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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte DMITRIY BARYSHNIKOV

Appeal 2020-000928
Application 14/833,936
Technology Center 3700

Before BIBHU R. MOHANTY, PHILIP J. HOFFMANN, and
KENNETH G. SCHOPFER, *Administrative Patent Judges*.

SCHOPFER, *Administrative Patent Judge*.

DECISION ON APPEAL

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

We REVERSE.

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 Woodward, Inc. Appeal Br. 2.

BACKGROUND

The Specification discloses that “[t]his invention generally relates to centrifugal pumps and their associated componentry, and more particularly to the impeller of a centrifugal pump.” Spec. ¶ 1.

CLAIMS

Claims 1, 11, and 16 are the independent claims on appeal. Claim 1 is illustrative of the appealed claims and recites:

1. An impeller for a centrifugal pump, the impeller comprising:

a disc shaped shroud having a central axis, and a central hub circumscribing the central axis;

a disc shaped base plate having a central axis coaxial with the central axis of the shroud, the base plate having a plurality of vanes extending from a first surface of the base plate;

wherein the shroud includes a plurality of serrations formed circumferentially along a periphery of the shroud;

wherein the base plate includes a plurality of serrations formed circumferentially along a periphery of the base plate, the plurality of serrations of the base plate including a plurality of major teeth and a plurality of minor teeth, wherein a radial extent of each of the plurality of vanes is aligned with a respective one of the plurality of major teeth such that the respective one of the plurality of major teeth extends beyond both sides of the radial extent in the circumferential direction; and

wherein the shroud is mounted against the base plate.

Appeal Br., Claims App. 1.

REJECTIONS

1. The Examiner rejects claims 1, 4–9, 11, 12, 14, and 15 under 35 U.S.C. § 103 as unpatentable over Buse 467² in view of Buse 277.³
2. The Examiner rejects claims 2 and 3 under 35 U.S.C. § 103 as unpatentable over Buse 467 in view of Buse 277 and Neumann.⁴
3. The Examiner rejects claim 10 under 35 U.S.C. § 103 as unpatentable over Buse 467 in view of Buse 277 and Moore.⁵
4. The Examiner rejects claim 13 under 35 U.S.C. § 103 as unpatentable over Buse 467 in view of Buse 277 and design choice.
5. The Examiner rejects claims 16 and 18–20 under 35 U.S.C. § 103 as unpatentable over Buse 467 in view of Smith⁶ and Moore.

DISCUSSION

Claims 1–15

A prima facie conclusion of obviousness must be supported by the clear articulation of a reason why the claimed invention would have been obvious. The Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) indicated that the analysis supporting a rejection under 35 U.S.C. § 103 should be made explicit. The Federal Circuit has stated that “rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re*

² Buse, US 3,746,467, iss. July 17, 1973.

³ Buse, US 4,767,277, iss. Aug. 30, 1988.

⁴ Neumann, US 867,069, iss. Sept. 24, 1907.

⁵ Moore, US 2,625,365, iss. Jan. 13, 1953.

⁶ Smith, GB 877,878, pub. Sept. 20, 1961.

Kahn, 441 F.3d 977, 988 (Fed. Cir. 2006), cited with approval in *KSR*, 550 U.S. at 418.

We are persuaded by Appellant’s argument that the Examiner has not set forth an adequate reason to support the proposed combination of art with respect to the rejection of independent claims 1 and 11. *See* Appeal Br. 6–9; *see also* Reply Br. 6–10.

With respect to claim 1, the Examiner finds that Buse 467 teaches an impeller as claimed, except that Buse 467 “does not explicitly teach such that the respective one of the plurality of major teeth extends beyond both sides of the radial extent [of the plurality of vanes] in the circumferential direction.” Final Act. 3–4. The Examiner finds that Buse 277 also teaches an impeller, which includes a plurality of teeth extending beyond both sides of the radially extent of impeller vanes in the circumferential direction. *Id.* at 4. The Examiner determines that it would have been obvious to modify Buse 467 to include this feature from Buse 277:

as it is noted that the use of a known technique (in this case the use of a serration of a impeller base plate to extend to both sides of a vane as attached to the base plate as taught by Buse [277]), to improve a similar devices (in this case the use of the serration of the major teeth of Buse [467] to extend beyond both sides so as to suitably attach the vane to the base plate and suitably control fluid flow centrifugally) was an obvious extension of prior art teachings.

Id. at 5.

Appellant argues that the Examiner has merely catalogued the teachings of the cited references without providing an objective reason to combine them. Appeal Br. 6. Appellant also asserts that the Examiner provides no evidence for the reasoning providing, i.e., there is no evidence cited showing that the proposed modification would improve suitability for

either attaching the vane to the base plate or controlling fluid flow. *Id.* at 8–9; *see also* Reply Br. 8. We agree. The Examiner does not provide any evidence or explanation showing how the proposed modification achieves the stated benefits, e.g., the Examiner does not provide evidence either showing that Buse 467 includes some deficiency in these areas or showing that Buse 277 provides an advantage in these areas which is derived from the relative thickness of the major teeth.

In the Answer, the Examiner explains that “[o]ne of ordinary skill in the art understands that modifications to vanes and/or main or shroud plates of an impeller affect[] the flow of fluid through that impeller, such as affecting fluid vortices, which may also adversely affect the vibration of the system.” Ans. 4. The Examiner determines that a modification of Buse 467 based on Buse 277 as proposed, “may be done to tailor the performance of the impeller[, s]uch tailored performance may include preventing or controlling vibration with configurations of teeth and vane such vibrations which may lead to failure of the impeller.” *Id.* at 4, 7. We agree with Appellant that this reasoning is also not sufficient to support the conclusion of obviousness. *See* Reply Br. 8–9. We agree with Appellant that this reasoning amounts to a rationale stating that it would have been obvious to make the combination because it is known to optimize certain parameters. The Examiner does not provide any evidence or explanation showing that the propose modification would provide any improvement over the unmodified prior art device, and without such evidence or explanation, we determine that the Examiner does not adequately support the conclusion of obviousness.

Based on the foregoing, we are persuaded of error in the rejection of claim 1. The Examiner relies on the same reasoning with respect to the rejection of independent claim 11, and thus, we also find error in the rejection of this claim. Accordingly, we do not sustain the rejection of claims 1 and 11. The Examiner also relies on the same reasoning with respect to the rejections of dependent claims 2–10 and 12–15, and the Examiner does not provide further findings and/or reasoning with respect to the art of record for the rejections of these claims that cures the deficiency in the rejection of the independent claims from which they depend. Thus, we also do not sustain the rejections of claims 2–10 and 12–15.

Claims 16 and 18–20

We are persuaded by Appellant’s argument that the Examiner has not set forth an adequate reason to support the proposed combination of art with respect to the rejection of independent claim 16. *See* Appeal Br. 11–13; *see also* Reply Br. 12–14.

With respect to claim 16, the Examiner finds that Buse 467 discloses a centrifugal pump as claimed except that:

Buse [467] does not explicitly disclose a pump casing defining an inlet, and outlet, and an internal cavity disposed between the inlet and the outlet; a drive shaft, a portion of the drive shaft rotatably disposed within the internal cavity; an impeller disposed within the internal cavity, the impeller mounted to the drive shaft such that it is rotatable with said drive shaft; wherein the first width is less than the second width.

Final Act. 14. The Examiner relies on Smith and Moore to cure these deficiencies. *Id.* at 14–15. The Examiner determines that the combination would have been obvious because “it is noted that the use of a known technique . . . to improve a similar device . . . was an obvious extension of

prior art teachings.” *Id.* at 15. The Examiner also provides the following reasoning for the combination: “so as to allow for the pumping of a fluid as is conventionally known in the art with [an] impeller situated in a casing and so as to allow for designed modification of the weight of the impeller to tailor its performance under various speeds as is known in the art.” *Id.*

Appellant argues, *inter alia*, that the Examiner has not set forth any reasoning why a person of ordinary skill in the art would deviate from the configuration presented in Buse 467. Appeal Br. 12. We agree. As with the rejection of claims 1 and 11 discussed above, the Examiner fails to provide any evidence or an adequate explanation for the proposed modification such as by showing that the modification would provide an improvement over the unmodified prior art device. For example, although the Examiner asserts that the combination would allow for a modified weight to tailor performance, the Examiner does not cite to any evidence discussing the effects of weight change, or otherwise tie the benefit to shrouds of differing axial width, as claimed. To the extent that the Examiner is merely concluding that the modification would have been obvious in order to optimize performance, we determine that such reasoning, as discussed above, is not sufficient by itself to support the conclusion of obviousness.

Based on the foregoing, we are also persuaded of error in the rejection of claim 16. Accordingly, we do not sustain the rejection of claim 16. For the same reasons, we also do not sustain the rejection of dependent claims 18–20.

CONCLUSION

We REVERSE the rejections of claims 1–16 and 18–20.

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In summary:

Claims Rejected	35 U.S.C. §	Basis	Affirmed	Reversed
1, 4–9, 11, 12, 14, 15	103	Buse 467, Buse 277		1, 4–9, 11, 12, 14, 15
2, 3	103	Buse 467, Buse 277, Neumann		2, 3
10	103	Buse 467, Buse 277, Moore		10
13	103	Buse 467, Buse 277, design choice		13
16, 18–20	103	Buse 467, Smith, Moore		16, 18–20
Overall Outcome				1–16, 18–20

REVERSED