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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte GREGORY D. HAGER and ELIOT LEONARD WEGBREIT

Appeal 2016-008590
Application 11/104,822
Technology Center 3600

Before JENNIFER D. BAHR, MICHELLE R. OSINSKI, and BRANDON J. WARNER, *Administrative Patent Judges*.

OSINSKI, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Gregory D. Hager and Eliot Leonard Wegbreit ("Appellants")[1] appeal under 35 U.S.C. § 134(a) from the Examiner's decision rejecting claims 2–4, 12–18, 22–25, 27, 28, and 30–53.[2] We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

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[1] According to Appellants, the real party in interest is Strider Labs, Inc. Appeal Br. 4.

[2] Claims 1, 5–11, 19–21, 26, and 29 are canceled. Appeal Br. 58–61 (Claims App.).

THE CLAIMED SUBJECT MATTER

Claims 2, 34–37, 42, and 45–50 are independent. Claim 2 is reproduced below and is illustrative of the subject matter on appeal.

> 2. A method for automatically computing desirable palm grasp configurations of an object, comprising the steps of:
>
> receiving at a processor as an input a description of the surface of an object, said object and description each being of an arbitrary 3D shape not restricted to a fixed set of shape primitives;
>
> automatically selecting by the processor a plurality of grasp configurations of a robotic hand, the robotic hand comprising a palm and one or more fingers, each grasp configuration specifying a hand configuration and joint variables of the hand, and contact points for the palm and fingers on the object's surface as so described;
>
> computing by the processor the coefficient of friction at each of the contact points in the selected configurations;
>
> receiving at a processor as an input a description of a specific external wrench that applies to the object;
>
> computing by the processor a quality measure for each grasp configuration representing the ability of the robotic hand to hold the object against the specific external wrench in the selected configuration; and
>
> comparing by the processor the quality measure of each of the grasp configurations to determine which grasp configurations have the best quality measures.

EVIDENCE

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

Irie	JP 09150384 A	June 10, 1997

Aage Bendiksen & Greg Hager, *A Vision-Based Grasping System for Unfamiliar Planar Objects*, Proc. of the IEEE International Conference on Robotics & Automation, pp. 2844–2849 (May 1994) (hereinafter "Bendiksen").

Eris Chinellato et al., *Ranking Planar Grasp Configurations for a Three-Finger Hand*, Proc. of the IEEE International Conference on Robotics & Automation, pp. 1133–1138 (Sept. 2003) (hereinafter "Chinellato").

Jean-Paul Gourret et al., *Simulation of Object and Human Skin Deformations in a Grasping Task*, 23 Comput. Graph. 21–30 (1989) (hereinafter "Gourret").

Li Han et al., *Grasp Analysis as Linear Matrix Inequality Problems*, 17 IEEE Transactions on Robotics and Automation 663–674 (Dec. 2000) (hereinafter "Han").

Andrew T. Miller & Peter K. Allen, *GraspIt!: A Versatile Simulator for Grasp Analysis*, Proc. of the ASME Dynamic Systems and Control Division, pp. 1251–1258 (2000) (hereafter "Miller 2000").

Andrew T. Miller et al., *Automatic Grasp Planning Using Shape Primitives*, Proc. of the IEEE International Conference on Robotics and Automation, pp. 1824–1829 (Sept. 2003) (hereafter "Miller 2003").

REJECTIONS

I. Claims 2–4, 12–18, 22–25, 27, 28, and 30–46 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement because of the recitation that the claimed object and a description of its surface are "of an arbitrary 3D shape not restricted to a fixed set of shape primitives." Final Act. 6–7.[3]

II. Claims 2–4, 12–18, 22–25, 27, 28, and 30–50 stand rejected under 35 U.S.C. § 101 as being directed to patent-ineligible subject matter. *Id.* at 8–11.

[3] The Examiner withdrew a rejection of claim 42 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement because of the recitation of "a second quality measure." Ans. 3; *see* Final Act. 7.

III. Claims 2–4, 12–14, 27, 28, 33–37, 39, 47, 48, and 51–53[4] stand rejected under 35 U.S.C. § 103(a) as unpatentable over Bendiksen, Miller 2000, and Miller 2003. *Id.* at 11–20.

IV. Claims 15–18 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Bendiksen, Miller 2000, Miller 2003, and Gourret. *Id.* at 20–21.

V. Claims 42 and 46 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Bendiksen, Miller 2000, Miller 2003, and Chinellato. *Id.* at 21–24.

VI. Claims 22–25, 43, 45, 49, and 50 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Bendiksen, Miller 2000, Miller 2003, and Han. *Id.* at 24–28.

VII. Claims 31, 32, 38, 40, and 41 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Bendiksen, Miller 2000, Miller 2003, and Irie. *Id.* at 28–29.

OPINION

Rejection I

Each of independent claims 2, 34–37, 42, 45, and 46 recites, in relevant part, "said object and description each being of an arbitrary 3D shape not restricted to a fixed set of shape primitives." Appeal Br. 58, 62–66, 68–69 (Claims App.). The Examiner understands this to mean "that the

[4] Even though the Examiner failed to include reference to claims 51–53 in the heading for this rejection (*see* Final Act. 11), the Examiner makes reference to these claims within the body of the rejection (*see id.* at 19–20). We consider the Examiner's oversight in the heading to be a typographical error, and therefore, we list claims 51–53 as being subject to this ground of rejection.

object can be, but is not limited to[,] objects that are of a fixed set of shape primitives and the description[s] . . . can be, but are not limited to, a fixed set of [shape] primitives." Final Act. 6. The Examiner determines that "the claim limitation excludes 3D shapes that are restricted to a fixed set of shape primitives," but "this exclusion is not supported by the original disclosure." *Id.*; *see also id.* at 7 (explaining that "'a fixed set of shape primitives' is not disclosed or suggested"). According to the Examiner, "[t]he [S]pecification does not explicitly disclose negative limitations." Ans. 2.

Appellants argue that "the Specification and original claims repeatedly refer to an object of arbitrary 3D shape," and, therefore, "describe[] an object not restricted to a fixed set of shape primitives." Appeal Br. 27. In particular, Appellants assert that the Specification "indicates that the invention deals with 'general three-dimensional objects' and 'general surfaces.'" *Id.* at 27–28 (quoting Spec.[5] ¶¶ 7, 257). According to Appellants, one of ordinary skill in the art "would understand that the recitation that the invention applies to 'general three-dimensional objects' and the various techniques for describing an object's surface all indicate . . . a three-dimensional object of ***arbitrary shape***, and not limited to one that is part of a 'fixed set of shape primitives.'" *Id.* at 28.

We agree with Appellants that the Specification provides support for the limitation in question sufficient to satisfy the written description requirement of 35 U.S.C. § 112, first paragraph. In particular, the

[5] Appellants' citations to "Spec." include paragraph numbers that appear to correspond to Appellants' Patent Application Publication (US 2006/0012198 pub. Jan. 19, 2006). However, in this opinion, citations to "Spec." refer to the original Specification.

Specification describes planning robot grasps in an unstructured environment having a variety of "general three-dimensional objects" differing in size, shape, and weight, including objects that the robot has not previously encountered. Spec. ¶¶ 5, 7. The Specification also describes prior art grasp planning approaches that use simplified sets of known shape primitives such as spheres, cylinders, cones and boxes. *Id.* ¶¶ 19, 22. In this regard, the disclosure provided in the Specification would reasonably convey to one having ordinary skill in the art, as of the filing date, that Appellants possessed the claimed subject matter of planning grasps for arbitrary 3D object shapes that are not restricted to a fixed set of shape primitives. *See Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc).

Accordingly, we do not sustain the Examiner's rejection of claims 2–4, 12–18, 22–25, 27, 28, and 30–46 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

Rejection II

Appellants argue claims 2–4, 12–18, 22–25, 27, 28, and 30–50 together as a group. Appeal Br. 29–36; Reply Br. 9–16. We select claim 2 as the representative claim, and claims 3, 4, 12–18, 22–25, 27, 28, and 30–50 stand or fall therewith. 37 C.F.R. § 41.37(c)(1)(iv).

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 Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014) (citing *Mayo Collaborative Servs. v. Prometheus Labs, Inc.*, 566 U.S. 66, 71–73 (2012)). Under that framework, it must be "determine[d] whether the claims at issue

are directed to one of those patent-ineligible concepts"—i.e., a law of nature, a natural phenomenon, or an abstract idea. *Id.* If so, "the elements of each claim [must be considered] 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*, 566 U.S. at 78). The Supreme Court has described the second part 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.* (quoting *Mayo*, 566 U.S. at 72–73) (alteration in original).

The Examiner determines that claim 2 is directed to a method of "computing desirable precision grasp configuration of an object which comprises the steps of: receiving at a processor as an input, selecting by the processor a plurality of grasp configuration[s], computing the coefficient of friction, receiving an input, computing a quality measure, and comparing the quality measure." Ans. 4; *see also* Final Act. 8 (the Examiner determining that the claimed method "acquires data, applies the data to an algorithm and compares the results"). According to the Examiner, "[t]hese steps describe the concept of collecting and comparing data to use [a] mathematical formula to identify options, which corresponds to concepts identified as abstract ideas by the courts." Ans. 4. The Examiner concludes that the claimed subject matter is directed to "an abstract idea, particularly a mathematical relationship, without other limitations that show more than a mere instruction to apply the abstract idea." Final Act. 9.

Appellants argue that the Examiner errs in concluding that the claimed subject matter is directed to an abstract idea. Appeal Br. 30. We are not persuaded by Appellants' argument.

Instead, we agree with the Examiner that, under the first step of the analysis, claim 2 is directed to an abstract idea. *See* Final Act. 8–9. The claimed steps amount to receiving information (i.e., describing an object, grasp configurations, and an external wrench) and generating additional information (i.e., fiction coefficients, quality measures, and grasp configurations determined to have the best quality measures) using an algorithm.[6] Our reviewing courts have held claims ineligible under § 101 when directed to manipulating existing information, such as by using algorithms, to generate additional information. *See Parker v. Flook*, 437 U.S. 584, 585, 594–96 (1978) (rejecting as ineligible claims directed to (1) measuring the current value for a variable in a catalytic conversion process, (2) using an algorithm to calculate an updated "alarm-limit value" for that variable, and (3) updating the limit with the new value); *Gottschalk v. Benson*, 409 U.S. 63, 71–72 (1994) (rejecting as ineligible claims directed to an algorithm for converting binary-coded decimal numerals into pure binary form); *Elec. Power Grp. LLC v. Alstom S.A.*, 830 F.3d 1350, 1353–54 (Fed. Cir. 2016) (discussing how "collecting information" and "analyzing information by steps people go through in their minds, or by mathematical

[6] Although claim 2 recites the algorithm in words rather than as a mathematical formula, the claim nevertheless recites an algorithm. *See In re Grams*, 888 F.2d 835, 837 n.1 (Fed. Cir. 1989) ("It is of no moment that the algorithm is not expressed in terms of a mathematical formula. Words used in a claim operating on data to solve a problem can serve the same purpose as a formula.").

algorithms, without more" are abstract ideas); *Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344, 1351 (Fed. Cir. 2014) ("Without additional limitations, a process that employs mathematical algorithms to manipulate existing information to generate additional information is not patent eligible."); *SmartGene, Inc. v. Advanced Biological Labs, S.A.*, 555 F. App'x. 950, 951–55 (Fed. Cir. 2014) (comparing new and stored information and using rules to identify options).

Therefore, when read as a whole, claim 2 is directed to a mathematical algorithm for manipulating data, which, for the above reasons, constitutes a patent-ineligible abstract idea.

Regarding the second step of the *Alice* framework, the Examiner determines:

> The claims do not include additional elements that are sufficient to amount to significantly more than the judicial exception because the additional elements when considered both individually and as an ordered combination do not amount to significantly more than the abstract idea. Generic computer components recited as performing generic computer functions that are well-understood, routine and conventional activities amount to no more than implementing the abstract idea with a computerized system. The use of generic computer components to collect and receive information through an unspecified interface does not impose any meaningful limit on the computer implementation of the abstract idea.

Ans. 4–5; *see also* Final Act. 8.

Appellants first argue that "a robotic hand is inherently required, as shown by the very context of the invention, and almost the entire Specification, since computing desirable grasps of a robotic hand would have no point in the absence of some use of such grasps." Appeal Br. 31 (emphasis omitted). We are not persuaded by Appellants' argument because

the broadest reasonable interpretation of claim 2 does not require the actual robotic hand. Instead, the claim recites "selecting by the processor a plurality of grasp configurations of a robotic hand;" "computing by the processor a quality measure for each grasp configuration representing the ability of the robotic hand to hold the object against the specific external wrench in the selected configuration;" and "comparing by the processor the quality measure of each of the grasp configurations to determine which grasp configurations have the best quality measures." Appeal Br. 58–59 (Claims App.). Although the determined desirable grasp configurations may be *intended to be used* by a robotic hand to grasp an object, the claim does not require, either expressly or inherently, a robotic hand to perform the claimed steps. Instead, only a processor is required.

Appellants next argue that, even if the robotic hand is not in the claim, "the claims recite additional elements which ***do*** amount to 'significantly more' than the judicial exception." Appeal Br. 32 (citing 2014 Interim Guidance on Patent Subject Matter Eligibility, 79 Fed. Reg. 74618 (Dec. 16, 2014) (hereafter "Guidance")). In particular, Appellants assert that the claimed subject matter is "confined to a particular useful application, i.e., the computation of desirable grasps for use with a robotic hand in grasping an object (*id.* at 33 (emphasis omitted)) and "clearly describes an improvement to another technology or technical field, i.e., planning grasps for a robotic hand having a palm, and adds a specific limitation other than what is well-understood, routine and conventional in the field, i.e., planning grasps for a robotic hand without a palm" (*id.* at 33–34 (emphasis omitted)).

In support of this argument, Appellants point to *Diamond v. Diehr*, 450 U.S. 175 (1981) and assert that the analysis in *Diehr* did "not rely on the

post-computation steps of actually curing rubber to find patentability, but rather clearly states that it is the way in which the temperature is constantly measured and the cure time recalculated that provide the 'something more' than mere computer implementation of an algorithm that justifies patent eligibility." Appeal Br. 34–35. Appellants analogize "the comparisons of quality measures for different grasp configurations in the present application" "to the 'repetitive computer recalculation of the appropriate cure time' based upon constant temperature measurement." *Id.* at 35. According to Appellants, "as in *Diehr*, the steps claimed herein act in concert to provide a result that improves another technology[;] in *Diehr* the curing of rubber, and here the grasping of an object by a robotic hand with a desirable grasp configuration." Reply Br. 15.

Appellants' reliance on *Diehr* is unavailing. The claims at issue in *Diehr* recited a method that included automatically opening a press based on the calculations and comparisons. *See Diehr*, 450 U.S. at 187 (explaining that the claimed method requires "installing rubber in a press, closing the mold, constantly determining the temperature of the mold, constantly recalculating the appropriate cure time through the use of the formula and a digital computer, and automatically opening the press at the proper time"). The Court in *Diehr* found that the respondents' claims were not an attempt to patent an unpatentable principle (e.g., mathematical formula), but rather an industrial process "which, when considered as a whole, is performing a function which the patent laws were designed to protect" even though it implemented or applied a mathematical formula." *Id.* at 192. In contrast, claim 2 appears to seek to patent an unpatentable principle (i.e., the abstract idea of a processor (i) receiving input data relating to an object and an

external wrench applied to the object and (ii) generating output data relating to a grasp configuration with certain contact points having certain computed coefficients of friction), rather than an industrial process into which the unpatentable principle has been integrated. That is, the abstract idea is not applied in a sufficiently specific industrial process in claim 2 to demonstrate an improvement in a technology or technical field or confine the claim to a particular useful application.[7]

Appellants also argue that the present claims are similar to *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327 (Fed. Cir. 2016) because "general-purpose computer components are not added to fundamental robotic practice, or even a known one, but rather are directed to a specific implementation of a solution to a problem in robotic hand grasping, again as evidenced by the very prior art cited by the Examiner." Reply Br. 16. This argument is not convincing. In *Enfish*, the court found that "the self-

[7] Although we need not separately consider independent claims 37, 45, and 46 because they fall with representative claim 2, we note that each of claims 37, 45, and 46 is directed to a system including, in relevant part, "a robot which receives one of the grasp configurations having the best quality measures and commands the robotic hand to use the received grasp configuration for grasping the object." Appeal Br. 65, 68, 69 (Claims App.). Notably, these claims merely require the robot to "command" (i.e., provide instructions to) the robotic hand, but do not require the robot to actually control the robotic hand using the grasp configuration to grasp the object by, for example, making contact between the object and the palm of the robotic hand. Thus, claims 37, 45, and 46 also appear to be directed to an abstract idea because the nominal recitation of a robot commanding (i.e., providing instruction to) a robotic hand amounts to an application of the abstract idea to a conventional robot to perform conventional robot functions (i.e., receive input data and provide output commands), rather than sufficiently integrating the abstract idea into an industrial process as a whole as in *Diehr*.

referential table recited in the claims on appeal is a specific type of data structure designed to improve the way a computer stores and retrieves data in memory." *Id.* at 1339. The court found they were "not faced with a situation where general-purpose computer components are added post-hoc to a fundamental economic practice or mathematical equation," but "[r]ather, the claims are directed to a specific implementation of a solution to a problem in the software arts." *Id.* The question becomes whether the claims as a whole "focus on a specific means or method that improves the relevant technology" or are "directed to a result or effect that itself is the abstract idea and merely invoke[s] generic processes and machinery." *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1314 (Fed. Cir. 2016).

Here, where claim 2 merely involves the steps of "receiving" descriptions of an object and external wrench, "automatically selecting" a plurality of robotic hand grasp configurations, "computing" quality measures for each grasp, and "comparing" quality measures to determine the best grasp configurations (without any specificity regarding, for example, the grasp configurations or their quality measures or the logic for computing the coefficient of friction at contact points specified by the grasp configurations), Appellants have not persuaded us that claim 2 is directed to anything more than a method that qualifies as an abstract idea for which a processor is invoked as a conventional tool. Appellants have not provided any specificity regarding any particular inventive technology associated with the steps of claim 2. The computer elements described in the Specification and claims (e.g., processor) appear to function in a conventional manner to execute program instructions and operations. Receiving data and computing data are steps that are well-understood, routine, and conventional functions

of a general-purpose computer, and Appellants do not provide adequate evidence to the contrary. The Specification supports this view by discussing only generic elements used in performing the steps. *See* Spec. ¶¶ 254–255. In particular, the Specification describes that "[t]he method may be implemented on a computer executing program instructions." *Id.* ¶ 254. Although the Specification describes that "steps may also be implemented in specialized programmable processors," the Specification only lists generic computer hardware elements including "digital signal processors (DSPs), graphics processors (GPUs), media processors, and streaming processors." *Id.* ¶ 255. There is no further description, in the claims or the Specification, of any particular technology for performing the steps recited in the claims other than generic computer components (i.e., "processor") used in their ordinary capacity as a tool to perform mathematical operations. In sum, Appellants have not persuaded us that claim 2 is directed to a specific application of computation and analysis designed to achieve an improved technological result, as opposed to being directed merely to ordinary functionality of a generic processor (e.g., receiving and computing data).

For the foregoing reasons, we find nothing in claim 2 to be sufficiently transformative to render claim 2 patent eligible. We sustain the Examiner's rejection of claim 2, and claims 3, 4, 12–18, 22–25, 27, 28, and 30–50 falling therewith, under 35 U.S.C. §101 as being directed to patent-ineligible subject matter.

Rejection III

Independent claim 2 recites, in relevant part, "receiving at a processor as an input a description of the surface of an object, said object and description each being of an arbitrary 3D shape not restricted to a fixed set

of shape primitives." Appeal Br. 58 (Claims App.). Independent claims 34–37, 47, and 48 recite similar limitations. *Id.* at 62–65, 68–70.

The Examiner finds that Bendiksen teaches most of the limitations of the independent claims, including "acquiring a description of the surface of an object (pg 2846, column 1, lines 11–20)." Final Act. 12, 15, 17. The Examiner takes the position that Bendiksen "discloses acquiring a description of the surface of an object, or receiving such a[] description at a processor as an input (page 2845, section 2.1, image is a description of the surface, page 2846, Column 1, lines 11–20, edges, pictures are descriptions)." Ans. 5–6. According to the Examiner, "even 2D object descriptions are still descriptions of a 3D object, such as a surface of a 3D object." *Id.* at 6; *see also id.* at 7 (stating that "2D object descriptions and grasp description of Bendiksen are 3D object descriptions").

Appellants argue Bendiksen does not teach receiving a description of the surface of an object. Appeal Br. 37. Appellants assert that the cited portions of Bendiksen only teach planar 2D descriptions of objects using edge point data. *Id.* at 38 (citing Bendiksen 2844); *see id.* at 39 (emphasis omitted) (asserting that Bendiksen only describes an object "by its outline on the working surface, i.e., a plane"). In other words, "projected edge data is only a two-dimensional projection; it is not the same as a three-dimensional surface of an object, nor does it describe the three-dimensional surface of an object." Reply Br. 18. We agree that a sustainable case of obviousness has not been established.

Although we agree with the Examiner that Bendiksen discloses receiving a description of a 3D object as an input (Ans. 5–6 (citing Bendiksen 2845, 2846)), the Examiner's rejection does not establish that

Bendiksen discloses that the description is of the object's *surface*. Bendiksen discloses that "[t]he image acquisition and processing system consists of a single COHU camera and associated frame buffer, together with software for edge detection." Bendiksen 2845. Bendiksen describes that an "edge detector is used to locate the points in the image that may correspond to edges of the object." *Id.* In this regard, we agree with Appellants that Bendiksen's "object description is only 2D, since it concerns only 'edge point data.'" Appeal Br. 38 (quoting Bendiksen 2844). In other words, Bendiksen acquires a 2D image of an object and uses edge detection to obtain a 2D description (i.e., outline) of the object. Although Bendiksen's edge detection provides a description of a three-dimensional object (i.e., a description of the outline of the three-dimensional object), we fail to see how it provides a description of the *surface* of the object (i.e., a description of the three-dimensional shape or boundary of the three-dimensional object).

Moreover, although Bendiksen discloses that the "[t]he same formulation holds for contact data obtained for the three dimensional case, and our current implementation of the grasp analyzer handles 3D data" (Bendiksen 2847), the Examiner has not adequately explained how this isolated disclosure in Bendiksen is relied on for the step of receiving at a processor as an input a description of the surface of an object (i.e., a description of the three-dimensional shape or boundary of the object), nor provided reasoning with some rational underpinning to support the obviousness of utilizing this disclosure in connection with the remainder of teachings of Bendiksen, Miller 2000, and Miller 2003.

Accordingly, we do not sustain the rejection of independent claims 2, 34–37, 47, and 48, and claims 3, 4, 12–14, 27, 28, 33, 39, and 51–53 which

depend therefrom, under 35 U.S.C. § 103(a) as unpatentable over Bendiksen, Miller 2000, and Miller 2003.

Rejections IV–VII

The Examiner's rejections of claims 15–18, 22–25, 31, 32, 38, 40–43, 45, 46, 49, and 50 rely on the same proposed combination of Bendiksen, Miller 2000, and Miller 2003 that we find deficient for the reasons stated above. Final Act. 20–29. The Examiner does not make any findings as to the scope and content of Gourret, Chinellato, Han, or Irie that would cure the deficiency in the underlying combination of Bendiksen, Miller 2000, and Miller 2003. Accordingly, for the reasons discussed above, we do not sustain the Examiner's rejections, under 35 U.S.C. § 103(a), of: claims 15–18 as unpatentable over Bendiksen, Miller 2000, Miller 2003, and Gourret; claims 42 and 46 as unpatentable over Bendiksen, Miller 2000, Miller 2003, and Chinellato; claims 22–25, 43, 45, 49, and 50 as unpatentable over Bendiksen, Miller 2000, Miller 2003, and Han; and claims 31, 32, 38, 40, and 41 as unpatentable over Bendiksen, Miller 2000, Miller 2003, and Irie.

DECISION

The Examiner's decision to reject claims 2–4, 12–18, 22–25, 27, 28, and 30–46 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement is reversed.

The Examiner's decision to reject claims 2–4, 12–18, 22–25, 27, 28, and 30–50 under 35 U.S.C. § 101 as being directed to patent-ineligible subject matter is affirmed.

The Examiner's decision to reject claims 2–4, 12–18, 22–25, 27, 28, 31–43, 45–53 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-IN-PART