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CARLSON, GASKEY & OLDS/PRATT & WHITNEY 400 West Maple Road Suite 350 Birmingham, MI 48009			AMAR, MARC J	
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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* FREDERICK M. SCHWARZ and PAUL W. DUESLER

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Appeal 2019-003484  
Application 14/793,119  
Technology Center 3700

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Before JENNIFER D. BAHR, MICHELLE R. OSINSKI, and  
SEAN P. O’HANLON, *Administrative Patent Judges*.

O’HANLON, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant<sup>1</sup> appeals under 35 U.S.C. § 134(a) from the Examiner’s decision to reject claims 1–22. We have jurisdiction over this appeal under 35 U.S.C. § 6(b). We AFFIRM IN PART.

In explaining our Decision, we refer to the Specification filed July 7, 2015 (“Spec.”), the Final Office Action mailed January 12, 2018 (“Final Act.”), the Supplementary Appeal Brief filed October 1, 2018 (“Appeal

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<sup>1</sup> We use the term “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies United Technologies Corp. as the real party-in-interest. Appeal Br. 1.

Br.”), the Examiner’s Answer mailed February 4, 2019 (“Ans.”), and the Reply Brief filed March 29, 2019 (“Reply Br.”).

### SUMMARY OF THE INVENTION

Appellant’s claimed invention relates to turbofan engines. Spec. ¶ 1. Claims 1 and 18 are independent. Claim 1, reproduced below from page 9 (Claims Appendix) of the Appeal Brief, is illustrative of the claimed subject matter:

1. A gas turbine engine comprising:
  - a fan bypass duct defined between a fan nacelle and core cowl of an engine core;
  - the engine core including a cooled cooling air system configured to receive cooling air from a primary flowpath bleed within the engine core and configured to provide cooled cooling air to at least one component within the engine core, the cooled cooling air system further including a cold air modulator having a first position, a second position, and at least one intermediate position between the first and second positions;
  - the cooled cooling air system including an air-air heat exchanger; and
  - a controller controllably connected to the cold air modulator and configured to control a position of said cold air modulator based on at least one engine operating condition.

### REFERENCES

The Examiner relies on the following prior art references in rejecting the claims on appeal:

Vermejan	US 5,269,135	Dec. 14, 1993
Nichols	US 2004/0107702 A1	June 10, 2004
Mowill	US 2006/0021354 A1	Feb. 2, 2006
Schwarz	US 2008/0028763 A1	Feb. 7, 2008
Richards	US 2008/0253881 A1	Oct. 16, 2008

Porte	US 2009/0007567 A1	Jan. 8, 2009
Lo	US 2013/0145744 A1	June 13, 2013
Suciu	US 2013/0192263 A1	Aug. 1, 2013
Fletcher	US 2014/0341704 A1	Nov. 20, 2014

### REJECTIONS<sup>2</sup>

- I. Claims 4–10, 19, and 20 stand rejected under 35 U.S.C. § 112(b) as being indefinite.
- II. Claims 1, 4, and 8 stand rejected under 35 U.S.C. § 102(a)(1) as being anticipated by Fletcher.
- III. Claims 9 and 21 stand rejected under 35 U.S.C. § 103 as being unpatentable over Fletcher and Mowill.
- IV. Claim 10 stands rejected under 35 U.S.C. § 103 as being unpatentable over Fletcher and Nichols.
- V. Claim 22 stands rejected under 35 U.S.C. § 103 as being unpatentable over Fletcher and Schwarz.
- VI. Claims 1–8, 12, 17, and 18 stand rejected under 35 U.S.C. § 103 as being unpatentable over Lo and Fletcher.
- VII. Claims 13 and 15 stand rejected under 35 U.S.C. § 103 as being unpatentable over Lo, Fletcher, and Vermejan.
- VIII. Claim 14 stands rejected under 35 U.S.C. § 103 as being unpatentable over Lo, Fletcher, Vermejan, and Richards.
- IX. Claim 16 stands rejected under 35 U.S.C. § 103 as being unpatentable over Lo, Fletcher, and Suciu.

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<sup>2</sup> A rejection of claim 22 under 35 U.S.C. § 112(b) was withdrawn by the Examiner. Final Act. 3–4; Ans. 3.

X. Claim 19 stands rejected under 35 U.S.C. § 103 as being unpatentable over Lo, Fletcher, and Mowill.

XI. Claim 20 stands rejected under 35 U.S.C. § 103 as being unpatentable over Lo, Fletcher, and Nichols.

XII. Claims 1 and 11 stand rejected under 35 U.S.C. § 103 as being unpatentable over Porte and Fletcher.

## ANALYSIS

### *Rejection I – Indefiniteness*

#### *Claims 4–10*

The Examiner determines that the recitation of “a cold air modulator” in claim 4 renders the claim indefinite because “it is not clear if the modulator of claim 4 refers to the cold air modulator of claim 1, or is a second cold air modulator or different modulator [altogether].” Final Act. 3. Appellant argues “that the claim is not unclear, and one of skill in the art, having read the specification, would understand that the cold air modulator of both claim 4 and of claim 1 is a singular component.” Appeal Br. 4. We are not persuaded by this argument.

Claim 1, from which claim 4 depends, recites “the cooled cooling air system further including a cold air modulator having a first position, a second position, and at least one intermediate position between the first and second positions.” Appeal Br. 9 (Claims App.). Claim 4 further recites that “the cooled cooling air system includes a cold air modulator configured to regulate a flow of cold air to the heat exchanger.” *Id.* We agree with the Examiner that it is unclear if “a cold air modulator,” as recited in claim 4, refers to the cold air modulator recited in base claim 1 or requires the gas turbine engine to include a second cold air modulator. *See* Final Act. 3.

Here, in apparent conflict with Appellant’s otherwise seemingly reasonable assertion that “one of skill in the art, having read the specification, would understand that the cold air modulator of both claim 4 and of claim 1 is a singular component” (Appeal Br. 4), the use of the article “a” in claim 4, rather than “the,” to precede “cold air modulator” implies that it is a separate element from the cold air modulator recited in claim 1. We note that, where a claim lists elements separately, the implication is that such elements constitute distinct components. *Becton, Dickinson & Co. v. Tyco Healthcare Grp., LP*, 616 F.3d 1249, 1254 (Fed. Cir. 2010) (citing *Gaus v. Conair Corp.*, 363 F.3d 1284, 1288 (Fed. Cir. 2004)).

Accordingly, for the above reasons, we sustain the Examiner’s indefiniteness rejection of claims 4–10.

#### *Claims 19 and 20*

Each of claims 19 and 20 recites, in relevant part, “the engine controller.” Appeal Br. 11 (Claims App.). The Examiner determines that “[t]here is insufficient antecedent basis for this limitation in the claim[s].” Final Act. 3. The Examiner explains that “the only controller previously set forth in the claims is a controller for the cold air modulator.” Ans. 4. Appellant argues “that the claim is not indefinite because one of skill in the art would have understood that the controller being reference[d] is the previously referenced controller.” Appeal Br. 4. We are unpersuaded by Appellant’s argument.

Independent claim 1, from which claims 19 and 20 indirectly depend, recites “a controller controllably connected to the cold air modulator and configured to control a position of said cold air modulator based on at least one engine operating condition.” Appeal Br. 9 (Claims App.). Given that

claims 19 and 20 use different terms (i.e., “engine controller”) than claim 1 (i.e., “controller”), the terms are presumed to have different meanings, and Appellant has not set forth persuasive evidence to the contrary. *See CAE Screenplates, Inc. v. Heinrich Fiedler GmbH & Co.*, 224 F.3d 1308, 1317 (Fed. Cir. 2000) (“In the absence of any evidence to the contrary, we must presume that the use of . . . different terms in the claims connotes different meanings.”). Moreover, the Examiner explains, “in the art, an ‘engine controller’ controls numerous parts of the engine, such as fuel valves supplying fuel between the fuel supply and the combustor, and inlet guide vanes regulating air flow into the compressor.” Ans. 4. In other words, the term “engine controller” recited in claims 19 and 20 appears to connote a more comprehensive component than the cold air modulator “controller” recited in claim 1. In short, “the engine controller” recited in claims 19 and 20 appears to refer to a separate “controller” than that recited in base claim 1, and, thus, we agree with the Examiner that claims 19 and 20 are indefinite.

Accordingly, for the above reasons, we sustain the Examiner’s indefiniteness rejection of claims 19 and 20.

*Rejections II and IV–XII – Anticipation and Obviousness*

Appellant does not present any arguments contesting the Examiner’s rejections of claims 1–8, 10–20, and 22 under 35 U.S.C. §§ 102(b) and 103 (Rejections II and IV–XII). *See* Appeal Br. 4–7 (presenting arguments only as to the rejection of claims 4–10, 19, and 20 under 35 U.S.C. § 112(b) (Rejection I) and the rejection of claims 9 and 21 under 35 U.S.C. § 103 (Rejection III)). Accordingly, we summarily sustain Rejections II and IV–

XII. *See Hyatt v. Dudas*, 551 F.3d 1307, 1314 (Fed. Cir. 2008) (explaining that summary affirmance without consideration of the substantive merits is appropriate where an appellant does not contest a ground of rejection); *see also* 37 C.F.R. § 41.31(c) (“An appeal, when taken, is presumed to be taken from the rejection of all claims under rejection unless cancelled by an amendment filed by the applicant and entered by the Office.”).

*Rejection III – Obviousness based on Fletcher and Mowill*

In rejecting claim 21, which depends from independent claim 1, the Examiner finds that Fletcher “teaches the controller 52 is configured to modulate the flow of cold air (from fan duct 32) to the heat exchanger 42.” Final Act. 7. The Examiner also finds that “Fletcher fails to explicitly teach the at least one operating condition is one of an engine power and a combination of engine rotor speed and ambient temperature.” *Id.* (boldface omitted). However, the Examiner finds that “Mowill teaches that it is well known in the art to control air valves associated with gas turbine bleed air systems based on an engine operating condition of engine power level.” *Id.* (citing Mowill ¶ 30). According to the Examiner, “Mowill teaches the claimed engine power parameter and further teaches a relationship between engine power and engine operating temperature,” namely “that ‘engine controller 40 is programmed to control valve 46 to divert part of the compressed air flow to bypass combustor 16 and turbine 18 . . . during low power operations.’” Ans. 5 (quoting Mowill ¶ 26) (alteration in original). The Examiner determines that it would have been obvious

that [the] controller of Fletcher is capable of controlling the valve 48 (i.e., for controller 52 to modulate valve 48 in order to control the flow of cold fan air from duct 32 into heat

exchanger 42) based on additional engine operating parameters such as engine power level for the purpose of providing [the] proper amount of cooling air from Fletcher[’s] fan duct to thereby provide the correct temperature of cooling air to Fletcher[’s] heat exchanger, thereby preventing damage to the engine components, and increasing their operating life.

Final Act. 7–8 (citing Fletcher ¶ 3). The Examiner rejects claim 9 in a similar manner. *Id.* at 6–7.

Appellant argues that Mowill fails to teach or suggest modulating the flow of cold air to the heat exchanger as a function of engine power. Appeal Br. 5–6. In particular, Appellant asserts that

the air control being discussed in Mowill is directed toward air valves controlling the mixture of air and fuel in the combustor. Mowill includes no teaching related to the provision of air to a cooled cooling air system, much less one that would suggest to one of skill in the art that it would be beneficial to control an air modulator for providing air to a heat exchanger based on at least one engine operating condition.

*Id.* at 5 (footnote omitted). We agree that the Examiner has not set forth a sustainable case of obviousness.

Mowill teaches, with reference to Figure 1A, that “engine controller 40 is programmed to control valve 46 to divert part of the compressed air flow to bypass combustor 16 and turbine 18, such as directly to the atmosphere during certain engine operating conditions, usually during low power operations.” Mowill ¶ 26. Mowill teaches that “[e]ngine controller 40 also is programmed to control bleed valve 46 in accordance with the engine power level, and possibly other conditions, to regulate the occurrence and the amount of bleed air diverted from the dilution air flow, as one skilled in the art would understand.” *Id.* ¶ 30. Mowill also discloses that “combustor 16 . . . is configured to receive a separate or second portion

of compressed air at combustor exit region 16a for diluting and cooling the combustion gases prior to admission to turbine 18.” *Id.* ¶ 20. “[S]ome or all of this dilution air may be used to convectively cool a portion or all of the exterior walls of combustor 16 prior to entering combustor exit 16a.” *Id.* ¶ 21.

The Examiner takes the position that a “relationship between engine power and engine operating temperature is supported by Mowill’s teaching . . . of diverting cooling air away from the combustor at low power settings when less cooling is required.” Ans. 6. However, the Examiner does not point to, nor do we discern, adequate disclosure in Mowill that engine controller 40 controls valve 46 to divert cooling air *when less cooling is required*. In this regard, Appellant persuasively asserts that Mowill’s “diversion at low power is to prevent pressure drops (See Mowill, paragraph 27), not because of a decreased magnitude of cooling required.” Reply Br. 3. In other words, the Examiner’s finding as to the disclosure of Mowill lacks adequate evidentiary support, and the Examiner’s conclusion of obviousness is based on this inadequately supported finding. *See* Ans. 5–7.

For the above reasons, we do not sustain the rejection of claim 21 as unpatentable over Fletcher and Mowill. Because the Examiner relies on the same deficient findings in rejecting claim 9 (*see* Final Act. 6–7), we also do not sustain the rejection of claim 9 as unpatentable over Fletcher and Mowill.

CONCLUSION

In summary,

<b>Claim(s) Rejected</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
4–10, 19, 20	112(b)	Indefiniteness	4–10, 19, 20	
1, 4, 8	102(a)(1)	Fletcher	1, 4, 8	
9, 21	103	Fletcher, Mowill		9, 21
10	103	Fletcher, Nichols	10	
22	103	Fletcher, Schwarz	22	
1–8, 12, 17, 18	103	Lo, Fletcher	1–8, 12, 17, 18	
13, 15	103	Lo, Fletcher, Vermejan	13, 15	
14	103	Lo, Fletcher, Vermejan, Richards	14	
16	103	Lo, Fletcher, Suci	16	
19	103	Lo, Fletcher, Mowill	19	
20	103	Lo, Fletcher, Nichols	20	
1, 11	103	Porte, Fletcher	1, 11	
<b>Overall Outcome</b>			1–20, 22	21

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 IN PART