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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MOHAMMED H. ALSHAWAF, LEWIS M. WARLICK,
and FAHAD A. AL-AJMI

Appeal 2018-001013
Application 12/987,526
Technology Center 2800

Before BRADLEY R. GARRIS, CATHERINE Q. TIMM, and
JANE E. INGLESE, *Administrative Patent Judges*.

INGLESE, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants¹ request our review under 35 U.S.C. § 134(a) of the Examiner's decision to finally reject claims 1–27, 31, 35, and 39.² We have jurisdiction over this appeal under 35 U.S.C. § 6(b).

We AFFIRM.

¹ Appellants identify Saudi Arabian Oil Company as the real party in interest. Appeal Brief filed May 3, 2017 (“App. Br.”), 2.

² Final Office Action entered September 8, 2016 (“Final Act.”).

STATEMENT OF THE CASE

Appellants claim a computer-implemented method of obtaining a measure of transmissibility of fluid in a subsurface formation at a location in a well bore without production logging tool data from the subsurface formation (independent claim 1), a data processing system for forming a measure of transmissibility of fluid in a subsurface formation at a location in a well bore without production logging tool data from the subsurface formation (independent claim 12), and a data storage device having stored in a non-transitory computer readable medium computer operable instructions for causing a data processing system to form a measure of transmissibility of fluid in a subsurface formation at a location in a well bore without production logging tool data from the subsurface formation (independent claim 20).

Claim 1 illustrates the subject matter on appeal and is reproduced below with contested language italicized:

1. A computer implemented method of obtaining a measure of transmissibility of fluid in a subsurface formation at a location in a well bore *without production logging tool data from the subsurface formation*, the computer performing the steps of:
 - obtaining a measure of the thickness of the formation based on measurements obtained from a well logging tool;
 - obtaining a measure of the permeability of the formation based on logging measurements obtained from a permeability well logging tool;
 - obtaining a measure of the viscosity of the formation fluid based on logging measurements obtained from a viscosity well logging tool;
 - determining the transmissibility of fluid in the subsurface formation at the location in the formation based on the obtained measures of the thickness, permeability and viscosity.

App. Br. 26 (Claims Appendix) (emphasis added).

The Examiner sets forth the following rejections in the Final Office Action, and maintains the rejections in the Examiner's Answer entered September 9, 2017 ("Ans."):

- I. Claims 1–27, 31, 35, and 39 under 35 U.S.C. § 101 as directed to non-statutory subject matter;
- II. Claims 1, 3, 7, 8, 11, 12, 15, 16, 19, 20, 23, 24, 27, 31, 35, and 39 under 35 U.S.C. § 103(a) as unpatentable over Zazovsky (US 2005/0171699 A1, published August 4, 2005) in view of Flaum (US 6,140,817, issued October 31, 2000);
- III. Claims 2, 6, 13, 14, 21, and 22 under 35 U.S.C. § 103(a) as unpatentable over Zazovsky in view of Flaum and Mullins (US 2009/0288881 A1, published November 26, 2009);
- IV. Claim 4 under 35 U.S.C. § 103(a) as unpatentable over Zazovsky in view of Flaum and Ye (US 6,477,469 B2, issued November 5, 2002);
- V. Claim 5 under 35 U.S.C. § 103(a) as unpatentable over Zazovsky in view of Flaum and Prammer (US 6,023,164, issued February 8, 2000);
- VI. Claims 9, 17, and 25 under 35 U.S.C. § 103(a) as unpatentable over Zazovsky in view of Flaum and Feth et al., *Lake Bonneville: Geology and Hydrology of the Weber Delta District, Including Ogden, Utah*, Geological Survey Professional Paper 518, 1966; and
- VII. Claims 10, 18, and 26 as unpatentable over Zazovsky in view of Flaum, Mullins, and Feth.

DISCUSSION

Upon consideration of the evidence relied upon in this appeal and each of Appellants' timely contentions,³ we affirm the Examiner's rejection of claims 1–27, 31, 35, and 39 under 35 U.S.C. § 101 for the reasons set forth in the Final Action, the Answer, and below, and reverse the Examiner's rejections of claims 1–27, 31, 35, and 39 under 35 U.S.C. § 103(a) for the reasons set forth below.

We review appealed rejections for reversible error based on the arguments and evidence Appellants provide for each issue Appellants identify. 37 C.F.R. § 41.37(c)(1)(iv); *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential), *cited with approval in In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011) (explaining that even if the examiner had failed to make a prima facie case, “it has long been the Board’s practice to require an applicant to identify the alleged error in the examiner’s rejections”).

Rejection I

Appellants argue claims 1–27, 31, 35, and 39 as a group on the basis of claim 1, to which we accordingly limit our discussion. App. Br. 17–38; 37 C.F.R. § 41.37(c)(1)(iv).

The Examiner determines that the recitation in claim 1 of determining the transmissibility of fluid in a subsurface formation at a location in the formation based on obtained measures of thickness, permeability and

³ We do not consider any new argument Appellants raise in the Reply Brief that Appellants could have raised in the Appeal Brief. 37 C.F.R. § 41.37(c)(1)(iv); 37 C.F.R. § 41.41(b)(2) (arguments raised for the first time in the Reply Brief that could have been raised in the Appeal Brief will not be considered by the Board unless good cause is shown).

viscosity is an abstract idea corresponding to a mathematical relation and organizing information through mathematical correlations. Final Act. 4 (citing *Digitech Image Tech., LLC v. Electronics for Imaging, Inc.*, 758 F.3d 1344 (Fed. Cir. 2014)).

The Examiner determines that the additional steps and elements recited in claim 1, considered separately and in combination, do not add significantly more to the abstract idea. Final Act. 4–5. Specifically, the Examiner determines that the steps of obtaining a measure of the thickness of the formation based on measurements obtained from a well logging tool, obtaining a measure of the permeability of the formation based on logging measurements obtained from a permeability well logging tool, and obtaining a measure of the viscosity of the formation fluid based on logging measurements obtained from a viscosity well logging tool, are conventional data gathering steps necessary to implement the abstract idea, which Appellants do not dispute. *Compare* Final Act. 4 and Ans. 9, *with* Reply Br. 7–8. The Examiner also determines that the computer recited in the preamble of claim 1 “is recited at a high level of generality, [and is] necessary, routine, or conventional to facilitate the application of the abstract idea,” which Appellants also do not dispute. *Compare* Final Act. 5, *with* Reply Br. 7–8.

The Examiner determines *de facto* that the subject matter of claim 1 is therefore ineligible for patenting. Final Act. 4–5.

Appellants argue that the claims are not directed to an abstract idea because the claimed subject matter includes a specific combination of features that extend well beyond merely “mathematical relations and organizing information through mathematical correlations.” App. Br. 18–

20. Appellants further contend that the claimed subject matter amounts to significantly more than the “alleged abstract idea” because the claims include non-conventional elements that “effect an improvement in [another] technology or technical field” and are thus analogous to the claims in *Diamond v. Diehr*, 450 U.S. 175, 177–78 (1981). App. Br. 20–23.

Appellants assert that the claimed subject matter solves the technological problem of measuring transmissibility of fluid in a subsurface formation to generate model flow profiles using conventional logging operations without the need to engage in expensive and time consuming production logging operations. App. Br. 22–23; Reply Br. 7–8.

The Court in *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347 (2014) identified a two-step framework for determining whether claimed subject matter is judicially excepted from patent eligibility under § 101. In the first step, “[w]e must . . . determine whether the claims at issue are directed to a patent-ineligible concept,” such as an abstract idea. *Alice*, 134 S. Ct. at 2355. Step two involves “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,’” and is more than “well-understood, routine, conventional activit[y].” *Alice*, 134 S. Ct. at 2355, 2359 (first alteration in original) (quoting *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 72–73 (2012)).

Claim 1 recites a method in which a computer performs the steps of obtaining measures of the thickness, permeability, and viscosity of a subsurface formation, and determining the transmissibility of fluid in the subsurface formation based on the obtained measures of the thickness,

permeability and viscosity. Contrary to Appellants' arguments, as the Examiner correctly determines, the step of determining the transmissibility of fluid in a subsurface formation is directed to an abstract idea of manipulating or analyzing data (measures of the thickness, permeability and viscosity) to generate additional data (transmissibility of fluid) using a mathematical algorithm. *See Digitech Image Techs., LLC v. Elecs. 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.”); *FairWarning IP, LLC v. Iatric Sys., Inc.*, 839 F.3d 1089, 1093 (Fed. Cir. 2016) (abstract ideas include collecting information and analyzing that information “by steps people go through in their minds, or by mathematical algorithms”); *Synopsis, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1146–47 (Fed. Cir. 2016) (“[W]e continue to ‘treat[] 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.’” (second alteration in original) (citation omitted)); *Intellectual Ventures I LLC v. Capital One Fin. Corp.*, 850 F.3d 1332, 1340 (Fed. Cir. 2017) (organizing, displaying, and manipulating data is an abstract idea).

As the Examiner also correctly determines, the steps of obtaining measures of the thickness, permeability, and viscosity of a subsurface formation are conventional data gathering steps, and therefore, individually, and in combination, do not constitute an inventive concept that transforms the abstract idea into a patent-eligible application. Final Act. 4; Ans. 9. *Content Extraction*, 776 F.3d 1343, 1347 (“[t]he concept of data collection,

recognition, and storage is undisputedly well-known,” and “humans have always performed these functions”); *Electric Power Grp, LLC v. Alstom S.A.*, 830 F.3d 1350, 1353–54 (Fed. Cir. 2016) (“[C]ollecting information, including when limited to particular content (which does not change its character as information),” and “analyzing information by steps people go through in their minds, or by mathematical algorithms, without more,” are “within the realm of abstract ideas.”)

In addition, performing the steps recited in claim 1 using a conventional computer also does not transform the abstract idea into a patent-eligible application. *See, e.g., Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 715–716 (Fed. Cir. 2014) (holding the claims insufficient to supply an inventive concept because they did not “do significantly more than simply describe [the] abstract method,” but rather are simply “conventional steps, specified at a high level of generality” (quoting *Alice*, 134 S. Ct. at 2357)).

Accordingly, when considered as an ordered combination, the steps recited in claim 1 relate to gathering data through conventional means (obtaining measures of the thickness, permeability, and viscosity of a subsurface formation) and manipulating or analyzing the data (measures of the thickness, permeability and viscosity) using a mathematical algorithm executed on a conventional computer to generate additional data (transmissibility of fluid). Claim 1 is therefore ineligible for patenting because it is directed to an abstract idea, and lacks an inventive concept that amounts to significantly more than a patent upon the abstract idea itself. *Alice*, 134 S. Ct. at 2355, 2359.

Although Appellants assert that claim 1 is analogous to the claims in

Diehr because the claim includes non-conventional elements that “effect an improvement in [another] technology or technical field,” as the Examiner correctly finds, Appellants do not actually identify any “non-conventional” elements in claim 1. Ans. 9. In addition, although the method of claim 1 may solve a technological problem, the claimed method is directed to manipulating data gathered by conventional means with a conventional computer to generate additional data, and is therefore directed to an improvement in a mathematical algorithm, which our patent laws are not designed to protect. *Parker v. Flook*, 437 U.S. 584, 591, 595 (1978) (“if a claim is directed essentially to a method of calculating, using a mathematical formula, even if the solution is for a specific purpose, the claimed method is nonstatutory.”) (quoting *In re Richman*, 563 F.2d 1026, 1030 (CCPA 1977)).

We accordingly sustain the Examiner’s rejection of claims 1–27, 31, 35, and 39 under 35 U.S.C. § 101.

Rejections II–VII

In reaching our decision, we need consider only independent claims 1, 12, and 20, which each recite obtaining or forming a measure of transmissibility of fluid in a subsurface formation at a location in a well bore without production logging tool data from the subsurface formation.

The Examiner determines that “[u]nder a broadest reasonable interpretation ‘production logging tool data’ would reasonably be any data or information related to a production logging tool.” Ans. 2. The Examiner therefore interprets “production logging tool data” as “the type or name or manufacture regarding the actual production logging tool.” Final Act. 6; Ans. 2. The Examiner finds that “[i]t would be inherent that the subsurface

formation could not supply this information, and therefore would not be involved in obtaining a measure of transmissibility.” Final Act. 6.

However, as Appellants point out (Reply Br. 3), the phrase “production logging tool data” recited in independent claims 1, 20, and 20 is part of the larger phrase “production logging tool data from the subsurface formation.” By interpreting only a portion of the entire phrase, the Examiner improperly fails to consider the full claim language. *In re Suitco Surface, Inc.*, 603 F.3d 1255, 1260 (Fed. Cir. 2010) (explaining that the broadest reasonable interpretation standard does not give the Patent Office an unfettered license to interpret the words in a claim without regard for the full claim language and the written description.)

Furthermore, Appellants’ Specification indicates that a “production logging tool (or PLT)” is a well logging tool used to evaluate wells to determine flow profiles of subsurface earth formations where the wells are located. Spec. ¶¶ 1, 3. Appellants’ Specification states that “for those wells in which a *production logging tool run was not run and PLT data thus unavailable*, analysis of the subsurface formation flow was based on data available from the other, earlier logging tool runs.” *Id.* (emphasis added). Appellants’ Specification also refers to “data from an actual well showing cumulative transmissibility as a function of measured depth of a flow profile from a conventional PLT log,” and to “data obtained and plotted from a production logging tool in an actual well.” Spec. ¶¶ 51, 52 (reference numerals omitted).

According to Appellants’ Specification, “production logging tool data from a subsurface formation” thus refers to data obtained by running a production logging tool in a well in a subsurface earth formation. The

Examiner’s interpretation of “production logging tool data” as “the type or name or manufacture regarding the actual production logging tool” is inconsistent with how this phrase is used in Appellants’ Specification, and with the resulting meaning accorded this phrase by the Specification. The Examiner’s interpretation is therefore unduly broad. *In re Morris*, 127 F.3d 1048, 1054–55 (Fed. Cir. 1997) (“While the Board must give the terms their broadest reasonable construction, the construction cannot be divorced from the specification and the record evidence.”); *In re Baker Hughes, Inc.*, 215 F.3d 1297, 1303 (Fed. Cir. 2000) (the PTO cannot adopt a construction that is “beyond that which was reasonable in light of the totality of the written description” in the Specification); *In re Zletz*, 893 F.2d 319, 321–22 (Fed. Cir. 1989) (“During patent examination the pending claims must be interpreted as broadly as their terms reasonably allow. When the applicant states the meaning that the claim terms are intended to have, the claims are examined with that meaning, in order to achieve a complete exploration of the applicant’s invention and its relation to the prior art.”).

Because the Examiner does not interpret the phrase “production logging tool data from the subsurface formation” in a manner consistent with how this phrase is used in Appellants’ Specification, the Examiner does not establish that the applied prior art discloses or would have suggested obtaining or forming a measure of transmissibility of fluid in a subsurface formation at a location in a well bore “without production logging tool data from the subsurface formation” as recited in claims 1, 12, and 20.”

We accordingly do not sustain the Examiner’s rejections of claims 1–27, 31, 35, and 39 under 35 U.S.C. § 103(a).

Appeal 2018-001013
Application 12/987,526

DECISION

We affirm the Examiner's rejection of claims 1–27, 31, 35, and 39 under 35 U.S.C. § 101 and reverse the Examiner's rejections of claims 1–27, 31, 35, and 39 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).

AFFIRMED