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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MATTHEW E. BERGE

Appeal 2017-000698¹
Application 10/836,714²
Technology Center 3600

Before MURRIEL E. CRAWFORD, NINA L. MEDLOCK, and
KEVIN W. CHERRY, *Administrative Patent Judges*.

MEDLOCK, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134(a) from the Examiner’s final rejection of claims 1–13, 19–29, and 34–44. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ Our decision references Appellant’s Appeal Brief (“App. Br.,” filed December 11, 2015) and Reply Brief (“Reply Br.,” filed October 19, 2016), and the Examiner’s Answer (“Ans.,” mailed August 19, 2016) and Final Office Action (“Final Act.,” mailed June 11, 2015).

² Appellant identifies The Boeing Company as the real party in interest. App. Br. 2.

CLAIMED INVENTION

Appellant’s claimed invention “relates generally to methods, systems and computer program products for collaborative flow management” and, more particularly, “to methods, systems and computer program products for schedule recovery, such as airline schedule recovery in the event of adverse weather conditions, system outages or the like” (Spec. 1, ll. 9–13).

Claims 1, 19, and 34 are the independent claims on appeal. Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A method of determining an alternative schedule comprising:

identifying a plurality of leg replicants for at least some legs of a plurality of itineraries;

evaluating, with a computer, different combinations of the leg replicants for the respective legs of the plurality of itineraries in order to construct schedules for the plurality of itineraries, wherein evaluating different combinations of the leg replicants comprises initially relaxing at least some capacity constraints; and

employing an itinerization routine, once the schedules have been constructed, for constructing an optimized set of itineraries in order to assign particular aircraft to the set of itineraries.

REJECTION

Claims 1–13, 19–29, and 34–44 are rejected under 35 U.S.C. § 101 as directed to judicially excepted subject matter.

ANALYSIS

Appellant argues claims 1–13, 19–29, and 34–44 as a group (App. Br. 4–12). We select independent claim 1 as representative. The remaining claims stand or fall with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(iv).

Under 35 U.S.C. § 101, 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).

The Supreme Court, in *Alice*, reiterated the two-step framework previously set forth in *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 566 U.S. 66 (2012), “for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts.” *Alice Corp.*, 134 S. Ct. at 2355. The first step in that analysis is to “determine whether the claims at issue are directed to one of those patent-ineligible concepts.” *Id.* If the claims are not directed to a patent-ineligible concept, e.g., an abstract idea, the inquiry ends. Otherwise, the inquiry proceeds to the second step where the elements of the claims are considered “individually and ‘as an ordered combination’” to determine whether there are additional elements that “‘transform the nature of the claim’ into a patent-eligible application.” *Id.* (quoting *Mayo*, 566 U.S. at 79, 78).

The Court acknowledged in *Mayo*, that “all inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.” *Mayo*, 566 U.S. at 71. Therefore, the Federal Circuit has instructed that claims are to be considered in their entirety to determine “whether their character as a whole is directed to excluded subject matter.” *McRO, Inc. v. Bandai Namco Games Am., Inc.*, 837 F.3d 1299, 1312

(Fed. Cir. 2016) (quoting *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1346 (Fed. Cir. 2015)).

Here, in rejecting the pending claims under 35 U.S.C. § 101, the Examiner determined that the claims are directed to “the series of steps instructing how to recover an airline schedule after disruptions,” which the Examiner reasoned is a mathematical relationship and a method of organizing human activity, and, therefore, an abstract idea; and that the claims do not include additional elements that are sufficient to amount to significantly more than the judicial exception (Final Act. 4–6).

Referencing the Supreme Court’s decision in *Alice*, Appellant first argues that the Supreme Court “**has only recognized fundamental economic practices long prevalent in our system of commerce as being an abstract method of organizing human activity**” (App. Br. 5). Appellant, thus, ostensibly maintains that the pending claims are not directed to a method of organizing human activities because determining an alternative schedule for an airline is not a fundamental economic practice long prevalent in our system of commerce (*id.* at 6).

As an initial matter, we find nothing in the Court’s decision in *Alice* that limits methods of organizing human activity to only fundamental economic practices. Nor, for that matter, does Appellant point us to any specific portion of the decision that sets forth any such limitation. Indeed, it is telling in this regard that in enumerating broad examples of what might constitute an abstract idea, the Court explicitly identified four *separate* categories: (1) fundamental economic practices; (2) certain methods of organizing human activities; (3) “an idea of itself”; and (4) mathematical relationships or formulae (*see Alice Corp.*, 134 S. Ct. at 2355–56) —

without any indication that “certain methods of organizing human activities” was intended to be subsumed within the category of “fundamental economic practices.”

The courts have generally used the phrase “methods of organizing human activity” in subject matter-eligibility jurisprudence to “describe concepts relating to interpersonal and intrapersonal activities, such as managing relationships or transactions between people, social activities, and human behavior; satisfying or avoiding a legal obligation; advertising, marketing, and sales activities or behaviors; and managing human mental activity.” *See* Manual of Patent Examining Procedure (“MPEP”) § 2106.04(a)(2)(II) (9th ed., Rev. 8, Jan. 2018) (collecting cases).³ Here, the Examiner asserts that because “the result of the method recited in the claims provides direction to individuals managing an airline as to how to recover a schedule after disruption by providing a new schedule,” the claims can be characterized as directed to “certain [methods] of organizing human activity,” as that phrase has been used by the courts (*see* Ans. 6). We are not persuaded that the Examiner’s position is unreasonable or otherwise unsupported.

Appellant further argues that although the pending claims use a mathematical approach, the claims are not directed to mathematical relationships and mathematical formulas; instead, according to Appellant, the claimed “method, system and computer program product for determining

³ Although the MPEP “does not have the force of law or the force of the rules in Title 37 of the Code of Federal Regulations” (MPEP, Foreword (9th ed., Rev. 8, Jan. 2018)), we refer to the MPEP, here, for its citation of case law precedent.

an alternative schedule” are examples of “a novel and useful structure created with the aid of knowledge of scientific truth,” which “was found by [the Court in *Parker v. Flook*, 437 U.S. 584 (1978)] to define patent eligible subject matter” (App. Br. 7).

That argument is similarly unpersuasive. The Federal Circuit has explained that “the ‘directed to’ inquiry applies a stage-one filter to claims, considered in light of the specification, based on whether ‘their character as a whole is directed to excluded subject matter.’” *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335 (Fed. Cir. 2016) (quoting *Internet Patents*, 790 F.3d at 1346). Here, it is clear from the Specification, including the claim language, that claim 1, considered as a whole, is directed to a method for determining an alternative airline schedule using mathematical optimization, i.e., Lagrangian relaxation, to produce an optimal set of itineraries (*see, e.g.*, Spec. 13–15 (describing that identifying optimal itineraries is a primal problem that may be formulated as an integral linear problem and solved using commercially available software)). In this regard, claim 1 is similar to subject matter that the courts have previously found to be abstract. *See, e.g.*, *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344, 1350–51 (Fed. Cir. 2014) (claims directed to “organizing information through mathematical correlations” did not satisfy *Mayo/Alice* step one). *See also Diamond v. Diehr*, 450 U.S. 175, 191 (1981) (“A mathematical formula . . . is not accorded the protection of our patent laws, and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment.” (citation omitted)).

We also are not persuaded of Examiner error by Appellant’s argument that the pending claims do not seek to tie up all ways of determining an

alternative schedule for an aircraft such that others cannot practice this idea (App. Br. 8).

There is no dispute that the Supreme Court has described “the concern that drives [the exclusion of abstract ideas from patent-eligible subject matter] as one of pre-emption.” *Alice Corp.*, 134 S. Ct. at 2354. But characterizing preemption as a driving concern for patent eligibility is not the same as characterizing pre-emption as the sole test for patent eligibility. “The Supreme Court has made clear that the principle of preemption is the basis for the judicial exceptions to patentability” and “[f]or this reason, questions on preemption are inherent in and resolved by the § 101 analysis.” *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015) (citing *Alice Corp.*, 134 S. Ct. at 2354). “[P]reemption may signal patent ineligible subject matter, [but] the absence of complete preemption does not demonstrate patent eligibility.” *Id.*

Turning to step two of the *Mayo/Alice* framework, Appellant argues that even if the claims are directed to an abstract idea, the claims are nonetheless patent-eligible because the claim elements amount to “significantly more” than an abstract idea (App. Br. 8). Yet, to the extent Appellant maintains that the claims are patent-eligible, i.e., that the claims amount to “significantly more” than an abstract idea, and/or that the recited functions are not “well-understood, routine, and conventional in the field,” because this Board reversed the prior art rejections in its January 12, 2015 Decision, Appellant misapprehends the controlling precedent (*id.* at 9, 11).

A finding of novelty or non-obviousness does not automatically lead to the conclusion that the claimed subject matter is patent-eligible. Although the second step in the *Mayo/Alice* framework is termed a search for an

“inventive concept,” the analysis is not an evaluation of novelty or non-obviousness, but rather, a search for “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 Corp.*, 134 S. Ct. at 2355 (alteration in original) (citation omitted).

“Groundbreaking, innovative, or even brilliant discovery does not by itself satisfy the § 101 inquiry.” *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. 576, 591 (2013). A novel and non-obvious claim directed to a purely abstract idea is, nonetheless, patent-ineligible. *See Mayo*, 566 U.S. at 90; *see also Diehr*, 450 U.S. at 188–89 (“The ‘novelty’ of any element or steps in a process, or even of the process itself, is of no relevance in determining whether the subject matter of a claim falls within the § 101 categories of possibly patentable subject matter.”).

We also cannot agree with Appellant that the Examiner has failed to provide a proper analysis under step two of the *Mayo/Alice* test, or that the Examiner has, otherwise, failed to adequately explain why the claims lack additional elements that amount to significantly more than the judicial exception (App. Br. 10). Appellant ostensibly maintains that in order to find that the independent claims do not include additional features that constitute more than an abstract idea, the Examiner must engage in an element by element analysis and provide an explanation “for why each additional element does not add significantly more to the exception” (*id.*). Yet, we are aware of no controlling precedent, nor, for that matter, does Appellant identify any controlling authority, that imposes any such requirement.

It also is significant here that under step two of the *Mayo/Alice* test, the elements of each claim are considered both individually and “as an

ordered combination” to determine whether the additional elements, i.e., the elements *other* than the abstract idea itself, “transform the nature of the claim” into a patent-eligible application. *Alice Corp.*, 134 S. Ct. at 2355; *see also Mayo*, 566 U.S. at 72–73 (requiring that “a process that focuses upon the use of a natural law also contain *other* elements or a combination of elements, sometimes referred to as an ‘inventive concept,’ sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the natural law itself” (emphasis added)). We are not persuaded here that the features that Appellant identifies as amounting to “significantly more,” i.e., identifying a plurality of leg replicants for at least some legs of a plurality of itineraries; evaluating different combinations of the leg replicants for the respective legs of the plurality of itineraries by initially relaxing at least some capacity constraints in order to construct schedules for the plurality of itineraries; and employing an itinerization routine, once the schedules have been constructed, for constructing an optimized set of itineraries in order to assign particular aircraft to the set of itineraries (App. Br. 10), are “additional elements,” as opposed to being merely a part of the abstract idea itself.

Finally, we cannot agree with Appellant that the claims involve a transformation of a particular article to a different state or thing (*id.*), i.e., that the claims satisfy the transformation prong of the *Bilski* machine-or-transformation test.⁴ Appellant argues that the “construction of an optimized set of itineraries serves to transform the legs of the original itineraries into a different state, such as an optimized set of itineraries including leg

⁴ *Bilski v. Kappos*, 561 U.S. 593 (2010).

replicants” and that “the transformation to a different state that is provided by the claims weighs in favor of finding that the claims recite ‘significantly more’ than an abstract idea” (*id.*). But these alleged “transformations” are, at best, merely a manipulation of data, which is not sufficient to meet the transformation prong under 35 U.S.C. § 101. *See Gottschalk v. Benson*, 409 U.S. 63, 71–72 (1972) (a computer based algorithm that merely transforms data from one form to another is not patent-eligible).

We are not persuaded, on the present record, that the Examiner erred in rejecting claim 1 under 35 U.S.C. § 101. Therefore, we sustain the Examiner’s rejection of claim 1, and claims 2–13, 19–29, and 34–44, which fall with claim 1.

DECISION

The Examiner’s rejection of claims 1–13, 19–29, and 34–44 under 35 U.S.C. § 101 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