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CARLSON, GASKEY & OLDS/PRATT & WHITNEY 400 West Maple Road Suite 350 Birmingham, MI 48009			PETERS, BRIAN O	
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte BRANDON W. SPANGLER and LAURIE L. BURSTYNSKI

Appeal 2019-002775
Application 14/853,286
Technology Center 3700

Before JENNIFER D. BAHR, MICHAEL J. FITZPATRICK, and
WILLIAM A. CAPP, *Administrative Patent Judges*.

FITZPATRICK, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant, United Technologies Corporation,¹ appeals under 35 U.S.C. § 134(a) from the Examiner's final decision rejecting claims 1–3, 5–7, 9–15, 17, and 19. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

¹ Appellant is the “applicant” as defined under 37 C.F.R. § 1.42(b) and is identified as the sole real party in interest. Appeal Br. 1.

STATEMENT OF THE CASE

The Specification

The Specification's disclosure relates generally to gas turbine engines and, more specifically, to particular configurations for cooling an airfoil tip. Spec. ¶2.

The Rejected Claims

Claims 1–3, 5–7, 9–15, 17, and 19 are rejected; no other claims are pending. Final Act. 1. Appellant argues the patentability of these claims together. Appeal Br. 3–5. We select claim 1 as representative. *See* 37 C.F.R. § 42.37(c)(1)(iv). Claim 1 is reproduced below.

1. An airfoil for a gas turbine engine comprising:
pressure and suction walls spaced apart from one another and joined at leading and trailing edges to provide an airfoil having an exterior surface that extends in a radial direction to a tip; and

a film cooling hole provided in the tip extending at an angle relative to the radial direction, the film cooling hole includes a diffuser, wherein the film cooling hole includes a metering portion extending along an axis, the axis and radial direction arranged at an acute angle, *wherein the diffuser breaks the tip at a perimeter that is generally rectangular in shape having a length and a width, the length greater than the width, the length extending in the chord-wise direction.*

Appeal Br. 6 (emphasis added).

The Examiner's Rejection

The sole rejection before us for review is: claims 1–3, 5–7, 9–15, 17, and 19, under 35 U.S.C. § 103, as unpatentable over Soechting² and Lee.³
Final Act. 5.

DISCUSSION

The Examiner found that Soechting teaches all of the subject matter of claim 1 except for the recited “rectangular” shape of the perimeter where the cooling hole’s diffuser portion breaks the tip surface. Final Act. 5 (citing Soechting Figs. 3A and 4A. Soechting instead employs a round shape for its corresponding perimeter. *See, e.g.*, Fig. 2A (ref. 39). The Examiner found that Lee teaches a turbine blade with a tip comprising cooling holes, the diffusers of which have the rectangular-shaped perimeters where they break the tip surface. Final Act. 6 (citing Lee Figs, 1 and 4). The Examiner concluded:

[A]bsent persuasive evidence that the particular shape of the diffuser is significant, it would have been an obvious design choice to one of ordinary skill in the art, before the filing of the claimed invention, to modify the circular shaped diffuser, as taught by Soechting, by utilizing a known rectangular shaped diffuser, as taught by Lee, in order to achieve the predictable result of providing an exit for the cooling fluid. *See In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966), MPEP 2144 (IV)(B).

Id.

Appellant does not dispute the individual teachings of the references identified by the Examiner. Appeal Br. 3–5. Appellant suggests, however, that *Dailey* is no longer good law, and directs our attention instead to

² US 6,994,514 B2, issued Feb. 7, 2006 (“Soechting”).

³ US 7,510,376 B2, issued Mar. 31, 2009 (“Lee”).

Cutsforth, Inc. v. Motivepower, Inc., 636 Fed. Appx. 575 (Fed. Cir. 2016). Appeal Br. 3–4; *see also* Ans. 1 (“[I]t appears more likely that the design choice standard has changed or become clearer in the 50 years between *Dailey* and *Cutsforth*.”). Appellant quotes *Cutsworth* as holding: “Merely stating that a particular placement of an element is a design choice does not make it obvious. The Board must offer a reason for why a person of ordinary skill in the art would have made the specific design choice to locate the springs on the mounting block.” Appeal Br. 4 (quoting *Cutsforth*, 636 Fed. Appx. at 578).

Cutsworth is inapposite to the facts before us. In *Cutsworth*, there is no mention of a prior art reference teaching the asserted design choice “to locate the springs on the mounting block.” 636 Fed. Appx. at 578. Here, Lee explicitly teaches that a rectangular perimeter may be employed at the tip surface. Also, the Examiner provided a reason why a person of ordinary skill in the art would employ the shape of Lee’s diffuser: “to achieve the predictable result of providing an exit for the cooling fluid.” Final Act. 6; *see also* Ans. 2 (“The specific reason for changing the shape of the perimeter was to provide an exit for the cooling fluid as taught by prior art Lee.”).

For the foregoing reasons, we affirm the rejection of claim 1 as unpatentable over Soechting and Lee, as well as that of claims 2, 3, 5–7, 9–15, 17, and 19, which fall therewith. 37 C.F.R. § 41.37(c)(1)(iv).

SUMMARY

Claims Rejected	Basis	Affirmed	Reversed
1-3, 5-7, 9-15, 17, and 19	§103; Soechting and Lee	1-3, 5-7, 9-15, 17, and 19	
Overall Outcome		1-3, 5-7, 9-15, 17, and 19	

AFFIRMED