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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SAN QUACH and THOMAS N. SLAVENS

Appeal 2019-002389¹
Application 15/022,356²
Technology Center 3700

Before PHILIP J. HOFFMANN, KENNETH G. SCHOPFER, and
ROBERT J. SILVERMAN, *Administrative Patent Judges*.

SCHOPFER, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the rejection of
claims 1–10 and 13–20. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ Our decision references the Appeal Brief (“Appeal Br.,” filed Nov. 2, 2018), the Reply Brief (“Reply Br.,” filed Jan. 29, 2019), the Examiner’s Answer (“Ans.,” mailed Jan. 2, 2019), and the Final Office Action (“Final Act.,” mailed June 22, 2018).

² According to Appellants, the real party in interest is United Technologies Corporation. Appeal Br. 1.

BACKGROUND

The Specification discloses that the “application relates to cooling a tip of a gas turbine engine airfoil.” Spec. ¶ 2.

CLAIMS

Claims 1 and 13 are the independent claims on appeal. Claim 1 is illustrative of the appealed claims and recites:

1. A gas turbine engine component comprising:
 - an airfoil extending from a platform to a tip at an end of said airfoil spaced from said platform;
 - said airfoil having a suction wall and a pressure wall, with at least one channel extending toward said tip from said platform, a plenum communicating with said at least one channel, and said plenum flowing from said suction wall toward said pressure wall at said tip to communicate with cooling holes near said pressure wall; and
 - said plenum having a reduced cross-sectional area between said suction wall and said pressure wall, and an increased cross-sectional area downstream of said reduced cross-sectional area, and within said airfoil.

Appeal Br. 4.

REJECTION

The Examiner rejects claims 1–10 and 13–20 under 35 U.S.C. § 103 as unpatentable over Liang³ in view of Leeke.⁴

³ Liang, US 7,530,789 B1, iss. May 12, 2009.

⁴ Leeke et al., US 6,592,330 B2, iss. July 15, 2003.

DISCUSSION

Claim 1–6 and 8–10

With respect to claim 1, the Examiner finds that Liang teaches a gas turbine engine component as claimed except that Liang does not teach a platform, for which the Examiner relies on Leeke. Final Act. 3. More specifically, the Examiner finds that Liang teaches an airfoil including “at least one channel (21, 22, 31, 32)” and “a plenum (23, 33, 43) communicating with said at least one channel,” flowing from the suction side to the pressure side, and having a reduced cross-sectional area as claimed.

As discussed below, we are not persuaded of error in these findings by Appellants’ arguments.

Appellants first argue that “[t]he Examiner is reading the holes 43 as being ‘reduced cross-sectional area,’ but the Liang holes 43 do not have an increased cross-sectional area downstream of this reduced cross-sectional.” Appeal Br. 2. We are not persuaded by this argument because the Examiner does not rely on the hole 43 as the claimed area of the plenum with an increased cross-sectional area. Rather, as the Examiner explains in the Answer, the identified plenum consists of elements 23, 33, and 43, which are shown to have a direction of cooling from 23 to 43 to 33 such that element 33 is the area of increased cross-section claimed. *See* Ans. 3. Appellants do not explain why this interpretation of Liang is incorrect.

In their reply, Appellants also indicate that the Examiner is using an “unfair” interpretation of a plenum. Reply Br. 1. Here, Appellants discuss only whether element 23 may be considered a plenum. We are not persuaded of error. First, as noted above, the Examiner relies on a

combination of elements 23, 33, and 43 as the claimed plenum, and thus, it is not entirely clear how Appellants' arguments with respect to only one of those elements are germane to the rejection before us. Second, Appellants indicate only that element 23 is a portion of the same channel including elements 21 and 22. But this argument does not explain why element 23 may not also be considered part of a plenum, as identified by the Examiner.

Finally, Appellants argue that "since leg 23 would appear to extend for a radial distance as great as leg 22 it could hardly be called a plenum 'at said tip.'" Reply Br. 1. Appellants do not provide further explanation. The fact that element 23 may extend the same distance as another element says nothing about whether it may be considered to be located at the tip of the airfoil.

Based on the foregoing, we are not persuaded of error in the rejection of claim 1. Accordingly, we sustain the rejection of this claim. We also sustain the rejection of dependent claims 2–6 and 8–10, which depend from claim 1 and for which Appellants do not provide separate arguments.

Claim 7

Claim 7 depends from claim 1 and further requires "wherein said at least one channel is a plurality of suction wall channels." Appeal Br. 5. The Examiner finds that elements 31 and 32 are suction wall channels that are part of the channel identified with respect to claim 1. Final Act. 5. Appellants first argue that the identified channels 21, 22, 31, and 32 "each communicate with different 'plenum' (23, 33, 43)" and "[t]hese are not plural and also communicating with A plenum." Appeal Br. 3 (emphasis omitted); *see also* Reply Br. 2. We disagree for the reasons provided by the Examiner. Specifically, we agree with the Examiner that elements 21, 22,

31, and 32 form a channel and are in fluid communication with the identified plenum 23, 33, and 43. Ans. 4. Liang discloses that elements 21 and 31 are in fluid communication; elements 22 and 32 are in fluid communication; elements 23, 43, and 33 are in fluid communication; and elements 21, 22, and 23 are in fluid communication. Liang Fig. 1. Thus, one of ordinary skill in the art may reasonable consider all these elements to be in fluid communication. Therefore, without further explanation from Appellants, we fail to see any error in the Examiner's findings. Accordingly, we sustain the rejection of claim 7.

Claim 13–20

Independent claim 13 recites substantially the same structure of an airfoil as recited in claim 1. *See* Appeal Br. 4–5. The Examiner relies on substantially the same findings in rejecting claim 13 as those presented with respect to the rejection of claim 1. Final Act. 5–6. Appellants rely on the arguments addressed above with respect to both claims 1 and 7, which we also find unpersuasive here. *See* Appeal Br. 2–3; *see also* Reply Br. 1–2. Accordingly, we sustain the rejection of claim 13 for the reasons discussed above. We also sustain the rejection of dependent claims 14–20, for which Appellants do not present separate arguments.

CONCLUSION

We AFFIRM the rejection of claims 1–10 and 13–20.

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)(iv).

AFFIRMED