



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.
10/977,194	10/29/2004	Joel S. Steinberg	JOSZ 200002US01	8971
27885	7590	09/04/2015	EXAMINER	
FAY SHARPE LLP 1228 Euclid Avenue, 5th Floor The Halle Building Cleveland, OH 44115			CARLOS, ALVIN LEABRES	
			ART UNIT	PAPER NUMBER
			3715	
			MAIL DATE	DELIVERY MODE
			09/04/2015	PAPER

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.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JOEL S. STEINBERG and HAROLD LARSON

Appeal 2013-000519
Application 10/977,194
Technology Center 3700

Before MICHAEL L. HOELTER, LYNNE H. BROWNE, and
MICHELLE R. OSINSKI, *Administrative Patent Judges*.

OSINSKI, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Joel S. Steinberg and Harold Larson (Appellants) appeal under 35 U.S.C. § 134 from the Examiner's final decision rejecting claims 1–3 and 5–24. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

THE CLAIMED SUBJECT MATTER

Claims 1, 12, and 20 are the independent claims on appeal. Claim 1, reproduced below, is illustrative of the claimed subject matter on appeal.

1. A method of teaching mathematical operations comprising:
 - forming a vertical line to produce an image on a fixed medium;
 - positioning a plurality of points along said vertical line, each point representing a numerical value equal to a successive positive or negative whole number power of two (2);
 - identifying a desired numerical value; and
 - adding one or more lines perpendicular to the vertical line from at least one of the plurality of points along the vertical line to transform the image on the fixed medium from a vertical line to a numerical notation form in response to the identified desired numerical value, creating a pattern specific to said numerical value, the perpendicular lines being of equal length and volume and having a value corresponding only to the value of the point from which it extends, wherein a multiple lines may only be at a particular point temporarily during manipulation, and wherein two perpendicular lines extending from the same point along the vertical line are equivalent to one perpendicular line extending from the next successive point along the vertical line;
 - representing a number value by the sum of the value of the perpendicular lines extending from the points along the vertical line;
 - increasing the numerical value of the numerical notation form by repeating a lower numerical notation form and adding it to the vertical line;
 - decreasing the numerical value of the numerical notation form by removing a lower numerical notation form from the vertical line; and
 - teaching a user to perform a mathematical operation through manipulation of said numerical notation system method.

EVIDENCE

The Examiner relied on the following evidence in rejecting the claims on appeal:

Stibal	US 3,461,573	Aug. 19, 1969
MacLaurin	A Treatise of Algebra, in Three Parts 4–5	1756

REJECTIONS

- I. Claims 1–3 and 5–24 stand rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Final Act. 2.
- II. Claims 1, 3, 5–10, and 21–24 stand rejected under 35 U.S.C. § 103(a) as being obvious over Stibal. *Id.* at 3–6.
- III. Claims 2 and 11–20 stand rejected under 35 U.S.C. § 103(a) as being obvious over Stibal and MacLaurin. *Id.* at 6–13.

OPINION

Rejection I

The Examiner rejected claims 1–3 and 5–24 under 35 U.S.C. §101 as being directed to non-statutory subject matter, namely, an abstract idea. Final Act. 2. As part of the analysis, the Examiner utilized the “machine-or-transformation test,” which the Supreme Court has instructed is “a useful and important clue, an investigative tool, for determining whether some claimed inventions are processes under § 101,” but “is not the sole test for deciding whether an invention is a patent-eligible ‘process.’” *Bilski v. Kappos*, 130 S. Ct. 3218, 3227 (2010); *see* Final Act. 2. In particular, the Examiner determined that the claimed method is “not positively tied to a particular machine or device nor transform[s] a particular article into a different state or thing.” Final Act. 2; *see also id.* at 13.

Appellants argue that the claims satisfy the machine prong of the machine-or-transformation test because “the claims are tied to the fixed medium, which . . . constitutes a machine or apparatus,” as well as to any apparatus that would be needed to mark the fixed medium with a vertical line. App. Br. 7–8. Despite the relatively broad definition of “machine” announced in *In re Ferguson*,¹ it is unclear how the claimed “fixed medium,” which is broad enough to include a simple piece of paper, consists of parts or is otherwise a mechanical device, such that it constitutes a machine. In addition, we note that claim 1 does not make any reference to any particular apparatus that would be used to mark the fixed medium. Even assuming *arguendo* that the recited “fixed medium” is a machine, the generality of the claimed “fixed medium,” the fact that the fixed medium is merely an object on which the method of teaching mathematical operations is executed,² and the fact that the fixed medium contributes only nominally or insignificantly to the execution of the claimed method,³ all weigh against eligibility. See *Manual of Patent Examining Procedure (MPEP)* (9th ed., Mar. 2014) § 2106(II)(B)(1)(a). We are not persuaded by Appellants’

¹ “[A] machine is a concrete thing, consisting of parts, or of certain devices and combination of devices. This includes every mechanical device or combination of mechanical powers and devices to perform some function and produce a certain effect or result.” *In re Ferguson*, 558 F.3d 1359, 1364 (Fed. Cir. 2009) (quoting *In re Nuijten*, 500 F.3d 1346, 1355 (Fed. Cir. 2007) (internal quotation marks omitted)).

² See Final Act. 13 (explaining that “forming a vertical line to produce an image on a fixed medium as recited in claim 1 could be perform[ed] mentally.”).

³ See Final Act. 2 (explaining that “the involvement of the machine . . . must not merely be insignificant extra-solution activity”).

arguments and agree with the Examiner that there is insufficient recitation of a machine to meet the machine-or-transformation test. Final Act. 2.

Appellants further argue that the claims satisfy the transformation prong of the machine-or-transformation test. In particular, Appellants argue that the fixed medium is transformed from merely including a vertical line to including a numerical notation form. App. Br. 6. “‘Transformation’ of an article means that the ‘article’ has changed to a different state or thing. Changing to a different state or thing usually means more than simply using an article” *MPEP* § 2106(II)(B)(1)(b). Recording something on a fixed medium is akin to simple use of the fixed medium, rather than the type of change of the fixed medium that results in a different function or use of the fixed medium as exemplified in subject matter described in earlier decisions of our reviewing court. *See In re Bilski*, 545 F.3d 943, 962 (Fed. Cir. 2008) (en banc)) (quoting *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972) (quoting *Corning v. Burden*, 56 U.S. 252, 267-68 (1854)) (“[T]he arts of tanning, dyeing, making waterproof cloth, vulcanizing India rubber, smelting ores . . . are instances, however, where the use of chemical substances or physical acts, such as temperature control, changes articles or materials. The chemical process or the physical acts which transform the raw material are, however, sufficiently definite to confine the patent monopoly within rather definite bounds.”). We do not agree with Appellants that adding markings to the vertical line on the fixed medium transforms the fixed medium.

Appellants additionally argue that the claimed method “transform[s] a number in a standard numerical representation, such as Arabic, to the claimed numerical notation form.” App. Br. 7. “An ‘article’ includes a

physical object or substance” or “electronic data that represents a physical object or substance,” and the physical object or substance “must be particular, meaning it can be specifically identified.” *MPEP* § 2106(II)(B)(1)(b). A number in a standard numerical representation is not particular and does not represent a physical object or substance. To the extent Appellants are also arguing that the image on the fixed medium is transformed (*see* Reply Br. 3), the image is not an article that is or represents a physical object or substance. We are not persuaded by Appellants’ arguments and agree with the Examiner that there is insufficient recitation of transformation to meet the machine-or-transformation test. Final Act. 2.

Although the machine-or-transformation test remains a useful tool for determining patent eligibility, it is not dispositive,⁴ and we note that § 101 case law has changed significantly since the briefing was submitted by Appellants and the Examiner in 2012. The Supreme Court has set forth “a framework 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. 2347, 2355 (2014) (*citing Mayo*, 132 S. Ct. at 1294). According to that framework, we must first determine whether the claims at issue are directed to one of those concepts (i.e., laws of nature, natural phenomena, and abstract ideas). *Id.* If so, we must secondly “consider the elements of each claim both individually and ‘as an ordered combination’ to determine whether the additional elements ‘transform the nature of the claim’ into a patent-eligible application.” *Id.*

⁴ *See Mayo Collaborative Servs. v. Prometheus Labs, Inc.*, 132 S. Ct. 1289, 1303 (2012) (the machine-or-transformation test does not “trump” the exclusions to patentable subject matter set forth in *Bilski*).

The Supreme Court characterizes the second step of the analysis as “a search for an ‘inventive concept’ –*i.e.*, an element or combination of elements that is ‘sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.’” *Id.*

The Examiner determined that the step of forming a vertical line to produce an image on a fixed medium could be performed mentally. Final Act. 13. This determination supports the Examiner’s conclusion that the claims are directed to an abstract idea. *Id.* at 2. Our reviewing court, relying on Supreme Court precedent, has “consistently ‘refused to find processes patentable when they merely claimed a mental process standing alone and untied to another category of statutory subject matter[,] even when a practical application was claimed.’” *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1372 (Fed. Cir. 2011) (quoting *In re Comiskey*, 554 F.3d 967, 980 (Fed. Cir. 2009)). Steps that can be performed in the human mind, or by a human using pen and paper,⁵ are mental processes that are not patent-eligible under § 101. *See id.* (holding that a method for verifying the validity of a credit card transaction over the Internet to be non-statutory subject matter as an abstract idea capable of being performed in the human mind or by a human using a pen and paper).⁶ Because we determine that the steps of Appellants’ method claims can be performed by a human using pen and paper, we determine that Appellants’ method claims are directed to the

⁵ In light of this case law, we are not persuaded by Appellants’ arguments that production of an image on a fixed medium precludes the claimed steps from being a mental process. *See Reply Br.* 3.

⁶ *See CyberSource*, 654 F.3d at 1372 (“It is clear that unpatentable mental processes are the subject matter of claim 3. All of claim 3’s method steps can be performed in the human mind, or by a human using a pen and paper.”).

mental process or abstract intellectual concept of teaching mathematical operations. *See* Final Act. 2. Mental processes or abstract intellectual concepts are not patentable. *Parker v. Flook*, 437 U.S. 584, 589 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 67-68 (1972).

Having determined that the claims are directed to a patent-ineligible mental process or abstract intellectual concept, we must secondly consider the elements of the claims individually and as an ordered combination to determine whether the additional elements of the claims transform the nature of the claims into a patent-eligible application. As recognized by the Federal Circuit in *Ulramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 715 (Fed. Cir. 2014), the machine-or-transformation test can be a “useful clue” in the second step of the *Alice* framework. We agree with the Examiner that the claims do not satisfy either prong of the machine-or-transformation test for the reasons described above. Moreover, the recited steps are simply steps for manipulating and/or recording numerical data, which could be performed mentally or by a human with pen and paper, and thus, are insufficient to supply the inventive concept needed to transform the claims into a patent-eligible application.

Considering the steps of independent claims 1, 12, and 20 as an ordered combination adds nothing to the concept of teaching mathematical operations. In other words, the steps, when viewed as a whole, add nothing significant beyond the sum of their parts taken separately. Accordingly, in connection with the second step of the framework set forth in *Alice*, we determine that Appellants’ method claims 1, 12, and 20 do not contain an “inventive concept,” i.e., an element or combination of elements that is significantly more than a patent on the ineligible concept itself.

We have also considered Appellants' argument that the claims of the present application are similar to issued U.S. Patent No. 6,639,139 (App. Br. 8) or that Stibal is evidence of the statutory subject matter of the present application (Reply Br. 3). The Court of Customs and Patent Appeals, predecessor court to the Court of Appeals for the Federal Circuit, held that "[e]ach case is determined on its own merits. In reviewing specific rejections of specific claims, this court does not consider allowed claims in other applications or patents." *In re Gyurik*, 596 F.2d 1012, 1018 n. 15 (CCPA 1979) (citations omitted). As our reviewing court directs, we will not consider the allowed claims in other patents when determining whether the present claims are directed to non-statutory subject matter. Accordingly, we are not persuaded of error by the Examiner.

We have also considered Appellants' separate arguments directed to the recitation of "a paper medium" in claim 21 and "writing instrument" in claims 22–24. Even when these terms are expressly recited, the recited steps remain directed to the mental process or abstract intellectual concept of manipulating and/or recording numerical data, which can be performed by a human with pen and paper, and thus are insufficient to transform the claims into a patent-eligible application.

For these reasons, we agree with the Examiner that claims 1, 12, and 20, and claims 2, 3, 5–11, 13–19, and 21–24, which depend therefrom, are directed to a patent-ineligible abstract idea and we sustain the Examiner's rejection of claims 1–3 and 5–24 under 35 U.S.C. § 101.

Rejections II and III

The Examiner rejects independent claim 1 as obvious over Stibal. Final Act. 3–6. With respect to the limitation of “adding one or more lines perpendicular to the vertical line from at least one of the plurality of points along the vertical line [each point representing a numerical value] . . . , the perpendicular lines . . . having a value corresponding only to the value of the point from which it extends,” the Examiner finds that Stibal teaches this subject matter at column 7, lines 40–66 and Figure 10. *Id.* at 3–4.

Appellants contend that Stibal merely teaches that any lines (e.g., unit bars) added to a vertical line have a value corresponding to their length, rather than a value corresponding only to the value of the point from which they extend as required by the claim. App. Br. 10; Reply Br. 4. For example, a unit bar has a value of 10 when its length is 10 units, and a unit bar has a value of 5 when its length is 5 units. *Id.*; Stibal, Fig. 10. As argued by Appellants, “the 10 unit bar extends, at best, from a point with a value of 0 or 1. This can also be seen in FIGURE 6 in which a 9 unit bar extends from 1.” *Id.*

We agree with Appellants that Stibal does not teach added lines have a value corresponding only to the value of the point from which they extend, as set forth in the claims. Rather, lines added from one of a plurality of points have different values corresponding to the length of the line. That is, a line added to a particular point has a first value in one instance and a second value in another instance depending on the length of the line, even when added to the same point. This precludes the lines from having a “value corresponding *only* to the value of the point from which it extends” as set forth in the claims. App. Br., Claims App. (emphasis added).

The Examiner has not established by a preponderance of the evidence that Stibal teaches the recited limitation of independent claim 1 of “adding one or more lines perpendicular to the vertical line from at least one of the plurality of points along the vertical line [each point representing a numerical value]. . . , the perpendicular lines . . . having a value corresponding only to the value of the point from which it extends.” As such, the Examiner’s conclusion of obviousness of the subject matter of independent claim 1 is based on an erroneous finding as to the scope and content of Stibal.

Independent claims 12 and 20 recite the same above-referenced limitation as claim 1, and the Examiner’s rejection of independent claims 12 and 20 are based on the same erroneous finding that Stibal teaches lines or flags having values corresponding only to the numerical value of the points from which they extend or are drawn. The Examiner’s additional reference to Stibal’s Figure 6 and column 6, lines 10–43 (Final Act. 7–8, 11) in connection with independent claims 12 and 20 does not remedy the deficiency of Stibal described above. Moreover, the Examiner does not explain how MacLaurin would remedy the deficiency of Stibal.

For the foregoing reasons, Appellants have shown error by the Examiner in concluding that the subject matter of claim 1 would have been obvious over Stibal, and that the subject matter of claims 12 and 20 would have been obvious over Stibal and MacLaurin. Accordingly, we do not sustain, under 35 U.S.C. § 103(a), the rejection of claims 1, 3, 5–10, and 21–24 as unpatentable over Stibal, nor the rejection of claims 2 and 11–20 as unpatentable over Stibal and MacLaurin.

Appeal 2013-000519
Application 10/977,194

DECISION

The Examiner's decision to reject claims 1–3 and 5–24 under 35 U.S.C. § 101 as being directed to non-statutory subject matter is **AFFIRMED**.

The Examiner's decision to reject claims 1–3 and 5–24 under 35 U.S.C. § 103(a) is **REVERSED**.

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

tkl