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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte NAIDE PAN

Appeal 2016-008038
Application 13/341,973[1]
Technology Center 2800

Before ADRIENE LEPIANE HANLON, WESLEY B. DERRICK, and JENNIFER R. GUPTA, *Administrative Patent Judges*.

DERRICK, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134 from the maintained final rejection under 35 U.S.C. § 101 of claims 1–20 as directed to non-statutory subject matter. We have jurisdiction under 35 U.S.C. § 6.

We AFFIRM.

THE INVENTION

The subject matter of the claims on appeal relates to computational methods and systems for carrying out computations to characterize and/or

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[1] PGS Geophysical AS is identified as the real party in interest. Appeal Br. 1.

image subsurface features. Specification filed December 31, 2011 ("Appeal Br."), Abstract.

Independent claims 1 and 20 are directed to systems. Independent claim 10 is directed to a method. Claim 1, reproduced below, is representative.

> 1. An exploration-seismology computer system that extrapolates a first constant-depth wavefield for a first depth to a second constant-depth wavefield for a second depth, the exploration-seismology computer system comprising:
>
> one or more processors;
>
> one or more data-storage devices; and
>
> an extrapolation routine, stored in one or more of the one or more data-storage devices that extrapolates the first constant-depth wavefield for the first depth to the second constant-depth wavefield for the second depth by computing two second-domain virtual complex-valued wavefields and propagating one of the two second-domain virtual complex-valued wavefields and that stores the second constant-depth wavefield for the second depth in one or more of the one or more data-storage devices.

Appeal Brief filed November 24, 2015 ("Appeal Br."), 20.

DISCUSSION[2]

We have reviewed the ground of rejection set forth by the Examiner, Appellant's arguments, and the Examiner's response. On this record, we are unpersuaded that the Examiner erred reversibly in determining that the claims do not comply with 35 U.S.C. § 101 for the reasons set forth by the

[2] In this discussion, we refer to the Specification, the Final Office Action dated June 30, 2015 ("Final Act."), the Appeal Brief, the Examiner's Answer issued June 22, 2016 ("Ans."), and the Reply Brief filed August 22, 2016 ("Reply Br.").

Examiner in the Final Office Action and the Examiner's Answer. We add the following primarily for emphasis.

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). In *Alice*, the Court reiterated the two-step framework previously set forth in *Mayo Collaborative Services v. Prometheus Labs, Inc.*, 132 S. Ct. 1289, 1300 (2012), in which it is first determined whether the claims at issue are directed to one of those patent-ineligible concepts and then, if they are, it is then determined whether there are additional elements that "transform the nature of the claim" into a patent-eligible application of the otherwise ineligible concepts. *Alice*, 134 S. Ct. at 2355 (quoting *Mayo*, 132 S. Ct. at 1297). Claims directed to, or reciting, systems are also ineligible under § 101 if the hardware recited by the claims add nothing of substance to the underlying abstract idea. *Alice*, 134 S. Ct. at 2360.

The Examiner determines the claims are directed to non-statutory subject matter because "[t]he extrapolation routine and the iterative routine is [sic] merely an abstract idea[]" and that the processor and data storage (claims 1 and 20) and "the storing step" (claim 10) do not transform the claims into patent-eligible applications of the abstract idea. Final Act. 3; Ans. 3.

Appellant contends that the Examiner failed both to properly apply the two-step test from *Alice* and to undertake the requisite analysis for a prima facie case. Maintaining that the Examiner's rejection is grounded on an

incorrect interpretation of *Alice*, Appellant further contends that the claimed subject matter is patent-eligible, arguing that there is no possibility of pre-emption, that it improves an existing technological process, that it is more efficient than the prior art, and that it includes physical components. *See generally* Appeal Br.; Reply Br.

Regarding the test applied by the Examiner, Appellant contends that the Examiner is applying a two step test—first asking whether the claims are directed to a process, machine, manufacture, or composition, and then asking whether there is a judicial exception—that differs from the two step test set forth in *Alice*. Appeal Br. 13–14.

Appellant's position is not persuasive as the Examiner, regardless of how the steps are denominated, applies the same test as *Alice* in that the Examiner first determines that the claims are directed to an abstract idea, and then determines that they do not include additional elements that would transform the nature of the claim into a patent-eligible application of the otherwise ineligible concepts. Final Act. 2–4. Regarding Appellant's stated presumption that the Examiner's answer to "whether the claims are directed to a process, machine, manufacture, or composition" is in the affirmative (Appeal Br. 13–14), it is manifest that the Examiner determined that the claims are directed to non-eligible subject matter despite nominally being directed to systems or methods that include processors and data-storage devices (Final Act. 2–4; Ans. 2–6).

Appellant contends that because *Alice* is grounded on avoiding pre-emption of the building blocks of human ingenuity, i.e., laws of nature, natural phenomena, and abstract ideas and the current claims "do not read on the existing, conventional methods [of wavefield extrapolation]," and cannot

"pre-empt the concept of two-dimensional wavefield extrapolation in even the single field of exploration-seismology data processing," the Examiner's § 101 rejections must necessarily fail. Appeal Br. 4–7, 10–11, 16–17; *see also* Reply Br. 4–5. Appellant emphasizes the process as disclosed in the Specification (Appeal Br. 7–10), and that the process is identified as an alternative to conventional methods (Appeal Br. 10, citing Spec. ¶ 54). Appellant further maintains that because the claims do not cover previously known and different systems and methods, the claims are not properly rejected under § 101. Appeal Br. 7, 10–11; Reply Br. 4–5.

Appellant's pre-emption argument does not alter our view that the claims are properly rejected under § 101. First, the question of pre-emption is not grounded on whether all methods for accomplishing the intended goal are pre-empted, but rather on whether the claim pre-empts application of the abstract idea embodied in the claim. It is, accordingly, of no import that the claims do not read on existing, conventional methods. Second, the absence of complete pre-emption does not demonstrate patent eligibility because even though the principle of pre-emption is the basis for the judicial exceptions to patentability, the concern is fully addressed and rendered moot where the claim is determined to disclose patent ineligible subject matter under the two-part framework described in *Mayo* and *Alice*. *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015). As explained in *Alice*, "the prohibition against patenting abstract ideas cannot be circumvented by attempting to limit the use of [the idea] to a particular technological environment." *Alice*, 134 S. Ct. at 2538 (internal citations and quotations omitted); *see also Parker v. Flook*, 437 U.S. 584, 590 (1978) ("The notion that post-solution activity, no matter how

conventional or obvious in itself, can transform an unpatentable principle into a patentable process exalts form over substance.").

Appellant contends that the claims are directed to an improvement to an existing technological process and are, accordingly, directed to patent-eligible subject matter. Appeal Br. 6–7, 11. Appellant relies on *Diamond v. Diehr*, 450 U.S. 175 (1981), in which "a computer-implemented process for curing rubber was found to be patent-eligible because the claims 'improved an existing technological process.'" Appeal Br. 6. Appellant further contends that the claimed subject matter "provides significant computational efficiencies . . . thus significantly improving the operational characteristics of the computer system." Reply Br. 3–4; *see also* Appeal Br. 10 (citing Spec. ¶ 54).

Appellant's arguments are unpersuasive of error. In contrast to the claims in *Diehr* which recited steps applying the results of an algorithm, e.g., installing uncured rubber in the press, closing the press, and opening the press, the instant claims do not recite any step applying the obtained wavefields or information regarding structures of subsurface features and materials. As to the contended improvement in efficiency, it is manifest that any improved result is grounded in the algorithm itself and not in further elements or their arrangement that adds significantly more so as to transform the ineligible concept. In this regard, turning to our reviewing court's decisions, the instant claims on appeal are analogous to those determined ineligible. *See, e.g., Digitech Image Technologies LLC v. Electronics for Imaging, Inc.*, 758 F.3d 1344, 1351 (Fed. Cir. 2014) ("Without additional limitations, a process that employs mathematical algorithms to manipulate existing information to generate additional information is not patent

eligible."); *See also Amdocs (Israel) Limited v. Openet Telecom, Inc.*, 841 F.3d 1288 (Fed. Cir. 2016) (contrasting cases in which the claims were determined to be eligible from those that were ineligible). In *Amdocs*, determining the claims were eligible, the court explained that the claims were tied to a specific structure of various components and required those components to operate in an unconventional manner to achieve an improvement in computer functionality. *Amdocs*, 841 F.3d at 1300–1301. On this record, we are apprised of no such ordering or relationship between the recited processors and/or data-storage devices that is unconventional. Further, rather than improving computer efficiency, the mathematical algorithm is merely less demanding of computer resources than the conventional alternative, which is, in itself, not sufficient for patent eligibility as it nonetheless is still merely a process manipulating existing information to generate additional information.

Appellant contends that the subject matter nominally directed to a system is patentable because the claims are directed to a machine. Appeal Br. 11–12 (citing claim 1). Regarding claim 10, directed to a method, Appellant argues that "[p]rocessors and data-storage devices are not 'merely a field of use,' . . . [and that] 'storing the second constant-depth wavefield . . . in one or more data-storage devices' is not an extra-solution activity that is not central to the purpose of the method." Appeal Br. 15. Appellant also argues that the Examiner's "classification of the subject matter of the current claims as 'data manipulation' is not supported by argument or analysis." Reply Br. 3.

Appellant's arguments, in sum, are that the claims are directed to more than the abstract idea of extrapolating a first constant-depth wavefield

for a first depth to a second constant-depth wavefield for a second depth, however, as explained above, an unpatentable principle is not transformed into patentable subject matter by hardware that adds nothing of substance to the underlying abstract idea. *See Alice*, 134 S. Ct. at 2355; *see also FairWarning IP, LLC v. Iatric Sys., Inc.*, 839 F.3d 1089, 1096 (Fed. Cir. 2016) ("[T]he use of generic computer elements like a microprocessor or user interface do not alone transform an otherwise abstract idea into patent-eligible subject matter."). Having considered the claims and the Specification, including the unfounded assertion that a general-purpose computer executing a computer program is a specialized computer system (Spec. ¶ 62), we discern no basis for the required hardware being anything other than a generic computer.

Further, Appellant argues that the Examiner erred because the extrapolation of a two-dimensional wavefield requires processing of many gigabytes of data using complex computational processes and cannot be undertaken without using a computer. Appeal Br. 14–15, 17. Appellant also argues that the Examiner has failed to understand the current application and, accordingly, misapprehends the purpose of the claims and the context for the claimed system. Appeal Br. 16–18.

Appellant's argument grounded on the requirement for a computer is not persuasive of harmful error because the inability to undertake the calculations without a computer is not dispositive. *Electric Power Group, LLC v. Alstom S.A.*, 830 F.3d 1350, 1354 (Fed. Cir. 2016) ("[W]e have treated analyzing information by steps people go through in their minds, *or by mathematical algorithms*, without more, *as essentially mental processes* within the abstract-idea category." (Emphasis added)). Regarding the

purpose of the claims and context for the claimed system, on this record, Appellant fails to identify how the purpose or context transforms the process such that it amounts to more than manipulation of existing information to generate additional information, notwithstanding that particular information may be subject to the manipulation to obtain information that can be used for a particular purpose. *Digitech*, 758 F.3d at 1351.

Appellant further contests the conduct of examination, arguing that the Examiner failed to examine the claims in accordance with the Manual of Patent Examining Procedure (MPEP) (Appeal Br. 16–17) and that the Examiner improperly relied on the MPEP and interim guidelines as to § 101 rather than on *Alice* (Reply Br. 2–3). However, for the reasons set forth above, we are not persuaded the Examiner erred in the determination that the claims did not comply with 35 U.S.C. § 101 for the reasons above. Furthermore, the USPTO carries its procedural burden of establishing a prima facie case when its rejection satisfies the requirements of 35 U.S.C. § 132 by notifying the applicant of the reasons for rejection, "together with such information and references as may be useful in judging the propriety of continuing the prosecution of [the] application." *In re Jung*, 637 F.3d 1356, 1362 (Fed. Cir. 2011). This notice requirement has been met in the Examiner finding the algorithm is an abstract idea and that the processor, data storage, and storing step do not transform the claims into patent-eligible applications.

On this record, we sustain the Examiner's rejection of the claims under 35 U.S.C. § 101.

DECISION

The Examiner's decision rejecting claims 1–20 is AFFIRMED.

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