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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ANTON G. BANKS, ANTHONY P. CHEROLIS, and
DONALD KASTEL

Appeal 2020-000235
Application 14/783,054
Technology Center 3700

Before JOHN C. KERINS, ANNETTE R. REIMERS, and
BRANDON J. WARNER, *Administrative Patent Judges*.

KERINS, *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 1–30. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

¹ The term “Appellant” is used herein to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies United Technologies Corp., as the real party in interest. Appeal Br. 3. Appellant subsequently filed, on April 23, 2020, a “Real Party-In-Interest Notice Pursuant to 37 C.F.R. § 41.8,” advising that United Technologies Corporation changed its name to Raytheon Technologies Corporation on April 3, 2020.

THE CLAIMED SUBJECT MATTER

Appellant's invention relates to a nozzle segment for a gas turbine engine. Claims 1 and 16 are illustrative, and are reproduced below:

1. A nozzle segment for a gas turbine engine comprising:

an arcuate outer vane platform segment;

an arcuate inner vane platform segment spaced from said arcuate outer vane platform segment;

a multiple of airfoils between said arcuate inner vane platform segment and said arcuate outer vane platform segment, said arcuate outer vane platform segment includes a scallop slot; and

a seal that seals said scallop slot.

16. A gas turbine engine comprising:

an annular nozzle with a multiple of scallop cuts, a first of the scallop cuts comprising a semi-circular portion and a rectangular portion adjacent the semi-circular portion, and the rectangular portion having a lateral width that is equal to a diameter of the semi-circular portion; and

a plurality of seals respectively sealing said multiple of scallop cuts, a first of the seals comprising of a sheet of material that plugs and extends laterally across the semi-circular portion and the rectangular portion.

THE REJECTIONS

The Examiner rejects:

(i) claims 16–22 under 35 U.S.C. § 112(a) as failing to comply with the written description requirement;

(ii) claims 16, 18–20, and 22 under 35 U.S.C. § 102(a)(1) as being anticipated by Ellis (US 7,229,245 B2, issued June 12, 2007);

(iii) claims 1–9, 11, 12, 17, and 23–26 under 35 U.S.C. § 103 as being unpatentable over Ellis;

(iv) claims 10, 27, and 28 under 35 U.S.C. § 103 as being unpatentable over Ellis in view of Zheng (US 2013/0256990 A1, published Oct. 3, 2013);

(v) claims 13–15, 29, and 30 under 35 U.S.C. § 103 as being unpatentable over Ellis in view of Walunj (US 2012/0195743 A1, published Aug. 2, 2012); and

(vi) claim 21 under 35 U.S.C. § 103 as being unpatentable over Ellis in view of Pieussergues (US 2011/0179798 A1, published July 28, 2011).

ANALYSIS

Claims 16–22--35 U.S.C. § 112(a)--Written Description

The Examiner finds that the expression, “a first of the scallop cuts comprising a semi-circular portion and a rectangular portion adjacent the semi-circular portion, and the rectangular portion having a lateral width that is equal to a diameter of the semi-circular portion,” lacks written descriptive support in the application as filed. Final Act. 6.² Appellant traverses the

² A corresponding objection to the drawings under 37 C.F.R. § 1.83(a), asserts that the drawings fail to show a scallop cut in which a rectangular

rejection, arguing that at least Figures 5, 6, and 8–11 as filed illustrate such a configuration. Appeal Br. 10. Appellant presents an annotated version of Figure 8 of the original application, and provides an explanation as to how that drawing figure discloses the limitation at issue. *Id.* at 9.

The Examiner responds as follows:

While Examiner agrees that the annotated FIG. 8 provided by Appellant appears to show that the lateral width of the semi-rectangular portion is equal to the diameter of the semi-circular portion, this is simply not shown in the original disclosure. There are no measurements provided in the original Figures and they are not drawn to scale. Additionally, it is not possible to determine if the semi-circular portion is half of a circle or a smaller portion of a circle and thus, it cannot be determined. Therefore, without the annotated FIG. 8, it is not possible to determine if Appellant, at the time the application was filed, had possession of the claimed invention. Neither the Specification nor the Figures disclose the rectangular portion having a lateral width that is equal to a diameter of the semi-circular portion.

Ans. 11.

Reproduced below are Figure 8 as filed in the original application, and Figure 8 as annotated by Appellant.

portion has a lateral width equal to a diameter of a semi-circular portion. Final Act. 4. Consistent with our decision herein as to the written description rejection, the drawing objection should be withdrawn once jurisdiction over the application returns to the Examiner.

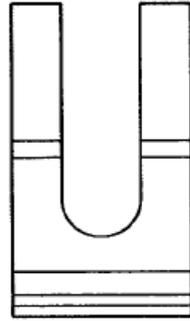


FIG. 8

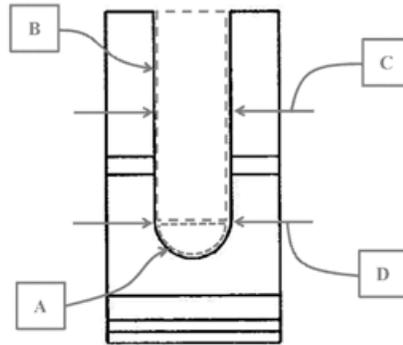


FIG. 8

Depicted above, on the left, is Figure 8 of the present application as originally filed, and, on the right, an Appellant-annotated version of that figure, which is described as an expanded view of the nozzle segment viewed from line 8-8 in Figure 7. Spec. ¶ 44; *see* Appeal Br. 8–9.

To a person of ordinary skill in the art, Appellant’s annotated Figure 8 discloses no more, and no less, than does the unannotated version filed with the original application. Accordingly, the Examiner’s statement that the annotated version is needed in order to establish that Appellant had possession of the subject matter at issue misses the mark.

Embedded in the above quote, the Examiner’s bases for asserting that Figure 8 and other drawing figures fail to evidence possession are that the drawings do not include any measurements; that the drawings are not to scale; and that it is not possible to determine if the curved portion of the scallop cut circumscribes a half-circle or something less than a half-circle. Ans. 11. This position is tantamount to requiring an *in haec verba* recitation of the claim language, whereas the standard for finding adequate written descriptive support is not so stringent. *See Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1352 (Fed. Cir. 2010) (en banc); *Fujikawa v.*

Wattanasin, 93 F.3d 1559, 1570 (Fed. Cir. 1996) (written description standard in § 112 does not require that every claim element find literal support in the application).

In terms of the adequacy of Figure 8, in particular, as providing written descriptive support for claim 16, we note that, although patent drawings not designated as being drawn to scale are generally not to be relied upon to define precise proportions of elements if the specification is completely silent on the issue, *Hockerson-Halberstadt v. Avia Group Int'l., Inc.*, 222 F.3d 951, 956 (Fed. Cir. 2000), that does not mean “that things patent drawings show clearly are to be *disregarded*.” *In re Mraz*, 455 F.2d 1069, 1072 (CCPA 1972). A drawing teaches all that it reasonably discloses and suggests to a person of ordinary skill in the art. *In re Aslanian*, 590 F.2d 911, 914 (CCPA 1979); *In re Wright*, 471 F.3d 1264 (Fed. Cir. 2006).

Here, we are persuaded that a person of ordinary skill in the art would understand, from viewing Figure 8, as well as Figures 5, 6, and 9–11, that Appellant was in possession of a scallop cut configuration having a semi-circular portion adjacent a rectangular portion, and that the lateral width of the rectangular portion is of the same dimension as is a diameter of the semi-circular portion. Accordingly, the rejection of claim 16 and the claims depending therefrom as lacking written descriptive support, is not sustained.

Claims 16, 18–20, and 22--35 U.S.C. § 102(a)(1)--Ellis

The Examiner finds that Ellis discloses each and every limitation appearing in claim 16, including one (a first) of a plurality of seals sealing a first scallop cut “comprising a sheet of material that plugs and extends

laterally across [a] semi-circular portion and [a] rectangular portion” of the scallop cut. Final Act. 6. The Examiner cites to the embodiment appearing in Figures 5 and 6 of Ellis as disclosing a scallop cut and seal meeting the limitations in claim 16. *Id.* Appellant counters that the seal that mates with the scallop cut in Figures 5 and 6 of Ellis “is U-shaped and thereby only extends partially across the . . . semi-circular portion and only extends partially across the . . . rectangular portion of the . . . scallop cut. The remaining portion of the cut is filled with a portion (chunk) of the rail 23 as shown in FIG. 5 of Ellis.” Appeal Br. 11. Appellant represents that the portion/chunk of the rail is not “a sheet of material,” as recited, and that the structure relied on does not disclose all elements of claim 16. *Id.* at 11–12.

The Examiner’s response does not adequately address Appellant’s argument that claim 16 requires a sheet of material that extends laterally across the semi-circular and rectangular portions of the scallop cut. Instead, the Examiner points out that, in Figure 5 of Ellis, “the seal (31) is shown as comprising three pieces, including the U-shaped portion,” which Ellis collectively identifies as seal 31. Ans. 12. The Examiner takes issue with Appellant’s characterization of the thickest of these pieces as being a “chunk of the rail (23),” but the Examiner fails to explain how this thick piece, which we note happens to match the thickness of rail 23, could reasonably be construed as being “a sheet of material,” so as to meet, or contribute to meeting, the limitation requiring the seal to comprise a sheet of material that spans the lateral extent of the semi-circular and rectangular portions of the scallop cut in Figure 5 of Ellis.

The rejection of claim 16, and of claims 18–20 and 22 depending therefrom, as being anticipated by Ellis, is not sustained.

Claims 1–9, 11, 12, 17, and 23–26--35 U.S.C. § 103--Ellis

For independent claims 1 and 23, the Examiner finds that Ellis discloses a scallop slot and seal, but that these are positioned on an arcuate inner (in a radial sense) vane platform segment, and not on an arcuate outer (in a radial sense) vane platform segment, as set forth in those claims. Final Act. 8, 11. The Examiner notes that, notwithstanding this different positioning of the scallop slot and seal, Ellis discloses that, although the focus of that invention is on inner rail 23 connected to inner platform 21, and relieving stress thereon, the teaching of providing a stress-relief opening “could be applied to a variety of vane assemblies and is not limited to the embodiment disclosed.” Final Act. 8; *see* Ellis 3:14–18. The Examiner concludes that it would have been obvious to modify Ellis by providing additional scallops and seals on the outer vane platform segment, “for the purposes of reducing thermally induced stresses and improving component durability.” *Id.*, citing Ellis, Abstract.

Appellant principally argues that the language in Ellis that mentions applicability to other vane assemblies is not particularly pertinent to assessing the purportedly obvious modification to Ellis, because Ellis contains no teaching or suggestion that the outer platform of Ellis suffers from the same thermal fatigue as does the inner platform rail, such that there would be any applicability of the stress relieving measures, disclosed as applying to the inner rail, to the outer platform as well. Appeal Br. 13. In particular, Appellant cites to disclosure in Ellis that the high, thermally-induced stresses to which the Ellis stress-relieving slot and seal are directed, occur because of a large operating temperature differential between, on the one hand, the inner rail, and, on the other hand, the elevated temperature

environment of the inner and outer platforms 11, 13, and vanes 14 at the location of the inner rail, where the two are adjacent one another. *Id.*, citing Ellis 1:54–62. Ellis explains that this operating temperature difference results from the inner and outer platform and vanes being exposed to hot combustion gases, whereas the inner rail to which Ellis provides stress relief is located proximate to a cooling air plenum, such that the inner rail operates at approximately that temperature. Ellis 1:51–60.

The Examiner attempts to bolster the position taken regarding the obviousness of applying the Ellis teaching of providing a slot and seal to the outer platform by pointing out that Ellis discloses, as an object of its invention, providing a turbine blade having reduced thermal stresses in the airfoil and platform regions. Ans. 12, citing Ellis 2:25–27. The Examiner additionally quotes from the passage in Ellis discussed above relative to the “vanes **and platforms**” operating at an elevated temperature relative to the inner rail. *Id.*, citing Ellis 1:55–58. According to the Examiner, “[t]hese passages indicate that the teachings of Ellis et al. can be applied to both the inner and outer platforms.” *Id.*

Appellant has the better position here. As to the particular stated object of the Ellis invention cited by the Examiner, i.e., reduced thermal stresses in the airfoil and platform regions, Ellis addresses this by providing a stress relief slot on the inner rail, in a region in which the cooler operating temperature of that inner rail is adjacent the starkly contrasting elevated operating temperature of the platform and airfoil regions. *See, e.g.*, Ellis 2:4–24. The emphasis attached by the Examiner to Ellis’ use of the plural “platforms” as seemingly providing a suggestion to include a slot and seal on the outer platform as well as the inner, does not aid the Examiner’s

position. As alluded to above, the “vanes and platforms” constitute one group of components that are operating at elevated temperatures compared to the inner rail operating at a cooler temperature. It is not the elevated operating temperature, per se, that is producing elevated thermal stresses in components,³ but rather, it is the temperature differential of the components of the structure experienced in the vicinity of the inner rail that Ellis identifies as creating potentially damaging elevated levels of thermal stress in the overall construction or arrangement.

Accordingly, we find nothing in Ellis, as its disclosure would be understood by persons of ordinary skill in the art, that suggests any benefit from providing additional scallops and seals on the outer vane platform segment thereof. As for the Examiner’s aside that “Ellis never states that the placing of such a scallop cut would be inappropriate on the outer platform,” we note that Ellis expresses a consideration that the openings proposed therein must not compromise the structural integrity of the component. Ellis 2:18–20. Thus, it appears counterintuitive to consider providing scallop cuts in areas not identified as leading to issues with excessive thermal stress.

The rejection of independent claims 1 and 23, and that of claims 2–9, 11, 12, 17, and 24–26, depending therefrom, is not sustained.

Claims 10, 27, and 28--35 U.S.C. § 103--Ellis/Zheng

The Examiner does not rely on Zheng in any manner that would overcome the deficiency of Ellis noted in the analysis above. The rejection

³ The Examiner appears to believe that elevated operating temperature alone gives rise to potentially damaging levels of thermal stresses. *See* Ans. 13 (Ellis’ disclosure that “both platforms operate at an elevated temperature.”)

Appeal 2020-000235
Application 14/783,054

of claims 10, 27, and 28 as being unpatentable over Ellis and Zheng is therefore not sustained.

Claims 13–15, 29, and 30--35 U.S.C. § 103--Ellis/Walunj

The Examiner does not rely on Walunj in any manner that would overcome the deficiency of Ellis noted in the analysis above. The rejection of claims 13–15, 29, and 30 as being unpatentable over Ellis and Walunj is therefore not sustained.

Claim 21--35 U.S.C. § 103--Ellis/Pieussergues

The Examiner does not rely on Pieussergues in any manner that would overcome the deficiency of Ellis noted in the analysis above. The rejection of claim 21 as being unpatentable over Ellis and Pieussergues is therefore not sustained.

DECISION

The rejections of claims 1–30 are reversed.

CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
16–22	112(a)	Written Description		16–22
16, 18–20, 22	102(a)(1)	Ellis		16, 18–20, 22
1–9, 11, 12, 17, 23–26	103	Ellis		1–9, 11, 12, 17, 23–26
10, 27, 28	103	Ellis, Zheng		10, 27, 28
13–15, 29, 30	103	Ellis, Walunj		13–15, 29, 30
21	103	Ellis, Pieussergues		21
Overall Outcome				1–30

REVERSED