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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MATTHEW JOHN CHILDE and PETER LEE CROSSLEY

Appeal 2014-009914
Application 12/709,146¹
Technology Center 3700

Before JOSEPH A. FISCHETTI, KENNETH G. SCHOPFER, and
TARA L. HUTCHINGS, *Administrative Patent Judges*.

SCHOPFER, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the rejection of claims 1–6, 9–12, 15, and 17–20. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

BACKGROUND

According to Appellants, “[t]he present invention relates to a centrifugal compressor.” Spec. 1, 1. 8.

¹ According to Appellants, the real party in interest is Dyson Technology Limited. Appeal Br. 2.

CLAIMS

Claims 1–6, 9–12, 15, and 17–19² are on appeal. Claims 1 and 18 are illustrative of the appealed claims and recites:

1. A centrifugal compressor comprising an impeller, a diffuser and a shroud, one of the diffuser and shroud comprising a plurality of recesses and the other of the diffuser and shroud comprising a plurality of radial vanes, wherein the shroud covers the impeller and diffuser such that each radial vane projects into a respective recess.

18. A method of assembling a centrifugal compressor comprising:

providing an impeller, a diffuser and a shroud, one of the shroud and diffuser comprising a plurality of recesses and the other of the shroud and diffuser comprising a plurality of radial vanes;

covering the impeller and the diffuser with the shroud such that the shroud contacts the impeller and each radial vane projects into a respective recess; and

separating the shroud from the impeller and the diffuser such that a clearance is defined between the shroud and the impeller and each radial vane continues to project into a respective recess.

Appeal Br. 12, 14.

² Claims 7, 8, 13, 14, and 16 have been identified as including allowable subject matter. Final Act. 4. The Examiner has withdrawn the rejection of claim 20. Ans. 2.

REJECTION

The Examiner rejects claims 1–6, 9–12,³ 15, and 17–19 35 U.S.C. § 102(b) as anticipated by Rogo.⁴

DISCUSSION

With respect to claim 1, the Examiner finds:

Rogo discloses an impeller 14, a diffuser 24 and a shroud 12, one of the diffuser and shroud comprising a plurality of recesses 68 and the other of the diffuser and shroud comprising a plurality of radial vanes 70, wherein the shroud covers the impeller and diffuser such that each radial vane projects into a respective recess.

Final Act. 3. The Examiner also finds:

While Applicant is correct that the first annular wall 20 and the second annular wall 22 define a diffuser passage 24, this does not mean that the annular wall 22 is not covering both the impeller and the diffuser. The Examiner takes the position that the annular wall 22 covers the diffuser passage and therefore meets the limitations of the claims.

Id. at 2. Further, in response to Appellants' arguments, the Examiner finds that a diffuser is "a channel (or passageway) between the vanes of the stator of a centrifugal compressor." Ans. 3. The Examiner further clarifies that

³ The Final Action lists claims 9 and 10 as being rejected. Final Act. 1. However, the statement of the rejection includes only claims "1–6, 11, 12, 15, 17–20." *Id.* at 3. The body of the rejection does not reference claim 9, but it does reference claim 10. *Id.* We consider claims 9 and 10 to be included in the rejection as anticipated by Rogo because the Final Action lists the claims as being rejected; no other rejections were presented in the Final Action; the rejection and arguments related to claims 1 and 2 are equally applicable to claims 9 and 10; and Appellants discuss claim 9 in response to this rejection in the Appeal Brief. *See* Appeal Br. 4.

⁴ Rogo et al., US 4,403,914, iss. Sept. 13, 1983.

the diffuser in Rogo is the passageway 24 in combination with the plurality of recesses 68 and the shroud is the outer wall 22 including the vanes 70. *Id.*

We agree with and adopt the Examiner's findings regarding Rogo with respect to claim 1. As discussed below, we are not persuaded of error by Appellants' arguments.

First, Appellants argue:

the housing assembly of Rogo merely includes two walls 20 and 22 that are separated from each other to form a passageway to guide the fluid stream. Neither wall includes a plurality of radial vanes or a plurality of recesses that can receive such radial vanes. There is no other structure in the housing that can be said to include a plurality of radial vanes or corresponding recesses.

Appeal Br. 6. Appellants argue that the Examiner cannot rely on the passageway 24 as the diffuser because it is not a structure and does not have a plurality of vanes or recesses as required by the claims. *Id.* Further, Appellants acknowledge that Rogo includes a plurality of vanes and corresponding slots, but Appellants argue that these are both part of the housing 12. *Id.* Thus, Appellants assert that Rogo discloses one of the shroud or the diffuser including both the vanes and recesses while the other has neither. *Id.* at 7. Appellants also argue that Rogo does not disclose a diffuser with recesses because the recesses (slots 68) are provided on a separate structure and thus, the fluid passageway 24 does not include the slots 68. Reply Br. 5–6.

However, we agree with the Examiner that, under the broadest reasonable interpretation of the claim, Rogo's passageway 24 in fluid communication with slots 68 is a diffuser with recesses as claimed. Rogo's device includes 2 separate structures in the housing 12, walls 20 and 22. The Examiner essentially finds that the passageway 24, wall 20, and

recesses/slots 68 form the claimed diffuser and that wall 22 with vanes 70 form the claimed shroud. Although the rejection states that the housing 12 is the claimed shroud, the Examiner's responses in the Final Action and the Answer clarify the rejection to show that the Examiner equates only wall 22 to the claimed shroud. *See* Final Act. 2; *see also* Ans. 3.

Appellants also indicate that Rogo's complexity shows that it does not anticipate. Appeal Br. 7–8. However, we agree with the Examiner that the fact that Rogo has a more complex structure or includes additional structure does not negate the fact that it anticipates. *See* Ans. 3–4.

Appellants also argue that the slots 68 are not recesses and that “in Rogo, there is only one recess 62 but this recess 62 is merely compartmentalized by providing therein separate structures.” Reply Br. 6–7. However, we find that Rogo clearly describes a plurality of vanes 70 extending through a plurality of slots 68. *See* Rogo col. 4, ll. 12–17. Appellants do not adequately explain why these slots cannot be considered recesses as claimed.

Finally, Appellants argue that “the Examiner does not explain how the annular wall 22, which is merely one of the two annular walls 20 and 22 that are spaced apart to define the annular fluid passageway 24, can be equated to the claimed shroud that ‘covers [both] the impeller and the diffuser.’” Reply Br. 8. In support, Appellants argue that wall 22 does not cover the diffuser or the impeller. *Id.* at 9. We disagree. The Specification does not provide a specific definition of shroud and the claim requires only that the shroud covers the impeller and diffuser. We agree with the Examiner that even if the wall 22 partly defines the diffuser passageway, it can still be said that it covers the passageway and the impeller which extends into the passageway,

and thus, it may be considered a shroud under the broadest reasonable interpretation of the claim. *See* Ans. 3; *see also* Final Act. 2. Appellants appear to be arguing that the claimed shroud should be more narrowly interpreted, but Appellants have not presented any evidence as to what that interpretation is and why it should be so.

Based on the foregoing, we find that a preponderance of the evidence supports the Examiner's finding that Rogo discloses an impeller, diffuser, and shroud as claimed. Thus, we sustain the rejection of claim 1. Appellants do not provide separate arguments with respect to independent claims 9 and 15 or dependent claims 5, 6, 10–12, 15, and 17, and thus, we sustain the rejection of those claims for the same reasons.

Claim 2

With respect to claim 2, Appellants argue:

Claim 2 recites “each radial vane is spaced *axially* from a wall of the respective recess.” (emphasis added) Rogo fails to disclose this feature. Rogo's assembly does not and cannot have an axial spacing between the vane and the recess because its vanes 70 can only radially (i.e., transversely) project into the slots 68 across the passageway 24. (Rogo, abstract and col. 4, lns. 12-23)

Appeal Br. 9. Although Rogo's vanes project radially into slots 68, we are not persuaded that that fact alone precludes Rogo's vanes from being spaced axially from a wall of the recess as required by claim 2. Further, we note that Rogo's Figure 1 shows that such a space exists between the bottom of the vane 70 and the bottom of the slot. Thus, Appellants' argument does not persuade us of any error in the rejection of claim 2, and we sustain the rejection of this claim.

Claims 3, 4

Claim 3 depends from claim 2 and requires that “the shroud is spaced axially from the impeller by an amount smaller than the axial spacing between each radial vane and the wall of the respective recess;” and claim 4 depends from claim 1 and requires “[that] each radial vane projects axially into a respective recess by a first amount, the shroud is spaced axially from the impeller by a second amount, and each recess has a depth greater than the sum of the first amount and the second amount.” Appeal Br. 12.

The Examiner does not show how Rogo discloses the relative spacing required by these claims in the rejection. *See* Final Act. 3. However, in response to Appellants’ arguments, the Examiner asserts that the impeller must be spaced from the shroud in order to allow the impeller to rotate and that the vanes 70 extend a significant distance into the recesses such that this distance clearly exceeds any axial separation between the shroud and the impeller. Ans. 4.

However, we agree with Appellants that the Examiner has not done enough to show that the relative spacing required by these claims necessarily exists in Rogo. The Examiner does not point to any specific disclosure of spacing in Rogo beyond Figure 1. We agree with Appellants that “[t]he Examiner’s allegation that a clearance or axial spacing between the annular wall 22 and impeller/rotor 14 must necessarily exist in the assembly of Rogo [were true, it] does not necessarily follow that such alleged axial spacing between the wall 22 and impeller 14 should be smaller than the alleged axial spacing between the vane 70 and recess 62.” Reply Br. 10. When a reference does not disclose that the drawings are to scale and is silent as to dimensions, arguments based on measurement of the drawing features are of

little value. *Hockerson-Halberstadt, Inc. v. Avia Group Int'l*, 222 F.3d 951, 956 (Fed. Cir. 2000).

For these reasons, we do not sustain the rejection of claims 3 and 4.

Claim 18

With respect to claim 18, the rejection relies on the same findings with respect to Rogo regarding the anticipation of claim 1. *See* Final Act. 3.

The Examiner also finds:

In regards to Appellant's arguments with respect to claim 18, the Examiner points out that there has to be a clearance between the shroud and the impeller, otherwise the impeller would be incapable of rotation due to the impact of the shroud. Furthermore, the 70 extends a significant distance into the recess of the diffuser as is clearly shown in the Figure 1. This distance clearly exceeds any axial separation between the shroud and the impeller.

Ans. 4

However, independent claim 18 is directed to a method of assembling a compressor that requires the step of covering the impeller and diffuser with the shroud such that the shroud contacts the impeller followed by a step requiring separating the shroud from the impeller. The Examiner's findings fail to address how Rogo anticipates each of these steps, in particular the requirement that the shroud must first contact the impeller before they are separated. Thus, we find that the Examiner has failed to establish a prima facie showing of anticipation with respect to claim 18. Accordingly, we do not sustain the rejection of claim 18. We also do not sustain the rejection of claim 19, which depends from claim 18.

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CONCLUSION

For the reasons set forth above, we AFFIRM the rejection of claims 1, 2, 5, 6, 9–12, 15, and 17, and we REVERSE the rejection of claims 3, 4, 18, and 19.

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-IN-PART