UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/160,322	05/20/2016	Bruce A. Liikanen	SGEN-0001.02/US	9701

10580 7590 03/04/2019

Pritzkau Patent Group, LLC
16162 Olive St
Brighton, CO 80602

EXAMINER
NGUYEN, THIEN DANG

ART UNIT	PAPER NUMBER
2111	

NOTIFICATION DATE	DELIVERY MODE
03/04/2019	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTO@Dockettrak.com
mpritz@msn.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte BRUCE A. LIIKANEN, STEPHEN P. VAN AKEN, GERALD L. CADLONI, JOHN L. SEABURY, and ROBERT B. EISENHUTH

Appeal 2018-004144
Application 15/160,322[1]
Technology Center 2100

Before MARC S. HOFF, CARL L. SILVERMAN, and JAMES W. DEJMEK, *Administrative Patent Judges*.

HOFF, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134 from a Final Rejection of claims 1 and 2. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

Appellants' invention is a system and method for multi-level data encoding, wherein each symbol represents more than one bit of information in a user data symbol stream. Each symbol is presented as a plurality of bits where each bit in the plurality of bits is subject to a different probability of

---

[1] Appellants state that the real party in interest is Ovonyx Memory Technology LLC. Amended App. Br. 2 (filed Jan. 31, 2018).

error. An error correction procedure is applied based on the different error probabilities, such that an error correction power for at least one bit of the plurality of bits is different than another error correction power that is associated with another one of the plurality of bits. Spec. ¶ 6.

Claim 1 is reproduced below:

> 1. In a system which uses multi-level data encoding where each symbol of a plurality of user data symbols represents more than one bit of information in a user data symbol stream for transfer using a multilevel transmission channel, a controller comprising:
>
> a data transfer section for representing said user data symbols, in relation to said transfer, in a digital bitwise form such that each symbol is presented as a plurality of bits where each bit in the plurality of bits is subject to a different probability of error; and
>
> an error correction section for applying an error correction procedure to the plurality of bits, for the digital bitwise form of each user data symbol that is transferred as part of the symbol stream, based on the different probability of error that is associated with each bit in the plurality of bits such that an error correction power for at least one bit of the plurality of bits is different than another error correction power that is associated with another one of the plurality of bits and all the user data symbols of the user data symbol stream are recoverable subject to the error correction power to compensate at least for errors induced by the multilevel transmission channel.

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

Throughout this Decision, we make reference to the Appeal Brief ("App. Br.," filed Jan. 3, 2018), the Reply Brief ("Reply Br.," filed Mar. 7, 2018), and the Examiner's Answer ("Ans.," mailed Feb. 2, 2018) for their respective details.

ISSUE

Is the claimed invention directed to patent-ineligible subject matter?

PRINCIPLES OF LAW

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. *See, e.g.*, *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014) (internal quotation marks and citation omitted).

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, 67 (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. 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*, 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 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."). 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 (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 recently published revised guidance on the application of § 101. USPTO's *2019 Revised Patent Subject Matter Eligibility Guidance*, 84 Fed. Reg. 50 (Jan. 7, 2019) ("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* MANUAL OF PATENT EXAMINING PROCEDURE (MPEP) § 2106.05(a)–(c), (e)–(h) (9th Ed., Rev. 08.2017, Jan. 2018)).

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.

ANALYSIS

MEANS PLUS FUNCTION INTERPRETATION

We observe that Appellants present argument in response to the Examiner's determination that "data transfer section," "error correction section," and "decoder" should be interpreted to invoke 35 U.S.C. § 112, sixth paragraph. App. Br. 10. We need not reach this issue in order to determine whether the Examiner erred in rejecting the claims under § 101.

SECTION 101 REJECTION

Independent claim 1 generally relates to, *inter alia*, a controller in a system that uses multi-level data encoding where each symbol of a plurality of user data symbols represents more than one bit of information. The controller comprises a data transfer section and an error correction section. The data transfer section represents user data symbols such that each symbol is presented as a plurality of bits, each bit in the plurality being subject to a different probability of error. The error correction section applies an error correction procedure, such that an error correction power for at least one bit is different than another error correction power associated with another one of the plurality of bits.

The Examiner found that the claimed invention — applying an error correction procedure to a plurality of bits based on the different probability of error that is associated with each bit, such that an error correction power for at least one bit is different than another error correction power associated with another one of the bits — is interpreted as "converting pure data into encoded data based on an algorithm," as in *Benson*. Ans. 4 (emphasis omitted). The Examiner further found that the limitation "all the user data symbols of the user data symbol stream are recoverable subject to the error

correction power to compensate at least for errors induced by the multilevel transmission channel" is interpreted as "the encoded data is recoverable when errors [are] induced during transmission." *Id.* (emphases omitted). The Examiner concludes that the claimed invention is directed to an abstract idea of "applying ECC for each bit according [(sic)] probability of error for each bit" based on "algorithm for converting binary coded decimal to pure binary" and "encoding/decoding information" as recited in *Benson*, which was found patent ineligible by the Supreme Court. Ans. 4, 11 (internal quotation marks and citation omitted). The Examiner, thus, essentially concluded that the claimed invention is directed to the abstract idea of a mathematical concept. Ans. 4–5.

We do not agree with the Examiner's analogy of the invention under appeal to that in *Benson*. *Benson* concerned a method for converting binary-coded-decimal (BCD) numerals into pure binary numerals. The claims were not limited to any particular art or technology, to any particular apparatus or machinery, or to any particular end use. *Benson*, 409 U.S. at 64–65. We find that the steps of the claimed invention — applying an error correction procedure to a plurality of bits based on the different probability of error that is associated with each bit, such that an error correction power for at least one bit is different than another error correction power associated with another one of the bits — amounts to more than the mere mathematical concept expressed in *Benson* of "converting pure data into encoded data based on an algorithm." Ans. 4 (emphasis omitted). Appellants' claimed differential error correction corresponds to the Specification's disclosure that the invention allocates "relatively more parity bits" to "correct errors on data most likely to have errors," and relatively fewer parity bits to data bits less

likely to have errors. Spec. ¶ 60. "In this way, better memory performance can be achieved with a fixed budget of available parity bits." Spec. ¶ 60. Based on this disclosure, we conclude that the claimed invention recites more than a mathematical concept, such as was claimed in *Benson*.

We determine that the Examiner erred in concluding that the claimed invention is directed to an abstract idea.[2] Accordingly, we do not sustain the Examiner's 35 U.S.C. § 101 rejection of claims 1 and 2.

CONCLUSION

The claimed invention is not directed to an abstract idea.

The Examiner's decision to reject claims 1 and 2 under 35 U.S.C. § 101 is reversed.

REVERSED

[2] Because we conclude that the claimed invention is not directed to an abstract idea, we need not reach Appellants' arguments concerning step 2 of the *Alice* analysis.