

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

---

*Ex parte* JEROME A. SOLINAS

---

Appeal 2008-0712  
Application 10/184,892  
Technology Center 2100

---

Decided: September 23, 2008

---

Before HOWARD B. BLANKENSHIP, JAY P. LUCAS,  
and ST. JOHN COURTENAY III, *Administrative Patent Judges*.

BLANKENSHIP, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 1-11. We have jurisdiction under 35 U.S.C. § 6(b). An oral hearing for this appeal was conducted on Sept. 11, 2008.

We affirm.

The invention relates, according to Appellant, to cryptography and a discrete logarithm based key exchange on an elliptic curve using expansion in joint sparse form. (Spec. 1.) Claim 1 is illustrative.

1. A method of generating a cryptographic key in a computing device between a first user and a second user, comprising the steps of:

a) selecting, between the first user and the second user, an elliptic curve;

b) selecting, between the first user and the second user, a point  $P$  on the elliptic curve;

c) selecting, by the first user, integers  $r_a$  and  $w_a$ ;

d) selecting, by the second user, integers  $r_b$  and  $w_b$ ;

e) generating, by the first user, points  $R_a = r_a P$  and  $W_a = w_a P$ ;

f) generating, by the second user, points  $R_b = r_b P$  and  $W_b = w_b P$ ;

g) transmitting  $R_a$  and  $W_a$  from the first user to the second user;

h) transmitting  $R_b$  and  $W_b$  from the second user to the first user;

i) generating, by the first user,  $c_a$ , where  $c_a$  is a user-definable function of  $w_a$ ,  $r_a$ ,  $W_b$ , and  $R_b$ ;

j) generating, by the second user,  $c_b$ , where  $c_b$  is a user-definable function of  $w_b$ ,  $r_b$ ,  $W_a$ , and  $R_a$ , and where the user-definable functions of step (i) and step (j) are equivalent after accounting for differing subscripts;

k) generating, by the first user,  $g_a$ , where  $g_a$  is a user-definable function of  $w_a$ ,  $r_a$ ,  $W_b$ , and  $R_b$ ;

l) generating, by the second user,  $g_b$ , where  $g_b$  is a user-definable function of  $w_b, r_b, W_a$ , and  $R_a$ , and where the user-definable functions of step (k) and step (l) are equivalent after accounting for differing subscripts:

m) generating, by the first user, a binary expansion of  $c_a$  and a binary expansion of  $g_a$ , where the binary expansions have its number of nonzero columns minimized;

n) generating, by the second user, a binary expansion of  $c_b$  and a binary expansion of  $g_b$ , where the binary expansions have its number of nonzero columns minimized;

o) generating, by the first user, a point  $K$  by computing  $c_a W_b + g_a R_b$  via twin multiplication using a double-add-subtract method with the binary expansions of  $c_a$  and  $g_a$  generated in step (m);

p) generating, by the second user, the point  $K$  by computing  $c_b W_a + g_b R_a$  via twin multiplication using the double-add-subtract method with the binary expansions of  $c_b$  and  $g_b$  generated the step (n); and

q) deriving the cryptographic key from the point  $K$  by the first user and the second user in a same user-definable manner.

Claims 1-11 stand rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter.

Claim 12, dependent upon rejected base claim 1, has been indicated as allowable if rewritten in independent form.

### *Section 101*

“Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.” 35 U.S.C. § 101. “[N]o patent is available for a

discovery, however useful, novel, and nonobvious, unless it falls within one of the express categories of patentable subject matter of 35 U.S.C. § 101.” *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 483 (1974).

## I

The Examiner contends that claims 1 through 11 are directed to non-statutory subject matter. The Examiner finds that the claims are directed to processes that do nothing more than solve mathematical problems or manipulate abstract ideas.

In response to the rejection, Appellant does not rely on the limitations of any particular claim. Accordingly, we will decide the appeal on the basis of claim 1, the sole independent claim. *See* 37 C.F.R. § 41.37(c)(1)(vii).

Appellant appears to quote, at pages 5 and 6 of the Brief, from a text that Appellant has not provided as evidence in this appeal. Moreover, Appellant does not tell us the reason for providing the quotations, or otherwise provide us with what may be thought the point of the quotations.

Appellant next submits that processes (e.g., methods) are patentable subject matter, citing § 101. (Br. 6.) We agree to the extent that statutory processes are statutory. However, drafting a claim in a method or process format does not make the subject matter of the claim patent eligible. *See Parker v. Flook*, 437 U.S. 584, 589 (1978) (“The holding that the discovery of [Benson’s] method could not be patented as a ‘process’ forecloses a purely literal reading of § 101.”).

Appellant submits, further, that various types of cryptographic methods relating to key generation, management, and distribution appear in

the USPTO Manual of Classification. From this, Appellant seems to conclude that all the named “methods” are “patentable subject matter.” (Br. 6-7.)

However, the purpose of the Manual of Classification is for organizing patent and other technical documents into a classification system. The Manual is not for determining or indicating that a claimed invention is directed to statutory subject matter. How a disclosure may be classified simply does not speak to whether a claimed method is directed to statutory subject matter. That a method may be described as a “cryptographic method” is neutral with respect to whether or not the underlying invention falls within the § 101 “process” category of invention.

Appellant next refers to 17 U.S. patents by number, submitting that the instant claims are “stylistically similar” to allowed claims in the patents. (Br. 7.) However, we do not consider the Examiner’s rejection to be based on the form or “style” of the instant claims.

We have not considered the patents, or the claims of any of the patents, alleged to have “stylistically similar” claims. *Cf.* 37 C.F.R. § 41.37(c)(1)(ix):

*Evidence appendix.* An appendix containing copies of any evidence submitted pursuant to §§ 1.130, 1.131, or 1.132 of this title or of any other evidence entered by the examiner and relied upon by appellant in the appeal, along with a statement setting forth where in the record that evidence was entered in the record by the examiner. Reference to unentered evidence is not permitted in the brief.

Appellant's "similarity" allegation amounts to an invitation for the Board to review the patents not in evidence to see if we can come up with some argument by which the Board may be able to conclude that the instant claims are directed to statutory subject matter. We respectfully decline the invitation. See *Halliburton Energy Services, Inc. v. M-I LLC*, 514 F.3d 1244, 1250 n.2 (Fed. Cir. 2008) (a skeletal argument, really nothing more than an assertion, does not preserve a claim; Judges are not like pigs, hunting for truffles buried in briefs) (quoting *United States v. Dunkel*, 927 F.2d 955, 956 (7th Cir. 1991)); *Ernst Haas Studio, Inc. v. Palm Press, Inc.*, 164 F.3d 110, 112 (2d Cir. 1999) ("Appellant's Brief is at best an invitation to the court to scour the record, research any legal theory that comes to mind, and serve generally as an advocate for appellant. We decline the invitation.").

While it is Appellant's burden, not the Examiner's or the Board's, to demonstrate the relevance of Appellant's rebuttal evidence (and provide the evidence in accordance with the rules governing appeal documents), we make the following observations. The Examiner submits that the claims have been examined and determined not statutory under the *Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility*, published 22 November 2005. (Ans. 4.) Of the 17 patents listed in the Brief, all received substantive examination and were allowed before 22 November 2005. Even were we to assume some identifiable inconsistency between the instant rejection and some claim in some earlier patent, that would not demonstrate error in the *instant* rejection as applied to the *instant* claims.

Appellant has not shown error in the Examiner's § 101 rejection of the claims. We can sustain the rejection on that basis alone.

## II

Claim 1, if statutory, falls within the statutory class of "process." "A process is . . . an act, or a series of acts, performed upon the subject matter to be transformed and reduced to a different state or thing." *Cochrane v. Deener*, 94 U.S. 780, 788 (1877). "Transformation and reduction of an article "to a different state or thing" is the clue to the patentability of a process claim that does not include particular machines." *Diamond v. Diehr*, 450 U.S. 175, 184 (1981) (quoting *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972)).

There is no transformation of an article to a different state or thing in claim 1. The steps of claim 1 appear to be directed to mathematical operations, or the paradigmatic "abstract idea." Compare the invention of *Warmerdam*:

[C]laim 1 recites the steps of "locating" a medial axis, and "creating" a bubble hierarchy. These steps describe nothing more than the manipulation of basic mathematical constructs, the paradigmatic "abstract idea." As the Supreme Court has made clear, "[a]n idea of itself is not patentable," *Rubber-Tip Pencil Co. v. Howard*, 87 U. S. (20 wall.) 498, 507 (1874); taking several abstract ideas and manipulating them together adds nothing to the basic equation.

*In re Warmerdam*, 33 F.3d 1354, 1360. That instant claim 1 may require a second person, or "user," to perform some of the mathematical operations adds nothing to the basic equation.

### III

Recent cases of our reviewing court suggest that a “lack of transformation” is not determinative with respect to whether a claimed process is statutory. Those cases, however, involved inventions that at least used *machines* to transform *data*. The cases could be read as consistent with the statement in *Diehr* and *Benson, supra*, which indicates that process claims that do not transform an article “to a different state or thing,” but include “particular machines,” may be statutory.

For example, our reviewing court in *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1357 (Fed. Cir. 1999), set forth (citing *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994) (en banc)) that a § 101 inquiry is directed to the determination of whether the claimed subject matter as a whole is a disembodied mathematical concept representing nothing more than a “law of nature” or an “abstract idea,” or if the mathematical concept has been reduced to some practical application rendering it “useful.” A claimed process that produces a useful, concrete, tangible result without pre-empting other uses of the mathematical principle falls within the scope of § 101. *AT&T Corp.* at 1358. The process held to be statutory in *AT&T Corp.*, however, required the use of switches and computers. *See, e.g., id.* at 1358 (AT&T's claimed process used “switching and recording mechanisms” to create a “signal” useful for billing purposes).

#### IV

The Examiner has indicated that the instant claims are interpreted as being implemented on a computer. Instant claim 1 recites, in the preamble, the words “in a computing device.”

However, it is not clear to us that the recitation in the preamble of claim 1 has any limiting effect. We find nothing in the steps of the claim that are specific to a computer. Nor do we find that the recitation of a “computing device” in the preamble serves as antecedent for anything in the body of the claim. “The preamble of a claim does not limit the scope of the claim when it merely states a purpose or intended use of the invention.” *In re Paulsen*, 30 F.3d 1475, 1479 (Fed. Cir. 1994).

Even if the nominal recitation of the “computing device” in the preamble were to limit the process to being performed in a computing device, the § 101 inquiry does not end.

In *Gottschalk v. Benson*, 409 U.S. 63 (1972), the claims were directed to a method for converting binary-coded-decimal (BCD) numerals into pure binary numerals for use with a general-purpose digital computer of any type. *Benson*, 409 U.S. at 64. The method steps in the body of the claim incorporated portions of a computer (a reentrant shift register) into the steps. The question before the Court was “whether the method described and claimed is a ‘process’ within the meaning of the Patent Act.” *Id.* The Court characterized the claimed invention as “a generalized formulation for programs to solve mathematical problems of converting one form of numerical representation to another.” *Id.* at 65.

The Court held that the claimed method was directed to non-statutory subject matter because “[t]he mathematical formula involved here has no substantial practical application except in connection with a digital computer, which means that if the judgment below is affirmed, the patent would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself.” *Id.* at 71-72.

In the instant case, assuming that the method requires the steps to be performed “in a computing device,” claim 1 would wholly pre-empt the mathematical formula and would be, in practical effect, a patent on the algorithm itself.

The Examiner cited *Gottschalk v. Benson* as support for the § 101 rejection, in both the Final Rejection and the Answer. Appellant did not respond in the Brief, or in a reply brief.

When asked at the oral hearing how one might distinguish the instant invention from that in *Benson*, counsel indicated that the Court found the invention in that case non-statutory because the algorithm involved was known (i.e., lacked novelty).

We find nothing in *Benson* to support that view. “The ‘novelty’ of any element or steps in a process, or even of the process itself, is of no relevance in determining whether the subject matter of a claim falls within the § 101 categories of possibly patentable subject matter.” *Diamond v. Diehr*, 450 U.S. 175, 188-89 (1981). “The question . . . of whether a particular invention is novel is ‘wholly apart from whether the invention falls into a category of statutory subject matter.’” *Id.* at 189 (quoting *In re Bergey*, 596 F.2d 952, 961 (CCPA 1979)). “The obligation to determine

what type of discovery is sought to be patented [so as to determine whether it is “the kind of ‘discoveries’ that the statute was enacted to protect”] must precede the determination of whether that discovery is, in fact, new or obvious.” *Parker v. Flook*, 437 U.S. 584, 593 (1978).

V

If we assume that claim 1 is directed to statutory subject matter because the claimed process produces a useful, concrete, tangible result without pre-empting other uses of the mathematical principle (*AT&T Corp.* at 1358), that result is, according to Appellant, a cryptographically secure key that “may be used” to securely encrypt or decrypt a message. (Br. 7.)

The Examiner has not rejected dependent claim 12. Claim 12 appears consistent with a way that Appellant submits the result of claim 1 “may” be used. The Examiner has further indicated (e.g., Ans. 5) that the subject matter of claim 1 is not limited to some practical application -- the mathematical concept has not been reduced to some practical application rendering it “useful” (*AT&T Corp.* at 1358).

We do not consider the requirement that a claim be limited to a practical application of mathematical principles or “ideas” to be unreasonable, especially when the claim is in the USPTO and can be amended. “The four categories [of § 101] together describe the exclusive reach of patentable subject matter. If a claim covers material not found in any of the four statutory categories, that claim falls outside the plainly expressed scope of § 101 even if the subject matter is otherwise new and useful.” *In re Nuijten*, 500 F.3d 1346, 1354 (Fed. Cir. 2007). “An essential

Appeal 2008-0712  
Application 10/184,892

purpose of patent examination is to fashion claims that are precise, clear, correct, and unambiguous. Only in this way can uncertainties of claim scope be removed, as much as possible, during the administrative process.” *In re Zletz*, 893 F.2d 319, 322 (Fed. Cir. 1989).

#### CONCLUSION

For the foregoing reasons, we sustain the rejection of claims 1-11 under 35 U.S.C. § 101 as being directed to non-statutory subject matter.

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

AFFIRMED

pgc

OFFICE OF THE ASSOC. GEN. COUNSEL (IP & T)  
9800 SAVAGE ROAD  
SUITE 6542  
FORT MEADE MD 20755-6542