds to the second step where the elements

of the claims are considered "individually and 'as an ordered combination'" to determine whether there are additional elements that "'transform the nature of the claim' into a patent-eligible application." *Id.* (quoting *Mayo*, 566 U.S. at 79, 78).

In rejecting the claims under 35 U.S.C. § 101, the Examiner determined that the claims are "directed to the abstract idea of signal processing, i.e.[,] a mathematical relationship or formula." Final Act. 3. The step-one analysis requires us to consider the claims "in their entirety to ascertain whether their character as a whole is directed to excluded subject matter." *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1346 (Fed. Cir. 2015). We, therefore, look to "whether the focus of the claims is on [a] specific asserted improvement in computer capabilities . . . or, instead, on a process that qualifies as an 'abstract idea' for which computers are invoked merely as a tool." *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335–36 (Fed. Cir. 2016).

Here, the Specification provides that the invention relates to measuring the movements of a person wearing a portable detector. Spec. 1:13–14. The prior art includes movement sensors, such as accelerometers, to monitor movements of the thorax cage and deduce heart rate from these movements. *Id.* at 1:18–20. However, a problem with such conventional movement sensors is that they require particular conditions or postures of the patient, namely, a lack of effort or movement, to provide a reliable measurement. *Id.* at 1:20–24.

Prior art devices isolate an estimation of the physiological activity by successive filtering, namely, applying a low-pass filter to remove high frequency noise, and a high-pass filter to remove low-frequency physical activity. *Id.* at 2:20–22; *see also id.* at 2:17–19 (describing movement due to

external activity of the wearer as typically, but not exclusively, low frequency). Such known signal filterings provide unreliable results, because physical activity "often comprises a part of the energy in the same frequencies as the physiological activity, especially in transient postural states or when great efforts are exerted." *Id.* at 2:23–26. Appellants' invention seeks to reduce or eliminate the influence of unfiltered physical activity in the frequency band where physiological activity is present, and avoid incorrect detection leading to a false alert. *Id.* at 2:28–32.

Claims 7–22 recite limitations encompassing these features. For example, independent claim 7 recites a "process for detecting an external activity signal and a separated physiological activity signal of a person," comprising the following steps: obtaining a signal from a sensor measuring movements of a person; repeatedly computing a value of a criterion; filtering the signal to derive a filtered signal representative of the person's activity, the filtering comprising a partition of the signal from the sensor into a low frequency component and a high frequency component, the filtered signal comprising the low frequency component and a portion of the high frequency component, the portion being variable and dependent, in each time portion, on the value of the criterion; and subtracting the filtered signal from the signal obtained from the sensor. In this way, claim 7 enables a detector to more accurately distinguish between a signal component due to an external activity of the wearer and a signal component due to a physiological activity. *See id.* at 1:1–4. Independent claim 15 recites similar language.

Considering the claim language in light of the Specification, we are persuaded by Appellants' argument that the claims are "not directed to a mathematical relationship or formula" (App. Br. 7), but instead focus on

providing a new and useful technique for measuring the movements of a person wearing a portable detector (*see id.* at 5–6). Much like the situation in *Thales Visionix Inc. v. United States*, 850 F.3d 1343, 1349 (Fed. Cir. 2017), which involved claims "directed to a new and useful technique for using sensors to more efficiently track an object on a moving platform," the claims here use sensors to more accurately detect an external activity signal and a separated physiological activity signal of a person. On the record before us, the Examiner has not sufficiently established that the claims are directed to an abstract idea under *Alice* step one. Because we are not persuaded that the claims are directed to an abstract idea, we need not proceed to step two.

Therefore, on the record before us, we do not sustain the Examiner's rejection under 35 U.S.C. § 101 of claims 7–22.

Obviousness

Independent Claims 7 and 15, and Dependent Claims 8–11, 14, 16–19, and 22

We are persuaded by Appellants' argument that the Examiner erred in rejecting independent claims 7 and 15 under 35 U.S.C. § 103(a) because the combination of Kadhiresan, Nakajima, and Freeman fails to teach or suggest:

> the filtered signal comprising the low frequency component of the signal of the sensor and a portion of the high frequency component, the portion being variable in the signal obtained from the sensor and depending, in each time portion of the filtered signal, on the value of the criterion, the position of the high frequency component being greater when either the minimal level or the minimal instability of the signal of the sensor is reached,

as recited in claim 7, and similarly recited in claim 15. App. Br. 7–11; *see also* Reply Br. 3–4. The Examiner relies on Kadhiresan at column 3, lines 23–59 and Figure 2, and Freeman at paragraphs 8 and 48 as disclosing the argued limitation. Final Act. 4–5. We have reviewed the cited portions of Kadhiresan and Freeman. Yet, we find nothing, alone or in combination, that discloses or suggests the argued limitation.

The Examiner finds that Kadhiresan teaches filtering the signal of the sensor into a low frequency component. *Id.* at 4 (citing Kadhiresan at 3:23–59, Fig. 2). However, Kadhiresan instead describes using a plurality of bandpass filters with upper and lower cut-off frequencies (not a lowpass filter that passes signals with a frequency lower than a single cutoff frequency). *See* Kadhiresan 3:29–37. For example, a pass band set between 1 and 10 Hz provides an output signal related to a patient's state of activity, a pass band set between 0.05 Hz and 1.0 Hz provides an output signal related to inspiration and expiration, and a pass band between 1 Hz and 140 Hz provides an output signal related to heart beat activity and the flow of blood through the heart. *Id.* at 3:38–52. The Examiner acknowledges that Kadhiresan's filtered signal does not comprise a portion of the high frequency component that is variable. *Id.* at 5. We agree with the Examiner that Kadhiresan does not teach a filtered signal comprising, in part, a portion of the high frequency component that is variable, as called for in claims 7 and 15.

The Examiner relies on Freeman as "teach[ing] that it is well known . . . to adjust the frequency of a filter such that the outcome of the filter, and thus the portion of a frequency component, varies based upon the minimal level to better enhance the stability of the filtering (0008, 0048)." Final Act. 5; *see also* Ans. 4–5 (finding that Freeman teaches that "a certain frequency

component of the filter is variable depending on the signal being filtered and the value of the spectral analysis").

Freeman at paragraph 48 describes that a variable cutoff low pass filter can be added to eliminate frequency components in an ECG that are unrelated to chest compression, thereby improving stability and accuracy. Yet, modifying the cutoff frequency of a lowpass filter does not teach or suggest filtering a signal to have a portion of the high frequency component, that is variable, as required in the independent claims.

Freeman at paragraph 8 describes performing spectral analysis on a difference signal, and adjusting the filter based on the outcome of the spectral analysis. In particular, Freeman's adaptive filter may be reset when the difference signal is beyond a threshold. Freeman ¶ 8. Yet, the use of an adaptive filter that seeks to minimize a difference signal fails to teach or suggest a filtered signal comprising a portion of the high frequency component that is variable, much less a signal comprising a low frequency component and a portion of the high frequency component, as called for in claims 7 and 15.

In view of the foregoing, we do not sustain the Examiner's rejection of independent claims 7 and 15, and dependent claims 8–11, 14, 16–19, and 22 under 35 U.S.C. § 103(a).

Dependent Claims 12, 13, 20, and 21

Claims 12, 13, 20, and 21 each depend from independent claims 7 and 15. The rejection of these dependent claims does not cure the deficiency in the Examiner's rejection of the independent claims. Therefore, we do not sustain the Examiner's rejections of claims 12, 13, 20, and 21 under

35 U.S.C. § 103(a) for the same reasons set forth above with respect to independent claims 7 and 15.

DECISION

The Examiner's rejection of claims 7–22 under 35 U.S.C. § 101 is reversed.

The Examiner's rejections of claims 7–22 under 35 U.S.C. § 103(a) are reversed.

REVERSED