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UNITED STATES PATENT AND TRADEMARK OFFICE
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BEFORE THE PATENT TRIAL AND APPEAL BOARD
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Ex parte ARI STUDNITZER, ZACHARY BONIG,
RYAN EAVY, and FRANK KMIEC
_____

Appeal 2018-000528
Application 14/074,663[1]
Technology Center 3600
_____

Before ST. JOHN COURTENAY III, JASON J. CHUNG, and
STEVEN M. AMUNDSON, *Administrative Patent Judges*.

CHUNG, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134(a) of the Final

Rejection of claims 1–26. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

INVENTION

The invention relates to a trading-system architecture. Abstract.

Claim 1 is illustrative of the invention and is reproduced below with

emphases discussed below in § C.1.:

> 1. A system for improving efficiency of a trading
> system comprising a plurality of hardware match engines
> coupled therewith, each of the plurality of hardware match

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[1] According to Appellants, Chicago Mercantile Exchange Inc. is the real
party in interest. App. Br. 2.

engines exclusively implementing at least one market for an associated financial instrument comprising at least one component, each hardware match engine being exclusively operative to attempt to match an incoming order for a transaction for the associated financial instrument with at least one other previously received but unsatisfied order for a transaction counter thereto for the associated financial instrument, to at least partially satisfy one or both of the incoming order or the at least one other previously received order, the system comprising:

a first logic component coupled with each of the plurality of hardware match engines and operative to *receive match event data* from each of the plurality of hardware match engines *indicative of whether that* hardware match engine *was able to match an incoming order* to that hardware match engine *for at least one transaction for the associated financial instrument associated with that hardware match engine with at least one previously received but unsatisfied order for a transaction counter thereto for the associated financial instrument, in at least partial satisfaction of one or both of the incoming order or the at least one other previously received order*;

the first logic component being further operative to, *when the match event data indicates that the incoming order has not been fully satisfied and prior to the match event data being communicated externally* to the trading system, *attempt to identify a set of previously received but unsatisfied orders received* by any of the plurality of match engines wherein, *for any residual of each particular of the at least one component of the associated financial instrument of the incoming order, the set includes a previously received but unsatisfied order for a counter transaction for another financial instrument comprising at least the particular component to at least partially satisfy one or both of the residual of the particular component of the associated financial instrument of the incoming order or the component of the determined previously received order and further attempt to identify and include in the set, for any component of the financial instrument of any previously received but unsatisfied orders included in the set and not at least partially satisfied by any of the components of the associated financial instrument of the incoming order, another previously received but unsatisfied*

order for a counter transaction for a financial instrument including at least the component of the financial instrument of the previously received but unsatisfied order, such that the incoming order together with the set of previously received but unsatisfied orders, if the transactions for the financial instruments thereof were completed there between, includes no fully unsatisfied orders; and

a second logic component operative to, *when the incoming order together with the identified set of previously received but unsatisfied orders, if the components thereof were completed there between, include at least one fully unsatisfied order having at least one fully unsatisfied component thereof, for each of the at least one fully unsatisfied order for a financial instrument having more than one component, generate, for each at least one fully unsatisfied component, a synthetic solicitation for a counter transaction for a financial instrument comprising a component identical to the at least one fully unsatisfied component and communicate the synthetic solicitation to a plurality of market participants and for any two or more of the at least one fully unsatisfied orders for financial instruments each having only one component, attempt to identify a financial instrument comprising a combination of those components, and for each identified financial instrument, generate a synthetic solicitation for a counter transaction therefore and submit each synthetic solicitation* to the particular hardware match engine of the plurality of hardware match engines *associated with the financial instrument for which the solicitation is for to cause* the associated hardware match engine *to communicate the synthetic solicitation to the plurality of market participants.*

App. Br. 24–25 (Claims Appendix) (emphases added).

REJECTION AT ISSUE

Claims 1–26 stand rejected under 35 U.S.C. § 101 as being directed to patent-ineligible subject matter. Final Act. 2–5.

ANALYSIS OF CLAIMS 1–26 REJECTED UNDER 35 U.S.C. § 101

A.   Legal Principles

An invention is patent eligible if it claims a "new and useful process, machine, manufacture, or composition of matter." 35 U.S.C. § 101. However, the Supreme Court has long interpreted 35 U.S.C. § 101 to include implicit exceptions: "[l]aws of nature, natural phenomena, and abstract ideas" are not patentable. *E.g.*, *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014).

In determining whether a claim falls within an excluded category, we are guided by the Supreme Court's two-step framework, described in *Mayo* and *Alice*. *Id.* at 217–18 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75–77 (2012)). In accordance with that framework, we first determine what concept the claim is "directed to." *See Alice*, 573 U.S. at 219 ("On their face, the claims before us are drawn to the concept of intermediated settlement, i.e., the use of a third party to mitigate settlement risk."); *see also Bilski v. Kappos*, 561 U.S. 593, 611 (2010) ("Claims 1 and 4 in petitioners' application explain the basic concept of hedging, or protecting against risk.").

Concepts determined to be abstract ideas, and thus patent ineligible, include certain methods of organizing human activity, such as fundamental economic practices (*Alice*, 573 U.S. at 219–20; *Bilski*, 561 U.S. at 611); mathematical formulas (*Parker v. Flook*, 437 U.S. 584, 594–95 (1978)); and mental processes (*Gottschalk v. Benson*, 409 U.S. 63, 69 (1972)). Concepts determined to be patent eligible include physical and chemical processes, such as "molding rubber products" (*Diamond v. Diehr*, 450 U.S. 175, 191 (1981)); "tanning, dyeing, making water-proof cloth, vulcanizing India

rubber, smelting ores" (*id.* at 182 n.7 (quoting *Corning v. Burden*, 56 U.S. (15 How.) 252, 267–68 (1854))); and manufacturing flour (*Benson*, 409 U.S. at 69 (citing *Cochrane v. Deener*, 94 U.S. 780, 785 (1876))).

In *Diehr*, the claim at issue recited a mathematical formula, but the Supreme Court held that "[a] claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula." *Diehr*, 450 U.S. at 187; *see also id.* at 192 ("We view respondents' claims as nothing more than a process for molding rubber products and not as an attempt to patent a mathematical formula."). Having said that, the Supreme Court also indicated that a claim "seeking patent protection for that formula in the abstract . . . 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." *Id.* (citing *Benson* and *Flook*); *see, e.g., id.* at 187 ("It is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.").

If the claim is "directed to" an abstract idea, we turn to the second step of the *Alice* and *Mayo* framework, where "we must examine the elements of the claim to determine whether it contains an 'inventive concept' sufficient to 'transform' the claimed abstract idea into a patent-eligible application." *Alice*, 573 U.S. at 221 (quotation marks omitted). "A claim that recites an abstract idea must include 'additional features' to ensure 'that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].'" *Id.* (quoting *Mayo*, 566 U.S. at 77). "[M]erely requir[ing] generic computer implementation[] fail[s] to transform

that abstract idea into a patent-eligible invention." *Id.*

The PTO recently published revised guidance on the application of § 101. USPTO's January 7, 2019 Memorandum, *2019 Revised Patent Subject Matter Eligibility Guidance* ("Memorandum"). Under that guidance, we first look to whether the claim recites:

> (1) any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human activity such as a fundamental economic practice, or mental processes); and

> (2) additional elements that integrate the judicial exception into a practical application (*see* MPEP § 2106.05(a)–(c), (e)–(h)).

Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, do we then look to whether the claim:

> (3) adds a specific limitation beyond the judicial exception that is not "well-understood, routine, conventional" in the field (*see* MPEP § 2106.05(d)); or

> (4) simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception.

See Memorandum.

> B. *The Examiner's Conclusions and Appellants' Arguments*

The Examiner concludes the present claims recite certain methods of organizing human activity. Final Act. 6. The Examiner also determines the present claims do not amount to significantly more than an abstract idea itself because the Examiner determines the abstract idea is implemented on generic components that are well-understood, routine, and conventional

previously known to the industry. Ans. 4, 11, 13–14; Final Act. 4–5, 7.

Appellants argue, similar to *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245 (Fed. Cir. 2014), the present claims are necessarily rooted in computer technology that solve problems specifically arising in the realm of electronic trading systems by using multiple match engines rather than a single match engine. App. Br. 11–15, 18, 20 (citing Spec. ¶¶ 230–234); Reply Br. 2–3. Appellants argue the present claims do not preempt any abstract idea. App. Br. 9–11.

Appellants argue, similar to *BASCOM Global Internet Services, Inc. v. AT&T Mobility LLC*, 827 F.3d 1341 (Fed. Cir. 2016), the present claims recite a non-conventional and non-generic arrangement of known, conventional elements, which results in an improvement of identifying implied transactional opportunities across match engines and interfacing with each match engine so as to cause those match engines to solicit appropriate transactions from participants, thereby increasing transactional opportunities using a novel system architecture. App. Br. 17, 21–22; Reply Br. 4–5.

Appellants argue the present claims do not implement an abstract idea using generic components that are well-understood, routine, or conventional because the present claims are have not been used before. App. Br. 15–17[2];

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[2] Appellants' arguments pertaining to *Trading Technologies International, Inc. v. CQG, Inc.*, 675 F. App'x 1001 (Fed. Cir. 2017) (non-precedential) and *Chicago Mercantile Exchange, Inc. v. 5th Market, Inc.*, CBM2015-00061 (PTAB July 16, 2015) (Paper 9) (App. Br. 15–16, 22; Reply Br. 5) are moot because these cases are non-precedential and we need not decide these issues to reach our Decision. *See also Trading Techs. Int'l, Inc. v. IBG LLC*, 921 F.3d 1084 (Fed. Cir. 2019) (deciding that the claims at issue failed to satisfy § 101 and explaining that "[w]e are not bound by non-precedential

Reply Br. 3. We disagree with Appellants.

C. Discussion

1. Step 2A, Prong 1

The emphasized portions of claim 1[3], reproduced above (*see supra* at 1–3), recite commercial interactions (including sales activities). According to the Memorandum, commercial interactions (including sales activities) fall into the category of certain methods of organizing human activity. *See* Memorandum. Moreover, those certain methods of organizing human activity are a type of an abstract idea. *See id.*

Because the present claims recite commercial interactions (including sales activities), which fall into the category of certain methods of organizing human activity (i.e., an abstract idea), we proceed to prong 2.

2. Step 2A, Prong 2

The present claims do not integrate the abstract idea into a practical application because they do not impose any meaningful limits on practicing the abstract idea.

We disagree with Appellants' argument that, similar to *DDR*, the present claims are necessarily rooted in computer technology that solve problems specifically arising in the realm of electronic trading systems by

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decisions at all"); *Trading Techs. Int'l, Inc. v. IBG LLC*, 921 F.3d 1378 (Fed. Cir. 2019) (deciding that the claims at issue failed to satisfy § 101). Appellants' argument pertaining to *TLI Communications LLC Patent Litigation v. AV Automotive, L.L.C.*, 823 F.3d 607 (Fed. Cir. 2016) (App. Br. 19) is moot because we do not rely on this case to reach our Decision.
[3] Claim 1, reproduced above with emphases, recites similar features as independent claims 2, 14, and 26. Appellants do not argue claims 2–26 separately with particularity. App. Br. 9–23. We, therefore, group claims 1–26 together and refer to claims 1–26 as the "present claims."

using multiple match engines rather than a single match engine. App. Br. 11–15, 18, 20 (citing Spec. ¶¶ 230–234); Reply Br. 2–3. Instead, the present claims are directed to an abstract idea using additional generic elements as tools to implement the abstract idea as discussed *supra* in § I.C.1. or at best, the present claims are rooted in commercial interactions (including sales activities) and overcoming a problem arising in that area.

The present claims are directed to an abstract idea as discussed *supra*, in § C.1. or at best, improving an abstract idea—not a technological improvement. The Specification indicates the additional elements (i.e., "first logic,"[4] "a plurality of hardware match engines," "second logic,"[5] "implicator,"[6] "trading system," "order generator,"[7] and "processor"[8]) recited in the present claims are merely tools used to implement the abstract idea. Spec. ¶¶ 44, 99, 126, 139, 210, 216.

Additionally, "a claim for a *new* abstract idea is still an abstract idea." *Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1151 (Fed. Cir. 2016). "[U]nder the *Mayo/Alice* framework, a claim directed to a newly discovered law of nature (or natural phenomenon or abstract idea) cannot rely on the novelty of that discovery for the inventive concept necessary for patent eligibility . . . ." *Genetic Techs. Ltd. v. Merial L.L.C.*, 818 F.3d 1369, 1376 (Fed. Cir. 2016) (citations omitted).

Additionally, we disagree with Appellants' argument that the present claims are patent eligible because they do not preempt any abstract idea.

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[4] Claim 1 is the only independent claim that recites this feature.
[5] Claim 1 is the only independent claim that recites this feature.
[6] Claim 2 is the only independent claim that recites this feature.
[7] Claim 2 is the only independent claim that recites this feature.
[8] Claim 14 is the only independent claim that recites this feature.

App. Br. 9–11. Although preemption may denote patent ineligibility, its absence does not demonstrate patent eligibility. *See FairWarning, IP, LLC v. Iatric Sys., Inc.*, 839 F.3d at 1098. For claims covering a patent-ineligible concept, preemption concerns "are fully addressed and made moot" by an analysis under the *Mayo/Alice* framework. *Ariosa Diagnostics, Inc. v. Sequenom, Inc.,* 788 F.3d 1371, 1379 (Fed. Cir. 2015).

To the extent that Appellants are arguing that the present claims integrate the abstract idea into a practical application pursuant to *BASCOM*, we address Appellants' arguments pursuant to *BASCOM infra* in § C.3.

Appellants do not make any other arguments pertaining to step 2A, prong 2. Because the present claims recite an abstract idea that is not integrated into a practical application, we proceed to Step 2B.

3. Step 2B

We agree with the Examiner's determination that the abstract idea is implemented on generic components that are well-understood, routine, and conventional. Final Act. 7 (citing Spec. 4:2–4, 5); Ans. 6. The Specification supports the Examiner's determination in this regard because it explains that "first logic," "a plurality of hardware match engines," "second logic," "implicator," "trading system," "order generator," and "processor" are generic components. Spec. ¶¶ 44, 99, 126, 139, 210, 216. Appellants' Specification indicates these elements were well-understood, routine, and conventional components because it describes them at a high level of generality and in a manner that indicates that they are sufficiently well-known. *Id.*

We disagree with Appellants' argument that the present claims do not implement an abstract idea using generic components that are well-

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understood, routine, or conventional because the present claims have not been used before. App. Br. 15–17; Reply Br. 3. Appellants improperly conflate the requirements for eligible subject matter (§ 101) with the independent requirements of novelty (§ 102) and non-obviousness (§ 103). "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." *Diehr*, 450 U.S. at 188–89; *see also Genetic Techs.*, 818 F.3d at 1376 (stating that, "under the *Mayo/Alice* framework, a claim directed to a newly discovered law of nature (or natural phenomenon or abstract idea) cannot rely on the novelty of that discovery for the inventive concept necessary for patent eligibility"). In short, the absence of anticipation and obviousness "does not resolve the question of whether the claims embody an inventive concept" under step 2B. *Intellectual Ventures I LLC v. Symantec Corp.*, 838 F.3d 1307, 1315 (Fed. Cir. 2016).

We disagree with Appellants' argument that, similar to *BASCOM*, the present claims recite a non-conventional and non-generic arrangement of known, conventional elements, which results in an inventive concept of identifying implied transactional opportunities across match engines and interfacing with each match engine so as to cause those match engines to solicit appropriate transactions from participants, thereby increasing transactional opportunities using a novel system architecture. App. Br. 17, 21–22; Reply Br. 4–5. Instead, the present claims are directed to an abstract idea using generic components as discussed *supra*, in §§ I.C.1. and I.C.2. or at best, improving an abstract idea—not an inventive concept.

Appellants do not make any other arguments pertaining to step 2B. Appellants do not argue claims 2–26 separately with particularity, but assert the § 101 rejection of those claims should be withdrawn for at least the same reasons as argued for independent claim 1. App. Br. 9–23. Based on our review of the dependent claims, these claims do not recite any additional features that would transform the abstract idea embodied in claims 1, 2, 14, and 26 into an inventive concept. Dependent claims that merely narrow an abstract idea "add nothing outside the abstract realm." *SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1169 (Fed. Cir. 2018). Accordingly, we sustain the Examiner's rejection of: (1) independent claims 1, 2, 14, and 26; and (2) dependent claims 3–13 and 15–25 under 35 U.S.C. § 101.

We have only considered those arguments that Appellants actually raised in the Briefs. Arguments Appellants could have made, but chose not to make, in the Briefs have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(iv).

DECISION

We affirm the Examiner's decision rejecting claims 1–26 under 35 U.S.C. § 101.

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