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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte WENDELL V. TWELVES, LYUTSIA DAUTOVA,
EVAN BUTCHER, JOE OTT, and MATTHEW E. LYNCH

Appeal 2020-000992
Application 14/720,300
Technology Center 3700

Before ANTON W. FETTING, AMEE A. SHAH, and
RACHEL H. TOWNSEND, *Administrative Patent Judges*.

SHAH, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), the Appellant¹ appeals from the Examiner's final decision to reject claims 1–15, 17, 21, and 23, which are all of the pending claims. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM IN PART.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. The Appellant identifies the real party in interest as United Technologies Corp. Appeal Br. 3.

CLAIMED SUBJECT MATTER

The Appellant’s invention “relates generally to surface conditioning and, more particularly, to conditioning an internal surface of an object, for example, to reduce surface roughness of and/or polish the surface.”

Spec. ¶ 1.

Claims 1, 15, and 23 are the independent claims. Claims 1 and 15 are illustrative of the subject matter on appeal and are reproduced below:

1. A process comprising:

disposing an object with an agitator configured as a multi-axis shaking device, the object including an aperture therein;

fluidly coupling a fluid conduit to the object;

directing abrasive material into the aperture through the fluid conduit; and

agitating the abrasive material within the aperture by moving the object using the agitator, *wherein the abrasive material within the aperture is dry during the agitating.*

15. A process comprising:

disposing an object with an agitator configured as a device, the object including an aperture therein;

fluidly coupling a fluid conduit to the object;

directing abrasive material into the aperture through the fluid conduit, *wherein the abrasive material comprises dry powder media;* and

agitating the dry powder media within the aperture by moving the object using the agitator.

Appeal Br. 20, 22 (Claims App.) (emphases added).

REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Hewins	US 3,523,834	Aug. 11, 1970
Hulet et al. (“Hulet”)	US 3,584,419	June 15, 1971
Sternstein	US 4,096,741	June 27, 1978
Marcus	US 4,581,853	Apr. 15, 1986
Joen et al. (“Joen”)	US 5,276,998	Jan. 11, 1994

REJECTIONS²

Claim 15 stands rejected under 35 U.S.C. § 102(a)(1) as anticipated by Joen.

Claims 1–14 and 17 stand rejected under 35 U.S.C. § 103 as being unpatentable over Joen, Hewins, and Marcus.

Claim 21 stands rejected under 35 U.S.C. § 103 as being unpatentable over Joen, Hewins, Marcus, and Hulet.

Claim 23 stands rejected under 35 U.S.C. § 103 as being unpatentable over Joen, Sternstein, and Marcus.

OPINION

Anticipation³

The Appellant contends that the Examiner’s rejection of independent claim 15 is in error because “Joen does not disclose or suggest and, in fact,

² The rejection of the claims under 35 U.S.C. § 112(b) has been withdrawn by the Examiner. Ans. 9.

³ The rejections are addressed in the order presented by the Examiner in the Final Action.

teaches away from a step of ‘*agitating the dry powder media within the aperture by moving the object using the agitator*’ as recited in claim 15.”

Appeal Br. 10. Conversely, the Examiner finds that Joen’s particles 46 meet the claimed dry powder and its high frequency vibration meets the claims agitation. Final Act. 4.

A determination that a claim is anticipated under [pre- AIA] 35 U.S.C. § 102(b) involves two analytical steps. First, the Board must interpret the claim language, where necessary. Because the PTO is entitled to give claims their broadest reasonable interpretation, our review of the Board's claim construction is limited to determining whether it was reasonable. *In re Morris*, 127 F.3d 1048, 1055 (Fed. Cir. 1997). Secondly, the Board must compare the construed claim to a prior art reference and make factual findings that “each and every limitation is found either expressly or inherently in [that] single prior art reference.” *Celeritas Techs. Ltd. v. Rockwell Int’l Corp.*, 150 F.3d 1354, 1360 (Fed. Cir. 1998). We review those factual findings for substantial evidence.

In re Crush, 393 F.3d 1253, 1256 (Fed. Cir. 2004).

The Examiner and the Appellant disagree on the interpretation of claim 15’s limitations of “wherein the abrasive material comprises dry powder media; and agitating the dry powder media within the aperture by moving the object using the agitator.” *Compare* Final Act. 4; Ans. 9–10 *with* Appeal Br. 10–11; Reply Br. 2–3. The Examiner notes claim 15’s use of the term “comprises” and determines

A mixture of dry powder media and a liquid to make a slurry is, therefore, not outside the scope of the claims, especially when read in light of the Specification. The Examiner points to ¶¶ [0049-50] in the instant Specification which states “(t)he abrasive material may be or include substantially dry powder media ... (and) may be configured as a slurry of the powder media mixed within a liquid”. The Examiner's interpretation of “dry powder media” as a label of a component of the abrasive material

is, therefore, consistent with the Specification, and is reasonable to one of ordinary skill in the art.

Ans. 9.

The Appellant contends that the term “dry powder” cannot include a slurry because the Specification describes them as different. *See Reply Br. 3.* Specifically, the Appellant directs attention to paragraph 50 of the Specification that recites “[t]he process of FIG. 10, however, is not limited to any particular abrasive material materials or forms thereof before discussing a slurry.” *Id.* (emphasis and internal quotation marks omitted).

The Appellant contends

Then, to give an example of such an alternative form, paragraph 50 of the present application discloses “*the abrasive material may be configured as a slurry of the powder media mixed within a liquid.*” Appellant respectfully submits therefore a person of skill in the art would understand, based on the disclosure of at least paragraphs 49 and 50 of the present application, that (a) abrasive material in the form a dry powder media and (b) abrasive material in the form of powder media mixed in liquid are different. It is also worth noting there is no disclosure or suggestion in paragraph 50 or elsewhere in the present application that the powder media within the slurry is considered to be “dry” as alleged in the Examiner’s Answer.

Id.

“During examination, ‘claims ... are to be given their broadest reasonable interpretation consistent with the specification, and ... claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art.’” *In re Am. Acad. Of Sci. Tech Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004) (quoting *In re Bond*, 910 F.2d 831, 833 (Fed.Cir.1990)). “Though understanding the claim language may be aided by the explanations contained in the written description, it is

important not to import into a claim limitations that are not a part of the claim. For example, a particular embodiment appearing in the written description may not be read into a claim when the claim language is broader than the embodiment.” *SuperGuide Corp. v. DirecTV Enterprises, Inc.*, 358 F.3d 870, 875 (Fed. Cir. 2004).

Here, claim 15 recites “wherein the abrasive material *comprises* dry powder media.” Appeal Br. 22 (Claims App.) (emphasis added). “It is well-established that “ ‘[c]omprising’ is a term of art used in claim language which means that the named elements are essential, but other elements may be added and still form a construct within the scope of the claim.” *Crish*, 393 F.3d at 1257 (quoting *Genentech, Inc. v. Chiron Corp.*, 112 F.3d 495, 501 (Fed.Cir.1997)). The Specification provides that “[t]he abrasive material may be or include substantially dry powder media” (Spec. ¶¶ 17, 49), indicating that other types of media may be included with the dry powder. In fact, the Specification indicates that the process “is not limited to any particular . . . form” of the abrasive material, noting in particular that “in some embodiments, the abrasive material may be configured as a slurry of the powder media mixed within a liquid.” *Id.* ¶ 50; *see also id.* ¶ 17. Consequently, although the Specification distinguishes dry powder from a slurry, the Specification supports the determination that abrasive material is not limited to dry powder only unless so specified. Claim 15’s recitation of “the abrasive material comprise” does not so specify. The claim language is broader than any embodiment(s) described in the Appellant’s Specification requiring only or *all* dry powder. Thus, we agree with the Examiner’s claim interpretation that the abrasive material comprises dry powder, but may include other elements such as a liquid.

Next, we compare the Examiner’s findings regarding Joen with the claimed limitations. Joen discloses a method for washing and cleaning workpieces comprising, in relevant part, filling a fixture chamber with an aperture therein with cleaning media 46 through an outlet. *See* Joen col. 6, ll. 29–32, Figs. 2, 4. “The cleaning media can take several forms of abrasive particles of either a ceramic based material or metal. The particular material used and the size or geometric configuration of the particles are chosen for the particular workpiece and the amount of deburring necessary in the overall cleaning process.” *Id.* at col. 4, ll. 29–33. At the same time the cleaning media is filling the chamber, working fluid⁴ is admitted to the chamber, flows through the chamber, and exits out the chamber out of holes to the bottom media dump door. *Id.* at col. 6, ll. 33–35, Figs. 2, 4. When the chamber is filled with the cleaning media, the flow of the cleaning media is stopped and the chamber is vibrated by vibrator 20. *Id.* at col. 6, ll. 35–39, Fig. 2.

The Specification provides that “[t]he term ‘powder’ may describe a quantity (e.g., an agglomeration) of discrete particles with substantially uniform or varying sizes; e.g., average diameters,” such as “between about 001 inches (~24.5 μ m) and about 0.110 inches (~2800 μ m); e.g., between about 0.004 inches (~ 106 μ m) and about 0.55 inches (~ 1400 μ m).” Spec. ¶ 49. However, “[t]he process of FIG. 10 . . . is not limited to any particular abrasive material particle sizes.” *Id.*

⁴ We note that neither the Examiner nor the Appellant defines what comprises a fluid, i.e., whether a liquid or gas. The Appellant’s Specification indicates it can be either. *See* Spec. ¶¶ 39, 54. However, both parties appear to interpret Joen’s working fluid as a liquid. *See* Final Act. 7, Reply Br. 2.

As such, we find supported the Examiner's findings that Joen discloses directing abrasive material comprising dry powder media, i.e., Joen's cleaning media, into the aperture and agitating the dry powder media (with the fluid) within the aperture by moving the chamber using the agitator, i.e., by vibrating using vibrator 20.

The Appellant's argument that Joen's cleaning media is not dry in the aperture because it is mixed with the fluid, i.e., "Joen clearly teaches the cleaning media within the alleged aperture is wet by the working fluid during the alleged agitation" (Appeal Br. 11), is not persuasive of error. As discussed above, claim 15 does not require that only dry powder is directed into the aperture, and as the Examiner notes (Ans. 9–10), the claim does not require the dry powder of the abrasive material to remain dry. Rather, claim 15 only requires that the dry powder media that is part of the abrasive material be agitated within the aperture. As also discussed above, we find supported Examiner's finding that Joen discloses the limitation as claimed of agitating the dry powder media using the agitator.

The Appellant's argument that "Joen teaches away from using 'dry powder media' as recited in claim 15" (Appeal Br. 11; *see also id.* at 12) is unpersuasive for two reasons. First, as discussed above, we agree with the Examiner that Joen teaches using dry powder and the claim does not require only dry powder. Second, "[t]eaching away is irrelevant to anticipation." *Seachange Int'l, Inc. v. C-COR, Inc.*, 413 F.3d 1361, 1380 (Fed. Cir. 2005); *see also Celeritas Techs., Ltd. v. Rockwell Int'l Corp.*, 150 F.3d 1354, 1361 (Fed. Cir. 1998) ("A reference is no less anticipatory if, after disclosing the invention, the reference then disparages it. Thus, the question whether a

reference “teaches away” from the invention is inapplicable to an anticipation analysis.”);

For the above reasons, we are not persuaded of Examiner error and we sustain the Examiner’s rejection under 35 U.S.C. § 102(a)(1) of independent claim 15.

Obviousness

Independent claim 1 recites a process comprising, in relevant part, “agitating the abrasive material within the aperture by moving the object using the agitator, wherein the abrasive material within the aperture is dry during the agitating.” Independent claim 23 recites a process comprising, in relevant part, a similar limitation of “agitating the abrasive material within the component using the agitation device to condition an interior surface of the component, wherein the abrasive material within the component is dry during the agitating.” The Examiner acknowledges that “Joen is silent as to” wherein the abrasive material within the aperture/component is dry during the agitating. Final Act. 6, 9. The Examiner relies on Marcus as teaching “that it is well known in the art to provide vibratory abrasive processes/devices of this type wherein the abrasive media may be dry or contain a liquid to produce a slurry.” *Id.* at 7, 9 (citing Marcus, col. 3, ll. 4–11). The Examiner determines that it would have been obvious to one of ordinary skill in the art “to have modified the process of Joen to incorporate the teachings of Marcus and provide the abrasive material be dry during the agitation,” the rationale being that “[d]oing so would create a process where less product (i.e. liquid) is used, thereby decreasing the cost of materials used during the process” and “would also allow for the process to be optimized for the material/configuration of the workpiece being

processed as it may not be ideal to introduce liquids to all materials due to their physical/mechanical properties.” *Id.*

The Appellant contends that the Examiner’s rejections of independent claims 1 and 23 are in error because “a person of skill in the art would have no motivation to modify the teachings of Joen with the teachings of Marcus as alleged in the Office Action to not use the working fluid⁵ of Joen as such a modification would obviate a required element in the method and equipment of Joen.” Appeal Br. 15, 18. The basis of the Appellant’s argument stems from Joen’s teaching of “its ‘*new method and equipment for washing cleaning workpieces in a batch-type operation*’ [that] utilizes both a working fluid and a cleaning media, not just the cleaning media” to solve prior art problems related to batch-type operations requiring multi-stage cleaning. *Id.* at 14–15, 17–18. The Appellant points out that Joen’s discussion of another type of cleaning process used in the prior art, such as shot blasting and sand blasting using a dry abradant (*see* Joen, col. 1, ll. 24–26), “is not merely teaching an alternative way of doing something. Rather, Joen teaches the working fluid is what enables the removal of contaminants.” Reply Br. 3 (citing Ans. 10). In this case, the Appellant points to an issue that we cannot resolve in favor of the Examiner’s rejection.

First, we note that the Examiner states reasons for modifying the process of Joen to have abrasive material be dry during the agitation; namely

⁵ We note that neither the Examiner nor the Appellant defines what comprises a fluid, i.e., whether a liquid or gas. The Appellant’s Specification indicates it can be either. *See* Spec. ¶¶ 39, 54. However, both parties appear to interpret Joen’s working fluid as a liquid. *See* Final Act. 7, Reply Br. 2.

that “modif[ying] the process of Joen to incorporate the teachings of Marcus and provide the abrasive material be dry during the agitation . . . would create a process” that uses less product, decreases cost, and enables the use of the process for workpieces not suitable for liquids. Final Act. 7; *supra*. However, the Examiner fails to provide a clear reason or explanation as to how Marcus’s teaching of well-known vibration abrasion processes/devices using only dry media would necessarily result in Joen’s abrasive material, comprising dry cleaning media and working fluid of a liquid, remaining dry during agitation. To the extent the Examiner determines that Marcus’s teachings would result in Joen’s abrasive material remaining dry during agitation by removing the step of admitting working fluid that is required in Joen’s process, the Examiner does not explain how or why one of ordinary skill in the art would be led by the teachings of Marcus to do so.

Second, if Joen’s step of admitting working fluid into the chamber were removed, then that process would diminish the ability of Joen’s invention to reduce the quantity of abrasive media to remove contaminants in a single stage process. *See* Appeal Br. 14–15, 17–18 (citing Joen, col. 2, ll. 3–18, 27–35, 38–42, col. 4, ll. 39–42; Reply Br. 3–4). In response to the Appellant’s arguments in this regard, the Examiner focuses on the notion that Joen states “there are multiple ways to process a workpiece including how the art prior to Joen has accomplished this task, as well as the process which Joen employs, which Joen states is an improvement,” and repeats the benefits of modifying Joen with Marcus’s teaching of using only dry media, the benefits including less material, less costs, and optimization of the process for liquid-unfriendly workpieces. Ans. 10. Insofar as the Examiner is suggesting that one of ordinary skill in the art would infer that the

drawbacks associated with removing Joen's step of admitting the working fluid with the cleaning media, i.e., increasing the quantity of media and requiring a two-stage process to remove contaminants, could be acceptable in view of other advantages, i.e., using less product, decreasing cost, and having more utility with non-liquid friendly workpieces, there is no discussion on the record as to why this is so. Consequently, we determine that the Examiner fails to adequately establish on this record why one of ordinary skill in the art would have modified Joen's process to remove the working fluid so that the abrasive material is dry during agitation after weighing all of the facts pertinent to the proposed modification.

Lastly, we note that the Examiner fails to rely on the teachings of Hewins, Hulet, or Sternstein in any manner that would remedy the deficiencies in the Examiner's rejection as discussed above. Thus, we do not sustain the Examiner's rejections of independent claims 1 and 23 and dependent claims 2–14, 17, and 21 under 35 U.S.C. § 103.

CONCLUSION

The Examiner's decision to reject claim 15 under 35 U.S.C. § 102(a)(1) is sustained.

The Examiner's decision to reject claims 1–14, 17, 21, and 23 under 35 U.S.C. § 103(a) is not sustained.

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
15	102(a)(1)	Joen	15	

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1-14, 17	103(a)	Joen, Hewins, Marcus		1-14, 17
21	103(a)	Joen, Hewins, Marcus, Hulet		21
23	103(a)	Joen, Sternstein, Marcus		23
Overall Outcome			15	1-14, 17, 21, 23

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 IN PART