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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JAMES ALEXANDER GAMEI, NICHOLAS SAUNDERS,
KARL JAMES SHARMAN, and PAUL JAMES SILCOCK

Appeal 2018-007136
Application 14/394,834
Technology Center 2400

Before CAROLYN D. THOMAS, CARL W. WHITEHEAD JR., and
MICHAEL J. STRAUSS, *Administrative Patent Judges*.

THOMAS, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner’s decision to reject claims 22–26 and 28–43. We have jurisdiction over the appeal under 35 U.S.C. § 6(b). An Oral Hearing was held on February 25, 2020.

We REVERSE.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Sony Corporation. Appeal Br. 2.

The present invention relates generally to video coding by dividing image data into transform units. *See* Abstr.

Independent claim 22, reproduced below, are representative of the appealed claims:

22. A method of video coding, comprising:
dividing, by circuitry, image data into transform units;
when a transform unit is a non-square transform unit,
splitting the non-square transform unit into square blocks and
applying a spatial frequency transform to the square blocks to
generate corresponding sets of spatial frequency coefficients; and
associating, by the circuitry, intra-prediction mode angles
for square prediction units with different intra-prediction mode angles
for non-square prediction units.

Appellant appeals the following rejections:

R1. Claims 22–26 and 28–31 are rejected under 35 U.S.C. § 101 because the claimed invention is directed to patent-ineligible subject matter. Final Act. 4; and

R2. Claims 22–26 and 28–43 are rejected under 35 U.S.C. § 103(a) as being unpatentable over at least Wang (WO 2013/067174 A1, May 10, 2013) in combination with various other prior art. *See* Final Act. 5–12.

We review the appealed rejections for error based upon the issues identified by Appellant, and in light of the arguments and evidence produced thereon. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential).

ANALYSIS

Rejection under § 101 Claims 22–26 and 28–31

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*. *Alice*, 573 U.S. at 217–18 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75–77 (2012)). In accordance with the 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.”). For example, 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)).

The USPTO published revised guidance on the application of 35 U.S.C. § 101. USPTO’s 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50 (Jan. 7, 2019) (“Revised Guidance”). *Updated by USPTO, October 2019 Update: Subject Matter Eligibility* (available at https://www.uspto.gov/sites/default/files/documents/peg_oct_2019_update.pdf) (jointly referred to as “Revised Guidance”); *see also* October 2019 Patent Eligibility Guidance Update, 84 Fed. Reg. 55942

(Oct. 18, 2019) (notifying the public of the availability of the October update).

Under the Revised Guidance “Step 2A,” the office first looks 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)). Revised Guidance, 84 Fed. Reg. at 51–52, 55.

Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, does the Office then (pursuant to the Revised Guidance “Step 2B”) 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. Revised Guidance, 84 Fed. Reg. at 56.

Step 2A, Prong 1 (Does the Claim Recite a Judicial Exception?)

With respect to independent method claim 22, the Examiner determines that the claims are directed to “an ‘idea of itself’” (Final Act. 4), which we conclude are mental processes, which is a type of abstract idea. The Examiner also determines that the claims are directed to “a mathematical operation” (Ans. 4), which we conclude is another type of

abstract idea, i.e., mathematical concepts. For at least the following reasons, we are persuaded that representative claim 22 recites plural abstract ideas.

Claim 22 recites at least the following limitations: (1) “dividing . . . image data into transform units,” (2) “applying a spatial frequency transform to the square blocks,” and (3) “associating . . . intra-prediction mode angles for square prediction units with different intra-prediction mode angles for non-square prediction units.” *See* claim 22.

These limitations, under their broadest reasonable interpretation, recite mental processes because the limitations all recite mental processes that can be performed in the human mind. A claim recites a mental process when the claim encompasses acts people can perform using their minds or pen and paper. *See, e.g., CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1372–73 (Fed. Cir. 2011) (determining that a claim whose “steps can be performed in the human mind, or by a human using a pen and paper” is directed to an unpatentable mental process). This is true even if the claim recites that a generic computer component performs the acts. *See, e.g., Versata Dev. Grp., Inc. v. SAP Am., Inc.*, 793 F.3d 1306, 1335 (Fed. Cir. 2015) (“Courts have examined claims that required the use of a computer and still found that the underlying, patent-ineligible invention could be performed via pen and paper or in a person’s mind.”); *see also* Revised Guidance, 84 Fed. Reg. at 52 n.14 (emphasis omitted) (“If a claim, under its broadest reasonable interpretation, covers performance in the mind but for the recitation of generic computer components, then it is still in the mental processes category unless the claim cannot practically be performed in the mind.”).

Here, these limitations encompass acts people can perform using their minds or pen and paper because people can perform the “dividing” and “splitting” steps by simply looking at the image data and recognizing a non-square shape of transform units and using pen and paper to apply a Haar transform. *See* Spec. 13:17–21; 14:6–12. People can also perform the “applying a spatial frequency transform,” step by recognizing the square blocks and using pen a paper to apply said transform. *Id.* at 12:3–6. Finally, people can perform the “associating” step by observing which intra-prediction mode angles are for square and non-square prediction units.

For example, Appellant’s Specification indicates:

In many encoding methods including HEVC, such data is transformed into the spatial frequency domain using an integer cosine transform (ICT), and typically some compression is then achieved by retaining low spatial frequency data and discarding higher spatial frequency data according to the level of compression desired.

Id. at 12:3–6.

As discussed above, the splitting may comprise applying a Haar transform. Alternatively, in the case that the non-square transform unit is rectangular, the splitting may comprise selecting respective square blocks either side of a centre axis of the rectangular transform unit. Alternatively, in the case that the non-square transform unit is rectangular, the splitting may comprise selecting alternate rows or columns of samples of the transform unit.

Id. at 13:17–21.

Upon reviewing the Specification and the claim as a whole, as summarized above, we agree with the Examiner that the rejected claims recite a judicial exception because they are directed to processes or functions

that can be performed by a human using a pen and paper. *See* Ans. 4; *Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1146 (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.’”) (citation omitted).

Although independent claim 22 recites “circuitry,” it recites similar features that can be otherwise performed using pen and paper. The dependent claims are directed to similar processes or functions, and Appellant has not shown such claims are directed to other non-abstract functions or processes. *See* claims 23–26 and 28–31.

To the extent that such steps noted *supra* cannot practically be performed mentally (although Appellant has not directed our attention to any such evidence in Appellant’s Specification), we conclude that some of these limitations, under their broadest reasonable interpretation, also recite mathematical concepts because claim 22 broadly recites “dividing . . . applying a spatial frequency transform . . . [and] generating corresponding sets of spatial frequency coefficients.” As drafted, these limitations recite mathematical concepts because “dividing,” “applying a spatial frequency transform,” and “generating spatial frequency coefficients” are mathematical calculations. *See October 2019 Update: Subject Matter Eligibility*, 4 (Oct. 17, 2019) (“A claim that recites a numerical formula or equation will be considered as falling within the ‘mathematical concepts’ grouping. In addition, there are instances where a formula or equation is written in text format that should also be considered as falling within this grouping. For example, the phrase ‘determining a ratio of A to B’ is merely a textual

replacement for the particular equation (ratio = A/B).”); *SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1165, 1167 (Fed. Cir. 2018) (A claim reciting “performing a resampled statistical analysis” was directed to a mathematical concept.). Accordingly, we further conclude the claim recites another abstract idea, i.e., mathematical concepts.

Although Appellant contends that the Examiner’s “assertions are in contrast to a proper § 101 examination procedure” (*see* Appeal Br. 6–7, *citing* July 2015 Update and May 2016 Memo), we respectfully point out that the Revised Guidance, noted *supra*, dictates the proper section 101 examination procedure, which is being followed. In any case, Appellant does not directly challenge whether the claims are directed to an abstract idea, but instead make arguments more directly related to integrating the judicial exception into a practical application. Such arguments are addressed below.

Therefore, for at least the aforementioned reasons, we agree with the Examiner that claim 22 recites an abstract idea, which we conclude are mental processes and/or mathematical concepts.

Step 2A—Prong 2 (integration into Practical Application)²

Under the Revised Guidance, we now must determine if additional elements in the claims integrate the judicial exception into a **practical application** (*see* MPEP §§ 2106.05(a)–(c), (e)–(h)).

² We acknowledge that some of the considerations at Step 2A, Prong 2, properly may be evaluated under Step 2 of *Alice* (Step 2B of the Office revised guidance). For purposes of maintaining consistent treatment within the Office, we evaluate them under Step 1 of *Alice* (Step 2A of the Office revised guidance). *See* Revised Guidance, 84 Fed. Reg. at 55 n.25, 27–32.

We have discern additional element (or combination of elements) recited in Appellant’s representative claim 22 that integrates the judicial exception into a practical application. *See* Revised Guidance, 84 Fed. Reg. at 54–55 (“Prong 2”). For example, Appellant’s claimed additional elements (e.g., “circuitry,” “a splitter,” and “a spatial frequency transformer”) do improve the functioning of a computer or other technology. *See* MPEP §§ 2106.05(a)–(c), (e)–(h).

Specifically, Appellant contends that “the claims are directed to a *specific implementation of a solution to a problem in the field of video coding/decoding*” . . . “[f]or example, the utilization of non-square transform units, *inter alia*, (1) reduces high frequency artifacts . . . (2) improve the color prediction accuracy and (3) increase efficiency by containing less information.” Appeal Br. 8–9.

Appellant’s Specification discloses:

Having non-square chroma TUs, and hence fewer TUs, may be more efficient as they are likely to contain less information.

Spec. 7:12–13.

Hence more generally, for the 4:2:2 scheme, in NSQT the TU block sizes are selected to align with the asymmetric PU block layout. Consequently the NSQT usefully allows TU boundaries to align with PU boundaries, which reduces high frequency art[i]facts that may otherwise occur.

Id. at 8:6–9. In other words, as highlighted by Appellant, “such claim features address the processing of non-square transform units and provide improvements over the first versions of the HEVC H.265 standard.” *See* Appeal Br. 11.

As such, Appellant has directed our attention to an improvement in video coding/decoding technology when dealing with the processing of non-square transform units. For at least these reasons, we determine the additional recitations of claim 22 do integrate the recited patent-ineligible subject matter into a practical application. As a result, our analysis ends here.

For at least the above reasons, the Examiner's rejection of claims 22–26 and 28–31 under 35 U.S.C. § 101 is reversed.

Rejections under § 103(a)

The Examiner relies on Wang as prior art for the claims. Wang claims the benefit of U.S. Provisional Patent Application Serial Number 61/554,273, filed November 1, 2011, but Appellant contends:

[Appellant's] perfected priority date pre-dates the filing date of Wang [because] . . . US 61/554,273 does not support the disclosure in Wang that is relied upon in the Office Action. In particular, US 61/554,273 does not support at least Fig. 6 and [0067]-[0068], [0085] and [0095] of Wang, which the Office Action relies upon to assert that Wang describes the claimed features.

Appeal Br. 12.

Appellant emphasizes that “Wang is not entitled to the filing dates of US 61/554,273. Thus, Wang is not prior art.” Appeal Br. 13. In other words, Appellant contends that because Wang's provisional application (i.e., US 61/554,273) does not disclose or teach Figure 6 and paragraphs 67–68, 85, and 95 as disclosed in the non-provisional application, the effective data accorded to the subject matter of Wang relied upon for the rejection must be the filing data of Wang's non-provisional (i.e., November 1, 2012), which

date does not antedate the priority date of the instant application (i.e., GB 1207459.7 – April 26, 2012).

Appellant’s arguments have persuaded us of error. The Wang’s non-provisional application does not antedate Appellant’s application without relying upon the filing data of Wang’s provisional application. Our reviewing court has said: In *Dynamic Drinkware*, we clearly explained that for a non-provisional application to claim priority to a provisional application for prior art purposes, “the specification of the *provisional* [application] must contain a written description of the invention . . . in such full, clear, concise, and exact terms, to enable an ordinarily skilled artisan to practice the invention claimed in the *non-provisional* application.” *Amgen Inc. v. Sanofi*, 872 F.3d 1367, 1380 (Fed. Cir. 2017) (alteration in original) (quoting *Dynamic Drinkware, LLC v. National Graphics Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015)).

Stated differently, the non-provisional application can rely upon the filing date of the provisional application *only if* at least one of the claims in the non-provisional application is supported by the written description of the provisional application in compliance with pre-AIA 35 U.S.C. § 112, first paragraph. MPEP 2136.03 (III) (citing *Dynamic Drinkware*, 800 F.3d at 1381) (finding insufficient the combination of: (1) a comparison between the claims of the patent-in-suit and the disclosure of the prior art patent; and (2) a comparison between a claim of the patent-in-suit and the provisional application upon which the prior art patent’s priority claim is based).

Thus, regardless of whether the Examiner’s rejection relies upon the limitations of the claims in the Wang non-provisional application, for the Examiner to rely upon the filing date of the Wang provisional application, at

least one claim of the published application (non-provisional application) must be supported by the provisional application. Here, the Examiner has not made any findings in this regard. *See* Ans. 7.

Instead, the Examiner finds that “figure 6 is cited for showing a 4:2:2 subsampling pattern . . . because it is the pattern itself, and Wang’s use of it, which is being cited.” Ans. 7. The Examiner further finds that “both the provisional and non-provisional applications [of Wang teach] that this subsampling pattern existed in the art.” *Id.* The Examiner also finds that “several citations (e.g. [0091], [0097]) were made to the Wang provisional application . . . but no response to these citations and their explanations was given in the Appeal Brief.” *Id.*

However, it is insufficient to merely compare the provisional application to (1) the written description of the non-provisional child, or (2) the claims of the application alleged to be invalid. *Dynamic Drinkware*, 800 F.3d at 1381. What is needed, and is missing, is the Examiner’s finding that at least one claim in Wang’s non-provisional application is supported by the written description of the provisional application in compliance with pre-AIA 35 U.S.C. § 112, first paragraph. Accordingly, we are therefore constrained by the record before us to find that the Examiner erred in rejecting claims 22–26 and 28–43 under at least Wang.

CONCLUSION

Appellant has demonstrated that the Examiner erred in rejecting claims 22–26 and 28–31 as being unpatentable under 35 U.S.C. § 101.

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Appellant also has demonstrated that the Examiner erred in rejecting claims 22–26 and 28–43 as being unpatentable under 35 U.S.C. § 103 over at least Wang.

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
22–26, 28–31	101	Eligibility		22–26, 28–31
22–26, 28–43	103	(at least) Wang		22–26, 28–43
Overall Outcome				22–26, 28–43

REVERSED