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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JASON D. HIMES and PETER JOSEF KARNER

Appeal 2020-002134
Application 15/023,831
Technology Center 3700

Before CHARLES N. GREENHUT, BRETT C. MARTIN, and
MICHAEL J. FITZPATRICK, *Administrative Patent Judges*.

MARTIN, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 1 – 22. *See* Final Act. 1. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE AND ENTER NEW GROUNDS OF REJECTION.

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

CLAIMED SUBJECT MATTER

The claims are directed “to a balance ring for circumferentially balancing the rotating components.” Spec. ¶ 1. Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A balance ring comprising:
 - a ring-shaped body having a first radial thickness and including a split opening;
 - an anti-rotation tab extending outward from said ring-shaped body; and
 - at least one millable balancing feature connected to the ring-shaped body, wherein a weight profile of the millable balancing feature is adjusted from a base weight profile of the millable balancing feature via milling such that the weight profile of the millable balancing feature balances an empirically determined weight profile of a rotating component in an engine in which the balance ring is to be included.

REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Tameo	US 4,294,135	Oct. 13, 1981
Athanasίου	US 5,086,590	Feb. 11, 1992
Czerniak	US 2003/0213334 A1	Nov. 20, 2003
Ramlogan	US 2009/0107237 A1	Apr. 30, 2009

REJECTION

Claims 1–18 are rejected under 35 U.S.C. § 112(b) or 35 U.S.C. § 112 (pre–AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter regarded as the invention. Final Act. 36.

Claims 1, 2, 4–8, 10–12, 14, and 17–22 stand rejected under 35 U.S.C. § 102(a)(1) as anticipated by Ramlogan. Final Act. 4.

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Claims 1–3, 5, 6, 8, and 10–17 stand rejected under 35 U.S.C. § 102(a)(1) as anticipated by Tameo. Final Act. 8.

Claims 1, 2, 5–7, 9 and 10 stand rejected under 35 U.S.C. § 102(a)(1) as anticipated by Czerniak. Final Act. 10.

Claims 19–22 stand rejected under 35 U.S.C. § 103 as unpatentable over Ramlogan and Athanasiou. Final Act. 11.

OPINION

Indefiniteness

The Examiner rejects the device claims as indefinite because “[i]t is unclear if the device, after adjustment, is all that is covered by the claim – or, if the device being capable of balancing a rotating component (once adjusted) is what is covered.” Final Act. 3. The Examiner expounds that “[t]he crux of the indefiniteness lies with the language ‘is adjusted’” and further states that it is unclear whether “this language require[s] a final product with a milled feature, or is it reciting intended use of an intermediate product that has a *millable* feature.” Ans. 3–4.

Regarding this, Appellant responds that “the claim is not limited to either, and would cover both, provided all of the enumerated features were present.” Appeal Br. 4. Appellant also responds regarding the use of the term “millable” and that “a material that is millable doesn’t suddenly become unmillable simply because a machining process has been finished.” Reply Br. 2. We agree with Appellant that the claim could cover both an intermediate and final product because as long as the feature is made of millable material and has been adjusted from its original state, it does not matter whether the feature is in a final state or may need further adjustment

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to achieve the desired balancing. Accordingly, we do not sustain the Examiner's rejection.

We do, however, take issue with the claim language for different reasons. Claim 1 recites "the weight profile of the millable balancing feature balances an empirically determined weight profile of a rotating component in an engine in which the balance ring is to be included." It is unclear to us how one of skill in the art could ever determine whether the weight profile of the rotating component was empirically determined as part of the process of creating the balancing feature. For example, extremely experienced machinists may be capable of observing a shaft and determining the proper balancing course, without trial and error or by some analytical as opposed to empirical method. The Specification does not provide sufficient guidance as to what constitutes empirical determinations. Ultimately, regardless of *how* the weight profile is determined, the final product could still be a balancing feature that has been adjusted as otherwise claimed. It is not clear how a potential infringer could evaluate the possibility of infringing a claim drawn to a product when the claim requires a process of manufacture that does not appear to have any definite impact on the final product.

This also raises an issue regarding the necessity of product-by-process claims in this case. Appellant asserts that "the resultant product of a balance ring that counter balances the specific weight profile of an actual rotating machine can only be described in the manner Applicant has utilized." Reply Br. 2. We disagree. The empirical analysis simply leads to a desired profile of the balancing feature. There is no requirement that this feature's profile be formed from a millable material nor that it be adjusted in any way. Even if adjustment were required, it would not necessarily require milling.

For example, if one of skill in the art, at the end of an empirical determination, were to see that a balancing feature as depicted in either of Figures 5B and 5C were desirable, that person could make that balancing feature in a number of ways. The balancing ring, or the features thereof, could be molded such that the balancing feature has the desired profile shape. If made in this manner, there would be no adjustment because the balancing ring would come into existence as a completed product. Additionally, there is no requirement that such a device be millable, because there are numerous ways of manufacturing such a profile. The feature could be laser-cut, for example, which would not constitute milling, but could still achieve the desired shape.

Given the uncertainties regarding the claimed empirical determination as well as the lack of necessity for using product-by-process claim language, we find it difficult to understand how one of skill in the art could determine whether any particular device meets the metes and bounds of the claims. Accordingly, we enter new grounds of rejection that claims 1–18 are indefinite for the reasons stated above and reverse all of the prior-art rejections of claims 1–18 due to their indefiniteness.

Anticipation

Although we reverse all of the Examiner's rejections of the device claims due to the indefinite nature of the claim language note above, the prior art rejections of these claims further elucidate our reasons for entering new grounds. We generally agree with Appellant that Ramlogan does not meet the claims because of the nature of the adjustment made therein. The term profile, as used in the Specification, connotes some kind of adjustment of the weight distribution of the balancing feature, not simply adjustment in

a manner that does not otherwise change the distribution of weight as appears to be disclosed in Ramlogan.

For example, the Specification, in describing the rotating shaft, explains that “[t]his weight distribution can be determined via testing the rotating component 100 and is referred to as the weight profile of the overweight region 310.” Spec. ¶ 53. In describing the counterweight, Appellant explains that excess material is removed from counterweight 240 “via a milling process to create a shaped counterweight 240” such that “material 244 is only removed from one side of the counterweight 240.” Spec. ¶ 56. When looking at the exemplary profiles, the removal process does not simply remove weight across the surface of the individual counterweight, as appears to be done in Ramlogan, such that the overall weight distribution of the entire ring is changed in a way that balances the rotating component, but tailors the removal process of the counterweight itself to achieve a different weight distribution within only the counterweight. As such, Ramlogan does not meet what we discern to be the intent of the claim language found in claim 1 and we would reverse the Examiner’s rejection based upon Ramlogan.

Tameo and Czerniak, however, present issues not present in Ramlogan. In both of Tameo and Czerniak, the balance ring has a counterweight portion that has a unique profile with material removed or originally formed in such a way that it could be considered similar to the counterweights found in Figures 5B and 5C. Tameo discloses an eccentric ring such that the counterweight feature is the eccentricity of the ring itself. This ring could be manufactured by starting from a uniform ring and milling material away to achieve the disclosed eccentricity such that it could be found to meet the limitations found in claim 1. Furthermore, the exact same

ring could simply be molded to initially have the shape found in Tameo and there would be no discernable difference between such a ring that was formed to have the desired profile or weight distribution from a ring that has been “adjusted” from some stock form to achieve the eccentric form.

Similarly, Czerniak discloses a balance ring having a weighted portion 26 that has a non-uniform profile also similar to what is disclosed in Appellant’s Figures 5B and 5C. This feature, like Tameo, could be milled or otherwise adjusted, or it could be molded originally to take the shape disclosed therein. One of skill in the art would be unable to discern exactly how such a weight profile was achieved and therefore could not ascertain whether such a product would or would not infringe claim 1 as written, as it is ultimately the final balancing ring that determines infringement. As such, it is unclear whether the Examiner is correct in finding anticipation by Tameo and Czerniak based on the claim as written. As noted above, we have already reversed these rejections based upon the claim’s indefiniteness, but ultimately it is unclear whether a counterbalance ring as disclosed and Tameo or Czerniak would infringe the claims as written.

Obviousness

As noted above, we do not agree that Ramlogan accomplishes the claimed adjustment of the weight distribution or profile of any individual counterweight as claimed, rather Ramlogan appears to remove weight from one or more individual counterweights to change the overall weight distribution, or profile, of the ring, but not of the counterweights themselves. Because the method claim does not suffer from the same indefiniteness issues found in the device claims, we do not sustain the Examiner’s rejection over Ramlogan and Athanasiou.

CONCLUSION

The Examiner’s rejections of claims 1–18 are REVERSED and we enter NEW GROUNDS OF REJECTION of claims 1–18 as indefinite. We also REVERSE the Examiner’s rejection of claims 19–22 as unpatentable over Ramlogan and Athanasiou.

More specifically,

DECISION SUMMARY

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed	New Ground
1–18	112(b)	Indefiniteness		1–18	1–18
1, 2, 4–8,, 10–12, 14, 17–22	102(a)	Ramlogan		1, 2, 4–8,, 10–12, 14, 17–22	
1–3, 5, 6, 8, 10–17	102(a)	Tameo		1–3, 5, 6, 8, 10–17	
1, 2, 5–7, 9, 10	102(a)	Czerniak		1, 2, 5–7, 9, 10	
19–22	103	Ramlogan, Athanasiou		19–22	
Overall Outcome				1–22	1–18

TIME PERIOD FOR RESPONSE

This decision contains a new ground of rejection pursuant to 37 C.F.R. § 41.50(b). Section 41.50(b) provides “[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review.” Section 41.50(b) also provides:

When the Board enters such a non-final decision, the appellant, within two months from the date of the decision, must exercise one of the following two options with respect to the new ground

of rejection to avoid termination of the appeal as to the rejected claims:

(1) *Reopen prosecution.* Submit an appropriate amendment of the claims so rejected or new Evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the prosecution will be remanded to the examiner. The new ground of rejection is binding upon the examiner unless an amendment or new Evidence not previously of Record is made which, in the opinion of the examiner, overcomes the new ground of rejection designated in the decision. Should the examiner reject the claims, appellant may again appeal to the Board pursuant to this subpart.

(2) *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board upon the same Record. The request for rehearing must address any new ground of rejection and state with particularity the points believed to have been misapprehended or overlooked in entering the new ground of rejection and also state all other grounds upon which rehearing is sought.

Further guidance on responding to a new ground of rejection can be found in the Manual of Patent Examining Procedure § 1214.01.

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).

REVERSED; 37 C.F.R. § 41.50(b)