



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.
13/139,803	06/15/2011	Karen Irene Trovato	2008P00711WOUS	4048
24737	7590	10/31/2018	EXAMINER	
PHILIPS INTELLECTUAL PROPERTY & STANDARDS 465 Columbus Avenue Suite 340 Valhalla, NY 10595			LUONG, PETER	
			ART UNIT	PAPER NUMBER
			3793	
			NOTIFICATION DATE	DELIVERY MODE
			10/31/2018	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):

patti.demichele@Philips.com
marianne.fox@philips.com
katelyn.mulroy@philips.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte KAREN IRENE TROVATO and ALEKSANDRA POPOVIC

Appeal 2017-009659
Application 13/139,803
Technology Center 3700

Before ERIC B. GRIMES, MICHAEL J. FITZPATRICK, and
DAVID COTTA, *Administrative Patent Judges*.

FITZPATRICK, *Administrative Patent Judge*.

DECISION ON APPEAL

Karen Irene Trovato and Aleksandra Popovic (“Appellants”)¹ appeal under 35 U.S.C. § 134(a) from the Examiner’s decision finally rejecting claims 1–15. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

STATEMENT OF THE CASE

The Specification

According to Appellants, the claimed invention “relates to a method and a system for computing a path for a minimally invasive device to reach a

¹ The real party in interest is “Koninklijke Philips N.V., a corporation of Netherlands having an office and a place of business at Groenewoudseweg 1, Eindhoven, Netherlands 5621 BA.” *See* App. Br. 3.

target while avoiding critical structures and minimizing damage to structures.” Spec. 1:4–6.

The claimed invention involves constructing “a configuration space structure within a data storage medium, the configuration space structure representing a discretized configuration space of an anatomical region of a body, including free-space configuration nodes and forbidden configuration nodes.” *Id.* at 3:3–6. “Since the configuration space is a discretized space, each state of the configuration space may be considered a ‘node’ in an N-dimensional graph (frequently $N = 2$ or 3 , but sometimes much higher).” *Id.* at 1:16–18; *see also id.* at 1:18–19 (“‘State’ and ‘node’ are used interchangeably herein.”).

The claimed invention may further include generating “a structural damage assessment for each free-space configuration node, the structural damage assessment being indicative of a damage assessment of potential damage to one or more anatomical areas of the anatomical region represented by the forbidden configuration node(s) having an infinite structural assessment cost.” *Id.* at 3:6–10. The structural damage assessment “provides a cost estimate or penalty accrued by traversing specific anatomical areas (e.g., critical anatomical structures within an anatomical region and fragile entry points into the anatomical region).” 4:32–5:4. Thus, “[t]he structural damage assessment will facilitate path planning within the anatomical region that minimizes overall damage.” *Id.* at 5:5–6.

Figure 13 is reproduced below.

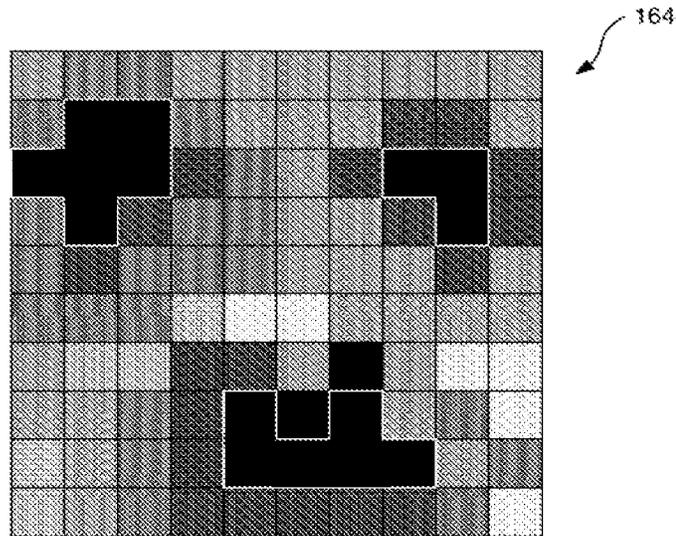


FIG. 13

Figure 13, reproduced above, “illustrates an exemplary structural damage assessment map [164] in accordance with the present invention.” *Id.* at 4:17–18. The black states/nodes enclosed by thin white perimeters are “forbidden areas.” *Id.* at 10:15–17, *see also id.* at 11:6–10. The darker the state/node, the higher the cost of traversing it. *Id.* at 10:13 (“ranging from a zero white coded cost to an infinity black coded cost”). The map “has color coded areas with values collectively derived from the forbidden areas and empirical data in a manner to avoid the forbidden areas to the greatest extent possible to thereby minimize, if not prevent, any structural damage to anatomical structures associated with the forbidden areas.” *Id.* at 11:6–10.

The Rejected Claims

Of the pending and finally rejected claims, claims 1 and 14, are independent. Appeal Br. 36–40. Claim 1 is representative and reads as follows:

1. A method for use in a surgical application, the method comprising:
 - constructing a configuration space node structure within a data storage medium, the configuration space node structure including free-space configuration nodes and forbidden configuration nodes representing a discretized configuration space of an anatomical region of a body; and
 - generating a structural damage assessment for each free-space configuration node, the structural damage assessment being indicative of an assessment of potential damage to at least one critical anatomical area of the anatomical region represented by the forbidden configuration nodes, each forbidden configuration node having an infinite structure damage assessment cost.

Id. at 36.

The Appealed Rejections

The following rejections are before us for review:

- (1) Claims 1–15 under the judicial exception to 35 U.S.C. § 101 (Final Act. 2);
- (2) Claims 1–5 and 10–15 under 35 U.S.C. § 103(a) as obvious over Trovato² and Hartlep³ (Final Act. 3); and
- (3) Claims 4–9 under 35 U.S.C. § 103(a) as obvious over Trovato, Hartlep, and Poole⁴ (Final Act. 4).

² WO 2008/032230 A1, published Mar. 20, 2008 (“Trovato”).

³ EP 1,844,725 A1, published Oct. 17, 2007 (“Hartlep”).

⁴ US 7,379,062 B2, issued May 27, 2008 (“Poole”).

DISCUSSION

Rejection 1

The Examiner rejected all pending claims under the judicial exception to 35 U.S.C. § 101. Final Act. 2; *see, e.g., Alice Corp. Pty. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2354 (2014) (“We have long held that this provision [35 U.S.C. § 101] contains an important implicit exception: Laws of nature, natural phenomena, and abstract ideas are not patentable.”).

In analyzing patent-eligibility questions under the judicial exception to 35 U.S.C. § 101, we “first determine whether the claims at issue are directed to a patent-ineligible concept.” *Alice Corp.*, 134 S. Ct. at 2355. This is sometimes referred to as step 2a.⁵ If the claims are directed to an ineligible concept in step 2a, then, in step 2b, we “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.* (quoting *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 78–79 (2012)).

Pursuant to step 2a, the Examiner determined that the rejected claims are directed to “the abstract idea of obtaining and comparing intangible data and comparing data to determine a risk level.” Nov. 21, 2016, Advisory Act. 2; *see also Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1146–47 (Fed. Cir. 2016) (“[W]e continue to ‘treat[] analyzing information by steps people go through in their minds, or by mathematical algorithms,

⁵ Step 1 of *Alice* is determining whether the claims are directed to a “process, machine, manufacture, or composition of matter, or any new and useful improvement thereof” as recited in 35 U.S.C. § 101. Whether the rejected claims pass step 1, which they do, is not at issue here.

without more, as essentially mental processes within the abstract-idea category.” (quoting *Electric Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1354 (Fed. Cir. 2016)). Appellants do not identify any error in the Examiner’s determination that the claims are directed to an abstract idea. *See generally* Appeal Br. 11–14 (comparing “hypothetical” claims directed purely to abstract ideas with Appellants’ actual claims 1 and 14, which they argue “provide significantly more than an abstract idea”).

Thus, we turn to step 2b. Pursuant to that step, the Examiner stated the following:

The claim(s) does/do not include additional elements that are sufficient to amount to significantly more than the judicial exception because the claim recites a data storage medium to store data. The addition of general purpose computer components alone to perform such steps is not sufficient to transform a judicial exception into a patentable invention. The computer components are recited at a high level of generality and perform the basic functions of a computer (in this case, storing an algorithm) that would be needed to apply the abstract idea via a computer. Merely using generic computer components to perform the above identified basic computer functions to practice or apply the judicial exception does not constitute a meaningful limitation that would amount to significantly more than the judicial exception.

Final Act. 2.

Appellants argue that the independent claims—claims 1 and 14—“provide significantly more than an abstract idea.” Appeal Br. 11. For example, Appellants identify the following underlined claim language as

allegedly transforming claim 1 into patent-eligible applications of the abstract idea.

1. A method for use in a surgical application, the method comprising:

constructing a configuration space node structure within a data storage medium, the configuration space node structure including free-space configuration nodes and forbidden configuration nodes representing a discretized configuration space of an anatomical region of a body; and

generating a structural damage assessment for each free-space configuration node, the structural damage assessment being indicative of an assessment of potential damage to at least one critical anatomical area of the anatomical region represented by the forbidden configuration nodes, each forbidden configuration node having an infinite structure damage assessment cost.

Appeal Br. 11–12. Appellants identify similar, corresponding limitations for claim 14. *Id.* at 13–14.

We are not persuaded. All of the underlined matter is a description of information. Simply put, “[i]nformation as such is an intangible.” *Electric Power Grp., LLC v. Alstom S.A.*, 830 F.3d at 1353.

“[C]onstructing a configuration space node structure within a data storage medium” (as recited in claim 1) is collecting information, which is abstract. *See id.* This is true even when, as here, the data are limited to particular content such as information “representing a discretized configuration space of an anatomical region of a body” (as recited in claim 1). *See id.* (“[W]e have treated collecting information, *including when limited to particular content (which does not change its character as information)*, as within the realm of abstract ideas.” (emphasis added)).

“[G]enerating a structural damage assessment for each free-space configuration node” (as recited in claim 1) is analyzing information, which is also abstract. *See id.* at 1354 (“[A]nalyzing information by steps people go through in their minds, or by mathematical algorithms, without more, [are] essentially mental processes within the abstract-idea category.”).

In sum, claim 1 recites a two-step method, with both steps involving the mere manipulation of data. Appellants have not shown error in the Examiner’s rejection of claim 1 as patent-ineligible.

Claim 14 is an apparatus claim but Appellants concede that its only tangible elements, “a data storage medium; and a data processing device,” do not provide patent eligibility. *See* Appeal Br. 13 (not underlining those elements). Instead, Appellants argue patent eligibility of claim 14 based on recitations of intangible data. *See id.* at 13–14. For the same reasons as claim 1, Appellants have not shown error in the Examiner’s rejection of claim 14 as patent-ineligible.

We have considered all of Appellants’ arguments, including their reliance on the underlined language of claims 1 and 14 on pages 12–14 of their Appeal Brief, but none of them persuades us the Examiner erred in rejecting the claims as patent ineligible.

We find no error in the Examiner’s rejection of claims 1–15 under the judicial exception to 35 U.S.C. § 101. Accordingly, that rejection is affirmed.

Rejection 2

The Examiner rejected 1–5 and 10–15 under 35 U.S.C. § 103(a) as obvious over Trovato and Hartlep. Final Act. 3.

The Examiner found that *Trovato*, which is a published patent application by one of the two Appellants, discloses all of the claimed subject matter save a structural damage assessment. *Id.* (citing *Trovato* 6:25–8:4, 10:8–13:29, Figs. 1–3). The Examiner next found that *Hartlep* “teaches in the same field of path planning a method of structure damage assessment.” Final Act. 3 (citing *Hartlep* ¶¶13, 24, Figs. 1–3). The Examiner concluded that it, thus, “would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided *Trovato* with the structural damage assessment as taught by *Hartlep* in order to reduce risk to the patient.” *Id.* at 3–4.

Appellants state that the:

Trovato Reference describes a construction of “a configuration space node structure within a data storage medium, the configuration space node structure including free-space configuration nodes and forbidden configuration nodes representing a discretized configuration space of an anatomical region of a body” as recited in claims 1–5 and 10–15. . . .

Generally, *Hartlep* teaches a risk assessment for a planned trajectory of a device within the body whereby the internal structure of a body of a patient is analyzed to determine if one or more specific or critical regions or structures lie within the planned trajectory of the device.

Appeal Br. 18 (underlining omitted).

Appellants, however, argue that the combination does not meet the limitation of “generating a structural damage assessment for each free-space configuration node,” as recited in claim 1, because the combination of teachings “exclusively provides a manner by which a free-space configuration node may be distinguished from a forbidden configuration node.” *Id.* In other words, Appellants implicitly construe the limitation at

issue to require more than a binary structural damage assessment such as the non-binary assessment embodiment that is mapped in Figure 13 of the Specification. *Id.* at 18–22.

We are not persuaded by Appellants’ arguments, which are premised on their reading of Hartlep as teaching binary-only risk assessment. We read Hartlep, contrary to Appellants, to teach non-binary risk assessment. For example, Examiner-cited portions of Hartlep state the following, which fairly suggest a non-binary risk assessment:

[T]he *levels of risk* e.g. resulting from a specifically planned trajectory or the difficulty in carrying out a surgical plan or medical examination associated with planned stereotactic trajectories can be assessed and related to a specific plan or trajectory of a device to be introduced into, placed in and/or moved in the body or patient. Especially, when considering a particular plan for placing a device in a body, the proximity of a treatment approach, e.g. a trajectory of the device, to risk structures can be determined and *the riskiness of a particular treatment approach can be weighted*, so that for example a plan can be drawn up that the catheter to be placed in the body has a predetermined minimum distance from certain critical structures and stays e.g. at least 5 mm away from sulci or 7 mm away from the optical nerve.

* * *

Another embodiment is the use of information for creation of suggestions for trajectories that are placed in a predefined distance to areas of *predefined risk levels*. This distance can be the same constant distance for every critical structure with a risk level above a predetermined risk level *or can be related to or proportional to the extent of each level of risk*.

Hartlep 3:12–18, 5:42–48 (all emphasis added).

In view of these teachings, we do not find error in the Examiner’s rejection of claims 1–5 and 10–15 as obvious over Trovato and Hartlep.⁶

Lastly, we acknowledge that Appellants superficially “argued” various subsets of claims 1–5 and 10–15 under separate headings. Appeal Br. 23–27. However, under none of those headings, do Appellants present substantive arguments. Instead, under each such heading, Appellants merely argue that the prior art “fails to render obvious the aforementioned limitations of” various claims. *See id.* These arguments do not meet the requirements of 37 C.F.R. § 41.37(c)(1)(iv). *See In re Lovin*, 652 F.3d 1349, 1357 (Fed. Cir. 2011) (“[T]he Board [has] reasonably interpreted Rule 41.37 to require more substantive arguments in an appeal brief than a mere recitation of the claim elements and a naked assertion that the corresponding elements were not found in the prior art.”). *See also In re Huai-Hung Kao*, 639 F.3d 1057, 1065 (Fed. Cir. 2011) (Statements in a brief that “merely mention [a] claim . . . and lack any type of separate, substantive argument concerning the claim” are not sufficient to constitute separate argument regarding that claim under 37 C.F.R. § 41.37(c)(1)(iv)).

For the foregoing reasons, we affirm Rejection 2.

⁶ Additionally, it is not clear to us that the broadest reasonable construction of generating/generate “a structural damage assessment for each free-space configuration node” excludes generation of a binary-only risk assessment. Because the prior art is not so limited and because the Examiner and Appellants did not squarely address this issue, we do not decide it. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“only those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy”).

Rejection 3

The Examiner rejected claims 4–9 under 35 U.S.C. § 103(a) as obvious over Trovato, Hartlep, and Poole. Final Act. 4. Each of claims 4–9 depends directly or indirectly from claim 1.

Appellants argue Rejection 3 only on the basis that the additional reference, Poole, fails to cure the alleged error in Rejection 2. Appeal Br. 29–34. As we find no error in Rejection 2, we likewise affirm Rejection 3.

SUMMARY

For the reasons discussed, we affirm the Examiner’s rejection of all claims on appeal.

TIME PERIOD

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