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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte GABRIEL L. SUCIU and BRIAN D. MERRY

Appeal 2020-001285
Application 14/187,612
Technology Center 3700

Before PHILLIP J. KAUFFMAN, ANNETTE R. REIMERS, and
TARA L. HUTCHINGS, *Administrative Patent Judges*.

KAUFFMAN, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 1–8, 12–14, 16–20, and 23–25. Final Act. 6–18. We have jurisdiction under 35 U.S.C. § 6(b).

¹ 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 Raytheon Technologies Corporation. “Update to Real Party in Interest,” dated April 23, 2019. United Technologies Corporation was identified as the applicant under 37 C.F.R. § 1.42 in an Application Data Sheet dated February 24, 2014. A change of name of United Technologies Corporation to Raytheon Technologies Corporation was recorded on April 22, 2020, at Reel 052472, Frame 0871.

We affirm in part.

The claims are directed to a gas turbine engine designed to reduce flutter in the airfoils of the fan section while limiting overall engine weight. Spec. ¶¶ 2–3. Claims 1, 2, and 12 are independent. We reproduce claims 1 and 12 below.

1. A gas turbine engine comprising:

a fan section including a fan rotatable about an engine axis with a plurality of fan blades rotatable about a fan blade axis, wherein at least a portion of each of the plurality of fan blades is radially aligned with a portion of a core flow path, each of the plurality of fan blades are rotatably attached to a central disk, a radially inner end of each of the plurality of fan blades are attached to a rotatable mount on to the central disk, and each of the plurality of fan blades rotate no more than 20 degrees;

a geared architecture in communication with the fan and driven by a turbine section,

wherein the fan rotates at a first speed and the turbine section rotates at a second speed different from the first speed; and

a fixed area fan nozzle in communication with the fan section.

12. A method of operating a gas turbine engine comprising the steps of:

rotating a fan section including a plurality of fan blades at a first speed, wherein the plurality of fan blades direct air into a core flow path of the gas turbine engine;

rotating the plurality of fan blades about a fan axis no more than 20 degrees to change each of the fan blades from a common first pitch to a common second pitch; and

rotating a low pressure turbine section at a second speed, wherein the first speed is different from the second speed, wherein the gas turbine engine includes a fan section having a fan rotatable about an engine axis with a plurality of fan blades rotatable about a fan blade axis, at least a portion of each of the

plurality of fan blades is radially aligned with a portion of a core flow path, each of the plurality of fan blades are rotatably attached to a central disk, a radially inner end of each of the plurality of fan blades are attached to a rotatable mount on to the central disk.

REJECTIONS

- I. Claims 23–25 are rejected under 35 U.S.C. § 112(a) as failing to comply with the written description requirement. Final Act. 6–7.
- II. Claims 23–25 are rejected under 35 U.S.C. § 112(a) as failing to comply with the enablement requirement. Final Act. 7–10.
- III. Claims 12–14, 16, 20, and 25 are rejected under 35 U.S.C. § 112(b) as indefinite. Final Act. 10.
- IV. Claims 1–3, 6–8, 12, 13, and 16–20 are rejected under 35 U.S.C. § 103 as unpatentable over Kasmarik² and Wright.³ Final Act. 11–17.
- V. Claims 4, 5, and 14 are rejected under 35 U.S.C. § 103 as unpatentable over Kasmarik, Wright, and Johnston.⁴ Final Act. 17–18.

² Kasmarik (US 4,112,677, issued Sept. 12, 1978).

³ Wright (US 4,810,164, issued Mar. 7, 1989).

⁴ Johnston (US 3,900,274, issued Aug. 19, 1975).

ANALYSIS⁵

Rejection I

Although claims 23, 24, and 25 each depend from a different independent claim, the claims are similar in that each recites that “the central disk includes a single actuator *directly attached* to the rotatable mount for rotating each of the plurality of fan blades” (emphasis added).

The Examiner rejected claims 23–25 for failure to comply with the written description requirement. Final Act. 6–7; Ans. 3. In support, the Examiner finds that, other than in claims 23–25, the Specification does not describe or depict that the actuator is “directly attached” to the rotatable mount.⁶ Final Act. 6; Ans. 3. Rather, the Specification only describes that the actuator is in “mechanical communication” with the rotating mount. *Id.* (citing Spec. ¶ 39).

As an initial matter, the Examiner does not interpret the words “directly attached” to require the two components to be unitary, as Appellant suggests. *See* Reply Br. 2.⁷ Rather, the Examiner’s determination is premised on a claim interpretation that “directly attached” means the attachment is without an intermediary member while, in contrast,

⁵ The first and second rejections both pertain to claims 23–25. The first rejection relates to written description and the second relates to enablement. We apply the appropriate standard for each. Despite the different standards, the inquiries overlap to some extent, as reflected in both the Examiner’s findings and Appellant’s arguments for each rejection. Consequently, our analysis below of these two rejections, at times, references information identified by the Examiner or Appellant as applicable to the other rejection.

⁶ Notably, claims 23–25 were not part of Appellant’s original disclosure.

⁷ We note Appellant concedes that two components may be directly attached by means of a fastener, such as a pin, that passes through aligned openings in the components. *See id*

“mechanical connection,” such as recited in the Specification, only requires mechanical communication between the two components. Final Act. 2; Ans. 3.

Appellant makes two arguments against this rejection. First, Appellant quotes a portion of the paragraph of the Specification cited by the Examiner and asserts that the disclosure permits a person of ordinary skill in the art to recognize Appellant invented what is claimed. Appeal Br. 4 (quoting Spec. ¶ 39). Appellant’s conclusion is not supported by a cogent explanation. Specifically, Appellant does not explain how the disclosure that the actuator is in “mechanical communication” with the rotating mount demonstrates possession of a “direct connection” between the actuator and the rotating mount. *See* Appeal Br. 4; Spec. ¶ 39.

Appellant’s second argument is based on Figure 3. Appellant asserts that a figure alone can provide adequate written description support, and asserts that Figure 3 illustrates single actuator mechanism 70 “mechanically attached” to rotating mount 68 for rotating fan blade 62. Appeal Br. 4. We reproduce Figure 3 below.

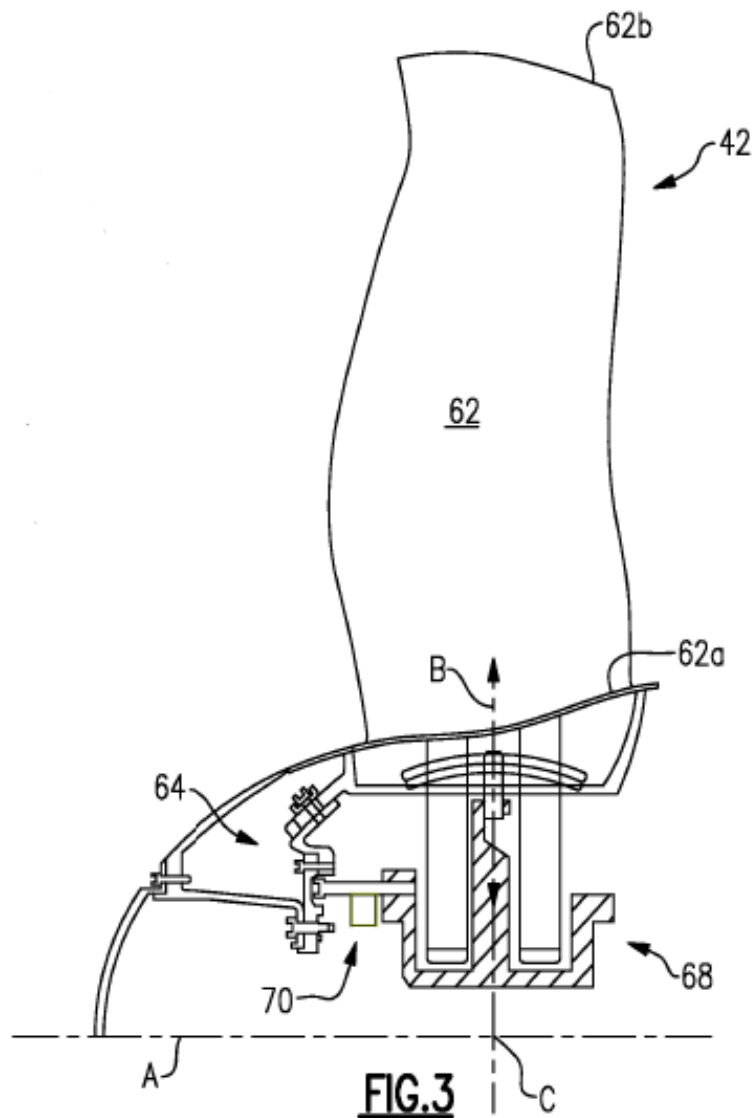


Figure 3 above is a partial cross sectional view of fan 42, including actuator 70 and rotating mount 68. Spec. ¶¶ 22, 39. The Examiner responds that the actuator in Figure 3 is the rectangular box near the point of the arrow. Ans. 4. Appellant responds in turn that Figure 3 utilizes an arrow rather a lead line because the actuator is comprised of more than just the box identified by the Examiner. Reply Br. 1-2.

Appellant’s argument misses the point in two respects. One, whether actuator 70 consists of the rectangular box alone, or consists of more components is not the salient point. The dispositive question is whether Appellant’s disclosure demonstrates possession of an actuator directly connected to a rotating mount. *Ariad Pharmas., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (The test for sufficiency under the written description requirement is “whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date.”). Appellant’s argument sheds no light on that inquiry.

Two, Appellant refers to Figure 3 as depicting actuator mechanism 70 “mechanically attached” to rotating mount 68, while the claims at issue refer to “direct attachment.” Therefore, even if Figure 3 depicts “mechanical attachment,” as Appellant contends, that does not demonstrate “direct attachment” between the actuator and the rotating mount.

For these reasons, we agree with the Examiner that the Specification fails to convey possession of an actuator “directly attached” a rotatable mount, as recited in claims 23–25.

Rejection II

The Examiner rejected claims 23–25 for lack of enablement. In support, the Examiner made findings addressing the *Wands* factors. Final Act. 8–10; *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988). Weighing these findings, the Examiner concluded that there exists a reasonable basis to question whether the Specification enabled, as of the filing date, “a single actuator directly attached to the rotatable mount for rotating each of the

plurality of fan blades,” as recited in claims 23–25. Final Act. 10. This conclusion shifted the burden to Appellant “to provide suitable proofs indicating that the specification is indeed enabling.” *In re Wright*, 999 F.2d 1557, 1562 (Fed. Cir. 1993). As detailed below, Appellant has not met that burden.

Appellant contends that, “in the Examiner’s analysis of the Wands factors, the Examiner identified several possibilities that could achieve the claimed goal that would not require undue experimentation.” Appeal Br. 4 (citing Final Act. 7–9). Appellant’s contention lacks specificity in that it does not identify which possibility could be achieved without undue experimentation. More importantly, Appellant mischaracterizes the Examiner’s analysis. The Examiner did not identify any example of an actuator directly attached to a rotating member as claimed. Rather, the Examiner explained that two facts impacted several *Wands* factors and contributed to the need for undue experimentation: one, the actuator could be any of a variety of types (e.g., electric, hydraulic, pneumatic); and two, it could have any of a variety of configurations (e.g., linear extension, telescopic extension, rotary).

Appellant contends, as mentioned in the analysis of the prior rejection, that the Examiner is interpreting that the attachment must be unitary. Reply Br. 2. However, as explained above, that is not how the Examiner is interpreting the claims.

Appellant has not made suitable proofs indicating that the Specification is enabling. Therefore, we sustain the rejection of claim 23–25 under 35 U.S.C. § 112(a) for failure to comply with the enablement requirement.

Rejections III

The Examiner concludes that claims 12–14, 16, 20, and 25 are indefinite because certain elements are repeated. Final Act. 10. For example, claim 12 recites each of the phrases “a fan section” and “a plurality of fan blades” twice. Although each second recitation should include “the” or “said,” the scope of these claims is ascertainable. *See Energizer Holdings, Inc. v. International Trade Comm’n*, 435 F.3d 1366, 1370 (Fed. Cir. 2006) (recitation of an element without proper antecedent basis, while disfavored, does not necessarily indicate that the claim as a whole is indefinite). For example, the Specification does not describe a gas turbine engine having two fan sections. Consequently, we agree with Appellant that the meanings of the claims at issue is reasonably clear despite the lack of antecedent basis for certain terms. Appeal Br. 4–5. Therefore, we do not sustain the rejection of claims 12–14, 16, 20, and 25 under 35 U.S.C. § 112(b) as indefinite.

Rejections IV

The issue with regard to this rejection is whether the proposed modification is properly justified as a simple substitution. For the reasons that follow, we determine that it is not.

The Examiner concludes that the subject matter of claims 1–3, 6–8, 12, 13, and 16–20 would have been obvious from the combined teachings of Kasmarik and Wright. Final Act. 11–17. Specifically, the Examiner finds that Kasmarik discloses a gas turbine engine as claimed, except that Kasmarik’s fan section lacks rotatable fan blades as claimed. Final Act. 10–11. The Examiner finds that Wright discloses a gas turbine engine including

a fan section having rotatable (pitchable) fan blades. *Id.* at 11–12. The Examiner concludes that it would have been obvious to simply substitute Wright’s fan section for Kasmarik’s. *Id.*

Appellant contends, and we agree, that the proffered rationale is conclusory, in that, under the Examiner’s logic, any gas turbine engine fan section may be substituted for any other gas turbine engine fan section. Appeal Br. 5–6. Here, there are significant differences between the structure and function of the fan sections of Kasmarik and Wright. In Kasmarik’s engine 10, fan stage 16 accelerates air for two uses: one, primary air going via passageway 22 to the compressor, and two, secondary air going via annular duct 27 to discharge at nozzle 26 as bypass. Kasmarik 2:42–55, 3:7–10, Fig. 1. In contrast, in Wright’s engine 10, fan assembly 24 includes variable pitch fan blades 44 that accelerate air into a single passageway, namely, fan duct 28. Wright 3:20–22, 3:30–34, Fig. 1. Wright’s fan assembly 24 does not accelerate air entering core engine 12 because fan assembly 24 is located radially outward of core engine 12. Wright 3:3–4, 3:27–38, 3:57–62, Fig. 1 (intake duct 36 supplies air to core engine 12, fan rotor 42 is positioned radially outward of duct 36, and is the base of variable pitch fan blades 44). In sum, Kasmarik’s fan accelerates air into the compressor and as bypass, while Wright’s fan only accelerates bypass air. If, as the Examiner proposes, Wright’s fan section is simply substituted for Kasmarik’s fan section, the fan section of the modified device would no longer accelerate air for the compressor. The Examiner neither addresses this difference in operation, nor proposes further modification to compensate for this difference in structure and operation.

In view of these structural and functional differences, we are not persuaded the Examiner has adequately demonstrated that the proposed modification is a simple substitution. We do not sustain the rejection of claims 1–3, 6–8, 12, 13, and 16–20 under 35 U.S.C. § 103 as unpatentable over Kasmarik and Wright.

Rejections V

The Examiner concludes that the subject matter of independent claims 4, 5, and 14 would have been obvious from the combined teachings of Kasmarik, Wright, and Johnston. Final Act. 17–18. Claims 4 and 5 depend from claim 2, and claim 14 depends from claim 12. The Examiner does not rely on Johnston to remedy the deficiencies in the combined teachings of Kasmarik and Wright as applied to parent claims 2 and 12. *See* Final Act. 17. Therefore, we do not sustain the rejection of claims 4, 5, and 14 as unpatentable over Kasmarik, Wright, and Johnston.

CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/ Basis	Affirmed	Reversed
23–25	112(a)	Written Description	23–25	
23–25	112(a)	Enablement	23–25	
12–14, 16, 20, 25	112(b)	Indefiniteness		12–14, 16, 20, 25
1–3, 6–8, 12, 13, 16–20	103	Kasmarik, Wright		1–3, 6–8, 12, 13, 16–20
4, 5, 14	103	Kasmarik, Wright, Johnston		4, 5, 14

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Overall Outcome			23–25	1–8, 12–14, 16–20
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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