THE DOCTRINE OF EQUIVALENTS: TWELVE YEARS OF FEDERAL CIRCUIT PRECEDENT STILL LEAVES PRACTITIONERS WONDERING

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I. INTRODUCTION

Once considered the exception and not the rule, application of the doctrine of equivalents has become the second prong of patent infringement litigation. Outright duplication is a rare form of infringement and the doctrine of equivalents is a readily available means of extending protection beyond the scope of the claims. To the displeasure of many patent practitioners, the doctrine of equivalents is mired in considerable ambiguity and uncertainty.

Even after twelve years of Federal Circuit precedents, much is left to be decided regarding application of the doctrine. The patent community continues to struggle to develop an analysis that is both equitable and predictable. A careful review of recent precedents, however, suggests an analysis may be forming through the confusion.

This Article analyzes the doctrine of equivalents as the doctrine is currently applied by the Federal Circuit in patent infringement cases. Part II provides a brief background on patents and patent infringement generally. Part III discusses the origin and purpose of the doctrine of equivalents. Part IV analyzes the

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1. See London v. Carson Pirie Scott & Co., 946 F.2d 1534, 1538 (Fed. Cir. 1991). The court stated "the doctrine of the equivalents is the exception . . . not the rule." Id. The court reasoned that if the doctrine of equivalents was made a part of every infringement charge, then patent claims would no longer serve their intended purpose and competitors will never know if their actions infringe an existing patent. Id.


3. Claims define the subject matter, novelty, and nonobviousness of the invention protected by the patent or protection sought for in the application for patent. "The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." 35 U.S.C. § 112, ¶ 2 (1988).


For patent practitioners, the Federal Circuit is effectively the court of last resort because the United States Supreme Court rarely accepts patent cases for review. In the past four years, the United States Supreme Court has heard two patent cases. See Cardinal Chemical Co. v. Morton Int’l, Inc., 113 S. Ct. 1967 (1993); Eli Lily & Co. v. Medtronic, Inc., 496 U.S. 661 (1990).
application of the doctrine in the Federal Circuit. Part V examines some significant limitations to the applicability of the doctrine. Part VI presents other considerations affecting the use of the doctrine and Part VII sets out a number of recommendations for clarifying the doctrine. Finally, this Article concludes with a brief comment on the debate surrounding the doctrine of equivalents and the significance future resolution of that debate will have for patent law practitioners.

II. OVERVIEW OF PATENT INFRINGEMENT ANALYSIS

A. Background

The progress of science and the useful arts is promoted when an invention is disclosed to the public, thus adding to the sum of all knowledge. The economic theory behind patent rights is that the best way to advance the public welfare is by encouraging effort through personal gain. Moreover, sacrifice and effort devoted to creative activities deserve rewards.

The United States Constitution grants Congress the power "[t]o promote the Progress of Science and useful Arts, by securing for limited Times to . . . Inventors the exclusive Right to their respective . . . discoveries." Congress has implemented this power through the Patent Act which gives the patentee the right to exclude others from making, using, or selling the inven-

5. See Christopher S. Marchese, Promoting the Progress of the Useful Arts by Narrowing Best Mode Disclosure Requirements in Patent Law, U. Pitt. L. Rev. 589, 589 (1993) (noting that policies underlying the Constitution’s patent system clause are intended to promote “innovation, advancement and addition to the sum of useful knowledge”).


7. Marchese, supra note 6, at 6 (granting exclusive right to make, use, and sell inventions provides patent owners a “formidable right, and through it [they] may profit handsomely”).


10. The term “patentee” “includes not only the patentee to whom the patent was issued but also the successors in title to the patentee.” 35 U.S.C. § 100(d) (1988).
tion for seventeen years. In exchange for this right, the patentee must disclose the invention to the public.

In order to secure the right to the invention, an inventor must file an application with the United States Patent and Trademark Office (PTO). The application must contain a complete description of the invention in sufficient detail so that a person skilled in the art to which the invention pertains can practice the invention. The application must conclude with one or more claims particularly pointing out and distinctly claiming the subject matter that the inventor regards as the invention. After examination, if allowed, the Commissioner issues the inventor, who becomes the patentee, a patent.

Patent infringement occurs when any individual acting without authority makes, uses, or sells a patented invention within

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13. The statutory requirements as set forth in 35 U.S.C. § 112, provide:
   The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which the invention pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor in carrying out his invention.

Id.

Thus, the requirements for disclosure are threefold: a descriptive requirement, an enablement requirement, and a best mode requirement. The purpose of the descriptive requirement is to convince those skilled in the art to which the invention pertains that the inventor has invented the claimed subject matter. See, e.g., Stiftung v. Renishaw PLC, 945 F.2d 1173, 1181-82 (Fed. Cir. 1991). The enablement requirement must teach someone skilled in the art how to practice the invention. In re Sherwood, 613 F.2d 809, 816 (C.C.P.A. 1980), cert. denied, 450 U.S. 994 (1981). Finally, if the inventor conceals a better mode for carrying out the invention than that described in the specification, a resulting patent may be held unenforceable. Chemcast Corp. v. Arco Indus. Corp., 913 F.2d 923, 927 (Fed. Cir. 1990). The purpose for holding a patent unenforceable when the inventor conceals a better mode is to "restrain inventors from applying for patents while at the same time concealing from the public preferred embodiments of their inventions which they have in fact conceived." Chemcast Corp., 913 F.2d at 926.
15. 37 C.F.R. § 1.75 (Supp. 1992). The application must also include a drawing if necessary under section 113, an oath stating that the patentee believes himself to be the original inventor as required under section 115, and the appropriate fees. 35 U.S.C. § 111 (1988).
16. An application for a patent is examined by the PTO to determine whether the applicant is entitled to a patent under the law. 35 U.S.C. § 131 (1988).
the United States during the patent's term of effectiveness. Patent infringement is a tort, and the patentee can seek a remedy through a civil action. Remedies include injunctive relief, damages, and possibly attorney fees.

B. Determining Infringement

Determining patent infringement is a two-step process. First, the claims of the patent must be construed or interpreted to determine their meaning and scope. Second, the properly construed claims must be applied to the allegedly infringing, or accused, device.

The first step, interpreting the claims, involves a determination of what the claimed invention is in light of, inter alia, the specification, claims, prior art, and prosecution history. Claim construction is a question of law. Claim interpretation, however, must be based on facts established by evidence. This may require reference to the application, prosecution history, and expert testimony to determine what the claims mean to a person.

22. 35 U.S.C. § 284 (1988). Treble damages may also be available. Id.
25. ZMI Corp. v. Cardiac Resuscitator Corp., 844 F.2d 1576, 1578 (Fed. Cir. 1988).
26. Id.
27. Prosecution history includes material representations made by an applicant for patent to the PTO during examination of the application. After a patent has been issued, all papers relating to the case are open to inspection by the public, and copies may be obtained from the PTO. 37 C.F.R. § 1.11 (1988).
of ordinary skill in the art.\textsuperscript{30} Federal Circuit precedent remains ambiguous in defining the jury’s role in claim interpretation.\textsuperscript{31}

The second step, application of the properly construed claims to the accused device, is a question of fact.\textsuperscript{32} Once the district court has properly construed the claims, the claims must be compared to the accused device to determine whether the accused device infringes the patent either literally or through the doctrine of equivalents.\textsuperscript{33}

\section{Literal Infringement}

Literal infringement is established if and only if all the limitations of the claims are found in the accused device exactly.\textsuperscript{34} All claim elements are essential and necessary in this determination.\textsuperscript{35} If the accused device does not contain all the patentee’s claims exactly, there can be no finding of literal infringement.\textsuperscript{36}

One manner in which a claim element may be specified is in means-plus-function language.\textsuperscript{37} For claim elements expressed in means-plus-function terms,\textsuperscript{38} section 112, paragraph 6 of the

\begin{itemize}
\item \textsuperscript{30} Tol-O-Matic, Inc. v. Proma Produkt-Und Marketing Gesellschaft M.b.H., 945 F.2d 1546, 1550 (Fed. Cir. 1991) (describing what evidence a jury may use in interpreting the language of the disputed claim).
\item \textsuperscript{31} Mark D. Janis, \textit{Judge and Jury Roles in Equivalents Analysis: Commentary on Malta v. Schubnerich Carillons}, 74 J. PAT. & TRADEMARK OFF. SOC’Y 621, 625 (1992) (recognizing that with regard to “extrinsic evidence” that is prosecution history or expert testimony, claim interpretation should generally be in the province of the jury, otherwise the situation is unclear).
\item \textsuperscript{32} See King Instrument Corp. v. Otari Corp., 767 F.2d 853, 862 (Fed. Cir. 1985), \textit{cert. denied}, 475 U.S. 1016 (1986) (stating that 35 U.S.C. § 112 calls for “claim construction covering equivalents of the described embodiments” and that the scope of these equivalents is a question of fact).
\item \textsuperscript{33} Loctite Corp. v. Ultraseal Ltd., 781 F.2d 861, 870-71 (Fed. Cir. 1985) (noting that prosecution history estoppel is a limitation of the doctrine of equivalents “after the claims have been properly interpreted and no literal infringement is found”).
\item \textsuperscript{34} Johnston v. IVAC Corp., 885 F.2d 1574, 1580 (Fed. Cir. 1989) (recognizing that 35 U.S.C. § 112 \textsuperscript{1} 6 “can never provide a basis for finding that a means-plus-function claim element is met literally where the function part of the element in not literally met in an accused device”).
\item \textsuperscript{35} Perkin-Elmer Corp. v. Westinghouse Elec. Corp., 822 F.2d 1528, 1533 (Fed. Cir. 1987) (citing Lemelson v. United States, 752 F.2d 1538, 1551 (Fed. Cir. 1985)).
\item \textsuperscript{36} Johnston, 885 F.2d at 1580.
\item \textsuperscript{37} See 35 U.S.C. § 112, \textsuperscript{1} 6 (1988).
\item \textsuperscript{38} An example of a claim element in means-plus-function terms is “means for stopping the rotation of the wheel,” which may include a disk brake or a drum brake. When claim elements are stated in means-plus-function language, each element is “construed to cover [a] corresponding structure in an accused apparatus which both (1) performs the same function, and (2) is the same as, or
\end{itemize}
Patent Act provides explicit guidelines for interpretation of meaning and scope:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without 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.\(^{39}\)

Thus, section 112, paragraph 6, as interpreted today, operates to limit the means that satisfy the claim language.\(^{40}\) Correctly construed claims are limited to the embodiments of the invention as described in the specification.\(^{41}\) For an accused device to literally infringe a patent employing a means-plus-function language claim, the patentee must show that the structure in the accused device is the same or equivalent\(^{42}\) and performs the identical functions as disclosed in the specification.\(^{43}\)

2. Infringement Under the Doctrine of Equivalents

If the accused device falls within the claims, infringement is established and the infringement analysis is concluded.\(^{44}\) If literal infringement does not exist, however, infringement may still be found if the accused device "performs substantially the same function in substantially the same way to obtain the same result [as the claimed invention]."\(^{45}\) This constitutes infringement under the doctrine of equivalents.

reasonably equivalent to, the particular structure disclosed in the specification for performing that function.


\(^{40}.\) See infra part VI.B discussing the limiting effect of § 112.


\(^{42}.\) See infra part VI.B discussing equivalents in means-plus-function claims.

\(^{43}.\) See, e.g., Valmont Indus., Inc. v. Reinke Mfg., 983 F.2d 1039, 1042-44 (Fed. Cir. 1993) (finding the trial court erred by not examining the specification "to identify the disclosed means and to determine whether Reinke used equivalents thereof").

\(^{44}.\) Graver Tank & Mfg. Co. v. Linde Air Prod. Co., 339 U.S. 605, 607 (1950), reh'g denied, 340 U.S. 845 (1950) (stating "[i]f accused matter falls clearly within the claim, infringement is made out and that is the end of it").

\(^{45}.\) Id. at 608 (quoting Sanitary Refrigerator Co. v. Winters, 280 U.S. 30, 42 (1929)).
The only exceptions or limitations to the doctrine of equivalents are that the doctrine cannot encompass either subject matter covered by prior art or subject matter given up during prosecution of the patent for the claimed invention. Through the application of the doctrine of equivalents, the Federal Circuit has introduced ambiguity and uncertainty surrounding the scope of patent claims.

III. Development of the Doctrine of Equivalents

A. Origins

The 1853 case of Winans v. Denmead was the United States Supreme Court's first discussion of the doctrine of equivalents. The patentee's claimed invention was for manufacturing a railroad car out of a sheet of iron with the upper part being cylindrical and the lower part in the form of a frustum cone. The defendant's accused device was for an octagonal and pyramidal car. The structure, the mode of operation, and the results attained were the same for both the claimed invention and the accused device. Recognizing that the whole substance of the invention may be copied over the form of the invention, the Court was compelled to look through the form of the invention to its substance to determine what rights the patent was designed to secure.

47. London v. Carson Pirie Scott & Co., 946 F.2d 1534, 1538 (Fed. Cir. 1991) (noting that if the doctrine of equivalents is not the exception but rather the rule, the public will come "to believe (or fear) that the language of patent claims can never be relied on").
49. See Pennwalt, 833 F.2d at 960 (Newman, J., commentary) (stating "the Supreme Court's first discussion of the principles of equivalency appeared in Winans v. Denmead"). Prior to the Patent Act of 1836, patents were granted to anyone who applied and fulfilled the formal requirements, such as filing the necessary papers and payment of the required fee. P.J. Federico, Preface to 35 U.S.C. §§ 1, 2 (1954) (commentary on the new Patent Act). The Act of 1793 did not provide for patent examinations or patent claims, although the Act did subject applications to some review. Id. However, judicial determinations of equivalency were made well before Winans v. Denmead and the Act of 1836. Pennwalt, 833 F.2d at 957-58.
50. Winans, 56 U.S. at 330.
51. Id. at 331-32.
52. Id. at 332.
53. Id. at 340.
54. Id. at 342. Often, a practitioner will insert a paragraph at the end of the description of the preferred embodiments to lend itself to alternatives. A typical closing may be
Later, in *Boyden Power-Brake Co. v. Westinghouse*, the Court found that infringement requires more than finding correspondence of the claims of the patentee's invention with the claims or limitations of the accused device. Rather, the analysis requires a finding of whether the accused device indeed appropriates the invention. The Court stated:

> [A]n infringement "is a copy of the thing described in the specification of the patentee, either without variation, or with such variations as are consistent with its being in substance the same thing. If the invention of the patentee be a machine, it will be infringed by a machine which incorporates in its structure and operation the substance of the invention; that is, by an arrangement of mechanism which performs the same service or produces the same effect in the same way, or substantially the same way."

The Court's most recent application of the doctrine of equivalents occurred in *Graver Tank & Manufacturing Co. v. Linde Air Products Co.* This decision is credited with enunciation of the form: "Although the invention has been described in considerable detail with reference to certain preferred versions thereof, other versions are possible. Therefore, the spirit and scope of the appended claims should not be limited to the description of the preferred versions contained herein."

Interestingly, the *Winans* Court held that such a paragraph is unnecessary because the law will provide such protection for the patentee by interpreting the claim in this manner even absent the additional paragraph. *Winans*, 56 U.S. at 343.

55. 170 U.S. 537 (1897).
56. *Id.* at 568.
57. *Id.* The *Westinghouse* Court is also considered to have created a reverse doctrine of equivalents:

But even if it be conceded that the Boyden device corresponds with the letter of the *Westinghouse* claims, that does not settle conclusively the question of infringement. We have repeatedly held that a charge of infringement is sometimes made out, though the letter of the claims be avoided . . . . The converse is equally true. The patentee may bring the defendant within the letter of [the patentee's] claims, but if the [defendant] has so far changed the principle of the device that the claims of the patent, literally construed, have ceased to represent his actual invention, he is as little subject to be adjudged an infringer as one who has violated the letter of a statute has to be convicted, when he has done nothing in conflict with its spirit and intent. "An infringement . . . involves substantial identity, whether that identity be described by the terms, 'same principle', same 'modus operandi', or any other."


ing the modern standards for applying the doctrine. Under *Graver Tank*, while a patent may not be literally infringed, infringement may be found if the accused device performs substantially the same function, in substantially the same way, to obtain substantially the same result as the claimed invention.

To hold otherwise, wrote the Court, would convert the patent grant into a hollow and useless thing. Outright and forthright duplication is a dull and very rare type of infringement. To prohibit no other would be subordinating substance to form. It would deprive [the inventor] 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.

The Court expressed concern for the possibility of the unscrupulous copyist making insubstantial changes that would be enough to take the copied matter outside the claim and thus outside the reach of law.

**B. Purpose**

The doctrine of equivalents was ostensibly devised to do equity. This doctrine evolved from a balancing of competing policies that serve the purpose of promoting the useful arts. On the one hand, claims must be particular and distinct so the public has fair notice of what constitutes the metes and bounds of the claimed invention.

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61. *Graver Tank*, 339 U.S. at 608. Justice Jackson wrote:

Where a device is so far changed in principle from a patented article that it performs the same or similar function in a substantially different way, but nevertheless falls within the literal words of the claim, the doctrine of equivalents may be used to restrict the claim and defeat the patentee's action for infringement.

339 U.S. at 608-9 (citing *Boyden Power-Brake Co. v. Westinghouse*, 170 U.S. 537, 568 (1897)).
62. *Id.* at 607.
63. *Id.*
64. *Id.*
67. *London*, 946 F.2d at 1538. The court wrote:

Application of the doctrine of equivalents is the exception, however, not the rule, for if the public comes to believe (or fear) that the language of patent claims can never be relied on, and that the doctrine of equivalents is simply the second prong of every infringement charge, regularly available to extend protection beyond the scope of the claims, then claims will cease to serve their
“On the other hand, the patentee should not be deprived of the benefits of his patent by competitors who appropriate the essence . . . while barely avoiding the literal language of the claims." To that end, *Westinghouse requires* application of a doctrine of equivalents analysis, when plead, in order to show patent infringement. The effort to balance these competing policies has unfortunately led to conflicting results.

IV. APPLICATION OF THE DOCTRINE OF EQUIVALENTS

A. Background

Commentators argue that an equitable remedy such as the doctrine of equivalents should not be reduced to a mechanical formula. Such a policy, however, creates uncertainty in the assessment of the likely outcome of patent infringement litigation, and in the assessment of acceptable parameters for "designing around" an invention.

Although the *Graver Tank* Court put forth the now familiar tripartite "function/way/result" test as a method of demonstrating that the accused device is substantially equivalent to the intended purpose. Competitors will never know whether their actions infringe a granted patent.

Id. Ironically, Justice Black, in his dissent in *Graver Tank*, wrote, "One need not be a prophet to suggest that today's rhapsody on the virtue of the 'doctrine of equivalents' will . . . make enlargement of patent claims the 'rule' rather than the 'exception.'" 339 U.S. at 616 (Black, J., dissenting).

Justice Black also drew a correlation between the doctrine of equivalents and patent reissues. *Id.* at 615. Whenever any patent is found to contain errors that render the patent wholly or partially invalid, the Commissioner may reissue the patent in accordance with a reissue application. 35 U.S.C. § 251 (1988). Such error may include the patentee claiming more or less than he or she had a right to claim in the patent. *Id.* The term of the reissue patent is for the unexpired term of the original patent. *Id.*

68. *London*, 946 F.2d at 1538.
71. See, e.g., *Read Corp. v. Portec, Inc.*, 970 F.2d 816 (Fed. Cir. 1992), *reh'g denied*, Sept. 23, 1992:

We have often noted that one of the benefits of the patent system is the incentive it provides for "designing around" patented inventions, thus creating new innovations . . . . Of course, determining when a patented device has been "designed around" enough to avoid infringement is a difficult determination to make. One cannot know for certain that changes are sufficient to avoid infringement until a judge or jury has made that determination.

*Id.* at 828 (citation omitted).
claim limitations,72 the Federal Circuit has stated that the tripartite test is not necessarily the only method to be used in doctrine of equivalents analysis.73 The Federal Circuit, instead, has refused to adopt a formula for general applicability.74 Nevertheless, the Federal Circuit has overwhelmingly applied the tripartite test in doctrine of equivalents matters.75

Despite the position that the court is not bound to any rigid formula when applying the doctrine of equivalents, a review of precedents outlines a general method of analysis. Once literal infringement is found lacking, the court may apply the doctrine of equivalents. First, the court must compare the claimed invention to the accused device.76 The tripartite test may be utilized as the method of comparison to determine equivalence.77 Depending on the forum of the suit, the patentee has certain evidentiary burdens and thresholds to surpass in order to show equivalence.78 If equivalency is found, there still may be no infringement if the equivalency comparison would encompass the prior art or be barred by prosecution history estoppel.79

The doctrine of equivalents was designed to do equity, which is evidently different than an equitable remedy. A finding of equivalence is a determination of fact.80 Proof of equivalence may be made in any form.81 As with any other issue of fact, the determination of equivalence requires the balancing of credibility, persuasiveness, and weight of the evidence.82 Equivalence is

72. Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 607, 608 (1950) (stating that patentee may invoke the doctrine of equivalents if a device performs the same function in the same way to obtain the same result).

73. See, e.g., Malta v. Schulmerich Carillons, Inc., 952 F.2d 1320, 1326 (Fed. Cir. 1991), reh'g denied, 959 F.2d 923 (1992), cert. denied, 112 S. Ct. 2942 (1992) (stating that "[w]hile comparison of function/way/result is an acceptable way of showing that structure in an accused device is the 'substantial equivalent' of a claim limitation, it is not the only way to do so").

74. See id. (citing Hughes Aircraft Co. v. United States, 717 F.2d 1351, 1361 (Fed. Cir. 1983)).

75. Wegner, supra note 70, at 68.

76. See infra part IV.B.

77. See infra part IV.C.2.

78. See infra part IV.C.3.

79. See infra part V.


81. Types of proof that may be used include, but are not limited to, testimony of experts or others versed in the technology, documents such as textbooks and treatises, and disclosure of the prior art. Id.

82. Id. at 609-10.
to be determined by the trial court and that determination should not be disturbed unless clearly erroneous.\textsuperscript{83}

Viewed in this broad fashion, the analysis appears straightforward. Actual application of the doctrine of equivalents, though, is replete with ambiguity.

\section*{B. Comparison of the Invention to the Accused Device}

A doctrine of equivalents analysis begins with a comparison of the patented invention to the accused device.\textsuperscript{84} The Federal Circuit considers at least two different approaches in undertaking this comparison. These are the “element by element” approach\textsuperscript{85} and the “as a whole” approach.\textsuperscript{86} The “element by element” approach requires an equivalent for each claim in order to find infringement.\textsuperscript{87} The “as a whole” approach simply requires an equivalence between the invention and the accused device.\textsuperscript{88}

Only comparisons of the claimed invention to the accused device are used to determine equivalence.\textsuperscript{89} The court does not consider comparisons of the claimed invention to another admittedly infringing device.\textsuperscript{90} However, simply because an accused device is patented does not necessarily mean it is not equivalent to the claimed invention and the court will consider a comparison of a patented yet accused device to the claimed invention.\textsuperscript{91}

\begin{thebibliography}{99}
\bibitem{83}Id. at 610 (applying the general principles of appellate review).
\bibitem{84}See, \textit{e.g.}, Pennwalt Corp. v. Durand-Wayland, Inc., 833 F.2d 931, 934 (Fed. Cir. 1987), \textit{cert. denied}, 485 U.S. 961 (1988) (holding that the district court was correct in comparing the structure of the patented device to the structure of the accused device).
\bibitem{85}See, \textit{e.g.}, \textit{id.} (applying element by element approach to a claim for infringement of a fruit sorter patent by comparing the specific components of each machine).
\bibitem{86}See, \textit{e.g.}, Spectra Corp. v. Lutz, 839 F.2d 1579, 1582 (Fed. Cir. 1988) (comparing marketing sublimination dye toners to determine if they perform substantially the same function in the same way to reach the same result).
\bibitem{87}Pennwall, 833 F.2d at 935 (quoting Lemelson v. United States, 752 F.2d 1538, 1551 (Fed. Cir. 1985)).
\bibitem{89}See Datascop Corp. v. Kontren Inc., 786 F.2d 398, 400 (Fed. Cir. 1986) (refusing to compare accused device to a similar device that had been previously found to infringe).
\bibitem{90}Id.
\bibitem{91}See Atlas Powder Co. v. E.I. Du Pont & Co., 750 F.2d 1569, 1580-81 (Fed. Cir. 1984). The issuance of a patent only raises a presumption of validity, not a presumption of noninfringement. \textit{id.} at 1581 (citing Freeman v. Altvater, 66 F.2d 506, 512 (8th Cir. 1933), \textit{cert. denied}, 290 U.S. 696 (1933)). However, the party attacking validity must
\end{thebibliography}
1. "Element by Element" Approach

The court in \textit{Pennwalt Corp. v. Durand-Wayland, Inc.},\textsuperscript{92} held that in order to find infringement under the doctrine of equivalents, an equivalent is required for each claim element.\textsuperscript{98} In order to find infringement, all claimed elements must either be found, or have an equivalent, in the accused device.\textsuperscript{94} When the accused device does not contain either the exact element of the claim or that element’s equivalent, there is no infringement.\textsuperscript{95}

The court modified this approach when applying the doctrine of equivalents analysis in \textit{Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.}\textsuperscript{96} In attempting to explain the reasoning of \textit{Pennwalt} and clarify what is meant by “element,”\textsuperscript{97} the \textit{Corning Glass} court stated that the term “element” was ambiguous and that the \textit{Pennwalt} court instead meant to establish a “claims limitations” approach.\textsuperscript{98} In order to find infringement under the “claims limitations” approach, each and every limitation of the claim must be found in the accused device either exactly or by substantial equivalent.\textsuperscript{99}

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overcome the presumption by clear and convincing evidence. \textit{Id.} at 1573. \textit{See generally 35 U.S.C.} § 282 (1988) (presuming patents valid). Furthermore, a patent does not give the patentee the right to make use or sell the invention. Instead, it merely gives the patentee the right to exclude others from making, using, or selling the invention. 35 U.S.C. § 154 (1992).
93. \textit{Id.} at 935. “Claims in patents are typically drafted in the form of a preamble, transition and one or more elements. Each element constitutes a limitation or narrowing of the scope of the claim.” \textit{Id.} at 949 (Nies, J., additional views) (quoting 4 DONALD S. CHISUM, \textit{Patents} § 18.03[4] (1986)).
94. \textit{See id.} at 935-36 (comparing the claimed elements of each device).
95. \textit{See, e.g., id.} at 935.
96. 868 F.2d 1251 (Fed. Cir. 1989).
97. \textit{Id.} at 1259.
98. \textit{Id.} The court stated that “[r]eferences to ‘elements’ can be misleading . . . . [C]larity is advanced when sufficient wording is employed to indicate when ‘elements’ is intended to mean a component . . . of an embodiment of an invention and when it is intended to mean a feature set forth in or as a limitation in a claim.” \textit{Id.} at 1259 n.5 (quoting Perkin-Elmer Corp. v. Westinghouse Elec. Corp., 822 F.2d 1528, 1533 n.9 (Fed. Cir. 1987)).
\end{verbatim}
The court amended this "claims limitation" approach in Sun Studs, Inc. v. ATA Equipment Leasing, Inc. While comparing every limitation of the claims to the accused device, the finding of infringement does not require a one for one correspondence of components. Infringement cannot be avoided by combining several operations that are claimed as separate operations. The application and interpretation of the "element by element" approach continues to vary from case to case.

2. "As a Whole" Approach

Although the Federal Circuit appears to apply an expanded "element by element" approach when comparing the claimed invention to the accused device, Supreme Court precedent requires an application of the "as a whole" approach. From the first Supreme Court case addressing the doctrine of equivalents, Winans, to Graver Tank, the Court has not used a rigid test

100. 872 F.2d 978, 989 (Fed. Cir. 1989), reh'g denied, 892 F.2d 73 (1989).
101. Id. (stating "[o]ne to one correspondence of components is not required, and elements or steps may be combined without ipso facto loss of equivalency").
102. Id.
103. See infra note 200 and accompanying text.
104. The latest Supreme Court case involving the doctrine of equivalents, Graver Tank, is regarded as applying the "as a whole" approach. See Pennwalt Corp. v. Durand-Wayland Inc., 833 F.2d 931, 945 (Fed. Cir. 1987), cert. denied, 485 U.S. 961 (1988) (Bennett, J., dissenting) (stating that the teachings of Graver Tank require an "as a whole" analysis when applying the doctrine of equivalents); Roy Collins, III, The Doctrine of Equivalents: Rethinking the Balance Between Equity and Predictability, 22 GOLDEN GATE L. REV. 285, 300 (1992) (stating that the Supreme Court's perspective in Graver Tank is that of the invention 'as a whole'). See also Boyden Power-Brake Co. v. Westinghouse, 170 U.S. 537, 568 (1897); Winans v. Denmead, 56 U.S. (15 How.) 330, 343 (1853). But see Pennwalt, 833 F.2d at 953 (Nies, J., additional views) (stating "[t]he expression 'invention as a whole' does not appear in Graver Tank... "). The association of Graver Tank with the expression "invention as a whole" first appeared in Hughes Aircraft Co. v. United States, 717 F.2d 1351, 1364 (Fed. Cir. 1983). Pennwalt, 833 F.2d at 953 (Nies, J., additional views).
105. Winans v. Denmead, 56 U.S. (15 How.) 330 (1853). The Winans Court stated: Where form and substance are inseparable, it is enough to look at the form only. Where they are separable; where the whole substance of the invention may be copied in a different form, it is the duty of courts and juries to look through the form for the substance of the invention-for that which entitled the inventor to his patent, and which the patent was designed to secure; where that is found, there is an infringement; and it is not a defence [sic], that it is embodied in a form not described, and in terms claimed by the patentee.
Id. at 342.
in applying the doctrine of equivalents. Instead, the analysis consistently turned on the totality of the circumstances.\textsuperscript{107} The Court applied the doctrine of equivalents to the invention as a whole, or to parts thereof, in accordance with the principles of equity.\textsuperscript{108}

Recently, in \textit{Spectra Corp. v. Lutz},\textsuperscript{109} the Federal Circuit applied the “as a whole” approach in ruling there was infringement in the case at bar.\textsuperscript{110} In at least two other cases since \textit{Pennwalt}, the court reached similar conclusions by applying analytical models more similar to the “as a whole” approach than to the “element by element” approach.\textsuperscript{111} Commentators have observed that the Federal Circuit uses the “as a whole” approach when the court has an expansive view of the claims, and uses the “element by element” approach for restrictive interpretations of the claims.\textsuperscript{112}

3. \textit{Distinguishing the Approaches}

Because these two analytical models are both still applied in patent cases, one must be aware of their differences. The “element by element” approach digresses from the precedents set by \textit{Graver Tank} and its antecedents which require more than a comparison of parts. Thus, claiming an invention requires more than merely listing parts of the structure. A claim also requires a description of functional or structural cooperation of the parts.\textsuperscript{113}

Old elements are permissible, and often necessary, but it is the elements and the cooperation of those elements that comprise

\textsuperscript{107} For an exhaustive review of Supreme Court and Federal Circuit application of the doctrine of equivalents, see Judge Newman’s commentary in \textit{Pennwalt}, 833 F.2d at 954-75.

\textsuperscript{108} \textit{Id.} at 959-63.

\textsuperscript{109} 839 F.2d 1579 (Fed. Cir. 1988).

\textsuperscript{110} \textit{Id.} at 1582 (finding there was no infringement because, although the function of the devices were broadly the same, the methods of performing that function and results obtained were entirely different).

\textsuperscript{111} \textit{See} Durango Assoc., Inc. v. Reflange, Inc., 843 F.2d 1349, 1358 (Fed. Cir. 1988) (ignoring the presence of a claim limitation that would have otherwise brought the accused device within the range of equivalents); W.L. Gore & Assoc., Inc. v. Garlock, Inc., 842 F.2d 1275, 1281 (Fed. Cir. 1988) (requiring the patentee to establish that the accused device produced the same overall result).

\textsuperscript{112} \textit{See}, e.g., Collins, \textit{supra} note 104, at 300.

what the patentee regards as the invention. The "element by element" approach's consideration of each element or limitation, regardless of whether the limitation is novel, improperly places too much importance on what may otherwise be elements that are insignificant to the "invention."

For an approach to be consistent with the principles of equity, consideration must be given to the true substance of the invention. Additionally, consideration must be given to whether the accused device employs the invention or its equivalent. Such an approach gives the greatest weight to the points of novelty or to the invention itself, while giving lesser weight to subordinate components that comprise the structure of the invention.

The analysis most consistent with Supreme Court precedent and the principles of equity first isolates the components considered the "point of novelty" or the true "invention" of the claim and then determines whether the accused device's corresponding components are either equivalent or novel before considering the subordinate or ancillary elements when comparing the claimed invention to the accused device "as a whole." Such an approach apparently has not been widely followed by the Federal Circuit because Pennwalt remains the controlling law of the Federal Circuit.

C. Determining Equivalence

After determining the method of comparison, the court applies a test to determine if the claimed invention is substantially equivalent to the accused device. How equivalency is determined, though, varies from case to case due to many variables, including the form of the claim; the nature of the invention defined by the claim; and the kind of limitation that is not literally met.

114. E.g., Larson, supra note 99, at 4; see generally William I. Wyman, Functional Statements in Claims, 4 J. PAT. & TRADEMARK OFF. Soc'y, 433, 438-39 (1922) ("a patentable combination may be made up of concededly old elements").

115. See generally Richard M. Klein, Establishing Infringement Under the Doctrine of Equivalents after Malta, 75 J. PAT. & TRADEMARK OFF. Soc'y, 5, 18 (1993) ("While the dispute continues in the Federal Circuit, it is clear that the 'element-by-element' approach, as opposed to the 'claim as a whole' entirety approach to equivalence, remains the controlling precedent in the Federal Circuit.").

In assessing the equivalence of an accused device, the court must recognize that the doctrine of equivalents does not prevent the manufacture, use, or sale by others of all generally similar devices. 117 Though an invention may be entitled to some range of equivalents, “a court may not, under the guise of applying the doctrine of equivalents, erase a plethora of meaningful structural and functional limitations . . . on which the public is entitled to rely in avoiding infringement.” 118

1. Equivalence Triable to a Jury or to the Bench

As noted, a finding of equivalence is a determination of fact. 119 While factual determinations may be made by a judge or jury, the Seventh Amendment provides that the right to a trial by jury shall be preserved in suits at common law. 120 Moreover, the Seventh Amendment extends to causes of action created by Congress, including patent cases. 121 However, merely identifying a determination as factual does not ensure the right to a jury trial if the question involves an issue that is entirely equitable. 122

To determine whether a particular action will involve legal rights that entitle a party to a jury trial, the Supreme Court uses a

117. Lear Siegler, Inc. v. Sealy Mattress Co., 873 F.2d 1422, 1425 (Fed. Cir. 1989) (stating that although the doctrine of equivalents extends the claims beyond literal interpretation, the doctrine does not prevent the manufacture, use or sale of every similar device).


120. U.S. Const. amend. VII.

121. Root v. Railway Co., 105 U.S. 189, 206-7 (1881); see also Swofford v. B & W, Inc., 336 F.2d 406, 409 (5th Cir. 1964), cert. denied, 379 U.S. 962 (1965) (stating that when plaintiffs in an infringement case seek equitable relief they have a right to a jury trial).

122. Paragon Podiatry Laboratory, Inc. v. KLM Laboratories, Inc., 984 F.2d 1182, 1190 (Fed. Cir. 1993). The issue of the role of the jury in determining equivalence will be determined by the Federal Circuit in Hilton Davis Chemical Co. v. Warner-Jenkinson Co., Inc., No. 93-1088, 1993 WL 502162 (Fed. Cir. Dec. 3, 1993). The Federal Circuit issued an order to hear the Hilton case en banc. Among the issues to be addressed in supplemental briefs is: “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?” Hilton, 1993 WL 502162 at *1.
two-step process: first, an examination of the nature of the issues involved, and second, an examination of the remedy sought. Determining the forum of the suit is important because the patentee must meet specific evidentiary thresholds depending on whether the case is tried to a jury or to a court.

2. The Tripartite Test

The *Graver Tank* decision is often credited with formulating the "function/way/result" test for determining equivalency. The test is consistently reiterated by the Federal Circuit in doctrine of equivalents analysis; "[t]he doctrine of equivalents involves a familiar three-part inquiry. An accused device which 'performs substantially the same overall function or work, in substantially the same way, to obtain substantially the same overall result as the claimed invention' . . . is an equivalent." The Federal Circuit has used other methods to determine equivalence, but no other method has been accepted or applied as regularly as the tripartite test.

Infringement under the doctrine of equivalents will not be found if the accused device performs the same function and achieves the same result but does so in a different way than the claimed invention. However, the "way" portion of the test may be met even if the claim limitation has been substituted in the

124. See infra part IV.C.3.
125. "The . . . 'function/way/result' equivalency analysis with respect to a claim limitation appears to be a helpful way to approach the problem and entirely in accord with the analysis actually made in *Graver Tank*." Corning Glass Works v. Sumitoms Elec. U.S.A., Inc., 868 F.2d 1251, 1260 (Fed. Cir. 1989).
126. See, e.g., London v. Carson Pirie Scott & Co., 946 F.2d 1534, 1538 (Fed. Cir. 1991) (articulating the standard for infringement under the doctrine of equivalents as a question of whether the "accused device performs substantially the same function in the same way to achieve substantially the same results").
129. Perkin-Elmer Corp. v. Westinghouse Elec. Corp., 822 F.2d 931, 1534-35 (Fed. Cir. 1987). (holding that the differing methods "permeate[ ] the entire operation of the claimed invention and cannot be deemed insignificant or insubstantial").

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The accused device. The "element by element" approach must be applied when analyzing the "way" portion of the test.

3. Burdens of Proof

The patentee has the burden to show the accused device performs in a manner that satisfies the tripartite test. The patentee bears this burden of proving infringement by a preponderance of the evidence.

For an accused device to infringe a patent, the patentee must establish the presence of each and every claimed element or its substantial equivalent. To be a substantial equivalent, the element substituted in the accused device for the claimed element must not be such as would substantially change the way in which the function of the claimed invention is performed.

130. Read Corp. v. Protec, Inc., 970 F.2d 816, 822 (Fed. Cir. 1992), reh'g denied, Sept. 23, 1992, (recognizing that infringement "requires that each limitation of a claim be met exactly or by a substantial equivalent").

131. Pennwalt Corp. v. Durand-Wayland, Inc., 833 F.2d 931, 935 (Fed. Cir. 1987), cert. denied, 485 U.S. 961 (1988) (citing Lemelson v. United States, 752 F.2d 1538, 1551 (Fed. Cir. 1985)). The recent decision of Malta v. Schulmerich Carillons, Inc., 952 F.2d 1320 (Fed. Cir. 1991), cert. denied, 112 S. Ct. 2942 (1992) has created further ambiguity in interpreting the tripartite test. The Malta panel held that when applying the tripartite test, the patentee must also show "why" the function, way, and result of the accused device are substantially equivalent to the claimed invention. Id. at 1327. Ambiguity now exists as to whether the "why" requirement is an additional prong of the function/way/result test (see Malta, 952 F.2d at 1334 (Newman, J., dissenting)) or simply an elaboration of the "way" portion of the three-prong test (see id. at 1330 (Michel, J., concurring)).

132. See Universal Gym Equip., Inc. v. ERWA Exercise Equip. Ltd., 827 F.2d 1542, 1548 (Fed. Cir. 1987) (holding that showing of substantially similar results does not create a presumption that the devices do so in a substantially similar way; rather, patentee has burden of showing that the accused device meets all three components of the equivalency test). As noted above, see supra part IV.C.2, the tripartite test is an acceptable way of showing substantial equivalence when comparing the accused device to the claimed invention. Also noted above, see supra part IV.B.1, the "element by element" approach is the method to be used when making the comparison of the accused device to the claimed invention.

133. See Amstar Corp. v. Envirotech Corp., 823 F.2d 1538, 1545 (Fed. Cir. 1987). "During an accounting, as during the liability trial, a patentee must prove infringement by a preponderance of the evidence." Id.


135. Pennwalt, 833 F.2d at 935 (quoting Lemelson v. United States, 752 F.2d 1538, 1552-53 (Fed. Cir. 1985)).
a. Jury Trials

The patentee must meet a minimum evidentiary threshold in order to support a *prima facie* case of infringement in doctrine of equivalents actions brought before a jury. This standard requires the patentee to prove "substantial identity as to each of the function, way, and result prongs of the doctrine." In addressing each prong, comparison must be made separately and explicitly to each in the form of particularized testimony and linking arguments. This evidentiary threshold requires more than a cursory presentation of evidence.

Such a proof requirement is necessary to prevent the jury from being "put to sea without guiding charts." As well, this evidentiary standard is intended to prevent the jury from determining infringement by simply comparing the claimed invention and the accused device on the basis of "overall similarity."

b. Bench Trials

Whether similar evidentiary requirements are imposed on bench trials involving the doctrine of equivalents is less clear. Such evidentiary requirements are not the standard in doctrine of equivalents matters tried before the United States International Trade Commission. Unlike a typical district court jury, the International Trade Commission resolves matters involving

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137. Lear Siegler Inc. v. Sealy Mattress Co., 873 F.2d 1422, 1425 (Fed. Cir. 1989) (requiring that jury be directed to isolate proof for each element of the doctrine).

138. Nestor Corp. v. Menasha Corp.-Lewis Sys. Div., 739 F.2d 1576, 1579 (Fed. Cir. 1984), cert. denied, 470 U.S. 1053 (1985) (holding the claim was insufficient because plaintiff's attorneys and witnesses did not present evidence addressing equivalence terms of functions, means, and result).

139. Malta, 952 F.2d at 1328 (holding "brief conclusory evidence" is insufficient to meet the threshold).

140. Lear Siegler, 873 F.2d at 1426 (recognizing that in order for the jury to decide the factual issue of equivalence, a showing of how plaintiff compares function, means, and result of its invention with those of the accused device is required).

141. Malta, 952 F.2d at 1327 (citing Lear Siegler, 873 F.2d at 1427). With little guidance, the jury is left to its own imagination on the technical issue of equivalence. Id. at 1327.


patent infringement regularly and is cognizant of the doctrine of equivalents.\(^{144}\)

Although a district court bench may also be aware of the doctrine of equivalents, the reasoning behind the evidentiary burdens established in *Malta v. Schulmerich Carillons, Inc.* may be logically extended to bench trials.\(^{145}\)

V. LIMITATIONS ON THE DOCTRINE OF EQUIVALENTS

A. Prior Art

Even if the doctrine of equivalents standards of *Graver Tank* and its progeny are met, there can be no infringement if the scope of equivalency would encompass the prior art.\(^{146}\) "[A] patentee should not be able to obtain, under the doctrine of equivalents, coverage which he could not lawfully have obtained from the PTO by literal claims."\(^{147}\) The prior art limits expanding the right to exclude equivalents.\(^{148}\)

Prior art always limits what is patentable or what the inventor could have claimed in the application, including what the prior art has anticipated\(^{149}\) or made obvious.\(^{150}\) Thus, prior

\(^{144}\) Id. (recognizing that "unlike a jury in a district court case, the Commission resolves disputes involving patent infringement matters with some regularity and thus is aware of doctrine of equivalents jurisprudence").

\(^{145}\) See Janis, supra note 31, at 644-45. "[I]t would seem to follow that failure to meet the threshold proof would subject the patent owner to a Rule 52(c) 'judgment on partial findings' in a bench trial just as it would subject him to a Rule 50(a) judgment as a matter of law in a jury trial, or to an adverse summary judgment." Id.

\(^{146}\) Senmed, Inc. v. Richard Allen Medical Ind., Inc., 888 F.2d 815, 821 (Fed. Cir. 1989) (citing Perkin-Elmer Corp. v. Westinghouse Elec. Corp., 822 F.2d 1528, 1532 (Fed. Cir. 1987)).


\(^{148}\) Id.

\(^{149}\) 35 U.S.C. § 102 (1988). In order to be patentable, an invention must be novel. Id. See also Moore v. Stewart, 600 F. Supp. 655 (D.C. Ark. 1985) (holding that appearance of design for which protection is sought must be novel and nonobvious).

\(^{150}\) 35 U.S.C. § 103 (1988). The *Wilson Sporting Goods* court explicitly held that the doctrine of equivalents cannot be extended to what is made obvious by the prior art. 904 F.2d at 685. Since prior art limits what an inventor could patent in the first place, it limits the range of permissible equivalents. In *Wilson Sporting Goods*, the court conceptualized a hypothetical patent claim sufficiently broad in scope to cover the accused product. Id. at 684. The court then examined whether that claim could have been allowed by the PTO over prior art. Id. The court compared the hypothetical claim and the prior art and concluded that there was "no principled difference" between the hypothetical claim and the prior art product. Id. at 685. Any difference between the hypothetical claim and the prior art product was so minor that the hypothetical claim would have been obvious in view of the prior art. Id.
art should limit the range of permissible equivalents of a claim.\textsuperscript{151}

To determine if the claimed equivalency would encompass the prior art, the Federal Circuit utilizes the "hypothetical claim" analysis.\textsuperscript{152} The hypothetical claim is created sufficiently broad in scope to literally cover the accused device.\textsuperscript{153} If the hypothetical claim would be allowed by the PTO over the prior art, "then prior art is not a bar to infringement under the doctrine of equivalents."\textsuperscript{154} If the hypothetical claim would not be allowed because of the prior art, then to allow the patentee to obtain protection would be improper.\textsuperscript{155}

The issue of whether a claimed equivalency would encompass the prior art is a question of law to be reviewed \textit{de novo}.\textsuperscript{156} Furthermore, the burden is on the patentee asserting the claimed equivalency to prove that the claimed equivalency does not encompass the prior art.\textsuperscript{157} This burden does not, however, undermine the presumed validity of the patent claims.\textsuperscript{158}

\textbf{B. Prosecution History Estoppel}

Another limitation on the application of the doctrine of equivalents is prosecution history estoppel. Prosecution history estoppel is an affirmative defense to be pled by the accused infringer\textsuperscript{159} and is a question of law.\textsuperscript{160} Prosecution history estoppel will not allow the patentee to recapture through the doctrine

\begin{itemize}
\item \textsuperscript{151} Wilson Sporting Goods, 904 F.2d at 684.
\item \textsuperscript{152} Id. at 685. The hypothetical claim is a helpful, but not mandatory, way for the patentee to show that the claimed equivalency would not encompass the prior art. Key Mfg. Group, Inc. v. Microdot, Inc., 925 F.2d 1444, 1449 (Fed. Cir. 1991). The use of the term "hypothetical claim" serves to emphasize that the patentee is seeking coverage beyond the limits considered by the PTO examiner. Wilson Sporting Goods, 904 F.2d at 685.
\item \textsuperscript{153} Wilson Sporting Goods, 904 F.2d at 684.
\item \textsuperscript{154} Id. (emphasis omitted).
\item \textsuperscript{155} Id. The court recognized "[t]he doctrine of equivalents exists to prevent a fraud on a patent, not to give a patentee something he could not lawfully have obtained from the PTO had he tried." Id. (citation omitted).
\item \textsuperscript{156} Id. at 683 (presuming, however, that the jury resolved the evidentiary conflicts in the plaintiff's favor).
\item \textsuperscript{157} Id. at 685. The court recognized that patent owners always have the burden of proving infringement and that there is no logical reason to displace this general rule simply because infringement might require an examination of the patentability of the proposed hypothetical claim. Id. The court reasoned that any other approach would ignore and violate existing patent law. Id.
\item \textsuperscript{158} Wilson Sporting Goods, 904 F.2d at 685.
\item \textsuperscript{159} Carman Indus., Inc. v. Wahl, 724 F.2d 932, 942 (Fed. Cir. 1983).
\end{itemize}
of equivalents certain coverage surrendered during prosecution of the patent application.\(^{161}\)

The prosecution history, or file wrapper,\(^{162}\) includes material representations made to the PTO in response to references cited by the examiner.\(^{163}\) Such material representations may be amendments, statements, remarks, or replies made to obtain a patent.\(^{164}\) The doctrine of prosecution history estoppel bars a patentee from construing the claims in a manner that would re-capture the subject matter surrendered in the material representations made to the examiner.\(^{165}\)

Application of the doctrine of prosecution history estoppel is performed on a case by case basis and is guided by equitable principles.\(^{166}\) Reversible error results when a trial court concludes that the doctrine of equivalents cannot be invoked simply because the claims have been narrowed.\(^{167}\) The prosecution his-

\(^{160}\) LaBounty Mfg., Inc. v. United States Int'l Trade Comm'n, 867 F.2d 1572, 1576 (Fed. Cir. 1989).

\(^{161}\) Loctite Corp. v. Ultraseal Ltd., 781 F.2d 861, 870 (Fed. Cir. 1985).


\(^{163}\) The Federal Circuit has stated that prosecution history is irrelevant where there is literal infringement. Fromson v. Advance Offset Plate, Inc., 720 F.2d 1565, 1571 (Fed. Cir. 1983). The same matters used to determine prosecution history estoppel, however, may be used to interpret the claims during the first step of infringement analysis. See supra part II.B.

\(^{164}\) Townsend Eng'r Co. v. HiTec Co., 829 F.2d 1086, 1090-91 (Fed. Cir. 1987).

\(^{165}\) Loctite, 781 F.2d at 870. But see Durango Assoc., Inc. v. Reflange, Inc., 843 F.2d 1349, 1358 (Fed. Cir. 1988) (prosecution history estoppel does not necessarily mean the patentee is completely prohibited from recapturing what was originally surrendered).

In *Durango*, application claim 2 was amended during prosecution to include a limitation. This amendment had no effect on claim 3, which was the subject of the dispute. Claim 3 was based on application claim 7. Although application claim 7 originally depended on application claim 2, application claim 7 was deemed allowable by the examiner prior to the amendment of application claim 2. “The subsequent addition of limitations to application claim 2 to obtain its allowance has no effect on the interpretation of application claim 7 and, therefore, no effect on claim 3.” *Id.* at 1358.

\(^{166}\) See, e.g., Insta-Foam Prod., Inc. v. Universal Foam Sys., Inc., 906 F.2d 698, 702 (Fed. Cir. 1990) (noting infringement analysis under doctrine of equivalents is equitable analysis).

\(^{167}\) Bayer Aktiengesellschaft v. Duphar Int'l Research B.V., 738 F.2d 1237, 1243 (Fed. Cir. 1984). The court recognized that just because claims were narrowed does not mean the doctrine of history estoppel completely prevents a patentee from recapturing some of the original claim. *Id.* Thus, limiting the claims because of a restrictive requirement would not of necessity involve file history estoppel. *Id.* If a judge decides solely on an erroneous consideration of the law, this would be error. *Id.*
tory is extremely important when the invention is part of a crowded art. 168

VI. OTHER CONSIDERATIONS

A. Pioneer Status

Pioneer status regards the position of the invention in the art to which the invention pertains. 169 A pioneer invention is devoid of significant prior art, although it may be a combination of old elements. 170 Nonpioneer inventions are merely improvements in a crowded field. 171

Historically, pioneer inventions were entitled to liberal construction of the claims in doctrine of equivalents analysis. 172 Claims for a nonpioneer invention would receive a narrower interpretation. 173 The Federal Circuit, however, apparently does not regard the status of the invention as significant. 174 This position is evidenced by the Circuit's recognition that a pioneer invention does not have the status of a separate class of invention subject to laws that are only applicable to pioneer inventions. 175

172. Id. (citing Morley Sewing Machine Co. v. Lancaster, 129 U.S. 263, 273 (1889)).
173. See Sun Studs, Inc. v. ATA Equip., 872 F.2d 978, 987 (Fed. Cir. 1989), reh'g denied, May 2, 1989 (noting "[t]he concept of 'pioneer' arises from an ancient jurisprudence, reflecting judicial appreciation that a broad breakthrough invention merits a broader scope of equivalents than does a narrow improvement in a crowded technology").

It is not necessary, of course, that an inventor be entitled to a broad claim covering all possible products in a line of products before a court may award an invention pioneer status... or a range of equivalents sufficient to encompass a particular accused product. It is commonplace for claims to inventions, pioneer and non-pioneer, to be amended during prosecution. Though the 'area of equivalence' may vary, the doctrine of equivalents is applicable to both.

Id. (citations omitted). But see Perkin-Elmer Corp. v. Westinghouse Elec. Corp., 822 F.2d 1528, 1532 (Fed. Cir. 1987). "A pioneer invention is entitled to a broad range of equivalents." Id. (citations omitted).
175. Sun Studs, 872 F.2d at 987.
The role of the status of the invention in doctrine of equivalents analysis is uncertain, if any role exists at all. There are wide ranges of technological advances that may arise between a pioneering breakthrough and any given improvement of the claimed invention and these ranges allow for distinguishing gradations of equivalency. Consequently, a particular invention’s position on this equivalency spectrum is dependent on all the circumstances in each particular case.

B. Means-Plus-Function Language

As previously noted, the Patent Act provides explicit guidelines for interpretation of claim elements expressed in means-plus-function terms. Section 112, paragraph 6 allows broad means-plus-function terms, but at the same time provides a standard that makes the language less ambiguous and subject to more definitive interpretation.

According to the first clause of section 112, paragraph 6, the applicant need not recite structure, material, or acts in the claim’s means-plus-function limitation. The second clause of section 112, paragraph 6, however, places a limiting condition on the use of the language. The second clause limits the applicant to structure, material, or acts in the specification or their equivalents. Thus, section 112, paragraph 6 acts as a reverse

176. Id. at 987 (citing Texas Instruments, Inc. v. United States Int’l Trade Comm’n, 846 F.2d 1369, 1370 (Fed. Cir. 1988)).
177. Id. (citing Royer v. Schultz Belting Co., 135 U.S. 319, 325 (1890)).
178. See supra notes 37-43 and accompanying text.
179. See Valmont Indus., Inc. v. Reinke Mfg. Co., 983 F.2d 1039, 1042 (Fed. Cir. 1993). The United States Supreme Court had initially prohibited the use of means-plus-function language in describing the key element in a combination claim. Id. at 1042 (citing Halliburton Oil Well Cementing Co. v. Walker, 329 U.S. 1, 9 (1946)). The Court was concerned that such language was both overbroad and ambiguous. Id. Congress responded by enacting § 112 of the 1952 Patent Act that expressly permitted the use of means-plus-function language. Valmont, 983 F.2d at 1042.
181. The second clause serves to necessarily limit the breadth of the means-plus-function claim limitation, as a literal reading of a means-plus-function claim element can potentially include all possible means for performing the claimed function. Id. at 1042 (citing Johnston v. IVAC Corp., 885 F.2d 1574, 1580 (Fed. Cir. 1989)).
182. The second clause of 35 U.S.C. § 112, ¶ 6 (1988) provides: “such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.” Id. (emphasis added). The second clause relates primarily to the construction of such claims for the purpose of infringement, and the second clause should not have much applicability in determining the patentability of such claims over the prior art. P.J. Federico, Preface to 35 U.S.C. §§ 1, 25 (1954).
doctrine of equivalents by restricting the coverage of the literal claim language. 183

As currently applied, equivalency under section 112, paragraph 6 is not the same as the doctrine of equivalents. 184 Section 112, paragraph 6 limits the broad language of means-plus-function clauses in combination claims to equivalents of structures, materials, or acts in the specification. 185 On the other hand, the doctrine of equivalents equitably expands patent rights to equivalents not necessarily detailed in the specification. 186

According to the Federal Circuit, one must not confuse "equivalents" as utilized in section 112, paragraph 6, with the doctrine of equivalents. 187 "If the required function is not performed exactly in the accused device," the section 112, paragraph 6 equivalency requirement is not satisfied. 188 However, an equivalent under the doctrine of equivalents may not literally meet the claim, yet still infringe the patent. 189

Nevertheless, although the Pennwalt court held that section 112, paragraph 6 "plays no role in determining whether an equivalent function is performed by the accused device under

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183. Johnston v. IVAC Corp., 885 F.2d 1574, 1580 (Fed. Cir. 1989). "Properly understood section 112 ¶ 6 operates more like the reverse doctrine of equivalents than the doctrine of equivalents because it restricts the scope of the literal claim language." Id.

184. Valmont, 983 F.2d at 1043-44.
The doctrine of equivalents has a different purpose and application than section 112. The doctrine of equivalents prevents a copyist from evading patent claims with insubstantial changes.

[S]ection 112, ¶ 6, and the doctrine of equivalents have separate origins and purposes. Section 112, ¶ 6, limits the broad language of means-plus-function limitations in combination claims to equivalents of the structures, materials, or acts in the specification. The doctrine of equivalents equitably expands exclusive patent rights."

Id.

185. See supra note 183.

186. Valmont, 983 F.2d at 1043-44. "An equivalent under the doctrine of equivalents results from an insubstantial change which, from the perspective of one of ordinary skill in the art, adds nothing of significance to the claimed invention. An equivalent under the doctrine of equivalents, though not literally meeting the claims, still infringes the patent." Id. (citation omitted).

187. D.M.I., Inc. v. Deere & Co., 755 F.2d 1570, 1575 (Fed. Cir. 1985) (stating that doctrine of equivalents analysis requires determination whether accused device meets the three-part doctrine of equivalents test, while § 112, ¶ 6 provides a basis for determining a single question of whether or not the means of the accused device performs the function of the claim in the same or equivalent manner).

188. Pennwalt Corp. v. Durand-Wayland, Inc., 833 F.2d 931, 934 (Fed. Cir. 1987), cert. denied, 485 U.S. 961 (1988). If an accused structure performs the function required by the claim, it is not necessarily structurally equivalent. Id.

189. Valmont, 983 F.2d at 1043.
the doctrine of equivalents," such a conclusion neglects to acknowledge the role of the second clause of section 112, paragraph 6 in claim interpretation.

Before making an infringement determination, the court must properly interpret the claims. For claims with means-plus-function language, section 112, paragraph 6 is employed for claim interpretation. The same interpretation is made whether subsequently determining literal infringement or infringement under the doctrine of equivalents.

Recently, the Federal Circuit held that the PTO may no longer read means-plus-function elements as broadly as reasonably proper or independently of any structure set out in the specification. Instead, paragraph 6 applies in all contexts where the interpretation of means-plus-function language arises, either in prosecution in the PTO or in enforcement in the courts. This may signal a new court direction towards requiring that all cases of means-plus-function equivalents be interpreted in the same manner.

VII. RECOMMENDATIONS FOR CLARIFYING THE DOCTRINE

In the past several years, the Federal Circuit has made great strides in developing the structure of an analysis that outlines the issues surrounding application of the doctrine of equivalents in patent infringement litigation. Unfortunately, uncertainty remains in every issue of the doctrine of equivalents as currently applied. Furthermore, Federal Circuit judges themselves do not agree on the application of the doctrine.

190. Pennwalt, 833 F.2d at 934.
192. See Johnston v. IVAC Corp., 885 F.2d 1574, 1580 (Fed. Cir. 1989) (stating "[s]ection 112, ¶ 6 provides direction with respect to how the part of a claim framed in means-plus-function language must be interpreted within an infringement analysis") (citation omitted).
195. Id. at 1193.
The doctrine remains an equitable remedy. As an equitable doctrine, the prevailing uncertainty allows the court to do equity as necessary and this power should not be taken away from the courts. Any legislative or judicial guidelines that restrict the doctrine to a mechanistic formula could conceivably remove certain types of infringement from the purview of the doctrine. Expanding the section 112, paragraph 6 standard of "equivalent" and eliminating, or greatly reducing, the application of the doctrine of equivalents would abolish the equitable "as a whole" nature of the doctrine in circumstances when such an analysis is necessary and appropriate. 197

Other suggestions have been presented, such as placing the invention on a copy-independent spectrum. 198 The spectrum would range from one end, where the accused device was crafted independent of the claimed invention, to the other end, where the claimed invention was clearly copied by the accused device. 199

Such an evaluation may, however, penalize those who "design around" the claimed invention, a worthwhile consideration if indeed "designing around" is a practice to be encouraged and considered beneficial to society. On the other hand, the implementation of the spectrum may not work against those who "design around" inventions any more than the current application of the doctrine of equivalents.

Another suggestion is a combination of the "element by element" approach and the "as a whole" approach. 200 The court in Becton Dickinson & Co. v. C.R. Bard, Inc. 201 upheld an application of the "element by element" approach when conducting the tripartite test followed by a consideration of the overall similarity between the accused device and the claimed invention. 202 This "overall similarity" analytical approach would allow the court to make an equitable determination after applying the current substantive and procedural rule of uncertain soundness, as well as treading upon due process.

197. See supra part IV.B.2.
201. 922 F.2d 792 (Fed. Cir. 1990).
202. Id. at 798.
mechanistic analysis. Combining the two approaches into one that would examine the overall degree of similarity may result in a more predictable infringement determination under the doctrine of equivalents. Adding this “overall similarity” test to the current doctrine of equivalents analysis does have support in the patent community.

VIII. Conclusion

The doctrine of equivalents was developed to prevent fraud on the patent and the unscrupulous copyist from making insubstantial changes that, though adding nothing, were enough to take the device outside the scope of the claims. As such, the doctrine was considered the exception and not the rule.

Today, the doctrine of equivalents is a readily available means of protecting patent rights, and the second prong of patent infringement litigation. Any guidelines developed to remove ambiguity must, at the very least, articulate the scope of the protection available in order to clarify the underlying policy behind the doctrine of equivalents. To paraphrase one great philosopher, if we don’t know where we’re going, we’ll wind up someplace else.


204. Katz, supra note 200, at 463.

205. See Int'l Visual Corp., 991 F.2d at 775 (Lourie, J., concurring); see also Collins, supra note 104, at 303 (citing Katz, The Federal Circuit, in Determining Whether Patent Infringement Exists, is Divided Over Whether to Utilize "As-a-Whole" or "Element-by-Element" Analysis When Applying the Doctrine of Equivalents, 30 S. Tex. L. J. 441, 463 (1989)).

206. The great philosopher was Yogi Berra.