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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte PETER GRABAU

Appeal 2016-000105
Application 12/086,649¹
Technology Center 2800

Before ADRIENE LEPIANE HANLON, CATHERINE Q. TIMM, and
JAMES C. HOUSEL, *Administrative Patent Judges*.

PER CURIAM.

DECISION ON APPEAL

A. STATEMENT OF THE CASE

Appellant filed an appeal under 35 U.S.C. § 134(a) from the Examiner's decision finally rejecting claims 1–4, 6, 7, and 12–15² under 35 U.S.C. § 103(a) as unpatentable over Johnston³ in view of Herr⁴ and Grabau '060⁵ and rejecting claims 8–10 under 35 U.S.C. § 103(a) as unpatentable over Johnston in view of Herr and Grabau '060 and further in view of Grabau '500.⁶

¹ According to Appellant, the real party in interest is LM Glasfiber A/S. Br. 3.

² Claim 5 was canceled via an amendment dated March 4, 2013 and is not before us on appeal.

³ Johnston et al., US 4,976,587, issued Dec. 11, 1990 (“Johnston”).

⁴ Herr, US 2007/0065290 A1, published Mar. 22, 2007 (“Herr”).

⁵ Grabau et al., US 2004/0115060 A1, published June 17, 2004 (“Grabau '060”).

⁶ Grabau, WO 95/19500 A1, published July 20, 1995 (“Grabau '500”).

We have jurisdiction under 35 U.S.C. § 6(b).⁷

We AFFIRM.

STATEMENT OF THE CASE

The subject matter on appeal relates to wind turbine blades and methods of designing wind turbine blades (*see, e.g.*, claims 1 and 14). Appellant discloses that blades for aircraft, wind turbines, and other devices include a series of profiles that are cross-sections of the blade in various positions along the length of the blade. Spec. p. 1, ll. 10–12. Areas between the different profiles are interpolated or blended so a smooth transition is made between profiles. *Id.* at p. 1, ll. 17–20. There are problems with the rear edge of a blade, however, such as exposure to large fatigue loads, which leads to wear and repair of the rear edge. *Id.* at p. 1, ll. 22–23, 29–30. Appellant discloses a blade having a series of profiles in which the profile describing at least a portion of the rear edge is the same. *Id.* at p. 2, l. 29 to p. 3, l. 2. This enables the rear edge to be manufactured in a quick and inexpensive manner. *Id.* at p. 3, ll. 3–8. Moreover, the rear edge may be made of a different material than the blade, may be simple to replace when it is damaged or worn, and may be made with a higher degree of accuracy than when the rear edge is made as part of the blade. *Id.* at p. 3, ll. 12–14, 19–20; p. 8, l. 31 to p. 9, l. 2.

Independent claim 1 is illustrative and is reproduced below from the Claims Appendix of the Appeal Brief.⁸ The limitations at issue are italicized.

⁷ Our decision refers to the Appellant's Specification filed June 17, 2008 (Spec.), the Final Office Action mailed July 9, 2014 (Final Act.), the Appeal Brief filed Dec. 9, 2014 (Br.), and the Examiner's Answer mailed July 23, 2015 (Ans.).

⁸ Br. Claims Appendix 17.

1. A wind turbine blade wherein at least a portion of the blade is described by an airfoil family, the airfoil family comprising several different airfoils of differing sizes describing the desired outline of said wind turbine blade transversally to its longitudinal axis, characterised in that:

the different sized airfoils in the airfoil family have an identical airfoil rear trailing edge profile shape and size describing at least a portion of the desired rear trailing edge of the blade, wherein the shape of the airfoil rear trailing edge profile is curvilinear and wherein the wind turbine blade has an identical airfoil rear trailing edge profile shape and size along the length of said portion of the blade.

B. DISCUSSION

Rejection over Johnston in view of Herr and Grabau '060

Claims 1–4, 6, 7, and 12–15 are rejected under 35 U.S.C. § 103(a) as unpatentable over Johnston in view of Herr and Grabau '060. We select claim 1 as representative for discussing the issues on appeal.

The dispositive issue on appeal is whether Appellant has demonstrated a reversible error in the Examiner's finding that the combination of Johnston, Herr, and Grabau '060 would have suggested a wind turbine blade described by an airfoil family having the airfoil rear trailing edge profile recited in claim 1.

The Examiner finds Johnston discloses a wind turbine blade in which at least a portion of the blade is described by an airfoil family, wherein the airfoil family includes several different airfoils of different sizes that describe the outline of the blade, including a rear trailing edge. Final Act. 2–3. The Examiner finds Johnston does not disclose that the rear trailing edge has a rear trailing edge profile identical in shape and size along a length of a portion of the blade or that the shape of the rear trailing edge profile is curvilinear. *Id.* at 3.

The Examiner finds Herr discloses an airfoil having a rear trailing edge profile that is identical in shape and size along a length of a portion of the blade,

citing the acoustic flap 136 disclosed by Herr. *Id.* The Examiner finds Grabau ‘060 discloses a flap having a rear trailing edge profile that is curvilinear. *Id.* The Examiner concludes it would have been obvious to use the rear trailing edge of Herr to reduce acoustic noise generated by a blade, as disclosed by Herr, and modify the shape of the flap to be curvilinear to achieve maximum power output as disclosed by Grabau ‘060. *Id.* at 3–4.

Appellant argues that Herr and Grabau ‘060 “each disclose add-on flaps attached at the trailing edge of the blade.” Br. 9. In contrast, Appellant argues that the trailing edge in Appellant’s invention “is not provided as an add-on to a wind turbine blade airfoil profile, but instead as a section of the profile itself.” *Id.* at 11 (emphasis omitted). In view of these arguments, Appellant argues modifying Johnston in view of Herr and Grabau ‘060 would result in a flap attached to the blade, which would not provide the airfoil rear trailing edge profile of claim 1. *Id.* at 13–14.

In response to Appellant’s arguments, the Examiner explains that when the flap of Herr is attached to a blade body it becomes an integral part of an airfoil that includes both the blade body and the flap. Ans. 5. More specifically, the Examiner finds the flap of Herr is the rear trailing edge of an airfoil (i.e., “it is the edge of the airfoil which passes through the air last during operation” (*id.*)) and finds Herr discloses the flap may be ““integrally or monolithically formed into the blade body 130”” if desired. *Id.*; *see also* Herr ¶ 21 (disclosing an embodiment in which “the flap 136 may be integrally or monolithically formed into the blade body 130 if desired”). Thus, in the modification proposed by the Examiner, the blade of Johnston includes the flap of Herr as an integral part, with the flap being the rear

trailing edge of the blade.⁹ Ans. 6. Significantly, Appellant has not responded to the explanation and findings presented by the Examiner in the Answer and thus has not demonstrated reversible error.

Appellant further argues there would have been no motivation to combine Herr and Grabau '060 with the disclosure of Johnston because Herr is directed to reducing the acoustic noise of a blade and Grabau '060 is directed to maximizing the power output of a blade. Br. 9. This argument is unpersuasive. As stated by the Examiner, Appellant has not shown that noise reduction and power output are mutually exclusive or otherwise provided any explanation or reasoning to support their argument. Ans. 3–4.

Appellant does not present any arguments in support of the separate patentability of claims 2–4, 6, 7, and 12–15. Br. 14. Therefore, the § 103(a) rejection of claims 1–4, 6, 7, and 12–15 over the combination of Johnston, Herr, and Grabau '060 is sustained.

Rejection over Johnston, Herr, Grabau '060, and Grabau '500

Claims 8–10 are rejected under 35 U.S.C. § 103(a) as unpatentable over Johnston in view of Herr and Grabau '060 and further in view of Grabau '500. Appellant does not present any arguments in support of the separate patentability of claims 8–10. Rather, Appellant contends Grabau '500 does not remedy the deficiencies of the references applied in the rejection of claim 1. Br. 15. For the reasons set forth above, there are no deficiencies in the rejection of claim 1 that require curing by Grabau '500. Therefore, the § 103(a) rejection of claims 8–10

⁹ In the rejection on appeal, the Examiner further modifies the shape of the flap (or rear trailing edge of the blade) to be curvilinear based on the teachings in Grabau '060.

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over the combination of Johnston, Herr, Grabau '060, and Grabau '500 is also sustained.

C. DECISION

The decision of the Examiner is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1).

AFFIRMED