UNITED STATES PATENT AND TRADEMARK OFFICE

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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 SEO WOOK JANG

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Appeal 2019-001639
Application 14/587,467
Technology Center 3600

_____

Before CAROLYN D. THOMAS, JOHN F. HORVATH,
and ADAM J. PYONIN, *Administrative Patent Judges.*

HORVATH, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant[1] seeks review of the Examiner's decision to reject claims 13, 15, 17, 18, 20, and 22. Appeal Br. 1–2. Claims 1–12, 14, 16, 19, and 21 have been cancelled. *Id*. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

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[1] We use the word Appellant to refer to "applicant" as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as Chicago Mercantile Exchange, Inc. Appeal Br. 1.

CLAIMED SUBJECT MATTER

The invention is directed to a computer method that "indicates prices for a financial product at each of multiple times, generates data representing changes in prices, and stores codes representing that generated price change data." Spec. ¶ 33.

Claim 13, reproduced below, is illustrative of the claimed subject matter:

13. A method of compressing data associated with a financial product, comprising:

(a) calculating a price change $\Delta P(q)$ by a computer system, wherein the price change $\Delta P(q)$ corresponds to a time $t(q)$ and is based on a difference between a price for the financial product corresponding to the time $t(q)$ and a price for the financial product corresponding to a previous time $t(q-1)$**;**

(b) identifying, by the computer system, a price change category for $\Delta P(q)$, wherein the identified category is a member of a group of price change categories, wherein each of the price change categories in the group corresponds to a different range of price changes, and wherein the price change category identified for $\Delta P(q)$ corresponds to a range of price changes that includes $\Delta P(q)$;

(c) storing, by the computer system, a code corresponding to the price change category identified for $\Delta P(q)$, wherein

each of the price change categories corresponds to a range bounded by multiples of a standard deviation of price changes corresponding to times in a time period prior to the time $t(q)$,

a center price change category code is a single digit and is a 0 or a 1,

each of the remaining price change category codes has the same number of digits, includes digits selected from 1 and

0, and begins with a digit that is different from the single digit
of the center price change category code, and

the stored code corresponding to the price change
category identified for $\Delta P(q)$ requires less storage resources
than data representing the prices for the financial product; and

(d) repeating (a) through (c) for multiple iterations, each
iteration corresponding to a successively incremented value of q
and a successively later time.

REJECTIONS[2]

Claims 13, 15, 17, 18, 20, and 22 stand rejected under 35 U.S.C. § 101
as directed to non-patentable subject matter. Final Act. 3–6.[3]

OPINION

We review the appealed rejections for error based upon the issues
identified by Appellant. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI
2010) (precedential). Appellant argues for the patent eligibility of claims 13,
15, 17, 18, 20, and 22 as a group. Appeal Br. 5–17. We select claim 13 as a
representative claim, and review the rejection of claims 13, 15, 17, 18, 20,
and 22 based on our analysis of the rejection of claim 13. *See* 37 C.F.R.
§ 41.37(c)(iv). Any arguments not raised by Appellant are waived. *Id.*

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[2] The rejections of claims 1–12 under 35 U.S.C. § 103, and of claims 7–12
and 18–22 under 35 U.S.C. § 112 have been withdrawn. *See* Final Act. 2–3,
7–9; Ans. 6.

[3] Although the Final Action identifies claim 15 as rejected, claim 15 is not
listed under the § 101 rejection. *Compare* Final Act. 1, *with id*. at 3.
Nonetheless, claim 15 is listed as a rejected claim in the Advisory Action in
which the only outstanding rejection is the § 101 rejection. *See* Advisory
Action 1–2. Therefore, we treat claim 15 as standing rejected under § 101.
We note Appellant has done the same. *See* Appeal Br. 5–17.

We have reviewed the Examiner's rejection of claims 13, 15, 17, 18, 20, and 22 in light of Appellant's arguments that the Examiner has erred. We are not persuaded by Appellant's arguments, and sustain the Examiner's rejection for the reasons stated in the Final Action and Answer, which we adopt as our own. We highlight the following for emphasis.

Rejection under 35 U.S.C. §101

The Examiner finds claim 13 is patent ineligible because it is "directed to a judicial exception (e.g., an abstract idea, etc.) without significantly more." Final Act. 3.

Principles of law

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." 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. *See Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014).

In determining whether a claim falls within a judicially 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)). Accordingly, we first determine the concept to which the claim is directed. *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. Kappas*, 561 U.S. 593, 611 (2010) ("Claims 1 and 4 in petitioners' application explain the basic concept of hedging, or protecting against risk.").

Concepts that have been determined to be patent ineligible abstract ideas 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, 67 (1972)). Concepts that have been 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. 252, 267–68 (1853))); and manufacturing flour *(Benson,* 409 U.S. at 69 (citing *Cochrane v. Deener*, 94 U.S. 780, 785 (1876))).

If a 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 (internal citation 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 has published guidance on the application of § 101 to patentability determinations. *See 2019 Revised Patent Subject Matter Eligibility Guidance,* 84 Fed. Reg. 50 (Jan. 7, 2019) ("PEG"). Under step 1 of that guidance, we first determine whether the claim recites a statutory class (i.e., a process, machine, manufacture, or composition of matter). *Id.*

at 53–54. If it does not, it is not patent eligible. If it does, we next

determine whether the claim recites:

> Step 2A – Prong One: 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).

Id. at 52, 54. If the claim does not recite a judicial exception, it is patent

eligible. *Id.* at 54. If it does, we next determine whether the claim recites:

> Step 2A – Prong Two: additional elements that integrate the
>
> judicial exception into a practical application (*see* Manual of
>
> Patent Examining Procedure (MPEP) § 2106.05(a)–(c), (e)–(h)
>
> (9th Ed., Rev. 08-2017 (Jan. 2018)).

84 Fed. Reg. at 54–55. If the claim integrates a judicial exception into a

practical application, it is patent eligible. *Id.* If it does not, we next

determine whether the claim recites:

> Step 2B: additional elements beyond the judicial exception that
>
> are more than "well-understood, routine, conventional"
>
> elements in the field (*see* MPEP § 2106.05(d)).

Id. at 56. If the claim adds more than well-understood, routine, and

convention additional elements, it is patent eligible. *Id.* If it does not, it is

not patent eligible. *Id.*

2019 PEG Step 1

Under step 1 of the subject matter eligibility guidance, we first

determine whether the claims recite a statutory class (i.e., a process,

machine, manufacture, or composition of matter). *Id.* at 53–54. Claims 13, 15, and 17 recite a process (a method for compressing data) and claims 18, 20, and 22 recite a manufacture (a non-transitory computer-readable medium storing computer executable instructions). *See* Appeal Br. 18–20 (Claims Appx.). Thus, claims 13, 15, 17, 18, 20, and 22 recite patent-eligible statutory classes. Accordingly, we next consider whether the claims recite judicial exceptions under step 2A, prong one.

2019 PEG Step 2A, prong one

Under step 2A, prong one of the eligibility guidance, we determine whether a claim recites a judicial exception such as an abstract idea, law of nature, or natural phenomenon. 84 Fed. Reg. at 54. This involves (1) identifying the limitations in the claim (either individually or in combination) that recite an abstract idea, and (2) determining whether the identified abstract idea falls within one of the subject matter groupings consisting of (a) mathematical concepts (relationships, formulas, equations, or calculations), (b) methods of organizing human activity (fundamental economic practices, commercial or legal interactions, or managing behavior or relationships), and (c) mental processes (concepts performed in the mind such as observation, evaluation, judgment, and opinion). *Id.* at 52.

Claim 13 recites "calculating a price change $\Delta P(q)$", "identifying . . . a price change category for $\Delta P(q)$", and "storing . . . a code corresponding to the price change category identified for $\Delta P(q)$." Appeal Br. 18 (Claims Appx.). The Examiner finds these limitations recite the following court-recognized abstract ideas:

      i.   "processing information through a clearinghouse" (*see* Spec. ¶ 22; *Dealer-track, Inc. v. Huber*, 674 F.3d 1315 (Fed. Cir. 2012)),

ii. "comparing new and stored information and using rules to identify options" (*see SmartGene, Inc. v. Advanced Bio. Labs., SA*, 555 Fed. Appx. 950 (Fed. Cir. 2014)),

iii. "collecting and comparing known information" (*see Classen Immunotherapies, Inc. v. Biogen IDEC*, 659 F.3d 1057 (Fed. Cir. 2011)),

iv. "collection, manipulation, and display of data (*see Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350 (Fed. Cir. 2016)),

v. "using categories to organize, store and transmit information" (*see Cyberfone Sys., LLC v. CNN Interactive Grp., Inc.*, 558 Fed. Appx. 988 (Fed. Cir. 2016)),

vi. "organizing and transforming information through mathematical correlations" (*see Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344 (Fed. Cir. 2014)),

vii. "data recognition and storage" (*see Content Extraction and Transmission, LLC v. Wells Fargo Bank, Nat'l Ass'n*, 776 F.3d 1343 (Fed. Cir. 2017)), and

viii. "obtaining and comparing intangible data" (*see CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366 (Fed. Cir. 2011)).

Final Act. 4.

Appellant argues the Examiner erred in determining claim 13 is "directed to" an abstract idea by considering the claim language "at an inappropriately high level of abstraction." Appeal Br. 6–7. Appellant further argues the Examiner erred by mischaracterizing the claims as being directed to "a financial database that compiles financial transaction activity, including manipulated (pricing) data, and the use of codes." Reply Br. 2 (quoting Ans. 4). As a result, Appellant argues, the Examiner improperly

found claim 13 recites a fundamental economic practice or method of organizing human activity. *Id.* at 3–4.

As indicated above, the Examiner has identified numerous claim limitations that fall under one or more abstract ideas, including collecting information (obtaining pricing data), transforming information through mathematical calculations (calculating price changes), and using rules and categories to organize and store information (identifying a price change category as a range of price changes that includes the calculated price change and storing the price change by storing its price change category). *See* Final Act. 4; Ans. 6–7.

For example, claim 13 recites calculating a price change for a financial product between times $t(q)$ and $t(q-1)$. Appeal Br. 18 (Claims Appx.). This involves collecting information (prices at $t(q)$ and $t(q-1)$), and generating additional information from the collected information (calculating a price change), which, as recited, fall within the subject matter groupings of (a) mathematical concepts (calculations), and (b) fundamental economic practices (calculating and recording the change in value of a financial asset). *See Digitech,* 758 F.3d at 1351 (finding a "process of gathering and combining data" and of using "mathematical algorithms to manipulate existing information to generate additional information" to be patent ineligible); *see also OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1362–63 (Fed. Cir. 2015) (concluding that "offer-based price optimization" is an abstract idea "similar to other 'fundamental economic concepts' found to be abstract ideas by the Supreme Court and this court").

Accordingly, having determined that claim 13 recites at least collecting, comparing, organizing, and storing information, which fall under the subject matter groupings of mathematical concepts and fundamental

economic practices, we next consider whether claim 13 is "directed to" those abstract ideas or instead integrates them into a practical application. *See* 84 Fed. Reg. at 54–55.

2019 PEG Step 2A, prong two

Under step 2A, prong two, a claim that recites a judicial exception is not "directed to" that judicial exception if the claim as a whole "integrates the recited judicial exception into a practical application of the exception." *Id.* at 54. This involves (a) identifying whether the claim recites elements in addition to the judicial exceptions, and (b) determining whether these additional elements individually and in combination integrate the judicial exceptions into a practical application. *Id.* at 54–55.

Additional elements integrate judicial exceptions into a practical application when they (i) improve the functioning of a computer or some other technology, (ii) effect a particular treatment or prophylaxis for a disease or medical condition, (iii) implement or use the judicial exceptions in conjunction with particular machines or manufactures that are integral to the claim, (iv) transform or reduce a particular article to a different state or thing, or (v) do more than merely link the judicial exceptions to a particular technological environment. *Id.* at 55. Additional elements do not integrate judicial exceptions into a practical application when they (i) merely include instructions to implement the judicial exceptions on a computer, (ii) add insignificant pre- or post-solution activity, or (iii) do no more than link the judicial exceptions to a particular technological environment. *Id.*

The Examiner finds the limitations of claim 13, when "taken individually and as a whole, do not amount to significantly more than the abstract idea itself" because "the claims do not effect an improvement to another technology or technical field" and "do not amount to an

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improvement to the functioning of a computer itself." Final Act. 5. The Examiner further finds that the additional limitations of claim 13 "fail to offer significantly more than the abstract idea" and its "application . . . in the specific field of financial trade data." Ans. 7. The Examiner also finds that although the limitations of "using standard deviation[s] to determine category boundaries for price change codes" and "using a '0' or '1' as a price change code may not be taught in the prior art," these claim limitations do not add significantly more to the abstract ideas identified above, which we conclude are mathematical calculations and/or fundamental economic practices. *Id.*

Appellant argues that claim 13 is patentable because it "recites a specific, technological solution to a technological problem." Appeal Br. 6. Appellant argues that because "financial data[] is voluminous and the data storage requirements are technically onerous," claim 13 is patentable because "innovations that reduce memory requirement problems are a real world technological solution that qualify as patent eligible subject matter." *Id.* at 7. Appellant further argues that claim 13 is patent eligible because it "recites a specific way to compress data," one that "applies rules of selection in a manner different from those humans used before its invention" as evidenced by the fact that the Office "cites no prior art to reject the pending claims." *Id.* at 9; *see also* Reply Br. 4–6. Finally, Appellant argues claim 13 is patent eligible because "preemption . . . is the underlying primary concern driving § 101 jurisprudence," and claim 13 recites "specific rules [that] are limited to specific steps" to compress data, and "other compress data techniques can include[] many other possible approaches." Appeal Br. 10.

We agree with the Examiner that the claims are directed to the aforementioned abstract ideas because the claims, as a whole, are directed to

the implementation of these abstract ideas on a computer, limited only to the financial price analysis field of use. *See* Final Act. 5; Ans. 7; *see also* 84 Fed. Reg. at 55. We are not persuaded by Appellant's contention that the claims are patent eligible because they recite a specific way to compress financial data that has never been done by humans before. To the contrary, the claims recite little more than sorting an object (a price change) into one of a plurality of categories, and storing the category into which the object has been sorted as a digitally encoded binary number. Moreover, as the Examiner found, Appellant's arguments that claim 13 is patentable because it doesn't "preempt" other ways of encoding the price change categories are inapposite because "questions on preemption are inherent in and resolved by the § 101 analysis." Ans. 7 (citing *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1375 (Fed. Cir. 2015).

Accordingly, having determined that claim 13 is "directed to" collecting, comparing, organizing, and storing information, we next consider whether claim 13 contains additional elements that, both individually and as an ordered combination, are more than well-understood, routine, or conventional. *See* 84 Fed. Reg. at 56.

2019 PEG Step 2B

Under step 2B, a claim that is "directed to" a judicial exception may nonetheless be patent eligible if it recites additional elements that, when considered both individually and as an ordered combination, provide an inventive concept. *Id.* An inventive concept may be present if the claim adds an additional limitation that is not a well-understood, routine, or conventional element in the field of endeavor. *Id.* However, an inventive concept is not present if the claim adds an additional limitation that is well-

understood, routine, or conventional in the field of endeavor, specified at a high level of generality. *Id.*

The Examiner finds the additional limitations in claim 13 (e.g., "storing a code for a price change . . . wherein the stored code requires less storage resources") fail to offer significantly more than the abstract ideas recited in the claim because "they are well-known, conventional, and routine in the art" and because "[i]t has long been known that short hand or codes save time and space." Final Act. 5. The Examiner further finds the courts have long recognized that the computer functions recited in claim 13, including "performing repetitive calculations, receiving, processing, and storing data; [and] automating mental tasks" are "well-understood, routine, and conventional when they are claimed in a merely generic manner." *Id.* at 6. As evidence, the Examiner points to the Specification's disclosure that these functions can be performed by generic computer systems executing instructions that are stored on generic computer-readable media. *Id.* at 5 (citing Spec. ¶¶ 24–27); Ans. 8–9 (citing Spec. ¶¶ 16–17).

Appellant argues the Examiner has failed to establish the unpatentability of claim 13 by failing "to present objective evidence to support the allegations of patent ineligibility under 35 U.S.C. § 101." Appeal Br. 13. Specifically, Appellant argues, the Examiner "has failed to satisfy the Office's burden to prove by clear and convincing evidence that the claimed features are 'well-known, routine, and conventional.'" *Id.* (citing *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1368 (Fed. Cir. 2018)). Appellant further argues the Examiner's "failure to present any supporting evidence and simple reliance on . . . mere opinion as an adequate finding of fact is in violation of the substantial evidence standard" set forth in the Administrative Procedure Act. *Id.* at 16.

We are not persuaded by Appellant's arguments. To reject claim 13 as patent ineligible, the Examiner's burden is one of establishing a "prima facie" case of ineligibility, not one of proving ineligibility by "clear and convincing" evidence as Appellant contends. *See* 35 U.S.C. § 132(a) ("Whenever, on examination, any claim for a patent is rejected . . . the Director shall notify the applicant thereof, stating the reasons for such rejection . . . together with such information and references as may be useful in judging of the propriety of continuing the prosecution of his application."); *see also Hyatt v. Dudas*, 492 F.3d 1365, 1369 (Fed. Cir. 2007) (during "the prosecution of a patent, the initial burden . . . on the PTO [is] to set forth the bases for any rejection, *i.e.*, a prima facie case").

Here, as discussed *supra*, the Examiner has sufficiently stated the reasons why claim 13 is rejected as patent ineligible, including why the claims as a whole are "directed to" one or more abstract ideas, and why the limitations that do not specifically recite an abstract idea are merely routine, conventional, or well-understood. *See* Final Act. 5–6 (citing Spec. ¶¶ 24–27) (finding "system 100 may be implemented across generic computing technology"); Ans. 8–9 (citing Spec. ¶¶ 16–17) (finding "generic computing technology may be utilized to execute the method steps of the instant invention").

We agree with the Examiner's findings. Claim 13 requires calculating the price change, identifying the price change category, and encoding and storing the price change category using a "computer system." *See* Appeal Br. 18 (Claims Appx.). The Specification describes the computer system that performs these operations generically, e.g., as a system that "could be a single computer or could comprise multiple computers," and as "one or more mainframe, desktop, or other computers." Spec. ¶¶ 17, 20. Claim 18

recites a non-transitory computer-readable medium storing instructions that cause the computer system to execute the method of claim 13. *See* Appeal Br. 19 (Claims Appx.). The Specification describes this medium in generic terms, e.g., as "a single medium" or "a combination of one or more media and/or types of media," including "hard disks, CD-ROMs, optical storage devices, magnetic storage devices, FLASH memory, and/or any combination thereof." Spec. ¶ 16. For these reasons, when the additional limitations recited in claim 13 are considered both individually and as an ordered combination, they fail to "'transform the nature of the claim' into a patent-eligible application.'" *Alice,* 573 U.S. at 217 (quoting *Mayo,* 566 U.S. at 78).

Accordingly, for the reasons discussed above, we agree with the Examiner that claim 13 is patent ineligible under 35 U.S.C. § 101, and sustain the Examiner's rejection of claim 13, and of claims 15, 17, 18, 20, and 22, which are not separately argued.

CONCLUSION

The Examiner's rejection of claims 13, 15, 17, 18, 20, and 22 as directed to unpatentable subject matter is sustained.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	References / Basis	Affirmed	Reversed
13, 15, 17, 18, 20, 22	101	Unpatentable subject matter	13, 15, 17, 18, 20, 22	

TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended. *See* 37 C.F.R. § 1.136(a)(1)(iv).

<u>AFFIRMED</u>