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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/917,879	03/09/2016	Thomas N. Slavens	67097-2603PUS1;73180US02	6194
54549	7590	03/17/2020	EXAMINER	
CARLSON, GASKEY & OLDS/PRATT & WHITNEY			HASAN, SABBIR	
400 West Maple Road			ART UNIT	
Suite 350			PAPER NUMBER	
Birmingham, MI 48009			3745	
			NOTIFICATION DATE	
			DELIVERY MODE	
			03/17/2020	
			ELECTRONIC	

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* THOMAS N. SLAVENS, MARK F. ZELESKY, ATUL KOHLI,  
SEAN D. BRADSHAW, and STEVEN BRUCE GAUTSCHI

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Appeal 2019-004875  
Application 14/917,879  
Technology Center 3700

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Before JAMES P. CALVE, MICHAEL J. FITZPATRICK, and  
LISA M. GUIJT, *Administrative Patent Judges*.

FITZPATRICK, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant, United Technologies Corporation,<sup>1</sup> appeals under 35 U.S.C. § 134(a) from the Examiner's final decision rejecting claims 1–10, 12–15, 17, 18, and 20–23. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

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<sup>1</sup> Appellant identifies itself as the sole real party in interest. Appeal Br. 1.

STATEMENT OF THE CASE

*The Specification*

The Specification “relates to a gas turbine engine including a component having a leading edge, a pressure side and a suction side.” Spec. ¶3. “The component includes a first group of holes in the leading edge and a second group of holes in one of the pressure side and the suction side,” and further includes first and second core passageways that are separate from one another but in communication with a respective group of holes. *Id.*

*The Claims*

Claims 1–10, 12–15, 17, 18, and 20–23 are rejected. Final Act. 1. No other claims are pending. *Id.* Claims 1, 10, and 15 are independent. Appeal Br. 11–15 (Claims App.). Claim 1 is illustrative and reproduced below.

1. A gas turbine engine, comprising:
  - a component having a leading edge, a pressure side and a suction side,
  - the component including a first group of holes in the leading edge and a second group of holes in one of the pressure side and the suction side,
  - the component including a first core passageway and a second core passageway separate from the first core passageway,
  - the first core passageway and the second core passageway in communication with a respective one of the first group of holes and the second group of holes,
  - wherein the component includes a passageway formed in a wall of the component and configured to feed fluid from the second core passageway to the second group of showerhead holes in series.

*Id.* at 11 (paragraphing added).

*The Examiner's Rejections*

The following rejections are before us:

1. claims 1–10, 12–15, 17, 18, and 20–23, under 35 U.S.C. § 112(b), as indefinite (*id.* at 2); and
2. claims 1–10, 12–15, 17, 18, and 20–23, under 35 U.S.C. § 103, as unpatentable over by Santeler<sup>2</sup> and Krause<sup>3</sup> (*id.* at 3).

DISCUSSION

*Rejection 1—Indefiniteness*

The Examiner rejected all pending claims because the recitation of “the second group of showerhead holes” in independent claims 1 and 15 “lacks antecedent basis.” Final Act. 2. The Examiner asserted: “**Claims 2–10, 12–14, 17–18, 20–23** are rejected by virtue of their dependency.” *Id.*<sup>4</sup>

Claims 10 and 12–14

Claim 10 is independent, and claims 12–14 ultimately depend from claim 10 (and not from either of claims 1 and 15). Because the Examiner did not provide any basis on which to reject claims 10 and 12–14 as indefinite, we reverse the rejection of those claims.

Claims 1–9, 15, 17, 18, and 20–23

As to the remaining claims, Appellant argues that antecedent basis is not lacking; rather, it is provided by the prior recitation -- in each of claims 1

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<sup>2</sup> US 7,438,118 B2, issued Oct. 21, 2008 (“Santeler”).

<sup>3</sup> US 5,931,638, issued Aug. 3, 1999 (“Krause”).

<sup>4</sup> The Examiner rejected claim 4 as indefinite for the additional reason that its “recitation of ‘a first passageway’ lacks antecedent basis.” Final Act. 2. However, the Examiner ultimately withdrew that as a basis for rejecting claim 4. Ans. 3.

and 15 -- of “a second group of holes.” Appeal Br. 7; *see also id.* at 11 (claim 1), 14 (claim 15). Appellant’s argument is that:

One skilled in the subject art is intimately familiar with gas turbine engine design. Such persons are colloquially referred to as “rocket scientists,” and typically have strong mechanical and/or aerospace engineering backgrounds. Persons of such intellect are capable of understanding that Appellant’s reference to “second group of showerhead holes” referred back to the previously-introduced “second group of holes,” considering that the “second group of holes” are configured to generate a “showerhead” film, as explained in Appellant’s disclosure, and especially considering that there is no other “second group” of holes introduced earlier in the claim to which Appellant could be referencing. Accordingly, claims 1 and 15 are not indefinite.

*Id.* The Examiner responds that “limitations are not [to be] imported from the specification.” Ans. 4.

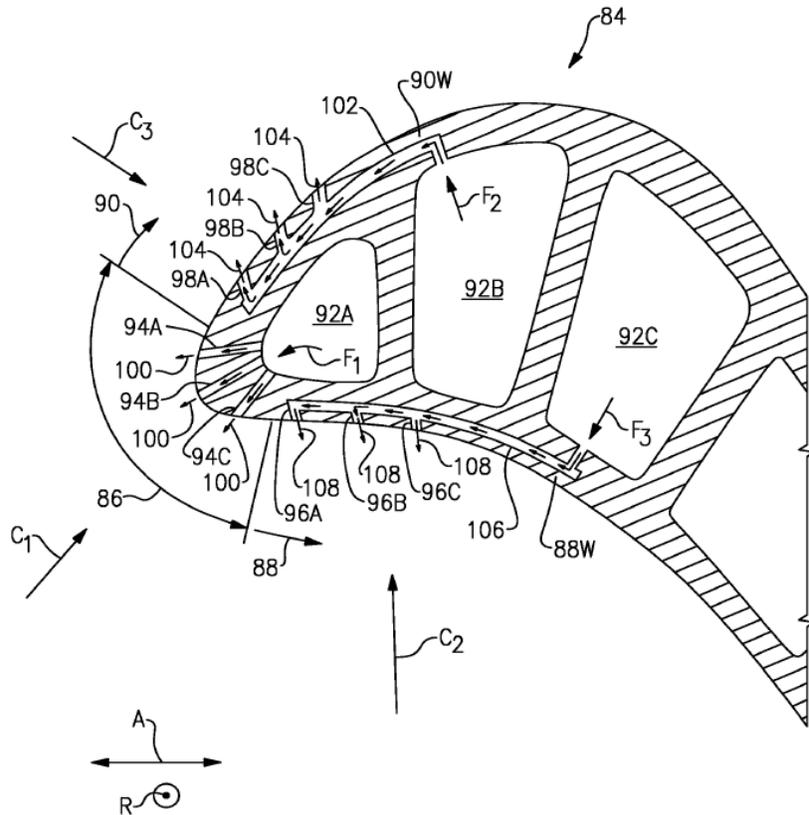
We do not agree with the Examiner that Appellant’s argument seeks to import limitations into the claims. The limitation at issue, “the second group of showerhead holes,” is recited in claims 1 and 15. Appellant relies on the Specification, not to import any additional limitations, but rather to show that a person of ordinary skill in the art would understand that the limitation refers back to the previously introduced “second group of holes.” Appellant has the better argument in that the claims are clear in this respect.

Accordingly, we also reverse the indefiniteness rejection of claims 1–9, 15, 17, 18, and 20–23.

#### *Rejection 2—Obviousness*

Appellant argues independent claims 1, 10, and 15 together. Appeal Br. 7–9. For these claims, we select claim 1 as representative. *See* 37 C.F.R. § 41.37(c)(1)(iv).

Claim 1 recites, in relevant part, “wherein the component includes a passageway formed in a wall of the component and configured to feed fluid from the second core passageway to the second group of showerhead holes *in series*.” Appeal Br. 11 (Claims App.) (emphasis added). Appellant’s sole argument is that Santeler does not teach the “in series” aspect of this limitation, as found by the Examiner. *Id.* at 8–9. For context, Appellant directs us to its own embodiment illustrated in Figure 3. *Id.* at 8 (referring to “holes (e.g., 96A–96C, 98A–98C)”). Figure 3 is reproduced below.



**FIG.3**

Figure 3, reproduced above, shows a partial view of component 84 of a gas turbine engine. Spec. ¶¶26–28, 42. Figure 3 shows “suction side passageway 102 leads from the core passageway 92B to the suction side showerhead holes 98A–98C, and feeds the suction side showerhead holes

98A–98C *in series* in a flow direction normal to the radial direction of the blade.” Spec. ¶48 (emphasis added). “Similarly, . . . pressure side passageway 106 is formed in the pressure side wall 88W of the component 84, and feeds the pressure side holes 96A–96C *in series*.” *Id.* ¶49 (emphasis added). As seen above, the arrangement of holes 96A–96C and 98A–98C is in contrast to those of holes 94A–94C, which all originate directly from core passageway 92A.

In the Final Action, the Examiner found that, in Santeler’s Figure 1, “cooling fluid is fed spanwise through the main portion 48 and out through outlets 44, and then 46 i.e. fed through in series.” Final Act. 4. In an October 19, 2018, Advisory Action, however, the Examiner altered these findings. Instead of relying on hole 46 as being allegedly fed further downstream of hole 44, the Examiner relies on multiple rows of holes 44. Adv. Act. 2 (citing Santeler 3:50–52 and finding that it discloses that main passageway 48 “extends to two rows of outlets 44”). As summarized in the Answer, the Examiner found:

Santeler teaches multiple inlets (42) in the spanwise direction of the airfoil in communication with a passageway (48) which would feed cooling fluid to multiple outlets (44) arranged in the spanwise direction of the airfoil. By virtue of cooling fluid entering from the root(bottom) of the airfoil, and consequently entering the bottom inlet first, cooling fluid would exit the bottom outlet first before exiting out of a another outlet above i.e. fluid would exit from the bottom outlet, and then exit out from another outlet above i.e. one after the other.

Ans. 8–9. In other words, Santeler’s cooling holes 44 are fed in series, albeit in a root-to-tip direction. *Id.* at 6–7.

Appellant argues that “with respect to the Examiner’s findings as set forth in the Advisory Action, that the Examiner “has not established that [the

two rows of outlets 44] are fed in series by main portion 48,” because “Santeler’s Figure 1 is not particularly informative of Santeler’s flow arrangement;” rather, “Figure 3 is informative, and resolves any doubt in Appellant’s favor.” Appeal Br. 9. In particular, Appellant argues that “Santeler’s fluid (a) flows into one inlet 42, (b) appears to intermix with fluid from other inlets 42 in the main portion 48, (c) naturally splits into multiple flows, and (d) those split flows pass through a respective outlet 44, 46.” Appeal Br. 9. Thus, “[t]he outlets 44, 46 are not fed one after the other, in sequence. Rather, the main portion 48 feeds the outlets 44, 46 in parallel.” *Id.*

As we best can discern, Appellant is arguing that main portion 48 cannot be considered to feed the outlets 44 in series, even in a root-to-tip direction, because main portion 48 is in communication with the core passageway via multiple inlets 42 along the same root-to-tip direction. In other words, according to Appellant and, again, as we best can discern, Santeler’s cooling holes (i.e., outlets 44) are not fed in series because the passageway from which they are fed (i.e., main portion 48) itself is fed by multiple inlets.

Appellant’s arguments are not commensurate with the scope of the claim, which does not preclude multiple inlets or intermixing of air. The claims recites “a passageway formed in a wall of the component and configured to feed fluid from the second core passageway to the second group of showerhead holes in series.” Thus, as long as the passageway feeds two or more holes and the first hole is fed before the second hole, then the limitation at issue (i.e., “in series”) is met. Appellant’s argument does not apprise us of error in the Examiner’s finding that Santeler’s main portion 48

feeds, with respect to the rows of outlets 44, a first outlet in a row before a second outlet in the row (i.e., in series), and therefore, Santeler meets this limitation.

Accordingly, we affirm the rejection of claim 1, along with that of claims 10 and 15, which fall therewith. *See* 37 C.F.R. § 41.37(c)(1)(iv). Because Appellant argues the dependent claims, namely claims 2–9, 12–14, 17, 18, and 20–23, solely on the basis of their dependency from one of the independent claims, we likewise affirm their rejection. *See* Appeal Br. 9 (“Each dependent claim should be allowed for at least the reason that it depends from an allowable base claim (without regard to the other patentable features recited therein).”).

SUMMARY

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>References/Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
1–10, 12–15, 17, 18, 20–23	112(b)	Indefiniteness		1–10, 12–15, 17, 18, 20–23
1–10, 12–15, 17, 18, 20–23	103	Santeler, Krause	1–10, 12–15, 17, 18, 20–23	
<b>Overall Outcome</b>			<b>1–10, 12–15, 17, 18, 20–23</b>	

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