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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ABHILASH PATANGAY,
PRAMODSINGH HIRASINGH THAKUR,
and YI ZHANG[1]

Appeal 2018-000734
Application 13/331,288
Technology Center 3700

Before DANIEL S. SONG, JAMES P. CALVE, and ARTHUR M. PESLAK, *Administrative Patent Judges*.

CALVE, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134(a) from the Office Action finally rejecting claims 1–21. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

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[1] Cardiac Pacemakers, Inc. is identified as the real party in interest. Appeal Br. 2.

CLAIMED SUBJECT MATTER

Claims 1, 14, and 16 are independent. Claim 1 is reproduced below.

1. An apparatus comprising:
a processor circuit configured to:
receive an indication of cardiac filling pressure of a subject;
receive an indication of thoracic fluid status of the subject;
receive an indication of cardiac output of the subject;
classify the indication of cardiac filling pressure into one of at least first and second cardiac filling pressure states by comparing the indication of cardiac filling pressure to at least one pressure threshold;
classify the indication of thoracic fluid status into one of at least first and second thoracic fluid status states by comparing the indication of thoracic fluid status to at least one fluid status threshold;
classify the indication of cardiac output into one of at least first and second cardiac output states by comparing the indication of cardiac output to at least one cardiac output threshold;
generate a multi-dimensional heart failure decompensation status indication classifying the subject as having one of a plurality of discrete types of heart failure events and indicating a need for therapy, the multi-dimensional heart failure decompensation status indication including, in separate dimensions, the classified cardiac filling pressure state, the classified thoracic fluid status state, and the classified cardiac output state; and
generate a multi-dimensional heart failure decompensation status alert based on the multi-dimensional heart failure decompensation status indication, the multi-dimensional heart failure decompensation status alert displayed as a representation of a collection of at least two categorical descriptors among the classified indication of cardiac filling pressure, the classified indication of thoracic fluid status, and the classified indication of cardiac output.

REJECTIONS

Claims 1, 3–9, and 11–21 are rejected as being directed to patent-ineligible subject matter under the judicial exception to 35 U.S.C. § 101.

Claims 1–21 are rejected under 35 U.S.C. § 112, first paragraph, for failing to comply with the written description requirement.

Claim 9 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

Claims 1–3, 5, 7, 8, 10–17, 19, and 21 are rejected under 35 U.S.C. § 103(a) as unpatentable over Sachanandani (US 7,629,889 B2, iss. Dec. 8, 2009), Tehrani (US 2005/0085734 A1, pub. Apr. 21, 2005), and Wekell (US 2006/0200009 A1, pub. Sept. 7, 2006).

Claims 4, 6, 18, and 20 are rejected under 35 U.S.C. § 103(a) as unpatentable over Sachanandani, Tehrani, Wekell, and Brockway (US 2007/0142732 A1, pub. June 21, 2007).

ANALYSIS

Claims 1, 3–9, and 11–21 Under 35 U.S.C. § 101

The Examiner finds that claims 1, 3–9, and 11–21 are directed to the abstract idea of generating a multi-dimensional heart failure decompensation status. Final Act. 5. The Examiner also finds that the claims are directed to the abstract idea of classifying data, which is similar to organizing human activities, and to organizing information through mathematical correlations. *Id.* at 6. The Examiner further finds that the claims are directed to receiving data, classifying the received data, and generating multi-dimensional heart failure decompensation indication/status that are similar to collecting and analyzing information and displaying the results. Ans. 4 (citing *Electric Power Group*).

On January 7, 2019, the United States Patent and Trademark Office published the 2019 Revised Patent Subject Matter Eligibility Guidance in the Federal Register in which the Office revised its examination procedure. 84 Fed. Reg. 50 ("Revised Guidance"). To determine if a claim recites an abstract idea under Prong One of the Revised Guidance, Examiners must identify specific limitations in the claim (individually or in combination) that the Examiner believes recite an abstract idea, and determine whether the identified limitation(s) falls within the subject matter groupings set forth in Section I of the Revised Guidance. *Id.* at 54 (III. *A. Revised Step 2A*). The subject matter groupings include mathematical concepts, certain methods of organizing human activity, and mental processes. *Id.* at 52.

Here, the Examiner does not identify any claim limitations but instead states generally that "[c]laims 1, 3–9, and 11–21 are directed to generating a multi-dimensional heart failure decompensation status, which is an abstract idea." Final Act. 5; *see also* Ans. 4 ("The claims are directed to receiving data, classifying the received data, and a generating multi-dimensional heart failure decompensation indication/status."). These findings do not provide the requisite specificity required by the Revised Guidance for Prong One. In addition, the abstract ideas identified by the Examiner are not among the categories of abstract ideas set forth in Section I of the Revised Guidance.

The Examiner has not shown that the claims are directed to any mathematical concepts, mathematical relationships, or formulas, equations, or calculations. *See Revised Guidance*, 84 Fed. Reg. 50, 52. Nor has the Examiner shown that the claims are directed to organizing human activity by fundamental economic principles, commercial or legal interactions, sales, advertising, or managing personal behavior or relationships. *Id.*

Furthermore, the Examiner has not shown that the claims are directed to mental processes or concepts performed in the human mind including observation, evaluation, judgment, and opinion. *Id.*

Accordingly, we do not sustain the rejection of claims 1, 3–9, and 11–21 under the judicial exception to 35 U.S.C. § 101.[2]

Claims 1–21 For Lack of Written Description

Regarding independent claims 1, 14, and 16, the Examiner finds that the Specification's disclosure fails to describe generating the status alert based on the status indication because it appears that the disclosure describes the status indication and the status alert as interchangeable terms for meaning the same thing. Final Act. 2–3. The Examiner also finds that the disclosure in the Specification fails to describe a status alert and status indication that are linked with each other. *Id.* at 3; *see* Ans. 3.

Appellants argue that Figures 4 and 5 disclose how multi-dimensional status alerts are generated by using separate classified status indications for cardiac filling pressure, thoracic fluid status, and cardiac output. Appeal Br. 14; Reply Br. 2. Appellants argue that the Specification describes how the multi-dimensional heart failure decompensation status alert is provided from a plurality of the separately classified indications. Appeal Br. 14; Reply Br. 2. Appellants cite page 17, lines 12–23, which discloses that a multi-dimensional alert in block 450 of Figure 4 "can include a separate cardiac output dimension 413, a cardiac filling pressure dimension 423, and a thoracic fluid status dimension 433." Spec. 17:18–19; Appeal Br. 14.

[2] Challenging an Examiner's refusal to enter an amendment (Appeal Br. 12–14) is by petition under 37 C.F.R. §§ 1.127 and 1.181, not by appeal to the Board. Appellant's petition was dismissed by Decision mailed June 5, 2017.

Appellant's Figure 4 is reproduced below.

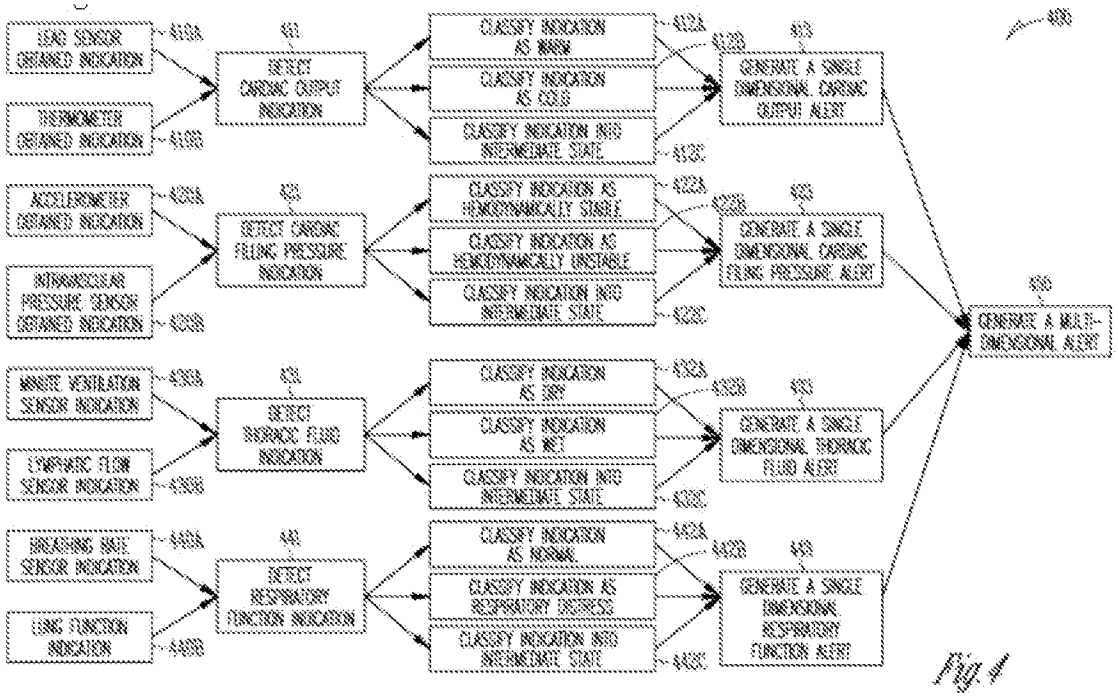

Figure 4 shows how a multi-dimensional heart failure decompensation status alert is generated from single dimensional classified alerts.

Furthermore, the written description of generate a multi-dimensional heart failure decompensation status alert (block 550) in Figure 5 indicates that "a multi-dimensional alert can be created by obtaining any two or more single dimensional alerts." Spec. 19:22–24. Subjects are classified as "hemodynamically stable" or "hemodynamically unstable" for cardiac filling pressure. They are classified as "dry" or "wet" for thoracic fluid status. They are classified as "warm" or "cold" for cardiac output. *Id.* at 19:24–29.

These single dimensional alerts, which are based on corresponding indications, are combined to generate a multi-dimensional alert such as "hemodynamically stable," "dry," and "warm" *or* "hemodynamically stable," "wet," and "warm" *or* "hemodynamically unstable" "wet," and "warm." *Id.* at 20:1–10; *see* Reply Br. 2–3.

This disclosure reasonably conveys to those skilled in the art that the inventors had possession of the claimed subject matter as of the filing date. *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). Accordingly, we do not sustain the rejection of claims 1–21 for lack of written description.

Claim 9 For Indefiniteness

Dependent claim 9 further recites classifying the subject as having cardiogenic heart failure or non-cardiogenic heart failure. The Examiner interprets "cardiogenic" to mean originating in the heart or caused by a cardiac condition. Final Act. 4. The Examiner determines that it is unclear what is meant by *non-cardiogenic* heart failure, i.e., heart failure that does not originate in the heart or is not caused by a cardiac condition. *Id.* at 4–5.

Appellant argues only that claim 9 was cancelled by amendment after the Final Office Action, but the amendment was not entered. Appeal Br. 16.

Accordingly, we summarily sustain the rejection of claim 9.

Claims 1–3, 5, 7, 8, 10–17, 19, and 21
Unpatentable over Sachanandani, Tehrani, and Wekell

The Examiner finds that Sachanandani teaches an apparatus, non-transitory device-readable medium, and method as recited in independent claims 1, 14, and 16, including receiving and classifying cardiac parameters to generate multi-dimensional heart failure decompensation status indication and status alert, as claimed, but does not teach using cardiac filling pressure, thoracic fluid status, and cardiac output as cardiac parameters to classify a subject as having discrete types of heart failure events and displaying at least two categorical descriptors from the classified cardiac parameters. Final Act. 8–9, 15–16, and 19–20.

The Examiner finds that Tehrani teaches to use cardiac parameters of cardiac filling, fluid levels, and cardiac output to classify a subject as having one or more discrete types of heart failure events indicating a need for therapy by using a multiple-dimensional heart failure decompensation status indication, as claimed. *Id.* at 9, 16–17, and 20.

The Examiner finds that Wekell teaches generating and representing the status of various physiological parameters on a display system to allow healthcare providers to easily view the status of patients. *Id.* at 10, 17, 21.

The Examiner reasons that because Sachanandani generates an alert score based on two or more alert status values, the single alert score is multi-dimensional. Ans. 7.

Appellant argues that the claims require the multi-dimensional alert to include separate dimensions of cardiac filling pressure, thoracic fluid status, and cardiac output. Appeal Br. 16. Appellant argues that Sachanandani may use multiple physiological signals to represent heart failure decompensation status and to compute an "alert score," but the alert score is one dimensional rather than multi-dimensional. *Id.* at 16–17; Reply Br. 3. Appellant argues that Tehrani, like Sachanandani, receives and classifies multiple cardiac parameters based on a threshold but then uses those signals to calculate a single dimensional "average." Appeal Br. 17; Reply Br. 3–4. We agree.

Independent claims 1, 14, and 16 require the multi-dimensional alert to be displayed "as a representation of a collection of at least two categorical descriptors among the classified indication of cardiac filling pressure, the classified indication of thoracic fluid status, and the classified indication of cardiac output." Thus, the claims require the multi-dimensional alert to include and to display multiple categories or dimensions of heart failure.

Sachanandani teaches comparison of one or more sensed parameters of a patient's physiological condition to one or more threshold values and find an alert status if the sensed value is exceeded. Sachanandani, 8:18–9:22. Each individual sensed parameter may correspond to a dimension; however, these multi-dimensional alert statuses are then communicated to fusion machine 208 or first fusion module 210, which calculates a *single* alert score using the alert status(es) provided from one or more detectors 202. *Id.* at 9:23–62. Sachanandani may detect and classify multiple dimensions of a heart failure, but Sachanandani only generates a single dimension status alert or score. *Id.* at 9:34–10:23; *see also id.* at Fig. 2.

Tehrani teaches receiving and classifying different cardiac parameters based on a threshold, but Tehrani uses those parameters to generate a single "average" of the classification values for multiple conditions. Tehrani ¶ 78, Fig. 6. This single average is not provided in multiple dimensions.

The Examiner's interpretation of "multi-dimensional . . . status alert" to mean a score that is calculated based on two or more alert status values is an unreasonably broad interpretation in light of the claim language discussed above and also is inconsistent with the written description of this feature as discussed above for the written description rejection. Spec. Fig. 4. Thus, we do not sustain the rejection of claims 1–3, 5, 7, 8, 10–17, 19, and 21.

Claims 4, 6, 18, and 20
Unpatentable over Sachanandani, Tehrani, Wekell, and Brockway

The Examiner's reliance on Brockway to teach features of claims 4, 6, 18, and 20 does not remedy the deficiencies of Sachanandani, Tehrani, and Wekell as to claims 1 and 16 from which these claims depend. Thus we do not sustain the rejection of claims 4, 6, 18, and 20.

DECISION

We affirm the rejection of claim 9 as being indefinite and we reverse the remaining rejections.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED-IN-PART