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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte HIROSHI OHASHI,
TADAYUKI YAMAGUCHI, and HIDETOSHI TERADA

Appeal 2018-002262
Application 13/549,699
Technology Center 1700

Before MICHAEL P. COLAIANNI, GEORGE C. BEST, and
N. WHITNEY WILSON, *Administrative Patent Judges*.

WILSON, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants¹ appeal under 35 U.S.C. § 134(a) from the Examiner's May 5, 2017 decision finally rejecting claims 1–9 ("Final Act."). We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We reverse.

¹ Appellants identify the real party in interest as Shimadzu Corporation. (Appeal Br. 2).

CLAIMED SUBJECT MATTER

Appellants' invention relates to a control apparatus, and the program used therein, for controlling the operation of a liquid chromatograph (Spec. ¶ 1).

Claim 1 is representative and is reproduced below from Appendix A of the Appeal Brief (*emphasis added*):

1. A control apparatus for controlling an operation of a liquid chromatograph that has a gradient analysis function in which a chromatograph analysis is performed while a mixture ratio of a plurality of solvents composing a mobile phase is temporally changed, the control apparatus comprising:
 - a) an analysis controller programmed to control the liquid chromatograph so as to *continuously change the mixture ratio of the solvents from an initial mixture ratio to a final mixture ratio* when performing a sample analysis; and
 - b) a preparatory liquid supply controller programmed to control the liquid chromatograph so as to perform, before the sample analysis, a preparatory liquid supply in which *the mixture ratio of the solvents is continuously changed from the initial mixture ratio to the final mixture ratio* at a rate higher than that in the sample analysis so that a time required to perform the preparatory liquid supply is reduced.

REJECTIONS

(1) Claims 1–8 are rejected under 35 U.S.C. § 103(a) as unpatentable over Nash² in view of Cazes.³

(2) Claim 9 is rejected under 35 U.S.C. § 103(a) as unpatentable over Nash in view of Cazes, and further in view of Afeyan.⁴

² Nash, Jr. et al., US 4,969,993, issued November 13, 1990.

³ Cazes, J., *Encyclopedia of Chromatography*, Marcel Dekker, Inc. 390–92 (2001).

⁴ Afeyan et al., US 6,344,172 B1, issued February 5, 2002.

Appellants argue for the reversal of the rejections of dependent claims 2, 3, and 5–9 on the basis of limitations recited in independent claims 1 and 4 (*see generally* Appeal Br. 5–20; Reply Br. 1–9). Accordingly, claims 2, 3, and 5–9 will stand or fall with each of their respective independent claims. 37 C.F.R. § 41.37(c)(1)(iv).

DISCUSSION

Rejections I and II

To resolve this appeal, we need only address claim 1.

It is well understood that “[r]ejections 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.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). The fact that a reference may be modified to reflect features of the claimed invention would not have made the modification, and hence the claimed invention, obvious unless the prior art suggested the desirability of such modification. *In re Mills*, 916 F.2d 680, 682 (Fed. Cir. 1990).

Here, Appellants do not dispute the Examiner’s findings that:

(i) Nash discloses a chromatographic instrument, which performs calibration runs using isocratic elution methods; and (ii) Cazes discloses an overview of gradient elution methods used in liquid chromatography systems (Ans. 2–3; Appeal Br. 8–9). Rather, Appellants dispute the Examiner’s rationale for modifying Nash’s chromatography instrument to perform Cazes’s gradient elution instead of isocratic elution described by Nash (Appeal Br. 13; Reply Br. 5–6).

The Examiner determines that “[i]t would have been obvious to one having ordinary skill in the art at the time of the invention to program the controllers of Nash to perform [Cazes’s] gradient elutions rather than only isocratic elution runs, . . . since doing so will result in a more robust chromatography system that is capable of increased resolution and easier identification of early eluting compounds” (Ans. 3–4).

Appellants argue that neither Nash or Cazes provides, “and the Examiner has not identified, any reasons as to why the person of ordinary skill in the art would have pursued a modification as complicated and expensive as the conversion of an instrument for isocratic elution to one for gradient elution” (Appeal Br. 12).

In response, the Examiner argues that Appellants have “not provided any evidence supporting this statement” (Ans. 14). The Examiner finds that Nash already includes “a primary feature required to perform gradient elutions,” namely “an automated pump capable of mixing solvents from separate containers” (*id.* at 10; *see also* Nash 3:24–31). The Examiner further finds that “Cazes details different methods used to form gradients using pumps . . . and suggests that so long as the operator understands the hardware, a gradient elution system *should be easy to operate*” (Ans. 11, *emphasis added*); *see also* Cazes 391 ¶¶ 2–6, 12; 392 ¶ 1). According to the Examiner, “one having ordinary skill in the art of chromatography will readily understand the instrumentation and steps necessary *to run* both isocratic and *gradient elutions*” based solely on the teachings of Nash and Cazes (Ans. 11, *emphasis added*).

Contrary to the Examiner’s findings, the alleged ease of *running* or *operating* gradient elution equipment based on an understanding of gradient

equipment does not necessarily indicate that *converting* isocratic elution equipment for gradient elution purposes would have been similarly easy. On this record, the Examiner has not made sufficient findings that the prior art teaches or suggests how one of ordinary skill would have converted Nash's instrument for isocratic elution to one for gradient elution.

Furthermore, Appellants persuasively argue that even though isocratic and gradient elution techniques are well-known in the chromatographic arts, Cazes teaches that gradient elution is not preferred because of, *inter alia*, the required equipment's "higher cost, and gradient elution is more complicated" (Cazes 391 ¶ 8). The Examiner has not provided adequate reasoning to explain why a person of skill in the art would have made such a conversion in view of Cazes's teachings that gradient elution is not preferred (*see* Ans. 14). Without such reasoning, the Examiner has not established a *prima facie* case of obviousness.

Thus, Appellants have identified reversible error in the Examiner's determination that the disclosure of Nash in view of Cazes renders claim 1 obvious. Furthermore, Appellants' arguments urging reversal of the Examiner's rejection of independent claim 4 are substantially similar to Appellants' persuasive arguments set forth above (*see, e.g.*, Appeal Br. 18). Accordingly, we reverse the obviousness rejections of claims 1–9. 37 C.F.R. § 41.37(c)(1)(iv).

We express no opinion with respect to Appellants' other arguments urging reversal of the Examiner's § 103(a) rejections.

CONCLUSION

We REVERSE the rejection of claims 1–8 under 35 U.S.C. § 103(a) as obvious over Nash in view of Cazes.

We REVERSE the rejection of claim 9 under 35 U.S.C. § 103(a) as obvious over Nash in view of Cazes, and further in view of Afeyan.

REVERSED