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Patent Law - Infringement - Doctrine of Equivalents - Prosecution History Estoppel

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The Supreme Court of the United States held that the doctrine of equivalents is not inconsistent with the Patent Act; that the doctrine of equivalents is to be applied to individual elements of a patent claim as opposed to the invention as a whole; that prosecution history estoppel applies to all changes made to an application during prosecution in the form of a rebuttable presumption against the patentee that can be overcome with a sufficient showing that the change was not relevant to patentability.


In 1985, the United States Patent and Trademark Office ("PTO") issued Patent Number 4,560,746 to Hilton Davis Chemical Co. ("Hilton"). This patent disclosed a purification process for the ultrafiltration of dyes through a porous membrane within a range of specified pore sizes, pressures and pH limits. In 1986, Warner-Jenkinson Co., Inc. ("Warner") began using an ultrafiltration process that operated within the same specified pore sizes and pressures and pH limits.
pressures as the Hilton process, but outside the literal pH limit specified in the claims of Hilton's patent. Following Warner's initial commercial use of its ultrafiltration process, Hilton learned of the similarities between the two processes and sued Warner, in 1991, for patent infringement in the United States District Court for the Southern District of Ohio. The district court determined that the Hilton patent was not invalid and held that Warner infringed the patent under the "doctrine of equivalents." The jury found, however, that Warner had not acted willfully, and thus, awarded Hilton $3,564,705, an amount representing 20% of the requested damages. After denying Warner's post-trial motion, the district court entered judgment in favor of Hilton. Furthermore, the court imposed a permanent injunction against Warner, prohibiting it from practicing ultrafiltration except at pressures and pH levels above those covered in the Hilton patent.

Warner appealed both the patent validity and infringement findings to the United States Court of Appeals for the Federal Circuit. Initially, a three-judge panel heard oral arguments in the

6. Id., 117 S. Ct. at 1046. During the prosecution of the Hilton patent, the claims relating to the pH limits of the process were amended to read "approximately 6.0 to 9.0." Warner designed its process to operate at a pH of 5.0. Id.
8. Hilton Davis Chem. Co. v. Warner-Jenkinson Co., Inc., 64 F.3d 675 (Fed. Cir. 1995) ("Hilton I"). The jury found the Hilton patent valid because it was "nonobvious over the asserted prior art, not invalid for failure to name the correct inventors, and not invalid for failure to disclose the best mode." Id. An issued patent is always presumed valid. 35 U.S.C. § 282 (1996). The burden of establishing invalidity in an infringement suit is on the asserting party (usually the defendant). Id.
12. Id. at 1516. The district court entered a permanent injunction prohibiting Warner from practicing ultrafiltration except at pressures higher than 500 pounds per square inch gauge ("p.s.i.g") and pHs higher than 9.01.
13. Id. Congress established the United States Court of Appeals for the Federal Circuit
summer of 1993. In December 1993, the court, en banc, acting sua sponte, ordered a rehearing of the appeal "to consider the important issues raised concerning the doctrine of equivalents." The en banc court ordered supplemental briefs from the parties on the following questions:

1. Does a finding of patent infringement under the doctrine of equivalents require anything in addition to proof of the facts that there are the same or substantially the same (a) function, (b) way, and (c) result, the so-called triple identity test of Graver Tank v. Linde Air Product Co., 339 U.S. 605, 85 USPQ 328 (1950), and cases relied on therein? If yes, what?

2. Is application of the doctrine of equivalents by the trial court to find infringement of the patentee's right to exclude, when there is no literal infringement of a claim, discretionary in accordance with the circumstances of the case?

3. Is the issue of infringement under the doctrine of equivalents an equitable remedy to be decided by the court, or is it, like literal infringement, an issue of fact to be submitted to the jury in a jury case?

On August 8, 1995, a divided Court of Appeals for the Federal Circuit, sitting en banc, affirmed the district court's decision, holding that:

1. [the] finding of infringement under [the] doctrine of equivalents requires proof of insubstantial differences between claimed and accused products or processes; (2) infringement under the doctrine of equivalents is [an] issue of fact to be submitted to [the] jury . . . ; (3) [the] trial judge does not have discretion to choose whether to apply the doctrine of equivalents when the records show no literal infringement; and (4) [Warner's] dye purification method infringed [Hilton's] patented method under the doctrine of equivalents.

The validity of the Hilton patent was also affirmed by the same panel of judges that had previously heard the initial oral arguments in 1982 to provide greater uniformity in the administration of patent laws by granting this forum exclusive appellate jurisdiction over all patent cases. Alex Chartrove, 1997 Federal Circuit Yearbook xxix (1997).

14. Id.

15. In an "en banc" proceeding, the entire membership of the court participates in the decision, rather than the regular quorum. Black's Law Dictionary 528 (6th ed. 1990). In the United States, circuit courts usually sit in "panels" of judges (usually numbering three or five), but in important cases, the court may expand the panel to include the full membership. Id. In Warner, twelve members composed the en banc court. Hilton II, 62 F.3d at 1514.

16. A court acts "sua sponte" when it acts on "its own will or motion; voluntarily; without prompting or suggestions." Black's Law Dictionary 1424 (6th ed. 1990).


18. Id.

and was reported in a separate opinion issued on the same date.\textsuperscript{20}

The decision of the Federal Circuit consisted of a per curiam\textsuperscript{21} opinion, a concurring opinion, and three dissenting opinions, alternately joined by a total of five judges.\textsuperscript{22} Subsequently, Warner petitioned the Supreme Court for a writ of certiorari.\textsuperscript{23}

In granting Warner's petition,\textsuperscript{24} the Supreme Court first considered the issue of whether the doctrine of equivalents, as set forth in \textit{Graver Tank}, is consistent with Congress' 1952 revision of the Patent Act.\textsuperscript{25} Writing for a unanimous Court, Justice Thomas observed that three of the four points raised by Warner were not unique to this case and had already been decided by the Court.\textsuperscript{26} In reviewing the Court's previous holdings on these three arguments, Justice Thomas concluded that there was no reason to reach a different conclusion in the immediate case.\textsuperscript{27}

The fourth point raised by Warner concerned Congress' intent in enacting Title 35 U.S.C. section 112, paragraph 6.\textsuperscript{28} The text of this provision states that an applicant can describe an element in a combination claim\textsuperscript{29} as a means for performing a specified function.

\textsuperscript{20} \textit{Hilton III}, 64 F.3d at 675.

\textsuperscript{21} A "per curiam" opinion is an unattributed unanimous opinion of a court, as opposed to an opinion written by a single judge. \textit{BLACK'S LAW DICTIONARY} 1136 (6th ed. 1990).

\textsuperscript{22} \textit{Hilton II}, 62 F.3d at 1514.

\textsuperscript{23} A "writ of certiorari" is a discretionary order issued by an appellate court to a lower court, requesting that it certify the record of the proceeding below. \textit{BLACK'S LAW DICTIONARY} 1609 (6th ed. 1990). The Supreme Court of the United States grants review based on a writ of certiorari only when the Court believes compelling reasons exist mandating review. \textit{Id.}; 28 U.S.C.A. §§ 1254, 1257 (1996).


\textsuperscript{26} \textit{Id.} at 1047-48. In \textit{Graver Tank}, Justice Black raised these same three arguments in his dissent: (1) the doctrine of equivalents is inconsistent with the Patent Act; (2) the doctrine of equivalents bypasses the reissue process and avoids the limitations on the scope of reissue; and (3) the doctrine of equivalents conflicts with the duty of the patent office to establish the scope of the claims. \textit{Id.}

The reissue process disallows reissue of a patent if the scope of the claims of the original patent is enlarged, unless the holder applies for reissue "within two years from the grant of the original patent." 35 U.S.C. § 251 (1996).

\textsuperscript{27} \textit{Warner}, 117 S. Ct. at 1048.

\textsuperscript{28} \textit{Id.} This provision was not contained in the original 1870 Patent Act, but was enacted in response to \textit{Halliburton Oil Well Cementing Co. v. Walker}, 329 U.S. 1 (1946). Section 112 requires the inclusion of the written "disclosure" (the specification) in a patent application. 35 U.S.C. § 112 (1996).

\textsuperscript{29} A "combination claim" contains more than one element. \textit{ROBERT C. FABER, LANDIS ON MECHANICS OF CLAIM DRAFTING} §§ 9, 34 (1990).
without reciting the structure or material needed to perform that function.\textsuperscript{30} Furthermore, such a claim is construed to cover the corresponding structure (or material), and its equivalents.\textsuperscript{31} The Court recognized this as an express endorsement of "means plus function" claims, with the restrictive limitation that "the broad literal language of such claims [will] be limited to only those means which are 'equivalent' to the actual means shown in the specification."\textsuperscript{32} Justice Thomas characterized this legislation as "an application of the doctrine of equivalents in a restrictive role which functions to narrow the application of broad literal claim elements," but he further added that the statute is silent on the subject of non-literal infringement.\textsuperscript{33}

While Warner argued that the language of section 112, paragraph 6 signified Congressional intent to limit the doctrine of equivalents to literal claim elements and the "equivalents" of the means shown in the patent specification, the Court found that "such limited congressional action should not be overread for negative implication."\textsuperscript{34} Coupling this analysis with the fact that Congress failed for more than four decades to legislate this type of restriction on the doctrine of equivalents, Justice Thomas concluded that there is no conflict between the judicially-created doctrine of equivalents and the Patent Act.\textsuperscript{35}

Providing notice to the public through delineation of the "metes and bounds"\textsuperscript{36} of an invention has always been the price that a patentee must pay in return for receiving a patent and the corresponding right to exclude others from practicing their claimed

\textsuperscript{30} 35 U.S.C. § 112 (1996). Paragraph 6 provides, in full:
An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material or acts described in the specification and equivalents thereof.
\textit{Id.} (emphasis added).

\textsuperscript{31} FABER, \textit{supra} note 29 at §§ 34, 45, 58 (1990). The language of paragraph 6 of 35 U.S.C. section 112 has specifically been interpreted to allow definition of an element by what it does, rather than by what it is. \textit{Id.} This method of claim drafting is commonly referred to as "means plus function" claiming. \textit{Id.}

\textsuperscript{32} Warner, 117 S. Ct. at 1048.

\textsuperscript{33} \textit{Id.} (emphasis added).

\textsuperscript{34} \textit{Id.} Justice Thomas described Congress' action as a "targeted cure to a specific problem" because this section was added in response to \textit{Halliburton Oil}. \textit{Id.}

\textsuperscript{35} \textit{Id.}

\textsuperscript{36} "Metes and bounds" traditionally described the boundary lines of land, including their terminal points and angles, by listing the compass directions and distances of the boundaries. \textit{BLACK'S LAW DICTIONARY} 991 (6th ed. 1990). This phrase is also used to describe the periphery of a specific patent's coverage. \textit{Id.}
invention. The Supreme Court acknowledged the concerns raised in the dissenting opinions of the Federal Circuit on this issue. Specifically, Justice Thomas found that a broad application of the doctrine of equivalents is at odds with the statutory requirements of the Patent Act. The Patent Act provides that the applicant must describe the subject matter of his invention with particularity in the patent application. In order to reconcile the Court's holding that the doctrine of equivalents does not conflict with the Patent Act, and the statement that a broad application of the doctrine of equivalents would conflict with specific statutory requirements of that same Act, Justice Thomas relied on Judge Nies' dissenting opinion in the Federal Circuit case.

In her dissent, Judge Nies advocated application of the doctrine of equivalents on an element-by-element basis as a means of harmonizing opposing holdings. Judge Nies acknowledged that any finding of infringement by equivalents effectively enlarges the literal claims of the patent to cover unclaimed subject matter. She distinguished the substitution of an equivalent component from enlarging the scope of the invention beyond what is claimed. In the former case, the doctrine of equivalents is relevant - the latter case is reserved for PTO reexamination.

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37. Among other things, a patent grants the patentee the right to exclude others from making, using, offering for sale, or selling the invention for a specified period of time. 35 U.S.C. § 154 (1996). All of the rights granted by a United States patent are listed in this statute. Id.

38. Warner, 117 S. Ct. at 1048-49.

39. Id. at 1049. Justice Thomas referred to both the public notice requirement of the Patent Act in 35 U.S.C. section 112, para. 1 and the requirement to describe the invention in 35 U.S.C. section 112, para. 2. Broad application of the doctrine of equivalents would circumvent both requirements. Id.

40. 35 U.S.C. § 112 (1996). "The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." Id.

41. Warner, 117 S. Ct. at 1049. "This view that the accused device or process must be more than equivalent overall reconciles the Supreme Court's position on infringement by equivalents with its concurrent statements that the courts have no right to enlarge a patent beyond the scope of its claims as allowed by the Patent Office." Id.

42. Hilton II, 62 F.3d at 1573-74.

43. Id. at 1573.

44. Id.

45. Id. Sections 1.501 through 1.570 of Title 37 of the Code of Federal Regulations ("C.F.R.") specify the procedures for reexamination of patents. When the commissioner determines the existence of a substantial new question of patentability, a reexamination may be made. 37 C.F.R. § 1.515 (1996).
equivalence of the invention) the scope of the claims is not enlarged.\textsuperscript{46} Each individual element thus becomes a material part of the definition of the scope of the patented invention.\textsuperscript{47} The Court expressly adopted this approach by finding that the doctrine of equivalents is not applicable to an invention as a whole.\textsuperscript{48}

The Court also addressed the issue of "prosecution history estoppel"\textsuperscript{49} and the limits estoppel imposes on the doctrine of equivalents.\textsuperscript{50} Warner raised several arguments supporting application of prosecution history estoppel more consistently and restrictively than was previously the custom in the lower courts.\textsuperscript{51} Warner proposed that any surrender of subject matter during the prosecution of a patent application should prevent a patentee from reclaiming that matter as equivalent (and therefore, infringing) during a later procedure.\textsuperscript{52} The Court rejected this proposition, finding that the reason for the change must be considered when applying estoppel doctrine.\textsuperscript{53} Only patentability-related amendments prevent an applicant from subsequently reclaiming the excluded subject matter as equivalent.\textsuperscript{54}

The Court also evaluated the burden of proving the purpose for a proposed amendment made during the prosecution of the application.\textsuperscript{55} The Court reasoned that a rebuttable presumption against the patent applicant placed the burden where it belonged.\textsuperscript{56}

Therefore, where no purpose for the amendment is clearly documented in the record, it will be presumed that "the PTO had a

\textsuperscript{46} Hilton II, 62 F.3d at 1574.
\textsuperscript{47} Warner, 117 S. Ct. at 1049.
\textsuperscript{48} Id. In her dissent, Judge Nies stated that "[a]n infringing product or process may also be referred to as an 'equivalent' of the invention, but more than overall equivalency is required." Hilton II, 62 F.3d at 1573-74. Judge Nies provided the following example: "[w]hile a ballpoint and fountain pen may be equivalent overall, they are not equivalent in the sense of the doctrine of equivalents because their components are not equivalent." Id. at 1574.
\textsuperscript{49} Warner, 117 S. Ct. at 1050-51. "Prosecution history estoppel" is an equitable tool for determining the permissible scope of patent claims. It limits the scope of patent claims based on arguments and claim amendments made during prosecution [of a patent application] to obtain allowance of a patent. The doctrine applies both to claim amendments to overcome rejections based on prior art, and to arguments submitted to obtain the patent.
\textsuperscript{50} BLACK'S LAW DICTIONARY 1221 (6th ed. 1990) (citations omitted).
\textsuperscript{51} Warner, 117 S. Ct. at 1049.
\textsuperscript{53} Warner, 117 S. Ct. at 1049.
\textsuperscript{54} Id. at 1050.
\textsuperscript{55} Id.
\textsuperscript{56} Id. at 1051.
substantial reason related to patentability for including [any] limiting element by amendment." When this presumption survives, and proof to the contrary is not forthcoming, prosecution history estoppel bars the application of the doctrine of equivalents to the amended element. In applying this holding to the facts of the instant case, Justice Thomas remanded the issue to the Federal Circuit for probing the reasons underlying the limiting amendment to Hilton's patent.

Warner proposed that intent should further restrict application of the doctrine of equivalents. Justice Thomas reviewed the Supreme Court's application of the doctrine of equivalents in Graver Tank and the cases following, concluding that the doctrine of equivalents is intent-neutral. He acknowledged that the doctrine prevents copying and piracy, but refused to limit its application to circumstances of intentional acts by the alleged infringer. Justice Thomas recounted the intent-neutral history of the doctrine to explain why the doctrine should not be interpreted to prevent only copying and piracy.

The Court then turned to Warner's proposition that the best way to satisfy the public notice function of patent claims is to limit any equivalents to those elements either disclosed within the patent specification itself or known at the time the patent was issued. Justice Thomas dispensed with both proposals by noting that the

57. Warner, 117 S. Ct. at 1051.
58. Id.
59. Id. On June 12, 1997, the Court of Appeals for the Federal Circuit further remanded the issue of the rebuttable presumption back to the district court for additional fact-finding on the issue of whether Hilton could establish a reason for the amendment (adding the lower pH limit) unrelated to patentability. Hilton Davis Chem. Co. v. Warner-Jenkinson Co., Inc., 114 F.3d 1161 (Fed. Cir. 1997) ("Hilton IV").
63. Id. at 1051.
64. Id. at 1051-52. Justice Thomas, quoting Winans v. Denmead, stated that "the claim extends to the thing patented, however, its form or proportions may be varied." Id. at 1051 (quoting Winans v. Denmead, 66 U.S. (15 How.) 330, 343 (1853)). He appeared to give very broad scope to the Winans Court's use of the word "however" to include not only piracy and copying, but also unintentional infringements. Warner, 117 S. Ct. at 1051-52.
65. Id. at 1052. Warner raised this point in its brief to the Court, based on sound patent policy. Warner argued that subject matter that is not known on the issue date of the patent, but is developed later and then found equivalent, should be available to the discoverer, rather than to the developer of the old claimed equivalent subject matter. Brief for Petitioner at 38-39, Warner-Jenkinson Co., Inc. v. Hilton Davis Chem. Co., 117 S. Ct. 1040 (1997) (No. 95-728).
best time for determining equivalence under the doctrine is at the
time of infringement, not at the time the patent was issued. In
rejecting Warner's proposed limit, Justice Thomas summarily
rejected the proposition that equivalents must be restricted to those
disclosed within the patent specification.

Finally, the Court addressed the linguistic framework used to
determine "equivalence" when applying the doctrine of
equivalents. Justice Thomas acknowledged that the three
dissenting opinions in the Federal Circuit concerned whether the
tripartite test of "function, way, result" was the best method of
determining equivalence, or whether the "insubstantial differences"
approach might be superior. He concluded that the linguistic
framework of either test is less important than whether the applied
test makes the essential inquiry into equivalence. Specifically, the
question the Court posed is: "Does the accused product or process
contain elements identical or equivalent to each claimed element of
the patented invention?" Because this question was not addressed
by the Federal Circuit, the Court reversed and remanded on this
issue. With this pronouncement, the Court provided a principal
inquiry for the lower courts to refine the test for equivalence on a
case by case basis.

A concurring opinion by Justice Ginsburg raised a cautionary
note regarding the application of the rebuttable presumption
created by the Court. Justice Ginsburg was concerned that the
presumption imposes a new duty on patent applicants. All the

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66. Id. at 1053. The Court restated its holding in Hughes Aircraft Co. v. United States,
"[a]n applicant . . . is not required to predict all future developments which enable the
practice of his invention in substantially the same way." Id. (quoting Hughes Aircraft Co. v.
United States, 717 F.2d 1351, 1362 (Fed. Cir. 1983)).

67. Warner, 117 S. Ct. at 1053. It is only logical that if the Court had decided that the
best time to determine equivalence is at the time of infringement (rather than at an earlier
point), it is impossible to restrict equivalents to only those elements disclosed in the patent
specification.

68. Id. at 1054.

69. Id.

70. Id.

71. Id.

72. Warner, 117 S. Ct. at 1054.

73. Id. On June 12, 1997, the Court of Appeals for the Federal Circuit, on remand,
reaffirmed its earlier holding that a pH of 5.0 is equivalent to a pH of "approximately 6.0," in
the context of the claimed process. Hilton IV, 114 F.3d at 1164.

74. Warner, 117 S. Ct. at 1054 (Ginsburg, J., concurring). Justice Ginsburg was joined
in concurrence by Justice Kennedy.

75. Id. at 1054-55 (Ginsburg, J., concurring).

76. Id.
reasons for any modification to the file wrapper must now be fully documented if evidence is subsequently needed to avoid the presumption that the change was made solely for reasons of patentability. Justice Ginsburg acknowledged that the lower courts will be required to consider the past lack of incentive for an applicant to fulfill this duty. In the instant case, Justice Ginsburg followed Justice Thomas' approach and deferred to the lower courts' wisdom and expertise to determine whether suitable reasons could be established by Hilton to overcome this negative presumption.

Many of the issues examined in this case have been disputed for several generations. Almost one hundred and fifty years ago, in *Winans v. Denmead*, the Court, in a five-four decision, identified the conflict between the statutory requirements of the Patent Act and the judiciary's liberal construction of patent claims through the application of equivalents. In *Winans*, the patentee, Ross Winans, introduced a revolutionary design for a railroad car that vastly improved coal-hauling efficiency. Subsequently, he brought an action of infringement against Adam, Edward, and Talbot Denmead based on their railroad car design, that Winans claimed was substantially the same as his own. The patentability of Winans' design was never at issue, but the scope of the claims was disputed, with the main question being the equivalency of two shapes, an octagon and a circle. The Court approached the infringement question by first querying the structure described in the claims of the patent, the mode of operation that was employed, and the result obtained by the mode of operation.

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78. *Warner,* 117 S. Ct. at 1054-55 (Ginsburg, J., concurring). Justice Ginsburg cautioned lower courts when applying this new presumption. Her concern was that a post-prosecution phase patent applicant would have received no notice of this presumption and no incentive to document the reasons behind any changes in the scope of claims made during prosecution. *Id.* at 1055.
79. *Id.*
80. 56 U.S. (15 How.) 330 (1853).
83. *Id.* The defendants' draftsman measured and closely examined Winans' design prior to building the accused railroad cars. *Id.*
84. *Id.* at 338.
85. *Id.* at 340.
86. *Id.* at 338. An infringement trial addresses two principle questions: (1) “What is the definition of the patented invention?” (a question of law for the court), and (2) “Does the accused device infringe on the invention defined by the court?” (a question of fact submitted
questioned whether the claims of the specification encompassed the described mode of operation from which the result was obtained. In its analysis, the Court found that the essence of patent law is to protect the “mode of operation” specified by the patentee—not to restrict the claims to one particular form embodying that mode. The Court acknowledged the patentee's right to restrict the claims to cover less than what he has invented, or to limit the claims to one particular form that embodies the essence of the invention. The Court, however, held that it is not free to impose such a restriction on a patent.

The majority in Winans based its reasoning on two general policy statements developed by precedent. First, in the absence of a self-imposed explicit restriction, the patentee should have the equivalents of his claims protected. The Court noted that because the inventor has “a just right to cover and protect his whole invention” it is reasonable to presume that he intends to do so. Second, in keeping with Constitutional intent to promote progress in the useful arts and allowing inventors to retain what they themselves have created, patent specifications are to be construed liberally. In finding that Winans’ patent had been infringed, the majority in Winans announced the essence of all patentees’ arguments on what became to be known as the “rule of
The dissent in *Winans* stood squarely opposed to these judicially interpreted policy statements, arguing in favor of allowing the language of the patent to set the boundaries of the invention. Justice Campbell, writing for the dissent, abhorred the relaxation of the statutory requirement that a patent must be explained and "specify and point out" the scope of the invention and the coverage of the claims with particularity. The dissent reasoned that a liberal reading of patent claims allowing equivalents would fall short of the Congressional mandate, leading to "costly litigation of exorbitant and unjust pretensions."

In the cases following *Winans* during the next century, courts refined the linguistic framework of infringement analysis, but the dilemma remained the same — how to resolve the policy struggle between strict statutory compliance with patent law and liberal claim construction based on equivalence. In *Union Paper-Bag Mach. Co. v. Murphy*, the Court reversed a decree by the Circuit Court of the United States for the Eastern District of Missouri, finding that a knife that cut paper when impacted by a striker was substantially the same as a cutter that cut paper by the gravitational action of its own weight. The main issue in the case involved the wide differences between the two machines, specifically in the names and arrangement of their various components. In explaining its reasoning, the Court instructed the fact-finder on remand to look beyond the names of things when determining similarities or differences. Rather, the trial court was asked to examine the various elements and compare "what they do, ... what ... function they perform, and how they perform it."

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97. *Id.* at 343. The Court found it unnecessary for a patentee to explicitly state that "however its form or proportions may be varied," his claims cover his invention. *Id.* All patent claims implicitly cover such variations or "equivalents." *Id.*
98. *Id.* at 347 (Campbell, J., dissenting).
99. *Id.* (Campbell, J., dissenting).
100. *Id.* (Campbell, J., dissenting). The dissent pointed out that by allowing non-literal interpretation of patent claims, it is difficult for a subsequent inventor or practitioner to know with certainty that he is not infringing a covered invention. *Id.* The Court inferred that this uncertainty might lead to excessive litigation to determine whether an infringement has indeed occurred. *Id.*
101. 97 U.S. 120 (1877).
102. *Union Paper-Bag, 97 U.S. at 125.*
103. *Id.* at 123. The Court detailed differences in the arrangement and form of the devices composing the operative parts, such as, the cutter assembly, the knife edge, and the direction of the planer operation. *Id.*
104. *Id.* at 125.
105. *Id.*
Equivalence is, therefore, established when an accused thing "performs substantially the same function in substantially the same way to obtain the same result [as the claimed thing]. . . ." This now infamous phrase survived virtually intact up to the present case. In 1929, the Supreme Court resolved a split between the Seventh and Third Circuits by its holding in *Sanitary Refrigerator Co. v. Winters v. Dent Hardware Co.* Winters held a patent for improvements to a latch used on refrigerator doors. He brought an infringement suit against the Sanitary Refrigerator Co. ("Sanitary") in the United States District Court for the Eastern District of Wisconsin, based on the latch mechanism that Sanitary incorporated into its refrigerators. The district court held that Winters' patent was valid and had been infringed by Sanitary. This holding was ultimately affirmed by the Seventh Circuit. Dent Hardware Co. ("Dent") manufactured the latch Sanitary had been using, and therefore, was joined by Sanitary in the infringement suit filed by Winters in the United States District Court for the Eastern District of Pennsylvania.

In this action, the district court also found Winters' patent valid, but restricted the scope of the claims to their literal construction, and as a result, found that Dent had not infringed the patent. The Third Circuit affirmed and dismissed Winters' appeal, finding no infringement, as a matter of law.

In resolving this conflict, the Supreme Court framed the question in terms of the scope of Winters' patent, acknowledging that the infringement issue would be decided as a matter of law, once the scope of the patent was defined. The scope of the patent was found to be dependent upon the proper application of the rule of

106. *Id.*
107. *Warner,* 117 S. Ct. at 1054. Most of the cases employing the tripartite test language after 1950 trace this phrase from *Graver Tank* (see supra note 9) and *Sanitary Refrigerator* (see supra note 104) back to *Union Paper-Bag* (see supra note 98).
108. 280 U.S. 30 (1929).
109. *Sanitary Refrigerator,* 280 U.S. at 32. On July 19, 1921, the PTO issued Patent No. 1,385,102 to Winters and his co-inventor. *Id.*
110. *Id.* at 32-33.
111. *Id.* at 33.
112. *Id.*
113. *Id.*
115. *Id.* at 34.
116. *Id.* at 35-36.
The Court reaffirmed its holding in *Union Paper-Bag*, stating that two devices are substantially identical if they operate "upon the same principle and accomplish the same result in substantially the same way." In applying the rule of equivalency to the undisputed facts of the case, the Court affirmed the holding of infringement by the Seventh Circuit and reversed the holding of non-infringement by the Third Circuit.

A modern embodiment of the tension between the statutory requirements of the Patent Act and the judicially-developed "rule of equivalents" can be found in *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.* The Court's solution has come to be known as the "doctrine of equivalents." Ironically, one of the stated objectives of originally permitting the doctrine of equivalents to extend patent protection to non-literal infringement was to foster statutory compliance and encourage the very disclosure required by the Patent Act. The Court reasoned that if a patentee was exclusively limited to his literal claims, imitators would be encouraged to make insubstantial changes that avoided the literal scope of the patent, thus, robbing the inventor of the benefit of his creativity. In turn, the inventor would have little or no incentive to disclose and every incentive to conceal, thus, denying society the benefits of a strong patent system.

In *Graver Tank*, Justice Jackson, writing for the majority, refined the doctrine of equivalents in affirming the finding of infringement by the district court and the Seventh Circuit. Justice Jackson clarified the theory underlying the doctrine of equivalents and the context in which that theory should be applied. Relying on *Sanitary Refrigerator Co. v. Winters* and *Union Paper-Bag*, the

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117. *Id.* at 36.
118. *Id.* at 41.
124. *Id.* at 607.
125. *Id.* at 608. In general terms, society benefits from the access to new and useful technology, exchanging this benefit of use for the grant of patent protection to the developer of the technology. ROCHELLE COOPER DREYFUSS & ROBERTA ROSENTHAL KWAL, INTELLECTUAL PROPERTY, TRADEMARK, COPYRIGHT AND PATENT LAW 553 (1996). Consequently, when it gains access, the public becomes free to improve upon the protected technology, perhaps advancing the technology even further.
127. *Id.* at 608.
128. 280 U.S. 30 (1929).
Court reiterated that "a patentee may invoke the doctrine [of equivalents] 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."130 The Graver Tank Court reasoned that equivalency is determined in light of the patent itself, the prior art,131 and the specific circumstances surrounding the case.132 Another key consideration is whether a reasonable person skilled in the art would know of the interchangeability (equivocality) of a substituted element.133 The Court concluded its analysis by holding that the finding of equivalency is a determination of fact, and therefore, under the purview of the trial court.134

Justice Black dissented,135 voicing the concern that this broad application of the doctrine of equivalents was contrary to the statutory requirement of 35 U.S.C. section 33.136 Hence, an immeasurable burden was placed on the public since it is unable to ascertain what is within the claims of the patent; and conversely, what is within the public domain.137 The dissent argued that proper application of the doctrine of equivalents would limit its use to encompass de minimis138 differences, "colorable only, and without substance.”139

129. 97 U.S. 120 (1877).
130. Graver Tank, 339 U.S. at 608 (quoting Sanitary Refrigirator Co. v. Winters, 280 U.S. 30, 42 (1929)).
131. In patent law, "prior art" includes any relevant knowledge, act, description and patent that pertains to, but predates, [the] invention in question. Prior art may also be used by a court to invalidate a patent claim, i.e., declare the claim is not novel or unobvious. 35 U.S.C. § 102. (1975); BLACK'S LAW DICTIONARY 828 (6th ed. 1990).
132. Graver Tank, 339 U.S. at 609. In Graver Tank, Graver's accused product, a welding flux, substituted one chemical element (manganese) for the original element (magnesium) contained in the claimed welding flux of Linde. Id. at 610-11. The Court examined whether the substitution, under the circumstances and in light of the existing technology and prior art, was a change of such substance as to make the doctrine of equivalents inapplicable, or if this change was so insubstantial that the doctrine of equivalents would prevent Graver from manufacturing and selling its product. Id. at 609. After reviewing the evidence, the Court affirmed the decision of the Seventh Circuit, holding the substitution was insubstantial, and therefore, infringed Linde's patent. Id. at 612.
133. Id.
134. Id. at 609-10.
135. Id. at 613 (Black, J., dissenting). Justice Black was joined in dissent by Justice Douglas.
136. Id. at 613 (Black, J., dissenting). Former Title 35 U.S.C. section 33 is currently codified at 35 U.S.C. section 112 (1975).
137. Graver Tank, 339 U.S. at 614 (Black, J., dissenting).
138. "De minimis" is an abridgement of the Latin phrase, "de minimis non curat lex," meaning, the law does not care for, or take notice of, very small or trifling matters. BLACK'S LAW DICTIONARY 431 (6th ed. 1990).
139. Graver Tank, 339 U.S. at 616.
In the century between *Winans* and *Graver Tank*, the arguments remained static on both sides of this issue.\(^{140}\) In the forty-five years since the *Graver Tank* decision, application of the tripartite test of "function, way, result," has not been static, but has yielded a variety of holdings by federal courts, both at the district and appellate levels. For example, up to and including the present case, the courts have exhibited some uncertainty on exactly what should be compared for equivalency — the invention as a whole or the individual elements composing the invention.\(^{141}\)

The Federal Circuit appeared to clarify this issue in *Hughes Aircraft Co. v. United States*.\(^{142}\) The court stated that infringement exists under the doctrine of equivalents if the accused product, *as a whole*, performs substantially the same function, in substantially the same way, to obtain the same result as the claimed product.\(^{143}\) At issue in *Hughes* was whether Hughes' claimed method of controlling the velocity and orientation of a spin-stabilized satellite was infringed by the method employed by the government on several American communication satellites.\(^{144}\) The trial court judge focused his application of the doctrine of equivalents on comparing two specific elements of the claimed and accused methods, concluding that no infringement occurred because there was no "obvious or exact equivalent" of the claimed element in the accused method.\(^{145}\) The Federal Circuit was highly critical of this elemental approach, finding that merely establishing the equivalence of two elements, rather than applying the doctrine of equivalents to the invention as a whole, was erroneous.\(^{146}\)

Two years later in *Atlas Powder Co. v. E.I. du Pont de Nemours & Co.*\(^{147}\) the Federal Circuit reviewed a finding of infringement against du Pont.\(^{148}\) The circuit court examined whether the United

\(^{140}\) See generally Hilton II, 62 F.3d at 1563-73 (Justice Nies traced the origin and history of the doctrine of equivalents in her dissent.).

\(^{141}\) 5 Chisum, supra note 122 at § 18.04, (1), (1)[b][I].

\(^{142}\) 717 F.2d 1351 (Fed. Cir. 1983).

\(^{143}\) *Hughes*, 717 F.2d at 1361 (emphasis added).

\(^{144}\) Id.

\(^{145}\) Id. at 1363.

\(^{146}\) Id. at 1363-64.

\(^{147}\) *Hughes*, 717 F.2d at 1364. This finding reversed the United States Claims Court holding that the Hughes' patent had not been infringed. Id. Following the disposition of *Warner*, the Supreme Court granted certiorari, remanding *Hughes* to the Federal Circuit for disposition in light of *Warner*. *Hughes v. United States*, 116 F.3d 453 (Fed. Cir. 1997). Oral arguments in *Hughes* are scheduled for the 1997-98 Federal Circuit term. Id.

\(^{148}\) 224 U.S.P.Q. 409 (Fed Cir. 1984).

\(^{149}\) Id.
States District Court for the Northern District of Texas erred in its application of the doctrine of equivalents. Atlas claimed that its patent for an emulsifying agent was infringed by du Pont. In applying the tripartite test of Graver Tank, the district court compared an individual ingredient in the accused product with the claimed product, focusing on the "function, purpose and quality" of the individual ingredient by comparing the finished products. This two-stage (elemental and compound) analysis was sanctioned by the Federal Circuit as a proper application of the Graver Tank tripartite test.

In a subsequent case, the Federal Circuit reviewed a finding of "no infringement" by the United States District Court for the Northern District of Georgia in Pennwalt Corp. v. Durand-Wayland, Inc. In Pennwalt, the district court relied solely on the elemental approach, rejecting the plaintiff's argument for applying the Graver Tank comparison of the complete patented and accused devices. At issue was the equivalency of an element in Pennwalt's fruit-sorter that relied on a hardwired electronic network to track the position of the sorted fruit. The accused device of Durand-Wayland used a computer with a memory component as a substitute element to perform the same function. Judge Bissell, writing for the majority, affirmed the trial court's finding of no infringement. Quoting from Lemelson v. United States, the court noted that, to achieve a finding of infringement, "it is well settled that each element of a claim is material and essential... and the plaintiff must show the presence of every element [in the accused device] or its substantial equivalent."

This finding merely restates the "all elements rule." The genesis

150. Id. at 411.
151. Id. at 410.
152. Id. at 416.
153. Atlas Powder, 224 U.S.P.Q. at 416. Although the district court never explicitly applied Graver Tank, the Federal Circuit found the test was implicitly satisfied under the rationale of ACS Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1582 (Fed. Cir. 1984). The circular reasoning of the ACS Systems court states that "this court will infer findings that were obviously necessary to the court's opinion." Id. at 1582.
156. Id. at 1738.
157. Id.
158. Id. at 1743.
159. 752 F.2d 1638 (Fed. Cir. 1985).
160. Lemelson, 752 F.2d at 1651.
161. "[E]ach element of a patented combination is considered to be material and essential. Thus, the omission of any one of the elements of the claimed combination avoids
of this rule appears to be in cases discussing the plaintiff's burden to produce the evidence necessary to prove literal infringement. Specifically, the rule requires that the plaintiff demonstrate that each element is present in an accused device in order to prove literal infringement of the patented device. Thus, Judge Bissell, by incorporating the Lemelson holding into his opinion, subsumed the all elements rule into the doctrine of equivalents, extending it to encompass the plaintiff's burden in cases of non-literal infringement, as well.

The four-member dissent in Pennwalt expressed grave concern about the majority's finding of "no infringement" based on elemental analysis alone. Senior Circuit Judge Bennett declared that the majority's opinion implicitly overruled Hughes, even though Hughes is conspicuously absent from the majority opinion. He continued that "the majority has eviscerated the underlying rationale of the Graver Tank test" in extending the elemental analysis burden to cases of non-literal infringement. The dissent concluded that while the majority retained the tripartite test of Graver Tank, the requirement to compare the claimed and accused devices as a whole no longer existed.

In 1989, in Corning Glass Works v. Sumitomo Elec. U.S.A., Inc., the Federal Circuit defined an "element," and how it should be compared. In Corning, the plaintiff's claimed invention was a composition and a production method for fused silica optical waveguide fibers. The Federal Circuit upheld the district court's application of the Graver Tank tripartite test in comparing the individual limitations (elements) of the accused and claimed

infringement." Interdent Corp. v. United States, 531 F.2d 547, 552 (Ct. Cl. 1976).
162. *See generally* Autogiro Co. of America v. United States, 384 F.2d 391 (Ct. Cl. 1967) (emphasis added).
163. *Interdent*, 531 F.2d at 552. The United States Court of Claims dismissed Interdent's claim for damages against the United States for alleged unauthorized use of its patented invention. *Id.* The dismissal resulted from Interdent's failure to show equivalence between each and every element of the accused device and Interdent's protected device. *Id.* at 562-64.

166. *Id.* at 1744 (Bennett, J., dissenting). *See supra* note 147 for the current status of Hughes.

167. *Id.* (Bennett, J., dissenting).
168. *Id.* (Bennett, J., dissenting).
169. 868 F.2d 1251 (Fed. Cir. 1989).
171. *Id.* at 1254.
devices.\textsuperscript{172} In doing so, the majority affirmed the holding of infringement by the United States District Court for the Southern District of New York.\textsuperscript{173} Judge Nies, writing for the majority, found that a limitation in an accused device could be contained in more than a single structural component, even though the limitation in the patented device existed solely in a single distinct structure.\textsuperscript{174} By applying \textit{Graver Tank} in this manner, \textit{Corning} virtually renamed \textit{Pennwalt}'s all elements rule as the "all limitations rule."\textsuperscript{175} Furthermore, the \textit{Corning} limitations can be defined by combining various components of the accused device to prove non-literal infringement of the patented device.\textsuperscript{176}

In following the evolution of the \textit{Graver Tank} tripartite test through the cases preceding \textit{Warner}, it appears that the Court has narrowed the doctrine of equivalents considerably. In \textit{Hughes}, the Court applied the test to the claimed and accused devices as a whole.\textsuperscript{177} In \textit{Atlas}, the Federal Circuit sanctioned elemental comparison as a preliminary application of the test to the device as a whole.\textsuperscript{178} In \textit{Pennwalt}, the Court completely abandoned whole device comparison in favor of element-by-element analysis.\textsuperscript{179} Finally, in \textit{Corning}, the compared elements are found by the Court to be limitations defined by single or combined components of the claimed and accused devices.\textsuperscript{180}

The recent history of the limitations applied to the doctrine of equivalents has been somewhat less dynamic. A basic tenet of patent theory grants the patentee the right to exclude others from making, using, offering for sale, or selling the invention encompassed within the scope of his patent.\textsuperscript{181} Conversely, anything outside the scope of the patent claims (i.e., subject matter in the public domain) cannot be claimed to be an "equivalent" during a subsequent infringement proceeding by invoking the doctrine of equivalents.\textsuperscript{182} Logically, this limitation merely excludes subject

\textsuperscript{172} Id. at 1261.
\textsuperscript{173} Id. at 1264.
\textsuperscript{174} Id. at 1259.
\textsuperscript{175} See Chambers supra note 164, at 214.
\textsuperscript{176} Id.
\textsuperscript{177} Hughes, 717 F.2d at 1363.
\textsuperscript{178} Atlas Powder, 224 U.S.P.Q. at 409.
\textsuperscript{179} Pennwalt, 4 U.S.P.Q.2d at 1739-40.
\textsuperscript{180} Corning, 868 F.2d at 1260.
\textsuperscript{182} 5 Chisum, supra note 122 at § 18.02 at [3] (quoting Exhibit Supply Co. v. Ace Patents Corp., 315 U.S. 126 (1942)).
matter not originally claimed by the patentee from being subsequently claimed.\textsuperscript{183}

Likewise, restriction of the doctrine of equivalents in the form of prosecution history estoppel (also termed "file wrapper estoppel")\textsuperscript{184} depends on the scope of the claims as originally defined by the patentee during the prosecution of his application.\textsuperscript{185} Prosecution history estoppel confines the scope of the subject matter that can be subsequently claimed as equivalent, based on changes that the applicant made during prosecution of the patent.\textsuperscript{186} In practice, if a patentee changed the scope of his claim(s) to avoid the prior art, or in response to a PTO action that required the change to allow the patent, the patentee is estopped from reclaiming (expanding the claims to include) subject matter relinquished during prosecution as equivalent during an infringement proceeding.\textsuperscript{187}

Two alternate and opposing theories of applying the doctrine of prosecution history estoppel exist. Each theory begins by examining the reason underlying the change and the relevance of the reason to the scope of the claims ultimately allowed. One theory holds that any change to the claims during prosecution forms a basis for estoppel.\textsuperscript{188} The other theory looks behind the change to the \textit{reason} for the change to determine if an estoppel exists.\textsuperscript{189} Both positions were argued in \textit{Warner}, with the Supreme Court seemingly deciding in favor of the latter approach.\textsuperscript{190} In creating a rebuttable presumption against the patentee, however, it appears that the Court has truly merged the wisdom of both arguments.

Consequently, all changes in the scope of patent claims made during prosecution of the application are presumed to form the basis of an estoppel.\textsuperscript{191} This presumption can be overcome by a showing that the changes were made for reasons unrelated to

\textsuperscript{183} \textit{Id.}

\textsuperscript{184} The "file wrapper" or "prosecution history" records the procedural steps taken on an issued patent application by the PTO. 5 C\textsc{hi}sum, \textit{supra} note 122 at § 18.05.

\textsuperscript{185} \textit{Id.} at 2[a].

\textsuperscript{186} The doctrine of file wrapper estoppel precludes a patent owner in an infringement suit from asserting a construction of a claim that would, in effect, resurrect subject matter surrendered during the course of PTO proceedings. \textit{Id.}

\textsuperscript{187} See generally 5 C\textsc{hi}sum, \textit{supra} note 122 § 18.02 at [3].

\textsuperscript{188} Hughes, 717 F.2d at 1362.

\textsuperscript{189} \textit{Id.} at 1362-63 (emphasis added).

\textsuperscript{190} \textit{Warner}, 117 S. Ct. at 1060.

\textsuperscript{191} \textit{Id.} at 1050-51.
Wamer-Jenkinson v. Hilton Davis

patentability. 192 Clearly, the Warner holding will require any person prosecuting a future patent application to fully document each and every change made to the scope of the claims during prosecution. Failure to document could lead to a lack of the evidence needed to nullify the argument that the excluded subject matter is an equivalent of the allowed subject matter. This bright line holding of the Supreme Court will likely lead to more intense negotiations over the reasons behind each and every change during prosecution between patent applicants and patent examiners. Ultimately however, the outcome of those negotiations will be completely documented, and thus, a reliable source for determining exactly what the inventor claimed as his invention. This added definition strengthens both the inventor's rights and the public notice function of current patent policy.

Unfortunately, the holdings relating to application of the doctrine of equivalents in Warner are not as helpful, mainly because they do not provide sufficient clarity on the subject of how the doctrine is to be applied. In this case, the Court explicitly held that the patent claims themselves function to define the scope of the patent. 193 It is also obvious that each element contained within a claim is material to this definition. 194 Furthermore, in defining the elements of the claims for purposes of non-literal infringement, the Court apparently would allow the substitution of equivalents for each element to be implicitly encompassed by the explicit definition. 195 This latter point effectively brings the all elements rule 196 to the doctrine of equivalents and marks the end for broad application of the Graver Tank tripartite test. 197

However, what is not clear is how an element of a patent is now to be defined in the context of applying the doctrine of equivalents. In light of the Supreme Court's silence on this point, it appears that the Federal Circuit's opinion in Corning controls, and "element" should be considered synonymous with "limitation." 198 Recalling the essential inquiry that Justice Thomas enunciated in Warner, and

192. Id. at 1051.
193. Id. at 1049.
194. Id.
196. See supra note 161 for an explanation of the "all elements rule."
197. See Eastman Kodak Co. v. Goodyear Tire & Rubber Co., 114 F.3d 1547 (Fed. Cir. 1997). In this subsequent Federal Circuit case, the court quotes from Warner in applying the doctrine of equivalents to each claimed element. Id. at 1560.
198. See supra note 164.
substituting "limitation" for "element," the holding of the Court becomes a little clearer. Moreover, once defined, district and circuit courts have sufficient latitude to compare individual elements/limitations using the tripartite test of *Graver Tank*, or some other suitable measure of insubstantial difference in determining equivalence.

Through the explicit restatement of the considerations used in applying the doctrine of equivalents developed in *Graver Tank*, the Court provides additional guidance by setting the context for determining the equivalence of elements. Consequently, courts must determine the purpose, quality and function of ingredients, as well as whether a reasonably skilled person would know of the interchangeability of a patented ingredient/component with an ingredient/component in the accused invention or process. In addition, the context of the patent, the prior art, and the specific circumstances of the case are all necessary factors in comparing elements for equivalence.

In light of the Supreme Court's holdings in *Warner*, it appears that some changes are in order for patent law practitioners. First, everyone who prosecutes a patent application will need to fully document every reason for every change made to a patent claim during prosecution to preserve evidence for rebuttal. Failure to do so will result in a narrowed scope of equivalents that can be claimed in a subsequent infringement proceeding. Second, for those offering opinions to clients on whether their product or process infringes a patented product or process, the covered items must be analyzed in light of *Warner*. Each element/limitation will have to be defined and compared to each element/limitation of the client's product or process. This comparison can be in the form of the tripartite test of function/way/result or the insubstantial differences analysis to determine equivalence. While it remains to be seen if non-literal infringement is more apparent under the elemental approach of *Warner*, there will likely remain some equivalents that will only become clear upon determination during litigation in the federal courts.

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199. "Does the accused product or process contain *limitations* identical or equivalent to each claimed *limitation* of the patented invention?" *Warner*, 117 S. Ct. at 1054.
200. *Id.*
201. *Id.* at 1043.
202. *Id.*
203. *Id.*