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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/360,443	01/27/2012	Kevin J. Kelly	1123-062US01/ P39663.USU1	8574

71996 7590 11/26/2019

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EXAMINER	
COX, THADDEUS B	

ART UNIT	PAPER NUMBER
3791	

NOTIFICATION DATE	DELIVERY MODE
11/26/2019	ELECTRONIC

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte KEVIN J. KELLY, DAVID P. OLSON,
REID K. BORNHOFT, and VENKAT R. GADDAM

Appeal 2019-002435
Application 13/360,443
Technology Center 3700

Before BIBHU R. MOHANTY, MICHAEL P. ASTORINO, and PHILIP J. HOFFMANN, *Administrative Patent Judges*.

HOFFMANN, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the Examiner's rejection of claims 1–32. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM IN PART.

[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 "Medtronic, Inc. . . ., a subsidiary of Medtronic plc." Appeal Br. 3.

According to Appellant, the invention "relates to . . . rechargeable power supplies for implantable medical devices." Spec. ¶ 1. Below, we reproduce independent claim 1 as representative of the appealed claims.

1. A method comprising:

calculating, by a processor, an estimated cumulative thermal dose delivered to a patient during charging of a rechargeable power source of an implantable medical device over a period of time; and

selecting, by the processor, a power level for subsequent charging of the rechargeable power source based on the estimated cumulative thermal dose.

REJECTIONS AND PRIOR ART

The Examiner rejects the claims as follows:

I. Claims 1, 4–6, 8–17, 19–23, 25, 26, and 28–32 under 35 U.S.C. § 101 as reciting only patent-ineligible subject matter;

II. Claims 1–3, 5, 11–14, 16, 22, 26–28, and 32 under 35 U.S.C. § 102(b) as anticipated by Morgan et al. (US 2009/0276014 Al, pub. Nov. 5, 2009) ("Morgan");

III. Claims 23–25 under 35 U.S.C. § 102(b) as anticipated by Carbunaru et al. (US 2010/0010582 A1, pub. Jan. 14, 2010) ("Carbunaru");

IV. Claims 4 and 15 under 35 U.S.C. § 103 as unpatentable over Morgan;

V. Claims 7 and 18 under 35 U.S.C. § 103 as unpatentable over Morgan and Kallmyer (US 2010/0256709 A1, pub. Oct. 7, 2010);

VI. Claims 8, 9, 19, and 20 under 35 U.S.C. § 103 as unpatentable over Morgan, Wahlstrand et al. (US 2009/0112291 A1, pub. Apr. 30, 2009) ("Wahlstrand"), and Buysse et al. (US 2008/0183165 A1, pub. July 31, 2008) ("Buysse"); and

VII. Claims 29–31 under 35 U.S.C. § 103 as unpatentable over Morgan and Carbunaru.

PRINCIPLES OF LAW CONCERNING 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 has long interpreted 35 U.S.C. § 101 to include implicit exceptions, however: "[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) (citation omitted).

In determining whether a claim falls within an excluded category, the Supreme Court's two-step framework, described in *Mayo* and *Alice*, guides us. *See 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." *Id.* 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 that the courts 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, 67 (1972)). Concepts that the courts 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))).

In *Diehr*, although the claim at issue recited a mathematical formula, 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 191 ("We view respondents' claims as nothing more than a process for molding rubber products and not as an attempt to patent a mathematical formula."). Nonetheless, 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 (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.*

2019 Revised Patent Subject Matter Eligibility Guidance

The U.S. Patent and Trademark Office recently published revised guidance on the application of § 101. *See 2019 Revised Patent Subject Matter Eligibility Guidance*, 84 Fed. Reg. 50 (Jan. 7, 2019) ("Guidance"). 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 i) a fundamental economic practice, or ii) managing personal behavior or relationships or interactions between people, or mental processes); and
>
> (2) 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)).

A practical application "appl[ies], rel[ies] on, or use[s] the judicial exception in a manner that imposes a meaningful limit on the judicial exception, such that the claim is more than a drafting effort designed to monopolize the judicial exception." Guidance at 54.

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 either:

> (3) adds a specific limitation beyond the judicial exception which is not "well-understood, routine, [or] conventional" in the field (*see* MPEP § 2106.05(d)); or
>
> (4) simply appends well-understood, routine, and conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception.
>
> *See generally* Guidance.

ANALYSIS

Rejection I—§ 101 rejection of claims 1, 4–6, 8–17, 19–23, 25, 26, and 28–32

Initially, we note that Appellant argues against the Examiner's § 101 rejection of claims 1, 4–6, 8–11, and 32 as a group (*see* Appeal Br. 6–13), and argues that the § 101 rejection of the remaining claims is improper "[f]or at least the same reasons presented above with respect to independent claim 1," without presenting further specific arguments (Appeal Br. 14, 15). Thus, we choose independent claim 1 for our analysis, and the remaining independent and dependent claims stand or fall with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(iv). For the following reasons, we sustain the Examiner's rejection of the claims as patent-ineligible.

We determine that in accordance with point (1) of the Guidance referenced above, independent claim 1 recites at least one judicial exception, including an abstract idea. More specifically, as described in further detail, the abstract idea includes mental concepts.

As reproduced above, claim 1 recites a method comprising: (1) "calculating, by a processor, an estimated cumulative thermal dose delivered to a patient during charging of a rechargeable power source of an implantable medical device over a period of time"; and (2) "selecting, by the

processor, a power level for subsequent charging of the rechargeable power source based on the estimated cumulative thermal dose." Appeal Br., Claims App. (Claim 1). Notwithstanding that the claim generally recites a processor, claim recitations (1) and (2) are determinations that a person may accomplish in his or her mind. For example, a person may receive information regarding one or more individual thermal doses delivered to a patient, over a time period, during charging of a rechargeable power source of an implantable medical device in the patient. That person may they sum the individual doses in his or her mind, or with pencil and paper, to calculate an estimated cumulative thermal dose delivered over that time period. That person or another person may then select a subsequent charging level based on the patient's calculated estimated cumulative thermal dose. For example, if the calculation indicates that the patients' estimated cumulative thermal dose is above some threshold level, a person may select a lower subsequent charging level, thereby minimizing damage to the patient's tissue during charging. *See, e.g.*, Spec. ¶ 23. Conversely, if the patient's estimated cumulative thermal dose is below some threshold level, a person may select a higher subsequent charging level, thereby minimizing a charging time. *See, e.g.*, *id.* ¶ 22.

The courts have recognized mental steps, such as those identified above, as abstract ideas. *See Elec. Power Grp. LLC v. Alstom*, 830 F.3d 1350, 1353–54 (Fed. Cir. 2016) (collecting information and "analyzing information by steps people go through in their minds, or by mathematical algorithms, without more, [are] essentially mental processes within the abstract-idea category."); *see CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1373 (Fed. Cir. 2011) (finding a claim that is directed to "a

method that can be performed by human thought alone is merely an abstract idea and is not patent-eligible under § 101"); *see In re Comiskey*, 554 F.3d 967, 979 (Fed. Cir. 2009) ("[M]ental processes—or processes of human thinking—standing alone are not patentable even if they have practical application."); *see Gottschalk v. Benson*, 409 U.S. at 67 ("Phenomena of nature, . . . mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work."). Additionally, mental processes may remain unpatentable even when automated to reduce the burden on the user. *CyberSource*, 654 F.3d at 1375 ("That purely mental processes can be unpatentable, even when performed by a computer, was precisely the holding of the Supreme Court in *Gottschalk v. Benson*."). Accordingly, we conclude that claim 1 recites a judicial exception of mental processes.

Notwithstanding the above discussion, we further determine that in accordance with point (1) of the Guidance referenced above, independent claim 1 recites the judicial exception of an abstract idea including mathematical concepts.

As restated above, claim 1 recites a method comprising: (1) "calculating, by a processor, an estimated cumulative thermal dose delivered to a patient during charging of a rechargeable power source of an implantable medical device over a period of time"; and (2) "selecting, by the processor, a power level for subsequent charging of the rechargeable power source based on the estimated cumulative thermal dose." Appeal Br., Claims App. (Claim 1). Here, at least claim 1's recitation (1) calculates a value—an estimated cumulative thermal dose. Calculating a value is a mathematical concept that is an abstract idea. *See* MPEP

§ 2106.04(a)(2)(IV)(B); *see Bancorp Servs., LLC v. Sun Life Assur. Co. of Canada (U.S.)*, 687 F.3d 1266, 1270–71 (Fed. Cir. 2012) (where the court identified a concept relating to performing mathematical calculations as abstract idea).

In accordance with point (2) of the Guidance referenced above, claim 1 does not recite any additional element that integrates the judicial exception into a practical application—i.e., something that "appl[ies], rel[ies] on, or use[s] the judicial exception in a manner that imposes a meaningful limit on the judicial exception, such that the claim is more than a drafting effort designed to monopolize the judicial exception." Guidance at 54. Claim 1 only generically recites the use of physical hardware—a "processor"—and, thus, the hardware as recited in the claim does not meaningfully limit claim 1. Further, in the Specification, Appellant does not describe the claimed processor in such a way as to indicate that the processor is anything other than generic. *See, e.g.*, Spec. ¶ 62. Thus, claim 1 does not affect an improvement in any technology or technical field.

Therefore, for the foregoing reasons, independent claim 1 is directed to the above-discussed abstract ideas, and does not integrate the judicial exception into a practical application.

In accordance with points (3) and (4) of the Guidance referenced above, claim 1 fails to recite a specific limitation beyond the judicial exception which is not well understood, routine, and conventional in the field, but instead simply appends well-understood, routine, and conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception. Taking the claim elements separately, the claimed hardware, as well as the functions performed by the claimed

hardware, are purely conventional. Specifically, claim 1 uses a known, generic component—a processor—to perform its known, basic functions of calculating, and selecting based on the calculation. Although, arguably, the data processed by the processor differs from that processed in some other methods, the claim recites the hardware only at a high level of generality. Restated, here the claim recites only well-understood, routine, and conventional functions. *See Elec. Power Grp. v. Alstom S.A.*, 830 F.3d 1350, 1353 (Fed. Cir. 2016); *see also In re Katz*, 639 F.3d 1303, 1316 (Fed. Cir. 2011) ("Absent a possible narrower construction of the terms 'processing,' 'receiving,' and 'storing,' . . . those functions can be achieved by any general purpose computer without special programming.").

For the following reasons, when considered as an ordered combination, claim 1's hardware (i.e., the processor) does not add anything that is not already present when we consider the steps separately. The hardware remains the same before, during, and after calculating an estimated cumulative thermal dose and selecting a subsequent charging power level. Thus, the claim amounts to nothing significantly more than instructions to apply the abstract idea with generic hardware, and does not improve the hardware. Accordingly, the claim recitations are insufficient to transform the abstract idea into a patent-eligible invention. *See Alice*, 573 U.S. at 225–26.

We have considered all of Appellant's arguments in the Briefs, but Appellant does not persuade us of error. We now address certain arguments below.

Appellant argues that "claim 1 is similar to the eligible subject matter of the claims in *McRO, Inc.* [*v. Bandai Namco Games Am. Inc.*, 837 F.3d

1299 (Fed. Cir. 2016)]." *See* Appeal Br. 10. In *McRO*, the Federal Circuit addressed claims directed to "[a] method for automatically animating lip synchronization and facial expression of three-dimensional characters." *McRO*, 837 F.3d at 1307. The court reviewed the specification of the patent at issue and found that, rather than invoking the computer merely as a tool, "[c]laim 1 of the [asserted] patent is focused on a specific asserted improvement in computer animation." *Id.* at 1314. The court found that the plain focus of the claim was on an improvement to computer functionality itself, not on an abstract idea for which a computer is used in its ordinary capacity. Unlike *McRO*, which focused on a specific improvement to computer technology, as discussed above Appellant's claim 1 does not improve any computer technology. Instead, Appellant's claim focuses on using generic computer operations, in which a computer is used in its ordinary capacity, for calculating and selecting.

Appellant argues that the claims are similar to those found patent eligible in *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245 (Fed. Cir. 2014), because they claim "a solution that is rooted in technology in order to solve a problem in that technology [and thus are] not abstract." Appeal Br. 10. In *DDR*, the Court evaluated the eligibility of claims "address[ing] the problem of retaining website visitors that, if adhering to the routine, conventional functioning of Internet hyperlink protocol, would be instantly transported away from a host's website after 'clicking' on an advertisement and activating a hyperlink." *DDR*, 773 F.3d at 1257. There, the Court found that the claims were patent eligible because they transformed the manner in which a hyperlink typically functions to resolve a problem that had no "pre-Internet analog." *Id.* at 1258. In contrast, Appellant's claim 1, for example,

is directed to a method of calculating an estimated cumulative thermal dose delivered to a patient.

Appellant argue, with reference to *BASCOM Glob. Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341 (Fed. Cir. 2016), that the claims "improve[] . . . the functioning of a computer," and thus are patent eligible. Appeal Br. 12. Initially, we note that the Court in *BASCOM* did not find claims eligible, but rather that the Court found that the appellee did not provide sufficient evidence to support a 12(b)(6) motion to dismiss in which facts are presumed in the non-movant's favor. Regardless, the key fact in *BASCOM* was the presence of a structural change in "installation of a filtering tool at a specific location, remote from the end users, with customizable filtering features specific to each end user. This design gives the filtering tool both the benefits of a filter on a local computer and the benefits of a filter on the ISP server." *BASCOM*, 827 F.3d at 1350. Appellant's claim 1 has no analogous structural benefit.

Rejection II—Rejection of claims 1–3, 5, 11–14, 16, 22, and 26–28 as anticipated by Morgan

As set forth above, claim 1 recites the following:

> 1. A method comprising:
>
> *calculating*, by a processor, *an estimated cumulative thermal dose* delivered to a patient during charging of a rechargeable power source of an implantable medical device over a period of time; and
>
> *selecting*, by the processor, *a power level for subsequent charging* of the rechargeable power source *based on the estimated cumulative thermal dose*.

Appeal Br., Claims App. (emphases added). We do not sustain the Examiner's anticipation rejection because the Examiner does not support adequately that Morgan discloses calculating an estimated cumulative thermal dose over a period of time. *See* Appeal Br. 15–23; *see* Answer 7–8; *see* Final Action 2–3, 25–27.

Specifically, the Examiner relies on Morgan's claim 2, and paragraphs 8–11 and 49 to disclose calculating an estimated cumulative thermal dose. *See* Answer 7–8; *see* Final Action 2–3, 25–27. Morgan's claim 2 states, in relevant part, "calculating said energy absorbed in said body." Morgan, Claim 2. Consistent with Appellant's argument, it is not clear, however, that this is a calculation of an estimated *cumulative* thermal dose over a period of time, as opposed to a calculation of an amount of energy absorbed in a body at a specific time. Similarly, Morgan's paragraph 8 states that Morgan's invention "address[es] the issue of determining the amount of energy dissipated in a patient, not by measuring energy dissipation from the perspective of the implantable medical device, but by measuring characteristics of the energy transfer from the perspective of the external charger." *Id.* ¶ 8. Again, however, it is not clear that Morgan's invention is concerned with an estimated *cumulative* thermal dose over a period of time, as opposed to an amount of energy dissipated in a patient at a specific time.

Thus, based on the foregoing, we do not sustain the Examiner's anticipation rejection of claim 1 based on Morgan. Accordingly, we also do not sustain the anticipation rejection of claims 2, 3, 5, and 11 that depend from claim 1. Each of independent claims 12 and 26, from which claims 13, 14, 16, 22, 27, and 28 depend, includes a recitation similar to that discussed

above for claim 1. Therefore, we also do not sustain the Examiner's anticipation rejection of claims 12–14, 16, 22, and 26–28 based on Morgan.

Rejection III—Rejection of claims 23–25 as anticipated by Carbunaru

Independent claim 23, from which claims 24 and 25 depend, recites the following:

> 23. A computer-readable storage medium comprising instructions that cause at least one processor to:
>
> *calculate an estimated cumulative thermal dose* delivered to a patient during charging of a rechargeable power source of an implantable medical device over a period of time; and
>
> *select a power level for subsequent charging* of the rechargeable power source *based on the estimated cumulative thermal dose*.

Appeal Br., Claims App. (emphases added). We do not sustain the Examiner's anticipation rejection because the Examiner does not support adequately that Carbunaru discloses calculating an estimated cumulative thermal dose over a period of time. *See* Appeal Br. 26–30; *see* Answer 9–10; *see* Final Action 12–13, 27.

Specifically, the Examiner relies on Carbunaru's paragraph 45, which, according to the Examiner, discloses that "a computation can be performed to determine the temperature." Final Action 13. Based on our review of Carbunaru, it is not clear that any "calculation of an average temperature" (Final Action 27) that occurs in Carbunaru discloses calculating an estimated cumulative thermal dose over a time period, as claimed. Thus, based on the foregoing, we do not sustain the Examiner's anticipation rejection of claims 23–25 based on Carbunaru.

Rejection IV—Rejections of claims 4 and 15 as obvious based on Morgan

Claims 4 and 15 depend from independent claims 1 and 12, respectively. As discussed above, we do not sustain the anticipation rejection of these independent claims, which is based on Morgan. The Examiner does not rely on an obvious modification to Morgan to teach or suggest anything that would remedy the deficiency in the anticipation rejection of claims 1 and 12. Thus, we do not sustain the Examiner's obviousness rejection of claims 4 and 15 based on Morgan.

Rejections V–VII—Rejections of claims 7–9, 18–20, and 29–31 as obvious

Claims 7–9, 18–20, and 29–31 depend from independent claims 1, 12, and 26. As discussed above, we do not sustain the anticipation rejection of the independent claims, which is based on Morgan. The Examiner does not rely on Kallmyer, Wahlstrand, Buysse, or Carbunaru to disclose anything that would remedy the deficiency in the anticipation rejection of claims 1, 12, and 16. Thus, we do not sustain any of the Examiner's obviousness rejections of dependent claims 7–9, 18–20, and 29–31.

CONCLUSION

We AFFIRM the Examiner's § 101 rejection of claims 1, 4–6, 8–17, 19–23, 25, 26, and 28–32.

We REVERSE the Examiner's §§ 102 and 103 rejections of claims 1–5, 7–9, 11–16, 18–20, and 22–32.

In summary:

Claims Rejected	35 U.S.C. §	Basis/Reference(s)	Affirmed	Reversed
1, 4–6, 8–17, 19–23, 25, 26, 28–32	101		1, 4–6, 8–17, 19–23, 25, 26, 28–32	
1–3, 5, 11–14, 16, 22, 26–28, 32	102(b)	Morgan		1–3, 5, 11–14, 16, 22, 26–28, 32
23–25	102(b)	Carbunaru		23–25
4, 15	103	Morgan		4, 15
7, 18	103	Morgan, Kallmyer		7, 18
8, 9, 19, 20	103	Morgan, Wahlstrand, Buysse		8, 9, 19, 20
29–31	103	Morgan, Carbunaru		29–31
Overall Outcome			1, 4–6, 8–17, 19–23, 25, 26, 28–32	2, 3, 7, 18, 24, 27

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

AFFIRM IN PART