United States Court of Appeals for the Federal Circuit

04-1145
(Serial No. 08/439,712)

IN RE JOHN DASH and PATRICK S. KEEFE

DECIDED: December 10, 2004

Before MAYER, Chief Judge, PLAGER, Senior Circuit Judge, and PROST, Circuit Judge.

PROST, Circuit Judge.

Professor John Dash and Patrick Keefe ("Dash") appeal from a United States Patent and Trademark Office Board of Patent Appeals and Interferences ("Board") decision affirming the final rejection of claims 4-11 of application Serial No. 08/439,712 for lack of utility under 35 U.S.C. § 101 and lack of enablement under 35 U.S.C. § 112. The examiner rejected the application for lack of utility and enablement. We affirm the Board's decision.

BACKGROUND

Dash's patent application discloses a method for generating heat energy using an electrolytic cell having a palladium sheet cathode and an inert anode. The

electrolyte used in the cell principally contains sulfuric acid and D_2O, or "heavy water." According to Dash's specification, the method produces heat energy; hydrogen, deuterium, and oxygen gases; and possibly heavy water through the recombination of deuterium and oxygen.

Dash filed his initial patent application on this invention on April 16, 1990. The application was rejected by the examiner for lack of utility and enablement, and the Board affirmed the rejection. Ex parte Dash, 27 USPQ2d 1481 (Bd. Pat. App. & Int. 1993). Dash filed a continuation application that was also finally rejected on the same grounds. Dash responded by filing a file wrapper continuation application. After final rejection for lack of both utility and enablement and unsuccessful appeal to the Board, that application is now before us on appeal.

Dash and his graduate students have published experimental results that, they claim, suggest that nuclear fusion occurred in the apparatus described in the patent application. Specifically, they claim to have found distortion of the palladium cathode, possibly due to the formation of hydrogen isotopes on its surface; microscopic evidence of localized melting; and localized concentrations of gold and silver, which could have been produced by nuclear reactions in the palladium. Additionally, they reported measurements of heat produced by the apparatus. Some of these results were submitted to the Patent Office in support of Dash's attempts to overcome the utility and enablement rejections.

DISCUSSION

Dash appeals the Board's decision sustaining the examiner's rejection on enablement and utility grounds. We have jurisdiction under 35 U.S.C. § 141 and 28 U.S.C. § 1295(a)(4)(A).

A. Standard of review

We review the Board's legal conclusions de novo and the underlying factual findings for substantial evidence. In re Gartside, 203 F.3d 1305, 1315 (Fed. Cir. 2000). The substantial evidence standard requires us to determine whether a reasonable fact finder could have arrived at the Board's decision. Id. at 1312. The Board's claim construction is reviewed de novo. See Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1456 (Fed. Cir. 1998). Whether an invention is operative, and hence has utility within the meaning of § 101, is a question of fact. In re Swartz, 232 F.3d 862, 863 (Fed. Cir. 2000). Enablement under § 112 is a question of law based on underlying factual inquiries. Enzo Biochem, Inc. v. Calgene, Inc., 188 F.3d 1362, 1369 (Fed. Cir. 1999).

B. Arguments

Dash argues that the examiner improperly required him to submit proof of the operability of his invention. He first asserts that the examiner misconstrued the claims at issue by considering the words "producing heat energy" in the preamble of each claim to be a limitation and by importing a limitation from the specification by requiring the "heat energy" to be "excess energy" produced by cold fusion. Dash further argues that the examiner failed to establish a prima facie case of lack of utility, and therefore that the burden of proving utility should not have been shifted to Dash. Finally, he

contends, if a prima facie case was established, then the evidence he submitted to the Patent Office was sufficient to rebut it.

The Patent Office responds that the specification clearly defines "heat energy" as excess energy and indisputably shows that the invention is directed to achieving cold fusion. The Patent Office also points out that Dash distinguished his invention from prior art on the basis of the preamble. Regarding utility, the Patent Office cites a considerable amount of scientific literature that casts doubt on the ability of electrolytic methods to produce cold fusion.

C. Analysis

As explained below, we construe the claims at issue to require the production of excess heat energy and to be directed to a method of achieving cold fusion. After that, we turn to the issues of utility and enablement, which here collapse into a single issue. See In re Brana, 51 F.3d 1550, 1564 (Fed. Cir. 1995) ("Obviously, if a claimed invention does not have utility, the specification cannot enable one to use it."). Given the scientific community's considerable doubt regarding the utility of "cold fusion" processes, we hold that the examiner established a prima facie case of lack of utility and enablement. Accordingly, the burden was shifted to Dash, and we hold that substantial evidence supports the Board's finding that Dash failed to meet that burden.

1. Claim Construction

The Board properly considered the preamble in its construction of the appealed claims. During prosecution, Dash distinguished a prior art reference on the basis that it "provide[d] no teachings concerning the electrolyte used by [the] present invention to produce excess thermal heat[,]" further asking: "What relevance does the degreasing of

electrodes by [the prior art reference] have to the production of a thermal output according to the method steps of the present invention?" In response to another rejection based on prior art, Dash asserted that the prior art cells did not produce "unexpected superior heat," "excess thermal heat," or "excess heat[.]" Dash's use of the concept of "producing heat energy," a feature found only in the preamble of the appealed claims, to distinguish prior art supports construing the preamble as a limitation, or at least as "context" for the interpretation of the claims. See Metabolite Labs., Inc. v. Lab. Corp. of Am. Holdings, 370 F.3d 1354, 1362 (Fed. Cir. 2004) ("A preamble may provide context for claim construction, particularly, where as here, that preamble's statement of intended use forms the basis for distinguishing the prior art in the patent's prosecution history."). Here, the preamble provides context for the utility determination by illustrating the purpose for which the invention must be operative. Thus, we believe that the Board did not act improperly by taking the preamble language into account.

Further, we agree with the Board's interpretation of the preamble. Viewing the language of the claims in light of the specification and prosecution history, one of ordinary skill in the art would understand the term "producing heat energy" to mean that the invention generates a net output of heat energy. Dash repeatedly argued during prosecution that his invention produced "excess energy." Moreover, the specification "postulate[s] that a nuclear reaction has taken place with the production of energy." The specification offers no other explanation for the production of this energy, which it characterizes as "heat on a scale not reconciled with any known chemical reaction[.]" Additionally, Dash repeatedly submitted evidence during prosecution that purported to

show that the invention produced excess heat caused by nuclear reactions. He also distinguished prior art on the basis that it did not produce the unexpected amounts of heat that Dash believed were produced by his invention. All these factors support the Board's conclusion that Dash's claims are directed toward methods of achieving cold fusion.

2. Prima Facie Case of Lack of Utility and Enablement

The Patent Office establishes a prima facie case of lack of utility by "showing that one of ordinary skill in the art would reasonably doubt the asserted utility[.]" Brana, 51 F.3d at 1566. Because the determination of whether an invention is operative is a question of fact, we review the Board's decision on this issue for substantial evidence.

Dash argues that the evidence that supported the examiner's prima facie case is invalid because it does not concern the invention as claimed and because the documents cited are anecdotal or not peer-reviewed. However, we are aware of no rule that forbids the examiner from relying on related technology, anecdotal information, or sources that are not peer-reviewed to establish a case of inoperability. These details merely go to the weight of the evidence, not whether it can be relied upon at all. Thus, we understand Dash's arguments as attacks on the weight the Board accorded to the cited information.

Substantial evidence supported the Board's finding that the examiner established a prima facie case of inoperability. While it may be ideal for the examiner to offer peer-reviewed data on precisely the claimed invention to establish such a case, such extreme certainty is not required. The examiner must only establish that a person of ordinary skill in the art would reasonably doubt the asserted utility. Brana, 51 F.3d at

1566. It was reasonable for the Board to conclude that the examiner had established such doubt based on the number and quality of cited references that debunked claims of cold fusion.

3. Dash's Rebuttal Evidence

Substantial evidence also supported the Board's conclusion that Dash failed to rebut the prima facie case of inoperability. Dash did not produce evidence sufficient to show that his invention generated excess heat. Although Dash compared his D_2O cell to an H_2O cell and measured a higher temperature in the D_2O cell, references cited by the examiner show that temperature differences between the two cells would be expected even without the production of excess heat because the differing properties of H_2O and D_2O, such as their different heats of absorption. Dash's other evidence, such as his claim of localized melting on the palladium electrode, at most establishes that some localized heating took place, not that the invention produced a net output of heat. Several studies cited by the examiner suggest that localized melting could have been the product of an electrochemical process that would not represent a net output of heat.

Dash's evidence that his invention achieved cold fusion likewise does not convince us that he rebutted the examiner's prima facie case of inoperability. Dash produced evidence regarding detection of tritium, transmutation of palladium, and physical transformation of the cathode, as well as corroborating experiments and calculations designed to show excess heat. For each type of evidence Dash produced, the examiner found at least one sound reason to disbelieve the evidence in either the literature that supported the prima facie case or in Dash's evidence itself. The Board affirmed the examiner's findings. The evidence cited by the examiner constitutes

substantial evidence in support of the Board's decision. Accordingly, we hold that the Board acted reasonably in concluding that Dash did not make a showing sufficient to rebut the prima facie case of inoperability established by the examiner.

CONCLUSION

For the reasons stated above, we affirm the Board's decision sustaining the examiner's rejection of claims 4-11 of application Serial No. 08/439,712.