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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte CHRISTIAN SONNER,
MARTIN WEISS, and UWE ZIMMERMANN

Appeal 2015-002553
Application 13/122,904
Technology Center 2100

Before ROBERT E. NAPPI, ELENI MANTIS MERCADER, and STEVEN M. AMUNDSON, *Administrative Patent Judges*.

AMUNDSON, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants[1] seek our review under 35 U.S.C. § 134(a) from a final rejection of claims 13–24, i.e., all pending claims. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

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[1] According to Appellants, the real party in interest is KUKA Roboter GmbH. App. Br. 3.

STATEMENT OF THE CASE

The Invention

According to the Specification, the "[t]he invention relates to an industrial robot and a method for controlling the movement of an industrial robot." Spec. 1:4–5.[2] More particularly, "a robot arm and an end effector is controlled by a controller that generates first and second transformed programmed points, plans first and second paths based on the first and second programmed points, and moves the robot so that a designated point on the robot moves on the first planned path and process points associated with the end effector move on the second planned path." Abstract.

Representative Claim

Independent claim 13 exemplifies the subject matter of the claims under consideration and reads as follows:

> 13. A path planning method for controlling the motion of an industrial robot, to whose robot arm an effector, in particular a remote laser welding device, is attached, which is provided for processing process points at a variable distance from a first designated point of the industrial robot, having the following procedural steps:
>
> generating first transformed programmed points, from programmed points which each describe positions of axes of the industrial robot or are expressed in coordinates that describe a position and orientation of the first designated point assigned to the industrial robot, each first transformed programmed point

[2] This decision uses the following abbreviations: "Spec." for the Specification, filed May 20, 2011; "Int. Sum." for the Interview Summary, dated September 13, 2013; "Final Act." for the Final Office Action, mailed September 26, 2013; "Adv. Act." for the Advisory Action, mailed December 4, 2013; "App. Br." for the Appeal Brief, filed June 5, 2014; "Ans." for the Examiner's Answer, mailed October 23, 2014; and "Reply Br." for the Reply Brief, filed December 23, 2014.

being expressed in coordinates that specify each corresponding position of a second designated point assigned to the industrial robot;

generating second transformed programmed points from the programmed points and each corresponding variable distance, the second transformed programmed points being expressed in coordinates that describe each respective position of each process point;

planning a first path, on the basis of the first transformed programmed points, on which the second designated point is to move;

planning a second path, on the basis of the second transformed programmed points, independently of the planning of the first path;

defining a parameter for each programmed point that describes a degree of freedom of the industrial robot with attached effector; and

moving the axes of the industrial robot, with attention to the defined parameter, in such a way that the second designated point moves on the first planned path, and adjusting the effector so that the process points move on the second planned path.

App. Br. 15–16 (Claims App.).

The Prior Art Supporting the Rejections on Appeal

As evidence of unpatentability, the Examiner relies on the following prior art:

Tawel	US 5,371,834	Dec. 6, 1994
Terada et al. ("Terada")	US 6,321,139 B1	Nov. 20, 2001

The Rejections on Appeal

Claims 13–14, 16–21, and 23–24 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Tawel and Terada. Final Act. 4–13; App. Br. 3.

Claims 15 and 22 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Tawel, Terada, and admitted prior art. Final Act. 13–15; App. Br. 3.

ANALYSIS

We have reviewed the rejections of claims 13–24 in light of Appellants' arguments that the Examiner erred. We adopt the Examiner's findings in the Final Office Action and Answer. We add the following primarily for emphasis. For the reasons explained below, we disagree with Appellants' assertions regarding error by the Examiner.

The Rejection of Claims 13, 14, 19, and 20 Under 35 U.S.C. § 103(a)

According to Appellants, independent claims 13 and 14 are "directed to path planning methods for controlling the motion of an industrial robot having a remote laser welding device," while independent claims 19 and 20 are "directed to industrial robots having a robot arm, a remote laser welding device attached to the robot arm, and a control device configured to implement steps similar to those set forth in claims 13 and 14." App. Br. 8–9. Appellants argue claims 13, 14, 19, and 20 as a group. *Id.* at 8–13; Reply Br. 2–4. Consequently, we focus our analysis on claim 13 as representative of the independent claims. *See* 37 C.F.R. § 41.37(c)(1)(iv).

GENERATING FIRST AND SECOND TRANSFORMED PROGRAMMED POINTS

Appellants argue that Tawel and Terada do not teach or suggest "generating first transformed program points" and "generating second transformed program points" according to claim 13. App. Br. 10–12; Reply Br. 2–4. In particular, Appellants contend that the references do not teach or suggest transforming the "specific types of points" set forth in the claim, i.e.,

(1) "programmed points" based on "positions of axes" or a "first designated point" used for generating the "first transformed program points" and (2) "programmed points" and a "variable distance from the first designated point" used for generating the "second transformed program points." App. Br. 11–12; Reply Br. 3–4. Appellants also contend that the references do not teach or suggest "first transformed program points" and "second transformed program points" that are "expressed in coordinates" relating to other points, i.e., (1) "first transformed program points" relating to a "second designated point" and (2) "second transformed program points" relating to a "process point." App. Br. 11–12; Reply Br. 3–4.

Appellants note, however, that the Examiner "interprets the claimed 'transformed programmed points' as 'points that at some point had to be transformed and stored in a memory of a computing unit.'" App. Br. 11 (quoting Adv. Act. 2). Appellants then assert that the Examiner's interpretation "is inconsistent with the claim language." App. Br. 11–12. But Appellants do not explain the alleged inconsistency. *Id.* at 12.

We discern no error in the Examiner's interpretation of "transformed program points." "[D]uring examination proceedings, claims are given their broadest reasonable interpretation consistent with the specification." *In re Hyatt*, 211 F.3d 1367, 1372 (Fed. Cir. 2000). Inventors can act as their own lexicographers if they clearly set forth a definition of a claim term or phrase other than its plain and ordinary meaning. *Vasudevan Software, Inc. v. MicroStrategy, Inc.*, 782 F.3d 671, 677 (Fed. Cir. 2015). Here, Appellants do not contend that the Specification sets forth a definition for "transformed program points." App. Br. 10–12; Reply Br. 2–4. To the contrary, the Specification broadly refers to "a transformation stored in [a] control

computer" and states that various paths "result from appropriate transformations, which are the result of the geometry of robot hand 4 and may be derived for example from Figure 2." Spec. 14:27–15:1. Figure 2 illustrates "a geometric relationship of the hand root point, the tool center point and a process path of the industrial robot." *Id.* 11:22–24, Fig. 2. Figure 2 does not depict any transformations.

Appellants' arguments have not persuaded us that the Examiner erred in applying the claim language to the references. The Examiner finds that the "origin of any joint of the robot" in Tawel corresponds to a "first designated point" and that "[a]nother point near said point on said joint" corresponds to a "second designated point." Int. Sum. 3. The Examiner also finds that Tawel teaches "transforming" points and "generating transformed points" because "Tawel teaches that any point in space can be transformed to be specified by three orthogonal translations from the origin." Ans. 2; *see* Int. Sum. 3; Adv. Act. 2. For claim 13's requirement that "transformed program points" be "expressed in coordinates" relating to other points, the Examiner reasons that this corresponds to expressing the respective points using the same coordinate system. Int. Sum. 3. The Examiner then reasons that "the origin of any point on any joint of the robot expressed in terms of a coordinate system, is considered a first transformed point" and that "any point on the end effector" corresponds to the "second transformed program points." *Id.* at 3–4; *see* Ans. 2.

Appellants argue that "the broad disclosure of transforming points in order to express the location of the points in a different reference frame does not teach or suggest generating the specific transformed points recited in the claims." Reply Br. 3. But Appellants do not address the Examiner's

application of the claim language to Tawel. *Id.* at 2–4; *see* App. Br. 10–12. Thus, Appellants' arguments have not persuaded us that the Examiner erred in finding that Tawel teaches "generating first transformed program points" and "generating second transformed program points" according to claim 13. *See* Int. Sum. 3–4; Final Act. 3–6; Adv. Act. 2; Ans. 2.

PLANNING FIRST AND SECOND PATHS BASED ON THE FIRST AND SECOND TRANSFORMED PROGRAMMED POINTS

Claim 13 recites "planning a first path" based on "the first transformed programmed points" and "planning a second path" based on "the second transformed programmed points." App. Br. 15 (Claims App.). The Examiner finds that Tawel teaches the path-planning limitations. Int. Sum. 4; Final Act. 5.

Appellants argue that Tawel does not teach or suggest the path-planning limitations because Tawel does not teach or suggest generating the first and second transformed program points that provide the bases for planning the first and second paths. App. Br. 12. As discussed above, however, Appellants' arguments have not persuaded us that the Examiner erred in finding that Tawel teaches generating the first and second transformed program points. Similarly, Appellants' arguments have not persuaded us that the Examiner erred in finding that Tawel teaches "planning a first path" and "planning a second path." For instance, Appellants do not address the Examiner's application of the claim language to Tawel. App. Br. 12; Reply Br. 3–4.

"DEFINING A PARAMETER" AND "MOVING THE AXES OF THE INDUSTRIAL ROBOT, WITH ATTENTION TO THE DEFINED PARAMETER"

The Examiner finds that Tawel teaches the limitations in claim 13 concerning "defining a parameter" and "moving the axes of the industrial

robot, with attention to the defined parameter." Int. Sum. 4; *see* Final Act. 5. In particular, the Examiner determines that in Tawel that "the robot joints move[] along the first path, [and] the end effector also moves," with movement of "the end effector from one position to another" corresponding to the "moving of process points." Int. Sum. 4.

Appellants argue that Tawel does not teach or suggest these limitations in claim 13 because (1) the Examiner admits that Tawel "does not include a laser welding device (or any other device) that adds an additional degree of freedom to an industrial robot" and (2) without such a device, Tawel cannot teach or suggest "a parameter for each programmed point that describes a degree of freedom of the industrial robot with attached effector" according to claim 13. App. Br. 12–13. Appellants also argue that Terada fails to cure Tawel's deficiency. *Id.*

We agree with the Examiner, however, that the claim language "does not clearly recite how the claimed parameters are specifically limited to laser technology." Ans. 2–3. For example, claim 13 recites "a parameter . . . that describes **a** degree of freedom" rather than "a parameter . . . that describes **an additional** degree of freedom." App. Br. 16 (emphasis added). Appellants' arguments are not commensurate in scope with claim 13 and do not apprise us of error.

SUMMARY FOR CLAIM 13 AND
THE OTHER INDEPENDENT CLAIMS

For the reasons discussed above, Appellants' arguments have not persuaded us that the Examiner erred in rejecting claim 13 for obviousness based on Tawel and Terada. Because Appellants do not argue independent claims 14, 19, and 20 separately from claim 13, they stand or fall with

claim 13. *See* 37 C.F.R. § 41.37(c)(1)(iv). Hence, we sustain the obviousness rejection of claims 13, 14, 19, and 20.

The Rejection of Claims 16–18, 21, 23, and 24 Under 35 U.S.C. § 103(a)

Claims 16–18 depend from claim 13, while claims 21, 23, and 24 depend from claim 19. App. Br. 17, 20 (Claims App.). Appellants do not present any separate patentability arguments for these dependent claims. App. Br. 8–14; Reply Br. 2–4. Because Appellants do not argue these dependent claims separately, we sustain the rejection of the dependent claims for the reasons applicable to the independent claims. *See* 37 C.F.R. § 41.37(c)(1)(iv).

The Rejection of Claims 15 and 22 Under 35 U.S.C. § 103(a)

Claim 15 depends from claim 13, while claim 22 depends from claim 19. App. Br. 17, 20 (Claims App.). Claims 15 and 22 specify that "the first designated point is a tool center point of the industrial robot." *Id.* at 17, 20. The obviousness rejection of claims 15 and 22 rests on Tawel, Terada, and a statement in the Specification that "[c]onventionally, all degrees of freedom are indicated specifically for controlling the industrial robot . . . by defining Cartesian tool center point (TCP) values (x, y, z, a, b, c) plus possibly additional axis values . . . ." Final Act. 13–15; *see* Spec. 1:22–26.

Appellants "assert that claims 15 and 22 are in condition for allowance for at least the same reasons discussed above with respect to independent claims 13 and 19, and because the alleged AAPA fails to cure the deficiencies of Tawel '834 and Terada '139 discussed" with respect to the independent claims. App. Br. 14. Appellants do not articulate any

patentability arguments for claims 15 and 22 beyond the arguments regarding the independent claims. *Id.* Because Appellants do not argue these dependent claims separately, they stand or fall with the independent claims. *See* 37 C.F.R. § 41.37(c)(1)(iv). Hence, we sustain the obviousness rejection of claims 15 and 22.

DECISION

We affirm the Examiner's decision to reject claims 13–24.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED