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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* DANIELE MANGANO

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Appeal 2017-008743<sup>1</sup>  
Application 14/313,273  
Technology Center 2100

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Before ERIC B. CHEN, ADAM J. PYONIN, and MICHAEL J. ENGLE,  
*Administrative Patent Judges.*

PYONIN, *Administrative Patent Judge.*

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134(a) from a final rejection of claims 1–28.<sup>2</sup> *See* Reply Br. 9. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

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<sup>1</sup> STMicroelectronics S.r.l. is identified as the real party in interest. App. Br. 2.

<sup>2</sup> Claim 29 is pending but not subject to a rejection. *See* App. Br. 51; Ans. 2. 4; Reply Br. 8.

## STATEMENT OF THE CASE

### *Introduction*

The Application is directed to a method and system for “performing mathematical operations such as division or multiplication, e.g., in Integrated Circuit (IC) products.” Spec. 1:7–8. Claims 1, 12, 21, and 25 are independent. Claim 1 is reproduced below for reference (with additional formatting):

1. A method, comprising:
  - performing, using one or more configured processing devices including a memory, a mathematical operation on an operand digital signal with an operator by,
    - shifting bits of the operand digital signal by a first number of bit positions, the first number of bit positions corresponding to a largest power-of-two value less than the operator, generating a first approximate result;
    - shifting bits of the operand digital signal by a second number of bit positions, the second number of bit positions corresponding to a smallest power-of-two value greater than the operator, generating a second approximate result; and
    - generating an output digital signal indicative of a result of the mathematical operation based on the first and second approximate results.

### *The Examiner’s Rejection*<sup>3</sup>

Claims 1–28 stand rejected under 35 U.S.C. § 101 as being directed to patent-ineligible subject matter. Final Act. 2.

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<sup>3</sup> The Examiner has withdrawn the rejection of claims 27–29 as being indefinite pursuant to 35 U.S.C. § 112(b). *See* Ans. 4.

## ANALYSIS

We have reviewed the Examiner's rejection in light of Appellant's arguments. We have considered in this Decision only those arguments Appellant actually raised in the Briefs. Any other arguments Appellant could have made but chose not to make are deemed waived. *See* 37 C.F.R. § 41.37(c)(1)(iv). We are not persuaded of Examiner error; we adopt the Examiner's findings and conclusions as our own to the extent consistent with our analysis, and we add the following for emphasis.

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: laws of nature, natural phenomena, and abstract ideas are not patentable. *See, e.g., Alice Corp. 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.*, 132 S. Ct. 1289, 1300 (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*, 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," e.g., to an abstract idea. *Alice*, 134 S. Ct. at 2355. If the claims are directed to a patent-ineligible concept, 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." *Alice*, 134 S. Ct. at 2355 (quoting *Mayo*, 132 S. Ct. at 1297).

*I. Independent Claims*

Appellant argues the Examiner’s rejection is in error, because “claims 1–28 are not directed to an abstract idea, and, in any event, the Examiner has failed to show the claims do not recite significantly more than any such abstract idea.” App. Br. 31. Appellant does not separately argue independent claims 1, 12, 21, and 25. *See* App. Br. 39. We select claim 1 as representative, pursuant to our authority under 37 C.F.R. § 41.37(c)(1)(iv). We address Appellant’s argument with respect to each step of the *Alice* analysis, below.

*a. Alice Step 1*

Appellant argues “the allegation by the Office that the claims merely recite an abstract idea is a gross simplification of the claimed subject matter, and fails to address the actual language recited by the claims.” App. Br. 33. Appellant states that “[i]nstead, while the subject matter of the pending claims involve using mathematical relationships, a particular process which includes particular rules is recited” and thus the claims recite statutory subject matter. App. Br. 33

We are not persuaded the Examiner erred. Claim 1 recites a method of performing a mathematical operation by shifting bits and generating an output signal. The Examiner is correct in determining “the claimed invention is directed to a calculation to compute a result of a mathematical operation such as multiplication and division using a generic computer.” Ans. 5. Thus, claim 1 is directed to mathematical formulas or calculations, similar to claims found abstract by the Supreme Court:

In *Benson*, for example, this Court rejected as ineligible patent claims involving an algorithm for converting binary-coded decimal numerals into pure binary form, holding that the claimed patent was “in practical effect ... a patent on the algorithm itself.” 409 U.S., at 71–72, 93 S.Ct. 253. And in *Parker v. Flook*, 437 U.S. 584, 594–595, 98 S.Ct. 2522, 57 L.Ed.2d 451 (1978), we held that a mathematical formula for computing “alarm limits” in a catalytic conversion process was also a patent-ineligible abstract idea.

*Alice*, 134 S. Ct. at 2355. We determine Appellant’s claim 1 is abstract, “just like the algorithms at issue in *Benson* and *Flook*.” *Id.* at 2356.<sup>4</sup>

Additionally, we note claim 1 recites a set of calculations that can be performed by a mental process or a person using a pen and paper. *See, e.g.*, Spec. 10–11 (describing a method of shifting the bit signals). The law is clear that “a method that can be performed by human thought alone is merely an abstract idea and is not patent-eligible under § 101.” *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1373 (Fed. Cir. 2011).

Appellant’s arguments focus on the claimed recitations of “a particular process” and “particular rules.” *See, e.g.*, App. Br. 33. As discussed above, we determine these claimed steps and rules are part of an abstract algorithm. Further, we disagree with Appellant’s contention that the recited processes and rules improve a technical process and thus “the pending claims recite statutory subject matter in a manner analogous to the

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<sup>4</sup> That claim 1 recites an algorithm and is thus directed to an abstract concept is also consistent with Federal Circuit decisions. *See, e.g., 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.”); *see also Coffelt v. NVIDIA Corp.*, 680 F. App’x 1010 (Fed. Cir. 2017) (unpublished) (an abstract mathematical algorithm for calculating and comparing regions in space).

claims at issue in *Enfish* and *McRO*.” App. Br. 35. In *Enfish*, “the plain focus of the claims is on an improvement to the computer functionality itself.” *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1336 (Fed. Cir. 2016). In *McRO*, the claims “focused on a specific asserted improvement in computer animation.” *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1314 (Fed. Cir. 2016). In contrast, we do not find a claimed focus on a specific technical improvement here. Appellant lists various purported advantages of the claimed invention, but does not explain how any of the advantages relate to the claim limitations. See App. Br. 34. Further, the provided support for these advantages is a citation to the Specification (*see id.*); however, the Specification merely provides a list of possible benefits without explaining whether any specific benefit applies to the claims at issue. See Spec. 3 (“*One or more* embodiments *may* offer *one or more* of the following advantages.”) (emphases added). Accordingly, Appellant does not provide sufficient evidence or technical reasoning to persuade us the Examiner erred in determining the claimed invention “is not an improvement to a technology or technical field, or an improvement in the functioning of the computer itself.” Ans. 5.

Accordingly, we agree with the Examiner that claim 1 is directed to an abstract idea. See Ans. 2–3.

*b. Alice Step 2*

Appellant argues “the claims clearly recite significantly more than any [] abstract idea, and are thus statutory subject matter for at least that reason.” App. Br. 36. Appellant contends that, “in a manner analogous to *Bascom*, Appellant’s automated operations enable processing circuitry to perform

mathematic operations more efficiently, as discussed above and in the specification.” *Id.* (citing *Bascom Glob. Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341, 1350–51 (Fed. Cir. 2016)).

We are not persuaded the claims recite significantly more. As explained above with respect to the first step of the *Alice* analysis, there is insufficient evidence on the record before us to persuasively show the claims improve an existing technological process. Further, claim 1 is not a technology based solution; rather the claim recites an algorithm that may be performed by a mental process or generic computing equipment. *See* Spec. 9 (“one or more embodiments may apply to any type of processor), 20–21 (describing various computer program products capable of performing the disclosed embodiments). That the claimed process may be performed more efficiently by a computer does not “‘transform the nature of the claim’ into a patent-eligible application.” *Alice*, 134 S. Ct. at 2355 (quoting *Mayo*, 566 U.S. at 78); *see also FairWarning IP, LLC v. Iatric Sys., Inc.*, 839 F.3d 1089, 1096 (Fed. Cir. 2016) (“[T]he use of generic computer elements like a microprocessor or user interface do not alone transform an otherwise abstract idea into patent-eligible subject matter.”). Thus, Appellant does not persuade us claim 1 recites elements that transform the nature of the claim into a patent-eligible application.

*c. Preemption*

Appellant further argues “[i]n the present case, the claims do not cover any and all processes for automated performance of a mathematical operation on an operand digital signal.” App. Br. 38. According to Appellant, although the “claimed invention provides certain advantages over

such known methods for automated performance of mathematical operations, Appellant’s claims do not preempt the use of such methods.” *Id.*

We recognize as a threshold matter that the Supreme Court has described “the concern that drives this exclusionary principle [to statutory patentability] as one of pre-emption.” *Alice*, 134 S. Ct. at 2354. Here, we are not persuaded the claims do not preempt the claimed approach in all fields: claim 1 recites a three step algorithm performed by a generic processing device. In any event, characterizing preemption as a driving concern for patent eligibility is not the same as characterizing preemption as the sole test for patent eligibility. As our reviewing court has explained: “questions on preemption are inherent in and resolved by the § 101 analysis,” and, although “preemption may signal patent ineligible subject matter, the absence of complete preemption does not demonstrate patent eligibility.” *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015); *cf. OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1362–63 (Fed. Cir. 2015) (“[T]hat the claims do not preempt all price optimization or may be limited to price optimization in the e-commerce setting do not make them any less abstract.”).

Accordingly, we are not persuaded the Examiner erred in concluding independent claim 1 is not directed to patentable subject matter. *See* Ans. 5.

## *II. Claims 2–9, 13–19, 22–24, and 26–28.*

Appellant presents no arguments regarding dependent claim 13. *See* App. Br. 39–45. Thus, we find dependent claim 13 to be unpatentable under 35 U.S.C. § 101 for the same reasons as independent claim 12, from which it depends.

Appellant argues the remaining dependent claims “are, at a minimum, directed to significantly more than the alleged abstract idea.” App. Br. 40, 41, 42, 43. Appellant contends dependent claims 2–9, 14–19, and 22–24 “provide additional rules and/or additional details to the rules of [the independent claims], and provide further evidence that the claims do not merely invoke a generic process and machinery.” App. Br. 40, 41, 42. Appellant contends dependent claims 26–28 recite “specific elements that, together with the other respective limitations of claims 26–28, implement or otherwise facilitate the performance of the particular processes and particular rules discussed above.” App. Br. 43.

We are not persuaded the Examiner erred. Appellant restates the limitations of dependent claims 2–9, 14–19, and 22–24, but does not otherwise explain how these limitations are meaningfully different from the independent claims for purposes of the *Alice* analysis. Rather, we conclude these claims are directed to the same abstract idea, without reciting significantly more, as their parent independent claims discussed above.

Appellant refers to the elements recited by dependent claims 26–28; however we do not find these elements transform the nature of the claims into patent-eligible applications. *See Alice*, 134 S. Ct. at 2355; *see also* Spec. 18 (“a exemplary (barrel) shifter 14 which may be any known component used to perform [the specified] operations”).

Accordingly, we are not persuaded the Examiner erred in rejecting dependent claims 2–9, 14–19, 22–24, and 26–28 under 35 U.S.C. § 101. *Cf. Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1349 (Fed. Cir. 2015) (“additional limitations of these dependent claims do not add an

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inventive concept, for they represent merely generic data collection steps or siting the ineligible concept in a particular technological environment”).

#### DECISION

The Examiner’s decision rejecting claims 1–28 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