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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte XIAOMING FENG,
FANG YANG, and WILLIAM PETERSON¹

Appeal 2016-006242
Application 13/495,272
Technology Center 2800

Before BRADLEY R. GARRIS, GEORGE C. BEST, and
DEBRA L. DENNETT, *Administrative Patent Judges*.

GARRIS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134 from the Examiner's decision rejecting claims 1–22. We have jurisdiction under 35 U.S.C. § 6.

We AFFIRM.

Appellants claim a method of estimating outage scope for an electrical distribution system including distribution circuits C1–C8 and protective devices PD1–PD8 operable to isolate the corresponding distribution circuits from the remainder of the system responsive to a fault, wherein some of the

¹ ABB Research Ltd. is identified as the real party in interest. App. Br. 2.

protective devices are terminal protective devices PD4–PD8 and the remainder are non-terminal protective devices PD1–PD3, the method comprising:

generating downstream outage prediction information indicating whether any service area protected by one of the terminal protective devices likely has a power outage based on reported outage information;

generating upstream outage prediction information indicating whether any service area protected by one of the non-terminal protective devices likely has a power outage based on the downstream outage prediction information; and

predicting whether each protective device is in an open or closed state based on the downstream and upstream outage prediction information so that more than one open protective device can be identified when more than one fault occurs (independent claim 1, Fig. 1).

Appellants also claim a non-transitory computer readable medium (independent claim 12) and a computer system (remaining independent claim 13) having limitations corresponding to those of claim 1.

A copy of representative claim 1, taken from the Appeal Brief's Claims Appendix, appears below.

1. A method of estimating outage scope for an electrical distribution system including a plurality of distribution circuits connected to the electrical distribution system through protective devices operable to isolate the corresponding distribution circuits from the remainder of the electrical distribution system responsive to a fault, some of the protective devices being terminal protective devices in that no other protective device is downstream of the terminal protective devices, the remainder of the protective devices being non-terminal protective devices in that one or more other protective

devices are downstream of the non-terminal protective devices, the method comprising:

generating downstream outage prediction information indicating whether any service area protected by one of the terminal protective devices likely has a power outage based on reported outage information;

generating upstream outage prediction information indicating whether any service area protected by one of the non-terminal protective devices likely has a power outage based on the downstream outage prediction information; and

predicting whether each protective device is in an open or closed state based on the downstream and upstream outage prediction information so that more than one open protective device can be identified when more than one fault occurs in different parts of the electrical distribution system.

The Examiner rejects claims 1–22 under 35 U.S.C. § 101 as directed to ineligible subject matter involving an abstract idea in the form of a mathematical concept (Final Action 2–3).

The Examiner also rejects claims 1–4 and 12–15 under 35 U.S.C. § 102(b) as anticipated by Sumic (US 5,568,399, iss. Oct. 22, 1996) (*id.* at 3–6) and rejects remaining claims 5–11 and 16–22 under 35 U.S.C. § 103(a) as unpatentable over Sumic in view of Honghai (Kuang Honghai et al., *Application of AMR Based on Powerline Communication in Outage Management System*, 2009) (*id.* at 7–13).

Appellants do not present separate arguments specifically directed to the dependent claims under rejection (*see* App. Br. 5–12). Therefore, the dependent claims will stand or fall with their parent independent claims, of which claim 1 is representative.

We will sustain the Examiner’s rejections for the reasons expressed in the Final Action, the Answer, and below.

The § 101 Rejection

In *Alice Corp. v. CLS Bank International*, 134 S. Ct. 2347, 2355 (2014), the Supreme Court reiterated the following two-step analysis (previously set forth in *Mayo Collaborative Services v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1300 (2012)) for distinguishing patents that claim patent-ineligible laws of nature, natural phenomenon, and abstract ideas from those that claim patent-eligible applications of those concepts:

First, we determine whether the claims at issue are directed to one of those patent-ineligible concepts. If so, we then ask, what else is there in the claim before us? . . . We have described step two of this analysis as a search for an inventive concept—i.e., an element or combination of elements that is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the ineligible concept itself.

Alice, 134 S. Ct. at 2355.

Appellants argue that they “ha[ve] not claimed an algorithm” (App. Br. 6) and that “[t]he claims at issue do not recite a mathematical algorithm” (*id.* at 8).

However, as indicated in the above quotation from *Alice*, the first step for assessing patent-eligibility does not involve whether the appealed claims recite a mathematical algorithm but rather involves whether these claims are directed to a mathematical algorithm. The Examiner correctly finds, and Appellants do not contend otherwise, that each of the steps recited in claim 1 utilizes a mathematical formula (i.e., the step of generating downstream outage prediction information utilizes the mathematical formula of Specification ¶ 28 (*see* Ans. 3), the step of generating upstream outage prediction information utilizes the mathematical formula of Specification ¶ 34 (*see* Final Action 2), and the step of predicting whether each protective

device is in an open or closed state utilizes the mathematical formula of Specification ¶ 37 (*see* Ans. 3)).

Appellants also contend that the Examiner ignores claim features and interrelationships, namely, wherein the step of generating downstream information is based on reported outage information, the step of generating upstream information is based on the downstream information, and the step of predicting is based on both downstream and upstream information (App. Br. 6–7). Appellants further contend that these claim features and interrelationships add significantly more than a merely abstract idea (*id.* at 7–8; *see also* Reply Br. 4).

These contentions lack persuasive merit. Contrary to Appellants’ representation, the Examiner specifically addresses rather than ignores the features and interrelationships of claim 1 (Final Action 2; Ans. 3–4). Moreover, Appellants fail to explain why such features and interrelationships are considered to transform the patent-ineligible concept of mathematical formulas into a patent-eligible application of the concept. In this regard, we discern no rational basis for Appellants’ apparent belief that such a transformation is provided by an interrelationship between the respective mathematical concepts of the claimed steps (i.e., wherein the second and third steps are based on information from preceding steps).

Finally, Appellants argue that their patent-eligibility position is supported by *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327 (Fed. Cir. 2016); (Reply Br. 2, 4–5).

We do not agree. The claims of *Enfish* were held “not directed to an abstract idea within the meaning of *Alice* [but] [r]ather, . . . are directed to a specific improvement to the way computers operate, embodied in the self-referential table.” *Enfish*, 822 F.3d at 1336. In contrast, claim 1 relates to

estimating outage scope for an electrical distribution system and is not directed to an improvement in the way this system is operated, used, or controlled as correctly observed by the Examiner (Ans. 3). We emphasize that Appellants do not specifically challenge the Examiner's observation in their Reply Brief.

For the reasons stated above and given by the Examiner, we sustain the § 101 rejection of claims 1–22 as directed to ineligible subject matter.

The § 102/§ 103 Rejections

The pivotal issue in these rejections concerns the Examiner's finding that Sumic satisfies the claim 1 step of generating downstream outage prediction information (Final Action 4 (citing, *inter alia*, Sumic col. 13, ll. 16–22)).

Appellants argue: “Clearly, the downstream tracing referred to in the [column 13 disclosure] of the Sumic reference has nothing to do with generating downstream **outage prediction information**. Instead, this section of the Sumic reference pertains to setting confidence thresholds for the protective devices.” (App. Br. 11.)

Appellants' argument is not convincing. Sumic's confidence threshold is used in determining the possibility that a given protective device has operated (i.e., opened due to a fault, resulting in a power outage) (Sumic col. 8, ll. 21–22 (cited at Final Action 5)). For this reason, the confidence threshold appears to be an integral component of generating downstream outage prediction information in Sumic. Appellants do not provide any reasonably specific basis for their opposing view.

In addition, Appellants contend that, “unlike Applicant's claims which recite the downstream outage prediction information as being for service

areas downstream of the terminal devices (i.e., ‘protected by one of...’), Sumic’s description of downstream tracing occurs upstream of the terminal nodes” (Reply Br. 6).

This contention is unpersuasive because it incorrectly equates the claimed terminal devices with Sumic’s terminal nodes. As shown in Sumic’s Figure 1, terminal nodes 28 are distinct from protective devices 32 (*see, e.g.*, Sumic col. 5, ll. 7–29). Therefore, Appellants do not provide any basis for believing that the downstream tracing described by Sumic fails to satisfy the claim 1 step “generating downstream outage prediction information indicating whether any service area protected by one of the terminal protective devices likely has a power outage.”

In their Reply Brief, Appellants argue that “[m]oreover, Sumic’s upstream tracing is not based on the downstream tracing disclosed therein” (Reply Br. 6). This argument was not raised in the Appeal Brief and is not responsive to any argument raised in the Examiner’s Answer. For these reasons and because Appellants have not shown good cause, we will not consider this new argument raised in the Reply Brief. *See* 37 C.F.R. § 41.41(b)(2).

Because Appellants fail to show error in the Examiner’s finding that Sumic satisfies the claim 1 step of generating downstream outage prediction information, we sustain the § 102 rejection of claims 1–4 and 12–15 as anticipated by Sumic as well as the § 103 rejection of claims 5–11 and 16–22 as unpatentable over Sumic in view of Honghai.

Conclusion

The Examiner’s decision is affirmed.

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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). *See* 37 C.F.R. § 41.50(f).

AFFIRMED