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# Close Only Counts in Horseshoes, Hand Grenades, and...Patents: The Supreme Court Upholds the Each-Element Test of the Doctrine of Equivalents and Clarifies the Role of Prosecution History Estoppel in Warner-Jenkinson Co. v. Hilton Davis Chemical Co.

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**Close Only Counts in Horseshoes, Hand Grenades, and . . . Patents?: The Supreme Court Upholds the Each-Element Test of the Doctrine of Equivalents and “Clarifies” the Role of Prosecution History Estoppel in *Warner-Jenkinson Co. v. Hilton Davis Chemical Co.***

“The Congress shall have Power . . . To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.”<sup>1</sup> Pursuant to this constitutional authority, Congress created a patent system that grants an inventor “the right to exclude others from making, using, offering for sale, or selling the invention” for a period of twenty years.<sup>2</sup> In exchange for this twenty-year exclusivity, the inventor is required to disclose the contents of his invention such that a “person skilled in the art” could “make and use” the invention by merely using the information in the patent.<sup>3</sup> In the application for the patent, the inventor must include “one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.”<sup>4</sup> If allowed, the patent is issued and the inventor becomes known as the patentee.<sup>5</sup>

Infringement of a patent occurs when a person makes, uses, sells, offers for sale, or imports a patented invention without the patentee’s authorization.<sup>6</sup> Infringement may be found either by literal infringement of the patentee’s claims or by infringement under the doctrine of equivalents.<sup>7</sup> Literal infringement occurs only when each

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1. U.S. CONST. art. I, § 8, cl. 8.

2. 35 U.S.C.A. § 154(a)(1) (West Supp. 1998). If the invention is a process, the statute further grants the patentee “the right to exclude others from using, offering for sale or selling . . . products made by that process.” *Id.* In either case, the 20-year period begins to run from the date the patent application is filed with the Patent and Trademark Office. *See id.* § 154(a)(2). For the text of the entire Patent Act, see 35 U.S.C.A. §§ 1-376.

3. 35 U.S.C. § 112 para. 1 (1994).

4. *Id.* § 112 para. 2.

5. *See id.* § 100(d).

6. *See* 35 U.S.C.A. § 271(a) (West Supp. 1998). Whoever either induces or contributes to the infringement of a patent is also considered to be an infringer. *See id.* § 271(b)-(c).

7. *See* Rudolph P. Hofmann, Jr., *The Doctrine of Equivalents: Twelve Years of Federal Circuit Precedent Still Leaves Practitioners Wondering*, 20 WM. MITCHELL L. REV. 1033, 1038-39 (1994).

of the elements covered by the claims of the plaintiff's patent is exactly duplicated by the accused infringer's activity.<sup>8</sup> If literal infringement does not exist, infringement may still be found under the doctrine of equivalents.<sup>9</sup> In general, infringement under the doctrine of equivalents occurs when the accused device contains changes to the patented device that are enough to avoid literal infringement but, in essence, are substitutions that add nothing new to the patent.<sup>10</sup>

In any infringement action involving the doctrine of equivalents, there is a choice between two conflicting policies.<sup>11</sup> On one side there is the historic policy of giving the public fair notice of what the patentee views as the scope of the patent in order to allow competitors to avoid actions that would infringe the patent and to permit legitimate designing around the patent.<sup>12</sup> On the other side there is the policy of giving the patentee complete and fair protection of his invention.<sup>13</sup> Both policies further the statutory purpose of encouraging progress and innovation in technology.<sup>14</sup>

An unbridled application of the doctrine of equivalents could swing the balance between these competing policies in favor of the patentee by unfairly robbing the public of notice as to the true bounds of the patent. To mitigate this potential injustice, prosecution history estoppel evolved as a limitation on the doctrine of equivalents.<sup>15</sup> Prosecution history estoppel precludes a patentee from expanding the elements of his claims to cover aspects of the invention that were surrendered by amendment during the patent prosecution

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8. See, e.g., *Johnston v. IVAC Corp.*, 885 F.2d 1574, 1577, 1580 (Fed. Cir. 1989).

9. See *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 117 S. Ct. 1040, 1045 (1997) (unanimous decision). See generally 5 DONALD S. CHISUM, CHISUM ON PATENTS §§ 18.02[1], 18.04 (1998) (discussing the origin and application of the doctrine of equivalents).

10. See *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 607 (1950). The proper application of, and the tests used for determining equivalency under, the doctrine of equivalents are discussed *infra* in notes 80-83, 90-94 and accompanying text. The origin and history of the doctrine is discussed *infra* in notes 113-75 and accompanying text.

11. See *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 945 (Fed. Cir. 1987) (en banc) (Bennett, J., dissenting); Martin J. Adelman & Gary L. Francione, *The Doctrine of Equivalents in Patent Law: Questions That Pennwalt Did Not Answer*, 137 U. PA. L. REV. 673, 682 (1989); Bruce M. Wexler, *Patent Law: Bridling the Doctrine of Equivalents—Preclusion by Prior Art*, 1991 ANN. SURV. AM. L. 571, 576-77.

12. See *Pennwalt*, 833 F.2d at 945 (Bennett, J., dissenting).

13. See *id.* (Bennett, J., dissenting).

14. See *id.* (Bennett, J., dissenting).

15. See Hofmann, *supra* note 7, at 1055.

process.<sup>16</sup>

The varying judicial applications of prosecution history estoppel and the doctrine of equivalents have led to uncertainty in patent practice.<sup>17</sup> *Hilton Davis Chemical Co. v. Warner-Jenkinson Co.*,<sup>18</sup> a much-anticipated decision by the Federal Circuit, was expected to solidify the standard for infringement under the doctrine of equivalents.<sup>19</sup> Instead, the Federal Circuit, sitting en banc, produced a majority opinion, a concurring opinion, and three dissenting opinions—a testament to how controversial the doctrine of equivalents had become.<sup>20</sup>

In response to the significant disagreement in the Federal Circuit concerning the doctrine of equivalents, the Supreme Court granted certiorari<sup>21</sup> to “clarify the proper scope of the doctrine.”<sup>22</sup> On March 3, 1997, the Court handed down its decision in *Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*,<sup>23</sup> the second of two recent patent cases<sup>24</sup> that, taken together, are expected to shape and guide the

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16. See *id.* at 1055-56; Adelman & Francione, *supra* note 11, at 680. The process of obtaining a patent is known as the patent prosecution process. See Kevin R. Casey, Note, *Judge Learned Hand Guides the Federal Circuit: A Model for a Uniform Doctrine of Prosecution History Estoppel*, 1985 U. ILL. L. REV. 363, 366. The patent prosecution process consists of “an application, amendments, office actions, and other communication[s] between the Patent and Trademark Office and the patent applicant or the applicant’s representative.” *Id.*

17. See Adelman & Francione, *supra* note 11, at 682-83.

18. 62 F.3d 1512 (Fed. Cir. 1995) (en banc) (per curiam), *rev’d*, 117 S. Ct. 1040 (1997) (unanimous decision).

19. See Brooke Quist, Note, *The Supreme Court Provides Clarity to the Illusive Doctrine of Equivalents—Hilton Davis Reversed*, 5 TEX. INTELL. PROP. L.J. 363, 369 (1997). The Court of Appeals for the Federal Circuit was established by the Federal Courts Improvement Act of 1982, Pub. L. No. 97-164, § 125, 96 Stat. 25, 36-37 (codified as amended at 28 U.S.C. § 1295 (1994)). The Federal Circuit has exclusive jurisdiction over all appeals in patent cases. See 28 U.S.C. § 1295 (1994). The Federal Circuit acquired jurisdiction over decisions on patent applications and interferences when it replaced the Court of Customs and Patent Appeals and assumed the appellate jurisdiction of the Court of Claims to review monetary damage claims stemming from alleged unauthorized governmental use of patented inventions. See *id.* Since the establishment of the Federal Circuit, the Supreme Court rarely hears appeals of patent decisions; therefore, the Federal Circuit has primary responsibility for the development of patent law. See Adelman & Francione, *supra* note 11, at 676 n.11.

20. See Quist, *supra* note 19, at 369.

21. See *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 516 U.S. 1145 (1996).

22. *Warner-Jenkinson*, 117 S. Ct. at 1045. The question presented was “[w]hether patent infringement exists whenever the accused product or process is ‘equivalent’ to the invention claimed in the patent, in that the differences are not ‘substantial’ as determined by a jury, even though the accused product or process is outside the literal scope of the patent claim.” Brief for Petitioner at i, *Warner-Jenkinson* (No. 95-728).

23. 117 S. Ct. 1040 (1997).

24. The other recent patent decision by the Supreme Court is *Markman v. Westview*

practice of patent law into the twenty-first century.<sup>25</sup>

This Note first presents the factual background leading to Hilton Davis Chemical Company's ("Hilton Davis") suit against Warner-Jenkinson Company ("Warner-Jenkinson") for patent infringement.<sup>26</sup> It then briefly discusses the district court and Federal Circuit decisions<sup>27</sup> before detailing the Supreme Court's decision on the proper application of the doctrine of equivalents and prosecution history estoppel.<sup>28</sup> Following the discussion of the Court's opinion, the Note examines the relevant background law on the doctrine of equivalents.<sup>29</sup> It then analyzes the Court's decision on the proper application of the doctrine of equivalents in light of the background law.<sup>30</sup> Next it examines the relevant background law on prosecution history estoppel.<sup>31</sup> Finally, the Note analyzes the Court's decision on the proper application of prosecution history estoppel and concludes

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*Instruments, Inc.*, 116 S. Ct. 1384 (1996), in which the Court held that "the construction of a patent, including terms of art within its claim, is exclusively within the province of the court." *Id.* at 1387. Because claim construction is now considered a question of law, issues related to claim construction may be decided in summary proceedings even in the face of conflicting evidence. See James R. Farrand & Ronald L. Johnston, *Expanded Doctrine of Equivalents Extends Patents Old and New*, COMPUTER LAW., June 1997, at 1, 2. Since claim construction is often the critical part of a patent case, *Markman* is particularly important because it will allow a significant number of patent cases to be decided in summary fashion. See *id.*

Although *Markman* had not been decided at the time Warner-Jenkinson submitted its brief to the Supreme Court, Warner-Jenkinson argued that if the Court were to hold that judges are to decide questions regarding claim construction, then judges should also decide whether an accused device infringes under the doctrine of equivalents. See *Warner-Jenkinson*, 117 S. Ct. at 1053. This argument was in contravention of the Federal Circuit's holding in *Hilton Davis* that infringement under the doctrine of equivalents is a question for the trier of fact. See *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1520-21 (Fed. Cir. 1995) (en banc) (per curiam), *rev'd*, 117 S. Ct. 1040 (1997) (unanimous decision). The Supreme Court chose not to decide whether infringement under the doctrine of equivalents is a question for the judge or the jury, but did state that the Federal Circuit's decision was "amply supported" by the Court's precedent. See *Warner-Jenkinson*, 117 S. Ct. at 1053. The Court went on to note that any concerns about the unreviewability of "black-box jury verdicts" could be addressed by either a court's power to grant summary judgment based on prosecution history estoppel or the doctrine of equivalents, or by the use of "a special verdict and/or interrogatories on each claim element." *Id.* at 1053 n.8.

25. See Farrand & Johnston, *supra* note 24, at 1, 2; Janice M. Mueller, *Crafting Patents for the Twenty-First Century: Maximize Patent Strength and Avoid Prosecution History Estoppel in a Post-Markman/Hilton Davis World*, 79 J. PAT. & TRADEMARK OFF. SOC'Y 499, 500 (1997).

26. See *infra* notes 33-60 and accompanying text.

27. See *infra* notes 61-70 and accompanying text.

28. See *infra* notes 71-97 and accompanying text.

29. See *infra* notes 98-175 and accompanying text.

30. See *infra* notes 176-200 and accompanying text.

31. See *infra* notes 201-230 and accompanying text.

with a general discussion of the potential impact of *Warner-Jenkinson* on the practice of patent law.<sup>32</sup>

Warner-Jenkinson and Hilton Davis manufacture dyes.<sup>33</sup> The process of making two of these dyes, FD & C<sup>34</sup> Red Dye #40 and Yellow Dye #6, produces impurities in the dyes<sup>35</sup> which must be removed in order to meet the specifications of the Food & Drug Administration.<sup>36</sup> In order to purify these dyes, Hilton Davis and Warner-Jenkinson historically had used an inefficient and costly process known as "salting out."<sup>37</sup> In 1982, Warner-Jenkinson contracted with Osmonics, Inc. ("Osmonics") to process two of Warner-Jenkinson's dye preparations, including FD & C Red Dye #40, using Osmonics's standard ultrafiltration process with various membranes Osmonics selected as appropriate for the size of the molecules to be filtered.<sup>38</sup> Although the initial tests showed some positive signs,<sup>39</sup> the tests were unsuccessful in that they failed to produce a sufficiently pure dye.<sup>40</sup> As a result, Warner-Jenkinson suspended work on Red Dye #40, but continued to work on other dyes that had no bearing on the eventual patent infringement case.<sup>41</sup> Over the next several years, Warner-Jenkinson improved the chemistry of Red Dye #40 for filtration purposes enough to go forward with commercial use of the ultrafiltration process for Red Dye #40.<sup>42</sup> In 1986, ultrafiltration equipment was installed and Warner-Jenkinson began commercial production of Red Dye #40 using ultrafiltration.<sup>43</sup> Warner-Jenkinson's later-accused ultrafiltration process operates at pressures from 200 p.s.i.g. to nearly 500 p.s.i.g.<sup>44</sup> and at a pH of 5.0.<sup>45</sup>

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32. See *infra* notes 231-84 and accompanying text.

33. See *Warner-Jenkinson*, 117 S. Ct. at 1045.

34. FD & C stands for food, drug, and cosmetic. See *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1515 (Fed. Cir. 1995) (en banc) (per curiam), *rev'd*, 117 S. Ct. 1040 (1997) (unanimous decision).

35. See *id.*

36. See *id.* at 1552 (Nies, J., dissenting).

37. See *id.* at 1515.

38. See *id.* at 1552 (Nies, J., dissenting).

39. See *id.* (Nies, J., dissenting).

40. See *id.* at 1516.

41. See *id.* at 1552 (Nies, J., dissenting).

42. See *id.* (Nies, J., dissenting).

43. See *id.* (Nies, J., dissenting).

44. The abbreviation "p.s.i.g." stands for "pounds per square inch gauge" and indicates gauge pressure—the pressure indicated by a pressure gauge—as opposed to absolute pressure. Absolute pressure is equal to the sum of the gauge pressure plus the atmospheric pressure ( $P_a = P_g + P_{atm}$ ). See LEIGHTON E. SISSOM & DONALD R. PITTS, *ELEMENTS OF TRANSPORT PHENOMENA* 70 (1972).

Also in 1982, Hilton Davis began investigating alternatives to the salting-out process and, like Warner-Jenkinson, contacted Osmonics for assistance.<sup>46</sup> Osmonics performed tests on Hilton Davis Red Dye #40 using the same ultrafiltration process it had used for Warner-Jenkinson, except that Osmonics hydrolyzed<sup>47</sup> the membrane more than it did during the Warner-Jenkinson tests.<sup>48</sup> The initial tests were unsuccessful.<sup>49</sup> Osmonics then made changes in the test membrane and test procedures that resulted in a successful second round of tests.<sup>50</sup> Several months later, Osmonics also succeeded in using the process to purify Hilton Davis's Yellow Dye #6.<sup>51</sup>

In 1983, Hilton Davis applied for a patent in the names of the inventors of the process.<sup>52</sup> In 1985, United States Patent No. 4,560,746 (" '746 patent") was issued to Hilton Davis.<sup>53</sup> The '746 patent covers an improved purification process involving ultrafiltration<sup>54</sup> that is capable of producing a highly purified dye more cost-effectively than the salting-out method.<sup>55</sup> The patent claim at issue reads, in pertinent part:

"In a process for the purification of a dye ... the

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45. See *Warner-Jenkinson*, 117 S. Ct. at 1046. The pH, or power (exponent) of Hydrogen, of a solution is a measure of its acidity or alkalinity. A pH of 7.0 is neutral, a pH below 7.0 is acidic, and a pH above 7.0 is alkaline. See *id.* at 1045 n.1. The pH of a solution is measured on a logarithmic scale. See *id.* As such, a one-unit decrease in pH causes a ten-fold increase in acidity and a one-unit increase in pH causes a ten-fold increase in alkalinity. See *id.* The presence of a logarithmic scale could potentially create jury confusion regarding the equivalency between Warner-Jenkinson's process and Hilton Davis's process because a logarithmic scale is not as commonly used and understood as a linear scale.

46. See *Hilton Davis*, 62 F.3d at 1515.

47. To hydrolyze means to cause to undergo hydrolysis. Hydrolysis is the interaction "between the ions of water ( $H^+$  and  $OH^-$ ) and those of a salt to form an acid and a base, changing the pH of the solution when the acid and base are sufficiently different in strength." THE READER'S DIGEST ASS'N, READER'S DIGEST GREAT ENCYCLOPEDIA DICTIONARY 657 (10th prtg. 1975) [hereinafter READER'S DIGEST DICTIONARY].

48. See *Hilton Davis*, 62 F.3d at 1552 (Nies, J., dissenting). Osmonics performed its test for Hilton Davis just one week after it performed the first test for Warner-Jenkinson. See *id.* (Nies, J., dissenting).

49. See *id.* at 1515.

50. See *id.*

51. See *id.*

52. See *id.* at 1552 (Nies, J., dissenting).

53. See *Warner-Jenkinson*, 117 S. Ct. at 1045.

54. See *id.* "Ultrafiltration uses osmosis to separate components of a solution by drawing some of the components, but not others, through a membrane." *Hilton Davis*, 62 F.3d at 1515. "Thus, the '746 process filters impure dye solution through a membrane at certain pressures, pHs, and pore diameters. Impurities, but not dye molecules, pass through the membrane, leaving a high purity dye product." *Id.*

55. See *Hilton Davis*, 62 F.3d at 1515.

improvement which comprises: subjecting an aqueous solution . . . to ultrafiltration through a membrane having a nominal pore diameter of 5-15 Angstroms under a hydrostatic pressure of approximately 200 to 400 p.s.i.g., at a pH from approximately 6.0 to 9.0, to thereby cause separation of said impurities from said dye."<sup>56</sup>

The phrase "at a pH from approximately 6.0 to 9.0" was added during patent prosecution.<sup>57</sup> The inventors were required to add the upper pH limit of 9.0 during patent prosecution in order to distinguish the invention from a previous patent that disclosed an ultrafiltration process that operated at a pH above 9.0.<sup>58</sup> There was apparently no explanation in the prosecution history of why the lower pH limit of 6.0 was added; Hilton Davis and Warner-Jenkinson disagreed on the issue.<sup>59</sup> In 1989, Hilton Davis learned of Warner-Jenkinson's use of ultrafiltration and in 1991 sued Warner-Jenkinson for patent infringement.<sup>60</sup>

Hilton Davis conceded that there was no literal infringement and proceeded at trial to rely solely on the doctrine of equivalents.<sup>61</sup> The issue of infringement under the doctrine of equivalents was among those issues sent to the jury, and the jury found that Warner-Jenkinson had infringed the '746 patent.<sup>62</sup> However, the jury also found that Warner-Jenkinson had not intentionally infringed the '746 patent and therefore awarded only twenty percent of the damages

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56. *Warner-Jenkinson*, 117 S. Ct. at 1045 (alteration in original) (quoting claim one of the '746 patent). Claim one of the '746 patent is a Jepson-type claim. A Jepson claim is a claim "that begins with a preamble that recites an old device, process or combination, continues with a transition that states 'wherein the improvement comprises[.]' . . . and concludes with the body of the claim as the statement of the new elements or improvements upon the old device, process or combination." 3 CHISUM, *supra* note 9, § 8.06[1][c], at 8-104. Jepson claims are favored by the Patent and Trademark Office because they clearly separate what the applicant claims as his invention from what is in the prior art. *See* 3 *id.* The Jepson claim derives its name from *Ex parte Jepson*, 1917 Dec. Comm'r Pat. 62, in which the Assistant Commissioner of Patents first approved and encouraged the use of this form of claim. *See* 3 CHISUM, *supra* note 9, § 8.06[1][c], at 8-104.1.

57. *See Warner-Jenkinson*, 117 S. Ct. at 1045.

58. *See id.* at 1045-46.

59. *See id.* at 1046. Warner-Jenkinson contended that the lower limit was added because the patented process created foaming problems in the plant below a pH of 6.0 and was not shown to work below this pH level. *See id.* at 1046 n.2. Hilton Davis indicated that the process was successfully tested at pH levels as low as 2.2 but offered no explanation as to why the lower pH limit of 6.0 was selected. *See id.*

60. *See Hilton Davis*, 62 F.3d at 1516.

61. *See Warner-Jenkinson*, 117 S. Ct. at 1046.

62. *See id.*



Hilton Davis requested.<sup>63</sup> The district court entered a permanent injunction that prohibited Warner-Jenkinson from using the ultrafiltration process below 500 p.s.i.g. and below a pH of 9.01.<sup>64</sup>

The Court of Appeals for the Federal Circuit heard the case en banc and affirmed the district court by a seven-to-five vote in a decision that included three separate dissents.<sup>65</sup> The majority in the Federal Circuit held that the doctrine of equivalents survived the passage of the Patent Act of 1952<sup>66</sup> ("the 1952 Act") and that the test under the "doctrine of equivalents rests on the substantiality of the differences between the claimed and accused products or processes, assessed according to an objective standard."<sup>67</sup> The court held that there was substantial evidence in the record to support the jury's finding of infringement under the doctrine of equivalents.<sup>68</sup> The court also held that the determination of whether prosecution history estoppel would bar application of the doctrine of equivalents required an investigation of what was surrendered and the reason for surrender.<sup>69</sup> Ultimately, the Federal Circuit held that the addition of the phrase "a pH from approximately 6.0 to 9.0" during patent prosecution to avoid the disclosure in the prior art of a process

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63. *See id.*

64. *See id.*

65. *See Hilton Davis*, 62 F.3d at 1512. The majority opinion was per curiam. Judge Newman wrote a concurring opinion. *See id.* at 1529-36 (Newman, J., concurring). Judge Plager dissented and was joined by Chief Judge Archer and Judges Rich and Lourie. *See id.* at 1536-45 (Plager, J., dissenting). A second dissent was written by Judge Lourie and joined by Judges Rich and Plager. *See id.* at 1545-50 (Lourie, J., dissenting). A third dissent was written by the late Judge Nies and joined by Chief Judge Archer in part. *See id.* at 1550-83 (Nies, J., dissenting). The dissent of Judge Nies was heavily relied upon by the Supreme Court in support of the Court's holding that the doctrine of equivalents must be applied to each element of a patent. *See infra* notes 178-80 and accompanying text. Interestingly, the Federal Circuit chose to address the doctrine of equivalents issues en banc while leaving the determination of the validity of the Hilton Davis patent to a three-judge panel. *See Hilton Davis*, 62 F.3d at 1515 n.1. For the opinion that declares the validity of the Hilton Davis patent, *see Hilton Davis Chemical Co. v. Warner-Jenkinson Co.*, 64 F.3d 675 (Fed. Cir. 1995).

66. Patent Act of 1952, ch. 950, 66 Stat. 792 (codified as amended at 35 U.S.C.A. §§ 1-376 (West 1984 & Supp. 1998)); *Hilton Davis*, 62 F.3d at 1526-27. The Supreme Court reaffirmed the existence of the doctrine of equivalents in 1950. *See Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605 (1950); *infra* notes 133-57 and accompanying text. Warner-Jenkinson argued that because Congress did not codify the doctrine of equivalents in the rather comprehensive Patent Act of 1952, the doctrine of equivalents was invalidated legislatively. The *Warner-Jenkinson* Court rejected this argument. *See Warner-Jenkinson*, 117 S. Ct. at 1526-27. The argument is discussed further *infra* in notes 72-79 and accompanying text.

67. *Hilton Davis*, 62 F.3d at 1518.

68. *See id.* at 1528-29.

69. *See id.* at 1525.

operating at a pH above 9.0 did not bar Hilton Davis from invoking the doctrine of equivalents to challenge Warner-Jenkinson's process operating at a pH of 5.0.<sup>70</sup>

The Supreme Court unanimously reversed and remanded in a decision authored by Justice Thomas.<sup>71</sup> The Court held that the doctrine of equivalents as established in *Graver Tank & Manufacturing Co. v. Linde Air Products Co.*<sup>72</sup> survived the passage of the 1952 Act.<sup>73</sup> The Court stated that the language of the 1952 Act and the Patent Act of 1870<sup>74</sup> ("the 1870 Act") contained only minor differences in the areas of claiming, reissue, and the role of the Patent and Trademark Office, and that such minor differences were not grounds for overruling *Graver Tank*.<sup>75</sup> The Court also rejected Warner-Jenkinson's argument of implied negation of the doctrine of

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70. *See id.* at 1528. In general, prior art is "anything in tangible form that may properly be relied on by [the] patent office . . . in support of [a] rejection . . . of [a] claim in [a] pending patent application" and "includes any relevant knowledge, acts, descriptions and patents which pertain to, but predate, [the] invention in question." BLACK'S LAW DICTIONARY 828 (abr. 3d ed. 1991).

The Federal Circuit took the opportunity to address many substantive questions surrounding the doctrine of equivalents. The court held that the intent of the alleged infringer is not an element of an infringement claim under the doctrine of equivalents, *see Hilton Davis*, 62 F.3d at 1519, and that the proper time for evaluating whether an accused element is a known equivalent to an element in the patent is at the time of the infringement as opposed to the time the patent was issued, *see id.* at 1528. The court also held that the function-way-result test was not the sole test for equivalency, *see id.* at 1518, and, as a result, the court held that other evidence in addition to function-way-result evidence is relevant to the doctrine of equivalents, *see id.*; *infra* note 91 and accompanying text (defining the function-way-result test). The court also determined that evidence of copying is relevant to infringement under the doctrine of equivalents because evidence of copying permits a fact-finder to infer that the copyist has made a copy that contains only insubstantial differences. *See Hilton Davis*, 62 F.3d at 1519. The court ruled further that evidence of "designing around" is relevant to infringement under the doctrine of equivalents because it permits a fact-finder to infer that the competitor has made substantial changes in the product at issue in order to avoid infringement. *See id.* at 1520. The court also held that evidence of independent development is not directly relevant to infringement under the doctrine of equivalents but can be introduced to rebut evidence of copying introduced by the patentee. *See id.* The court concluded that infringement is a question of fact to be submitted to the jury in a jury trial and to be decided by a judge in a bench trial, *see id.* at 1522, and that evidence of whether a person reasonably skilled in the art would have known of the interchangeability of accused and claimed elements is relevant in determining whether one reasonably skilled in the art would have considered the change insubstantial, *see id.* at 1519. Any further discussion of these holdings is beyond the scope of this Note.

71. *See Warner-Jenkinson*, 117 S. Ct. at 1045.

72. 339 U.S. 605 (1950) (5-4 decision).

73. *See Warner-Jenkinson*, 117 S. Ct. at 1047-48.

74. Patent Act of 1870, ch. 230, 16 Stat. 198 (current version at 35 U.S.C.A. §§ 1-376 (West 1984 & Supp. 1998)).

75. *See Warner-Jenkinson*, 117 S. Ct. at 1047-48.

equivalents through the language of the means-plus-function claiming provisions in paragraph 6 of § 112 of the 1952 Act (“paragraph 6”), which were not contained in the 1870 Act.<sup>76</sup> The Court reasoned that paragraph 6 had been passed by Congress in response to *Halliburton Oil Well Cementing Co. v. Walker*<sup>77</sup> to allow means-plus-function claims.<sup>78</sup> The Court declined to read the specific inclusion of “equivalents” in paragraph 6 to mean that Congress had impliedly eliminated the doctrine of equivalents with respect to all claims except for means-plus-function claims.<sup>79</sup>

The Court also accepted the notion that the doctrine of equivalents is to be applied to each individual element of the claim—the “each-element” test—thereby rejecting the position that an invention should be examined as a whole.<sup>80</sup> In doing so, the Court acknowledged the concern of the dissenters below that a broadly applied doctrine of equivalents conflicted with the “definitional and public-notice functions of the statutory claiming requirement.”<sup>81</sup> The Court reasoned that the each-element test would harmonize the Court’s position on the doctrine of equivalents with the Court’s simultaneous assertions that courts cannot expand a patent beyond the scope of its claims as established by the Patent Office.<sup>82</sup> The Court concluded that the scope of the patent would not be enlarged if

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76. See *id.* at 1048. Paragraph 6 of § 112 reads as follows:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

35 U.S.C. § 112 para. 6 (1994). Means-plus-function claims allow an applicant to “describe an element of his invention by the result accomplished or the function served, rather than describing the item or element to be used (e.g., ‘a means of connecting Part A to Part B,’ rather than ‘a two-penny nail’).” *Warner-Jenkinson*, 117 S. Ct. at 1048. For additional information on means-plus-function claims, see 5 CHISUM, *supra* note 9, § 18.03[5], at 18-59 to -69.

77. 329 U.S. 1 (1946). In *Halliburton*, the Supreme Court held that certain functional claims were overbroad and ambiguous. See *id.* at 8-14.

78. See *Warner-Jenkinson*, 117 S. Ct. at 1048. The Court observed that the statute’s limitation of means-plus-function claims to only those means that are equivalent to the actual means disclosed in the patent specification serves to limit the broad literal language of means-plus-function claims. See *id.*

79. See *id.* In fact, the Court went on to state that “Congress can legislate the doctrine of equivalents out of existence any time it chooses.” *Id.*

80. See *id.* at 1049. Infringement does not require a one-to-one correspondence of elements. A combination of elements may be used to form an equivalent element. See *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 949 n.1 (Fed. Cir. 1987) (en banc) (Nies, J., additional views).

81. *Warner-Jenkinson*, 117 S. Ct. at 1049.

82. See *id.*

courts limited the doctrine to the substitution of equivalent elements.<sup>83</sup>

The Court agreed with Warner-Jenkinson that the doctrine of prosecution history estoppel continued to remain a limitation on the doctrine of equivalents and provided clarification on the proper application of the doctrine.<sup>84</sup> The Court stated that an exploration of the reason for an amendment during patent prosecution was necessary in order to decide whether prosecution history estoppel would preclude a finding of infringement under the doctrine of equivalents.<sup>85</sup> Prosecution history estoppel bars an action for infringement under the doctrine of equivalents when an amendment required during the patent application process was necessary to avoid the prior art.<sup>86</sup> The Court held that the burden of establishing the reason for an amendment required during patent prosecution belongs to the patentee and that, once the patentee establishes the reason for the amendment, the court decides "whether that reason is sufficient to overcome prosecution history estoppel as a bar to application of the doctrine of equivalents to the element added by that amendment."<sup>87</sup> In order to handle cases like *Warner-Jenkinson*, in which no reason is provided in the record for an amendment during the patent prosecution, the Court created a rebuttable presumption that the Patent and Trademark Office had a "substantial reason related to patentability for including the limiting element added by the amendment."<sup>88</sup> Since no reason for the addition of the lower pH limit of 6.0 was provided in the record in this case, the Court remanded to the Federal Circuit to determine whether adequate reasons for the amendment were provided and whether an additional opportunity to establish such reasons should be provided.<sup>89</sup>

The Court declined to declare the proper test for determining

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83. *See id.*

84. *See id.*

85. *See id.* at 1050-51.

86. *See id.* at 1049-51. The Court's decision leaves open the question of whether changes other than those to avoid prior art will trigger the application of prosecution history estoppel. *See infra* notes 269-78 and accompanying text. Non-prior-art changes include amendments to enhance clarity or avoid overbreadth of the patent language and to establish the utility of the invention. *See infra* note 236.

The Court made it clear that the correctness of the Patent and Trademark Office's decision to require a change based on the prior art was reviewable on direct appeal from the denial of the patent, but was not reviewable in an action based on infringement. *See Warner-Jenkinson*, 117 S. Ct. at 1051 n.7.

87. *Warner-Jenkinson*, 117 S. Ct. at 1051.

88. *Id.*

89. *See id.*

infringement under the doctrine of equivalents.<sup>90</sup> The Court discussed the merits of both the “function-way-result” test<sup>91</sup> and the “substantial differences” test<sup>92</sup> and concluded that the phrasing of the test does not matter as long as it answers the essential question: “Does the accused product or process contain elements identical or equivalent to each claimed element of the patented invention?”<sup>93</sup> With this approach in mind, the Court left the formulation of the test for equivalency up to the Federal Circuit to refine on a case-by-case basis using its special expertise in the area of patent law.<sup>94</sup>

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90. *See id.* at 1054.

91. *See id.* The function-way-result test, referred to by the *Warner-Jenkinson* Court as the “triple-identity” test, *see id.*, asks whether the accused device “‘performs substantially the same function in substantially the same way to obtain the same result.’” *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 608 (1950) (quoting *Sanitary Refrigerator Co. v. Winters*, 280 U.S. 30, 42 (1929)).

92. *See Warner-Jenkinson*, 117 S. Ct. at 1054. The Federal Circuit expressed the substantial differences test—or, as the Court named it, the “insubstantial differences” test, *see id.*—as an analysis of “the substantiality of the differences between the claimed and accused products or processes, assessed according to an objective standard.” *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1518 (Fed. Cir. 1995) (en banc) (per curiam), *rev’d*, 117 S. Ct. 1040 (1997) (unanimous decision). There was some concern that, if the Supreme Court had not stressed the each-element test, the Federal Circuit’s holding regarding the substantial differences test in *Hilton Davis* could have called into question the use of the each-element test, which had been a prominent feature of the Federal Circuit’s caselaw since *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931 (Fed. Cir. 1987) (en banc). *See Farrand & Johnston*, *supra* note 24, at 3; *infra* note 180. The *Pennwalt* court held that the each-element test is the proper test for finding infringement under the doctrine of equivalents. *See Pennwalt*, 833 F.2d at 935.

93. *Warner-Jenkinson*, 117 S. Ct. at 1054.

94. *See id.* However, in dicta, the Court essentially overruled the Federal Circuit’s holding that evidence of copying, designing around, and independent development, when introduced to rebut evidence of copying, has relevance to infringement under the doctrine of equivalents. *See id.* at 1052. The Federal Circuit had held that evidence of copying was relevant because it permitted an inference of insubstantial differences and that evidence of designing around was relevant because it permitted an inference of substantial differences. *See id.*; *supra* note 70. The Court observed that this explanation for allowing evidence of copying and designing around “leaves much to be desired. At a minimum, one wonders how ever to distinguish between the intentional copyist making minor changes to lower the risk of legal action, and the incremental innovator designing around the claims, yet seeking to capture as much as is permissible of the patented advance.” *Warner-Jenkinson*, 117 S. Ct. at 1052.

The Court did hold that evidence of independent development, although not admissible to rebut evidence of copying, could be probative of the question of whether one reasonably skilled in the art would have known of the interchangeability of the accused element and the patented element and therefore would be admissible for that purpose. *See id.* The Court also affirmed the Federal Circuit’s holding that an alleged infringer’s intent is not an element under the doctrine of equivalents. *See id.* The Court concluded that because the doctrine of equivalents was predicated on the “notion of identity between a patented invention and its equivalent,” infringement—be it literal or based on equivalents—should be treated the same. *Id.* Because intent plays no role in

In a concurring opinion joined by Justice Kennedy, Justice Ginsburg added a cautionary note regarding the newly announced rebuttable presumption for prosecution history estoppel.<sup>95</sup> Justice Ginsburg was concerned that a rigid application of the presumption would unfairly affect patents prosecuted before the presumption existed because patentees would have had little incentive to insist on having the reasons for all amendments documented in the patent prosecution file.<sup>96</sup> Justice Ginsburg suggested that with respect to existing patents, the lower courts should keep in mind the absence of clear rules on prosecution history estoppel when deciding whether the patentee had established suitable reasons for making the amendments.<sup>97</sup>

As noted by the Court in *Warner-Jenkinson*, patent infringement cases decided by the Supreme Court had developed along two distinct lines.<sup>98</sup> In one line of cases, the Supreme Court has consistently stated that the courts have no right to enlarge a patent claim. A typical case in this line is *Keystone Bridge Co. v. Phoenix Iron Co.*<sup>99</sup> In *Keystone Bridge*, the patentee had obtained a patent for using wide and thin rolled bars with enlarged ends as the lower chords in truss bridges.<sup>100</sup> The defendant constructed cylindrical bars

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determining literal infringement, infringement under the doctrine of equivalents does not require proof of intent either. *See id.* The Court also held that the "proper time for evaluating equivalency—and thus knowledge of interchangeability between elements—is at the time of infringement, not at the time the patent was issued." *Id.* at 1053. The Court declined to decide whether the application of the doctrine of equivalents was a question for the judge or the jury because resolution of that issue was not necessary to resolve the question presented in the case. *See id.* Analysis of the Court's decisions on these issues is beyond the scope of this Note.

95. *See Warner-Jenkinson*, 117 S. Ct. at 1054-55 (Ginsburg, J., concurring).

96. *See id.* at 1055 (Ginsburg, J., concurring).

97. *See id.* (Ginsburg, J., concurring). On remand, the Federal Circuit held that, under the element-by-element approach, there was sufficient evidence in the record to support the jury's finding that a pH of 5.0 in Warner-Jenkinson's process was equivalent to a pH of "approximately 6.0" as claimed in Hilton Davis's patent. *See Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 114 F.3d 1161, 1164 (Fed. Cir. 1997) (en banc). The Federal Circuit also held that "where the prosecution history is silent or unclear the district court should give a patentee the opportunity to establish the reason, if any, for a claim change." *Id.* at 1163. In so holding, the court responded to Justice Ginsburg's concern that patentees prior to the Supreme Court's decision in *Warner-Jenkinson* had little incentive to include express indications as to why amendments were made. *See id.* Finally, the Federal Circuit held that if a court determines that a nonpatentability-related amendment was made during prosecution, the court must determine if the reason for the amendment is sufficient to overcome estoppel and that whether the "reason is sufficient depends on the particular facts of the case." *Id.*

98. *See Warner-Jenkinson*, 117 S. Ct. at 1049.

99. 95 U.S. 274 (1877).

100. *See id.* at 277-78. The primary function of the lower chords in a truss is to hold

"flattened at the eye" which also were used for the lower chords in truss bridges.<sup>101</sup> The Court, in finding no infringement, stated that "courts have no right to enlarge a patent beyond the scope of its claim as allowed by the Patent Office, or the appellate tribunal to which contested applications are referred."<sup>102</sup> The Court held that a patentee in an infringement suit is bound by the terms of the patent and "can claim nothing beyond it."<sup>103</sup> The Court also held that if the invention turns out to be broader than the claim, the patentee "must be held to have surrendered the surplus to the public."<sup>104</sup> The Court reasoned that it was the Patent Office's duty to examine, scrutinize, and limit the patentee's claim to that which the patentee was entitled, and that the courts could not be expected to reevaluate the patent in order to "spell out what [the patentee] might have claimed, but [had] not claimed."<sup>105</sup>

The Court's aversion to expanding the patent claim continued in *Minerals Separation, Ltd. v. Butte & Superior Mining Co.*<sup>106</sup> In *Minerals Separation*, the claim at issue called for the use of oil in a quantity " 'amounting to a fraction of one per cent. on the ore' "<sup>107</sup> in a process to improve the concentration of ores.<sup>108</sup> The accused infringer used oil in a quantity in excess of one percent on the ore to do the same thing.<sup>109</sup> In finding no infringement by the accused process, the Court relied on *Keystone Bridge* in holding that the

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the truss together by keeping the lower parts of the truss from spreading apart. *See id.* at 275.

101. *Id.* at 276.

102. *Id.* at 278.

103. *Id.*

104. *Id.* at 279.

105. *Id.* at 278. The Court determined that if the patentee had failed to claim the whole of his invention, the proper remedy was for the patentee to surrender the patent and file an application for reissue of a new patent encompassing the whole of the invention. *See id.* The reissue process allows a patentee to correct a patent that is or may be deemed to be defective. *See* 4 CHISUM, *supra* note 9, § 15.01, at 15-2. For example, a patentee may believe that a claim in the original patent is either too narrow to protect the full scope of his invention or too broad to be valid. *See* 4 *id.* at 15-2 to -3. The reissued patent cannot claim any new subject matter. *See* 4 *id.* at 15-3. "The claims of the reissue[d patent] must be for the 'invention disclosed in the original patent' " and cannot "recapture subject matter intentionally surrendered to obtain the original patent." 4 *id.* Reissues that enlarge the scope of the original patent must be applied for within two years of the issuance of the original patent. *See* 4 *id.* *See generally* 4 *id.* §§ 15.01-.05 (providing a more thorough discussion of the reissue process).

106. 250 U.S. 336 (1919).

107. *Id.* at 341 (quoting the patent at issue). "On the ore" indicates that the percentage of oil used is calculated in reference to the weight of the ore. *See id.*

108. *See id.* at 339.

109. *See id.*

courts could not expand a patent beyond the scope of its claims.<sup>110</sup> The Court reasoned that the claim is required by the statute in order to make the patentee define exactly what his invention is.<sup>111</sup> The Court continued by saying that it would be " 'unjust to the public, as well as an evasion of the law, to construe [the claim] in a manner different from the plain import of its terms.' " <sup>112</sup>

While long recognizing that the courts do not have the right to expand a patent claim beyond the scope granted by the Patent Office, the *Warner-Jenkinson* Court simultaneously recognized a separate line of cases that allows a finding of infringement under the doctrine of equivalents even when no literal infringement is present. *Winans v. Denmead*<sup>113</sup> generally is recognized as the first Supreme Court decision to use the doctrine of equivalents to find infringement outside the literal language of the patent claim.<sup>114</sup> The patentee Winans had obtained a patent on a new type of railroad car to carry coal.<sup>115</sup> Prior to the Winans invention, coal-carrying railroad cars were constructed with rectangular floors.<sup>116</sup> The patent claim called for the upper part of the railroad car to be cylindrical and the lower part to be in the form of a frustum cone.<sup>117</sup> The new cylindrical/conical design had two major advantages over the previous design: (1) the cylindrical/conical shape evenly distributed the weight of the coal over the car walls, resulting in cars requiring less reinforcement in construction,<sup>118</sup> thereby reducing the overall weight of the car<sup>119</sup> and enabling production of a coal car that could carry over three times its own weight in coal,<sup>120</sup> and (2) the cone-shaped lower part of the car allowed for complete discharge of the load when the bottom was removed.<sup>121</sup> The defendant had constructed railroad cars similar to Winans's except that they were

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110. *See id.* at 347 (citing *Keystone Bridge*, 95 U.S. at 278).

111. *See id.*

112. *Id.* (quoting *White v. Dunbar*, 119 U.S. 47, 52 (1886)).

113. 56 U.S. (15 How.) 330 (1853).

114. *See* 5 CHISUM, *supra* note 9, § 18.02[1]; Adelman & Francione, *supra* note 11, at 700 n.121.

115. *See Winans*, 56 U.S. (15 How.) at 330-31.

116. *See* 5 CHISUM, *supra* note 9, § 18.02[1], at 18-5.

117. *See Winans*, 56 U.S. (15 How.) at 339. A frustum cone is the part of a cone that remains after cutting off the upper part of the cone along a plane parallel to the base. *See* READER'S DIGEST DICTIONARY, *supra* note 47, at 538.

118. *See Winans*, 56 U.S. (15 How.) at 339.

119. *See id.* at 332.

120. *See id.* at 331. Previous coal cars could not carry a load greater than their own weight. *See id.* at 340.

121. *See id.* at 339.



octagonal/pyramidal in shape instead of cylindrical/conical.<sup>122</sup> The evidence at trial indicated that the defendant's car achieved substantially the same advantages of the Winans car.<sup>123</sup> Nevertheless, the district judge ruled that there was no infringement of the patent because Winans's claim was limited to the particular geometric form mentioned in the specification and the defendant's car was not constructed with that particular geometry.<sup>124</sup>

In a five-to-four decision, the Supreme Court reversed.<sup>125</sup> The majority relied on the presumption that once a patentee has described her invention and claimed it in the best mode contemplated by the inventor to carry out her invention, the law will presume that the patentee claimed every variation in which her invention may be copied, unless the patentee manifests an intention to disclaim some of these variations.<sup>126</sup> The question for the Court became, "How near to a circle, then, must a car be, in order to infringe?"<sup>127</sup> The Court answered that the car must be "so near to a true circle as substantially to embody the patentee's mode of operation, and thereby attain the same kind of result as was reached by his invention."<sup>128</sup>

Justice Campbell authored a dissent, in which Chief Justice Taney and Justices Catron and Daniel joined.<sup>129</sup> The dissenters presumed that the patentee must have had a specific reason for confining his claim to the conical form and suggested that this limitation on the claim may have been made to assure patent validity.<sup>130</sup> They argued that Congress had specifically required the patentee to point out his invention with specificity and that the decision of the Court went against this congressional mandate.<sup>131</sup> They further stated that "[n]othing, in the administration of this law, will be more mischievous, more productive of oppressive and costly litigation, of exorbitant and unjust pretensions and vexatious demands, more injurious to labor, than a relaxation of these wise and salutary requisitions of the act of Congress."<sup>132</sup>

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122. *See id.* at 332.

123. *See id.* at 340.

124. *See id.*

125. *See id.* at 344.

126. *See id.* at 343.

127. *Id.* at 343-44.

128. *Id.* at 344.

129. *See id.* at 344-48 (Campbell, J., dissenting).

130. *See id.* at 347 (Campbell, J., dissenting).

131. *See id.* (Campbell, J., dissenting).

132. *Id.* (Campbell, J., dissenting).

The Supreme Court ushered the doctrine of equivalents into modern patent law in *Graver Tank & Manufacturing Co. v. Linde Air Products Co.*<sup>133</sup> In *Graver Tank*, the patentee had obtained a patent that claimed a welding flux composed of a combination of alkaline earth metal silicates and calcium fluoride.<sup>134</sup> The actual welding flux made by the patentee contained silicates of calcium and magnesium.<sup>135</sup> The accused welding flux was similar to that of the patentee's except that it substituted manganese, which is not an alkaline earth metal, for magnesium.<sup>136</sup>

The Court in *Graver Tank* stated that "[i]n determining whether an accused device or composition infringes a valid patent, resort must be had in the first instance to the words of the claim. If accused matter falls clearly within the claim, infringement is made out and that is the end of it."<sup>137</sup> However, the Court held that the lack of literal infringement did not end the inquiry.<sup>138</sup> It then laid out the rationale for the doctrine of equivalents. In doing so, the Court compared a person who "pirates" a patented invention to a person who "pirates" a copyrighted book or play, observing that both will try to make minor changes in order to avoid liability.<sup>139</sup> The Court observed that, because outright duplication of an invention seldom occurs, a prohibition solely on literal infringement would leave the inventor "at the mercy of verbalism."<sup>140</sup> Limiting the inventor to the literal words of his claim would essentially "deprive [the inventor] of the benefit of his invention."<sup>141</sup> The Court predicted that the disclosure of inventions, one of the primary purposes of the patent system, would decline because inventors would choose to keep their inventions to themselves rather than risk the pitfalls of disclosing them to the public.<sup>142</sup> The Court noted that the doctrine of equivalents developed as a means to alleviate this problem,<sup>143</sup> and stated that the "essence of the doctrine is that one may not practice

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133. 339 U.S. 605 (1950); see 5 CHISUM, *supra* note 9, § 18.02[2], at 18-11.

134. See *Graver Tank*, 339 U.S. at 610. Welding flux is a substance that is applied to the surface of the objects to be joined during the welding process. See READER'S DIGEST DICTIONARY, *supra* note 47, at 514. Welding flux promotes the fusion of the two objects. See *id.*

135. See *Graver Tank*, 339 U.S. at 610.

136. See *id.*

137. *Id.* at 607.

138. See *id.*

139. See *id.*

140. *Id.*

141. *Id.*

142. See *id.*

143. See *id.* at 608.

fraud on a patent.”<sup>144</sup>

The Court held that the doctrine of equivalents can be invoked by the patentee against an infringer if the infringer’s device “‘performs substantially the same function in substantially the same way to obtain the same result.’”<sup>145</sup> While noting that the doctrine can be used for both a primary or pioneer invention as well as a secondary invention in which old ingredients are combined to bring about novel and useful results, the Court observed that the scope of equivalency may vary between the two.<sup>146</sup>

The Court then turned to defining what constitutes an equivalent. The Court stated that when determining whether two things are equivalent, one must examine “the context of the patent, the prior art, and the particular circumstances of the case.”<sup>147</sup> Factors to be considered include the purpose of the component of the claim at issue, the characteristics of the component when combined with other components, and the intended function of the component.<sup>148</sup> The Court stated that an important consideration is “whether persons reasonably skilled in the art would have known of the interchangeability of [a component] not contained in the patent with one that was.”<sup>149</sup> The Court held that the trial court’s finding that the defendant’s manganese-containing flux was equivalent to the patentee’s magnesium-containing flux was not clearly erroneous.<sup>150</sup>

Justice Black and Justice Douglas dissented. They argued that the Court’s holding was a “sterilization of Acts of Congress and prior [Supreme Court] decisions” which, in combination, require the patentee to claim his invention with particularity, resulting in a claim that outlines the patent grant.<sup>151</sup> Under this notion, the dissenters said that anything not specifically claimed by the patentee should be

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144. *Id.*

145. *Id.* (quoting *Sanitary Refrigerator Co. v. Winters*, 280 U.S. 30, 42 (1929)). This test is commonly known as the function-way-result test. See William E. Eshelman, Comment, *The Doctrine of Equivalents in Patent Law: Post-Pennwalt Developments*, 65 TUL. L. REV. 883, 887 (1991); *supra* note 91.

146. See *Graver Tank*, 339 U.S. at 608. A pioneer or primary invention is an invention in an area that is devoid of significant prior art. See Hofmann, *supra* note 7, at 1057. A secondary invention is an invention that is merely an improvement in a crowded field. See *id.*

147. *Graver Tank*, 339 U.S. at 609.

148. See *id.*

149. *Id.*

150. See *id.* at 612. The Court went on to comment that it would be “difficult to conceive of a case more appropriate for application of the doctrine of equivalents.” *Id.*

151. *Id.* at 613-14 (Black, J., dissenting).

considered as dedicated to the public.<sup>152</sup> They further argued that the patent statute's reissue process was the sole remedy for patentees in cases in which literal enforcement imposes a hardship due to the patentees' failure to claim complete protection for their inventions.<sup>153</sup> Echoing the terms used by the majority, the dissenters stated that the majority's decision set the "stage for more patent 'fraud' and 'piracy' against business than could be expected" from an adherence to the "congressionally enacted plan to protect business against judicial expansion of precise patent claims."<sup>154</sup> The dissenters were troubled by the fact that manufacturers could no longer rely on the language of the patent claims, but instead were forced to guess at how far a non-expert court would expand a claim based on the testimony of technical experts.<sup>155</sup> If the manufacturers calculated incorrectly, they would be exposed to potentially large damage awards for infringement.<sup>156</sup> The dissenters concluded that requiring such clairvoyance would impose a burden on business that was not compatible with the kind of competitive economy the Court "professed" to have as a goal.<sup>157</sup>

Although *Winans* and *Graver Tank* represent the birth and reaffirmation of the doctrine of equivalents and establish the broad-brush function-way-result test, they do not provide much guidance on how to apply the doctrine. Two other cases are helpful in illuminating the application of the doctrine of equivalents. One such case is *Burr v. Duryee*,<sup>158</sup> decided just ten years after *Winans*. *Burr* involved two machines that manufactured hats.<sup>159</sup> The Court was asked by the patentee to find infringement under the doctrine of equivalents.<sup>160</sup> In finding no infringement, the Court commented that abstract phrases like "*substantial* identity" and "equivalent" were often used in such an ambiguous manner that they confused the issue, led to "absurd conclusions," and were unhelpful in "distinguish[ing] between things that differ."<sup>161</sup> The Court stated that in order for a machine to infringe on a patented machine it must contain

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152. *See id.* at 614 (Black, J., dissenting).

153. *See id.* at 614-15 (Black, J., dissenting); *supra* note 105 (discussing the reissue process).

154. *Graver Tank*, 339 U.S. at 617 (Black, J., dissenting).

155. *See id.* (Black, J., dissenting).

156. *See id.* (Black, J., dissenting).

157. *See id.* (Black, J., dissenting).

158. 68 U.S. (1 Wall.) 531 (1863).

159. *See id.* at 531.

160. *See id.* at 532.

161. *Id.* at 572.

components “ ‘which perform[] the same [function] or produce[] the same effect in the same way, or substantially the same way.’ ”<sup>162</sup> The Court rejected the argument that all combinations of machine components that produce an equivalent result are equivalent, stating that such an argument was a “flagrant abuse of the term ‘equivalent.’ ”<sup>163</sup> Thus, the Court held that the mere fact that the two machines perform the same function to reach the same result was not enough to find infringement under the doctrine of equivalents.<sup>164</sup> The *Burr* Court concentrated its analysis on the “way” part of the function-way-result test by looking at the components within each machine.<sup>165</sup> The Court then held that there was no infringement because there were components in one machine that did not have equivalents in the other machine.<sup>166</sup>

In *Water-Meter Co. v. Desper*,<sup>167</sup> the Court dealt again with the doctrine of equivalents, this time in an infringement action involving two water meter designs.<sup>168</sup> The Court stated that a claim consisting of a combination of components will not be infringed “if any of the material parts of the combination are omitted.”<sup>169</sup> However, the Court went on to say that such a claim is infringed if one of the components is only formally omitted in that the component is replaced by an “equivalent performing the same [function] and producing the same result.”<sup>170</sup> Stating that infringement required “the presence of every one of the elements specified in the combination secured by [the patent],”<sup>171</sup> the Court proceeded to conclude that there was no infringement because at least one of the material components of the patentee’s water meter was missing in the defendant’s water meter.<sup>172</sup> The Court noted in its closing observations that because the law requires patentees to identify

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162. *Id.* at 573 (quoting GEORGE TICKNOR CURTIS, A TREATISE ON THE LAW OF PATENTS FOR USEFUL INVENTIONS IN THE UNITED STATES OF AMERICA 322 (1849)).

163. *Id.* Similarly, the Court in *Hubbell v. United States*, 179 U.S. 77 (1900), rejected the argument that two combinations of components were identical because they obtained the same result. *See id.* at 86. Instead, the Court said that the question was “whether the devices or mechanical means by which the desired result is secured are the same.” *Id.* For a discussion of *Hubbell*, see *infra* notes 204-11 and accompanying text.

164. *See Burr*, 68 U.S. (1 Wall.) at 572.

165. *See id.*

166. *See id.*

167. 101 U.S. 332 (1879).

168. *See id.* at 333.

169. *Id.* at 335.

170. *Id.*

171. *Id.* at 336.

172. *See id.* at 336-37.

precisely what is claimed to be new, the patentee gives materiality to all the elements of a patent claim.<sup>173</sup> Because the patentee had made each element material, the Court stated that it could not declare any single element immaterial in a claim that consisted of a combination of elements.<sup>174</sup> Accordingly, the sole question was whether "any part omitted by an alleged infringer is supplied by some other device or instrumentality which is its equivalent."<sup>175</sup>

Thus, before deciding *Warner-Jenkinson*, the Supreme Court had produced two seemingly incompatible lines of cases. The *Winans/Graver Tank* line of cases recognized the doctrine of equivalents, which helps foster an effective and fair patent system by protecting patentees from would-be infringers who make insubstantial changes to patentees' inventions.<sup>176</sup> At the same time, the *Keystone Bridge/Minerals Separation* line of cases recognized the fundamental idea that patent claims serve to give fair notice to the public of exactly what is claimed by the patentees so that the public can avoid infringing the patents.<sup>177</sup>

Instead of expressly overruling either line of cases, the *Warner-Jenkinson* Court chose to adopt the reasoning of Judge Nies's dissent from the court below in an attempt to harmonize these two lines of cases.<sup>178</sup> Judge Nies's reconciliation is based on the premise that "a distinction can be drawn . . . between substitution of an equivalent for a component *in* an invention and enlarging the metes and bounds of the invention *beyond* what is claimed."<sup>179</sup> The Court agreed with Judge Nies's premise and held that "the doctrine of equivalents must be applied to individual elements of the claim, not to the invention as a whole."<sup>180</sup>

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173. *See id.* at 337.

174. *See id.*; *Hubbell v. United States*, 179 U.S. 77, 84 (1900) (citing *Water-Meter Co. v. Desper*, 101 U.S. 332, 337 (1879)).

175. *Desper*, 101 U.S. at 337.

176. *See supra* note 13 and accompanying text.

177. *See supra* note 12 and accompanying text.

178. *See Warner-Jenkinson*, 117 S. Ct. at 1049.

179. *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1573 (Fed. Cir. 1995) (en banc) (Nies, J., dissenting), *rev'd*, 117 S. Ct. 1040 (1997) (unanimous decision).

180. *Warner-Jenkinson*, 117 S. Ct. at 1049. There had been some controversy in the Federal Circuit as to whether the doctrine of equivalents should be applied to the invention as a whole or on an element-by-element basis. In *Hughes Aircraft Co. v. United States*, 717 F.2d 1351 (Fed. Cir. 1983), *vacated*, 117 S. Ct. 1466 (1997), the Federal Circuit held that "[t]he failure to apply the doctrine of equivalents to the claimed invention as a whole, and the accompanying demand for 'obvious and exact' equivalents of two elements the presence of which would have effectively produced literal infringement, was error." *Id.* at 1364. In *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931 (Fed. Cir. 1987) (en banc), decided just four years later, the Federal Circuit held that the proper application of

On a common sense level, the each-element approach to the doctrine of equivalents is logical when compared to the requirements for literal infringement. Literal infringement requires the patent owner to show that the accused device contains each element of the patented device.<sup>181</sup> It follows that infringement under the doctrine of equivalents should require that the accused device contain at least the equivalent of each element of the patented device.<sup>182</sup>

Support for the each-element application of the doctrine of equivalents can also be found in Supreme Court precedent. In *Burr v. Duryee*,<sup>183</sup> in comparing the accused machine to the patented machine, the Court noted that no one could say that the two machines "contain the *same combination* of mechanical devices, or *substantially the same*, to produce the desired effect. Not one of the devices, or its equivalent, used in one is to be found in the other . . . ."<sup>184</sup> Additionally, in *Water-Meter Co. v. Desper*,<sup>185</sup> the Court stated two fundamental principles of patent law: (1) when a claim involves a combination of elements, there cannot be infringement when any material part of the combination is missing, and (2) when any part is missing, but an equivalent part is provided that has the same "office and produce[s] the same result, the patent is infringed."<sup>186</sup> These two cases provide strong support for the premise recognized earlier by the Supreme Court that the application of the doctrine of equivalents required an each-element approach.<sup>187</sup>

Despite the Court's proclamation that the each-element approach reconciles its two lines of precedent,<sup>188</sup> a close look at the *Keystone Bridge* and *Minerals Separation* cases reveals no such

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the doctrine of equivalents was on an element-by-element basis. See *id.* at 935. In an opinion in *Pennwalt* entitled "additional views," Judge Nies distinguished the holding in *Hughes Aircraft* by stating that the legal error in *Hughes Aircraft* was the requirement for "obvious and exact" equivalents. See *id.* at 953 (Nies, J., additional views). For an argument that the "as a whole" approach is the better application of the doctrine of equivalents, see Gary S. Levenson, Note, *An Element-by-Element Analysis of the Doctrine of Equivalents in the Court of Appeals for the Federal Circuit*, 38 *DRAKE L. REV.* 389, 404 (1988).

181. See 5 *CHISUM*, *supra* note 9, § 18.03[4], at 18-55; Hofmann, *supra* note 7, at 1038.

182. See *Pennwalt*, 833 F.2d at 949 (Nies, J., additional views).

183. 68 U.S. (1 Wall.) 531 (1863).

184. *Id.* at 573 (emphasis added).

185. 101 U.S. 332 (1879).

186. *Id.* at 335.

187. For additional opinions supporting an each-element approach to the doctrine of equivalents, see *Hilton Davis Chemical Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1574-75 (Fed. Cir. 1995) (en banc) (Nies, J., dissenting), *rev'd*, 117 S. Ct. 1040 (1997) (unanimous decision), and *Pennwalt*, 833 F.2d at 949-52 (Nies, J., additional views).

188. See *Warner-Jenkinson*, 117 S. Ct. at 1049.

reconciliation. In *Keystone Bridge*, the patented device was for "wide and thin" bars to be applied on edge for use in truss bridges.<sup>189</sup> The accused device differed from the patented device only in that the bars were round or cylindrical.<sup>190</sup> The Court, in finding no infringement, held that "the courts have no right to enlarge a patent beyond the scope of its claim as allowed by the Patent Office."<sup>191</sup> Nowhere in the opinion does the Court indicate that any inquiry was made into whether round or cylindrical truss bars were equivalent to truss bars that were wide and thin and applied on edge.

Failure to invoke the doctrine of equivalents in *Keystone Bridge* seems especially odd considering that the *Winans* Court had recognized the doctrine of equivalents twenty-four years previously while examining two competing devices with only basic geometric differences.<sup>192</sup> Under *Winans*, the question for the Court in *Keystone Bridge* would have been whether cylindrical and round truss bars were so near to wide and thin bars that they would "substantially . . . embody the patentee's mode of operation, and thereby attain the same kind of result as was reached by his invention."<sup>193</sup> There is no indication in the *Keystone Bridge* opinion that an equivalency analysis was ever used; in fact, the *Keystone Bridge* Court did not even mention *Winans*. In *Keystone Bridge*, the Court's resolution seems to have been based more on the premise that once a patentee picks a geometric form as the claim of his invention, the patent covers only that geometric form.<sup>194</sup> This is the exact argument that the Court in *Winans* rejected.<sup>195</sup>

Similarly, the Court in *Minerals Separation* did not make an inquiry under the doctrine of equivalents. In *Minerals Separation*, the patented process improved the concentrations of ore by using certain types of oils in a percentage of less than one percent of the weight of the ore.<sup>196</sup> The accused process was essentially the same, except that the amount of oil used exceeded one percent of the

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189. See *Keystone Bridge Co. v. Phoenix Iron Co.*, 95 U.S. 274, 275-76 (1877).

190. See *id.* at 278.

191. *Id.*

192. See *supra* notes 116-24 and accompanying text.

193. *Winans v. Denmead*, 56 U.S. (15 How.) 330, 344 (1853). The modern formulation of the *Winans* test under *Warner-Jenkinson* would be whether cylindrical and round truss bars were identical or equivalent to wide and thin truss bars applied on end. See *Warner-Jenkinson*, 117 S. Ct. at 1054.

194. See *Keystone Bridge*, 95 U.S. at 278.

195. See *Winans*, 56 U.S. (15 How.) at 343.

196. See *Minerals Separation, Ltd. v. Butte & Superior Mining Co.*, 250 U.S. 336, 339 (1918).



weight of the ore.<sup>197</sup> In finding no infringement by the accused process, the Court stated that the statute required the claim in order to make the patentee define exactly what his invention is.<sup>198</sup> The Court continued by saying that it would be “‘unjust to the public, as well as an evasion of the law, to construe [the claim] in a manner different from the plain import of its terms.’”<sup>199</sup>

Despite the remarkable similarities in facts between *Minerals Separation* and *Warner-Jenkinson*, the analysis used by the Court in *Minerals Separation* is strikingly inconsistent with the Court’s pronouncement in *Warner-Jenkinson* that the application of the doctrine of equivalents on an each-element basis reconciles the Court’s past treatment of patent infringement cases. Both the *Minerals Separation* and the *Warner-Jenkinson* patents dealt with processes—one to remove impurities from ore, the other to remove impurities from dyes. The accused process in both cases varied only one element to a value outside of the literal language of the claim—less than one percent oil versus greater than one percent oil in *Minerals Separation*, and a pH of 5.0 versus a pH of between 6.0 and 9.0 in *Warner-Jenkinson*. For *Minerals Separation* to be compatible with the each-element application of the doctrine of equivalents in *Warner-Jenkinson*, the *Minerals Separation* Court needed to ask the question whether the use of greater than one percent oil was equivalent to the use of less than one percent oil. Again, no such inquiry into the equivalency of the processes was undertaken. Thus, it is reasonable to conclude that both *Keystone Bridge* and *Minerals Separation* have effectively been overruled by *Warner-Jenkinson*.<sup>200</sup>

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197. See *id.* at 340-41.

198. See *id.* at 347.

199. *Id.* (quoting *White v. Dunbar*, 119 U.S. 47, 52 (1886)).

200. Perhaps a better way of viewing the each-element application of the doctrine of equivalents is that it provides an apt reconciliation of the competing policies behind the two lines of Supreme Court cases instead of actually reconciling the cases themselves. As previously noted, the two conflicting policies involved in the doctrine of equivalents are the policy of giving fair notice to the public of the scope of the patent, and the policy of giving complete and fair protection to the patentee’s invention. See *supra* notes 11-14 and accompanying text. The each-element approach reconciles these two policies by providing a middle ground between either eliminating the doctrine of equivalents entirely or adopting the broad “as a whole” approach. The each-element approach provides fairer notice to the public when compared to the “as a whole” approach in that the public can read the claims of a patent and know that infringement will occur only if *each element* of *each claim* of the patent, or *its equivalent*, is present in the accused device. On the other hand, the each-element approach provides fairer protection to the patentee’s invention when compared to complete elimination of the doctrine of equivalents in that the scope of the patent under the each-element test is broadened beyond the literal language of the patent claims. Thus, the Court’s decision to apply the doctrine of equivalents on an

In order to develop a compromise between applying the doctrine of equivalents and holding a patentee to the literal language of the claims, courts developed the doctrine of prosecution history estoppel.<sup>201</sup> The doctrine of prosecution history estoppel prevents a patentee in an infringement suit from obtaining a construction of a claim that would include subject matter surrendered during patent prosecution before the Patent and Trademark Office.<sup>202</sup> When a court determines that prosecution history estoppel applies, an action for infringement based on the doctrine of equivalents is barred.<sup>203</sup>

Three Supreme Court cases are illustrative of the Court's application of the doctrine of prosecution history estoppel. In *Hubbell v. United States*,<sup>204</sup> the patentee had obtained a patent for a reloading cartridge.<sup>205</sup> During the prosecution of the patent, the plaintiff amended the specification once<sup>206</sup> and amended the claims twice.<sup>207</sup> The first amendment to the claims was necessary to overcome the examiner's objections based on prior art.<sup>208</sup> The next amendment was necessary to overcome the examiner's rejection of the already amended claims as "vague, indefinite and ambiguous."<sup>209</sup> The Court summarily declined to apply the doctrine

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element-by-element basis can also be viewed as an approach that furthers both fair notice and fair protection simultaneously, thus reconciling the two competing policies. More generally, both the public and the patentees will benefit from the increased fairness that the each-element test should bring to the equivalency determination. By replacing an all-encompassing equivalency analysis with many small equivalency analyses, the each-element test tightens the focus of the equivalency determination, thereby reducing its subjective and arbitrary aspects and increasing the fairness of the result. One facet of this increased fairness is increased predictability. Increased predictability will benefit both the public and the patentees because each will be able to predict more accurately whether a process or device will infringe a patented process or device. More accurate predictions of infringement will aid the public in its decisions to bring processes or devices to the market and will aid the patentees in their decisions to bring infringement actions against competing processes or devices.

201. See *Casey*, *supra* note 16, at 369 & n.33. "Prosecution history estoppel" is also known as "file wrapper estoppel." The Federal Circuit created the phrase "prosecution history estoppel" as a substitute for the phrase "file wrapper estoppel." See *id.* at 364 n.9. The term "file wrapper" literally describes the jacket within which all of the documents filed in connection with a patent are kept. See 5 CHISUM, *supra* note 9, § 18.05, at 18-151.

202. See 5 CHISUM, *supra* note 9, § 18.05, at 18-152 to -153.

203. See 5 *id.* at 18-153.

204. 179 U.S. 77 (1900).

205. See *id.* at 84.

206. See *id.* at 80.

207. See *id.* at 81-82.

208. See *id.* at 81. In this instance, the patent examiner rejected the patent applicant's claim because it either lacked novelty or was obvious in light of the prior art. See 35 U.S.C. §§ 102-103 (1994).

209. *Hubbell*, 179 U.S. at 82 (quoting the examiner's rejection). Patent law requires

of equivalents because the Court could not "accept the contention that these two combinations are identical because they are intended to obtain the same result."<sup>210</sup> In dicta, the Court stated that a valid infringement claim should not be defeated by "mere changes of expression" that were made to satisfy the examiner, when the claim as made and the claim as allowed have substantially the same meaning.<sup>211</sup>

In *Keystone Driller Co. v. Northwest Engineering Corp.*,<sup>212</sup> the patentee plaintiff's original claim had been rejected by the examiner due to the prior art.<sup>213</sup> In order to distinguish his claim from the prior art, the plaintiff made an argument that appeared in the printed record and that eventually led to the examiner's acceptance of a narrower claim.<sup>214</sup> In reference to the plaintiff's arguments to the examiner in favor of patentability, the Court held that it would not apply estoppel to arguments made by an applicant in an effort to avoid the prior art cited against his broad claims, but "where such broad claims are denied *and a narrower [claim] substituted*, the patentee [would be] estopped to read the granted claim as the equivalent of those which were rejected."<sup>215</sup>

*Exhibit Supply Co. v. Ace Patents Corp.*<sup>216</sup> is considered the leading modern Supreme Court decision on prosecution history estoppel.<sup>217</sup> The patent at issue concerned a switch that could be used in pinball machines that would close an electrical circuit when hit by a ball.<sup>218</sup> During prosecution, the patent applicant amended his claim language from a "'conductor means carried by the table'" to a "'conductor means in said circuit and *embedded* in the table.'"<sup>219</sup> The patent examiner required this amendment to distinguish the claim from the prior art.<sup>220</sup>

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that an inventor particularly point out what he claims as his invention. This requirement is currently contained in the second paragraph of 35 U.S.C. § 112, which provides "that the specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." 35 U.S.C. § 112 para. 2 (1994). The patent examiner's objection in this instance was for failure to state adequately what the applicant claimed as his invention.

210. *Hubbell*, 179 U.S. at 86.

211. *See id.* at 80.

212. 294 U.S. 42 (1935).

213. *See id.* at 47.

214. *See id.* at 47-48.

215. *Id.* at 48 (emphasis added).

216. 315 U.S. 126 (1942).

217. *See* 5 CHISUM, *supra* note 9, § 18.02[3], at 18-17.

218. *See Exhibit Supply*, 315 U.S. at 128.

219. *Id.* at 132 (emphasis added) (quoting the original and amended patent language).

220. *See id.* at 133.

The infringement suit involved six accused devices that varied from the patented device in the form and placement of the conductor.<sup>221</sup> Two of the accused devices substituted for the conductor a nail or pin "driven into the table and surrounded . . . by a ring attached to the end of [a] resilient coil spring."<sup>222</sup> The Court construed the term "embedded" to "embrace any conductor means solidly set or firmly fixed in the table, whether or not it protrudes above or below the surface."<sup>223</sup> The Court held that a nail driven into the table fell within the claim language of "embedded in the table" and found infringement despite the fact that the nail protruded above the table surface.<sup>224</sup>

The four other accused devices used a conductor that was either "supported by an insulating plate resting on the table or an insulating core."<sup>225</sup> After finding no literal infringement because the conductor was not embedded in the table,<sup>226</sup> the Court considered the plaintiff's alternative argument that infringement should be found under the doctrine of equivalents.<sup>227</sup> However, the Court found it unnecessary to reach this issue, holding that the doctrine of equivalents could not be used to recapture claims surrendered by the patentee during the amendment process.<sup>228</sup> The Court stated that the patentee, by changing the claim from "carried by the table" to "embedded in the table" in order to avoid prior art, disclaimed the difference between the two phrases.<sup>229</sup> The Court reasoned that, once disclaimed, the difference between the two phrases—conductors that are carried by the table but not embedded in it—cannot be recaptured by the "doctrine of equivalents, which at most operates . . . to secure to the inventor the full benefits, not disclaimed, of the claims allowed."<sup>230</sup>

Against this backdrop, the Supreme Court addressed *Warner-Jenkinson*, a case in which there was no definite reason for the claim amendment that added a lower limit of 6.0 pH. The Court could

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221. See *id.* at 130.

222. *Id.*

223. *Id.* at 135.

224. See *id.*

225. *Id.* at 131.

226. See *id.* at 135.

227. See *id.*

228. See *id.* at 136. Interestingly, the accused infringers argued that the doctrine of equivalents "should be discarded because it did not satisfy the demands of the statute that the patent shall describe the invention." *Id.* The Court found it unnecessary to reach the question of whether the doctrine of equivalents continued to be viable because resort to the doctrine of equivalents was precluded by prosecution history estoppel. See *id.*

229. See *id.*

230. *Id.* at 137.

have held that prosecution history estoppel applied to *any* amendment made to a claim during the patent prosecution if the amendment was required by the patent examiner before he would issue the patent. This was the argument made by Warner-Jenkinson before the Court<sup>231</sup> and by Judge Nies<sup>232</sup> in her dissent below.<sup>233</sup> This position is also supported by the Court's own precedent. In *Hubbell*, the Court stated that "it is well settled that the claim as allowed must be read and interpreted with reference to the rejected claim and to the prior state of the art, and cannot be so construed as to cover *either* what was rejected by the Patent Office *or* disclosed by prior devices."<sup>234</sup> In *Exhibit Supply*, the Court stated that it had long been settled that the doctrine of equivalents could not be used to "recapture claims [that] the patentee [had] surrendered by amendment."<sup>235</sup> In neither case did the Court restrict the application of prosecution history estoppel to those situations in which the amendment was required to overcome prior art or was related to patentability. In fact, the *Hubbell* Court was careful to point out that prosecution history estoppel would apply to amendments resulting from claims rejected by the Patent Office *or* amendments necessary to overcome the prior art.<sup>236</sup>

The *Warner-Jenkinson* Court, however, chose to apply

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231. See Brief for Petitioner at 34-36, *Warner-Jenkinson* (No. 95-728).

232. See *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1572-73 (Fed. Cir. 1995) (en banc) (Nies, J., dissenting), *rev'd*, 117 S. Ct. 1040 (1997) (unanimous decision).

233. Arguably, the Court mischaracterized Warner-Jenkinson's argument. Warner-Jenkinson argued that when a *patent examiner* required a patent applicant to amend his claim in order to be granted a patent, the patent examiner's reason for requiring the amendment should be irrelevant. See Brief for Petitioner at 34-36, *Warner-Jenkinson* (No. 95-728). The Court stated, however, that Warner-Jenkinson's argument was "that the reason for an amendment during patent prosecution is irrelevant to any subsequent estoppel." *Warner-Jenkinson*, 117 S. Ct. at 1049. This statement could be read to encompass amendments made by the patent applicant that were not required by the patent examiner, which is a broader (and less defensible) argument than the one Warner-Jenkinson actually made.

234. *Hubbell v. United States*, 179 U.S. 77, 80 (1900) (emphasis added).

235. *Exhibit Supply*, 315 U.S. at 136.

236. See *Hubbell*, 179 U.S. at 80. Patent examiners may reject claims for either prior art or non-prior-art reasons. Reasons for rejecting claims for prior art include anticipation and the lack of novelty, see 35 U.S.C. § 102 (1994), and obviousness, see *id.* § 103. Reasons for non-prior-art rejections include vagueness and indefiniteness, nonstatutory subject matter, incompleteness, prolixity, old combination, aggregation, multiplicity, new matter, obvious method, undue breadth, and lack of utility under 35 U.S.C. § 101. See *Casey*, *supra* note 16, at 372 n.51. For more detailed information regarding prior art and non-prior-art rejections, see U.S. PATENT & TRADEMARK OFFICE, U.S. DEP'T OF COMMERCE, MANUAL OF PATENT EXAMINING PROCEDURE §§ 706.02 (prior art), 706.03 (non-prior art) (5th ed. rev. 2 1996) [hereinafter MPEP].

prosecution history estoppel in a narrower fashion,<sup>237</sup> holding that certain unspecified reasons for a claim amendment may avoid prosecution history estoppel. The Court pointed out that in each of its previous cases, it applied prosecution history estoppel when an applicant amended a claim "to avoid the prior art, or otherwise to address a specific concern such as obviousness—that *arguably* would have rendered the claimed subject matter unpatentable."<sup>238</sup> It is true that the patent examiner required the applicant to narrow his claim in order to overcome the prior art in *Hubbell*, *Keystone Driller*, and *Exhibit Supply*.<sup>239</sup> Thus, the Court's narrower application of prosecution history estoppel is equally consistent with the Court's precedent.<sup>240</sup>

One argument for adopting a broader application of prosecution history estoppel is the patent policy of giving clear notice to the public of the scope of the patent.<sup>241</sup> If a broader rule were adopted, the scope of the patent could be determined confidently based on the actual patent itself and the contents of the publicly available patent application file.<sup>242</sup> The Court's adoption of the narrower rule requires a judicial inquiry into the reason for the claim limitation, an analysis that is dependent not only upon the completeness of the patent history but also upon what a judge or jury concludes about the reason for the claim limitation.<sup>243</sup> The argument is that a judicial inquiry into the reasons for the limitation is unpredictable and that a " 'reasons' standard utterly undermines the patent policy of clear

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237. Under a narrow application of prosecution history estoppel, a court is "willing to judge for [itself] the specific limitations a particular amendment has on the available equivalents of [a] claim." Kurt F. James, Comment, *Patent Claims and Prosecution History Estoppel in the Federal Circuit*, 53 MO. L. REV. 497, 500 (1988). Under a broad application of prosecution history estoppel, a court is "unwilling to look behind the finding in the prosecution history that a claim was amended or otherwise limited to determine if the claim may yet have some range of equivalents." *Id.*

238. *Warner-Jenkinson*, 117 S. Ct. at 1049 (emphasis added).

239. See *supra* text accompanying notes 208, 214, 220. For example, in *Exhibit Supply*, the Court stated that, even if the range of equivalents would have encompassed the accused devices had the original claim been for a " 'conductor means embedded in the table,' " it was a different question "when the applicant, in order to meet objections in the Patent Office, *based on references to the prior art*, adopted the phrase as a substitute for the broader one 'carried by the table.'" *Exhibit Supply*, 315 U.S. at 136 (emphasis added).

240. Although the *Warner-Jenkinson* Court took a narrower approach to prosecution history estoppel, the extent to which the Court narrowed the doctrine is unclear. See *infra* notes 257-78 and accompanying text.

241. See Brief for Petitioner at 36-37, *Warner-Jenkinson* (No. 95-728).

242. See *id.* at 36.

243. See *id.*

public notice.”<sup>244</sup>

Further support for the broader application of prosecution history estoppel is provided by the idea that patentees have every incentive to write a claim as broadly as possible.<sup>245</sup> Since patentees try to make their claims as broad as possible, it makes sense to presume conclusively that patentees do not surrender matters in a patent claim without a reason.<sup>246</sup> The argument is further supported by considering both that patentees have the scientific expertise to engage patent examiners in a full exploration of the merits of whether matters need to be omitted from the claim, and that patentees can appeal<sup>247</sup> any determinations by the patent examiner that the patentee believes are too restrictive.<sup>248</sup> Given the patentee’s incentive to draft claims broadly, the patentee’s expertise to defend against an unjustified narrowing of a claim, and the statutory avenue of appeal, the argument is that, regardless of what the reason for the amendment to a claim, it is fundamentally fair to presume conclusively that the reason is sufficient to apply prosecution history estoppel.

Although the Court acknowledged the arguments in favor of a broad application of prosecution history estoppel, the Court chose to give significant weight to past practices of the Patent and Trademark Office in opting for a narrower application of the doctrine. The United States in its *amicus curiae* brief, joined by the Patent and Trademark Office, pointed out that there were a “variety” of reasons—other than overcoming the prior art—why the Patent and Trademark Office requested changes to claim language.<sup>249</sup> If the Patent and Trademark Office had been requesting changes without the intent to limit equivalents, the Court felt that it would be unwise to presume conclusively that any claim amendment supported

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244. *Id.* at 37.

245. See *Brenner v. Manson*, 383 U.S. 519, 534 (1966).

246. See *id.*

247. See 35 U.S.C. §§ 132, 134, 141, & 145 (1994).

248. See Brief for Petitioner at 37, *Warner-Jenkinson* (No. 95-728).

249. See Brief for the United States as *Amicus Curiae* at 22, *Warner-Jenkinson* (No. 95-728). In its *amicus* brief, the United States actually pointed out only two reasons other than prior art: enablement and additional specificity. See *id.* at 22-23. The United States stated that the purpose of the enabling requirement was “not to limit the scope of the patent right, but to ensure that the invention has been fully disclosed so that, upon the patent’s expiration, the public can practice the invention.” *Id.* at 22. The United States added that changes to claims to add specificity were “‘to impart precision, not to overcome prior art.’” *Id.* (quoting *Pall Corp. v. Micron Separations, Inc.*, 66 F.3d 1211, 1220 (Fed. Cir. 1995)).

application of the doctrine of prosecution history estoppel.<sup>250</sup> Accordingly, the Court concluded that the arguments in favor of a broader application of prosecution history estoppel were not substantial enough to warrant upsetting the basic assumptions of the Patent and Trademark Office by adopting a "more rigid rule invoking an estoppel regardless of the reasons for a change."<sup>251</sup>

But the conclusion that the reasons for the amendment to the claim during prosecution were relevant to determining whether prosecution history estoppel applied did not resolve the case at hand. On the facts in *Warner-Jenkinson*, it was unclear why the patent examiner required the lower pH limit of 6.0.<sup>252</sup> In order to resolve cases like *Warner-Jenkinson* in which the reasons for a claim amendment are unknown, the Court created a rebuttable presumption; in the absence of an explanation, the "court should presume that the [Patent and Trademark Office] had a substantial reason related to patentability for including the limiting element added by amendment."<sup>253</sup> Therefore, absent a sufficient reason for the amendment, prosecution history estoppel will bar the application of the doctrine of equivalents to the element that was amended.<sup>254</sup> If a reason is offered, the court is then to decide "whether that reason is sufficient to overcome prosecution history estoppel as a bar to application of the doctrine of equivalents to the element added by that amendment."<sup>255</sup> The Court rationalized the new rebuttable presumption rule by stating that it provided the "proper deference to the role of claims in defining an invention and providing public notice, and to the primacy of the [Patent and Trademark Office] in ensuring that the claims allowed cover only subject matter that is properly patentable in a proffered application."<sup>256</sup>

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250. See *Warner-Jenkinson*, 117 S. Ct. at 1050 ("[T]here are a variety of other reasons why the [Patent and Trademark Office] may request a change in claim language.").

251. *Id.* In a footnote, the Court added that the mere fact that *Warner-Jenkinson's* formulation might provide a brighter line rule for determining when to apply estoppel was not enough justification to adopt such a rule. See *id.* at 1050 n.6. The Court felt this was especially true "where, as here, the [Patent and Trademark Office] may have relied upon a flexible rule of estoppel when deciding whether to ask for a change in the first place." *Id.* The Court viewed *Warner-Jenkinson's* formulation of the rule as a substantial change that ran the risk of upsetting the "balances the [Patent and Trademark Office] sought to strike when issuing numerous patents which have not yet expired and which would be affected by [the Court's] decision." *Id.*

252. See *id.* at 1050; *supra* note 59 (describing the parties' divergent explanations for the lower pH limit).

253. *Warner-Jenkinson*, 117 S. Ct. at 1051.

254. See *id.*

255. *Id.* at 1050.

256. *Id.* at 1051.



The rebuttable presumption that all claim amendments during the patent prosecution process are made for substantial reasons related to patentability may well be the most significant aspect of the Supreme Court's decision in *Warner-Jenkinson*.<sup>257</sup> The problematic aspect of the Court's formulation of the rule is that it still leaves open two questions: (1) what type of amendments are "related to patentability," and (2) what is a "sufficient reason" to overcome prosecution history estoppel.<sup>258</sup> The determination of what is a sufficient reason to overcome prosecution history estoppel will ultimately depend on the type of amendments that are classified as "related to patentability."

One possible solution to what amendments the Court considers to be "related to patentability" is that the Court intended amendments "related to patentability" to be synonymous with amendments made to avoid the prior art. One commentator has taken this approach and suggested that the term "patentability," as used by the Court, would best be read in reference to the titles of the chapters in the patent statute.<sup>259</sup> Chapter 10 of the 1952 Act is entitled "Patentability of Inventions" and contains the prior art sections, § 102 (novelty) and § 103 (non-obviousness).<sup>260</sup> Chapter 11 is entitled "Application for Patent" and contains the "make and use" enablement and the clarify or "impart precision" requirements of § 112 (specifications).<sup>261</sup> The argument is that amendments required to overcome objections based on the Chapter 10 prior art requirements would give rise to prosecution history estoppel whereas

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257. See Kenneth R. Adamo, *The Waiting at the (Patent) Bar Is Over—The Supreme Court Decides Hilton Davis*, 79 J. PAT. & TRADEMARK OFF. SOC'Y 431, 435 (1997); Mueller, *supra* note 25, at 509.

258. See Adamo, *supra* note 257, at 447 ("[T]here is some ambiguity in the Court's language that may prove very troublesome in deciding what type of rejection gives rise to estoppel."). The Court's own language even suggests that the meaning of "related to patentability" is debatable when the Court classifies obviousness as a concern that would "arguably" render the claim unpatentable. See *Warner-Jenkinson*, 117 S. Ct. at 1049. Amendments made to a claim to overcome an objection based on obviousness are clearly necessary to render the claim patentable. See 35 U.S.C. § 103 (1994). But, by using "arguably," the Court seems to be implying that obviousness will not always render a claim unpatentable. If obviousness might not render a claim unpatentable, one has to wonder what the Court's definition of "related to patentability" really is.

259. See Adamo, *supra* note 257, at 447-48.

260. See 35 U.S.C. §§ 102-103 (1994).

261. See *id.* § 112. Interestingly, the Manual of Patent Examining Procedure ("MPEP") has a different structure. Chapter 2100 of the MPEP is entitled "Patentability," see MPEP, *supra* note 236, § 2100-1, and includes not only the novelty and non-obviousness requirements of §§ 102 and 103, but also the specification requirements of § 112, see *id.* §§ 2121-2186.

amendments required to overcome objections based on the Chapter 11 non-prior art requirements would not.<sup>262</sup> Under this view, amendments related to patentability and amendments to avoid the prior art are synonymous and both would refer to amendments necessary to overcome rejections based on the prior art sections of Chapter 10 of the 1952 Act.

It is suggested that the Court's decision can best be understood if amendments "related to patentability" is defined to mean amendments necessary to meet the requirements of § 112 *as well as* amendments to avoid the prior art. Defining amendments related to patentability to mean amendments necessary to meet the requirements of § 112 as well as amendments to avoid the prior art is supported by the fact that the first two paragraphs of § 112 contain requirements that are not related to prior art, but that are arguably conditions of patentability.<sup>263</sup> Under this reading of the Court's decision, amendments to avoid the prior art are classified as a subset of amendments related to patentability.

Additional support for defining amendments "related to patentability" to include both prior art amendments and § 112 amendments can be found in the language of the *Warner-Jenkinson* opinion. At several points in the opinion, the Court's language seems to indicate that the Court views amendments related to patentability more broadly than amendments to avoid the prior art, and may even view prior art amendments and patentability-related amendments as mutually exclusive. For example, the Court stated that its precedent applied prosecution history estoppel to amendments made to avoid the prior art *or* amendments that addressed concerns that "arguably would have rendered the claimed subject matter unpatentable."<sup>264</sup> At another point in the opinion the Court stated that "[w]here the

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262. See *Adamo*, *supra* note 257, at 447-48; see also *Farrand & Johnston*, *supra* note 24, at 9 (suggesting that one possible reading of the Court's decision is that amendments for purposes other than avoiding prior art do not give rise to estoppel).

263. See *Adamo*, *supra* note 257, at 447-48. Paragraphs 1 and 2 of § 112 read as follows:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

35 U.S.C. § 112 paras. 1-2.

264. *Warner-Jenkinson*, 117 S. Ct. at 1049.

reason for the change was not related to avoiding the prior art . . . it does not *necessarily* preclude infringement by equivalents of that element.”<sup>265</sup> At least three commentators have recognized that the Court’s language can be taken to mean that amendments related to patentability and amendments to avoid the prior art are not synonymous.<sup>266</sup>

Defining amendments “related to patentability” to include amendments necessary to meet the § 112 requirements is also supported by the fact that, although the § 112 requirements do not determine whether the underlying invention is patentable, a patent application can still be rejected for failure to meet the § 112 requirements.<sup>267</sup> Thus, amendments necessary to meet the requirements of § 112 are “related to patentability” in that the Patent and Trademark Office will not issue a patent when the patent applicant has failed to comply with the § 112 requirements.<sup>268</sup>

Even accepting that amendments “related to patentability” includes prior art amendments as well as § 112 amendments, the Court’s decision still leaves open the question of what type of amendments will trigger the application of prosecution history estoppel. Absent evidence to the contrary, the presumption is that the Patent and Trademark Office had a “substantial reason related to patentability” for requiring the amendment, thereby triggering the application of estoppel and precluding a finding of infringement under the doctrine of equivalents.<sup>269</sup> Therefore, a “sufficient reason” to overcome estoppel is a showing that the amendment was made for reasons which are not substantially related to patentability.<sup>270</sup> It is clear from the opinion that amendments to a claim to overcome prior art will trigger prosecution history estoppel.<sup>271</sup> Thus, amendments necessary to avoid the prior art must be included in the category of

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265. *Id.* at 1050-51 (emphasis added).

266. See Adamo, *supra* note 257, at 447-48; Farrand & Johnston, *supra* note 24, at 9.

267. See MPEP, *supra* note 236, §§ 706.03(c)-(d), 2161-2186.

268. See *id.* The structure of the MPEP also supports this conclusion in that the MPEP discusses both prior-art and non-prior-art objections in a chapter entitled “Patentability.” See *supra* note 261.

269. See *Warner-Jenkinson*, 117 S. Ct. at 1051.

270. *Warner-Jenkinson* is a case in which no reason for the claim amendment appeared in the prosecution history. It is suggested that in cases in which the reasons for an amendment appear either in the prosecution history or are offered at trial, a court should evaluate those reasons in order to determine if any of the reasons were substantially related to patentability. If any of the reasons were substantially related to patentability, prosecution history estoppel will apply and bar the application of the doctrine of equivalents with respect to that amendment.

271. See *id.* at 1050-51.

amendments that are for reasons substantially related to patentability.

The effect of amendments for reasons other than avoiding the prior art is less clear. Accepting that the Court intended amendments "related to patentability" to include amendments necessary to meet the requirements of § 112, it is suggested that the Court, in using the phrase "*substantially* related to patentability," created a hierarchy among those amendments necessary to meet the requirements of § 112. As such, only those § 112 requirements that are the most integrally related to patentability will trigger prosecution history estoppel.<sup>272</sup> Accordingly, amendments required to meet the specification requirements of § 112 that are substantially related to patentability would trigger prosecution history estoppel.

Support for a rule that amendments made to meet some § 112 requirements should trigger estoppel while other § 112 changes should not can be found in the precedents of the Supreme Court and the Federal Circuit. In *Hubbell v. United States*,<sup>273</sup> the Court, in dicta, indicated that changes made to a claim that consisted of "mere changes of expression, having substantially the same meaning" should not bar an infringement claim.<sup>274</sup> Thus, the *Hubbell* Court indicated that a clarifying amendment would not give rise to prosecution history estoppel. In *Pall Corp. v. Micron Separations, Inc.*,<sup>275</sup> the Federal Circuit stated that, when a claim was amended for a reason other than avoiding the prior art, the specific change and the reason for the change must be examined in order to determine whether prosecution history estoppel applied.<sup>276</sup> The Federal Circuit then went on to hold that "whether [an] amendment or [an] argument made in response to a rejection under § 112 produces an estoppel . . . is dependent on the particular facts."<sup>277</sup> From these decisions it can be inferred that some amendments required to meet

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272. See Casey, *supra* note 16, at 392-93.

273. 179 U.S. 77 (1900).

274. *Id.* at 80.

275. 66 F.3d 1211 (Fed. Cir. 1995).

276. See *id.* at 1219.

277. *Id.* at 1219-20. The Federal Circuit has also invalidated patents for failure to comply with the § 112 enablement requirements. See, e.g., *Brooktree Corp. v. Advanced Micro Devices, Inc.*, 977 F.2d 1555, 1571 (Fed. Cir. 1992); *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 956 (Fed. Cir. 1983). If a patent can be invalidated for failure to meet the § 112 enablement requirements, it seems equally fair to apply prosecution history estoppel to changes required to meet the enablement requirements. See Ted Apple, *Enablement Estoppel: Should Prosecution History Estoppel Arise When Claims Are Amended to Overcome Enablement Rejections?*, 13 SANTA CLARA COMPUTER & HIGH TECH. L.J. 107, 134-35 (1997).

the requirements of § 112 should give rise to estoppel while other amendments required to meet the requirements of § 112 should not give rise to estoppel. The determination of which § 112 amendments trigger estoppel should depend on the particular facts of the case.<sup>278</sup>

Regardless of how the meaning of "patentability" is eventually resolved by the Court, the new rule regarding prosecution history estoppel will change the practice of patent law. First, claim amendments without explanation must be avoided.<sup>279</sup> Under the new rebuttable presumption, any amendment without explanation is presumed to be for patentability reasons and will bar the application of the doctrine of equivalents to claim language removed by such amendments.<sup>280</sup> Patent prosecutors will need to take the utmost care in ensuring that the prosecution history accurately reflects the reasons for the amendments and must be extremely careful not to be overly broad in making arguments to overcome rejections based on the prior art.<sup>281</sup>

Second, if the patent applicant believes that the examiner is misreading the prior art and thereby requiring unnecessarily narrow claims, *Warner-Jenkinson* gives the patent applicant increased incentive to appeal rather than acquiesce by amending the claim.<sup>282</sup> In deciding whether to appeal, a patent applicant must balance any potential reduction in the value of the patent caused by the narrower claim against any possible reduction in the patent term that may result from appealing the examiner's decision.<sup>283</sup> The Court's decision in *Warner-Jenkinson* regarding prosecution history estoppel changes the balancing point in the decision to appeal by increasing the chances that the subject matter given up by the narrowing of a claim during patent prosecution will be permanently lost.<sup>284</sup>

The Supreme Court's decision in *Warner-Jenkinson* clarified that

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278. See *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 114 F.3d 1161, 1163 (Fed. Cir. 1997) (en banc); *Pall*, 66 F.3d at 1219-20.

279. See Daniel W. McDonald et al., *Hilton Davis: The Doctrine of Equivalents Survives—Now What?*, 79 J. PAT. & TRADEMARK OFF. SOC'Y 309, 325 (1997); Mueller, *supra* note 25, at 509.

280. See *supra* text accompanying note 88.

281. See Adamo, *supra* note 257, at 447-48; Mueller, *supra* note 25, at 509.

282. See Adamo, *supra* note 257, at 447; Mueller, *supra* note 25, at 510. Patent applicants may appeal determinations of the patent examiner pursuant to 35 U.S.C. §§ 134, 141, & 145.

283. See 35 U.S.C. § 154(b)(3); Mueller, *supra* note 25, at 510.

284. See Mueller, *supra* note 25, at 510. For additional discussion of the impact of *Warner-Jenkinson* on the practice of patent law, see Adamo, *supra* note 257, at 444-50, Farrand & Johnston, *supra* note 24, at 9-10, McDonald et al., *supra* note 279, at 322-29, and Mueller, *supra* note 25, at 502-14.

the proper application of the doctrine of equivalents is on an element-by-element basis. The each-element approach is consistent with the Court's previous cases involving the doctrine of equivalents.<sup>285</sup> Although the Court stated that the each-element rule reconciled two lines of Supreme Court precedent, in reality the each-element rule implicitly overruled the *Keystone Bridge/Minerals Separation* line of cases.<sup>286</sup>

The Court also created a rebuttable presumption that, when the reasons for a claim amendment are unknown, the amendment to a patent claim during the patent prosecution process is for reasons substantially related to patentability, thus invoking prosecution history estoppel as a bar to infringement based on the doctrine of equivalents.<sup>287</sup> The Court's opinion leaves unanswered the questions of what is an amendment related to patentability and what is a sufficient reason to overcome the presumption.<sup>288</sup> Based on the caselaw, the most logical answers to those questions are that amendments "related to patentability" should be read to mean amendments made to avoid the prior art as well as amendments made to meet the requirements of § 112 of the patent statute, and the determination of what is a sufficient reason to overcome estoppel should be determined on the particular facts of the case.<sup>289</sup>

Regardless of how these questions are resolved, *Warner-Jenkinson* will affect the practice of patent law in at least two ways. First, patent prosecutors will need to ensure that patent prosecution history adequately documents amendments made to the claims to ensure that the new rebuttable presumption does not bar use of the doctrine of equivalents in potential infringement actions.<sup>290</sup> Second, patent prosecutors have additional incentive to appeal determinations by the patent examiner that an amendment is necessary to overcome the prior art.<sup>291</sup> Failure to pursue the appeal will undoubtedly mean foreclosure of the use of the doctrine of equivalents to protect the scope of the patent that may have been needlessly surrendered during the patent prosecution.

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285. See *supra* notes 183-87 and accompanying text.

286. See *supra* notes 188-200 and accompanying text.

287. See *supra* notes 88, 253-56 and accompanying text.

288. See *supra* note 258 and accompanying text.

289. See *supra* notes 259-78 and accompanying text.

290. See *supra* notes 279-81 and accompanying text.

291. See *supra* notes 282-84 and accompanying text.