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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JOHN R. SAIEG, JACOB M. POVIRK, DENNIS W. ISKEN, and
BRIAN J. ANDONIAN

Appeal 2019-001244
Application 14/103,942
Technology Center 3600

Before JENNIFER D. BAHR, JAMES P. CALVE, and
BENJAMIN D. M. WOOD, *Administrative Patent Judges*.

WOOD, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's August 29, 2017 Non-Final Action rejecting claims 1–18. *See* Non-Final Act. 1 (summary). We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

¹ “Appellant” refers to the applicant as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Ford Global Technologies LLC. Appeal Br. 1.

CLAIMED SUBJECT MATTER

The claims are directed to an automotive wheel end assembly comprising an electromagnetically actuated coupler. Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A wheel end assembly, comprising:
 - an outboard shaft supported on a knuckle secured to a vehicle frame, including first clutch teeth;
 - an inboard shaft;
 - a coil;
 - a plunger;
 - a spring biasing the plunger axially away from the outboard shaft;
 - a collar rotatably secured to the inboard shaft, axially displaceable relative to the outboard shaft, including second clutch teeth;
 - a thrust bearing located axially between the plunger and the collar that transmits axial movement of the plunger to the collar when the coil is energized to engage the first and second clutch teeth.

REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Fujikawa	US 4,534,455	Aug. 13, 1985
Itoh	US 5,967,279	Oct. 19, 1999
Umekida	US 2014/0339885 A1	Nov. 20, 2014

REJECTIONS

Claims 1–18 are rejected under 35 U.S.C. § 112(b) as indefinite.

Claims 7 and 9 are rejected under 35 U.S.C. § 103 as unpatentable over Fujikawa and Itoh.

Claim 8 is rejected under 35 U.S.C. § 103 as unpatentable over Fujikawa, Itoh, and Umekida.

OPINION

Claims 1–18—Rejected as Indefinite

Claim 1

The Examiner determines that the terms “an outboard shaft” and “an inboard shaft” in claim 1 are indefinite, asserting that “[i]t is unclear what structural distinction the outboard and inboard aspects add to the shafts.” Non-Final Act. 2. The Examiner acknowledges that the “most suitable” general definition of “inboard” is “toward a center line of a vehicle,” *id.* at 3 (citing NPL Document, Definition of Inboard), but asserts that “this is a matter of degree,” and that it was unclear “[h]ow close to the center line” something must be to constitute “inboard.” Likewise, the Examiner acknowledges that the “most suitable” general definition of “outboard” is “closer to the sides of an automobile,” *id.* at 3 (citing NPL Document, Definition of Outboard), but the Examiner finds that the term “an outboard shaft” still lacks sufficient clarity. *See id.* (asking “[i]s the entire inboard shaft located more toward the center line of the vehicle relative to the entire outboard shaft? Can just a portion of these shafts be closer to the center line and side of the vehicle respectively and still correspond to an outboard shaft and an inboard shaft?”).

Appellant responds that the Specification clearly defines “outboard” and “inboard,” and thus the dictionary definitions that the Examiner relies on are “not applicable in this situation.” Appeal Br. 10. Appellant further asserts that “the relative positions” of the inboard and outboard shafts are

“clear from the specification and drawings,” and therefore “the ‘degree’ of ‘inboard’ or ‘outboard’ is irrelevant.” *Id.*

During prosecution, a claim is properly rejected as indefinite under 35 U.S.C. § 112 second paragraph if, after applying the broadest reasonable interpretation in light of the specification, the metes and bounds of a claim are not clear because the claim “contains words or phrases whose meaning is unclear.” *In re Packard*, 751 F.3d 1307, 1310, 1314 (Fed. Cir. 2014) (per curiam) (approving, for pre-issuance claims, the standard from MPEP § 2173.05(e)); *see also Ex parte McAward*, Appeal 2015-006416, 2017 WL 3669566, at *5 (PTAB Aug. 25, 2017) (precedential) (adopting the approach for assessing indefiniteness approved by the Federal Circuit in *Packard*). We construe the claims based on the “broadest reasonable construction” of the claims in light of the specification in which the claims appear. *In re Bigio*, 381 F.3d 1320, 1324 (Fed. Cir. 2004). Under this standard, claim terms are generally given their ordinary and accustomed meaning as understood by one of ordinary skill in the art, unless it appears from the specification, the file history, or other evidence asserted by the parties that the inventor used them differently. *In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). Any special definition for a claim term must be set forth in the specification with “reasonable clarity, deliberateness, and precision.” *Id.*

We agree with the Examiner that the Specification does not expressly define “inboard” and “outboard” with “reasonable clarity, deliberateness, and precision.” Accordingly, we may consult a dictionary to help construe these terms “so long as the dictionary definition does not contradict any definition found in or ascertained by reading the patent document.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1322–23 (Fed. Cir. 2005) (en banc); *see also*

Comaper Corp. v. Antec, Inc., 596 F.3d 1343, 1348 (Fed. Cir. 2010) (If “the specification does not assign or suggest a particular definition [of a claim term], in determining the ordinary and customary meaning of the claim term as viewed by a person of ordinary skill in the art, it is appropriate to consult a general dictionary definition of the word for guidance”) (internal citation omitted). The Examiner identifies several dictionary definitions for these terms, and correctly identified those that are most pertinent to this case: (1) “inboard” is defined as “toward a center line of a vehicle” (e.g., an automobile); and (2) “outboard” is defined as “closer to the sides of an automobile.” Non-Final Act. 3; see *Free Motion Fitness, Inc. v. Cybex Int’l, Inc.*, 423 F.3d 1343, 1349 (Fed. Cir. 2005) (“in those circumstances where reference to dictionaries is appropriate, the task is to scrutinize the intrinsic evidence in order to determine the most appropriate definition”). These definitions are consistent with how the terms are used in the Specification. For example, the Specification describes and depicts the outboard shaft as closer to the wheel hub (i.e., closer to the side of the automobile) than the inboard shaft. Spec. ¶ 14, Fig. 2.

We determine that the meanings of “inboard” and “outboard” would have been reasonably clear to one of ordinary skill in the art at the time of the invention and in light of the Specification, and therefore do not sustain the Examiner’s rejection of claim 1 as indefinite. The Examiner asserts that these terms are “matter[s] of degree,” and that it is not clear whether “the entire inboard shaft [must be] located more toward the center line of the vehicle relative to the entire outboard shaft,” or whether “just a portion” suffices. Non-Final Act. 3. We disagree that these concerns render the terms indefinite. The Specification and claims use “inboard” and “outboard”

not as terms of degree, but rather as relative to the other; i.e., one shaft is inboard of the other, and vice versa. Further, “reasonable certainty” does not require “absolute or mathematical precision.” *Biosig Instrs., Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1381 (Fed. Cir. 2015) (internal quotation marks omitted). We are not persuaded that one of ordinary skill in the art would not be able to determine whether one shaft is inboard or outboard of another shaft given the constructions noted above.

Claims 3, 7, and 15

Claim 3 depends from claim 1 and additionally recites, *inter alia*, that “the first clutch teeth are located on an inboard axial end face of the outboard shaft; and the second clutch teeth are located on an outboard axial end face of the collar.” Appeal Br. 20 (Claims App.). Claims 7 and 15 contain similar limitations. *Id.* at 20, 22. The Examiner determines that the terms “inboard axial end face” and “outboard axial end face” used in these claims are “unclear.” Non-Final Act. 3, 4, 6. The Examiner first asserts that it is unclear whether “axial end face mean[s] an axially extending face, or a radially extend[ing] face at an end in an axial direction.” The Examiner also asserts that it is unclear whether “the inboard end [is] closer to the center line of the vehicle relative to another end of the outboard shaft, or relative to the outboard axial end of the collar.” *Id.* at 3.

Appellant responds that it is “readily apparent” that an “axial end face is an end face at an axial end of the particular shaft or rotating element to which it is associated.” Appeal Br. 11. Appellant also asserts that “outboard end of the inboard shaft” and “inboard end of the outboard shaft” are “self-explanatory.” *Id.* at 12.

We are not persuaded that claims 3, 7, and 15 are indefinite. First, it is not entirely clear why it is necessary to consider whether an axial end face of a rotating element “extend[s]” axially or radially; to the extent we understand the Examiner’s use of these terms, the axial end face of a three-dimensional rotating element would necessarily “extend radially.” However, this does not exclude the possibility that it would also “extend axially,” i.e., have a contour that is not entirely flat. Second, the phrase “inboard axial end face” is modified by the phrase “*of the outboard shaft*” (emphasis added), which makes clear that the inboard axial end face is relative to the outboard axial end face of the outboard shaft (not of the collar). Likewise, the “outboard axial end face of the collar” is relative to the inboard axial end face of the collar, not of the outboard shaft.

Claim 5

The Examiner determines that claim 5 is indefinite “for the same reasons as claims 1 and 3.” Non-Final Act. 4. Because we are not persuaded that claims 1 and 3 are indefinite, we are also not persuaded that claim 5 is indefinite.

Claim 11

The Examiner determines that the terms “an outboard end of the inboard shaft” and “an inboard end of the outboard shaft” are indefinite “for the same reasons as claim 7 relating to the terms inboard and outboard on different elements.” *Id.* at 5. Because, as discussed above, we are not persuaded that claim 7 is indefinite, we are also not persuaded that claim 11 is indefinite.

Claim 13

Claim 13 is drawn to a wheel end assembly, comprising, among other things, “an outboard shaft for transmitting torque to a wheel hub, including radially extending first dog teeth,” and “a coil radially outboard of and axially spaced from the outboard shaft.” Appeal Br. 22 (Claims App.). The Examiner determines that “[i]t is unclear what direction these teeth extend.” Non-Final Act. 5. According to the Examiner:

Typically “radially extending” teeth are teeth that extend radially inward or outward from a circumferential/axial surface relative to a rotation axis, while “axially extending” teeth are teeth that extend axially parallel to the axis of rotation from a radial surface. The teeth shown in the exemplary embodiments could be interpreted under either interpretation and thus it is unclear which arrangement the claims are intending to cover. . . . In view of Applicant’s prior arguments, to best encompass the desired scope of the claims, the Examiner has interpreted claim 13 as reciting “axially extending clutch [*sic*, dog] teeth” in place of “radially oriented clutch [*sic*, radially extending first dog] teeth.” This is believed to be the intended scope of the feature.

Id. Appellant responds that the Specification depicts and describes radially extending dog teeth, i.e., teeth 34 and 38. Appeal Br. 15 (citing Spec. ¶¶ 15, 17, Figs. 2–4).

We are not persuaded that “radially extending first dog teeth” is indefinite. As the Examiner notes, “radially extending” teeth are teeth that “extend inward or outward” toward or away from the axis of rotation of a rotating element. Non-Final Act. 5. This term does not become indefinite simply because the radially extending dog teeth disclosed in the Specification also extend axially, i.e., along the axis of rotation. This may render the term broad and not particularly descriptive, but not indefinite. Because we do not agree that “radially extending dog teeth” is indefinite, we

see no justification for the Examiner’s approach of provisionally interpreting this term to mean “axially extending dog teeth.”

Finally, the Examiner determines that the term “a coil radially outboard of . . . the outboard shaft” is indefinite. *Id.* According to the Examiner “[i]f outboard vs inboard means either of the alternative definitions (left to right; or front to back), the term ‘radially’ relative to outboard makes this phrase even more confusing.” *Id.* Appellant responds that “[t]he modifier ‘radial’ clearly modifies the ‘outboard’ for the coil element to indicate a direction for this different use of the term outboard.” Appeal Br. 15. We agree with Appellant that “radially outboard” is not indefinite. “[C]laims must be read in view of the specification, of which they are a part.” *Phillips*, 415 F.3d at 1315 (internal quotations omitted). Reading this term in view of the Specification, particularly Figure 2, “radially outboard of . . . the outboard shaft” means farther away from the axis of rotation than the outboard shaft.

Claims 7 and 9—Rejected as Unpatentable over Fujikawa and Itoh

For claim 7, the Examiner finds that Fujikawa teaches the claimed inboard shaft, coil, outboard shaft secured to a wheel hub and including an inboard end face having radially extending first dog teeth, and collar rotatably secured to the inboard shaft and including an outboard end face having second dog teeth. Non-Final Act. 6–7 (citing Fujikawa 2:9–26, 46–48, 2:67–3:42); *see* Fujikawa Fig. 1. The Examiner further finds that Fujikawa does not teach that the first dog teeth are on the inboard end face on the outboard shaft, that the second dog teeth are on the outboard end face of the collar, or that the first and second dog teeth are “radially extending.”

Non-Final Act. 7. The Examiner therefore relies on Itoh to teach these limitations. *Id.*

Itoh discloses a positive clutch with engaging/disengaging clutch teeth and illustrates two alternative embodiments. In one embodiment (FIGS. 11 and 12), the teeth (81, 82) are radially extending teeth (spline-like teeth) which each extend from an axial/circumferential face of the two engaging elements (13, 9a), similar to the radially extending teeth of non-modified Fujikawa. In the other embodiment (FIGS. 3, 4a-4c), the teeth (40, 41) are axially extending teeth (typical dog-like teeth) which each extend from a radially extending face of the two engaging elements (18, 34).

Id. The Examiner determines that “[i]t would have been obvious to one having ordinary skill in the art at the time of filing to have modified Fujikawa to have replaced the radially extending teeth (11a, 15a) with axially extending teeth since this is a simple substitution of one known type of positive clutch teeth for another to yield predictable results.” *Id.* at 7–8 (citing MPEP § 2141). The Examiner also asserts that “such a substitution would have provided stronger teeth and thus less likelihood of tooth failure, as well as avoid the need for a stop to stop the inner moving teeth from extending entirely through the outer stationary teeth.” *Id.* at 8.

Appellant responds that combining Fujikawa and Itoh in the manner suggested would require the positions of Fujikawa’s teeth to change, which would “render the clutch of Fujikawa inoperable.” Appeal Br. 16. In the Answer, the Examiner clarifies that “the Examiner proposed to replace the type of teeth in Fujikawa for the type of teeth disclosed in FIGS. 3, 4A, and 4B of Itoh, with no other changes to Fujikawa.” Ans. 12.

As is evident from Figure 1 of Fujikawa, teeth 11a are not located on the “inboard end face” of cylindrical body 11, which the Examiner finds

corresponds to the claimed outboard shaft, as recited in claim 7. Further, as noted above, the Examiner's proposed modification would not change the location of teeth 11a with respect to cylindrical body 11. Therefore, the combined teachings of Fujikawa and Itoh do not teach or suggest all of the limitations of claim 7. For that reason, we do not sustain the rejection of claim 7, and its dependent claim 9, as unpatentable over Fujikawa and Itoh.

Claim 8—Rejected as Unpatentable over Fujikawa, Itoh, and Umekida

The Examiner's rejection of claim 8 relies on the erroneous finding that the combination of Fujikawa and Itoh teaches all of the limitations of claim 7, from which claim 8 depends. Non-Final Act. 9. Umekida is not relied on to cure this deficiency. Therefore, we do not sustain the Examiner's rejection of claim 8 as unpatentable over Fujikawa, Itoh, and Umekida.

CONCLUSION

The Examiner's rejections are reversed.

DECISION SUMMARY

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1-18	112(b)	Indefiniteness		1-18
7, 9	103	Fujikawa, Itoh		7, 9
8	103	Fujikawa, Itoh, Umekida		8
Overall Outcome				1-18

REVERSED