

United States Court of Appeals for the Federal Circuit

99-1267  
(Interference No. 102,727)

S. SHEFFIELD EATON, JR.,

Appellant,

v.

JOSEPH T. EVANS, JR.,

Appellee.

Michael R. Casey, Oblon, Spivak, McClland, Maier & Neustadt, P.C., of Arlington, Virginia, argued for appellant. On the brief were Charles L. Gholz and Carlos R. Villamar. Of counsel on the brief was Peter J. Meza, Ramtron International Corporation, of Colorado Springs, Colorado.

John A. Dondrea, Sidley & Austin, of Dallas, Texas, argued for appellee. On the brief was Roger N. Chauza. Of counsel were Dale B. Nixon; and Joseph S. Miller, Sidley & Austin, of Washington, DC.

Appealed from: Patent & Trademark Office  
Board of Patent Appeals and Interferences

United States Court of Appeals for the Federal Circuit

99-1267  
(Interference No. 102,727)

S. SHEFFILED EATON, JR.,

Petitioner-Appellant,

v.

JOSEPH T. EVANS, JR.,

Respondent-Appellee.

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DECIDED: February 2, 2000

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Before RADER, Circuit Judge, ARCHER, Senior Circuit Judge, and GAJARSA, Circuit Judge.

GAJARSA, Circuit Judge.

Pursuant to 35 U.S.C. § 141 (1994), S. Sheffield Eaton, Jr. ("Eaton") appeals from a decision of the United States Patent and Trademark Office Board of Patent Appeals and Interferences (the "PTO Board") awarding priority of invention to Joseph T. Evans, Jr. ("Evans") for a nonvolatile, ferroelectric memory cell. See *Evans v. Eaton*, Patent Interference No. 102,727 (Bd. Pat. App. & Int. Mar. 1, 1996) (Final Decision); *Evans v. Eaton*, Patent Interference No. 102,727 (Bd. Pat. App. & Int. Nov. 19, 1998) (Reconsideration Decision). Because we hold that the PTO Board erred as a matter of law in finding that Evans reduced the count to practice by December 1986, we vacate the PTO Board's priority determination and remand for further findings regarding Evans's date of reduction to practice and Eaton's dates of conception and reduction to practice.

#### BACKGROUND

On November 15, 1991, the PTO declared an interference between Eaton's United States Patent No. 4,873,664 ("the '664 patent"), which was filed on February 12, 1987, and Evans, William D. Miller, and Richard H. Womack's patent application Serial No. 07/057,100. The technology involves a memory cell that can store data after its power is removed without requiring the data to be periodically refreshed. The single count at issue, as established by the PTO, describes the memory cell as follows:

A nonvolatile ferroelectric memory cell having a word line and first and second complimentary bit lines coupled to a sense amplifier,

the memory cell comprising first and second ferroelectric capacitors, each said capacitors having first and second plate electrodes, the first plate electrode of said first capacitor coupled selectively to said first bit line and the first plate electrode of said second capacitor coupled selectively to said second bit line;

said memory cell including first and second access transistors each having a control electrode coupled to said word line, said first and second transistors being coupled respectively to first plate electrodes of said first and second ferroelectric capacitors, each said transistor being located within said memory cell, said transistor being selectively actuatable to couple said first plate

electrodes of said capacitors to said first and second bit lines associated with said memory cell in response to a voltage on said word line;

said sense amplifier being responsive to a difference in voltage between said first and second bit lines; and

said memory cell further including a plate line distinct from said bit line, said plate line coupled to said second plate electrode of both said capacitors.

In 1985, Evans co-founded Krysalis Corporation ("Krysalis") with the goal of developing nonvolatile memory circuits using ferroelectric materials. By April 1986, Evans began designing single-cell memory circuits consisting of two transistors and two ferroelectric capacitors. Sometime between July and August of that year, Richard Womack, a Krysalis employee, developed a prototype of the single-cell memory circuit that could be fabricated by semiconductor foundries; Krysalis identified the prototype as the TD01. At the same time, Wayne Kinney ("Kinney"), also a Krysalis employee, generated characterization studies and began testing the TD01. Throughout the testing period, a sense amplifier was never part of, or used with, the TD01.

In determining priority, the PTO Board first found that Evans conceived the subject matter of the count in interference no later than October 3, 1986. That conclusion rested on Kinney's deposition testimony and a schematic sketch of the TD01 in his laboratory notebook dated October 3, 1986. Although the sketch did not illustrate a sense amplifier, the PTO Board was persuaded by Kinney's testimony that he and others at Krysalis intended to use a sense amplifier with each memory circuit.

Next, the PTO Board found that Evans reduced the count to practice by no later than December 1986. In reaching that conclusion, the PTO Board once again relied on Kinney's testimony and laboratory notebook, which illustrated that the TD01 successfully stored data following a read-write-read operation. Cognizant that the TD01 was tested with an oscilloscope rather than a sense amplifier, the PTO Board, relying on *Scott v. Finney*, 34 F.3d 1058, 32 USPQ2d 1115 (Fed. Cir. 1994), found that Evans reduced the count to practice because the test results established a reasonable expectation that the TD01 would operate for its intended purpose.

Finally, the PTO Board addressed Eaton's case for priority by assuming that he was entitled to February 12, 1987-the date he filed his application-as his date of constructive reduction to practice. The PTO Board then reasoned that even if Eaton conceived the invention prior to Evans, Eaton could not prevail because his activities were directed to commercial improvements and therefore did not constitute reasonable diligence. The PTO Board also found that Eaton did not establish attorney diligence before Evans's date of conception. Accordingly, the PTO Board awarded priority to Evans without determining Eaton's date of conception or addressing Evans's argument that the '664 patent is invalid for lack of enablement, failure to disclose the best mode, and unenforceable due to inequitable conduct. This appeal followed.

## DISCUSSION

Pursuant to Section 135(a), when a party files a patent application with a claimed invention that would interfere with the claim of another pending application or with a claim of an unexpired patent, the PTO Commissioner has authority to declare an interference to determine

which party was the first to invent the claimed subject matter. See 35 U.S.C. § 135(a) (1994). To determine priority, the PTO Board may evaluate "not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other." 35 U.S.C. § 102(g) (1994). Priority of invention, therefore, belongs to the first party to reduce the invention to practice unless the other party can establish that it was the first to conceive the invention and that it exercised reasonable diligence in later reducing the invention to practice. See *Price v. Symsek*, 988 F.2d 1187, 1190, 26 USPQ2d 1031, 1033 (Fed. Cir. 1993). Priority and its constituent issues of conception and reduction to practice are questions of law predicated on subsidiary factual findings. See *Cooper v. Goldfarb*, 154 F.3d 1321, 1327, 47 USPQ2d 1896, 1901 (Fed. Cir. 1998). Accordingly, we review de novo the PTO Board's legal conclusions regarding priority, conception, and reduction to practice. See *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1376, 231 USPQ 81, 87 (Fed. Cir. 1986).

In an interference proceeding, a party seeking to establish an actual reduction to practice must satisfy a two-prong test: (1) the party constructed an embodiment or performed a process that met every element of the interference count, and (2) the embodiment or process operated for its intended purpose. See *Cooper*, 154 F.3d at 1327, 47 USPQ2d at 1901; *Estee Lauder Inc. v. L'Oreal S.A.*, 129 F.3d 588, 593, 44 USPQ2d 1610, 1614 (Fed. Cir. 1997) (requiring that the invention work for its intended purpose before an actual reduction to practice exists); *Correge v. Murphy*, 705 F.2d 1326, 1329, 217 USPQ 753, 755 (Fed. Cir. 1983) (requiring that the embodiment include every element of the count to have an actual reduction to practice). With regard to the first prong, this Court's well-established precedent requires that the constructed embodiment or performed process include the precise elements recited in the count. See *Correge*, 705 F.2d at 1329, 217 USPQ at 755; *Wetmore v. Quick*, 536 F.2d 937, 942, 190 USPQ 223, 227 (CCPA 1976) (finding that, despite successful testing, there was no actual reduction to practice because the constructed embodiment used an equivalent of an element rather than the exact element required by the count); *Martin v. Snyder*, 214 F.2d 177, 180, 102 USPQ 306, 308 (CCPA 1954) (holding that doctrine of equivalents does not apply in an interference when determining whether a constructed embodiment contained every element of the count). Thus, for purposes of an interference, there can be no actual reduction to practice if the constructed embodiment or performed process lacks an element recited in the count or uses an equivalent of that element.

In the present case, the count at issue explicitly calls for a "nonvolatile ferroelectric memory cell having . . . complimentary bit lines coupled to a sense amplifier" and the "sense amplifier being responsive to a difference in voltage between . . . bit lines." (emphasis added). The PTO Board found that in December 1986 a "sense amplifier was not utilized in the testing of the [TD01] wafer cells." Nonetheless, relying on *Scott v. Finney*, the PTO Board concluded that Evans reduced the count to practice because the TD01 test results established a reasonable expectation that the invention would work for its intended purpose. On appeal, Evans readily concedes that the TD01 did not use a sense amplifier. Notwithstanding that absence, Evans contends that he reduced the count to practice because the TD01 reliably stored nonvolatile data.

We hold that the PTO Board erred as a matter of law in awarding Evans an actual reduction to practice date of December 1986. As discussed above, an actual reduction to practice requires that a constructed embodiment include every element of the interference count. See, e.g., *Correge*, 705 F.2d at 1329, 217 USPQ at 755. The count defines the contours of the

claimed invention, and in the absence of any one element, there can be no exact invention. Here, it is undisputed that the TD01 did not use a sense amplifier which the count expressly recites. Even if the oscilloscope used during the TD01 testing performed the same function as a sense amplifier, which at oral argument Evans conceded is not the case, the sense amplifier element would remain unmet because the doctrine of equivalents does not pertain to an interference, see, e.g., *Martin*, 214 F.2d at 180, 102 USPQ at 308. Thus, the absence of a sense amplifier precludes a finding of an actual reduction to practice on December 1986 regardless of whether the TD01 testing was successful.

Moreover, by relying on *Scott v. Finney* to support its finding that Evans reduced the count to practice, the PTO Board in effect reasoned that satisfying the requirement that a constructed embodiment work for its intended purpose eliminates, or acts as a surrogate for, the requirement that the embodiment contain every element of the count. That analysis, however, misapprehends this Court's precedent and conflates the two requirements. In *Scott*, which was an appeal from an interference decision, the issue of whether the constructed embodiment contained every element of the count was not disputed. 34 F.3d at 1059, 32 USPQ2d at 1116. Rather, the only question before this Court concerned the degree of testing necessary for a reduction to practice, and we held that it varies with the nature of the invention. See *id.* at 1061, 32 USPQ2d at 1118.

Accordingly, *Scott* relates solely to the type of evidence which can establish that a constructed embodiment works for its intended purpose. Contrary to the PTO Board's reading of *Scott*, a party cannot obviate the initial requirement that a constructed embodiment include every element of the count through evidence that the embodiment operated for its intended purpose, regardless of the quality of such evidence. Put simply, these are two distinct requirements and a party must satisfy each one to establish an actual reduction to practice.

#### CONCLUSION

We hold that the PTO Board erred as a matter of law in finding that Evans reduced the count to practice by December 1986. Accordingly, we vacate the PTO Board's decision awarding priority of invention to Evans, and we remand for further findings as to Evans's date of actual reduction to practice and Eaton's dates of conception and reduction to practice, be it actual or constructive.

VACATED and REMANDED.

#### COSTS

Each party shall bear its own costs.