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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SUSANNE RENTSCH and
DIRK-JAN VAN MANEN

Appeal 2017-008950
Application 12/429,288
Technology Center 2800

Before TERRY J. OWENS, KAREN M. HASTINGS, and
DONNA M. PRAISS, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

The Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 1–24 and 26–29. We have jurisdiction under 35 U.S.C. § 6(b).

The Invention

The Appellants claim a seismic exploration method and system.

Claim 1 is illustrative:

1. A method comprising:
receiving seismic data acquired by at least one seismic sensor, the seismic data being indicative of at least one observed wavefield quantity associated with at least one seismic event;

processing the seismic data on a processor-based machine to:

determine a candidate event for said at least one observed wavefield quantity based at least in part on a ghost model, a source wavelet and a candidate value for at least one directional attribute quantity of said at least one seismic event;

correlate the candidate event with said at least one observed wavefield quantity; and

determine an event time based on a result of the correlation.

The Rejection

Claims 1–24 and 26–29 stand rejected under 35 U.S.C. § 101 as failing to claim patent eligible subject matter.

OPINION

We affirm the rejection.

The Appellants argue claims 1–22 as a group and, for claims 23, 24 and 26–29, rely upon the same argument (App. Br. 8–14). We therefore limit our discussion to one claim in each group, i.e., claims 1 and 26. Claims 2–22 stand or fall with claim 1, and claims 23, 24 and 27–29 stand or fall with claim 26. 37 C.F.R. § 41.37(c)(1)(iv) (2012).

“Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.” 35 U.S.C. § 101. The Supreme Court stated in *Bilski v. Kappos*, 561 U.S. 593, 601 (2010) that “[t]he Court’s precedents provide three specific exceptions to § 101’s broad patent-eligibility principles: ‘laws of nature, physical phenomena, and abstract ideas.’” [*Diamond v. Chakrabarty*, [447 U.S. 303,] 309, 100 S. Ct. 2204 [(1980)].”

Determining whether a claimed invention is patent-eligible subject matter requires determining whether the claim is directed toward a patent-ineligible concept and, if so, determining whether the claim's elements, considered both individually and as an ordered combination, transform the nature of the claim into a patent-eligible application. *See Alice Corp. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014).

Claim 1

Claim 1's requirement of "receiving seismic data acquired by at least one seismic sensor, the seismic data being indicative of at least one observed wavefield quantity associated with at least one seismic event" is a data-gathering step, and "mere '[data-gathering] step[s] cannot make an otherwise nonstatutory claim statutory.'" *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1370 (Fed. Cir. 2011) (quoting *In re Grams*, 888 F.2d 835, 840 (Fed. Cir. 1989)). The claim requirement of "processing the seismic data on a processor-based machine" is "the mere recitation of a generic computer [which] cannot transform a patent-ineligible abstract idea into a patent-eligible invention." *Alice*, 134 S. Ct. at 2358. The claim step of processing seismic data to "determine a candidate event for said at least one observed wavefield quantity based at least in part on a ghost model, a source wavelet and a candidate value for at least one directional attribute quantity of said at least one seismic event" encompasses the abstract idea of generating a synthetic wavefield based at least in part on a ghost model (a mathematical model which accounts for interference by down-going pressure waves (Spec. ¶¶ 25, 33)), a known or estimated source wavelet (Spec. ¶ 32), and a candidate value for at least one seismic event directional attribute (such as azimuth or incidence angle (Spec. ¶¶ 27, 36, 39, 40)). The

“correlate the candidate event with said at least one observed wavefield quantity” and “determine an event time based on a result of the correlation” claim steps encompass the abstract idea of mathematically determining an event time (arrival time) based upon a correlation of the determined wavefield quantity with an observed wavefield quantity (Spec. ¶¶ 42, 44)).

The Appellants assert that in claim 1 “a result is not merely recited, but rather this claim recites a specific concrete solution to determine an event time associated with a seismic event determining a candidate event time based on a ghost model, source wavelet and candidate value; correlating the candidate event with observed wavefield quantity(ies); and determining the event time based on a result of the correlation” (Reply Br. 3).

The Appellants’ claim 1 does not recite a concrete solution but, rather, recites an abstract idea.

The Appellants assert that “[i]t is entirely unclear how the human mind can process seismic data, or determine a candidate event from an observed wavefield based at least in part on a ghost model, a source value and a candidate event; and it is entirely unclear how the human mind can correlate a candidate event with observed wavefield quantities, or determine an event time based on the result of the correlation” (Reply Br. 3).

Even if a computer is needed to perform those tasks, claiming an abstract idea that requires computer implementation does not transform the abstract idea into a patent-eligible invention. *See Alice*, 134 S. Ct. at 2358.

The Appellants assert that “the instant claims are clearly directed to an innovation or improvement to a relevant technology (i.e., an improvement to

reflection seismology) and do not rely on the innovation being the use of a computer as a tool” (Reply Br. 4).

The Appellants’ claim 1 does not recite a technique for improving reflection seismology but, rather, merely recites an abstract idea for using a processor-based machine to determine an event time based upon a ghost model, a source wavelet and a directional attribute quantity of at least one seismic event.

Claim 26

Claim 26 includes requirements similar to those of claim 1 and also requires constructing, based at least in part on determined directional attributes including event times, a representation of a seismic wavefield, and processing the constructed seismic wavefield to determine at least one property of a geologic structure.

The Appellants assert that “claim 26 expressly ties the processing to another technology outside of the processor-based machine” (App. Br. 12–13) and “expressly recites how the innovative method of this claim is tied to an improvement to seismic measurement processing technology” (App. Br. 13).

For written descriptive support of the above-stated claim 26 limitations the Appellants rely upon their Specification’s paragraph 24 (App. Br. 6). That paragraph and the disclosure to which it refers (Spec. ¶ 65) state that the seismic wavefield representation is processed by a data processing system (320). Thus, claim 26 merely recites the abstract idea of using a processing system to construct a representation of a seismic wavefield and process it to determine at least one property of a geologic structure.

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For the above reasons we are not persuaded of reversible error in the rejection.

DECISION/ORDER

The rejection of claims 1–24 and 26–29 under 35 U.S.C. § 101 as failing to claim patent eligible subject matter is affirmed.

It is ordered that the Examiner’s decision 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).

AFFIRMED