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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JAMES R. MURDOCK

Appeal 2019-002966
Application 14/767,180¹
Technology Center 3700

Before MICHAEL C. ASTORINO, AMEE A. SHAH, and
ROBERT J. SILVERMAN, *Administrative Patent Judges*.

ASTORINO, *Administrative Patent Judge*.

DECISION ON APPEAL
STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), the Appellant appeals from the Examiner’s decision rejecting claims 1–5, 7–11, 13–16, and 18–20. Final Act. 1. Claims 6, 12, and 17 are cancelled. *Id.* at 2; Advisory Act. (mailed Nov. 29, 2018). We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We AFFIRM.

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. 2.

CLAIMED SUBJECT MATTER

The Appellant’s invention “relates generally to gas turbine engines and, more particularly, relates to sheaths for airfoils used in gas turbine engines.” Spec. ¶ 2. Claim 1, reproduced below, is illustrative of the subject matter on appeal.

1. A sheath for an airfoil, the sheath comprising:
 - a solid member forming an outer edge, the outer edge including a main portion and a projecting portion, the projecting portion having a variable dimension;
 - a pressure side flank, the pressure side flank projecting from the solid member opposite the outer edge;
 - a suction side flank, the suction side flank projecting from the solid member opposite the outer edge, the pressure side flank and the suction side flank forming a receiving cavity, wherein a dimension of the projecting portion adjacent to the main portion is equal to a dimension of the main portion adjacent to the projecting portion and the dimension of the projecting portion increases in a span-wise direction away from the main portion and wherein the projecting portion is configured to protect an area of the airfoil proximate to a root of the airfoil, wherein the area of the airfoil extends axially forward from the root.

REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Deal et al. (“Deal”)	US 2011/0211967 A1	Sept. 1, 2011
Alexander	US 2011/0229334 A1	Sept. 22, 2011
Murooka (“Murooka ’065”)	US 2013/0323065 A1	Dec. 5, 2013
Murooka (“Murooka ’736”)	WO 2012/090736 A1	July 5, 2012

REJECTIONS²

Claims 1, 3–5, 7, 9–11, 15, 16, 18, and 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Murooka '736³ and Alexander.

Claims 2, 8, 13, 14, and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Murooka '736, Alexander, and Deal.

OPINION

Independent claim 1 calls for a sheath for an airfoil having a solid member with a “projecting portion . . . configured to protect an area of the airfoil proximate to a root of the airfoil, wherein the area of the airfoil extends axially forward from the root.” Appeal Br. 18 (Claims App.). Independent claims 7 and 16 call for an airfoil and a method of protecting a leading edge of an airfoil, respectively, and each claim requires a sheath with the same projecting portion as claim 1. *See id.* at 19, 20–21.

The Appellant argues that Murooka '736 and Alexander fail to teach, alone or in combination, the projecting portion as required by claim 1. *Id.* at 6. More specifically, the Appellant argues:

Murooka does not teach or disclose at least “an area of the airfoil proximate to a root of the airfoil, wherein the area of the airfoil extends axially forward from the root” let alone a “projecting portion [of the sheath that] is configured to protect” the area of the airfoil [that] extends axially forward from the root.

² The rejection of claims 1–5, 7–16, and 18–20 under 35 U.S.C. § 112(b) as being indefinite is withdrawn. Ans. 3.

³ The Examiner cites to Murooka '065 as an English translation of Murooka '736. *See* Final Act. 4.

Id. at 6–7 (first bracket in original, second bracket added). Similarly, the Appellant argues:

Alexander also does not teach or disclose at least “an area of the airfoil proximate to a root of the airfoil, wherein the area of the airfoil extends axially forward from the root” let alone a “projecting portion [of the sheath that] is configured to protect” the area of the airfoil [that] extends axially forward from the root.

Id. at 8 (first bracket in original, second bracket added); *see* Reply Br. 5–6. The Appellant argues the rejection of claims 7 and 16 for the same reasons. *See* Appeal Br. 9–12, 13–16. The Appellant’s argument is not persuasive of Examiner error.

The Examiner finds that Murooka ’736 teaches sheath 71 for airfoil 57. Final Act. 4. The Examiner finds that sheath 71 includes projecting portion 75, 81, which “is configured to protect an area of the airfoil proximate to a root of the airfoil,” as recited in claim 1. *Id.* at 4–5 (citing Murooka ’065 ¶ 50, Figs. 4–5).

The Examiner finds that Murooka ’736 fails to teach, “wherein the area of the airfoil extends axially forward from the root,” as recited in claim 1. *Id.* at 5. To remedy this deficiency, the Examiner turns to Alexander. *Id.* (citing Alexander ¶¶ 13–15, Fig. 3). The Examiner explains that Alexander teaches cutting back airfoil 11 at point 17. *See* Ans. 5–6. Alexander references the portion that is removed from airfoil 11 as cut back 17a. Alexander ¶ 15. Cut back 17a removes a portion of root 13 and a portion of airfoil 11 that is at and/or near the leading edge of airfoil 11, but is not a part of root 13. *See* Ans. 6; Alexander, Fig. 3. As shown in Alexander’s Figure 3, the axial forward position of the remainder of root 13 is positioned behind the axial forward position of the remainder of airfoil’s

leading edge. *See* Ans. 6 (annotating Alexander, Fig. 3). Stated differently, Alexander teaches in Figure 3 the use of an airfoil that has a portion that extends axially forward from root 13. From this teaching, one of ordinary skill in the art would understand that the prior art includes a teaching of an airfoil with an area that extends axially forward from the airfoil's root.

In light of the foregoing, we determine that the Appellant's argument fails to persuasively explain why the combination of teachings of Murooka '736 and Alexander fails to result in a "projecting portion . . . configured to protect an area of the airfoil proximate to a root of the airfoil, wherein the area of the airfoil extends axially forward from the root," as recited in claims 1, 7, and 16. In this case, the Appellant argues that each of Murooka '736 and Alexander fails to teach the entirety of the foregoing recitation. As explained by the Examiner, the Appellant argues against the references individually, rather than what the combination of the teachings from both references teaches one of ordinary skill in the art. *Id.* at 4.

Further, we note that although Alexander teaches an airfoil with a sheath (e.g., sheath 21) (Alexander ¶¶ 7, 15), the Examiner's rejection does not rely on Alexander's teaching of a sheath to modify the sheath of Murooka '736. Rather, as discussed above, the Examiner's rejection is based on a modification of Murooka '736's airfoil to have a cut back portion, as taught by Alexander. *See* Final Act. 4–6; Ans. 4–6.

The Appellant argues "that *in addition to the arguments made in Appellant's Appeal Brief*, the proposed modifications to Mur[o]oka['736] would modify the blade of Mur[o]oka['736] in a manner that would make it inoperable for its intended use." Reply Br. 2 (emphasis added); *see also id.* at 2–5, 6. This argument is provided for the first time in the Reply Brief and

is not responsive to an argument raised in the Examiner's Answer. The Appellant fails to show good cause for not presenting this argument in the opening brief. Therefore, we will not consider this argument. *See* 37 C.F.R. § 41.41(b)(2) ("Any argument raised in the reply brief which was not raised in the appeal brief, or is not responsive to an argument raised in the examiner's answer, including any designated new ground of rejection, will not be considered by the Board for purposes of the present appeal, unless good cause is shown."); *see also id.* at § 41.37(c)(1)(iv) ("Except as provided for in §§ 41.41, 41.47 and 41.52, any arguments or authorities not included in the appeal brief will be refused consideration by the Board for purposes of the present appeal.").

Thus, we sustain the Examiner's rejection of independent claims 1, 7, and 16. For each of dependent claims 2–5, 8–11, 13–15, and 18–20, the Appellant solely relies on the argument for the independent claim from which the claim depends. Appeal Br. 9, 12–13, 16. For the reasons discussed above, we sustain the Examiner's rejection of claims 2–5, 8–11, 13–15, and 18–20.

CONCLUSION

The Examiner's decision to reject claims 1–5, 7–11, 13–16, and 18–20 is affirmed.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Basis	Affirmed	Reversed
1, 3–5, 7, 9–11, 15, 16, 18, and 19	103(a)	Murooka '736 and Alexander	1, 3–5, 7, 9–11, 15, 16, 18, and 19	
2, 8, 13, 14, and 20	103(a)	Murooka '736, Alexander, and Deal	2, 8, 13, 14, and 20	
Overall Outcome			1–5, 7–11, 13–16, and 18–20	

TIME PERIOD FOR RESPONSE

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