

ARTICLES

CABINING THE DOCTRINE OF
EQUIVALENTS IN *FESTO*: A HISTORICAL
PERSPECTIVE ON THE RELATIONSHIP
BETWEEN THE DOCTRINES OF
EQUIVALENTS AND PROSECUTION
HISTORY ESTOPPEL

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TABLE OF CONTENTS

I. Background.....	554
II. The Pre-Civil War Era: Recognition that the Patent Claim Extends to Equivalents of the Original Invention.....	556
III. The Post-Civil War Period: The Supreme Court Defines Limits to Claims of Equivalents—The “All Elements Rule”....	563
IV. The Advent of Prosecution History Estoppel.....	568
V. The Doctrine of Equivalents Enters the 20th Century: The Debate Opens on the Impact of Prosecution History Estoppel.....	575
VI. The Depression Era Court: The Balance Turns Away from the Patent Owner in Prosecution History Estoppel Cases.....	580
VII. The Post-World War II Treatment of Prosecution History Estoppel in the Circuit Courts.....	584
VIII. The Federal Circuit Settles the Issue on the Side of the Patent Holder: <i>Hughes Aircraft v. United States</i>	592

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IX. The Federal Circuit Unsettles the Issue in <i>Festo</i>	596
X. Conclusion: The Supreme Court Weighs In Again.....	602

I. BACKGROUND

The Constitution gave Congress the 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.”¹ So fundamental was the idea that the law of the nascent nation should provide a reward for and thereby encourage innovation that James Madison wrote, in urging ratification, that “[t]he utility of this power will scarcely be questioned . . . [t]he public good fully coincides in both cases with the claims of individuals.”² Indeed, little beyond this statement is reported in the early record of the ratification process—a testament to the lack of controversy over the provision. The Patent Act of 1790 was one of the earliest measures passed by the First Congress and signed into law by President Washington.³ Abraham Lincoln is credited with saying: “The patent system . . . added the fuel of interest to the fire of genius.”⁴

In giving effect to the intent of the Framers and the early Congress, courts and litigants soon grappled with a problem still vexing them today, two hundred years later: how broadly should the inventor’s patent claim be permitted to reach? On the one hand, if the patent is narrowly construed to the embodiment of the invention constructed and described in the patent, stealing the benefit of the invention becomes an easy matter for a copyist, who avoids the literal reach of the patent claim through slight alterations.⁵ The incentive to innovate intended by the patent system is thus lost. On the other hand, if the patent claim is construed more broadly than the “fair” scope of the invention, would-be competitors who might make innovative improvements to the original invention could be deterred

1. U.S. CONST. art. I, § 8, cl. 8.

2. THE FEDERALIST NO. 43 (James Madison).

3. The Patent Act 1790, ch. 7, 1 Stat. 109.

4. The quotation is inscribed on the building that now houses the United States Department of Commerce in Washington D.C., which also housed the U.S. Patent Office until it moved to its current location in Arlington, Virginia, in the 1960s; see also GREGORY L. LAVORGNA, AN OVERVIEW OF THE US PATENT SYSTEM, A.L.I.—A.B.A. COURSE OF STUDY: FUNDAMENTALS OF PATENT LAW AND PRACTICE (1994) (noting that Lincoln, in addition to being widely credited with the quote, was probably the only American President to have his own patent—U.S. Patent No. 6,469—a “system for buoing vessels over shoals”).

5. See ROBERT L. HARMON, PATENTS AND THE FEDERAL CIRCUIT 12 (2d ed. 1991) (stating that “[t]o hold a patentee to the precise claim language in all cases could turn the patent grant into a hollow and useless thing.”).

by the need to pay tribute to the original patent holder, possibly conferring on the patent holder an unjustified monopoly position.⁶ As patent infringement cases percolated through the courts over the last two centuries, two competing legal doctrines emerged to balance the interests of patent owners and would-be competitors: the “doctrine of equivalents”⁷ and the countervailing doctrine of “prosecution history estoppel.”⁸

The struggle to resolve the basic tension between these doctrines and the policy concerns that underlie them is perhaps no better illustrated than by the decisions of the Court of Appeals and the Supreme Court in *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*⁹ In *Festo*, the Court of Appeals for the Federal Circuit¹⁰ struggled with the uncertainty inherent in attempting to draw fair boundaries around a patentee’s rights.¹¹ As will be discussed later, the Federal Circuit in *Festo* tipped the balance squarely in favor of the would-be competitor and against the original innovator.¹² In favoring the would-be competitor, the Court of Appeals used the doctrine of prosecution history estoppel to severely cabin the doctrine of equivalents, setting up a regime in which the original inventor has little control of close imitations of the original invention.¹³

6. See *id.* at 199-202 (stating that representations made to the Patent and Trademark Office (“PTO”) during patent prosecution, which clarify or limit the product or process being patented, can have the effect of barring a patentee’s subsequent infringement claims by limiting the patentee’s ability to pursue infringement beyond the scope of the initial patent grant).

7. See discussion *infra* Parts III, V (explaining the doctrine of equivalents).

8. See discussion *infra* Parts IV, VI-VII (explaining the development and application of the doctrine of prosecution history estoppel).

9. 234 F.3d 558, 56 U.S.P.Q.2d (BNA) 1865 (Fed. Cir. 2000), *vacated*, 535 U.S. ___, 122 S. Ct. 1831 (May 28, 2002) (No. 00-1543).

10. See 28 U.S.C. § 1295(a)(3) (1994 & Supp. 1999) (creating the Federal Circuit via the Federal Courts Improvement Act of 1982). The court itself has stated that the “central purpose” of that Act was “to reduce the widespread lack of uniformity and uncertainty of legal doctrine that exists in the administration of patent law.” *Panduit Corp. v. All States Plastic Mfg. Co.*, 744 F.2d 1564, 1574, 223 U.S.P.Q. (BNA) 465, 470 (Fed. Cir. 1984) (quoting H.R. REP. NO. 97-312, at 23).

11. *Festo*, 234 F.3d at 563-64, 56 U.S.P.Q.2d (BNA) at 1868.

12. See *id.* at 582, 56 U.S.P.Q.2d (BNA) at 1883 (limiting a patentee’s ability to claim infringement under the doctrine of equivalents by strictly construing “claim amendments” as changes made to the scope of the patent during prosecution for a variety of reasons and not just those required by PTO in order to grant the patent).

13. See *id.* at 566-78, 56 U.S.P.Q.2d (BNA) at 1870-80 (limiting the doctrine of equivalents by holding that: (1) amendments narrowing the scope of the patent for any statutorily related reason gives rise to a defense of prosecution history estoppel; (2) “voluntary” claim amendments are equally as narrowly construed; (3) once prosecution history estoppel is created, no “range of equivalents” is available for the amended claim elements; and (4) “unexplained” amendments are similarly not entitled to any range of equivalents).

The Supreme Court, in vacating the Federal Circuit's decision, brought things back into balance and closer to historic norm.¹⁴ Indeed, a look back in time to the significant patent cases over more than two hundred years of history shows that the issues addressed in *Festo*—the relationship between the doctrine of equivalents and the doctrine of prosecution history estoppel—were hardly new.¹⁵ To the contrary, the Supreme Court had fleshed out these fundamental patent law issues by the 1880s.¹⁶ What was new about *Festo* was the Federal Circuit's marked departure from the majority view taken by the Supreme Court throughout most of this history.¹⁷ The Supreme Court, by correcting the imbalance left by the Federal Circuit, may have preserved the checks and balances in the patent system, and thus kept it relevant in the midst of another period of rapid technological development. Whether that is the ultimate result will depend upon how the courts, most importantly the Federal Circuit, apply the Supreme Court's guidance in future cases.

II. THE PRE-CIVIL WAR ERA: RECOGNITION THAT THE PATENT CLAIM EXTENDS TO EQUIVALENTS OF THE ORIGINAL INVENTION

A study of how courts have dealt with the balance between the rights of the patent holder and would-be competitors—also referred to in many cases as “the public”—takes one back only a few decades shy of the founding of the United States. In some of the nation's earliest reported patent infringement cases, the notion that a patent holder's claim extends beyond both the invention's literal embodiment and that described in the patent to cover equivalent alterations first appeared to be as uncontroversial as the idea of the patent system itself. The “Nail Wars” cases of the early 1800s illustrate this assumption.

In 1798, Jacob Perkins invented a machine combining a lever, cutter and vice that cut and headed a nail from a rod of iron.¹⁸ But

14. *Festo*, 122 S. Ct. at 1831.

15. See *Goodyear Dental Vulcanite Co. v. Davis*, 102 U.S. 222, 227-28 (1880) (setting forth in the notion of prosecution history estoppel—then called “file wrapper estoppel”—in a case involving a process for manufacturing false teeth); see also *Autogiro v. United States*, 384 F.2d 391, 400-01, 155 U.S.P.Q. (BNA) 697, 705 (Ct. Cl. 1967) (stating that “the doctrine of equivalents is subservient to . . . [prosecution history] estoppel.”).

16. See generally Harold C. Wegner, *Equitable Equivalents: Weighing the Equities to Determine Patent Infringement in Biotechnology and other Emerging Technologies*, 18 RUTGERS COMPUTER & TECH. L.J. 1, 3-23 (1992) (discussing the development of the doctrine of equitable equivalents and prosecution history estoppel in the late 1880s in relation to technology advancement).

17. See discussion *infra* Part IX.

18. *Gray v. James*, 10 F. Cas. 1015 (C.C.D. Pa. 1817) (No. 5,718) (Washington,

Perkins' machine tended to jam when operated rapidly and apparently was not as commercially successful as a similar device invented in 1807 by Jesse Read.¹⁹ Read's improved device, which also consisted of the same basic elements—a vice, a cutter and a lever—was reported to operate much more efficiently than Perkins' device.²⁰ Apparently, the major difference between the two devices was that with Perkins' machine, the lower jaw was fixed and the upper jaw was movable, whereas with Read's machine, the upper jaw was fixed and the lower jaw was movable.²¹

The ensuing litigation resulted in two decisions, one from the Circuit Court of Massachusetts and one from the Circuit Court in Pennsylvania. In the first decision, *Odiorne v. Winkley*,²² Supreme Court Justice Story, riding circuit, presided over a jury trial in which the issues of infringement and validity of Read's patent were tried.²³ The jury found for the defendant and, under Justice Story's instructions, must have concluded that the two machines were indeed "constructed substantially upon the same principles and upon the same mode of operation."²⁴

In the other reported case, *Gray v. James*,²⁵ the assignee of the Perkins patent asserted infringement by a user of Read's machine.²⁶

C.J.) (describing in detail the nail making device).

19. Compare *Gray*, 10 F. Cas. 1015, with *Odiorne v. Winkley*, 18 F. Cas. 581 (C.C.D. Mass. 1814) (No. 10,430) (Story, Circuit Justice). Note that the courts use "Read" or "Reed" respectively.

20. See *Gray*, 10 F. Cas. at 1016 (stating that because the machine could not make more than 30-40 nails per minute without jamming, the Perkin's device was completely abandoned in favor of Reed's machine that produced up to 200 nails per minute).

21. *Id.*

22. 18 F. Cas. 581 (C.C.D. Mass. 1814) (No. 10,430) (Story, Circuit Justice).

23. See *id.* at 582 (containing Justice Story's instructions to the jury relative to functional equivalence). Specifically, Justice Story instructed:

The first question for consideration is, whether the machines used by the defendant [the Jacobs machines] are substantially, in their principles and mode of operation, like the plaintiff's machines. If so, it was an infringement of the plaintiff's patent to use them, unless some of the other matters offered in the defence are proved. Mere colorable alterations of a machine are not sufficient to protect the defendant.

Id. Justice Story also instructed the jury on the issue of the validity of Read's patent: And, on the whole, in the present case, the question for the jury is, whether, taking Reed's machine, and Perkins's machine together, and considering them with their various combinations, they are machines constructed substantially upon the same principles, and upon the same mode of operation. If they are, then Reed's patent is void, and the plaintiff is not entitled to recover

Id.

24. See *id.* at 582; see also *supra* note 23 (detailing the relevant portions of Justice Story's jury instructions).

25. 10 F. Cas. 1015 (C.C.D. Pa. 1817) (No. 5,718) (Washington, C. J.)

26. See *id.* at 1015 (charging that Read's improvement was by "one [the same]

Riding circuit in Pennsylvania, Justice Washington instructed the jury in some detail on the defense that the Read machine was different in form and principle from Perkins' patented machine by focusing on similarities in design, operation, and result.²⁷

After acknowledging testimony by the defendant's witnesses that Read's machine was an improvement over Perkins', Justice Washington explained that improvements alone, no matter how substantial, do not provide a defense for patent infringement if the underlying construction and operation of the machines are substantially the same.²⁸ The jury in *Gray* awarded a verdict for \$750 to the plaintiff, which was trebled by the court.²⁹

The law given to the juries in these early cases shows that the early Patent Act protected inventors not only against infringement by direct copies, but also against machines that were "colorable alterations" operating in substantially the same manner and obtaining the same results as the patented invention.³⁰ Even if the later machines improved upon the operation of the original, if those machines operated on substantially the same principle, the original inventor would nonetheless receive a reward for contributing to the

operation," and therefore infringed the patent).

27. See *Gray*, 10 F. Cas. at 1016. Justice Washington instructed the jury:

What constitutes a difference in principle between two machines, is frequently a question of difficulty more especially if the difference in form is considerable and the machinery complicated. But we think it may safely be laid down as a general rule, that where the machines are substantially the same, and operate in the same manner, to produce the same result, they must be in principle the same. I say substantially, in order to exclude all formal differences; and when I speak of the same result, I must be understood as meaning the same kind of result though it may differ in extent.

Id.

28. See *id.* at 1017. The jury charge continued as follows:

If improvements only, what is the legal consequence? Most clearly this and no more: that Perkins and those claiming under his patent, have no right to use those improvements without a license from the inventor. But on the other hand, neither Read nor any other person, can lawfully use the discovery of Perkins of the principal machine without a license from him. The law wisely and with justice, discriminates between, [and] rewards the merit of each, by granting an exclusive property to each in his discovery, but prevents either from invading the rights of the other. If then, the jury should be of opinion, that the two machines are the same in principle, it is no defense for the defendants for using Perkins' discovery, that they have improved it, no matter to what extent.

Id. Interestingly, the report of the *Gray* case makes no mention of the earlier invalidation of the Read patent in the *Odiorne* case, which may not have actually appeared in the case reports until later.

29. *Id.* at 1018.

30. See *Odiorne v. Winkley*, 18 F. Cas. 581, 582 (C.C.D. Mass. 1814) (No. 10,430) (Story, C.J.) (containing Justice Story's instructions that incorporation of such minor alterations does not provide an adequate defense).

technology.³¹

The Supreme Court eventually cemented this notion into the law. One of the most celebrated, and perhaps one of the most important, inventions of the pre-Civil War era was the electric telegraph.³² Samuel Morse is credited with the invention of the telegraph, although other schemes for electric telegraphy were invented at about the same time. Morse's electric telegraphy invention and those electric telegraphy inventions of his competitors are described in *O'Reilly v. Morse*,³³ one of the most significant patent cases litigated up to that time.³⁴ After determining that Morse's invention pre-dated those of his competitors³⁵ and invalidating one of the eight claims in Morse's patent for over-breadth,³⁶ the Court turned to the question of infringement by O'Reilly's Columbia Telegraph Company. O'Reilly's telegraph was not identical to Morse's, but the Court noted that a:

well-settled principle of law, that the mere change in the form of the machinery (unless a particular form is specified as the means by which the effect described is produced) or an alteration in some of its unessential parts; or in the use of known equivalent powers, not varying essentially the machine, or its mode of operation or organization, will not make the new machine a new invention.³⁷

Such changes may constitute "improvements," but, echoing the decision in *Gray*, the users of the improved technology or devices must seek the permission of the underlying patentee.³⁸ To the question "[d]oes [O'Reilly] use the same means?" the Court answered: "Substantially, we think he does."³⁹ On this finding, the

31. See, e.g., *Gray*, 10 F. Cas. at 1017 (providing Justice Washington's statement that those benefiting from an improvement to the underlying machine must obtain license to do so).

32. The telegraph has been described as "the Internet of the 19th Century" because of its revolutionary effect on communications technology and commerce at the time. See generally TOM STANDAGE, *THE VICTORIAN INTERNET: THE REMARKABLE STORY OF THE TELEGRAPH AND THE NINETEENTH CENTURY'S ON-LINE PIONEERS* (1998).

33. 56 U.S. (15 How.) 62 (1853).

34. See Benjamin Hattenbach, *On Illuminating Black Holes in Patent Disclosures: Toward a Structured Approach to Identifying Omitted Elements Under the Written Description Requirement of Patent Law*, 38 HOUS. L. REV. 1195, 1200 n.21 (2001) (discussing the "enablement requirement" of § 112 of the patent code and characterizing the O'Reilly decision as "infamous").

35. See *Morse*, 56 U.S. (15 How.) at 106-11 (containing Chief Justice Taney's opinion on the competing claims of Dr. Steinhil of Germany and Professors Wheatstone and Davy).

36. See *id.* at 112-19 (explaining that Morse's eighth patent claim seeking to patent all modes of "electro-magnetic" transmission of "intelligible characters rights or letters" were far too broad and use thus invalid).

37. *Id.* at 123.

38. *Id.*

39. See *id.* (finding that all of the "efficient elements" were the same or equivalent and the organization of such elements essentially the same).

Court affirmed the lower court's finding of infringement.

Another, perhaps more significant, case in the development of patent law, *Winans v. Denmead*,⁴⁰ was handed down during the same Term. Ross Winans invented a revolutionary design for a coal-carrying railroad car.⁴¹ Previously, the railroads shipped coal in rectangular-shaped iron cars. The weight of the coal required that the iron sides of the cars be thick, thus increasing their weight, and raising the power requirements of the locomotive.⁴² Winans' coal car was built in the shape of a cylinder, with the base tapering into the frustrum of a cone, allowing the pressure of the load to be distributed equally around the car's circumference, and using the tensile strength of the iron to bear much more of the load than in rectilinear-shaped cars. The advantages of this invention were dramatic: (1) a Winans-type car could carry twice as much coal as a rectilinear car of the same weight,⁴³ and (2) the conical shape lowered the center of gravity of the load, providing stability and allowing more convenient discharge.⁴⁴

The defendants employed octagon-shaped coal cars with a pyramidal-shaped base.⁴⁵ The trial record included the testimony of experts that the defendants' car relied on the same principle as the patented car and had the same advantages.⁴⁶ In directing a verdict for the defendants, the court below held that the patent was limited only to the conical form of the invention as described in Winans' patent.⁴⁷ The Supreme Court was closely divided on the question of whether limiting the patent to exactly the geometric form described was error. Justice Curtis, writing for the majority, stated, "when a patentee describes a machine . . . he is understood to intend to claim . . . not only the precise forms he had described, but all other forms which embody his invention . . ." ⁴⁸ The Court then explained its rationale in terms of a policy rewarding innovation—the patent right is not

40. 56 U.S. (15 How.) 330 (1853).

41. See *id.* at 331 (containing the claims of the patent under which the new coal cars carry loads greater than their own weight). Prior coal cars could not carry heavier loads than their empty weight. *Id.*

42. See *id.* at 332 (noting that the lighter weight of the cars increased available locomotive power 50 to 100%).

43. See *id.* at 331 (stating that cars weighing 5,750 pounds could carry up to 18,550 pounds of coal—a 3.3 to 1.0 ratio).

44. See *id.* at 331, 339 (observing that part of the cone was lower than the axels).

45. *Winans v. Denmead*, 56 U.S. (15 How.) 330, 339 (1853).

46. *Id.* at 346 (Campbell, J., dissenting).

47. See *id.* at 336 (finding that the defendants' design, described as "entirely rectilinear," was not an infringement).

48. See *id.* at 341 (stating further that it was a "familiar rule that, to copy the principle or more of the operation described, is an infringement, although such copy should be totally unlike the original in form or proportions").

“secure” if others are free to make substantial copies of the invention.⁴⁹

Four justices dissented, including, interestingly, Chief Justice Taney.⁵⁰ Writing for the dissent, Justice Campbell lamented the uncertainty inherent in the majority’s rule and predicted dire results. Winans’ description of his invention in terms of the circular form, without an express reservation for equivalent structures “confine[d] his claim to the use of the conical form, and exclude[d] from his specification any allusion to any other. He must have done so advisedly.”⁵¹ How then, Justice Campbell asked, would a competitor know the boundaries of the claim, and thus what activities he could engage in without paying tribute to the original patent holder?⁵² “[T]his danger was foreseen, and provided for, in the patent act,”⁵³ the dissent continued, by provisions requiring the patentee to “describe his invention, in such full, clear, and exact terms, that from the description, the invention may be constructed and used.”⁵⁴ In the dissenters’ view, “[f]ullness, clearness, exactness, preciseness, and particularity, in the description of the invention, its principle, and of the matter claimed to be invented,” would achieve the goals of Congress and meet the demands of a growing nation.⁵⁵ Relaxing this standard to encompass the multitude of claims and devices entailed in the majority’s interpretation would likely “be more mischievous, more productive of oppressive and costly litigation, of exorbitant and

49. *See id.* at 343 (explaining that the law does not require the patentee to anticipate every form a copy might take). Thus, the presumptive protection of the law extends to all equivalent, although unstated, devices. *Id.* Earlier, the Court had applied contract principles to the construction of patent claims by examining the words of the written instrument and looking to the intent of the patent applicants to resolve any ambiguities. *See Evans v. Eaton*, 16 U.S. (1 Wheat.) 454, 506 (1818). The Court stated that:

The construction of the patent must certainly depend on the words of the instrument. But where, as in this case, the words are ambiguous . . . [t]he intention of the parties, if that intention can be collected from sources which the principles of law permit us to explore, are entitled to great consideration.

Id.

50. Chief Justice Taney wrote the *Morse* decision, wherein he stated it was “well-settled that a mere change in the form of the machinery . . . or an alteration in some of its unessential parts . . . will not justify its use without the consent of the first patentee.” *O’Reilly v. Morse*, 56 U.S. (15 How.) 62, 123 (1853).

51. *Winans*, 56 U.S. at 346.

52. *Id.* at 347 (“The claim of today is, that an octagonal car is an infringement of his patent. Will this be the limit to that claim? Who can tell the bounds within which the mechanical industry of the country may freely exert itself? What restraint does this patent impose on this branch of mechanic art?”).

53. *See id.* (referring to the Patent Act of 1836 as modified by the Patent Act of 1840, which were the statutes then in effect).

54. *Id.*

55. *Winans*, 56 U.S. (1 How.) at 347.

unjust pretensions and vexatious demands, [and] more injurious to labor”⁵⁶

Thus, even prior to the Civil War the Supreme Court grappled with and definitively decided the central issue that divided the Federal Circuit 150 years later in *Festo*.⁵⁷ The Supreme Court determined that guaranteeing the security of patent rights by prohibiting close copies of the claimed invention, and thus preserving the Constitutional incentive for technological innovation, should not be sacrificed even for a rule that would provide more certainty to potential competitors in the marketplace.⁵⁸

The term “doctrine of equivalents” soon thereafter appeared as a patent law term of art in *McCormick v. Talcott*.⁵⁹ The Court defined the limits of this doctrine by stating, “[t]he inventor of the first improvement cannot invoke the doctrine of equivalents to suppress all other improvements which are not mere colorable invasions of the first.”⁶⁰ The Court found no infringement in *McCormick* because the defendant’s accused reaping machine was “substantially different, both in form and in combination, from that claimed by the complainant.”⁶¹ In the Civil War case of *Burr v. Duryee*,⁶² the Court articulated the principle that “an infringement involves substantial identity . . . [I]f the invention of the patentee be a machine, it will be infringed by a machine that incorporates in its structure and operation the substance of the invention.”⁶³

In the ensuing years, the Court continued to develop certain limitations and refinements to what might otherwise have been an unfettered rule favoring patentees. During this century of patent law jurisprudence, the Court seems to have grown sensitive to the *Winans* dissenters’ warning against allowing patents to “be very frequently

56. *Id.*

57. *See id.* at 337-47 (addressing the question of whether it is more appropriate to make the patent right “secure” by allowing the patentee to control alternative forms of his invention that nonetheless embody the essential principles of the invention, or whether it is better to promote the interests of would-be competitors in the “certainty” of knowing the boundaries of the patent claim).

58. *See id.* at 343 (“The exclusive right to the thing patented is not secured, if the public are at liberty to make substantial copies of it.”).

59. 61 U.S. (1 How.) 402 (1857).

60. *See id.* at 405 (asserting that a patentee cannot “treat another as an infringer who has improved the original machine by use of a different form or combination performing the same functions”).

61. *See McCormick*, 61 U.S. (1 How.) at 408 (finding that it was “an independent contrivance, a distinct invention”).

62. 68 U.S. (1 Wall.) 531 (1863).

63. *See Burr*, 68 U.S. (1 Wall.) at 572-73 (defining this as “an arrangement of mechanism which performs the same service or produces the same effect in the same way or substantially the same way”).

employed to obstruct invention, and to deter from legitimate operations of skill and ingenuity.”⁶⁴ But the Court also did not lose sight of the original purpose of the patent system—to secure to inventors the legitimate fruits of their inventions, thereby encouraging more innovation.

III. THE POST-CIVIL WAR PERIOD: THE SUPREME COURT DEFINES LIMITS TO CLAIMS OF EQUIVALENTS—THE “ALL ELEMENTS RULE”

The period following the Civil War represents one of the greatest periods of innovation in our country’s history.⁶⁵ Indeed, this period marked the height of the Industrial Revolution.⁶⁶ The 1880s alone saw the invention or introduction of the incandescent lamp,⁶⁷ the trolley car,⁶⁸ the automobile,⁶⁹ the cash register,⁷⁰ the electric dynamo,⁷¹ the pneumatic tire,⁷² smokeless gunpowder,⁷³ transparent film,⁷⁴ electrical welding,⁷⁵ the electric furnace,⁷⁶ as well as the steam

64. *Winans v. Denmead*, 56 U.S. (1 How.) 330, 347 (1853) (Campbell, J., dissenting).

65. See generally 2 BERNARD BAILY ET AL., *THE GREAT REPUBLIC: A HISTORY OF THE AMERICAN PEOPLE* 88-89 (4th ed. 1992) (discussing the tremendous number of innovations during the post-Civil War period and the sharp increase in the total number of patents issued).

66. *Id.* at 72.

67. See *The Incandescent Lamp* (noting experiments with incandescent light began as early as 1812 and providing a brief description of how incandescent lamps function), at <http://library.thinkquest.org/2763/Electricity/History/Inventions/LightBulb.html> (last visited Jan. 26, 2002).

68. See Laurence Gerckens, *Ten Events that Shaped the 20th Century American City*, 30 PLANNING COMMISSIONERS J. (stating the first successful use of the trolley was in 1886) (1998), available at <http://www.plannersweb.com/wfiles/w151.html> (last visited Jan. 26, 2002).

69. See THE CAMBRIDGE ENCYCLOPEDIA 215 (David Crystal ed., 1992) (noting the automobile was invented in 1884).

70. See *Cash Register* (stating that James Ritty invented the cash register in 1884 and named the invention the “Incorruptible Cashier”), at http://www.inventors.about.com/library/inventors/blcash_register.htm (last visited Jan. 26, 2002).

71. See *Edison’s Timeline of Inventions*, at <http://www.americanhistory.si.edu/timeline/05ed.htm> (last visited Jan. 26, 2002).

72. See *The Pneumatic Tube & The History of Pneumatic Devices* (indicating that John Boyd Dunlap patented his bicycle tire in 1888 and although this tire was not the first pneumatic tire to be patented Dunlap’s tire was the first pneumatic tire to be commercially accepted), at <http://www.inventors.about.com/library/inventors/blpneumatic.htm> (last visited Jan. 26, 2002).

73. See *Explosives* (stating Paul Vieille invented smokeless gunpowder in 1885), at <http://www.encyclopedia.com/printablenew/04323.html> (last visited Jan. 26, 2002).

74. See *Milestones—1878 to 1932* (noting that George Eastman invented the first commercially viable transparent film in 1889), at <http://www.kodak.com/US/en/corp/aboutKodak/kodakHistory/milestones78to32.shtml> (last visited Jan. 26, 2002).

75. See *Elihu Thomson Collection* (stating Elihu Thomson invented the electrical welding process in 1887) *1890-1974*, at <http://www.americanhistory.si.edu/archives/d8103.htm> (last visited Jan. 26, 2002).

76. See *The Heroult ASM Historical Site Project* (crediting Paul Heroult with the 1886

turbine.⁷⁷ Not surprisingly, the late 1800s was also an extraordinarily active period for patent litigation⁷⁸ and sorting out the respective rights of the inventors and improvers fell to the courts.⁷⁹ To address the varied patent issues, the United States Supreme Court developed common law rules that continue to guide the courts and the litigants in present-day patent cases.

From the early patent decisions, the Court developed the principle that “the mere change in the form of the machinery . . . or an alteration in some of *its unessential parts*; or in the use of known equivalent powers, *not varying essentially* the machine, or its mode of operation or organization” requires the consent of the patentee.⁸⁰ However, the establishment of this principle immediately raised the question what elements are material or essential to a patent claim.⁸¹ Recognizing the elasticity permitted in answering this question is central to understanding Chief Justice Taney’s seemingly opposed views in *Winans* and *O’Reilly*.

In *Winans*, the dissent asserted that Winans’ patent should have been regarded as falling within the narrow exception that held form and substance as inseparable⁸² because the advantage of the invention was its circular form.⁸³ Accordingly, the circular form was a material and essential element of the invention that had to be duplicated in order to find infringement.⁸⁴ But how did Justice Taney determine

invention of the electric furnace), at <http://www.ggc-asmi.ucdavis.edu/heroult.htm> (last visited Jan. 26, 2002).

77. See *Important Historical Inventions and Inventors* (stating that the steam turbine was invented in 1884 by C.A. Parsons), at <http://www.top-education.com/tempscience1.htm> (last visited Jan. 26, 2002).

78. Patent cases occupy a substantial portion of the official Supreme Court reports from that era; more than 90 patent cases were decided by the Supreme Court in the 1880’s alone. Interestingly, the consolidated appeals involving the controversy over the patent rights to the telephone, in which Alexander Graham Bell was ultimately victorious, occupy an entire volume of the United States reports. *The Telephone Cases*, 126 U.S. 1 (1888).

79. See, e.g., *Agawam Co. v. Jordon*, 74 U.S. (7 Wall.) 583, 603 (1868) (holding an employee’s suggested improvements are generally regarded as the property of the party who originally discovered the principle and will be embodied in his patent for the invention, unless the improvement amounts to a complete invention itself). See also *Kreag v. Geen*, 28 App. D.C. 437, 440 (D.C. Cir. 1906); *E. Paper Bag Co. v. Continental Paper Bag Co.*, 142 F. 479 (D. Maine 1905); *Miller v. Nemmer*, 179 F.2d 979 (C.C.P.A. 1950); *Polaroid Corp. v. Horner*, 197 F. Supp. 950 (D.C. Cir. 1961).

80. *O’Reilly v. Morse*, 56 U.S. (15 How.) 62, 123 (1853) (emphasis added).

81. See *Winans*, 56 U.S. (15 How.) at 342-43 (stating that form alone is not necessarily a material element to a patent claim). But see *id.* at 344-45 (Campbell, J., dissenting) (arguing form is necessarily a material element).

82. See *Winans*, 56 U.S. (15 How.) at 343 (stating “[w]here form and substance are inseparable,” the Court may find infringement based on form alone).

83. *Id.* at 345 (Campbell, J., dissenting).

84. See *id.* (Campbell, J., dissenting) (asserting that because the patent specifically referenced the form of the railroad cars, the specified form should not

that the exact form specified in Winans' patent was material? Winans' patent specified that the body of the railroad car should be made "in the form of a frustrum of a cone, substantially as herein described."⁸⁵ Yet Winans' complaint, referring to the "principle of operation," stated "whereby the force exerted by the weight of the load presses equally in all directions . . . so that every part resists its equal proportion."⁸⁶ In *O'Reilly*, Morse appears to have made equally broad claims. However, Chief Justice Taney, in upholding the infringement ruling, did not view that patent as limited only to the form described in Morse's specification.⁸⁷

In the post-Civil War period, the Court revisited the issue of material elements, with an eye toward balancing the concerns raised by the justices in the majority and dissent in *Winans*.⁸⁸ The Court's resolution established the framework for what would more than a century later be called the "All Elements Rule."⁸⁹

In 1879, the Court began to develop this doctrine in *Water-Meter Co. v. Desper*.⁹⁰ The asserted patent was for an improved water meter with a crankshaft.⁹¹ The defendant's water meter functioned differently from the patented meter because the defendant's meter did not possess a crank-shaft.⁹² Moreover, the Court concluded the

have been held to be immaterial to the infringement claim). This viewpoint gives some insight into the meaning of the parenthetical phrase "(unless a particular form is specified as the means by which the effect described is produced)" appearing in Taney's *O'Reilly* opinion. See 56 U.S. (15 How.) at 123. A decade earlier, in *Prouty v. Draper*, 41 U.S. (16 Pet.) 336, 340-41 (1842), Chief Justice Taney ruled that a patent for a plow, which incorporated a new arrangement of previously known components, was not infringed by the use of only a subset of the combination of components.

85. *Winans*, 56 U.S. (15 How.) at 331.

86. *Id.* at 331. This feature, along with the center of gravity-lowering feature of the conical base, was what was duplicated by the accused octagonal car. *Id.* at 340 (recounting testimony that showed the two different forms to be virtually identical in their resistance to pressure and in the strengthening of the bottom of the railroad cars).

87. See *O'Reilly*, 56 U.S. (15 How.) at 85-86. In fact, Chief Justice Taney, in an oft-cited portion of his opinion, held Morse's eighth claim invalid because Morse's claims were written so broadly that any machine or process sending signals for communication purposes fell within the claims scope. *Id.* at 112-17.

88. See, e.g., *Water-Meter Co. v. Desper*, 101 U.S. 332, 337 (1879) (stating that all elements specified in a patent are material and the court can only determine if any material elements are missing or whether a missing material element is supplied by an alleged infringer).

89. See, e.g., *Warner-Jenkinson Co. v. Hilton-Davis Chem. Co.*, 520 U.S. 17, 29-30 (1997); see also Glen P. Belvis, *An Analysis of the En Banc Decision in Festo v. Shoketsu Kinzoku Kogyo Kabushiki Co. and the Doctrine of Equivalents*, 11 FED. CIRCUIT B.J. 59, 63 (2001-2002) (explaining that the all elements rule applies the doctrine of equivalents to each individual element and not the invention as a whole).

90. 101 U.S. 332 (1879).

91. See *id.* at 334-35 (listing the combination of elements and most importantly the crank-shaft that connected the rotary valve and pistons).

92. See *id.* at 335 (noting the defendant's meter "has no crank-shaft, and no

defendant's employment of a direct connection between the valve and the piston rods was not the equivalent of a crank-shaft.⁹³ Accordingly, the Court found the defendant's meter did not infringe upon the patented meter because the defendant's meter lacked one material element, the crank-shaft, and substituted no equivalent structure.⁹⁴ The Court buttressed this holding by relying on what was by then a statutory requirement for precise claiming.⁹⁵ In subsequent cases, the Supreme Court emphasized that elements were material and essential, but nevertheless clearly contemplated that the elements need not be identical. Rather, if the equivalent elements were substituted by the defendant, liability for infringement would be found.⁹⁶

In *Gage v. Herring*,⁹⁷ the Court analyzed whether the alleged infringer's milling machinery contained each of the elements or equivalents claimed in the patent.⁹⁸ While some of the claim elements were met by an equivalent structure that "performs the same function in substantially the same way, and produces substantially the same result" as the claimed invention, the defendant's structure did not contain any equivalent to the claimed conveyor shaft.⁹⁹ Quoting Justice Bradley's decision in *Water-Meter*, the Court dismissed the infringement complaint because all the elements of the claimed invention were not present in an equivalent

semblance of a crank-shaft, for imparting motion from the pistons to the rotary valve . . .").

93. See *id.* at 336 (stating that the defendant achieved the same result without the use of crank-shaft or a similar substitute).

94. *Id.* at 336-37.

95. See *id.* at 337 (stating that the Court can only decide if a material element of a patent or its functional equivalent is present in a potentially infringing device, however, the Court cannot declare an element specified in the patent as immaterial). By this time, Congress has passed the Patent Act of 1870, ch. 230, 16 Stat. 198, that required that the inventor "shall particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery." Patent Act of 1870, ch. 230, § 26, 16 Stat. 198. The Supreme Court explained:

The growth of the patent system in the last quarter of a century in this country has reached a stage in its progress where the variety and magnitude of the interests involved require accuracy, precision, and care in the preparation of all the papers on which the patent is founded.

Merrill v. Yeomans, 94 U.S. 568, 573 (1876). Therefore, the "distinct and formal claim is . . . of primary importance in the effort to ascertain precisely what it is that is patented . . ." *Id.* at 570.

96. See *Gage v. Herring*, 107 U.S. 647-48 (1883) (stating that because one of the material elements of its functional equivalent was not duplicated by the defendant's milling machinery there was no infringement).

97. 107 U.S. 640 (1883).

98. See *id.* at 647-48 (discussing the material elements of the plaintiff's milling machinery specified in the patent and comparing those elements with the defendant's milling device).

99. *Id.* at 647-48.

structure.¹⁰⁰

Similarly, *Fay v. Cordesman*,¹⁰¹ decided the same year, cites *Water-Meter* and *Gage* for what by then had become the well-settled refinement of the rule established in *O'Reilly* and *Winans*.¹⁰² The refined rule stated that when a patent is based on a claim for a combination of elements and the patentee specifies certain elements as being a part of that combination, each of those elements are material to the patent. Consequently, the only question for the court to determine is whether an omitted part is supplied by its substantial equivalent in the alleged infringing device.

The decision in *Fay* is especially significant because one of the three patents sued upon was a reissued patent that contained claims that had been amended in the Patent Office.¹⁰³ The sawing apparatus in the asserted patent was a reciprocating saw. In obtaining the reissue, the patentee, Richards, described, in an amended claim, an anti-friction guide and adjustable guide in combination with the upper portion of a saw blade.¹⁰⁴ The defendant's accused device was a continuous band saw, which moved only in one direction, and consequently, neither used the claimed guide or guard nor substituted any equivalent structure.¹⁰⁵ Although the Court found no infringement, the Court's explication of the law drew no distinction between original claim and amended claim.¹⁰⁶ The implication is that infringement could have been found for the amended claim had there been an equivalent of each of the elements of the claim.¹⁰⁷

The Federal Circuit majority in *Festo*, interpreting the scope of prosecution history estoppel, would later fail to appreciate the significance of the fact that *Fay* involved a claim that had been amended during prosecution in the Patent Office.¹⁰⁸ Before turning to *Festo*, however, the rich history of the doctrine of prosecution history estoppel contains much more to discuss.

100. *Gage*, 107 U.S. at 648.

101. 109 U.S. 408 (1883).

102. *Fay*, 109 U.S. at 421.

103. *Id.* at 413-14.

104. *Id.* at 412-13.

105. *Id.* at 414.

106. *See id.* at 420-21 (describing the doctrine of equivalents without making a distinction between original and reissued patents).

107. *See Fay*, 109 U.S. at 420-21 (holding that a patent is infringed where, substantial equivalents, meaning each of the material elements of a claim, or combination of those elements, are used in the allegedly infringing device).

108. *See Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 234 F.3d 558, 571, 56 U.S.P.Q.2d (BNA) 1865 (Fed. Cir. 2000), *vacated*, 535 U.S. ___, 122 S. Ct. 1831 (May 28, 2002) (No. 00-1543) (asserting "absolute bar" rule is consistent with prior precedent including *Fay* and other cases discussed herein). For further discussion of *Festo*, see *infra* Parts IX and X.

IV. THE ADVENT OF PROSECUTION HISTORY ESTOPPEL

The amendment of claims, and the related practice of disclaiming all or a portion of a claim, soon provided the basis for a second limitation upon the notion that the patentee was presumed to have encompassed all equivalent structures in his claim(s). This doctrine would later take the name by which we now know it: “prosecution history estoppel.”¹⁰⁹

The Patent Act of 1836¹¹⁰ required patent holders to disclaim those portions of their claimed inventions that the patent holders knew were in the prior art, or had not been invented by them, or otherwise not validly covered by the patent.¹¹¹ If an inventor failed to do so, the inventor risked the entire patent being declared invalid.¹¹² The disclaimer was said to protect the public because if a patentee did not make the appropriate disclaimer, the patentee “prevents others from attempting to improve upon the manner and process which he has described in his spe[c]ification—and may deter the public from using it, even if discovered.”¹¹³

The Supreme Court’s 1879 decision in *Leggett v. Avery*,¹¹⁴ firmly established the proposition that subject matter, once intentionally disclaimed, could not later be recaptured by the patentee through subsequent expansion of the claims.¹¹⁵ The old patent statutes permitted a patent holder to file for a seven year extension following the original patent’s expiration.¹¹⁶ The patent holder in *Leggett* applied for a seven year patent extension on an improved plow that contained six claims.¹¹⁷ However, competitors opposed the approval of the extension, asserting the claims were invalid because the claims had been anticipated by the prior art.¹¹⁸ The Patent Office largely

109. The term “prosecution history estoppel” was first used by the Federal Circuit in *Hughes Aircraft Co. v. United States*, 717 F.2d 1351, 1362, 219 U.S.P.Q. 473, 484 (Fed. Cir. 1983). This is a modification of the previously used term—“file wrapper estoppel”—which took its name from the “file wrapper” used to hold the contents of a patent application in the Patent Office. *Autogiro Co. of Am. v. United States*, 384 F.2d 391, 398-99 (Ct. Cl. 1967).

110. Patent Act of 1836, ch. 357, § 5 Stat. 117.

111. Patent Act of 1836, ch. 357, § 6, 5 Stat. 117.

112. See *O’Reilly v. Morse*, 56 U.S. (15 How.) 62, 120-21 (1853) (stating a patentee must disclaim overly broad claims in a patent or risk the entire patent being nullified).

113. *Id.* at 120-21.

114. 101 U.S. 256 (1879).

115. See *Leggett*, 101 U.S. at 259 (stating that once a claim has been formally abandoned, the patentee cannot later attempt to enjoin others from using the disclaimed invention).

116. See Patent Act of 1870 § 66 (granting a seven year extension to an inventor upon approval by the Commissioner of Patents).

117. *Leggett*, 101 U.S. at 258.

118. See *id.* at 258 (asserting the six claims contained in the extension application

agreed with the competitors and granted the extension only after the patent holder formally disclaimed the subject matter in all but the fifth claim.¹¹⁹ However, following this resolution, the patent owner sought and was granted a reissue of the extended patent containing claims that were substantially similar to those claims that had been previously disclaimed.¹²⁰ Employing strong language against what it perceived as fraudulent conduct, the Court held the reissued patent invalid and declared that granting claims previously abandoned by the patentee “is the occasion of immense frauds against the public.”¹²¹ Justice Bradley called it an abuse of the patent reissuance process, for individuals, “under the pretense of inadvertence and mistake” to reverse adverse decisions and secure the patent.¹²²

In *Union Metallic Cartridge Co. v. United States Cartridge Co.*,¹²³ the principle articulated in *Leggett* was first applied to estop a patent owner from claiming infringement by equivalent structures that had been expressly disclaimed in order to secure allowance of the patent.¹²⁴ The case involved Ethan Allen’s patent for “the first successful organized automatic machine for heading cartridge shells” which “furnished the essential principle of construction which has been maintained in all succeeding heading machines of its class.”¹²⁵ In 1873, the Remington company opposed Allen’s widow’s application for a reissuance of the patent.¹²⁶ The original patent described a process in which a movable “die” struck a fixed “bunter” to form the cartridge flange.¹²⁷ In the reissue application, an attempt was made to add a description in which the “bunter” could be made movable and the “die” was fixed.¹²⁸ The Patent Office determined that this additional embodiment described “a substantially different invention” and therefore could not permissibly be included in the reissued patent.¹²⁹ In response, Allen’s widow filed an express disclaimer, which disclaimed the newly added particular structure,

had been in use before the 1869 reissued patent was granted).

119. See *id.* (noting the formal disclaimer was filed in 1874).

120. See *id.* at 258-59 (concluding the first two claims in the reissued patents are substantially the same as two claims the patentee previously disclaimed in 1874).

121. *Id.* at 258.

122. *Leggett*, 101 U.S. at 258.

123. 112 U.S. 624 (1884).

124. *Union Metallic*, 112 U.S. at 643-44 (stating the case was controlled by the principles articulated in *Leggett*).

125. *Id.* at 632. “Heading” is the process by which a flange or rim forms on the cartridge. *Id.*

126. *Id.* at 632.

127. *Id.* at 638.

128. *Id.*

129. *Union Metallic*, 112 U.S. at 633.

but made an exception “in so far as the same by fair construction may be deemed the mechanical equivalent of the fixed die.”¹³⁰ Following the Patent Office’s rejection of this attempted reservation, Allen’s widow filed another disclaimer that completely omitted any attempted reservations.¹³¹

The reissued patent, after being extended, was asserted against defendants who used a similar machine with a movable “bunter” and a fixed “die.”¹³² The trial judge held *Leggett* was not controlling because the disclaimer was made simply to overcome the Patent Office’s new matter objection.¹³³ The Supreme Court disagreed.¹³⁴ The Court viewed the disclaimer as “one of the facts of invention.”¹³⁵ Therefore, the question was “not open now as to whether Allen invented at any time the stationary die D and movable bunter E, or as to whether it was, or is, or could be, a mechanical equivalent for the movable die D and stationary bunter E, because those questions are concluded by the disclaimer.”¹³⁶ Notably, the Court used the term “estopped” for the first time in an infringement analysis in view of a disclaimer.¹³⁷

The Court in *Union Metallic*, however, did not extend *Leggett* so far as to impose a rule that barred a patent holder from asserting infringement by equivalents in the absence of an express disclaimer of equivalents.¹³⁸ In *Goodyear Dental Vulcanite Co. v. Davis*,¹³⁹ decided one year after *Leggett*, the Court established that an intentional disclaimer did not bar equivalents for subject matter unaffected by the disclaimer.¹⁴⁰ The patent covered Cummings’ invention of artificial teeth that were molded with soft rubber that was hardened by Goodyear’s vulcanization process.¹⁴¹ Cummings’ specification listed materials used in this process, including a substance known as “gutta-percha.”¹⁴² However, during the prosecution of the reissue

130. *Id.* at 633-34.

131. *Id.* at 643.

132. *Id.* at 636.

133. *See id.* at 639 (noting lower court’s interpretation that the case did not entail the issue of invention but, rather, procedural formality).

134. *Id.* at 644.

135. *Id.* at 645.

136. *Id.*

137. *Id.* at 645.

138. *Union Metallic*, 112 U.S. at 645.

139. 102 U.S. 222 (1880).

140. *See Goodyear*, 102 U.S. at 238-39 (analyzing equivalents even though amendment had been made and holding that the manufacturer of dental plates with a product not equivalent to the one mentioned in the initial patent did not constitute infringement of that patent).

141. *Id.* at 224.

142. *Id.* at 225.

patent, Cummings, in a letter to the Patent Office, struck out reference to gutta-percha and amended the specification to read, "I do not claim the use of gutta-percha, or of any material which is merely rendered plastic by heat and hardened by cooling, in the manufacture of sets of artificial teeth" ¹⁴³

The question of infringement turned on whether the defendant's use of celluloid in a process which did not use the patented rubber vulcanization steps was equivalent to what was claimed. ¹⁴⁴ The Supreme Court determined that celluloid was not equivalent to vulcanized rubber because celluloid was not manipulated by the vulcanization process. ¹⁴⁵ It is important to note that the Court's analysis turned on whether celluloid and vulcanized rubber were equivalent and not on the disclaimer of gutta-percha or like materials, which was unrelated to the equivalence issue. ¹⁴⁶

In the 1885 case of *Sargent v. Hall Safe & Lock Co.*, ¹⁴⁷ the Court equated amendments to claims following a Patent Office rejection to intentional disclaimers. ¹⁴⁸ Nevertheless, the Court allowed that the patent could still cover equivalents of the amended claims. ¹⁴⁹ The patent application for a time-locked safe underwent a lengthy prosecution in which the Patent Office rejected the claims multiple times and the applicant made multiple amendments. ¹⁵⁰ Patents for safes were numerous and many patentees had already suggested using a timing device to prevent a safe from being opened during unauthorized times. ¹⁵¹ Only when the claims were amended to reflect

143. *Id.* at 227.

144. *See id.* at 228-30 (finding that the process of vulcanization was an essential element of patentee's invention and stating that "when a product arrived at by certain defined stages or processes is patented, only those things can be considered equivalents for the elements of the manufacture which perform the same function in substantially the same way").

145. *See id.* at 229 (noting that celluloid is not vulcanite and "neither it nor its agents are capable of being vulcanized . . .").

146. *See id.* at 230 (conceding that a "patentee is protected against equivalents for any part of his invention," but concluding that "[c]elluloid is not an equivalent for the material that the patent makes essential to the invention").

147. 114 U.S. 63 (1885).

148. *See id.* at 86 (specifying that in patents for combinations of mechanisms, certain limitations imposed by the inventor, especially those introduced into an application having been formerly rejected "must be strictly construed against the inventor and in favor of the public, and looked upon as in the nature of disclaimers . . .").

149. *See id.* (suggesting that the patent could still cover combinations which contain elements "material to the combination" invented, claimed and restricted by the patentee).

150. *See id.* at 76-83 (detailing the various rejections and amendments to the specifications of a safe with a time device preventing the safe from being opened even with the correct combination).

151. *See id.* at 76-81 (noting previous patents to Holbrook, Hollen, Rutherford and

precisely the form and configuration of the lock-bolt did the Patent Office issue the patent.¹⁵² Because the defendants' locking device had an entirely different construction, the Supreme Court agreed with the lower court ruling of non-infringement.¹⁵³ In so holding, the Court equated the process of amending claims in response to the prior art rejections made by the Patent Office to the practice of intentional disclaimers.¹⁵⁴ Interestingly, in the case of amended claims, the Court did not state that all equivalents were barred as they had been in *Union Metallic*, where the patentee had expressly disclaimed equivalents.¹⁵⁵ Rather, the amended claims were examined in accordance with the rule laid down in *Fay, Water-Meter and Gage*.¹⁵⁶ Although each element of a patented combination was considered material and therefore must be present in the accused device for infringement to lie, those elements also could be met by equivalent structures.¹⁵⁷

One year later, in *Shepard v. Carrigan*,¹⁵⁸ the Court linked the concepts underlying *Leggett* and *Fay*. Citing a prior art skirt protected by a patent granted to McKee, the Patent Office rejected MacDonald's first patent application for an invention protecting the bottom of long-trained women's skirts.¹⁵⁹ In response, MacDonald amended her application to include a reference to the skirt protector having a "plaited border."¹⁶⁰ The Patent Office then declared an interference with a pending application of Chase. The Patent Office stated the subject matter of the interference to be "a skirt protector having a fluted or plaited border."¹⁶¹ MacDonald prevailed in the interference, and the patent was issued to her.¹⁶² The defendant against whom the patent was asserted successfully argued non-infringement because their skirt protector lacked a plaited border.

Little).

152. See *Sargent*, 114 U.S. at 73-83 (stating the precision in which the locking mechanism was explained).

153. See *id.* at 85-86 (stating that while plaintiff's invention was limited to locks with a rotating bolt, defendants' lock had a sliding-bolt).

154. *Id.* at 86; see also *supra* note 149.

155. See *Union Metallic Cartridge Co. v. United States Cartridges Co.*, 112 U.S. 624, 643-44 (1884).

156. See *Sargent*, 114 U.S. at 86 (citations omitted) (citing *Fay, Water-Meter, and Gage* in holding that in a patent for a combination, where a patentee specifies certain elements as entering into the combination, the court must thereafter recognize such elements as material).

157. *Id.*

158. 116 U.S. 593 (1886).

159. *Id.* at 596-97.

160. *Id.*

161. *Id.*

162. *Id.* at 596 (noting that the patent issued to MacDonald specifically included the element of a "plaited or fluted border").

The Court's opinion in *Shepard* cites *Leggett*, as well as *Fay* and *Union Metallic*, for the proposition that an applicant for a combination patent who "is compelled by the patent-office to narrow his claim by the introduction of a new element," is prevented from later broadening the claim by omitting the earlier-compelled limitation.¹⁶³ The Court went on to define the ensuing infringement inquiry by quoting the statement relied on in *Sargent* that "all [elements] must be regarded as material, leaving open only the question whether an omitted part is supplied by an equivalent device or instrumentality."¹⁶⁴

The cases that followed placed additional constraints on a patentee's ability to assert infringement by equivalent structures in view of the patent prosecution, as well as the prior art. In *California Artificial Stone Paving Co. v. Shaliche*,¹⁶⁵ the Court, in finding no infringement, ruled that the defendant was practicing exactly the method previously disclaimed and thus made no inquiry into equivalency.¹⁶⁶ However, in *Hurlbut v. Schillinger*,¹⁶⁷ where the defendant was not practicing exactly what was disclaimed, the Court made clear that an equivalency analysis was required. In *Hurlbut*, the Court clarified that the essential components of the patentee's specifications were that the blocks of pavement be "substantially separate, made so by the permanent to temporary interposition of a separating medium or a cutting instrument, so that one block could upheave or be removed without disturbing the adjoining blocks."¹⁶⁸

163. *Shepard*, 116 U.S. at 597.

164. *Id.* at 598 (quoting *Fay v. Cordesman*, 109 U.S. 408, 420 (1883)) (emphasis added). *Shepard* and *Sargent* involved amendments made following rejections by the Patent Office on the basis of prior art. The Court, in *Crawford v. Heysinger*, 123 U.S. 589 (1887), reached a similar result where the Patent Office made a rejection based on another patentability defect—inoperability. The patent examiner rejected claims originally presented in the reissue application because the claim "does not present an operative combination of mechanical devices for the purpose stated." *Crawford*, 123 U.S. at 603. The examiner required a number of structural amendments before he withdrew his rejections. *Id.* at 603-04. The result, according to the Court, was that the patentee had "carefully limited himself, in those claims, to a stationary staple-support or anvil, and a reciprocating slotted or recessed hammer or driver." *Id.* at 604. The defendant's device, however, had a driving device which the plaintiff contended was equivalent. The Court rejected the claim, citing *Leggett*, *Fay*, *Sargent* and *Shepard*, because "[t]he patentee having imposed words of limitation upon himself in his claims, especially when so required by the patent office in taking out his reissue, is bound by such limitations, in subsequent suits on the reissued patent." *Id.* at 606.

165. 119 U.S. 401 (1886).

166. See *California Paving*, 119 U.S. at 407 (finding that defendant's method of laying pavement without creating "blocks" or interposing material between those "blocks" was the method expressly disclaimed by the patentee as "the forming of blocks from plastic material without interposing anything between their joints while in the process of formation.").

167. 130 U.S. 456 (1889).

168. See *id.* at 466 (noting that these essential components have been present in

The Court distinguished the case at bar from *California Paving* because in *California Paving*, the defendant was installing a pavement of the type expressly disclaimed and “blocks” were not created in a manner devised by the patentee.¹⁶⁹ In *Hurlbut*, however, the Court determined that the defendant’s sectional concrete pavement, while not separated by exactly the same material as used by the patentee, was nevertheless laid in detached blocks and permitted removal without disturbing the adjoining block, thereby accomplishing the same result in the same manner as the patentee’s invention.¹⁷⁰

In *Sutter v. Robinson*,¹⁷¹ decided the same day as *California Paving*, the Court held that the prior art imposes an additional constraint on an assertion of equivalents.¹⁷² Robinson’s patent was for a process of re-sweating tobacco leaves in which the tobacco was held in a porous wooden box to allow for steam to reach the tobacco.¹⁷³ During prosecution, the examiner required the inventor to state that the essential feature of the invention was the use of a porous wooden box, as opposed to a metal container used in the prior art.¹⁷⁴ The defendant’s apparatus used, as the container for the re-sweating process, the original cases in which the tobacco had been shipped.

The Court stated the “ultimate question” was whether “the use of cases, or boxes, or packages, in which the tobacco leaves are originally packed by the producer is equivalent to the wooden tobacco holder mentioned in the complainants’ specification.”¹⁷⁵ According to the Court, if the two arrangements were not equivalent, there was no infringement.¹⁷⁶ However, if the two arrangements were equivalent, the patent would have been deemed anticipated, because a prior art patent taught use of the original tobacco containers for re-sweating.¹⁷⁷ Adopting this reasoning, the Court concluded that the judgment of infringement must be reversed.

every case where infringement of said patent has been found).

169. *Id.* at 465-66.

170. *Sutter*, 130 U.S. at 465-66. The Court commented that the “invention of Schillinger was a very valuable one. The evidence is that it entirely superseded the prior practice of laying concrete pavements in a continuous, adhering mass.” *Id.* at 469.

171. 119 U.S. 530 (1886).

172. *Id.* at 541-42 (holding that a patentee cannot claim infringement where equivalents of the invention have been anticipated for many years by the practice of others that pre-dated the patent’s approval).

173. *Id.* at 531-35.

174. *Id.* at 535.

175. *Id.* at 542.

176. *Id.*

177. *See Sutter*, 119 U.S. at 537-38 (maintaining that the 1865 Huse patent showed that the patentee’s invention was anticipated by others and used for many years prior to the patent date).

As the nineteenth century came to a close, *Sutter v. Robinson* and the cases that preceded it had cemented in law the two limitations on the doctrine of equivalents that persist to this day: Under the first, the rule of prosecution history estoppel, an equivalent structure would not be found to infringe if the patentee had disclaimed coverage of such a structure during his dealings with the Patent Office (but such structure could infringe, even where the patent claim had been narrowed during examination, if not the subject of the narrowing or disclaimer). Under the second limitation, the patentee could not validly maintain an infringement action against a defendant who was practicing the prior art.¹⁷⁸

V. THE DOCTRINE OF EQUIVALENTS ENTERS THE 20TH CENTURY:
THE DEBATE OPENS ON THE IMPACT OF PROSECUTION HISTORY
ESTOPPEL

At the twentieth century began, the Supreme Court was hearing fewer patent cases, due mainly to the creation of the Circuit Courts of Appeals in the 1890s.¹⁷⁹ Following the establishment of the Circuit Courts, the Supreme Court heard patent cases generally when the United States was a party, or when the circuit courts were in conflict regarding a particular patent or on an important question of patent law.

The Supreme Court did, however, have an opportunity to summarize the state of the law in *Hubbell v. United States*.¹⁸⁰ The invention in *Hubbell* was for a certain configuration of an ammunition cartridge.¹⁸¹ The patent application was rejected initially for prior art and later for being “vague, indefinite and ambiguous.”¹⁸² The claims were allowed only when the patentee added claim language requiring “two or more openings, whose inner edges nearly coincide with the

178. See, e.g., *Bragg v. Fitch*, 121 U.S. 478 (1887). In *Bragg*, the Court placed an additional gloss on this rule. The Court determined that the invention for a snap hook was made in such a crowded art that “[o]ne would hardly suppose that a patentable invention could have been made in relation to this little device.” *Id.* at 480. Several prior art patents put in evidence showed near anticipation of the patented invention. *Id.* at 481-82. Thus, the Court held, “[i]t is obvious from the foregoing review of prior patents, that the invention of Bristol, if his snap-hook contains a patentable invention, is but one in a series of improvements all having the same general object and purpose; and that in construing the claims of his patent they must be restricted to the precise form and arrangement of parts described in his specification, and to the purpose indicated therein.” *Id.* at 483.

179. See Circuit Court of Appeals Act, ch. 517, 26 Stat. 826 (1891) (codified as amended at 28 U.S.C. §§ 43, 44, 46, 604, 711, 713, 961, 962, 2101, 2106, 2107) (establishing the circuit courts of appeal).

180. 179 U.S. 77 (1900).

181. *Id.* at 80-81 (describing the invention in detail).

182. *Id.* at 82.

edges of the central chamber of fulminate in the base of the cartridge”¹⁸³ The Court stated that where a patentee makes “mere changes to expression, having substantially the same meaning” to an application in order to meet the examiner’s requirement, the patentee will not be penalized by an unfairly limiting construction of the claim’s terms.¹⁸⁴

The Court in *Hubbell*, however, viewed the patentee’s amendments as reaching beyond “mere changes of expression.”¹⁸⁵ The Court noted that the additional limitations to the openings were made in response to the Patent Office’s rejections for anticipatory prior art, showing similar breech-loading ammunition cartridges.¹⁸⁶ The Court held that these amendments put the patentee “within the range of authorities which hold that if the claim to a combination be restricted to specified elements, all must be regarded as material, and that limitations imposed by the inventor . . . must be strictly construed against the inventor and in favor of the public”¹⁸⁷ After determining that the patent was for a combination, the Court, citing *Fay v. Cordesman*,¹⁸⁸ *Sargent v. Hall Safe & Lock Co.*,¹⁸⁹ *Shepard v. Carrigan*,¹⁹⁰ and *Union Water Meter Co. v. Desper*,¹⁹¹ defined the issue as whether the defendant’s invention fell within the scope of the patentee’s combination in light of the amended claim.¹⁹² Concluding there was “an essential difference” between the two cartridges, the

183. *Id.* at 82-83.

184. *See Hubbell*, 179 U.S. at 80-83 (finding that the applicant originally expressed his invention in terms of its individual elements and later changed that expression to cover the combination of those elements).

185. *See id.* at 83 (finding that the amendments clearly established the actual position of the vents as being a material part of claimant’s patent).

186. *See Hubbell*, 179 U.S. at 83 (listing the patents which anticipated breech-loading ammunition cartridges).

187. *Id.* at 83-84.

188. *See* 109 U.S. 408, 420-21 (1883) (stating the patentee determines which elements are material to the combination and that the court may not regard as immaterial a specific element set forth by the patentee as entering into the combination).

189. *See* 114 U.S. 63, 86 (1885) (holding that “in patents for combination of mechanism, limitations imposed by the inventor, especially such as were introduced into an application after it had been persistently rejected, must be strictly construed against the inventor and in favor of the public, and looked upon as in the nature of disclaimers.”).

190. *See* 116 U.S. 593, 598 (1886) (asserting that if an applicant, “in order to get his patent, accepts one with a narrower claim than contained in his original application, he is bound by it.”).

191. *See* 101 U.S. 332, 337 (1879) (requiring that a patentee specify what claims are new and assert that if a patentee restrict the claim’s form and combination of elements, the court is precluded from declaring that any one of these elements is immaterial).

192. *Hubbell v. United States*, 179 U.S. 77, 82-85 (1900).

Court found no infringement.¹⁹³

Seven years later in *Computing Scale Co. of America v. Automatic Scale Co.*,¹⁹⁴ the Court decided another case in which the claim had been amended to avoid a rejection based upon prior art.¹⁹⁵ The Court described the invention—a spring-balance scale—as “an improvement” in the field rather than a “pioneer[ing]” invention.¹⁹⁶ The Court, quoting *Hubbell*, stated amendments that comprise “mere changes of expression . . . ought not be permitted to defeat a meritorious claimant.”¹⁹⁷ The Court thus reinforced this formulation of the rule that the Court characterized as being “as favorable to the inventor as previous cases would admit.”¹⁹⁸ However, because the patentee in responding to the Patent Office’s rejections limited the claim to “specific means,” the Court regarded this limitation as a “narrowing” of the claim.¹⁹⁹ Accordingly, the Court continued, the “novel feature” of the invention “is of that narrow character of invention which does not entitle the patentee to any considerable range of equivalents, but must be practically limited to the means shown by the inventor.”²⁰⁰ The Court contrasted the narrow range of equivalent structures covered by the particular patent with the “wide range of equivalents” that might have been available to a pioneering invention.²⁰¹

In the next major patent case involving the question of infringement, *Weber Elec. Co. v. E.H. Freeman Elec. Co.*,²⁰² the Court dealt with another “narrow” invention.²⁰³ The Patent Office rejected the original application on the basis of prior art.²⁰⁴ The applicant, in order to procure the patent, amended the claim by adding limitations to a certain type of rotary movement between an incandescent lamp and socket.²⁰⁵ The Court held that the accused

193. *Id.* at 86.

194. 204 U.S. 609 (1907).

195. *Id.* at 618-20 (setting forth the Patent Office’s rejections of patentee’s original claims in view of prior existing patents).

196. *Id.* at 615.

197. *Computing Scale*, 204 U.S. at 617-18 (quoting *Hubbell v. United States*, 179 U.S. 77, 80 (1900)).

198. *Id.* at 617.

199. *Id.* at 620.

200. *Id.* at 621.

201. *See id.* (reiterating that since the invention was only an improvement of others already in use, the invention could only be sustained to a limited extent and “does not entitle the patentee to any considerable range of equivalents”).

202. 256 U.S. 668 (1921).

203. *See id.* at 669 (stating that “[t]he patent is a simple and . . . a narrow one.”).

204. *Id.* at 676.

205. *See id.* at 677 (stating that the patentee, in order to avoid a prior art construction that required rotary movement, “clearly [implied] that no such rotary movement was necessary in the adjustment of his socket.”).

device, which lacked this rotary movement, did not infringe.²⁰⁶ However, the Court, in stating the rule, introduced a distinctly different concept:

Having thus narrowed his claim against rotary movement in order to obtain a patent, the patentee may not by construction, or by resort to the doctrine of equivalents, give to the claim the larger scope which it might have had without the amendments, which amount to a disclaimer of rotation as an operative feature of his device.²⁰⁷

The Court's formulation in *Weber Electric* marked a subtle, but significant change in the Supreme Court's patent jurisprudence. The reference to the "disclaimer" effect of an amendment was, of course, not new. The term originated in the cases that involved express disclaimers.²⁰⁸ Beginning with *Sargent*, the Court had equated amendments made to overcome prior art rejections in the Patent Office to disclaimers.²⁰⁹ But in the prior cases, the Court had stated that the patentee was nonetheless entitled to a "fair construction" of the amended claims,²¹⁰ which left open the question of "whether an omitted part is supplied by an equivalent device or instrumentality."²¹¹ The Court's formulation in *Weber Electric*, in contrast, seemingly barred any reliance on the doctrine of equivalents for amended claims—even a scope that included equivalents but avoided the prior art. In other words, what was now at stake was whether a patent owner could assert a claim to cover the equivalent, yet patentable, middle ground between the literal limit of a claim and the prior art.

Indeed, the Court's next significant patent law decision, *I.T.S. Rubber Co. v. Essex Rubber Co.*,²¹² added to the ambiguity. In *I.T.S. Rubber*, the Court again faced a patent that had been amended to overcome prior art.²¹³ Ruling consistently with *Sargent*, *Shepard* and *Hubbell*, the Court held that once an applicant has limited the claim

206. *Id.* at 678.

207. *Weber Elec.*, 256 U.S. at 677-78 (citing *Shepard v. Carrigan*, 116 U.S. 593, 598 (1886); *Hubbell v. United States*, 179 U.S. 77, 80 (1900)).

208. *See, e.g.*, *Sargent v. Hall Safe & Lock Co.*, 114 U.S. 63, 86 (1885) (equating limitations imposed by the inventor on combinations of mechanism to disclaimers, especially where the limitations were introduced in order to make a rejected application acceptable to the Patent Office); *Union Metallic Cartridge Co. v. United States Cartridge Co.*, 112 U.S. 624, 639-45 (1884) (discussing the meaning of the term "disclaimer" in the patent context).

209. *Sargent*, 114 U.S. at 86.

210. *Hubbell*, 179 U.S. at 80.

211. *Fay v. Cordesman*, 109 U.S. 408, 421 (1883).

212. 272 U.S. 429 (1926).

213. *See I.T.S. Rubber*, 272 U.S. at 439-40 (detailing the process in which the applicant rubber company limited the specific form of its rubber heel to a "three point contact" life in response to the Patent examiner's rejections).

by amendment and accepted a patent, the limitations are construed as disclaimers that bind the applicant.²¹⁴ The Court then took a further step by stating “[t]he patentee is thereafter estopped to claim the benefit of his rejected claim or such a construction of his amended claim as would be equivalent thereto.”²¹⁵

The circuit courts of appeal, which had by the turn of the century taken a prominent role in determining patent law, began to grapple with the ambiguity stemming from the Supreme Court’s explanation of the effect of narrowing claim amendments on the doctrine of equivalents.²¹⁶ The question which became increasingly important was where the patent owner had narrowed the claim in view of prior art, was some range of equivalents nevertheless available to protect the patent owner against close imitations of the patented invention? The language in *Shepard, Sargent and Fay* stating that the elements amended to avoid the prior art “must be regarded as material, leaving open only the question whether an omitted part is supplied by an equivalent device or instrumentality,”²¹⁷ suggested a limited range of equivalents would be available to the patentee even after a narrowing amendment, so long as the patentee was not asserting equivalence over what precisely had been disclaimed and did not attempt to

214. *Id.* at 443-44.

215. *Id.* at 444 (quoting *Morgan Envelope Co. v. Albany Paper Co.*, 152 U.S. 425, 429 (1894)). The citation to *Morgan Envelope* is *dicta* arguably taken out of context. In *Morgan Envelope*, the Supreme Court ruled that the defendant was not liable for infringement of plaintiff’s patent on a toilet paper dispensing mechanism because the defendants were merely manufacturing rolls of toilet paper and selling them in combination with dispensing mechanisms they had purchased from the plaintiff. In a classic application of the first-sale doctrine, the Court ruled that “[t]he patentee having once received his royalty upon such a device, he cannot treat the subsequent seller or user as an infringer.” *Id.* at 432. In construing the patent, the Court commented that the patentee was not entitled to include the toilet paper roll as part of the claimed combination even though the patentee had claimed the dispenser “substantially as described.” The reason was because “the patentee having once presented his claim in that form [the original claim included “a bundle of paper” as an element], and the patent office having rejected it, and he having acquiesced in such rejection, he is, under the repeated decisions of this court, now estopped to claim the benefit of his rejected claim or such a construction of his present claim as would be equivalent thereto.” *Id.* at 429 (citing *Leggett v. Avery*, 101 U.S. 256, 259-60 (1879); *Shepard v. Carrigan*, 116 U.S. 593, 597 (1886); *Crawford v. Heysinger*, 123 U.S. 589, 606 (1887); *Union Metallic Cartridge Co. v. United States Cartridge Co.*, 112 U.S. 624, 645 (1884)).

216. Compare *Fay v. Cordesman*, 109 U.S. 408, 420-21 (1883) (suggesting that a patentee is afforded some protection against infringement beyond those elements specifically identified in the patent by emphasizing that a patentee has the authority to specify particular elements as immaterial, raising the question as to whether those elements omitted are protected due to equivalency), with *Hubbell v. United States*, 179 U.S. 77 (1900) (articulating that limitations on a claim, especially those imposed by the inventor to overcome an examiner’s rejection should be strictly construed against the inventor).

217. *Fay*, 109 U.S. at 421.

extend the claim to cover prior art. However, the language that originated in *Sargent*,²¹⁸ later echoed in *Hubbell* and re-stated in *Weber Electric* and *I.T.S. Rubber*, could be understood as erecting an absolute bar to the availability of any equivalents, even where infringement was asserted for an equivalent element unrelated to any claim amendment.

The circuit courts initially took the view more in keeping with the earlier Supreme Court cases. For example, in the 1915 case of *New York Scaffolding Co. v. Whitney*,²¹⁹ the Eighth Circuit held that the patentee was not estopped from asserting infringement of his amended claim.²²⁰ In *Southern Textile Machine Co. v. United Hosiery Mills Corp.*,²²¹ the Sixth Circuit likewise rejected the argument that claims amended in response to prior art rejections should be “strictly construed” against patentees to bar all resort to the doctrine of equivalents.²²² The court concluded that prosecution history estoppel does not strip a patentee of protection against all equivalents and reiterated that a patentee is protected against close equivalents.²²³

VI. THE DEPRESSION ERA COURT: THE BALANCE TURNS AWAY FROM THE PATENT OWNER IN PROSECUTION HISTORY ESTOPPEL CASES

As the Depression set in, the Supreme Court took a decided turn in a direction away from the neutral balance between patent holder and would-be competitor that had existed previously in the patent jurisprudence.²²⁴ The Depression-Era Court differed from previous

218. See *Sargent*, 114 U.S. at 86. The Court asserted that “limitations and provisos, imposed by the inventor, especially such as were introduced into an application after it had been persistently rejected, must be strictly construed against the inventor and in favor of the public, and looked upon in light of disclaimers.” *Id.*

219. 224 F. 452 (8th Cir. 1915).

220. See *id.* at 462 (asserting that even if a patentee accepts a patent on an amended claim, the patentee is not barred from securing through an amended claim new and useful improvements). “[O]ne who acquiesces in the rejection of his claim because it is said to be anticipated by other patents or references is not thereby estopped from claiming and securing by an amended claim every novel and useful improvement that is *not described in those references.*” *Id.* at 462 (emphasis added).

221. 33 F.2d 862 (6th Cir. 1929).

222. See *id.* at 865 (explaining that the patentee’s invention had made a “profound impression on the art,” is accepted and used in the trade as a radical improvement from prior inventions, and therefore should be protected).

223. See *id.* at 866 (limiting the scope of the estoppel and claiming that the purpose is to prevent the patentee’s reliance on broad constructions that could unfairly block other similar inventions).

224. See generally Rudolph P. Hofmann, Jr. & Edward P. Heller, III, *The Rosetta Stone for the Doctrines of Means-Plus-Function Patents*, 23 RUTGERS COMPUTER & TECH. L.J. 227, 263-64 (1997) (outlining the dramatic increase in the courts’ invalidation of patents from the mid-1920s to the mid-1950s). See, e.g., *Cuno Eng’g Corp. v. Automatic Devices Corp.*, 314 U.S. 84 (1941) (exemplifying the high standard the Court employed for upholding a patent as a “flash of creative genius”).

Courts in economic policy and viewed patent protection as somewhat inconsistent with policies held to promote competition.²²⁵ The cases that best illustrated this trend involved other legal doctrines, such as the “patent misuse doctrine.”²²⁶ However, the trend is also evident in the Court’s seeming abandonment of the theory that patent owners are entitled to prevent close imitations of their invention in the patentable middle ground between the literal language of the claim and prior art, even if that claim was amended to avoid the prior art.

In *Smith v. Magic City Kennel Club, Inc.*,²²⁷ the patent was for a device that moved a lure ahead of racing dogs on a track.²²⁸ Due to prior art, the claim was amended to include limitations to a hinged horizontal arm carrying the lure and a supporting wheel on the end of the arm.²²⁹ The alleged infringer created a design that eliminated the need for the supporting wheel.²³⁰ Relying on the doctrine of equivalents, the patentee asserted infringement.²³¹ However, in rejecting the patentee’s reliance on the doctrine of equivalents, the Court stated “where a patentee has narrowed his claim, in order to escape rejection, he may not ‘by resort to the doctrine of equivalents, give to the claim the larger scope which it might have had without the amendments which amount to disclaimer’ ”²³²

Four years later, in *Keystone Driller Co. v. Northwest Engineering Corp.*,²³³ the Court again was presented with a patent claim that had been narrowed to avoid prior art.²³⁴ The original broad claims were

225. See generally Hofmann, *supra* note 229, at 263 (explaining that patent law and judicial decisions regarding patent law historically have been shaped by the social and political context in which they have developed, and further noting that during the Depression, the nation’s economic and social situation reduced the perceived value of patents to economic growth).

226. See, e.g., *Jungerson v. Ostby & Barton Co.*, 335 U.S. 560, 572 (1949) (Jackson, J., dissenting) (rejecting the idea that the proper remedy for the Patent Office’s tendency to grant patents is the Supreme Court’s overwhelming instinct to strike them down); *Mercoid Corp. v. Mid-Continent Inv. Co.*, 320 U.S. 661, 665-66 (1944) (highlighting the misuse of a patent and decrying the evils of the “patent monopoly”); *Mercoid Corp. v. Minneapolis Honeywell Regulator Co.*, 320 U.S. 680, 684 (1944) (holding that an owner of a patent cannot use the patent to limit competition).

227. 282 U.S. 784 (1931).

228. *Id.* at 786.

229. *Id.* at 788-89.

230. *Id.* at 787-88.

231. *Id.* at 789.

232. *Id.* at 790 (quoting *Weber Elec. Co. v. Freeman Elec. Co.*, 256 U.S. 668, 677-78 (1921)).

233. 294 U.S. 42 (1935).

234. See *id.* at 47 (explaining that the patentee originally applied for a broad patent, which was rejected because the submitted patent claims overlapped with prior patented inventions).

cancelled after prior art rejections by the Patent Office.²³⁵ The patentee submitted narrower claims that were subsequently approved.²³⁶ Based on the specific language of the patents, the Court insisted that the patent be strictly construed and limited in scope.²³⁷ The Court stated, “we find no justification for enlarging the scope of what is described, but rather [we adhere to] the requirement of strict limitation to that which is specified”²³⁸

In *Schriber-Schroth Co. v. Cleveland Trust Co.*,²³⁹ the Court addressed the question of whether the patent-in-suit was valid over the prior art.²⁴⁰ The issue turned on whether the claims for a piston and cylinder arrangement properly could be read to include a “flexible web.”²⁴¹ Without this “flexible web” as a limitation, the patents could not be distinguished over the prior art. The patentee initially presented claims including a flexible web limitation, but had withdrawn them during the course of an interference proceeding.²⁴² In view of this history, the Court held that the claim that had issued could not be construed as including a flexible web.²⁴³ In making this unremarkable holding related to the invalidity of the patent, the Court appeared to go out of its way to give this summary, *in dicta*, of the state of the law on a different issue—the doctrine of equivalents:

It is a rule of patent construction consistently observed that a claim in a patent as allowed must be read and interpreted with reference to claims that have been cancelled or rejected and the claims allowed cannot by construction be read to cover what was thus eliminated from the patent. The patentee may not, by resort to the doctrine of equivalents, give to an allowed claim a scope which it might have had without the amendments, the cancellation of which amounts to a disclaimer. The injurious consequences to the public and to inventors and patent applicants if patentees were thus permitted to revive cancelled or rejected claims and restore them

235. *Id.*

236. *See id.* at 47-48 (explaining that the revised claims used specific and narrow language to distinguish the invention from prior inventions).

237. *Id.* at 48-49.

238. *Id.* at 49.

239. 311 U.S. 211 (1940).

240. *Id.* at 214-17.

241. *See id.* at 218 (noting that the appellate court relied on the flexible web feature as the only distinguishing characteristic from prior patented inventions).

242. *See id.* at 219-20 (outlining a series of claim amendments submitted while the patent was pending that referred to the flexible web, which the patentee later withdrew).

243. *See id.* at 219-20 (noting that the only difference between the patent with the amendments and the final version without the amendments was the reference to the flexible web).

to their patents are manifest.²⁴⁴

After re-stating the legal framework *in dicta* in *Schriber-Schroth*, the Court next dealt with the issue of equivalents in *Exhibit Supply Co. v. Ace Patents Corp.*²⁴⁵ *Exhibit Supply* involved a patent for a contact switch for pinball machines.²⁴⁶ The Patent Office rejected the original claim, drawn to a device having electrical conductors “carried by the table,” in view of prior art.²⁴⁷ In response, the patentee amended the claim by narrowing the patent to cover conductors that were “embedded in” the table.²⁴⁸ This limiting language satisfied the patent examiner and the Patent Office issued the patent.²⁴⁹ The question presented was whether the addition of “and embedded in,” included to distinguish the prior art, also estopped the patentee from relying upon the doctrine of equivalents to claim infringement by a device that included conductors that were not literally “embedded in” the table but were nevertheless concededly the mechanical equivalents of such conductors.²⁵⁰

The Supreme Court began the discussion by reciting what it called the “settled” law that prevented the doctrine of equivalents from “recaptur[ing] claims which the patentee has surrendered by amendment.”²⁵¹ The Court then asserted that adding limiting language to overcome a prior art rejection required the patent’s language to be strictly construed.²⁵² The Court’s description of the consequence of such a strict construction, however, departed in the most clear terms yet from its nineteenth century jurisprudence: “By the amendment [the patentee] recognized and emphasized the

244. *Id.* at 220-21. The Court cited many of the fundamental doctrine of equivalents precedents set out earlier in this paper, including, *Shepard v. Carrigan*, 116 U.S. 593; *Sutter v. Robinson*, 119 U.S. 530; *Hubbell v. United States*, 179 U.S. 77; *Weber Elec. Co. v. E. H. Freeman Electric Co.*, 256 U.S. 668; *I. T. S. Rubber Co. v. Essex Rubber Co.*, 272 U.S. 429; *Smith v. Magic City Club*, 282 U.S. 784; and *Leggett v. Avery*, 101 U.S. 256, 259, 25 L. Ed. 865.

245. 315 U.S. 126 (1942).

246. *Id.* at 127.

247. *Id.* at 128.

248. *Id.* at 129 n.1, 133-34. The final approved language of the patent read in pertinent part:

[T]o enable the spring to be resiliently flexed . . . in the [electric] circuit and constituting a conductor, and conductor means in said circuit *and embedded in* the table at a point spaced from the standard and engageable by a portion of the spring when it is flexed to close the [electric] circuit.

Id. at 129 n.1 (emphasis added).

249. *Id.* at 133-34.

250. *Exhibit Supply Co.*, 315 U.S. at 135-36.

251. *See id.* at 136 (asserting the general rule that once a patentee had amended a claim to overcome rejection based on prior art, the patentee cannot claim a broad scope to include the prior art).

252. *Id.* at 137. In supporting this rationale, the Court relied on *Magic City Kennel Club*, 282 U.S. at 790 and *Shepard*, 116 U.S. at 598.

difference between the two phrases and proclaimed his abandonment of *all* that is embraced in that difference.”²⁵³

Thus, while the Court appeared only to be re-stating the original reasoning of some of its early cases by emphasizing the “disclaimer” aspect of patent claim amendments, the Court did not carry forward the qualifying statements in those cases that still permitted some analysis of a scope of equivalents for the narrowed claim.²⁵⁴ In other words, despite casting the doctrine in terms of “abandonment,” “disclaimer,” and “estoppel,” the Supreme Court appeared to discard the fairness inquiry that normally would be associated with such equitable concepts.²⁵⁵ Under this new rubric, application of an estoppel theory apparently would no longer hinge—as it had in the past—on an analysis of what subject matter the patentee was “*expressly required* to abandon and disavow as a condition of the grant.”²⁵⁶

Exhibit Supply would be the last significant word from the Supreme Court on the doctrine of prosecution history estoppel until the end of the twentieth century. Interestingly, the doctrine’s treatment in the circuit courts of appeals prior to the formation of the Federal Circuit in 1982 indicates that the various circuit courts did not universally understand the Supreme Court to have departed as sharply from its previous, more flexible application of estoppel as the language in *Exhibit Supply* seemed to indicate.

VII. THE POST-WORLD WAR II TREATMENT OF PROSECUTION HISTORY ESTOPPEL IN THE CIRCUIT COURTS

In the second half of the twentieth century, the Supreme Court addressed the doctrine of equivalents in only two other cases prior to *Festo*.²⁵⁷ Thus, the evolution of this doctrine in the circuit courts is

253. *Exhibit Supply*, 315 U.S. at 136 (emphasis added) (citing *Hubbell v. United States*; *Weber Elec. Co. v. E. H. Freeman Elec. Co.*; *I. T. S. Rubber Co. v. Essex Rubber Co.*; *Smith v. Magic City Kennel Club*; and *Schriber-Schroth Co. v. Cleveland Trust Co.*).

254. *See, e.g.*, *Shepard v. Carrigan*, 116 U.S. 593, 598 (1886) (providing for consideration of some range of equivalents for amended claim).

255. *See, e.g.*, *Sutter v. Robinson*, 119 U.S. 530, 541 (1886) (suggesting that if a patentee was not *expressly required* to abandon an element of the claim to overcome prior art rejection, the patentee should be afforded the opportunity to rely upon the doctrine of equivalents despite voluntary abandonment of the element).

256. *Id.* at 541 (emphasis added).

257. *See Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 608-09 (1950) (holding that the doctrine of equivalents is necessary to prevent “unscrupulous copyists” from replicating inventions and disguising the copying by making insubstantial changes); and *Warner-Jenkinson Co., Inc. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 34 (1997) (holding that the doctrine of equivalents is not inconsistent with the Patent Act and that the doctrine must be applied to each element of a patent claim and not to the invention as a whole).

critical to the understanding of the doctrine's overall history. Perhaps because of its harsh impact on patent holders, it was not long before the tendency to distinguish, qualify, or simply ignore *Exhibit Supply* began to manifest itself in certain circuits. The treatment of this issue in the various circuits was anything but uniform, however.

In *Musher Foundation, Inc. v. Alba Trading, Inc.*,²⁵⁸ the Second Circuit held that the estoppel described in *Exhibit Supply* and *Schriber-Schroth* did not arise from circumstances that were unrelated to the core requirements for obtaining a patent. In *Musher*, claims were cancelled solely for the purpose of restating those claims in a continuation application. The court found that where a patent applicant cancels a claim that already has been allowed, the rationale of *Exhibit Supply* and *Schriber-Schroth* does not apply.²⁵⁹ Rather, according to the court, the proper question is whether the applicant "intends to surrender the disclosure in such sense that [the applicant] abandons any equivalents of the elements of those claims which [the applicant] keeps."²⁶⁰ Because the court held that the applicant in *Musher* had no such intent, the first claim was entitled to the range of equivalents that would have applied had the claims not been cancelled.²⁶¹ Inasmuch as the allowed claims had been cancelled only for continuation purposes, no estoppel arose because the patent holder did not manifest an intent to abandon the claims.²⁶²

Subsequent decisions concentrated in the Seventh Circuit uncritically applied *Exhibit Supply* and *Schriber-Schroth* to bar reliance on the doctrine of equivalents where claim language was changed due to prior art rejection, even where the addition of a limitation precluding literal infringement was unnecessary to distinguish prior art.²⁶³ Only some of these decisions even analyze the particular limitations added and their relationship to the prior art upon which the rejection was based,²⁶⁴ or at least discuss generally what happened

258. 150 F.2d 885, 66 U.S.P.Q. (BNA) 183 (2d Cir. 1945).

259. *Musher*, 150 F.2d at 888, 66 U.S.P.Q. (BNA) at 186.

260. *Id.*, 66 U.S.P.Q. (BNA) at 186.

261. *See id.*, 66 U.S.P.Q. (BNA) at 186 (stating that "when the defendant lengthened the time and reduced the temperature, it adopted the equivalent of a 'short' time and a 'slightly elevated temperature.'").

262. *Id.*, 66 U.S.P.Q. (BNA) at 186.

263. *See, e.g.*, *Peters & Russell, Inc. v. Dorfman*, 188 F.2d 711, 714-15, 89 U.S.P.Q. (BNA) 351, 354-55 (7th Cir. 1951) (adjudicating a case in which several claims were rejected over prior art and consequently the patentee had specified and limited the claim to the literal embodiment described in the application).

264. *See, e.g.*, *Lewis v. Avco Mfg. Corp.*, 228 F.2d 919, 926-27, 108 U.S.P.Q. (BNA) 147, 153 (7th Cir. 1956) (discussing applicant's lengthy application process ending only when applicant amended the claim to include a limitation); *Kromer v. Riegel Textile Corp.*, 227 F.2d 741, 743-44, 107 U.S.P.Q. (BNA) 317, 319-20 (7th Cir. 1955) (describing applicant's amendments to claims after claims were rejected); *Dixie Cup*

during prosecution history.²⁶⁵ *Baker-Cammack Hosiery Mills, Inc. v. Davis Co.*²⁶⁶ exemplifies the courts' approach during this period.

In *Baker-Cammack*, the patentee had attempted to broaden his claims in a reissue application to eliminate a particular limitation present in some, but not all, of the claims. The broader reissue claims were rejected based on prior art. The patentee subsequently withdrew the reissue application and requested reinstatement of his original patent claims. When the patentee asserted the original claims against an alleged equivalent device, the court held that even the original claims that had not included the particular limitation in issue should be read to include that limitation because the broader claims had been canceled in the reissue application. The court reasoned that to read the claims otherwise would allow the patentee to assert infringement against a device that literally embodied a claim that was presented, but then abandoned, during the reissue proceeding.²⁶⁷

The Fifth Circuit took a decidedly different tack than did the Seventh Circuit in its first post-*Exhibit Supply* prosecution history estoppel case, *Hunt Tool Co. v. Lawrence*.²⁶⁸ *Hunt Tool* involved three patents, two of which raised important and different prosecution history estoppel issues.²⁶⁹ The claims of the first patent had been amended in response to a rejection for formal matters under 35 U.S.C. § 112.²⁷⁰ The court held that only amendments made in response to prior art rejections could give rise to an estoppel.²⁷¹ This

Co. v. Paper Contained Mfg. Co., 169 F.2d 645, 648, 78 U.S.P.Q. 222, 224-25 (7th Cir. 1948) (explaining the effect of patentee's amendments and the patentee's belief that amendments were necessary to distinguish the claims from prior art).

265. See, e.g., *United States Air Conditioning Corp. v. Governair Corp.*, 216 F.2d 430, 433, 103 U.S.P.Q. (BNA) 231, 233-34 (10th Cir. 1954) (explaining applicant's process of amending claims after they were rejected); *Union Carbide & Carbon Corp. v. Graver Tank & Mfg. Co., Inc.*, 196 F.2d 103, 109, 93 U.S.P.Q. (BNA) 137, 141 (7th Cir. 1952) ("But more important is the history attached to these claims and, more particularly, the controverted language from the time the claims emerged from the Patent Office until the commencement of the instant litigation.").

266. 181 F.2d 550, 85 U.S.P.Q. (BNA) 94 (4th Cir. 1950).

267. See *id.* at 563, 85 U.S.P.Q. (BNA) at 117.

268. 242 F.2d 347, 113 U.S.P.Q. (BNA) 7 (5th Cir. 1957).

269. See *id.* at 348, 113 U.S.P.Q. (BNA) at 8 (describing the patents, which dealt with tools designed to extract obstructing objects from oil wells).

270. *Id.* at 353 and n.3, 113 U.S.P.Q. (BNA) at 12 n.3. 35 U.S.C. § 112 requires that the patent application meet certain formal requirements. Section 112 imposes standards of clarity, requiring that the invention be described "in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains . . . to make and use [the invention], and shall set forth the best mode contemplated by the inventor of carrying out [the] invention." 35 U.S.C. § 112 (1995).

271. See *Hunt Tool*, 242 F.2d at 354, 113 U.S.P.Q. (BNA) at 12-13 (explaining that because the patent examiner's objection was with reference to the prior art, file

holding is consistent with the fact that virtually all of the cases that had applied the rule dating back to *Leggett v. Avery*²⁷² had done so where the patent holder narrowed the claim to avoid prior art rather than for matters of form.²⁷³

The prosecution history of the second patent presented a closer question.²⁷⁴ The initial rejection due to prior art was overcome by amendments.²⁷⁵ The patentee had narrowed the phrase “a piston on a string” to “a piston fixed on the string.”²⁷⁶ The defendant’s device consisted of a piston that was not rigidly fixed to a string, but was pulled by a string as if fixed.²⁷⁷ The court rejected the defendant’s argument that the insertion of the term “fixed” in the claim, in response to a prior art rejection, estopped the patentee from asserting infringement under the doctrine of equivalents.²⁷⁸ The court reasoned that “the several patents cited [by the PTO] do not make such a distinction a plausible ground for the rejection.”²⁷⁹ Simply stated, the court took the view that the change in terminology to include the word “fixed” was not material in overcoming the prior art. The court further clarified that certain other changes in wording between the allowed claim and the original rejected claim were for “clarification.”²⁸⁰ Therefore, the court allowed the patent owner to cover, by the doctrine of equivalents, part of the patentable middle ground between the rejected and amended claims.²⁸¹

In *Hunt Tool*, the court made no citation or reference either to

wrapper estoppel would protect the appellants only if the alleged infringement is in “an area to which the prior art could possibly have been thought to extend so as to make it impossible to make valid claims there.”)

272. 101 U.S. 256 (1879).

273. See *supra* note 164 and accompanying text (explaining that the only notable exception in this long line of cases was *Crawford v. Heysinger*, 123 U.S. 589 (1887), which presented an equally problematic patentability problem: an initial claim to a device that was inoperative in the absence of claim elements that were later added to gain allowance). The modern day requirements for an operative device are found in the Patent Statute, which requires the claimed invention be “useful.” 35 U.S.C. § 101 (1994).

274. See *Hunt Tool Co. v. Lawrence*, 242 F.2d 347, 353, 113 U.S.P.Q. (BNA) 7, 12 (5th Cir. 1957) (explaining that the situation with regard to the Lawrence patent was more difficult to evaluate because the original claim’s rejection conflicted with the prior art and a comparison with those claims allowed showed the difference to be that “the grapple will be moved upwardly upon application of fluid into the cylinder.”).

275. *Id.*, 113 U.S.P.Q. (BNA) at 12.

276. *Id.* at 354, 113 U.S.P.Q. (BNA) at 12.

277. See *id.* at 349, 113 U.S.P.Q. (BNA) at 9 (describing the technical aspects of the defendant’s invention).

278. *Id.* at 352, 113 U.S.P.Q. (BNA) at 11.

279. *Id.* at 353, 113 U.S.P.Q. (BNA) at 12.

280. *Id.*, 113 U.S.P.Q. (BNA) at 12.

281. *Id.* at 354, 113 U.S.P.Q. (BNA) at 13.

Exhibit Supply or to *Schriber-Schroth*. Instead, the court cited *New York Scaffolding Co. v. Whitney*,²⁸² for the proposition that “file wrapper estoppel” protects a defendant only where the alleged infringement is “in an area to which the prior art could possibly have been thought to extend so as to make it impossible to make valid claims there, for *there is no reason to presume* that an applicant made a disclaimer broader than necessary to yield to the actual challenge” by the Patent Office.²⁸³

Hunt Tool represented the first major post-World War II circuit court case squarely to depart from the absolute rule implied by *Exhibit Supply* and return to the more balanced approach forged in the 1880s.²⁸⁴ The Fifth Circuit adhered to the more flexible rule in *Ziegler v. Phillips Petroleum Co.*,²⁸⁵ where the court quoted *Hunt Tool*, stating “an applicant should not be presumed to have made a disclaimer broader than necessary to yield to the actual challenge to his claim.”²⁸⁶

Following *Ziegler*, however, even the Fifth Circuit began to waiver. The continuing vitality of *Hunt Tool* was questioned by *Nationwide Chemical Corp. v. Wright*.²⁸⁷ The patent was a “method for combating infections in plants growing in soil infested with [certain] pathogenic micro-organisms.”²⁸⁸ The relevant claim identified a known bacteriacide (hexachlorophene)²⁸⁹ and called for application “at a dosage of less than 4 ounces” of hexachlorophene per acre.²⁹⁰ The patent owner brought an infringement suit against a competitor who manufactured a hexachlorophene product with parallel instructions except the competitor recommended a dosage of 4.73 ounces per acre.²⁹¹ Unlike in *Hunt Tool* and *Ziegler*, the court in *Nationwide*

282. 224 F. 452 (8th Cir. 1915).

283. *Hunt Tool*, 242 F.2d at 354, 133 U.S.P.Q. (BNA) at 12 (emphasis added).

284. See *supra* Part IV (discussing the willingness of courts to allow patents to cover equivalents of the amended claims).

285. 483 F.2d 858, 177 U.S.P.Q. (BNA) 481 (5th Cir. 1973).

286. *Id.* at 871, 177 U.S.P.Q. (BNA) at 489 (citing *Hunt Tool*, 242 F.2d at 354, 113 U.S.P.Q. (BNA) at 13).

287. 584 F.2d 714, 200 U.S.P.Q. (BNA) 257 (5th Cir. 1978).

288. *Id.* at 715 n.1, 200 U.S.P.Q. (BNA) at 258 n.1.

289. *Id.* at 715 n.1, 716, 200 U.S.P.Q. (BNA) at 258 n.1.

290. *Id.*, 200 U.S.P.Q. (BNA) at 258 n.1. This dosage limitation had been added during prosecution in response to a rejection by the examiner over a prior art reference. The reference disclosed a method of achieving the desired effect by aerial spraying of a much heavier dose of chemical (48 ounces per acre). The examiner asserted that this reference anticipated the original claim, which had not specified a dosage. *Id.*

291. See *Nationwide Chem. Corp. v. Wright*, 458 F. Supp. 828, 832, 192 U.S.P.Q. 95, 99 (M.D. Fla. 1976) (citing trial record which specified the recommend dosage), *aff'd*, 584 F.2d 714, 200 U.S.P.Q. (BNA) 257 (5th Cir. 1978). The plaintiff argued that although the “less than 4 ounces” limitation was added in response to the examiner’s rejection over the cited reference, the particular dosage chosen—4

Chemical refused to probe the reasons behind the change in claim language. Instead the court reasoned “[t]he simpler solution [was] to look at the question of whether the patentee had to insert a limitation in the broader sense.”²⁹² In support of this approach, the court cited, as “most nearly on point,”²⁹³ the Seventh Circuit’s decision in *Ecko Products Co. v. Chicago Metallic Manufacturing Co.*²⁹⁴ The *Ecko* court recognized that “file wrapper estoppel arises only through amendment and cancellation of claims to overcome rejection.”²⁹⁵ Therefore, the inquiry focused on whether the patentee was forced to introduce an element in order to avoid rejection.²⁹⁶ Where a patentee narrowed the claim after rejection, the *Nationwide Chemical* court followed the *Ecko* holding that the patentee “is held strictly to the letter of the limited claims granted.”²⁹⁷ Agreeing with the Seventh Circuit’s holding, the *Nationwide Chemical* court concluded that because *Nationwide*, forced to introduce dosage restrictions, chose “less than 4 ounces per acre,” *Nationwide* was held “strictly to the letter of the limited claims granted.”²⁹⁸

The *Nationwide Chemical* court, however, did discuss instances in which the rule of *Hunt Tool* would be appropriate,²⁹⁹ and in so doing,

ounces per acre—was not relevant to avoiding the reference which, as stated, taught 48 ounces per acre. The plaintiff alleged that such a low number was chosen “only to point out the difference from the high dosage” known in the prior art. Since the patent applicant lacked the requisite intent to abandon all relatively low dosages, the plaintiff argued that estoppel did not lie. *Nationwide Chem.*, 584 F.2d at 718, 200 U.S.P.Q. (BNA) at 10-11.

292. *Nationwide Chem.*, 584 F.2d at 718, 200 U.S.P.Q. (BNA) at 260.

293. *Id.* at 719, 200 U.S.P.Q. (BNA) at 13.

294. 347 F.2d 453, 147 U.S.P.Q. (BNA) 146 (7th Cir. 1965).

295. *Id.* at 454, 147 U.S.P.Q. (BNA) at 147.

296. *Id.*, 147 U.S.P.Q. (BNA) at 147.

297. *Nationwide Chem.*, 584 F.2d at 719, 200 U.S.P.Q. (BNA) at 261 (citing *Ecko Prods.*, 347 F.2d at 455, 146 U.S.P.Q. (BNA) at 148) (emphasis added).

298. *Id.* *Nationwide Chemical* and *Ecko* are the two cases specifically mentioned in *Hughes Aircraft Co. v. United States*, 717 F.2d 1351, 1362, 219 U.S.P.Q. (BNA) 473, 481 (Fed. Cir. 1983), as being “rejected” by the Federal Circuit because they applied a “wooden” rule of estoppel in which “virtually any amendment of the claims creates a ‘file wrapper estoppel’ effective to bar all resort to the doctrine of equivalents, and to confine patentee ‘strictly to the letter of the limited claims granted.’” *Id.* at 1362, 219 U.S.P.Q. (BNA) at 481. The *Hughes* court found this approach negated “entirely the doctrine of equivalents and limit[ed] determination of the infringement issue to consideration of *literal* infringement alone.” *Id.*, 219 U.S.P.Q. (BNA) at 481 (emphasis in original).

299. See *Nationwide Chem. Corp. v. Wright*, 584 F.2d 714, 719, 200 U.S.P.Q. (BNA) 257, 261 (5th Cir. 1978) (stating that the presumption from *Hunt Tool*, that the patentee did not make a disclaimer broader than necessary to obtain allowance of the claim might apply “where the purported infringer falls on the other side of the patent in suit from the prior art,” making the patent in suit entitled to some slight range of equivalents). The *Nationwide Chemical* court further noted that the *Hunt Tool* presumption also might apply where the limitation in the claim was not inserted to overcome prior art. *Id.*, 200 U.S.P.Q. (BNA) at 261.

seemed to limit *Hunt Tool* to situations even narrower than the facts of that case would dictate.³⁰⁰

The Fifth Circuit's last word on the subject came in *Continental Oil Co. v. Cole*.³⁰¹ The court reversed a lower court's application of prosecution history estoppel after citing *Hunt Tool*'s presumption that patentees do not intend to abandon any more than necessary to overcome a rejection.³⁰² The rejection at issue in *Continental Oil* was not based on prior art.³⁰³ The circuit conflict and confusion was not resolved prior to the Federal Circuit's assumption of exclusive jurisdiction over patent cases in 1982.

Courts in other circuits similarly were split on whether prosecution history estoppel bars resort to the doctrine of equivalents where a claim has been amended in response to a prior art rejection, such as in *Exhibit Supply*, or only where the relevant limitation added by the amendment was necessary to overcome the examiner's rejection, such as in *Hunt Tool*.

The Seventh Circuit continued to apply prosecution history estoppel to bar resort to the doctrine of equivalents in all cases in which a claim was amended in response to a prior art rejection. The Second and Fourth Circuits followed the Seventh's Circuit's lead—and the *Nationwide Chemical* side of the intra-Fifth Circuit split—when the issue finally arose in those courts.³⁰⁴ However, the First Circuit, in *Borg-Warner Corp. v. Paragon Gear Works, Inc.*,³⁰⁵ joined with the *Hunt Tool* court in rejecting the *per se* rule of prosecution history estoppel set forth in *Exhibit Supply*, and instead adopted a factual inquiry that

300. See *Nationwide Chem.*, 584 F.2d at 719, 200 U.S.P.Q. (BNA) at 261 (speculating that if *Nationwide* had limited the claim to dosage of 2-4 ounces and the defendant had used 1 ounce, the *Hunt Tool* presumption might apply and entitle *Nationwide* to a limited range of equivalents below 2 ounces).

301. 634 F.2d 188, 209 U.S.P.Q. (BNA) 361 (5th Cir. 1981).

302. See *id.* at 198, 209 U.S.P.Q. (BNA) at 369-70 (rejecting trial judge's conclusion that file wrapper estoppel applied to the case and citing the *Hunt Tool* presumption as part of the basis for the rejection).

303. *Id.* at 195, 209 U.S.P.Q. (BNA) at 366-67.

304. See, e.g., *Cohn v. Coleco Indus.*, 558 F.2d 53, 58, 194 U.S.P.Q. (BNA) 241, 244 (2d Cir. 1976) (citing *Exhibit Supply* and holding that when the patentee, in order to meet objections in the Patent Office, based on references to prior art, narrows the claim and emphasizes the difference between the broad and the amended claim, the patentee abandons all that is embraced by the difference); *Power Curbers, Inc. v. E.D. Etnyre & Co.*, 298 F.2d 484, 494-95, 132 U.S.P.Q. (BNA) 158, 166-67 (4th Cir. 1962) ("Where the patentee in the course of his application in the patent office has, by amendment, cancelled or surrendered claims, those which are allowed are to be read in the light of those abandoned and an abandoned claim cannot be revived and restored to the patent by reading it by construction into the claims which are allowed.") (quoting *Schriber Co. v. Cleveland Trust Co.*, 311 U.S. 211, 217-18, 47 U.S.P.Q. (BNA) 345, 348 (1940)).

305. 355 F.2d 400, 148 U.S.P.Q. (BNA) 1 (1st Cir. 1965).

considered not only what literal claim scope was relinquished by amendment, but why it was relinquished. The court held that estoppel did not apply because the part of the amendment that relinquished coverage of the accused device addressed the indefiniteness rejection rather than the prior art rejection.³⁰⁶ The court stated that inquiry into the reasons for amendment is required.³⁰⁷

In *Omark Industries, Inc. v. Textron*,³⁰⁸ the Ninth Circuit also employed the more flexible approach. The defendant raised prosecution history estoppel as a defense because the relevant claim—for a chainsaw chain—had been amended during prosecution to include a specific limitation on the device.³⁰⁹ In rejecting this argument, the court held that the assignee of the patent was not “recapturing something it had given up to secure the issuance of the patent.”³¹⁰ Following the *Nationwide Chemical* holding, the court reasoned that “[a]n applicant should not be presumed to have made a disclaimer broader than necessary to yield to the actual challenge of the claim.”³¹¹

Of particular importance to the development of the jurisprudence in this area is the view of the United States Court of Claims articulated prior to the formation of the Federal Circuit.³¹² The United States Court of Claims sided with the circuits that adopted the flexible approach. In *Garrett Corp. v. United States*,³¹³ the patentee narrowed claims for a life raft ramp that would remain “at water level” when the raft was boarded.³¹⁴ This limitation was inserted to avoid a prior art reference that showed a ramp that was entirely submerged when boarded.³¹⁵ The accused raft contained a ramp that became slightly submerged when boarded. The court rejected the

306. See *id.* at 405-07, 148 U.S.P.Q. (BNA) at 6-7 (rejecting application of the doctrine of file wrapper estoppel).

307. *Id.* at 406, 148 U.S.P.Q. (BNA) at 6.

308. 688 F.2d 1242, 216 U.S.P.Q. (BNA) 749 (9th Cir. 1982).

309. See *id.* at 1251-52, 216 U.S.P.Q. (BNA) at 757 (referring to the district court’s finding that the limitation requiring that “the pivot point be located at the most rearward part of the base of the cutter was unnecessary to distinguish the claim over the prior art cited.”).

310. *Id.*, 216 U.S.P.Q. (BNA) at 757.

311. *Id.* at 1252, 216 U.S.P.Q. (BNA) at 757 (quoting *Ziegler*, 483 F.2d at 871, 177 U.S.P.Q. (BNA) at 489, and *Nationwide Chem.*, 584 F.2d at 719-20, 200 U.S.P.Q. (BNA) at 261).

312. In the Federal Circuit’s first published decision, the court adopted as binding precedent the decisions of its two predecessor courts: the Court of Claims and the Court of Customs and Patent Appeals. *South Corp. v. United States*, 690 F.2d 1368, 1370-71, 215 U.S.P.Q. (BNA) 657, 658 (Fed. Cir. 1982).

313. 422 F.2d 874, 164 U.S.P.Q. (BNA) 521 (Ct. Cl. 1970).

314. *Id.* at 882, 164 U.S.P.Q. (BNA) at 527.

315. *Id.*, 164 U.S.P.Q. (BNA) at 527.

estoppel defense because the accused product was closer to the patent claims than was the prior art that was distinguished.³¹⁶ While acknowledging *Exhibit Supply*, the court relied on the presumption stated in *Hunt Tool* that a patentee making an amendment should not be presumed to have intended to limit the claim any more than necessary to avoid the prior art.³¹⁷

VIII. THE FEDERAL CIRCUIT SETTLES THE ISSUE ON THE SIDE OF THE PATENT HOLDER: *HUGHES AIRCRAFT V. UNITED STATES*

The Court of Appeals for the Federal Circuit was created by the Federal Courts Improvement Act of 1982³¹⁸ to promote “doctrinal stability” and to “reduce the widespread lack of uniformity and uncertainty of legal doctrine” that then existed in the patent law.³¹⁹ In one of its first major patent law decisions—*Hughes Aircraft Co. v. United States*³²⁰—the Federal Circuit grappled with the question that had divided the circuit courts, and that had been the subject of changing views in the Supreme Court: the role of prosecution history estoppel and its relation to the doctrine of equivalents.

Hughes involved a patent filed by Donald Williams in 1960 for a control system used on early communications satellites to keep the satellite stable in orbit. Hughes’ satellites used a ground-based mechanical device to control the satellite’s orientation.³²¹ By the time the first accused Government satellites were deployed in the early 1970s, computer technology had progressed to the point where the ground-based mechanical device was no longer necessary. Instead, using the same methodology employed by Hughes, the accused satellites used on-board computer processors to execute an orientation correction maneuver.³²² Hughes asserted infringement

316. *Id.*, 164 U.S.P.Q. (BNA) at 527.

317. *Id.*, 164 U.S.P.Q. (BNA) at 527 (citing *Hunt Tool*, 242 F.2d at 354, 113 U.S.P.Q. (BNA) at 13).

318. See Federal Courts Improvement Act of 1982, Pub. L. No. 97-154, 96 Stat. 25 (codified as amended in scattered sections of 28 U.S.C.A.) (establishing both United States Court of Appeals for the Federal Circuit and the United States Claims Court).

319. See *Panduit Corp. v. All States Plastic Mfg. Co., Inc.*, 744 F.2d 1564, 1573-74, 223 U.S.P.Q. (BNA) 465, 470 (Fed. Cir. 1984) (quoting legislative history of the Federal Courts Improvement Act).

320. 717 F.2d 1351 (Fed. Cir. 1983).

321. See *Hughes*, 717 F.2d at 1352-57, 219 U.S.P.Q. (BNA) at 474-77 (detailing much of the technical background). Hughes had invented a system in which a satellite detected its orientation relative to the sun and the earth. The satellite’s orientation, and the extent of its angular rotation, were transmitted to earth, where ground controllers used a mechanical device synchronized with the satellite to calculate when to send a command to the satellite to correct its orientation. *Id.*

322. Rather than use a mechanical device, the Government spacecraft used a computer processor on-board the satellite to generate the jet pulse firing command

under the doctrine of equivalents.³²³

The Federal Circuit began its discussion of the doctrine by referring to the Supreme Court's 1950 decision in *Graver Tank & Manufacturing Co. v. Linde Air Products Co.*³²⁴ *Graver Tank* raised, for the first time since *Winans* a century earlier, the fundamental question of whether the doctrine of equivalents should exist. In *Graver Tank*, the majority of the Justices acknowledged 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."³²⁵ But, the Court continued, it had also been recognized that "to permit imitation of a patented invention which does not copy every literal detail would be to convert the protection of the patent grant into a hollow and useless thing."³²⁶ The Court noted that literal duplication of an invention was a rare occurrence, and that a rule permitting slight alterations—in the words of the Court, "unimportant and insubstantial changes"—would encourage "unscrupulous copyists" to "introduce minor variations to conceal and shelter the piracy."³²⁷ A rule permitting such conduct "would place the inventor at the mercy of verbalism and would be subordinating substance to form. It would deprive him of the benefit of his invention and would foster concealment rather than disclosure of inventions, which is one of the primary purposes of the patent system."³²⁸ The Court in *Graver Tank* continued:

The doctrine of equivalents evolved in response to this experience. The essence of the doctrine is that one may not practice a fraud on a patent. Originating almost a century ago in the case of *Winans v. Denmead*, it has been consistently applied by this Court and the lower federal courts, and continues today ready and available for utilization when the proper circumstances for its application arise. "To temper unsparing logic and prevent an infringer from stealing

to correct the spacecraft's orientation. See generally *Syncom—The World's First Geosynchronous Communications Satellite*, Boeing Satellite Systems, Inc. (providing an overview of the history and technology of Hughes' Syncom satellite system), available at <http://www.hsc.com/factsheets/376/syncom/syncom.html> (last visited May 20, 2002); David J. Wahlen, *Communications Satellites: Making the Global Village Possible*, National Aeronautics and Space Administration (discussing the history of communication satellites), available at <http://www.hq.nasa.gov/office/pao/History/satcomhistory> (last visited Feb. 4, 2002).

323. *Hughes*, 717 F.2d at 1361, 219 U.S.P.Q. (BNA) at 480.

324. 339 U.S. 605 (1950).

325. *Id.* at 607.

326. *Id.*

327. *Id.*

328. *Id.*

the benefit of the invention,' a patentee may invoke this doctrine to proceed against the producer of a device 'if it performs substantially the same function in substantially the same way to obtain the same result.' The theory on which it is founded is that 'if two devices do the same work in substantially the same way, and accomplish substantially the same result, they are the same, even though they differ in name, form or shape.'³²⁹

Picking up on these themes, the Federal Circuit in *Hughes* noted that the doctrine of equivalents was "judicially devised to do equity" and that the "essence of the doctrine is that one may not practice a fraud on a patent."³³⁰ *Hughes Aircraft's* claims had been amended in response to a rejection over the prior art—the McLean spacecraft—which was a concept for a self-guided space vehicle that would home to a distant target such as a star but could not be controlled from the ground.³³¹ Thus, the Federal Circuit acknowledged that "[h]aving chosen specific words of limitation to avoid the McLean disclosure, Hughes is estopped . . . from obtaining a claim interpretation so broad as to encompass the McLean structure"³³² The court found that the doctrine of prosecution history estoppel precluded a patent owner from constructing a claim based upon subject matter that was surrendered in arguments submitted to obtain the patent.³³³

329. *Id.*, 339 U.S. at 608 (citations omitted). Like *Winans*, the Court's strong adherence to a doctrine of equivalents was not without dissent. Echoing the concerns of the dissenters one hundred years before, Justice Black, joined by Justice Douglas (the author of the *Exhibit Supply* opinion), voiced the same concern about a lack of certainty:

The claim is a statutory requirement, prescribed for the very purpose of making the patentee define precisely what his invention is; and it is unjust to the public, as well as an evasion of the law, to construe it in a manner different from the plain import of its terms. Giving this patentee the benefit of a grant that it did not precisely claim is no less unjust to the public and no less an evasion of [the patent statute requiring particular and distinct claiming] merely because done in the name of the 'doctrine of equivalents.' * * * * The Court's ruling today sets the stage for more patent 'fraud' and 'piracy' against business than could be expected from faithful observance of the congressionally enacted plan to protect business against judicial expansion of precise patent claims. Hereafter a manufacturer cannot rely on what the language of a patent claims. He must be able, at the peril of heavy infringement damages, to forecast how far a court relatively unversed in a particular technological field will expand the claim's language after considering the testimony of technical experts in that field. To burden business enterprise on the assumption that men possess such a prescience bodes ill for the kind of competitive economy that is our professed goal.

Id. at 614, 617 (Black, J., dissenting).

330. *Hughes*, 717 F.2d at 1361, 219 U.S.P.Q. (BNA) at 480.

331. *Hughes*, 717 F.2d at 1354-56, 219 U.S.P.Q. (BNA) at 475-76.

332. *Id.* at 1362, 219 U.S.P.Q. (BNA) at 481.

333. *See id.*, 219 U.S.P.Q. (BNA) at 481 (rejecting the view expressed by some courts that the doctrine of "file wrapper estoppel" bars all future claims that might be made under the doctrine of equivalents as failing to recognized that the doctrine of equivalents is unnecessary when literal infringement is present and as contrary to

But the real question for the court was the scope of that estoppel.³³⁴ In addressing this question, the court commented that the Williams patent did not surrender subject matter related to employment of an on-board computer to accomplish in a similar manner what was accomplished by the disclosed structure.³³⁵ An applicant for a patent must only designate the best method known for executing the invention and not “to predict all future developments which enable the practice of [the] invention in substantially the same way.”³³⁶

The court went on to note that amending claims is common-place in the prosecution of patents and that those amendments may be of differing types and functions, resulting in a wide range of limiting effects, which may or may not be fatal to application of the doctrine of equivalents.³³⁷ The court stated that “a patent that has been severely limited to avoid the prior art will only have a small range between it and the point beyond which it violates file wrapper estoppel.”³³⁸ However, *Hughes* did not concern such a patent.³³⁹

The McLean spacecraft reference distinguished during the prosecution was a demonstrably different device; one that was not controlled from the ground.³⁴⁰ This, the court stated, was “an important consideration in applying the doctrine of equivalents.”³⁴¹ Because the accused Government satellites were much closer to Hughes’ patent than they were to the prior art McLean spacecraft, the court held that application of the doctrine of equivalents would not violate the doctrine of prosecution history estoppel.³⁴² For nearly

Graver).

334. See generally Glen K. Beaton, *File Wrapper Estoppel and the Federal Circuit*, 68 DENV. U. L. REV. 283 (1991) (reviewing, in general, prosecution history estoppel); Paul J. Otterstedt, *Unwrapping File Wrapper Estoppel in the Federal Circuit: A New Economic Policy Approach*, 67 ST. JOHN’S L. REV. 405 (1993) (discussing three types of prosecution history estoppel—classical estoppel, estoppel by admission and non-art estoppel).

335. *Hughes*, 717 F.2d at 1362, 219 U.S.P.Q. (BNA) at 481.

336. *Id.*, 219 U.S.P.Q. (BNA) at 481.

337. *Id.*, 219 U.S.P.Q. (BNA) at 481.

338. *Id.*, 219 U.S.P.Q. (BNA) at 481 (citing *Autogiro Co. v. United States*, 384 F.2d 391, 155 U.S.P.Q. (BNA) 697 (Ct. Cl. 1967)).

339. See *id.*, 219 U.S.P.Q. (BNA) at 481 (disagreeing with the plaintiff that Williams submitted a claim which broadly covered all ground controllable spacecraft, but finding that the amendments made to Williams’ patent did not take into account such differences as ground control versus non-ground control as a result of being privy to prior art).

340. See *Hughes*, 717 F.2d at 1360-61, 219 U.S.P.Q. (BNA) at 480 (explaining that the McLean spacecraft, unlike the Williams satellite, could not receive commands from the ground).

341. *Id.*, 219 U.S.P.Q. (BNA) at 482.

342. See *id.*, 219 U.S.P.Q. (BNA) at 484 (explaining that the accused spacecraft and the Hughes satellite reflect the precise circumstance envisaged in *Graver* since they perform the same function—receipt of and response to command signals—in

twenty years thereafter, the Federal Circuit adhered to the view in *Hughes* that courts should undertake a case-specific analysis of the prosecution history of the patent-in-suit to determine whether, on a particular set of facts, application of the doctrine of equivalents would run afoul of prosecution history estoppel.³⁴³

IX. THE FEDERAL CIRCUIT UNSETTLES THE ISSUE IN *FESTO*

The Federal Circuit's decision in *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*³⁴⁴ represented a sea of change in the Federal Circuit's approach to balancing the interests of the patentee and his would-be competitors.³⁴⁵ The court, sitting *en banc*, overruled the case-by-case approach adopted in *Hughes* and adopted a rigid rule imposing prosecution history estoppel for any amended claim element.³⁴⁶

Three years prior to *Festo*, in *Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*,³⁴⁷ the first case to address the doctrine of equivalents

substantially the same way—synchronized jet firing—thereby obtaining the same result—controlled positioning, and thus both resemble one another more closely than the McLean spacecraft).

343. See, e.g., *Litton Sys., Inc. v. Honeywell Corp.*, 140 F.3d 1449, 1456, 46 U.S.P.Q.2d (BNA) 1321, 1326 (Fed. Cir. 1998) (adhering to the holding and language in *Hughes* in that “an amendment to claim language in response to prior art may have a limiting effect within a spectrum ranging from great to small to zero. The effect may or may not be fatal to application of a range of equivalents broad enough to encompass a particular accused product. It is not fatal to application of the doctrine itself.”); *Cybor Corp. v. FAS Tech., Inc.*, 138 F.3d 1448, 1460, 46 U.S.P.Q.2d (BNA) 1169, 1178 (Fed. Cir. 1998) (*en banc*) (refusing to invoke estoppel “given the marked differences between the reference and the patented and accused devices.”); *Hormone Research Found. v. Genentech, Inc.*, 904 F.2d 1558, 1564, 15 U.S.P.Q.2d (BNA) 1039, 1044 (Fed. Cir. 1990) (stating that “whenever a limiting amendment or argument is made during prosecution, the patentee loses all coverage between what the claims literally cover and what they would have covered prior to the amendment or argument.”); *LaBounty Mfg., Inc. v. ITC*, 867 F.2d 1572, 1576, 9 U.S.P.Q.2d (BNA) 1995, 1999 (Fed. Cir. 1989) (remanding case for close analysis of prosecution history and noting similarities to *Hughes* where the “government spacecraft [were] much closer to patentee’s satellite than to prior art space vehicle.”); *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 938 n.2, 4 U.S.P.Q.2d (BNA) 1737, 1737 n.2 (Fed. Cir. 1987) (*en banc*) (ruling that because a patent applicant narrows his claims in amending to secure approval, prosecution history estoppel does not always prohibit the patentee from recapturing some of the subject matter rights originally claimed—the amount of coverage retained depends on the circumstances of each case); see also *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 234 F.3d 558, 613-15, 56 U.S.P.Q.2d (BNA) 1865, 1908-10 (Fed. Cir. 2000) (Michel, J., dissenting) (listing over 90 Federal Circuit cases that applied the *Hughes* case-by-case approach).

344. 234 F.3d 558, 56 U.S.P.Q.2d (BNA) 1865 (Fed. Cir. 2000).

345. See generally Belvis, *supra* note 89 (providing an overview of changes in the doctrine of equivalents post-*Festo*); Anthony H. Azure, Note, *Festo Effect on After-Arising Technology and the Doctrine of Equivalents*, 76 WASH. L. REV. 1153 (2001) (giving an overview of *Festo* and what changes the decision brought).

346. *Festo*, 234 F.3d at 569, 56 U.S.P.Q.2d (BNA) at 1872.

347. 520 U.S. 17, 21 (1997).

after *Graver Tank*,³⁴⁸ the Supreme Court had unanimously reaffirmed the doctrine's viability.³⁴⁹ The *Warner-Jenkinson* Court addressed the concern first expressed in *Winans* that the doctrine of equivalents should not be applied too broadly and noted that this concern was mollified by the "all-elements rule." Each element of a patent claim is material in defining the scope of the patented invention.³⁵⁰ The "all elements rule" had been defined in the Supreme Court's jurisprudence more than a century before.³⁵¹

The *Warner-Jenkinson* decision thus obliged courts to inquire as to whether "the accused product or process contain[s] elements identical or equivalent to each claimed element of the patented invention?"³⁵² "[T]he substantial equivalent of a thing, in the sense of the patent law, is the same as the thing itself."³⁵³ Indeed, "the essential predicate of the doctrine of equivalents is the notion of identity between a patented invention and its equivalent."³⁵⁴

The *Warner-Jenkinson* Court also clarified the role of prosecution history estoppel.³⁵⁵ Prosecution history estoppel, the Court concluded, may limit the doctrine of equivalents in circumstances where the patent claim was amended during the application process, depending on the reasons for the amendment and the purpose for which it was added.³⁵⁶ But importantly, the Court rejected the position that "any surrender of subject matter during patent prosecution, regardless of the reason for such surrender, precludes recapturing any part of that subject matter, even if it is equivalent to the matter expressly claimed."³⁵⁷ The Court observed that the reason for amending a claim during patent prosecution was central to deciding whether a patent holder should be estopped from asserting the doctrine of equivalents in any given case.³⁵⁸

348. See *Belvis*, *supra* note 89, at 62-63 (discussing the evolution of the doctrine of equivalents from *Graver Tank* to *Warner-Jenkinson*).

349. See *Warner-Jenkinson*, 520 U.S. at 17-18 (adhering to the doctrine of equivalents and stating that the holding of *Graver Tank* has not become irrelevant following the revisions of the United States Patent Act).

350. See *Warner-Jenkinson*, 520 U.S. at 29-30 (stating that the doctrine of equivalents must be applied individually to elements of a patent claim).

351. See *supra* Part III (discussing the history of the all elements rule).

352. *Warner-Jenkinson*, 520 U.S. at 40.

353. *Id.* at 35 (quoting *Union Paper-Bag Mach. Co. v. Murphy*, 97 U.S. 120, 125 (1878)).

354. *Id.*

355. See *id.* at 30 (confirming that the well-established doctrine of prosecution history estoppel remains intact as a limitation on the doctrine of equivalent, even after *Graver Tank*).

356. *Id.* at 30-34.

357. *Id.* at 30.

358. *Id.* at 31-32.

Commenting on the more than one hundred years of precedent reviewed *ante*, the *Warner-Jenkinson* Court noted: “It is telling that in each case this Court probed the reasoning behind the Patent Office’s insistence upon a change in the claims. In each instance, a change was demanded because the claim as otherwise written was viewed as not describing a patentable invention at all—typically because what it described was encompassed within the prior art.”³⁵⁹ Thus, rather than adopt a “rigid rule invoking an estoppel regardless of the reasons for a change,”³⁶⁰ the Court held instead that “[w]here the reason for the change was not related to avoiding the prior art, the change may introduce a new element, but it does not necessarily preclude infringement by equivalents of that element.”³⁶¹ To decide whether an estoppel applies, a court should therefore “explore . . . the reason (right or wrong) for the objection and the manner in which the amendment addressed and avoided the objection.”³⁶² Where the reason for an amendment is not established, however, the Court ruled that it would “presume that the patent applicant had a ‘substantial reason related to patentability’ for including the limiting element added by amendment. In those circumstances, prosecution history estoppel would bar the application of the doctrine of equivalents as to that element.”³⁶³

The Supreme Court in *Warner-Jenkinson* thus validated the balance between the interests of the patent owner and his would-be competitors that the Federal Circuit had consistently implemented since *Hughes*. The Federal Circuit in *Festo*, however, reversed course, and skewed the balance well to the side of would-be competitors and against patent owners.

The *Festo* decision began by asking and answering a series of policy questions posed *sua sponte* by the *en banc* court.³⁶⁴ The first question asked whether the Supreme Court in *Warner-Jenkinson* intended, by referring to a presumption of estoppel where an amendment was prompted by a “substantial reason related to patentability,” to refer only to reasons relating to a prior art rejection.³⁶⁵ Virtually every Supreme Court case had decided the issue of prosecution history

359. *Id.* at 31.

360. *Id.* at 32.

361. *Id.* at 33.

362. *Id.* at 33 n.7.

363. *Id.* at 33.

364. See *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 234 F.3d 558, 563, 56 U.S.P.Q.2d (BNA) 1865, 1868 (Fed. Cir. 2000) (outlining five questions that related to the doctrine of equivalents in light of *Warner-Jenkinson*).

365. *Id.* at 556, 56 U.S.P.Q.2d (BNA) at 1870.

estoppel in the context of objections by the Patent Office based on prior art.³⁶⁶ However, the *Festo* court held that an amendment relating to *any* statutory requirement for patentability, even if unrelated to prior art, would trigger prosecution history estoppel.³⁶⁷ Because virtually every amendment to a patent claim can be characterized as related to some legal requirement for obtaining a patent, the Federal Circuit's decision guaranteed that virtually any amendment would trigger an estoppel.³⁶⁸

The second question asked whether a "voluntary" claim amendment not made in response to any objection by the Patent Office could trigger an estoppel.³⁶⁹ The court answered affirmatively.³⁷⁰ The third question asked whether, if a claim amendment creates an estoppel, there is any range of equivalents available to the patent holder for the amended claim element.³⁷¹ The court answered negatively.³⁷² The court concluded, instead, that the estoppel acts as a "complete bar" to application of the doctrine of equivalents to that element.³⁷³ Although this question split the court 8 to 4, the *en banc* majority decided that when prosecution history estoppel applies, it operates as a "complete bar" to the doctrine of equivalents.³⁷⁴ The majority stated that in the years after *Hughes*, the "notice function" of patent claims had become "paramount."³⁷⁵ Thus,

366. *Warner-Jenkinson*, 520 U.S. at 31.

367. *Festo*, 234 F.3d at 567, 56 U.S.P.Q.2d (BNA) at 1871.

368. The only caveat the Federal Circuit put on this requirement was that the amendment "narrow" the scope of the claim in some respect. *Id.*, 234 F.3d at 566.

369. *Id.* at 568, 56 U.S.P.Q.2d (BNA) at 1871.

370. *Id.*, 56 U.S.P.Q.2d (BNA) at 1871.

371. *Id.* at 569, 56 U.S.P.Q.2d (BNA) at 1872.

372. *See id.* at 575, 56 U.S.P.Q.2d (BNA) at 1877 (stating a complete bar would establish a more "workable" doctrine).

373. *Id.* at 576, 56 U.S.P.Q.2d (BNA) at 1879.

374. *Festo*, 234 F.3d at 574-75, 56 U.S.P.Q.2d (BNA) at 1877.

375. *See id.* at 575, 56 U.S.P.Q.2d (BNA) at 1877 (echoing the concerns raised by the dissenters in *Winans* nearly a century and half before, the Federal Circuit had, with increasing frequency in the years leading up to *Festo*, emphasized this "notice function" of patent claims - the "public's" (*i.e.*, competitors') entitlement to rely on the words of the claims to determine their respective rights). *See, e.g.*, *Dolly, Inc. v. Spalding & Evenflo Cos., Inc.*, 16 F.3d 394, 398, 29 U.S.P.Q.2d (BNA) 1767, 1771 (Fed. Cir. 1994) ("The claims—*i.e.* the scope of patent protection as defined by the claims—remain the same and application of the doctrine expands the right to exclude to 'equivalents' of what is claimed. The doctrine of equivalents is not a license to ignore claim limitations.") (internal citations omitted). *Charles Greiner & Co., Inc. v. Mari-Med Mfg., Inc.*, 962 F.2d 1031, 1036, 22 U.S.P.Q.2d (BNA) 1526, 1531 (Fed. Cir. 1992) ("Most important, however, a court must, in applying the doctrine, avoid significant conflict with the fundamental principle that claims define the limits of patent protection. This court has repeatedly stated that the doctrine must not clash with the legal significance of claims: . . .") (internal citations and quotation omitted); *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538, 20 U.S.P.Q.2d (BNA) 1456, 1460 (Fed. Cir. 1991) ("It is . . . well settled that each element of a claim is material and essential, and that in order for a court to find

the court reasoned, it was necessary to impose a rule that “promot[es] certainty in patent law,” an objective that could not be achieved with the flexible approach of *Hughes*.³⁷⁶ Additional policy considerations justified its result, the majority said, because the complete bar approach would ensure technological advances that otherwise might have been abandoned “due to fear of litigation.”³⁷⁷

The majority opinion drew several sharp dissents. Most notably, the dissenters observed that:

Unwittingly, the majority has severely limited the protection previously available to patentees. Indeed, it may nullify the doctrine of equivalents. Under the majority’s approach, anyone who wants to steal a patentee’s technology need only review the prosecution history to identify patentability-related amendments, and then make a trivial modification to that part of its product corresponding to an amended claim limitation. . . . [M]ost patentees will lose the protection against copying that the Supreme Court unanimously reaffirmed in *Warner-Jenkinson*.³⁷⁸

One dissent noted that the decision “unfairly tips the balance away from patentees and toward competitors by constraining the legitimate rights of patentees to their inventions, even where competitors can reasonably determine the reasons for any amendments and the scope of any subject matter surrendered.”³⁷⁹

Another dissent attacked the majority’s economic rationale, suggesting that although the majority believed the decision would have a positive impact on the development of new technologies, “[e]mpirical studies have added rigor to the common sense knowledge that reduced profit opportunity affects the supply of capital to launch a new technology, and often the creation of the technology itself.”³⁸⁰

It is no overstatement to say that the Federal Circuit’s fidelity in *Festo* to the historical precedents in this area became a matter of some controversy.³⁸¹ The imposition of the “absolute bar” to equivalents for claims amended for reasons related to patentability appeared to

infringement, the plaintiff must show the presence of every element or its substantial equivalent in the accused device.”) (quoting *Lemelson v. United States*, 752 F.2d 1538, 1551, 224 U.S.P.Q. (BNA) 526, 533 (Fed. Cir. 1985)).

376. *Id.* at 575, 56 U.S.P.Q.2d (BNA) at 1878.

377. *Id.*, 56 U.S.P.Q.2d (BNA) at 1876.

378. *Id.* at 601, 56 U.S.P.Q.2d (BNA) at 1896 (Michel, J., dissenting).

379. *Id.* at 620, 56 U.S.P.Q.2d (BNA) at 1914 (Linn, J., dissenting).

380. *Id.* at 641, 56 U.S.P.Q.2d (BNA) at 1931 (Pauline & Newman, JJ., dissenting).

381. See generally Marc S. Hanish & Adrienne Yeung, *Patent Practitioners Beware: The Federal Circuit Release a Manifesto*, 9 NEV. LAW. 18, 21 (2001) (criticizing the bright-line rule created in the *Festo* decision which will place an increased burden on patent prosecutions); Belvis, *supra* note 89.

contradict directly the Supreme Court's rejection of such a rigid approach in *Warner-Jenkinson*. By focusing on the doctrine of prosecution history estoppel as a vehicle to "rein in" the doctrine of equivalents,³⁸² the Federal Circuit seemingly ignored *Warner-Jenkinson's* intention to address the concern over the perceived uncertainty created by the doctrine of equivalents by an entirely different mechanism. The *Warner-Jenkinson* Court intended that this issue be addressed in a much more nuanced way than the blunt instrument of an "absolute bar." Instead, the Court cautioned the lower courts to apply the doctrine of equivalents so as not to "vitiating the central functions of the patent claims themselves." In this way, courts could "ensure that the application of the doctrine, even as to an individual element, is not allowed such broad play as to effectively eliminate that element in its entirety."³⁸³ In other words, faithful application of the "all-elements-rule," which traces its roots back at least to *Union Water-Meter Co. v. Desper*,³⁸⁴ is the safeguard against the uncertainty inherent in any application of the doctrine of equivalents. This solution is quite different from the one imposed by the Federal Circuit, which widened the doctrine of prosecution history estoppel in *Festo* to such a degree that it virtually swallowed the doctrine of equivalents.³⁸⁵

Indeed, the Federal Circuit's elevation of the "notice function" of patent claims and the "disclaimer" effect of claim amendments to "paramount" status such that it trumps any consideration of a fair scope of equivalents ran contrary to the majority view throughout most of the history of the doctrine of equivalents, with perhaps the exception of the Depression and some of the ensuing post-World War II era circuit court cases when the courts were gripped with anti-patent thinking. The Federal Circuit's resolution also seemed in tension with the intentions expressed by the Nation's Founders, and echoed in Supreme Court pronouncements, that the "ultimate goal of the patent system" is to foster innovation and thereby "bring new designs and technologies into the public domain through disclosure."³⁸⁶ Moreover, from an economic viewpoint, the Federal Circuit's imposition of an absolute bar to the doctrine of equivalents

382. *Festo*, 234 F.3d at 578, 56 U.S.P.Q.2d (BNA) at 1880.

383. *Warner-Jenkinson*, 520 U.S. at 29-30.

384. 101 U.S. 332, 333 (1879).

385. See *Festo*, 234 F.3d at 598, 56 U.S.P.Q.2d (BNA) at 1896 (Michel, J., dissenting) (asserting that with the application of the complete bar standard, the protection that was offered under the doctrine of equivalents for patent holders is gone).

386. *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 151 (1989).

for most patent claims (since most are amended during prosecution), favored minor, insubstantial changes in technology that require little investment, over bold, innovative improvements that require larger investments. In fact, the majority's laudable goal of encouraging competitors to design around patents seems better served by allowing the "zone of uncertainty" around the literal scope of patent claims to belong to the patentee, thus giving the patentee an incentive to more fully develop the technology, while at the same time inducing competitors to give patent claims wider berth and thereby create truly innovative technological improvements.

X. CONCLUSION: THE SUPREME COURT WEIGHS IN AGAIN

On May 28, 2002, the Supreme Court issued its decision vacating the Federal Circuit's decision.³⁸⁷ Interest in these fundamental questions of patent law raised by the *Festo* decision had been intense. In addition to the briefs filed by the parties, over forty *amici curiae* either filed or joined in briefs discussing the merits of the case. The vast majority of those briefs—including briefs filed by the Solicitor General of the United States,³⁸⁸ a large number of prominent companies,³⁸⁹ and some of the most prestigious research universities in the country³⁹⁰—all argued against affirmation of the *Festo* decision.

The Supreme Court agreed. Drawing from themes that re-appear throughout the history of the case law, the Court restored the balance between the interests of the patent holder and his competitors. The Supreme Court began its opinion by reaffirming that patents were indeed intended to promote the progress of science and the useful arts by creating a property right in an invention.³⁹¹

387. 122 S. Ct. at 1831.

388. Brief for the United States as Amicus Curiae Supporting Vacatur and Remand in *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 234 F.3d 558 (Fed. Cir. 2000), *cert. granted*, 121 S. Ct. 2519 (U.S. June 18, 2001) (No. 00-1543).

389. Brief of Minnesota Mining and Manufacturing Co.; Eli Lilly and Co.; Henkel Corp.; Johnson & Johnson; Pfizer Inc.; PPG Industries, Inc.; Rexam Beverage Can Co.; Sun Microsystems, Inc.; and Verizon Communications Inc. as Amici Curiae in Support of Petitioners in *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 234 F.3d 558 (Fed. Cir. 2000), *cert. granted*, 121 S. Ct. 2519 (U.S. June 18, 2001) (No. 00-1543).

390. Brief of Amici Curiae Massachusetts Institute of Technology; Wisconsin Alumni Research Foundation; State University of New York-Stony Brook, Office of Technology Licensing and Industrial Relations; and University of Texas, Medical Branch at Galveston and M.D. Anderson Cancer Center Houston in Support of Petitioner for Writ of Certiorari in *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 234 F.3d 558 (Fed. Cir. 2000), *cert. granted*, 121 S. Ct. 2519 (U.S. June 18, 2001) (No. 00-1543).

391. *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 535 U.S. ___, 122 S. Ct. 1831, 1836 (May 28, 2002) (No. 00-1543).

The boundaries of that property right should be clear, however, so that a patent holder may know what he owns and the public may know what he does not.³⁹² The nature of the language, unfortunately, makes it impossible to describe with complete precision the novelty in an invention. The Court noted that “if patents were always interpreted by their literal terms, their value would be greatly diminished” because “unimportant and insubstantial substitutes for certain elements could defeat the patent.”³⁹³ Thus, the Court noted, the previous cases that had considered the issue over a century and a half, from *Winans* in 1854 to *Graver Tank* in 1950 to *Warner-Jenkinson* in 1997, had invariably decided that some uncertainty in the scope of patent rights must be tolerated in order to ensure the appropriate incentive for innovation.³⁹⁴

The Court went on to note that the scope of patent claims must be determined in light of the prosecution history in the PTO.³⁹⁵ The Court explained that the doctrine of prosecution history estoppel constrains the doctrine of equivalents to its original purpose.³⁹⁶ Consistent with the holdings in its prior cases ranging from *Goodyear*³⁹⁷ to *Exhibit Supply*,³⁹⁸ the Court explained that a patentee may not recapture, by asserting equivalency, something that was relinquished during prosecution.³⁹⁹ Because the doctrine of equivalents is premised on the inability of language to capture the complete essence of the innovation, the doctrine of equivalents should not apply where the inventor was able to describe his invention in a broader claim that was rejected by the PTO and replaced with a narrower amended claim.⁴⁰⁰ In that instance, the prosecution history indicates that the inventor “knew the words for both the broader and narrower claim, and affirmatively chose the latter.”⁴⁰¹

Turning to the specific questions raised by the petition, the Court first ruled that any amendment may give rise to a prosecution history estoppel, even an amendment directed strictly to matters of form in compliance with 35 U.S.C. § 112, which governs the form of patent claims.⁴⁰² The Supreme Court here agreed with the Federal Circuit

392. *Id.*

393. *Id.* at 1837.

394. *Id.* at 1837-39.

395. *Id.* at 1839-41.

396. *Id.*

397. *See supra* note 15.

398. *See supra* note 250.

399. *Festo*, 122 S. Ct. at 1839-40.

400. *Id.*

401. *Id.* at 1840.

402. Here, the Court conceded that none of its prior cases had applied

that estoppel will arise whenever an amendment narrows the claim in some respect.⁴⁰³ Only amendments that are “truly cosmetic” will not invoke an estoppel because such amendments do not narrow the claim in any way.⁴⁰⁴

The Court reversed the Federal Circuit’s determination that the estoppel completely bars any assertion of equivalents, however, because the Federal Circuit’s “*per se*” rule “is inconsistent with the purpose of applying the estoppel in the first place—to hold the inventor to the representations made during the application process and to the inferences that may be reasonably drawn from the amendment.”⁴⁰⁵ The Supreme Court explained that by narrowing the claim, the inventor has conceded that the patent does not extend as far as the original claim, but no reason exists to presume that “the amended claim becomes so perfect in its description that no one could devise an equivalent.”⁴⁰⁶ The Court continued:

There is no reason why a narrowing amendment should be deemed to relinquish equivalents unforeseeable at the time of the amendment and beyond a fair interpretation of what was surrendered. Nor is there any call to foreclose claims of equivalence for aspects of the invention that have only a peripheral relation to the reason the amendment was submitted.⁴⁰⁷

In order to balance the competing concerns of promoting innovation and minimizing uncertainty, the Court built upon its prior decision in *Warner-Jenkinson*. That decision had erected a rebuttable presumption that where no explanation of the rationale for an amendment appears in the prosecution record, the courts should presume that the amendment was made to obtain the patent and therefore estoppel should apply.⁴⁰⁸ In *Festo*, the Supreme Court extended this reasoning. Because the patentee is expected to draft claims encompassing “readily known” equivalents, an election to narrow a claim gives rise to the additional presumption that the patentee intended to disclaim “the territory between the original

prosecution history estoppel in a situation where an amendment was made purely to improve the form of the claims. *Id.* at 1841-42. All of the prior Supreme Court cases that had applied prosecution history estoppel had done so where the amendment to the claim was made in response to prior art, with the exception of *Crawford v. Heysinger*, where the amendment was made in response to the Patent Office’s rejection for claiming an inoperative device. *See supra* note 164; *supra* Parts II-VI.

403. *Festo*, 122 S. Ct. at 1841-43.

404. *Id.*

405. *Id.* at 1843-44.

406. *Id.* at 1844.

407. *Id.*

408. *Warner-Jenkinson*, 520 U.S. at 33.

claim and the amended claim.”⁴⁰⁹ The patentee bears the burden of rebutting that presumption by establishing a reason why the amendment should not be viewed as surrendering a particular equivalent.⁴¹⁰ For example, the asserted equivalent might not have been foreseeable at the time of the application, the rationale for the amendment might be no more than tangentially related to the asserted equivalent, or there may exist some other reason suggesting that the patentee could not reasonably be expected to have described the equivalent in question. “In those cases the patentee can overcome the presumption that prosecution history estoppel bars a finding of equivalence.”⁴¹¹

It is now for the Federal District Courts and the Court of Appeals for the Federal Circuit to faithfully apply the Supreme Court’s guidance. How the Federal Circuit applies the new *Festo* presumption, and in particular under what circumstances it will find it rebutted, will have a large impact on whether the balance between patentee and competitor is truly maintained. Some ambiguities exist in the Supreme Court opinion that could make this task more difficult.

For example, it remains to be seen how the Federal Circuit understands and applies the Supreme Court’s premise that estoppel should apply “[w]hen . . . the patentee originally claimed the subject matter alleged to infringe but then narrowed the claim in response to a rejection.”⁴¹² Under the somewhat arcane rules of patent claiming, of which the Supreme Court may not have been aware, the patentee’s originally submitted claim might literally cover an unknowable equivalent simply by virtue of the fact that it used open-ended “comprising” language. For example, the original claim may have been to a device comprising elements A, B and C. An amendment might have added element D, thereby “narrowing” the claim. Suppose the amended claim is thereafter asserted against a device comprising A,B,C and D’, where D’ is an equivalent of D that may have been unknowable at the time of the amendment. The original claim (A,B,C) would “literally” have encompassed A,B,C and D’. But the Supreme Court could not have meant that the doctrine of equivalents is necessarily eliminated in that situation. The Supreme

409. *Festo*, 122 S.Ct. at 1846.

410. *Id.* at 1846-47.

411. *Id.* at 1847.

412. *Id.* at 1839. The Supreme Court also stated: “The patentee must show that at the time of the amendment one skilled in the art could not reasonably be expected to have drafted a claim that would have literally encompassed the alleged equivalent.” *Id.* at 1847.

Court's statement appears to be limited to the situation where the patentee originally attempted to claim a particular feature of his invention, and later narrowed the claim element relating to that feature. The Court does not appear to have intended the statement to apply where the patentee did not originally intend to limit his claim to the feature. Were it otherwise, the Court's statements that the presumption of estoppel can be rebutted where the equivalent is unforeseeable would be meaningless.

Other questions exist, such as what the Court meant when it said that the presumption could be overcome where "the rationale underlying the amendment may bear no more than a tangential relation to the equivalent in question."⁴¹³ Presumably, one situation that would qualify under this exception is the common practice of re-writing dependent claims into independent form to make them acceptable to the patent examiner. For example, the examiner may indicate that an independent claim with elements A,B,C is not patentable. However, a dependent claim, which adds element D (and thus by definition comprises elements A,B,C and D) may be allowable if re-written in independent form to contain all four elements. Where the patent is later asserted against the combination of A,B,C and D', there appears little reason to hold that the patentee should be estopped from asserting that D and D' are equivalents because the rationale for the amendment had "no more than a tangential relation to the equivalent in question."⁴¹⁴ In addition, it is not clear what might qualify as "some other reason suggesting that the patentee could not reasonably be expected to have described the insubstantial substitute in question."⁴¹⁵

The one certainty is that the great majority of patent infringement disputes will be impacted by the Supreme Court's *Festo* decision. So, too, will patent prosecution, where patent practitioners now, more than ever, bear the particular burden of making the rationale for amendments clear in the record, in order to enable the rebuttal of the new *Festo* presumption, should litigation ensue. With wisdom and judgment, the Federal Circuit and other courts will apply the new

413. *Id.* at 1847.

414. *Id.*

415. *Id.* For example, in rapidly-developing areas of technology, such as biotechnology or sub-molecular physics, the particular nomenclature or terminology used may evolve over time. It is possible to envision a situation where a particular term for an element of the invention did not exist at the time of the patent application or that a term used in the application later evolves so as to have a different meaning in the art. Application of estoppel would seem inappropriate in such a case if literal infringement is avoided by virtue of the changed terminology.

2002]

CABINING THE DOCTRINE OF EQUIVALENTS

607

presumption so as to maintain the historical balance between the interests of the patentee in the full exploitation of his invention (including its insubstantial variations) and the interests of his competitors to design improvements and thereby compete on the economic playing field. In both situations, as James Madison aptly put it: "The public good fully coincides . . . with the claims of individuals."⁴¹⁶

416. *Supra* note 2.