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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* ZBIGNIEW M. GRABOWSKI and  
WILLIAM J. MCVEY

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Appeal 2017-010983  
Application 12/377,623  
Technology Center 3700

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Before MICHAEL C. ASTORINO, PHILIP J. HOFFMAN, and  
SCOTT C. MOORE, *Administrative Patent Judges*.

MOORE, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant<sup>1</sup> appeals from the Examiner's decision to reject claims 19–21, 23, 24, and 33, which are all of the pending claims.<sup>2</sup> We have jurisdiction under 35 U.S.C. § 6.

*We affirm.*

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

<sup>2</sup> Appellant cancelled claims 30 and 31 after filing its notice of appeal. *See* Appeal Br. 3–4; Ans. 3.

*Claimed Subject Matter*

The claims are directed to an effectively variable area nozzle turbofan engine with epicyclic gear train integration. Spec. 2. Claim 19, reproduced below, is the only independent claim on appeal:

19. A turbofan engine comprising:

a fan nacelle surrounding a core nacelle that houses a low spool and a high spool rotatable about an axis, and a low pressure compressor and turbine are mounted on the low spool, the fan and core nacelles providing a bypass flow path having a nozzle exit area;

a fan arranged within the fan nacelle upstream from the core nacelle;

a flow control device at an exit of the fan nacelle adapted to effectively change the nozzle exit area to obtain a desired operating condition for the turbofan engine; and

a gear train coupling the low spool and fan for reducing a fan rotational speed relative to a spool rotational speed, wherein the gear train is an epicyclic gear train, wherein the epicyclic gear train includes a central gear, intermediate gears arranged circumferentially about and intermeshing with the central gear, and a ring gear arranged circumferentially about and intermeshing with the intermediate gears.

*References and Rejections*

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

Coplin	US 4,827,712	May 9, 1989
Cornett	US 4,242,864	Jan. 6, 1981

Claims 19–21, 23, 24, and 33 stand rejected under 35 U.S.C. §103 as being unpatentable over Coplin and Cornett. Ans. 3.

#### ANALYSIS

The Examiner finds that Coplin discloses all elements of claim 19 except for the recited flow control device. Ans. 3–4. The Examiner finds that Cornett discloses a flow control device of the type recited in claim 19. *Id.* at 4. The Examiner determines that it “would have been obvious . . . to modify Coplin’s turbofan by incorporating Cornett’s flow control device in order to minimize noise level while balancing noise level with engine performance.” *Id.* at 5 (citing Cornett 3:3–10). Appellant raises three arguments to the contrary. For the reasons discussed below, Appellant’s arguments do not persuade us that the Examiner erred.

*First*, Appellant argues that Coplin “wishes to minimize the length of the fan casing in particular to minimize drag,” and that “[m]odifying Coplin to include Cornett’s flow control device at the exit of [the] fan nacelle would undesirably add length to Coplin’s fan nacelle as well as introduce undesired drag.” App. Br. 4. Appellant, however, does not offer any persuasive explanation of *why* a variable area fan nozzle would necessarily add length to the exit of the fan nacelle so as to induce excess drag. *See id.* In addition, though Coplin teaches that drag can be reduced by minimizing the diameter and length of the fan casing (*see* Coplin, 1:13–15), the Examiner points out that the length of the fan nacelle is just one of many design considerations (*see* Ans. 5–6). Even if Appellant had shown that modifying Coplin’s fan nacelle in the manner proposed by the Examiner would increase drag, this potential disadvantage would not rise to the level of a teaching away, but

would instead constitute a typical design tradeoff that would not have dissuaded one of ordinary skill in the art from exploring the benefits of modifying Coplin's fan nacelle to incorporate Cornett's flow control device.

*Second*, Appellant argues that Coplin already includes a variable area exhaust nozzle on the core nacelle, and that “[u]sing a variable area nozzle at the fan nacelle instead of the core nacelle would change Coplin's principle of operation.” App. Br. 5. This argument is not persuasive because it mischaracterizes the Examiner's rejection. The Examiner does not propose *replacing* Coplin's core nacelle with Cornett's flow control device. *See* Ans. 4–5. Appellant also argues that “using a variable area nozzle at the fan nacelle in addition to Coplin's core nacelle variable area exhaust nozzle would render Coplin unsatisfactory for its intended purpose.” App. Br. 5. Appellant, however, fails to provide a persuasive explanation of *why* adding a variable exhaust nozzle to the fan nacelle would render Coplin unsatisfactory for its intended purpose. *See id.* Accordingly, Appellant's second argument also is not persuasive.

*Finally*, Appellant argues that “control of the Mach number at the fan inlet for noise control . . . can be achieved without modification of Coplin's variable area core nozzle” because “the Mach number at the fan inlet can be controlled by the core variable area nozzle by regulating the rotational speed of the fan by regulating the rotational speed of the core.” App. Br. 5. This argument also misrepresents the substance of the Examiner's rejection. The Examiner does not propose *modifying* Coplin's variable area core nozzle. *See* Ans. 4–5. The Examiner proposes adding an additional variable area nozzle to Coplin's fan nacelle. *See id.* We also agree with the Examiner's determination that Cornett's flow control device advantageously would have

permitted the control of the inlet Mach number in a manner that did not require increasing or decreasing the rotational speed of the engine. *See* Ans. 8–9. Thus, we also are not persuaded by Appellant’s third and final argument.

For the foregoing reasons, Appellant’s arguments do not persuade us that the Examiner erred in rejecting claim 19, and we affirm the Examiner’s rejection of claim 19.

Appellant does not raise any additional arguments regarding the Examiner’s rejection of dependent claims 20, 21, 23, 24, and 33. Accordingly, we also affirm the Examiner’s rejection of these claims.

#### DECISION

In summary:

<b>Claims Rejected</b>	<b>Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
19–21, 23, 24, 33	§ 103 over Coplin and Cornett	19–21, 23, 24, 33	

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