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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte THOMAS N. SLAVENS,
DOMINIC J. MONGILLO JR., and MATTHEW A. DEVORE

Appeal 2018-001968
Application 14/633,677
Technology Center 3700

Before BRETT C. MARTIN, JILL D. HILL, and
JEFFREY A. STEPHENS, *Administrative Patent Judges*.

STEPHENS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant¹ seeks our review under 35 U.S.C. § 134(a) from the Examiner's Final Office Action ("Final Act.") rejecting claims 1–19. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

¹ Appellant is the Applicant, United Technologies Corp., identified by the Appeal Brief as the real party in interest. Appeal Br. 1.

Claimed Subject Matter

Claims 1, 10, and 16 are independent. Claim 1, reproduced below, illustrates the claimed subject matter.

1. A gas turbine engine component, comprising:
 - an airfoil having a leading edge area that corresponds to a stagnation traverse region of the airfoil;
 - a first circuit to cool a first section of the leading edge area;
 - and
 - a second circuit to cool a second section of the leading edge area, the first circuit separate and distinct from the second circuit within the airfoil.

Rejections

I. Claims 1–7 and 16–19 stand rejected under 35 U.S.C. § 102(a)(1) as anticipated by Kercher (US 5,356,265, issued Oct. 18, 1994). Final Act. 6–11.

II. Claims 1–9 and 16–19 stand rejected under 35 U.S.C. § 102(a)(1) as anticipated by Eneau (US 2003/0044278 A1, published Mar. 6, 2003). Final Act. 11–15.

III. Claims 10–15 stand rejected under 35 U.S.C. § 103 as unpatentable over Kercher and Wetzler (US 3,584,458, issued June 15, 1971). Final Act. 16–19.

DISCUSSION

Rejection I – 35 U.S.C. § 102(a)(1) – Kercher

Claims 1–7, 16–19

The Examiner finds Kercher discloses an airfoil with a leading edge area and first and second circuits to cool sections of the leading edge area. Final Act. 6–7 (citing Kercher col. 3, ll. 11–14, col. 5, ll. 43–45, col. 5, ll.

48–55, Figs. 1, 2). The Examiner finds Kercher’s first circuit cools a first section of the leading edge area that corresponds to a stagnation traverse region of the airfoil. *Id.* at 7 (citing Kercher col. 5, ll. 53–55, Figs. 1, 2).

Appellant argues the rejection fails to show a teaching in Kercher of a leading edge area that corresponds to a “stagnation traverse region of the airfoil,” where a first and second cooling circuit cool sections of that leading edge area. Appeal Br. 3. Appellant notes that the Examiner admits Kercher fails to explicitly disclose that the leading edge area of the airfoil “corresponds to a stagnation traverse region of the airfoil,” as recited in claim 1, and similarly recited in independent claim 16. *Id.* (citing Final Act. 3). Appellant acknowledges the Examiner’s finding that the stagnation traverse region is “variable” and “incorporated in the leading edge area,” but argues these findings are insufficient to show Kercher discloses a stagnation traverse region of the airfoil, where a first and second cooling circuit cool sections of that leading edge area. *Id.*

The Examiner responds that “[t]he stagnation traverse region is not a structural element positively recited in the claims, but rather is a geographical designation.” Ans. 3. The Examiner finds “this imaginary region is not an independent region on the blade,” and “is dependent on the environment in which the blade is installed.” *Id.* The Examiner interprets the stagnation traverse region as a region of the airfoil traversed by the maximum stagnation point due to a change of the angle of an adjustable guide vane (AGV). *Id.* at 4 (citing Spec. ¶¶ 5, 9); *see also* Spec. ¶ 53 (“The leading edge area 100 is the portion of the airfoil 72 traversed by a maximum stagnation point of flow across the airfoil 72 throughout the one-hundred-eighty degrees of incident angle shift.”). The Examiner reasons:

Both airfoils of the Appellant as well as the airfoil of Kercher, when installed downstream of an AGV, will have a maximum stagnation point that traverses a region due to the change of the angle of the AGV and the associated flow. Without an AGV, the maximum stagnation point is fixed and will not change nor traverse and there won't be any stagnation traverse region neither in the Appellant's airfoil nor in the Kercher's airfoil. In the presence of an AGV, both airfoils of Appellant and Kercher will have similar stagnation traverse regions which are dictated by the AGV and its range of angle of movement, independent of the airfoil. Hence, the leading edge of Kercher corresponds to a stagnation traverse region in as much as Appellant's leading edge does.

Id.

We agree with the Examiner's construction of the stagnation traverse region, and that the boundaries of the stagnation traverse region for a given airfoil will depend on the environment in which the blade is installed. Nonetheless, the stagnation traverse region of Kercher's airfoil must be identified in order to show anticipation. Otherwise, the limitation is, in effect, read out of the claim. Although Kercher's airfoil and the airfoil described in Appellant's Specification are similar, absent teaching of an adjustable guide vane or the like to vary the incidence angle through 180 degrees, Kercher does not disclose that the two cooling circuits identified by the Examiner will cool sections of the airfoil that correspond to a stagnation traverse region of the airfoil.

In view of the foregoing, we do not sustain the rejection of claims 1 and 16, and we do not sustain the rejection on the same ground of claims 2–7 and 17–19, which depend from claim 1 or claim 16.

*Rejection II – 35 U.S.C. § 102(a)(1) – Eneau
Claims 1–9, 16–19*

The rejection of claims 1–9 and 16–19 as anticipated by Eneau is in error for the same reasons discussed above for the rejection based on Kercher. Thus, we do not sustain the rejection.

*Rejection III – 35 U.S.C. § 103
Claims 10–15*

Appellant argues the rejection of claims 10–15 based on Kercher and Wetzler under 35 U.S.C. § 103 is in error for the same reasons argued in support of claims 1 and 16 because the obviousness rejection similarly relies on Kercher for teaching the second circuit recited in claim 10. Appeal Br. 10. We agree with Appellant that Wetzler does not cure the deficiencies discussed above for claims 1 and 16. Wetzler teaches variable setting vanes, Wetzler col. 2, ll. 24–27, and the Examiner explains why one of ordinary skill in the art would have placed a variable vane array upstream of Kercher’s turbine blades, *see* Final Act. 17. The rejection does not, however, explain why one of ordinary skill in the art would have situated the variable vane array such that two circuits would cool a leading edge area that corresponds to a stagnation traverse region of the airfoil.

Accordingly, we do not sustain the rejection of claim 10 under 35 U.S.C. § 103, or the rejection on the same ground of dependent claims 11–15.

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DECISION

We reverse the Examiner's decision to reject claims 1–19.

REVERSED