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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte KAI HENCKEN, DANIEL SCHRAG, PETER KRIPPNER, CARLO GEMME, MARCO EGMAN, and JARKKO MAKELA

Appeal 2017-008245
Application 14/450,016
Technology Center 2800

Before ADRIENE LEPIANE HANLON, JEFFREY T. SMITH, and SHELDON M. McGEE, *Administrative Patent Judges*.

McGEE, *Administrative Patent Judge.*

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellants[1] seek our review of the Examiner's decision to reject claims 1–20.

We have jurisdiction. 35 U.S.C. § 6.

We reverse.

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[1] Appellants identify ABB Research Ltd. as the real party in interest. App. Br. 2.

SUBJECT MATTER

The subject matter on appeal "relates to the field of power systems, such as installations for controlling and protecting the distribution of electric power," where a plurality of primary devices in a power system (e.g., circuit breakers, power transformers, distribution transformers) are monitored. Spec. ¶¶ 2–3. In the claimed method (independent claim 1), operational diagnostic data (e.g., regarding the degree of mechanical wear on electrical contacts) from a first primary device is collected, and health indicator data (e.g., potential malfunction or failure) is determined for the first primary device. *Id.* ¶¶17, 20; App. Br. 14. The operational diagnostic data and the health indicator data is linked and "diagnostic correlation data" is identified, after which a diagnostic rule (e.g., "a comparison with a threshold value") is adapted for purposes of "generating a diagnostic warning indicative of a health state of the primary device." Spec. ¶ 22; App. Br. 14. The adapted diagnostic rule – based on the data from the first primary device – is then communicated to a second diagnostic device, and is applied therein to generate a diagnostic warning of a second primary device based on operational diagnostic data collected from the second primary device. App. Br. 14.

Sharing an adapted diagnostic rule in this manner purportedly enables the second diagnostic device "to modify (e.g., improve) [its] diagnostic capabilities based on the experience made on a multitude of other primary devices." Spec. ¶ 80.

Independent claim 1 is illustrative of the claimed subject matter and is copied below with key limitations italicized for emphasis:

> 1. A method for monitoring primary devices of a power system via diagnostic devices, the method comprising:
>
> in a *first* diagnostic device:
>
> collecting operational diagnostic data from a *first primary device*, and determining health indicator data for the first primary device from readings of a sensor, or from a result of a remote query, or from *manual inspection, or from regular services performed by a human on the first primary device*;
>
> identifying diagnostic correlation data from the health indicator data and from correlated operational diagnostic data of the first primary device, which correlated operational diagnostic data is linked with the health indicator data;
>
> adapting a diagnostic rule to the identified diagnostic correlation data, wherein *an original diagnostic rule is modified by calculating a change in a diagnostic identifier associated with operational data of the first primary device* and is applicable to operational diagnostic data for generating a diagnostic warning indicative of a health state of the primary device;
>
> *communicating the adapted diagnostic rule to a second diagnostic device*; and
>
> in the *second* diagnostic device:
>
> generating a diagnostic warning of a *second primary device* by applying the adapted diagnostic rule of the first diagnostic device to operational diagnostic data collected from the second primary device.

App. Br. 14 (emphases added).

REJECTIONS

I. Claims 1–20 under 35 U.S.C. § 101 as directed to patent ineligible subject matter; and

II. Claims 1–20 under 35 U.S.C. § 102(b) as anticipated by Kalgren (US 2008/0141072 A1, published June 12, 2008).

OPINION

Rejection I

We review the Examiner's 35 U.S.C. § 101 rejection of claims 1–20 under the recently published revised guidance governing the application of 35 U.S.C. § 101. USPTO's January 7, 2019 Memorandum, *2019 Revised Patent Subject Matter Eligibility Guidance* ("Memorandum"). Under that guidance, we first look to determine whether the claim recites:

(1) any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human interactions, or mental processes); and, if so,

(2) additional elements that integrate the judicial exception into a practical application (see MPEP § 2106.05(a)–(c), (e)–(h)).

Applying the guidance to the claims at issue here, we determine that each independent claim 1 and 13 recites the abstract idea of performing a mental process, as well as the abstract idea of a mathematical concept.

Specifically, claim 1 recites that determination of "health indicator data for the first primary device" may be made "from manual inspection, or from regular services performed by a human on the first primary device." App. Br. 14. The Specification informs that such "health indicator data" includes whether the device has completely failed, malfunctioned, or has reduced availability. Spec. ¶ 20. A manual inspection can reveal the "severity of any kind of error" occurring in the first primary device. *Id.* Thus, the "health indicator data for the first primary device" recited in claim 1 may be based on human observation of the first primary device and a subsequent judgment regarding the "health" of the primary device. *Id.*

Further, in the recited "adapting a diagnostic rule" step, "an original diagnostic rule is modified by calculating a change in a diagnostic identifier[2] associated with operational data of the first primary device." This change may be accomplished by means of a statistical evaluation. Spec. ¶ 75; *see also id.* ¶ 76 (explaining that "different statistical or model based algorithms may be used to analyse the individual primary devices 16a, 16b, to detect the change in the diagnostic identifier 35 and to find improvements of the diagnostic rules 28 used to assess the quality of the primary devices 16a, 16b"); ¶ 73 ("[t]he change of the diagnostic indicator 35 may then be identified by comparing diagnostic indicators 35 of different data sets."). Thus, claim 1 recites the mathematical concept of performing a statistical analysis or a comparison of data regarding diagnostic indicators.

Independent claim 13 contains similar limitations as those recited in claim 1 – i.e., "receiving health indicator data determined from . . . manual inspection, or from regular services performed by a human on the first primary device," and "adapting a diagnostic rule" which involves "calculating a change in a diagnostic identifier associated with the operational data of the first primary device." App. Br. 17. Thus, like claim 1, claim 13 recites the abstract idea of performing a mental process, as well as the abstract idea of a mathematical concept.

Because the independent claims recite multiple abstract ideas, we now turn to whether the claims integrate those abstract ideas into a practical application, and are, thus, patent eligible.

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[2] The "diagnostic identifier" 35 is also referred to as "diagnostic indicator 35." Spec. ¶¶ 48, 72, 73, 75, 76.

Upon review of the Specification, as well as Appellants' arguments set forth in the Appeal and Reply Briefs, we determine that the claims are directed to improving the diagnostic capabilities of primary devices in the technical field of power distribution, and are patent eligible under 35 U.S.C. § 101. *See* MPEP 2106.05(a).

Here, the Specification informs us that, in a power substation, primary devices such as "circuit breakers vary in type, age and brand and may even include different parts." Spec. ¶ 3. There is a need for "[p]ower substation equipment [] to be very reliable and show a high availability," particularly when power needs to be interrupted and reconnected. *Id.* ¶ 4. To ensure that the primary devices are in good working order, they "can be checked regularly by a service technician." *Id.* Between service technician visits, components inevitably degrade and may fail, which may not be discovered until the next service visit, potentially resulting in delayed repairs. *Id.* ¶ 5. Such service technician visits are also expensive and time consuming because power substations can be remotely located. *Id.* Alternatives to this approach include using "non-intelligent data loggers" or "locally operating diagnostic devices" that employ fixed limits or parameters that may signal an alarm if violated. *Id.* ¶¶ 6–7.

The claimed method (claim 1) and program (claim 13) "purport to improve the functioning of . . . the technical field" of diagnostics in power systems. *Alice Corp. Pty. Ltd. v. CLS Bank Intern.*, 573 U.S. 208, 225 (2014); *see* Spec. ¶¶ 73–80 (explaining how modifying or adapting a diagnostic rule via statistical analysis, based on the data associated with one or more primary devices, and then communicating the adapted diagnostic rule to another diagnostic device may improve the diagnostic capabilities of

the diagnostic device to which the adapted rule is communicated). Namely, the Specification indicates that "[t]he improvements to diagnostic rules . . . may enable the local diagnostic device to modify (e.g., improve) [its] diagnostic capabilities based on the experience made on a multitude of other primary devices." *Id.* ¶ 80. Indeed, the Specification instructs that "[t]he diagnostic device 20 that received the adapted diagnostic rule 28 may then provide an improved diagnostic warning 21 of a further primary device . . . by applying the adapted diagnostic rule 28 to operational diagnostic data [] collected for the further primary device." *Id.* ¶ 82. In view of such purported improvements, we determine there is a practical application of the abstract ideas recited in claims 1 and 13. It follows, then, that these claims, and the claims dependent therefrom, are patent eligible.

For these reasons, we do not sustain the Examiner's rejection of claims 1–20 under 35 U.S.C. § 101.

Rejection II

The Examiner's findings relevant to the rejection of claims 1–20 under 35 U.S.C. § 102(b) over Kalgren appear at pages 4 and 5 of the Final Office Action dated February 25, 2016.

Relevant to this appeal, Appellants argue that the Examiner has failed to establish a prima facie case of anticipation because Kalgren does not disclose first and second diagnostic devices and first and second primary devices as recited in independent claims 1 and 13. App. Br. 11. Specifically, Appellants argue that "a single device is utilized to perform all the acts of Kalgren's method." *Id.* As such, Appellants argue, Kalgren does

> not disclose the claimed acts of adapting a diagnostic rule based on data from a first diagnostic device monitoring a first primary

> device, communicating the adapted diagnostic rule to a second diagnostic device, and, in the second diagnostic device, generating a diagnostic warning of a second primary device by applying the adapted diagnostic rule of the first diagnostic device to operational diagnostic data collected from the second primary device.

Id. at 12.

Appellants further take issue with the Examiner's citation to dual GPS receivers as satisfying the claimed requirement of two diagnostic devices. *Id.*

We find Appellants' arguments persuasive of reversible error. The findings cited in support of anticipation do not evince the recited limitations. For example, the Examiner maps method steps S1500 and S1600 (Fig. 1) to the separate diagnostic devices, but fails to explain how these method steps encompass the recited first and second diagnostic devices. Final Act. 4; *see also* Kalgren ¶ 81 ("In the training of diagnostic models *step* S1500, the diagnostic models . . ." (emphasis added)); *id.* ¶ 82 ("Diagnostic features are extracted (*step* S1600) from monitored values . . ." (emphasis added)).

Further, the Examiner's position that the first and second diagnostic devices and the first and second primary devices are not separate devices (Ans. 4) is unavailing. The Examiner fails to cite to any evidence in the Specification to support a claim construction that the recited "devices" may be a single device. On the other hand, the independent claims identify the devices as "first" and "second" devices, and our reading of the Specification supports a construction that they are indeed separate. *See, e.g.*, Spec. ¶¶ 3, 15, 16, 18, 37–39, 78.

Furthermore, in the underlying rejection (Final Act. 4–5), the Examiner provides no explanation how Kalgren's disclosure at paragraphs 79, 91, 100, 187, and 211 evinces the communication of the diagnostic rule adapted in a first primary device to a second diagnostic device and then application of that diagnostic rule to the second primary device based on the operational data of that second primary device.

Under these circumstances, we do not sustain the Examiner's anticipation rejection of claims 1–20 under 35 U.S.C. § 102(b) over Kalgren.

DECISION/ORDER

We reverse the rejection of claims 1–20 under 35 U.S.C. § 101.

We reverse the rejection of claims 1–20 under 35 U.S.C. § 102(b).

REVERSED