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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte BJORN R. BENGTSON

Appeal 2019-000356
Application 15/317,303
Technology Center 3700

Before CHARLES N. GREENHUT, BRANDON J. WARNER, and ARTHUR M. PESLAK, *Administrative Patent Judges.*

GREENHUT, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant,[1] Bjorn R. Bengtson, appeals from the Examiner's decision to reject claims 1–8. Final Act. 1. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART, designating our affirmance as including a new ground of rejection.

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[1] We use the word "Appellant" to refer to "Applicant" as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as Bjorn R. Bengtson. App. Br. 1.

CLAIMED SUBJECT MATTER

The claims are directed to a vane for an arrow, and an arrow exhibiting such vane. Claim 1, reproduced below, with emphasis added, is illustrative of the claimed subject matter:

> 1 A vane for guiding and stabilizing flight of an arrow through air after being released from a bow or crossbow provided with a string, the string of which bow or crossbow, at the time of release, is in engagement with a rear end of the arrow, said vane having an elongated and substantially planar body comprising:
>
> a foot having a sufficient transversal width to provide a base for mounting of the vane on an arrow shaft, such that said elongated body has a longitudinal extension in an axial direction of the arrow shaft;
>
> a plurality of outer vane portions extending radially in a plane of said elongated body; and
>
> an inner vane portion connecting the foot and said outer vane portions, wherein, between two neighboring outer vane portions, a respective valley, having a rounded shape at the bottom thereof, is formed by said two neighboring outer vane portions and the inner vane portion, with plural said valleys being formed between respective neighboring outer vane portions, wherein *a bottom of a deepest one of said valleys is located at a height of 17–30% of a total height of the vane*; and
>
> wherein there are at least three outer vane portions defining respective peaks that progressively increase in height and then progressively decrease in height going from front to rear.

REFERENCE

The prior art relied upon by the Examiner is:

Bengtson	US 4,615,552	Oct. 7, 1986

REJECTION

Claims 1–8 are rejected under U.S.C. § 103(a) as being unpatentable over Bengtson. Final Act. 2.

OPINION

Claims 1, 3, and 5–8

Claim 1 is representative of claims 1, 3, and 5–8 pursuant to 37 C.F.R. § 41.37(c)(1)(iv). *See* App. Br. 7–9.

There is no dispute that the Bengtson reference, which has the same named inventor as the present application,[2] teaches a substantially similar vane as that defined by claim 1. With regard to the limitation "a bottom of a deepest one of said valleys is located at a height of 17–30% of a total height of the vane," the Examiner states:

> [I]t is unclear exactly what Bengtson shows as the height of the valleys relative the peaks (Col. 6 lines 6-26). . . . Though the exact claimed dimensions may not be shown, it would have further been obvious to one having ordinary skill in the art to have modified the height to have been [within] the claimed range as it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art (*In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)) and because Bengtson teaches this ratio may be varied (Col. 6 lines 6-26).

Ans. 4.

Appellant provides a well-reasoned response that raises issues with the Examiner's initial reasoning:

> Bengtson describes the depth D of Bengtson's valleys 27 as being critical and optimal at around 40%, since Bengtson is concerned with creating turbulence during flight of Bengtson's arrow. . . . [T]he person of ordinary skill would be taught away from modifying Bengtson's valleys 27 to have a depth D significantly greater than the 40% depth D Bengtson discloses as

[2] "Bengtson" is used herein to refer to the applied prior-art reference.

> being optimal for creating turbulence to stabilize Bengtson's arrow after it leaves a bow based on the aerodynamic characteristics of Bengtson's arrow. Moreover, this objective is different from that disclosed by the present application, which addresses deviation of flight that is caused by interference occurring before an arrow has completely passed in front of the bow. . . . [T]he person of ordinary skill would not have been led to increase Bengtson's depth D from Bengtson's optimal 40% up to between 70% and 83% as argued by the Examiner to solve Bengtson's problem of in-flight stability due to aerodynamic characteristics of Bengtson's arrow. In this regard, claim 1 specifies the bottom of a deepest one of the valleys being located at a height of 17-30% of a total height of the vane, which is less that the maximum depth of 33% mentioned in Bengtson.

App. Br. 8–9.

A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618 (CCPA 1977). Even where a parameter is recognized as a result-effective variable, that, in and of itself, may not sufficiently demonstrate the obviousness of the claimed subject matter because optimization to effect a particular result may, in some cases, actually lead away from the claimed subject matter.

Here, to the extent valley depth is recognized as a result-effective variable, as Appellant correctly points out, the result effected is turbulence and the quoted statements of Bengtson are strong evidence that Bengtson's vane was already optimized for that particular result. Although the Examiner mentions routine optimization again in the Answer, the Examiner does not

provide any further specific details or technical analysis to rebut Appellant's position on this point. Instead, the Examiner takes an alternate position.

In the Answer, the Examiner first points out that using the largest disclosed valley depth D of 2/3, or 67%, one arrives at a valley height of 33%, which is very close to the range recited from a percentage standpoint, and even closer from an absolute standpoint when considering the size of the vanes is under one inch. Ans. 6. The Examiner then correctly recognizes that the recited range of "17–30% of a total height of the vane" for defining where "a bottom of a deepest one of said valleys is located" is not referring to exactly the same quantity that is referred to as the moment arm M, or the difference between H and D, in Bengtson. Ans. 6–7. In Bengtson, height H represents the total height of the vane above its base, similar to the "total height" dimension of the present application. Bengtson col. 6, l. 9. However, in Bengtson, depth D is measured from the top of *a* peak 26 to the bottom of *the underlying* valley. Bengtson col. 6, l. 6–7. The Examiner points out, based on Figure 3 of Bengtson, that Bengtson's *individual* peak heights vary, decreasing from left to right with the exception of the left-most tooth. Ans. 7. Thus the "top of a peak" is therefore not the same as the "total height" H of the vane for those peaks shorter than the tallest peak. As Appellant points out in the arguments reproduced above, depth D is held *constant* and within the critical range disclosed in Bengtson. However, dimension M in Bengtson, on the other hand, must vary, and may be as low as "33% *of the adjacent peak's* height" as the Examiner points out. Ans. 6 (emphasis added). Claim 1 seeks to compare to the vane height to "a bottom of a deepest one of [the vane] valleys." Because "a bottom of a deepest one of [the] valleys" does not necessarily refer to the adjacent valley, this quantity

recited in the claim does not correspond directly to dimension M in Bengtson. As the Examiner correctly points out, discussing Figure 3 of Bengtson, the claim language allows, if not requires, comparison of the location of the bottom of, for example, the *lowest* valley (the right-most in Figure 3 of Bengtson) with the height of *highest* peak, (the second from the left in Figure 3 of Bengtson) which defines the "total height" of the vane. This, in effect, decreases the value of the numerator in the calculated ratio, resulting in some value smaller than the smallest calculated value for M in Bengtson of 33%. Ans. 7. From this, the Examiner concludes that Bengtson's vane is extremely likely to have "a bottom of a deepest one of [its] valleys [] located at a height" that is a percentage of "a total height of the vane" that actually falls within the recited range of 17–30%. Ans. 7.

We agree with the Examiner's reasoning in this regard. However, it is perhaps better illustrated with an exemplary calculation. The Examiner recognizes that Bengtson does not provide exact dimensions for the vane height. As Appellant is the named inventor in the Bengtson reference, Appellant is in the best position to provide information regarding these dimensions so that the Office can make an informed decision about whether claim 1 actually covers the prior-art device.[3] As we do not presently have this information before us, it is reasonable, for the sake of an illustrative

[3] Should Appellant elect to request rehearing in response to this decision pursuant to 37 C.F.R. § 41.50(b)(2), we hereby request, pursuant to our authority under 37 C.F.R. § 41.50(d), that any such response under 37 C.F.R. § 41.50(b)(2) include all relevant information in the possession of, or reasonably obtainable by, Appellant related to the dimensions of the vane described in the Bengston reference. Should Appellant elect to proceed under 37 C.F.R. § 41.50(b)(1), the Examiner may wish to request similar information under 37 C.F.R. § 1.105. *See* MPEP § 704.

example, to use the vane height range described in Appellant's Specification of 8–12.5 mm. Spec. p. 5, l. 19. If, for example, the lowest peak's height in Bengtson is approximately 8 mm, a depth range of $\frac{1}{4}$ to $\frac{2}{3}$ yields a valley depth which can be up to 5.33 mm ($\frac{2}{3}x$ 8). The bottom of such a valley would then be located at a height of 2.67 mm (8 – 5.33). The *total height* of the vane might not be 8 mm if 8 mm is not the largest peak. Rather, the total height of the vane could be up to 12.5 mm. Using these exemplary values, the location of the "bottom of the deepest one of the valleys" would be at a height that is 21.4% (2.67/12.5) of a total height of the vane. This falls well within Appellants recited range. Further, as we have calculated the *lowest* theoretical value based on the information we have available, this calculation indicates that there is a likelihood that there is a significant overlap between the range that would be exhibited by Bengtson and that recited in claim 1. *See* Ans. 7. It has generally been held that "[i]n the case where the claimed ranges 'overlap or lie inside ranges disclosed by the prior art' a *prima facie* case of obviousness exists." *See* MPEP § 2144.05(I) (citations omitted). That appears to be the case here.

We are mindful that evidence and arguments are presented indicating that *the purpose for* selecting the particular range chosen in the presently claimed invention differs from that of Bengtson. App. Br. 3–7, 9 (citations to the Specification omitted). This may be relevant to the Examiner's original optimization reasoning because optimizing a variable for a different purpose may very well fail to lead to the claimed subject matter. However, it is also true that it may have been obvious to arrive at the claimed subject matter even when there was a different purpose for doing so. This latter principle is embodied in the many cases that discuss why the "[m]ere recognition of

latent properties in the prior art does not render nonobvious an otherwise known invention." MPEP § 2145(II) (citations omitted). So here, Appellant's recognition that certain vane dimensions reduce turbulence (App. Br. 3–5) does not confer a right to extend or renew the patent monopoly conferred by Appellant's prior patent that discloses subject matter exhibiting the same or very similar structural dimensions, albeit for different reasons, such as optimizing the turbulent airflow characteristics of the vane (App. Br. 5–7).

In view of the foregoing discussion, we ultimately agree with the Examiner's decision to reject claim 1 based on Bengtson. As we have supplemented the Examiner's findings and reasoning, we designate this opinion as including a new ground of rejection under 37 C.F.R. § 41.50(b) so as to afford Appellant the procedural options for response associated therewith.

Claims 2 and 4

As Appellant correctly points out, the Specification describes a number of possible structures to provide the bending joint recited in claim 2. App. Br. 10 (discussing without expressly citing Spec. 3). The Examiner is correct in that claim 2 does not require any specific structure from the Specification, but instead broadly allows for nearly any structure to act as the "bending joint." Ans. 9–10. This breadth, however, does not excuse the Examiner from the requirement to point to at least some structure that expressly, implicitly, or inherently acts as a "bending joint" in order to demonstrate subject matter falling within the scope of claim 2. We agree with Appellant that this has not adequately been done by the Examiner. App.

Br. 10. The Examiner relies on the valleys themselves as inherently creating a "bending joint." Final Act. 4; Ans. 9–10. However, there is no evidence or technical reasoning of record persuasively explaining why the valleys themselves would provide a "bending joint" disposed "just above" their bottoms, as recited. We are not apprised of anywhere the Bengtson reference or Appellant's present Specification attributes such a capability to the valleys themselves. If anything, the fact that Appellant's Specification requires additional structures to provide this joint is evidence that the valleys themselves do not. The Examiner does not provide sufficient evidence or technical reasoning to satisfy the high burden of establishing inherency discussed in MPEP § 2112. Accordingly, we do not sustain the Examiner's rejection of claim 2.

Regarding claim 4, the Examiner cites various structures from multiple embodiments depicted in Figures 9, 10, 15, and 16 of Bengtson as exhibiting a vane exhibiting "a locally reduced thickness" "just above the bottom of the valleys." Final Act. 5; Ans. 10. We do not agree that apertures 70 (Ans. 10) would reasonably be regarded by one skilled in the art as areas of "reduced thickness." App. Br. 12. We do not agree with the Examiner that one skilled in the art would describe something as having "reduced thickness" when it has no thickness at all. It is not clear why the Examiner regards the "closely spaced intervals 82" between "laterally projecting ribs 80 and 81" (Bengtson col. 7, ll. 35–38) as "cutouts/notches" (Ans. 10). Further, the Examiner does not provide any reason why these structures, even if incorporated into the embodiment depicted in Figures 1–3 of Bengtson, would be incorporated "just above the bottom of the valleys." The same is true regarding the location of the "indentations or pockets (79)"

(Ans. 10). In the anticipation context, our reviewing court has noted "it is not enough that the prior art reference . . . includes multiple, distinct teachings that [an ordinary] artisan might somehow combine to achieve the claimed invention." *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1371 (Fed. Cir. 2008). Here the Examiner set forth a rejection under 35 U.S.C. § 103(a). Although there is nothing wrong, per se, with relying on features from distinct embodiments to support an obviousness rejection, in such a case, similar to rejections relying on teachings from distinct references, "it is not enough to simply show that the references disclose the claim limitations; in addition, 'it can be important to identify a reason that would have prompted a person of ordinary skill in the art to combine the elements as the new invention does.'" *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Contractors USA, Inc.*, 617 F.3d 1296, 1303 (Fed. Cir. 2010) (citing *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 401 (2007)). This is because the obviousness analysis is more than simply showing that each limitation is found in the prior art. *KSR Int'l Co.*, 550 U.S. at 418 ("a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art"). One must also consider "whether there was an apparent reason to combine the known elements in the fashion claimed by the patent [or application] at issue." *Id.* (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). Here, even if some of the cited features from the embodiments depicted in Figures 11–18 of Bengtson satisfy some of the language of claim 4, the Examiner has not provided any reasoning supported by rational underpinnings for incorporating those features, particularly at the location required by claim 4, into the vane embodiment depicted in Figures 1–3 of

Bengston, on which the Examiner relies for rejecting independent parent claim 1. Accordingly, we do not sustain the Examiner's rejection of claim 4.

DECISION

The Examiner's rejection of claims 1, 3, and 5–8 is affirmed. We designate this affirmance as including a new ground of rejection.

The Examiner's rejection of claims 2 and 4 is reversed.

FINALITY AND RESPONSE

This decision contains a new ground of rejection pursuant to 37 C.F.R. § 41.50(b). Section 41.50(b) provides "[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review." Section 41.50(b) also provides:

> When the Board enters such a non-final decision, the appellant, within two months from the date of the decision, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:
>
> (1) *Reopen prosecution*. Submit an appropriate amendment of the claims so rejected or new Evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the prosecution will be remanded to the examiner. The new ground of rejection is binding upon the examiner unless an amendment or new Evidence not previously of Record is made which, in the opinion of the examiner, overcomes the new ground of rejection designated in the decision. Should the examiner reject the claims, appellant may again appeal to the Board pursuant to this subpart.
>
> (2) *Request rehearing*. Request that the proceeding be reheard under § 41.52 by the Board upon the same Record. The request for rehearing must address any new ground of rejection and state with particularity the points believed to have been

> misapprehended or overlooked in entering the new ground of rejection and also state all other grounds upon which rehearing is sought.

Further guidance on responding to a new ground of rejection can be found in the Manual of Patent Examining Procedure § 1214.01.

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; 37 C.F.R. § 41.50(b)