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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte LAURENT ARNAUD SOUCHE, JOSSELIN KHERROUBI, and MATTHIEU JEAN ROTSCHI

Appeal 2015-002459
Application 13/664,152
Technology Center 2100

Before CARL W. WHITEHEAD JR., ADAM J. PYONIN, and JOSEPH P. LENTIVECH, *Administrative Patent Judges*.

LENTIVECH, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants[1] seek our review under 35 U.S.C. § 134(a) of the Examiner's Final Rejection of claims 19–35 and 37. Claims 1–18 have been canceled. App. Br. 4. Claim 36 has been allowed. Final Act. 10. We have jurisdiction over the pending claims under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

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[1] According to Appellants, the real party in interest is Schlumberger Technology Corporation. App. Br. 2.

STATEMENT OF THE CASE

Appellants' Invention

Appellants' invention generally relates to characterizing networks of fractures in a subterranean reservoir using a statistical description derived from logging, seismic and other well and reservoir measurements. Spec. ¶ 1. Claims 19 and 37, which are illustrative, read as follows:

19. A method comprising:

providing data for a subterranean region that comprises a fracture network;

describing the fracture network by a single statistical description that comprises statistical parameters that are represented by localized random variables according to corresponding probability distribution laws wherein the single statistical description provides for partitioning into a discrete fracture network portion and a remaining portion;

partitioning the single statistical description into portions by determining values for the localized random variables according to the corresponding probability distribution laws using a computer wherein the values comprise fracture geometry parameter values and fracture density values; and

for at least one of the portions, determining homogenized fracture property values.

37. A computation system comprising:

a computerized control program configured to

access data for a subterranean region that comprises a fracture network;

describe the fracture network by a single statistical description that comprises statistical parameters that are represented by localized random variables according to corresponding probability distribution laws wherein the single statistical description provides for partitioning into a discrete fracture network portion and a remaining portion;

> partition the single statistical description into portions by determining values for the localized random variables according to the corresponding probability distribution laws wherein the values comprise fracture geometry parameter values and fracture density values; and
>
> for at least one of the portions, determine homogenized fracture property values.

References

The Examiner relies on the following prior art in rejecting the claims:

Li et al. ("Li") US 7,565,278 B2 July 21, 2009

Nam H. Tran et al., *Integrated Conditional Global Optimisation for Discrete Fracture Network Modelling*, Computers Geosciences, vol. 32, iss. 1, pp. 17–27 (2006) © Elsevier Ltd. (hereinafter "Tran").

Rejections

Claim 37 stands rejected under 35 U.S.C. § 101 as directed to non-statutory subject matter. Final Act. 2–3.

Claims 19–35 and 37 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Li and Tran. Final Act. 3–10.

Issues on Appeal

Did the Examiner err in finding that claim 37 is directed to nonstatutory subject matter under 35 U.S.C. § 101?

Did the Examiner err in finding that the combination of Li and Tran teaches or suggests "partitioning the single statistical description into portions by determining values for the localized random variables according to the corresponding probability distribution laws using a computer," as recited in claim 19?

ANALYSIS

§ 101 Rejection

The Examiner finds that claim 37 is directed to non-statutory subject matter. Final Act. 2–3; Ans. 2–3. The Examiner finds the broadest reasonable interpretation of "computation system" and "computerized control program" includes software per se and, because the claim does not include any link to a hardware component, the claim is directed to non-statutory subject matter. Final Act. 2–3; Ans. 2–3.

Appellants contend claim 37 is directed to a "computation system" and, therefore, directed to one of the four statutory categories of patentable subject matter. App. Br. 7. Appellants further contend, claim 37 does not recite or involve a judicial exception and, therefore, is directed to eligible subject matter. App. Br. 7. Appellants also contend claim 37 recites in part "data for a subterranean region that comprises a fracture network;" "fracture geometry parameter values and fracture density values;" and "homogenized fracture property values" and, therefore, "is reduced to a particular practical application having a real world use where the claimed practical application is evidence that the subject matter is not abstract (e.g., not purely mental) and does not encompass substantially all uses (preemption) of a law of nature or a physical phenomenon." App. Br. 8. Appellants cite to paragraphs 16 and 20 of the Specification as describing practical applications, human operation, and means of a computerized control program and contend that, based on the cited portions, "various bases exist to find the subject matter of claim 37 statutory under § 101." App. Br. 8.

Appellants further contend the Specification explicitly associates the claimed phrase "computerized control program" with storage space. Reply

Br. 2–3 (citing Spec. ¶¶ 9, 15, 20). Appellants contend "the instant application and various cited references all agree that it takes a computation system to represent a fracture network of a geologic environment. Independent claim 37 is directed to such a system and includes a computerized control program to 'access data for a subterranean region that comprises a fracture network' and to 'describe the fracture network by a single statistical description'." Reply Br. 4.

We do not find Appellants' contentions persuasive. A claim falls outside § 101 where (1) it is directed to a patent-ineligible concept, i.e., a law of nature, natural phenomenon, or abstract idea, and (2), if so, the particular elements of the claim, considered both individually and as an ordered combination, do not add enough to transform the nature of the claim into a patent-eligible application. *Alice Corp. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014); *see Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1297–98 (2012). The first inquiry looks at the "focus" of the claims, their "character as a whole," and the second inquiry, when reached, looks more precisely at what the claim elements add — specifically, whether they identify an "inventive concept" in the application of the ineligible matter to which (by assumption at reaching the second inquiry) the claim is directed. *See Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335–36 (Fed. Cir. 2016); *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1346 (Fed. Cir. 2015).

Regarding the first inquiry, "[t]he Supreme Court has not established a definitive rule to determine what constitutes an 'abstract idea' sufficient to satisfy the first step of the *Mayo/Alice* inquiry." *Enfish*, 822 F.3d at 1334.

Rather, it is "sufficient to compare claims at issue to those claims already found to be directed to an abstract idea in previous cases." *Id.*

Claim 37 is directed to a computerized control program configured to access data for a subterranean region that comprises a fracture network, describe the fracture network by a single statistical description, partition the single statistical description into portions, and, for at least one portion, determine homogenized fracture property values. Claim 37 is, therefore, directed to a process of gathering and analyzing information of a specified content and not any particular inventive technology for performing those functions. We find claim 37 is therefore directed to an abstract idea. *See Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1349 (Fed. Cir. 2015) (finding collecting information, including when limited to particular content (which does not change its character as information), is within the realm of abstract ideas); *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344, 1351 (Fed. Cir. 2014) (finding analyzing information by steps people go through in their minds, or by mathematical algorithms, without more, is essentially mental processes within the abstract-idea category).

Regarding the second inquiry, limiting a claim to a particular technological field is, without more, insufficient to transform the claim into a patent-eligible application of an abstract idea. *See Alice*, 134 S. Ct. at 2358. Further, we are not persuaded by Appellants' contention that the phrase "computerized control program" is explicitly associated with storage space (Reply Br. 2–3 (citing Spec. ¶¶ 9, 15, 20)) and that "the instant application and various cited references all agree that it takes a computation system to represent a fracture network of a geologic environment" (Reply

Br. 4) because invocations of computers and networks that are not even arguably inventive are "insufficient to pass the test of an inventive concept in the application" of an abstract idea. *buySAFE, Inc. v. Google, Inc.*, 765 F.3d 1350, 1353–1355 (Fed. Cir. 2014). As such, we are not persuaded the Examiner erred in finding claim 37 to be directed to non-statutory subject matter.

Accordingly, we sustain the Examiner's rejection of claim 37 under 35 U.S.C. § 101.

§ 103 Rejection

Li relates to simulating fluid flow in subterranean reservoirs using a three-dimensional hybrid reservoir model representative of a fractured subterranean reservoir. Li 2:33–36. Li teaches that fractures are characterized by statistical distribution functions for aperture size, length, orientation, etc. Li 7:64–65. Li teaches generating, from the statistical distribution functions, discrete fractures of multiple length scales using a stochastic process with statistical means and variances in length and orientation. Li. 7:66–8:2. Li further teaches each of the generated discrete fractures can then be classified as belonging to one of three classes: (1) short fractures; (2) medium (e.g., grid-block scale) fractures; and (3) long (e.g., extending over several grid blocks) fractures. Li 8:5–17. Li teaches that the long fractures are modeled explicitly and that a homogenization process, to incorporate the effect of having short and medium length fractures, is used to calculate equivalent or effective permeability for each matrix block. Li 8:61–67.

The Examiner finds Li's generation and identification of the discrete

fractures teaches or suggests partitioning the statistical distribution functions into portions (e.g., a portion including long fractures to be modeled explicitly and a portion including short and medium length fractures to be incorporated via the homogenization process) and, therefore, that Li teaches or suggests "partitioning the single statistical description into portions by determining values for the localized random variables according to the corresponding probability distribution laws using a computer," as recited in claim 19. Ans. 5–6.

Appellants contend the combination of Li and Tran does not teach or suggest the partitioning limitation. App. Br. 9–14; Reply Br. 5–7. Particularly, Appellants contend Li does not teach or suggest partitioning a single statistical description, as required by claim 19. App. Br. 13. Appellants contend Li, instead, teaches generating all discrete fractures; classifying the discrete fractures based on their respective lengths being short, medium, or long; and then homogenizing some of the generated discrete fractures based on the classifying. *Id.* Appellants further contend "[a]s such, a single statistical description is not partitioned as in claim 19, rather generated discrete fractures with corresponding lengths are classified by those lengths." *Id.*

We find Appellants' contention persuasive. We agree with the Examiner (Ans. 5–6) that Li teaches or suggests partitioning into portions. *See* Li 8:61–67. However, Li does not teach or suggest partitioning a single statistical description into portions, as recited in claim 19. Instead, Li teaches classifying (e.g., partitioning) discrete fractures generated through a stochastic process based on a length of each fracture. Li 7:65–8:2; 8:61–67. The Examiner's findings fail to show how Li's classification process,

performed on discrete fractures and not on a single statistical description describing a fracture network, teaches or suggests partitioning the single statistical description into portions by determining values for localized random variables representing statistical parameters included in the single statistical description, as required by claim 19. The Examiner does not find Tran cures these deficiencies in the teachings of Li. As such, we are constrained by the record to not sustain the Examiner's rejection of claim 19. For the same reasons we also do not sustain the Examiner's obviousness rejection of claims 20–35 and 37, which recite similar limitations.

DECISION

We affirm the Examiner's rejection of claim 37 under 35 U.S.C. § 101.

We reverse the Examiner's rejection of claims 19–35 and 37 under 35 U.S.C. § 103(a).

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