

THE SIGNIFICANT FEDERAL CIRCUIT CASES INTERPRETING SECTION 112*

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INTRODUCTION

The modern U.S. patent system has three purposes: first, to encourage invention by offering potential rewards to the individual inventor;¹ second, to encourage industry to assume the risks of

1. See U.S. CONST. art. I, § 9, cl. 8 (granting federal authority to establish patent laws). The foundation for the modern federal patent system begins with the Constitution, which provides that Congress shall have power "to promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries." *Id.* This provision reflects the accepted view that individuals have a right to the fruits of their inventive intellectual accomplishment. See STAFF OF SENATE COMM. ON THE JUDICIARY, 85TH CONG., 1ST SESS., PROPOSALS FOR IMPROVING THE PATENT SYSTEM I (Comm. Print 1957) (describing system of rewards to inventor and society inherent in patent system). The American government's founders recognized that "[t]he copyright of authors

financing research, developing products, and introducing new products to the marketplace;² and third, to discourage an atmosphere in which industrial design and technological development are clouded in secrecy, and scientific progress is hidden from the public.³

This third purpose underscores the patent system's quid pro quo nature, in which the patent is a social contract or franchise.⁴ Disclosure by the inventor, then, is the consideration in the social contract between the inventor and the government.⁵ 35 U.S.C. § 112 (section 112) sets forth the requirements of disclosure. If the disclosure is insufficient to enable a skilled person to make and use the claimed invention, then there is a failure of consideration, and the patent is invalid.⁶

Since its creation in 1982, the United States Court of Appeals for the Federal Circuit has addressed various issues concerning section 112, ostensibly to satisfy its mandate to bring uniformity to the patent law.⁷ This Article highlights and discusses the significant Federal Circuit opinions interpreting section 112 since the court's inception in 1982. This Article is organized according to subject area, with the more significant opinions discussed in greater detail. This Article is not intended to be a primer on the law of section 112;

has been solemnly adjudged, in Great Britain, to be a right of common law. The right to useful inventions seems with equal reason to belong to the inventors. The public good fully coincides in both cases with the claims of the individuals." SENATE COMM. ON THE JUDICIARY, 85TH CONG., 1ST SESS., THE PATENT SYSTEM AND THE MODERN ECONOMY 1 n.4 (Comm. Print 1957) (citing THE FEDERALIST No. 43 at 279 (James Madison)).

2. See SENATE COMM. ON THE JUDICIARY, 85TH CONG., 1ST SESS., THE PATENT SYSTEM AND THE MODERN ECONOMY 1-2 (Comm. Print 1957) (noting desirability of industry's promotion of inventions).

3. See *id.* (discussing importance of patent system to public).

4. See *Seymour v. Osborn*, 78 U.S. (11 Wall.) 516, 533-34 (1870) (describing patents as "public franchises"). In *Seymour*, the Supreme Court suggested a quid pro quo relationship between the patentee and society. *Id.* The benefit to the public is found in the patent system's "tend[ancy] to promote the progress of science and the useful arts." *Id.* at 533. The benefit to the individual patentee is found in the system's "compensation to the inventor for their labor, toil, and expense in making the inventions." *Id.*

5. See *Century Elec. Co. v. Westinghouse Elec. & Mfg. Co.*, 191 F. 350, 354 (8th Cir. 1911) (describing contractual nature of patent process). In *Century Electric*, the court described a patent as "a contract made by the acceptance by the government of the offer which the patentee by his application makes to disclose his invention, in consideration that the United States will secure to him the exclusive use and sale of it for seventeen years." *Id.* (emphasis added).

6. 35 U.S.C. § 112 (1988).

7. See Federal Courts Improvement Act, Pub. L. No. 97-164, 96 Stat. 25 (codified as amended at 20 U.S.C. § 1 (1982)) (creating federal appellate court with exclusive subject matter jurisdiction for patent cases); S. REP. NO. 275, 97th Cong., 2d Sess. 5, reprinted in 1982 U.S.C.C.A.N. 11, 15 (stating that Federal Circuit will provide needed uniformity at appellate level).

rather, it is a presentation of opinions illustrating the Federal Circuit's interpretation of section 112.⁸

I. LEGISLATIVE HISTORY OF SECTION 112

The Federal Circuit's interpretation of section 112 is necessarily bound by the legislative history of the statute. A brief overview of the origin of section 112 and its predecessor provisions offers a useful starting point. The quid pro quo nature of patent disclosure is at the very foundation of patent law, as seen in the original Patent Act of 1790.⁹ Disclosure, including precision in particularly pointing out what activities fall within the exclusionary right of the patent, was required not only to teach the methodology of the invention, but to delineate the invention so the public would know what activities infringed the patent.¹⁰ These two themes evolved into what are today section 112's paragraphs (1) and (2).

The 1790 Patent Act also made inadequate disclosure a defense in patent infringement suits. Defendants could argue that the specification "does not contain the whole truth concerning his invention," or "contains more than is necessary to produce that effect described" if either "appear[ed] to have been intended to mislead, or shall actually mislead the public, so as the effect described cannot be produced by the means specified."¹¹ In 1793, Congress amended the Patent Act, requiring machine inventors to delineate the principle behind, and the practical application of, each invention and to

8. See 2 DONALD S. CHISUM, PATENTS ch. 7 (1990) (providing overview of "adequate disclosure" of patent law, including enablement, description, and best mode requirements). Various secondary sources discuss section 112 more generally. See WALTER Y. BOYD ET AL., 35 U.S.C. § 112 AND CHEMICAL PATENT PRACTICE, 1990 BASIC CHEMICAL AND BIOTECHNOLOGY PRACTICE SEMINAR (1990), American Intellectual Property Law Association (providing overview of structure and implementation of section 112).

9. Act of April 10, 1790, ch. 7, § 2, 1 Stat. 109. The 1790 Act, adopted by the First Congress, required inventors to file

a specification . . . containing a description . . . of the thing . . . by him . . . invented . . . which specification shall be so particular . . . as not only to distinguish the invention . . . from other things before known and used, but also to ensure a workman or other person skilled in the art of manufacture, where of it is a branch, or where with it may be nearest connected, to make, construct or use the same, to the end that the public may have the full benefit thereof, after the expiration of the patent term.

Id.

10. See *Evans v. Eaton*, 20 U.S. (7 Wheat) 356, 433-34 (1822) (evaluating patent law's protection of inventor's improvement over existing machines). In *Evans*, the Supreme Court explained the nature of the enabling and distinguishing requirements of patent law. *Id.* The Court identified two purposes of the patent specification: to explain the nature of the invention, and to ascertain whether it is deserving of the protection of a patent. *Id.*

11. Act of April 10, 1790, ch. 7, § 6, 1 Stat. 109. See *Grant v. Raymond*, 31 U.S. 218, 248 (1832) (noting validity of arguing defectiveness of opposing party's specification in patent suits). *Grant* established that a showing of intent is not necessary to defend successfully against infringement, but such a showing is necessary for a patent to be declared void on this basis. *Id.*

distinguish it from other inventions.¹² Under the 1793 Act, however, patenting was no more than a clerical function, with no examination required.¹³

Minor linguistic changes accompanied the Patent Act of 1836. The adequate disclosure requirement necessitated that the patent enable one to “make, construct, compound, and use” the invention. The inventor was required to define with particularity “the part, improvement, or combination” claimed as the invention.¹⁴ At the same time, however, applicants were directed to avoid “unnecessary prolixity” in their specifications.¹⁵ Dissatisfaction over patenting without meaningful inquiry prompted Congress to create the Patent Office and the Commissioner of Patents. The Commissioner had the authority to refuse patents to those filing deficient applications.¹⁶ Additionally, the 1836 Act modified the defenses section, removing the provision for declaring inadequately disclosed patents invalid.¹⁷

The “best mode” provision superseded the “several modes” provision as to machines in the Patent Act of 1870.¹⁸ Similar to the 1836 Act, claim requirements specified that the applicant must specify and claim “the part, improvement, or combination” intended as the invention or discovery.¹⁹ Sections 4888 and 4920 of the Revised Statutes codified the disclosure provisions and the “whole truth” defense.²⁰

In 1949, the House Committee on the Judiciary began considering revisions to the patent statutes.²¹ After reviewing the existing sixty sections based on the 1790 Act, all proposed changes since 1925, and reports from government agencies and private groups,

12. Act of Feb. 21, 1793, ch. 11, § 3, 1 Stat. 318. The Act also changed “workman” to “any person skilled in the art or science,” who must be enabled by disclosure to “make, compound, and use” the invention. *Id.* The description referent changed “particular” to “such full, clear, and exact terms.” *Id.*

13. *See The Patent Act of 1952*, 34 J. PAT. OFF. SOC'Y 545, 554 (1952) (noting filing requirements of 1793 Act) [hereinafter *The Patent Act*].

14. Act of July 4, 1836, ch. 357, § 6, 5 Stat. 117.

15. *Id.*

16. *See The Patent Act*, *supra* note 13, at 554 (describing provisions of 1836 Act).

17. Act of July 4, 1836, ch. 357, § 15, 5 Stat. 117.

18. Act of July 8, 1870, ch. 230, § 26, 16 Stat. 198. This Act was part of the work to reorganize, revise, and consolidate all the United States Codes. *See The Patent Act*, *supra* note 13, at 550 (explaining development of United States Code).

19. Act of July 8, 1870, ch. 230, § 26, 16 Stat. 198.

20. *See* 2 DONALD S. CHISUM, PATENTS § 7.02[4] (1990) (tracing historical development of American patent law).

21. *See The Patent Act*, *supra* note 13, at 546-48 (describing legislative consideration of patent law changes). Representative Bryson of South Carolina chaired the subcommittee with jurisdiction to change patent laws. Law Revision Counsel J. Zinn and Patent Counsel L. James Harris provided legal advice. *Id.*

the Committee drafted new patent legislation.²² The effort culminated in the enactment, by unanimous consent, of ninety-five sections of Title 35 in 1952.²³

The Patent Act of 1952 created the penultimate section 112.²⁴ The "best mode" requirement, limited previously to machines, was expanded to include all kinds of inventions. The terms "constructing" and "compounding" in the 1836 Act were omitted. To emphasize the distinction between the enabling and claiming functions of disclosure, these provisions were divided into separate paragraphs. Because failure to disclose adequately the invention is a defense, regardless of intent, the "whole truth" defenses were omitted.²⁵ The last paragraph, which is the current section's sixth paragraph, did not have statutory precedent.²⁶ Rather, it reflected a growing use of "means-plus-function" language in claims involving complex mechanical devices. For these complex inventions, requiring structural recital proved to be too confining.²⁷ The last two amendments

22. See Karl B. Lutz, *The New 1952 Patent Statute*, 35 J. PAT. OFF. SOC'Y 155, 155 (1953) (providing account of congressional hearings on patent legislation). The subcommittee considered reports submitted by the Science Advisory Board, the Temporary National Economic Committee, the National Planning Commission, and the American Bar Association, as well as legal periodicals, books, and miscellaneous articles. *Id.*

23. See P.J. Federico, *Transitional Problems of the New Patent Act*, 35 J. PAT. OFF. SOC'Y 325, 326 (1953) (describing development of 1952 Patent Act); Lutz, *supra* note 22, at 162 (accounting for 1952 Act).

24. Act of July 19, 1952, Pub. L. No. 82-593, 66 Stat. 792 (codified as amended at 35 U.S.C. § 112 (1988)). Section 112 of the 1952 Act, which took effect on January 1, 1953, reads as follows:

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

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

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 a claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

Id.

25. CHISUM, *supra* note 20, § 7.02[4] (citing P.J. Federico, *Commentary on the New Patent Act*, 35 U.S.C.A. 1, 55 (1954)).

26. See 35 U.S.C.A. 406 (1952) (explaining amendments to patent law). The Revisor's Note indicates only that "[a] new paragraph relating to functional claims is added." *Id.*

27. The last paragraph of section 112 in part constituted an adverse reaction to a 1946 United States Supreme Court decision. See *Halliburton Oil Well Cementing Co. v. Walker*, 329 U.S. 1, 11-14 (1946) (requiring that patents for complicated inventions require presentation of clear, concise, and exact description of machine or process). Provisions concerning complex mechanical devices evolved in response to *Halliburton*, in which the Supreme Court invalidated a means-plus-function claim as "too broad." *Id.* The Commissioner of Patents at the time the 1952 Act passed said:

It is unquestionable that some measure of greater liberality in the use of functional expressions in combination claims is authorized than had been permitted by some

to section 112 occurred in 1965²⁸ and 1975,²⁹ when the paragraphs now comprising paragraphs three, four, and five were added. The legislative history of these amendments is discussed in Section V of this Article.

II. THE SECOND PARAGRAPH³⁰

The second paragraph of section 112 contains two requirements. The first requirement, relating to the scope of the provision, calls for "precision and definiteness" in claim language.³¹ One skilled in the art must be able to tell, with a reasonable degree of certainty, whether specific conduct would be inside or outside the scope of the claims; the "metes and bounds" of the claimed subject matter must be ascertainable. The second requirement demands that claims be directed to the subject matter the applicant regards as the invention.³² While an applicant may claim whatever is regarded as the invention, subject matter that is not regarded as the invention cannot be claimed. The Federal Circuit has had the opportunity to decide a number of section 112, second paragraph issues.

A. The "Precision and Definiteness" Requirement

One of the Federal Circuit's earliest cases with respect to the "precision and definiteness" requirement was *In re Marosi*.³³ At issue in *Marosi* was an invention for making zeolitic compounds that did not require the use of alkali metals. The claims described the crystalline metal silicate used in the process as "essentially free of alkali metal."³⁴ The specification, however, explained that some chemical impurities may be present, creating residual alkali metal

court decisions, and that decisions such as that in *Halliburton* . . . are modified or rendered obsolete, but the exact limits of the enlargement remain to be determined. See CHISUM, *supra* note 20, § 7.02[4] (citing P.J. Federico, *Commentary on the New Patent Act*, 35 U.S.C.A. 1, 25-26 (1954)).

28. Pub. L. No. 89-83, 79 Stat. 259 (codified as amended at scattered sections of 35 U.S.C.).

29. Pub. L. No. 94-131, 89 Stat. 685 (codified as amended at scattered sections of 35 U.S.C.).

30. See *In re Moore*, 439 F.2d 1232, 1235, 169 U.S.P.Q. 236, 238 (C.C.P.A. 1971) (stating that in evaluating patents, initial inquiry is into what is claimed, pursuant to section 112, second paragraph). Any section 112 analysis moves from the second paragraph to the first paragraph because claims must be construed pursuant to the second paragraph before the invention recited by the claims can be analyzed for first paragraph compliance. *Id.*

31. 35 U.S.C. § 112, ¶ 2 (1988); see also *In re Borkowski*, 422 F.2d 904, 909, 164 U.S.P.Q. 642, 645 (C.C.P.A. 1970) (holding that, under section 112, second paragraph, language of claim must be precise and definite regarding subject matter encompassed thereby).

32. 35 U.S.C. § 112, ¶ 2 (1988).

33. 710 F.2d 799, 218 U.S.P.Q. 289 (Fed. Cir. 1983).

34. *In re Marosi*, 710 F.2d 799, 801, 218 U.S.P.Q. 289, 291 (Fed. Cir. 1983).

content of about four parts per million (ppm) of sodium.³⁵ The Board of Patent Appeals held that the claim limitation, "essentially free of alkali metal," did not satisfy the second paragraph of section 112.³⁶ According to the Board, there was no teaching or disclosure to define an upper limit to the claim limitation, even when the claims were read in light of the specification.³⁷

The United States Patent and Trademark Office (PTO) argued before the Federal Circuit that it was impossible for one skilled in the art to determine the "essentially free of alkali metal" line between 4 ppm and the 3819 ppm of the prior art. The Federal Circuit responded that the PTO's position was impractical to the extent that the PTO was requiring Marosi to specify a particular number as the cut-off point between his invention and the prior art.³⁸

Marosi's invention, the court stated, did not reside in such a number. The term "essentially free of alkali metal" had to be read in light of the specification in order to give the invention its broadest reasonable interpretation.³⁹ Since Marosi's specification set forth the method for synthesizing zeolites in the absence of alkali metal, the Federal Circuit, recognizing that relevant industrial chemicals always contain traces of alkali metals, found the language sufficiently definite.⁴⁰

In another early case, *W.L. Gore & Associates v. Garlock, Inc.*,⁴¹ the Federal Circuit again addressed the question of whether claim language was indefinite. The claim in *Gore* involved both a method for treating unsintered polytetrafluorethylene (PTFE), better known as

35. *Id.* at 802, 218 U.S.P.Q. at 292. The specification defined the claim terminology as follows:

Free from alkali metal, for the purposes of the invention, means essentially free from sodium ions. The residual alkali metal content of such zeolites is in principle only attributable to impurities of the chemicals used as starting materials. . . . Thus, commercial pyrogenic silica (Aerosil), which, is a particularly suitable starting material, contains about 4 ppm of Na₂₀.

Id.

36. *Id.*

37. *Id.* The Board found the term "essentially free of alkali metal" to be a significant part of the claimed invention because it served to distinguish the invention over the prior art.
Id.

38. *Id.*

39. *Id.*

40. *Id.* at 803, 218 U.S.P.Q. at 292. The court stated:

[Marosi] provided a general guideline and examples sufficient to enable a person of ordinary skill in the art to determine whether a process uses a [starting material] "essentially free of alkali metal" to make a reaction mixture "essentially free of alkali metal" to produce a zeolitic compound "essentially free of alkali metal." We are persuaded that such a person would draw the line between unavoidable impurities in starting materials and essential ingredients.

Id.

41. 721 F.2d 1540, 220 U.S.P.Q. 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984).

the TEFLON® product sold by Du Pont, and the products that were produced by the method.⁴² The district court concluded that three terms used in the claim language—"stretch rate," "matrix tensile strength," and "specific gravity of the solid polymer"—were indefinite.⁴³

With respect to the term "stretch rate," the Federal Circuit noted that there was uncontradicted evidence in the record that, to those skilled in the art, the term meant the percent of stretch divided by the time of stretching, and that the latter was measurable, for example, with a stop watch.⁴⁴ According to the court, the absence from the specification of a formula for calculating stretch rate was irrelevant.⁴⁵

As to the language "matrix tensile strength," the district court found this term indefinite, even though the specification disclosed how it was to be computed.⁴⁶ The Federal Circuit did not agree that the term was indefinite.⁴⁷ The court observed that it is well settled that a patent applicant can be his own lexicographer, and that here the specification clearly taught how to calculate "matrix tensile strength."⁴⁸

The Federal Circuit also held that the district court erred in concluding that the term "specific gravity of the solid polymer" was indefinite.⁴⁹ The court found that the specification set forth the specific gravity values for unsintered and sintered PTFE.⁵⁰ Further, the court noted that there was no testimony alleging that these values were not known to persons of ordinary skill in the art or could not be calculated or measured.⁵¹

In *Rosemount, Inc. v. Beckman Instruments, Inc.*,⁵² the district court found Rosemount's patent, relating to a pH meter, to be valid and infringed by Beckman.⁵³ On appeal to the Federal Circuit, Beckman argued, inter alia, that the patent was invalid under the second paragraph primarily because the term "close proximity," used to de-

42. *W.L. Gore & Assocs. v. Garlock, Inc.*, 721 F.2d 1540, 1556, 220 U.S.P.Q. 303, 315 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984).

43. *Id.* at 1546, 220 U.S.P.Q. at 304.

44. *Id.* at 1556, 220 U.S.P.Q. at 315.

45. *Id.*

46. *Id.* at 1557, 220 U.S.P.Q. at 315.

47. *Id.* at 1558, 220 U.S.P.Q. at 316.

48. *Id.*

49. *Id.* at 1557, 220 U.S.P.Q. at 315.

50. *Id.*

51. *Id.* at 1556, 220 U.S.P.Q. at 315-16.

52. 727 F.2d 1540, 221 U.S.P.Q. 1 (Fed. Cir. 1984).

53. *Rosemount, Inc. v. Beckman Instruments, Inc.*, 727 F.2d 1540, 1542, 221 U.S.P.Q. 1, 2 (Fed. Cir. 1984).

scribe the position of the electrode relative to the high impedance material in the pH meter, was indefinite.⁵⁴ Noting that Beckman used the term "close proximity" in describing its own pH meters in its briefs and that the prior art also used the term, the Federal Circuit had little trouble agreeing with the district court's finding that one skilled in the art would understand all of the claim language when read in light of the specification. Thus, the court held that the claim language was as precise as the subject matter permitted.⁵⁵

Standard Oil Co. v. American Cyanamid Co.,⁵⁶ involved a patent on a catalytic process for producing acrylamide from acrylonitrile, in which copper was used as the catalyst.⁵⁷ Standard Oil, the owner of the patent, sued Cyanamid for infringement. The district court found not only that the patent was not infringed, but concluded that one of the claims of the patent was invalid because the term "at least partially soluble," used to describe the copper ions recited in the claimed process, was insufficiently precise to meet the requirements of the first paragraph of section 112.⁵⁸ Furthermore, the district court concluded that the term "partially soluble" was too vague to meet the requirements of the second paragraph.⁵⁹

The Federal Circuit agreed that the claim at issue was invalid under the second paragraph for failing to distinctly claim the invention. The court determined that the district court misapplied the statute, pointing out that the first paragraph of section 112 applies only to the disclosure portion of the specification and not to the claims.⁶⁰ The Federal Circuit found the error to be "harmless," however, because the district court applied the right statutory provision in finding the term "partially soluble" too vague to meet the requirements of the second paragraph.⁶¹

54. *Id.* at 1547, 221 U.S.P.Q. at 6.

55. *Id.*

56. 774 F.2d 448, 227 U.S.P.Q. 293 (Fed. Cir. 1985).

57. *Standard Oil Co. v. American Cyanamid Co.*, 774 F.2d 448, 453, 227 U.S.P.Q. 293, 297 (Fed. Cir. 1985).

58. *Id.* at 451, 227 U.S.P.Q. at 295.

59. *Id.* Neither term was defined in the specification. Although not discussed in the Federal Circuit's opinion, the district court found there was no generally accepted definition of the term "partially soluble." *Standard Oil Co. v. American Cyanamid Co.*, 585 F. Supp. 1481, 1486, 224 U.S.P.Q. 210, 217 (E.D. La. 1984), *aff'd in part and remanded in part*, 774 F.2d 448, 227 U.S.P.Q. 293 (Fed. Cir. 1985). Standard Oil argued that the term "partially soluble" meant the same as "slightly soluble" and "practically insoluble" (two terms that were well defined in the literature) and offered expert testimony to prove that point. *Standard Oil*, 774 F.2d at 452, 227 U.S.P.Q. at 296. However, particularly in view of the fact that the literature defined "slightly soluble" differently from "practically insoluble," the court rejected Standard Oil's argument that the terms were synonymous. *Id.* at 453, 227 U.S.P.Q. at 297.

60. *Standard Oil*, 774 F.2d at 453, 227 U.S.P.Q. at 297.

61. *Id.*

In *Seattle Box Co. v. Industrial Crating & Packing, Inc.*,⁶² the court considered whether the term “substantially equal to” in the patent claims makes the claimed subject matter indefinite and, therefore, the claims invalid.⁶³ The court observed that claims involving words of degree are often problematic.⁶⁴ The court stated that it is the task of the district court to determine whether the specification provides a standard for measuring degree, such that a person skilled in the art can understand the claim, in light of the specification.⁶⁵ The court stated that, because the district court found that “an expert” would know the limitations of the claims, the claims would not be invalid even if experimentation was needed to determine the limits of the claims.⁶⁶

In another case involving words of degree, *Amgen, Inc. v. Chugai Pharmaceutical Co.*,⁶⁷ the Federal Circuit considered whether the district court properly held two claims invalid because of their recitation of specific activity limitations of “at least about 160,000.”⁶⁸ Genetics Institute, one of the co-defendants, asserted on appeal that there was no evidence that claims 4 and 6 of the patent at issue did not comply with section 112.⁶⁹

The district court noted that “bioassays provide an imprecise form of measurements with a range of error.”⁷⁰ Given this, the district court found the use of the term “about 160,000 IU/AU,” coupled with the range of error already inherent in specific activity limitation, served neither to distinguish the invention over the close prior art (which described preparations of 120,000 IU/AU), nor to permit one skilled in the art to know what specific activity values below 160,000, if any, might constitute infringement.⁷¹

62. 731 F.2d 818, 221 U.S.P.Q. 568 (Fed. Cir. 1984).

63. *Seattle Box Co. v. Industrial Crating & Packing, Inc.*, 731 F.2d 818, 826, 221 U.S.P.Q. 568, 573-74 (Fed. Cir. 1984).

64. *Id.*

65. *Id.* at 826, 221 U.S.P.Q. at 574. The court noted: “That some claim language may not be precise, however, does not automatically render a claim invalid. When a word of degree is used the district court must determine whether the patent’s specification provides some standard for measuring that degree.” *Id.*

66. See *W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1557, 220 U.S.P.Q. 303, 316 (Fed. Cir. 1983) (stating that absence from specification of specific formula for calculating reach of claims is irrelevant if one skilled in art would understand how to measure limits).

67. 927 F.2d 1200, 18 U.S.P.Q.2d 1016 (Fed. Cir.), *cert. denied*, 112 S. Ct. 169 (1991).

68. *Amgen, Inc. v. Chugai Pharmaceutical Co.*, 927 F.2d 1200, 1217, 18 U.S.P.Q.2d 1016, 1030 (Fed. Cir.), *cert. denied*, 112 S. Ct. 169 (1991).

69. *Id.*

70. *Amgen, Inc. v. Chugai Pharmaceutical Co.*, No. 87-2617-Y, 1989 U.S. Dist. LEXIS 16,110, at *205, 13 U.S.P.Q.2d 1737, 1768 (D. Mass. 1990).

71. *Id.*

Furthermore, another of the co-defendants questioned whether the specific activity value of 138,000 IU/AU, for its own product, was within the claimed coverage. The district court required that the original claim limitation, "at least 120,000," be amended to recite "at least about 160,000" because of a prior art publication showing the specific activity value of 128,620 IU/AU.⁷² The district court found that the addition of the word "about" constituted an effort to recapture a mean activity somewhere between the original, albeit anticipated value and 160,000 IU/AU.⁷³ Finally, the district court noted that nothing in the specification, the prosecution history, the prior art, the expert testimony, or the inventor's testimony of record indicated what range of specific activity was covered by the term "about."⁷⁴ In affirming the district court, the Federal Circuit cautioned that its holding that the term "about" renders claims 4 and 6 indefinite should not be understood to rule out any and all uses of this term in patent claims.⁷⁵ The court speculated that the term could be acceptable in appropriate fact situations.⁷⁶

In both *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*⁷⁷ and *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*,⁷⁸ the Federal Circuit made it clear that the definiteness requirement of the second paragraph cannot be used to require more precise language than the relevant technology permits, or is capable of generating. In *Orthokinetics*, the patent for a collapsible wheelchair, designed for convenient storage in and out of an automobile, was at issue.⁷⁹ The district court concluded that the claim limitation, describing the wheelchair as "so dimensioned" as to fit inside an automobile, rendered the claim invalid under the second paragraph.⁸⁰ The district court reasoned that, as a result of the imprecision of the term "so dimensioned," one seeking to build a noninfringing wheelchair could not determine whether the chair would violate the claim without first constructing

72. *Id.* at *206, 13 U.S.P.Q.2d at 1768.

73. *Id.*

74. *Id.*

75. *Amgen*, 927 F.2d at 1218, 18 U.S.P.Q.2d at 1030.

76. *Id.* (citing *W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1557, 220 U.S.P.Q. 303, 316 (Fed. Cir. 1983) (stating that "use of 'stretching . . . at a rate exceeding about 10% per second' in the claims is not indefinite")).

77. 806 F.2d 1565, 1 U.S.P.Q.2d 1081 (Fed. Cir. 1986).

78. 802 F.2d 1367, 231 U.S.P.Q. 81 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947 (1987).

79. *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1575, 1 U.S.P.Q.2d 1081, 1089 (Fed. Cir. 1986).

80. *Id.* at 1575-76, 1 U.S.P.Q.2d at 1090. The claim language was as follows:

Wherein said front leg portion is so dimensioned as to be insertable through the space between the door frame of an automobile and one of the seats thereof.

Id.

a model and testing the model on vehicles of various sizes.⁸¹ The Federal Circuit rejected this analysis, however, and stressed that it is not the function of the claims to describe every possible dimension of a claimed feature.⁸²

According to the Federal Circuit, the question of claim invalidity under the second paragraph requires a determination of whether those skilled in the art would understand what is claimed when the claim is read in light of the specification.⁸³ The Federal Circuit concluded from the patent specification that one of ordinary skill in the art would easily have been able to determine the appropriate dimensions of the wheelchair using the disputed term.⁸⁴

In *Hybritech*, an immunometric monoclonal antibody sandwich assay was the subject matter of the patent at issue.⁸⁵ The relevant claim language referred to “monoclonal antibodies having an affinity for the antigenic substance of at least about 10⁸ liters/mole for each of said labeled antibody and said antibody bound to a solid carrier.”⁸⁶ The district court held that the claims were indefinite because, given the fact that the antibody affinity cannot be consistently estimated, the claims did not disclose how to avoid infringement.⁸⁷

The Federal Circuit reversed, relying on evidence indisputably showing that calculating affinity was known in the art at the time of the Hybritech patent’s filing.⁸⁸ The court observed that, while there may not have been any “standard” set of experimental conditions used to estimate affinities, the claims, when read in light of the specification, reasonably apprised those skilled in the art. The court went on to conclude that the claim language was as precise as the subject matter permitted.⁸⁹

In *Andrew Corp. v. Gabriel Electronics, Inc.*,⁹⁰ the district court found the patent for an improvement in a horn reflector microwave antenna to be invalid for indefiniteness under the second paragraph.⁹¹ Furthermore, the district court found that the patent, if valid, would

81. *Id.*

82. *Id.* at 1576, 1 U.S.P.Q.2d at 1090.

83. *Id.*

84. *Id.*

85. *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1369, 231 U.S.P.Q. 81, 83 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947 (1987).

86. *Id.* at 1370, 231 U.S.P.Q. at 84.

87. *Id.* at 1371, 231 U.S.P.Q. at 84.

88. *Id.* at 1385, 231 U.S.P.Q. at 97.

89. *Id.*

90. 847 F.2d 819, 6 U.S.P.Q.2d 2010 (Fed. Cir.), *cert. denied*, 488 U.S. 927 (1988).

91. *Andrew Corp. v. Gabriel Elecs., Inc.*, 847 F.2d 819, 821, 6 U.S.P.Q.2d 2010, 2011 (Fed. Cir.), *cert. denied*, 488 U.S. 927 (1988).

be infringed by Gabriel.⁹² The district court stated that the recited terms “approach each other,” “close to,” “substantially equal to,” and “closely approximate” were particularly indefinite.⁹³ At trial, the patentee, Andrew Corporation, asserted that the claims could not reasonably be expressed more precisely.⁹⁴

The district court recognized that prior art patents dealing with similar technology and using similar terms existed, but still held the patent invalid.⁹⁵ The Federal Circuit, reversing the district court, found that neither the record nor the law supported the position that one of ordinary skill in the art would not know when certain claimed terms were “substantially equal” or “closely approximate.”⁹⁶

Significantly, in *Andrew Corp.*, the Federal Circuit rejected the theory that claims must specifically delineate the point at which infringement starts.⁹⁷ The court further rejected the proposition that, if such a point does not correspond to an unexpected change in properties, the claims are fatally flawed under section 112.⁹⁸

92. *Id.*

93. *Id.*

94. *Id.*

95. *Id.* at 823, 6 U.S.P.Q.2d at 2012.

96. *Id.* at 822, 6 U.S.P.Q.2d at 2012.

97. *Id.*

98. *Id.* at 822-23, 6 U.S.P.Q.2d at 2013-14. The court found this proposition erroneous because it would prevent a patentee from obtaining claims that did not coincide with the exact point at which a change in the physical phenomenon occurs and that such a theory would require the patentee always to discover that point, no matter how prolonged or expensive the additional research. *Id.* The court said such a theory would prevent patent protection when the change at issue involved naturally gradual or incremental changes at its transition. *Id.* at 823, 6 U.S.P.Q.2d at 2014. The court stated:

Patentability is not measured against the closest point on the road to invention. Much technological change that meets the criterion of unobviousness, when viewed in light of the prior art, has a fuzzy boundary at its point of origin. Technological differences from prior art usually become more pronounced with distance from the boundary, but the changes may become manifest gradually. Indeed, the location of the boundary may well change with the available precision of measurement.

Id. The court further noted that patentability is tested against the “prior art,” and that the patentee is not required to show some technological discontinuity between the claimed invention and the subject matter just outside the claims. *Id.* The court reasoned that 35 U.S.C. § 103 requires only that the claimed subject matter be nonobvious in view of the prior art. *Id.* The court stated:

The law imposes no obligation on a patent applicant to determine what is going on in the technological gap between the claimed invention and the prior art, or to set the claim limits at the precise technological edge of the invention. A claim is not fatally indefinite for failing specifically to delineate the point at which the change in physical phenomenon occurs.

Id.; see *McClain v. Ortmayer*, 141 U.S. 419, 423-24 (1891) (“Nothing is better settled in the law of patents than that the patentee may claim the whole or only a part of his invention, and that if he only describes and claims a part, he is presumed to have abandoned the residue to the public.”).

In *Slimfold Manufacturing Co. v. Kinhead Industries*,⁹⁹ a decision concerning the second paragraph, the Federal Circuit held that a lack of antecedent support for a claim limitation does not necessarily render the claim invalid for indefiniteness.¹⁰⁰ According to the Federal Circuit, as long as the scope of the claim, when read in light of the specification, is clear to one of ordinary skill in the art, the definiteness requirement is satisfied.¹⁰¹ As issued, Slimfold's claim recited a metal door assembly and included a clause stating "releasable latch means operatively arranged between said head portion and said sleeve for releasably retaining said head in a retracted position adjacent said collar."¹⁰² During a subsequent reissue proceeding, the PTO examiner rejected the claim as vague and indefinite because of the absence of an antecedent basis for the claimed term "collar." In an effort to overcome the rejection, Slimfold amended the claim to provide antecedent support by adding the term "a collar on said sleeve."¹⁰³

In order to determine whether the reissue claim was substantially "identical" to the issued claim, the Federal Circuit first had to decide whether the addition of antecedent support was necessary to render the issued claim definite for purposes of the second paragraph.¹⁰⁴ To determine the definiteness of the original claim, the Federal Circuit turned to the specification. Noting that claims are not interpreted in a vacuum, the court reasoned that claims are part of, and are to be read in light of, the specification.¹⁰⁵ Because only one collar appeared in the specification and it appeared in only one place, the court concluded that, when read in light of the specification, the original claim was definite.¹⁰⁶

In *In re Corkill*,¹⁰⁷ the Federal Circuit considered the effect of inoperative embodiments on the indefiniteness requirement. The Board of Patent Appeals agreed with the PTO examiner's position that it was not clear whether the claimed particle sizes referred to single zeolite crystals or to agglomerates comprised of smaller crystals.¹⁰⁸ Certain Corkill declarants stated that particles larger than ten microns led to unacceptable deposition on clothing and washing

99. 810 F.2d 1113, 1 U.S.P.Q.2d 1563 (Fed. Cir. 1987).

100. *Slimfold Mfg. Co. v. Kinhead Indus.*, 810 F.2d 1113, 1114, 1 U.S.P.Q.2d 1563, 1564 (Fed. Cir. 1987).

101. *Id.*

102. *Id.* at 1115, 1 U.S.P.Q.2d at 1565.

103. *Id.*

104. *Id.* at 1116-17, 1 U.S.P.Q.2d at 1566.

105. *Id.* at 1117, 1 U.S.P.Q.2d at 1566.

106. *Id.*, 1 U.S.P.Q.2d at 1567.

107. 771 F.2d 1496, 226 U.S.P.Q. 1005 (Fed. Cir. 1985).

108. *In re Corkill*, 771 F.2d 1496, 1500-01, 226 U.S.P.Q. 1005, 1009 (Fed. Cir. 1985).

machine surfaces.¹⁰⁹ On the other hand, another Corkill declarant stated that agglomerates up to 100 microns would perform acceptably in some applications, provided that the constituent crystals were sufficiently small.¹¹⁰

Corkill argued that simple experimentation would show which particles worked and, as such, would be covered by the claims. The PTO argued that even if particles larger than ten microns met the rate limitation, they would be unsatisfactory for Corkill's purposes because they would form unacceptable deposits.¹¹¹

The Federal Circuit determined that the evidence submitted by Corkill supported the Solicitor's statement that Corkill's "claims do not correspond in scope to what they regard as their invention."¹¹² The court held that claims which included a "substantial measure" of inoperative embodiments were fairly rejected.¹¹³

B. Defining What Applicant Regards As the Invention

The second requirement of the second paragraph demands that claims define what the applicant regards as the invention.¹¹⁴ This requirement dictates that while an applicant may claim whatever is regarded as the invention, subject matter that is not regarded as the invention cannot be claimed. The Federal Circuit has not had the opportunity to consider this second requirement.¹¹⁵ Since the Federal Circuit has adopted the precedent of its predecessor courts, it is necessary to consult the opinions of the Court of Customs and Patent Appeals (C.C.P.A.) to gain a historical appreciation for the development of this area of the law.¹¹⁶

109. *Id.* at 1501, 226 U.S.P.Q. at 1009.

110. *Id.*

111. *Id.*

112. *Id.*

113. *Id.* (citing *In re Cook*, 439 F.2d 730, 734-35, 169 U.S.P.Q. 298, 302 (C.C.P.A. 1971)); *see Atlas Powder Co. v. E.I. Du Pont de Nemours & Co.*, 750 F.2d 1569, 1576-77, 224 U.S.P.Q. 409, 414 (Fed. Cir. 1984) (noting that although presence of some inoperative substances do not render claim invalid, significant number of inoperative combinations, requiring undue experimentation by one with ordinary skill in art, may render claim invalid); *see also Diversitech Corp. v. Century Steps, Inc.*, 850 F.2d 675, 7 U.S.P.Q.2d 1315 (Fed. Cir. 1988) (finding it improper for district court to redraft claims and then subsequently hold redrafted claims invalid).

114. *See In re Borkowski*, 422 F.2d 904, 164 U.S.P.Q. 645 (C.C.P.A. 1970) (stating need for precision in defining subject matter of claim language as required by section 112, second paragraph).

115. *Cf. In re Corkill*, 771 F.2d 1496, 1500, 226 U.S.P.Q. 1005, 1008 (Fed. Cir. 1985) (noting that "claims do not correspond in scope to what they regard as their invention" but finding indefiniteness was issue on review).

116. *See In re Brower*, 433 F.2d 813, 167 U.S.P.Q. 48 (C.C.P.A. 1974) (holding that patent application must disclose invention pursuant to section 112, first paragraph); *In re Prater*, 415 F.2d 1393, 162 U.S.P.Q. 541 (C.C.P.A. 1969) (invalidating patent for failure to claim distinctly subject matter that applicant regarded as invention).

III. THE FIRST PARAGRAPH

The Federal Circuit has addressed several issues under the first paragraph of section 112.¹¹⁷ The following case discussions have been grouped according to these different issues.

A. *The Enablement Requirement*1. *Commensurate in scope*

The term "undue breadth" is sometimes utilized by the PTO to reject claims deemed "broader than the scope of enablement" present in the application.¹¹⁸ Undue breadth rejections occur less frequently today than in the past, perhaps because the C.C.P.A. reversed several Board decisions that were premised on the PTO's failure to clarify which requirement of section 112 the applicant failed to satisfy.¹¹⁹

The Federal Circuit in *United States v. Telectronics, Inc.*¹²⁰ considered the issue of whether enablement is commensurate in scope with the claim in an *inter partes* situation. In the case, Telectronics alleged that the patent for a bone growth stimulator device was invalid for nonenablement because the disclosure did not bear a reasonable relationship to the scope of the claims.¹²¹ Telectronics admitted that the patent disclosed how to practice the invention if the electrodes were comprised of one metal/current combination—stainless steel and a current in the range of five to twenty microamperes. Telectronics asserted, however, that the claims were not limited to that specific metal/current combination, and therefore the full scope of the claims was not enabled by the specification.¹²²

The district court agreed that the disclosure was inadequate for electrodes made of materials other than stainless steel, and that an

117. See 35 U.S.C. § 112 (1988). Paragraph 1 reads as follows:

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

Id.

118. MANUAL OF PATENT EXAMINING PROCEDURE § 76.03(2); LESTER HORWITZ, 1C PATENT OFFICE RULES AND PRACTICE (Bender 1990).

119. See, e.g., *In re Robins*, 429 F.2d 452, 456, 166 U.S.P.Q. 552, 556 (C.C.P.A. 1970); *In re Fisher*, 427 F.2d 833, 839, 166 U.S.P.Q. 18, 23 (C.C.P.A. 1970); *In re Borkowski*, 422 F.2d 904, 909, 164 U.S.P.Q. 642, 646 (C.C.P.A. 1970).

120. 857 F.2d 778, 8 U.S.P.Q.2d 1217 (Fed. Cir. 1988), *cert. denied*, 490 U.S. 1046 (1989).

121. *United States v. Telectronics, Inc.*, 857 F.2d 778, 779, 8 U.S.P.Q.2d 1217, 1218 (Fed. Cir. 1988), *cert. denied*, 490 U.S. 1046 (1989).

122. *Id.*

undue amount of experimentation would be necessary for electrodes made of materials other than stainless steel. As a result, the district court combined both nonenablement concepts of "undue experimentation" and "not commensurate in scope."¹²³

The Federal Circuit, in *Telectronics*, found that the findings and conclusions of the district court were insufficient to constitute the clear and convincing proof needed to find a U.S. patent invalid based on nonenablement. The court found, as *Telectronics* admitted, that the patent disclosures were enabling with respect to the stainless steel electrodes for the current range set out in the specification.¹²⁴ The specification showed that the current range was determined by a dose response test. The district court found that one skilled in this art would know how to conduct such a response study to determine the appropriate range of current for use with other materials. Yet the district court, in invalidating the patent, focused on the time and expense of such studies.¹²⁵

The Federal Circuit reversed the district court, finding that the time and expense of such studies, standing alone, were unpersuasive to show that excessive experimentation would be required.¹²⁶ Because the specification disclosed one embodiment and the general manner for ascertaining current range, the court recognized that other permutations of the claimed invention could be practiced without undue experimentation.¹²⁷ Citing *In re Fisher*¹²⁸ and *In re Bowen*,¹²⁹ the Federal Circuit reversed because it was nonetheless convinced that the case before it mandated a different result. The court found no persuasive reason in the record as to why the specification did not realistically enable one skilled in the art to practice the invention as broadly as claimed.¹³⁰

123. *Id.* at 784-85, 8 U.S.P.Q.2d at 1223.

124. *Id.* at 786, 8 U.S.P.Q.2d at 1224.

125. *Id.* at 785, 8 U.S.P.Q.2d at 1223 (referring to district court's finding that dose response studies typically cost \$40,000 to \$50,000 and require six to twelve months).

126. *Id.* (citing *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384, 231 U.S.P.Q. 81, 94 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947 (1987)).

127. *Id.* at 786, 8 U.S.P.Q.2d at 1223.

128. 427 F.2d 833, 166 U.S.P.Q. 18 (C.C.P.A. 1970). The court in *In re Fisher* noted that "[i]n cases involving unpredictable factors, such as most chemical reactions and physiological activity, the scope of enablement obviously varies inversely with the degree of unpredictability of the factors involved." *In re Fisher*, 427 F.2d 833, 838-39, 166 U.S.P.Q. 18, 23-24 (C.C.P.A. 1970).

129. 492 F.2d 859, 181 U.S.P.Q. 48 (C.C.P.A. 1974).

130. *Telectronics*, 857 F.2d at 786, 8 U.S.P.Q.2d at 1224. The Federal Circuit noted the district court's finding that the dose response study could be performed by those "expert in the field . . . doing electrical stimulation experiments." *Id.*

In *United States Steel Corp. v. Phillips Petroleum Co.*,¹³¹ the Federal Circuit again addressed the issue of whether the scope of enablement is reasonably commensurate with the full scope of protection claimed. The court held that because application sufficiency must be judged as of the filing date under section 112, Phillips' patent claims were not invalid because the patent was entitled to the filing date of its parent application under 35 U.S.C. § 120. Additionally, the court found that the claims were adequately supported as of the date of the parent application.¹³²

The invention at issue was crystalline polypropylene. Phillips originally filed the patent application in 1953. In 1956, Phillips filed a continuation-in-part (CIP) application, finally resulting in the 1983 patent-in-suit.¹³³

At the district court level, defendants made numerous arguments to invalidate the Phillips patent; their primary argument was that the patent was invalid under 35 U.S.C. § 102(e) as anticipated by a patent filed in 1955. Phillips did not dispute that defendants' reference predated its CIP application filing date. To overcome the reference, however, Phillips claimed that it was entitled to rely on the filing date of its 1953 application under section 120.¹³⁴

Defendants argued that the 1953 application did not describe the entire class of compounds falling within the claims of the CIP application. Specifically, defendants asserted that the application specified intrinsic viscosities between a range of 0.2 to 1.0, and thus did not describe defendants' polypropylenes, all of which had intrinsic viscosities above 1.0. The district court, however, found that the claims of Phillips' CIP application did not contain a limitation regarding intrinsic viscosity.¹³⁵ The district court therefore concluded that Phillips satisfied both the written description and enablement requirements of section 112. Under section 120, the district court held that Phillips was entitled to rely on the filing date of the 1953 parent application.¹³⁶

On appeal to the Federal Circuit, defendants argued that the district court misstated the law. They maintained that if a claim embraces subject matter for which no adequate basis exists in the underlying disclosure, the claim is too broad. In particular, defend-

131. 865 F.2d 1247, 9 U.S.P.Q.2d 1461 (Fed. Cir. 1989).

132. *United States Steel Corp. v. Phillips Petroleum Co.*, 865 F.2d 1247, 1249, 9 U.S.P.Q.2d 1461, 1462 (Fed. Cir. 1989).

133. *Id.*

134. *Id.* at 1250, 9 U.S.P.Q.2d at 1464.

135. *Id.*, 9 U.S.P.Q.2d at 1463.

136. *Id.*

ants contended that the differences in intrinsic viscosity and average molecular weight made it clear that the scope of enablement of the 1953 application was not commensurate with the scope of the later claim.¹³⁷

The Federal Circuit noted that, while the adequacy of support is judged in relation to the scope of the claims, the "application sufficiency" must be judged as of the filing date.¹³⁸ Therefore, the court stated, the claim of the patent should be treated as of the 1953 filing date. Only if the claim would, at that time, have been correctly rejected for lack of support in the 1953 specification, would Phillips be denied the use of section 120.¹³⁹ The Federal Circuit viewed defendants' argument as the same as that improperly relied on by the PTO in *In re Hogan*.¹⁴⁰ The court concluded that the fact that the claim covered a later version of the claimed composition related to infringement and not to patentability.¹⁴¹

In determining the sufficiency of support, the Federal Circuit reasoned that the state of the art and the level of skill in the art in 1953 were critical.¹⁴² Examining the state of the art in 1953, the Federal Circuit concluded that no one at that time thought it possible that propylene monomers could be polymerized into polypropylene with an intrinsic viscosity of 1.7 to 2.0 and an average molecular weight approaching 50,000.¹⁴³ The court, citing *In re Koller*,¹⁴⁴ noted that while the disclosure of specifics adds to the understanding one skilled in the art would glean from a generic term, it does not follow that such added disclosure limits the claim's meaning.¹⁴⁵

In *Hormone Research Foundation v. Genentech, Inc.*,¹⁴⁶ the Federal Circuit considered a district court's error in applying *In re Fisher* and *In re Hogan*. Hormone Research appealed the grant of summary judgment by the district court, which found that Genentech did not in-

137. *Id.* at 1250-51, 9 U.S.P.Q.2d at 1464.

138. *Id.* at 1251, 9 U.S.P.Q.2d at 1464 (citing *In re Glass*, 492 F.2d 1228, 1232, 181 U.S.P.Q. 31, 34 (C.C.P.A. 1974)); see *In re Hogan*, 559 F.2d 595, 604, 194 U.S.P.Q. 527, 535 (C.C.P.A. 1977) (ruling that PTO cannot rely on what occurred in art after filing date to establish application insufficiency); *In re Koller*, 613 F.2d 819, 823, 204 U.S.P.Q. 702, 706 (C.C.P.A. 1977) (holding that compliance with section 112, paragraph one, is judged as of date of application's filing).

139. *United States Steel Corp.*, 865 F.2d at 1251, 9 U.S.P.Q.2d at 1464.

140. *Hogan*, 559 F.2d at 607, 194 U.S.P.Q. at 538. *Hogan* involved the same patent at issue in *United States Steel Corp.* *Id.*

141. *United States Steel Corp.*, 865 F.2d at 1251, 9 U.S.P.Q.2d at 1464.

142. *Id.* at 1252, 9 U.S.P.Q.2d at 1465.

143. *Id.*, 9 U.S.P.Q.2d at 1464.

144. *In re Koller*, 613 F.2d 819, 204 U.S.P.Q. 702 (C.C.P.A. 1980).

145. *United States Steel Corp.*, 865 F.2d at 1251, 9 U.S.P.Q.2d at 1465.

146. 904 F.2d 1558, 15 U.S.P.Q.2d 1039 (Fed. Cir. 1990), *cert. dismissed*, 111 S. Ct. 1434 (1991).

fringe certain claims of the '833 patent and that these same claims were invalid for nonenablement.¹⁴⁷ Specifically, the district court granted Genentech's motion because, in its view, the solid-phase peptide synthesis process disclosed in the specification would not have been sufficient to produce materials either as lengthy as the claimed polypeptide sequence or in as pure a form and having the potency of natural human growth hormone (HGH).¹⁴⁸

The Federal Circuit held that the enablement question should not have been resolved summarily.¹⁴⁹ Although the district court indicated that Genentech produced considerable evidence showing that the disclosed sequencing method could not have yielded polypeptide sequences as lengthy as those claimed (190 amino acids), the Federal Circuit found other evidence in the record that raised a genuine issue about this material fact.¹⁵⁰ Specifically, the Federal Circuit reasoned that several journal articles cited in the record supported the disclosure in the specification that the claimed method produced the material documented in the '833 patent and that such a material exhibited ectogenic activity. Resolving all inferences in favor of the nonmovant, Hormone Research, the Federal Circuit held that summary judgment was precluded.¹⁵¹

Further, the court was unconvinced that Genentech was "entitled to a judgment as a matter of law."¹⁵² Reversing the summary judgment, the Federal Circuit reasoned that while the district court correctly applied the principles in *In re Fisher*,¹⁵³ it failed to consider the effect of *In re Hogan*¹⁵⁴ on the resolution of the enablement issues.¹⁵⁵

Applying *In re Hogan*, the Federal Circuit stated that although purer compounds might be produced using more advanced technology, that fact does not necessarily mean that the enabling disclosure

147. *Hormone Research Found. v. Genentech, Inc.*, 904 F.2d 1558, 1559, 15 U.S.P.Q.2d 1039, 1040 (Fed. Cir. 1990), *cert. denied*, 111 S. Ct. 1434 (1991).

148. *Id.* at 1561, 15 U.S.P.Q.2d at 1041.

149. *Id.* at 1567, 15 U.S.P.Q.2d at 1047.

150. *Id.* at 1567-68, 15 U.S.P.Q.2d at 1047-48.

151. *Id.* at 1568, 15 U.S.P.Q.2d at 1047.

152. *See* FED. R. CIV. P. 56(c) (providing for summary judgment on pleadings where moving party contends opponent presented no genuine issue of material fact).

153. 427 F.2d 833, 839, 166 U.S.P.Q. 18, 23 (C.C.P.A. 1970) (prohibiting inventor with insufficiently supported claims to encompass future compositions on larger scale than originally obtainable, particularly where unpredictable factors such as chemical reactions and physiological activity are involved, as opposed to more predictable factors such as mechanical or electrical elements).

154. 559 F.2d 595, 606, 194 U.S.P.Q. 527, 537 (C.C.P.A. 1977) (noting relevance of distinction between predictable and unpredictable fields of invention).

155. *Hormone Research*, 904 F.2d at 1568, 15 U.S.P.Q.2d at 1048 (citing *United States Steel Corp.*, 865 F.2d at 1251, 9 U.S.P.Q.2d at 1464).

contained in the specification was insufficient at the time of filing. The record did not clearly show whether a more advanced recombinant DNA methodology existed at the time the application was filed. Therefore, the court believed it was necessary for the district court to conduct further factfinding on the state of the art at the time and to consider the principles of *In re Hogan* before appellate review of the relevant enablement issues could occur.¹⁵⁶ Consequently, the Federal Circuit vacated the part of the summary judgment that found the asserted claims to be invalid.¹⁵⁷

In *Amgen, Inc. v. Chugai Pharmaceutical Co.*,¹⁵⁸ the Federal Circuit considered several issues of alleged nonenablement asserted by each party against patents owned by the other. The district court's application of *In re Fisher* was considered in one issue. There were two patents-in-suit.¹⁵⁹ The first was U.S. Patent No. 4,677,195 (the '195 patent), entitled "Method for the Purification of Erythropoietin and Erythropoietin Compositions." The '195 patent was assigned to Genetics Institute, Inc. (GI), one of the co-defendants. This patent claimed both homogeneous erythropoietin (EPO) and compositions thereof, and a method for purifying human EPO using reverse-phase-high performance liquid chromatography. Only the homogeneous EPO and composition claims were at issue.¹⁶⁰ The second patent was U.S. Patent No. 4,703,008 (the '008 patent), entitled "DNA Sequences Encoding Erythropoietin." The '008 patent was assigned to Amgen. The claims of the '008 patent covered purified and isolated DNA sequences that encode EPO and host cells transformed or transfected with a DNA sequence.¹⁶¹

After a trial by a magistrate, the district court entered a judgment based on the findings of fact and conclusions of law set forth by the magistrate.¹⁶² With respect to the Amgen patent, the district court found claims 7, 8, 23-27, and 29 to be invalid for lack of enablement

156. *Id.* at 1568-69, 15 U.S.P.Q.2d at 1048.

157. *Id.* at 1569, 15 U.S.P.Q.2d at 1048.

158. 927 F.2d 1200, 18 U.S.P.Q.2d 1016 (Fed. Cir.), *cert. denied*, 112 S. Ct. 169 (1991). This appeal addresses several other issues as well. For analysis on best mode, see *infra* notes 666-84 and accompanying text; for analysis of validity under sections 102(g) and 103, and indefiniteness, see *supra* notes 67-76 and accompanying text.

159. *Amgen, Inc. v. Chugai Pharmaceutical Co.*, 927 F.2d 1200, 1203, 18 U.S.P.Q.2d 1016, 1018 (Fed. Cir.), *cert. denied*, 112 S. Ct. 169 (1991). Both patents concern purified erythropoietin (EPO). *Id.* EPO is a protein consisting of 165 amino acids that stimulate the production of red blood cells. *Id.* It is therefore a useful therapeutic agent in the treatment of anemias or blood disorders characterized by low or defective bone marrow production of red blood cells. *Id.*

160. *Id.*, 18 U.S.P.Q.2d at 1018-19.

161. *Id.* at 1203-04, 18 U.S.P.Q.2d at 1019.

162. *Id.* at 1205, 18 U.S.P.Q.2d at 1020.

under section 112. In the alternative, the district court stated that the claims, if valid, were infringed by GI.¹⁶³

On appeal, Amgen first argued that the district court's holding that claim 7 of the '008 patent was not enabled without undue experimentation constituted legal error.¹⁶⁴ Claim 7 involved a generic claim, covering all possible DNA sequences encoding polypeptides having an amino acid sequence "sufficiently duplicative" of EPO to possess the property of increasing the production of red blood cells.¹⁶⁵ Amgen, citing *In re Wands*,¹⁶⁶ specifically argued that the district court erred because it did not properly address factors that the Federal Circuit held must be considered in determining lack of enablement based on an assertion of undue experimentation.¹⁶⁷ Citing *In re Fisher*,¹⁶⁸ the Federal Circuit considered at the outset the "essential question"—whether the scope of enablement of claim 7 was as broad as the scope of the claim itself.¹⁶⁹

The district court found that over 3600 different EPO analogs could be made by a substitution at only a single amino acid position, and over a million different analogs could be made by a substitution of three amino acids.¹⁷⁰ The language of the '008 patent itself indicated that it embraced a means for the preparation of "numerous" polypeptide analogs of EPO.¹⁷¹ The district court then noted that the number of claimed DNA-encoding sequences that could produce an EPO-like product was potentially enormous.¹⁷²

In its holding of "nonenablement without undue experimentation," the district court also considered the deposition of the head of Amgen's EPO analog program.¹⁷³ This witness stated that he was uncertain as to whether Amgen's fifty to eighty EPO analogs had the

163. *Id.* at 1203, 18 U.S.P.Q.2d at 1018.

164. *Id.* at 1212-14, 18 U.S.P.Q.2d at 1026-28. Claims 8, 23-27, and 29 were not argued separately, and were held to stand or fall with claim 7. *Id.*; see *In re Dillon*, 919 F.2d 688, 692, 16 U.S.P.Q.2d 1897, 1900 (Fed. Cir. 1990) (in banc) (holding that it is not Federal Circuit's practice to review claims not argued separately before PTO Board, given Board's expertise in assessing patentability of each individual claim).

165. *Amgen*, 927 F.2d at 1212, 18 U.S.P.Q.2d at 1026.

166. 858 F.2d 731, 8 U.S.P.Q.2d 1400 (Fed. Cir. 1988).

167. *Amgen*, 927 F.2d at 1212, 8 U.S.P.Q.2d at 1026 (citing *In re Wands*, 858 F.2d 731, 8 U.S.P.Q.2d 1400 (Fed. Cir. 1988) (noting that "undue experimentation" is reached by weighing many factual considerations relating to claim and state of art)).

168. 427 F.2d 833, 166 U.S.P.Q. 18 (C.C.P.A. 1970).

169. *In re Fisher*, 427 F.2d 833, 839, 166 U.S.P.Q. 18, 23 (C.C.P.A. 1970) (holding that section 112, first paragraph, requires that scope of claim bear reasonable correlation to scope of enablement provided in specification); see CHISUM, *supra* note 20, § 7.03[7][b] (discussing enablement requirement under first paragraph of 112).

170. *Amgen*, 927 F.2d at 1213, 18 U.S.P.Q.2d at 1026.

171. *Id.*

172. *Id.*

173. *Id.*

desired biological property. The court also relied on the lack of predictability in the art, as demonstrated by the testimony of another scientist who testified concerning these qualities.¹⁷⁴

The Federal Circuit stated that the district court arrived at the right decision, but for the wrong reason. Specifically, by focusing on the biological properties of the EPO analogs, the district court failed to consider the enablement of the DNA sequence analogs that were the subject of claim 7.¹⁷⁵ For DNA sequences, the Federal Circuit stated that to provide a disclosure sufficient to enable one skilled in the art to carry out the invention commensurate with the scope of his claims, enough sequences must be disclosed to justify a grant of the claims sought.¹⁷⁶ The Federal Circuit concluded that Amgen's disclosure had not satisfied that requirement.¹⁷⁷

Additionally, the Federal Circuit stated that it is not necessary for a court to review all of the *Wands* factors in assessing the enablement of a disclosure.¹⁷⁸ The court instructed that these factors are merely illustrative, not mandatory.¹⁷⁹ The court stated further that the facts of the particular case determine what is relevant. Here, the facts showed that Amgen's preparation of DNA sequences was not sufficiently enabling to support its all-encompassing claims.¹⁸⁰

The court noted that despite extensive statements in the specification concerning all analogs of the EPO gene that can be made, Amgen's enabling disclosure included only a few particular analogs and how to make them.¹⁸¹ Although such a disclosure might justify a generic claim encompassing these and similar analogs, the court found it inadequate to support a claim to *all* EPO gene analogs.¹⁸² The Federal Circuit found that the district court properly relied on *Fisher* in making its decision.¹⁸³ In affirming the district court, the Federal Circuit stipulated that, given the complexity of the EPO gene, the applicant must include more information in the specifica-

174. *Id.* at 1213, 18 U.S.P.Q.2d at 1027 (noting testimony of Dr. Goldwasser, another scientist who worked on procedures for purifying urinary EPO).

175. *Id.*

176. *Id.* (citing *In re Angstadt*, 537 F.2d 498, 502, 190 U.S.P.Q. 214, 218 (C.C.P.A. 1976)).

177. *Id.*

178. *Id.* The factors listed in *Wands* for determining whether a disclosure would require undue experimentation are the quality of experimentation necessary; the amount of guidance presented; whether or not working examples are included; the nature of the invention; the state of the prior art; the relative skill of ordinary experts in the field; the predictability of the art; and the breadth of the claims. *In re Wands*, 858 F.2d 731, 737, 8 U.S.P.Q.2d 1400, 1404 (Fed. Cir. 1988).

179. *Amgen*, 927 F.2d at 1213, 18 U.S.P.Q.2d at 1027.

180. *Id.*

181. *Id.*

182. *Id.*

183. *Id.* at 1214, 18 U.S.P.Q.2d at 1027.

tion, including the identity of various analogs within the scope of the claim, methods for making them, and structural requirements for producing compounds with EPO activity.¹⁸⁴

Amgen's second challenge on appeal was of the district court's determination that the '195 patent enabled a person of ordinary skill in the art to obtain homogeneous EPO, recombinant EPO (rEPO) and urinary EPO (uEPO) from natural sources having an *in vivo* specific activity of at least 160,000 IU/AU.¹⁸⁵ Based on expert testimony of both sides, the district court found that those skilled in the art would consider the claims to refer to *in vivo* rather than to *in vitro* specific activity, despite the absence of an express statement in the patent.¹⁸⁶

The Federal Circuit stated that it did not consider the district court's finding that the assay measurement was an *in vivo* specific activity to be erroneous, in view of the testimony the district court heard.¹⁸⁷ Thus, the question before the Federal Circuit was whether the district court erred in concluding that the claims requiring 160,000 IU/AU by an *in vivo* measurement were enabled. On this latter point, the Federal Circuit concluded that the district court erred.¹⁸⁸ Specifically, the Federal Circuit found that defendants produced no evidence that EPO was ever prepared with a specific activity of at least 160,000 IU/AU *in vivo* using the disclosed methods.¹⁸⁹ In viewing the record, the court referred to GI's report to the Food and Drug Administration (FDA) as setting forth a specific activity of only 109,000 IU/AU for uEPO.¹⁹⁰ GI originally arrived at the figure of 160,000 IU/AU by calculation before it had the capacity to derive quantitative information from bioassays. Moreover, the court noted that the work of others showed that Amgen did not enable the preparation of uEPO having an *in vivo* specific activity of at least 160,000, as the claims required.¹⁹¹ Finally, the Federal Circuit stated that the district court improperly relied on the *in vitro* test results of GI's expert because there was a lack of demonstrated correlation between these tests to *in vivo* results.¹⁹²

The court also held that the patent failed to enable purification of either rEPO or uEPO. The Federal Circuit stated two reasons for

184. *Id.*, 18 U.S.P.Q.2d at 1028.

185. *Id.* at 1215, 18 U.S.P.Q.2d at 1029.

186. *Id.* at 1216, 18 U.S.P.Q.2d at 1029.

187. *Id.*

188. *Id.*

189. *Id.*

190. *Id.*

191. *Id.*

192. *Id.* at 1216-17, 18 U.S.P.Q.2d at 1029-30.

this finding. First, there was no purification attempt set forth in the '195 patent for uEPO. Second, the only purification attempt on rEPO failed to produce homogeneous EPO.¹⁹³ The Federal Circuit concluded that Amgen had met its burden by successfully showing that these claims had not been adequately enabled.¹⁹⁴

2. The "how-to-make" requirement

a. Satisfying the requirement

Pursuant to section 112, a specification must adequately disclose to one skilled in the relevant art, how to make, or in the case of a process, how to carry out, the claimed invention without undue experimentation.¹⁹⁵ In *Spectra-Physics, Inc. v. Coherent, Inc.*,¹⁹⁶ the Federal Circuit held that the enablement requirement is satisfied as long as the specification discloses at least one method for making and using the claimed invention. The court further held that the failure to disclose other methods by which the claimed invention may be made does not render the claim invalid.¹⁹⁷

Spectra-Physics involved patents directed to a laser and to a method of making a laser. The issue before the Federal Circuit was whether the patents enabled one to attach certain copper cups to a ceramic tube. The specifications identified three suitable attachment techniques: TiCuSil brazing; moly-manganese brazing; and pulse-soldering. The district court concluded that because one of the techniques, TiCuSil brazing, was not adequately disclosed, the claims were invalid for lack of enablement.¹⁹⁸ The Federal Circuit reversed, finding it sufficient that the enablement adequately disclosed at least one other attachment technique that would enable a person skilled in the art to make the invention. The court found that the failure to disclose all attachment techniques was not fatal to enablement under section 112.¹⁹⁹

193. *Id.* at 1217, 18 U.S.P.Q.2d at 1030 (citing *In re Rainer*, 377 F.2d 1006, 1012, 153 U.S.P.Q. 802, 807 (C.C.P.A. 1967) (noting that "specification is evidence of its own inadequacy")).

194. *Id.*

195. See 35 U.S.C. § 112, ¶ 1 (defining requirement of enablement in specification of patent application).

196. 827 F.2d 1524, 3 U.S.P.Q.2d 1737 (Fed. Cir.), *cert. denied*, 484 U.S. 954 (1987).

197. *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524, 1533, 3 U.S.P.Q.2d 1737, 1743 (Fed. Cir.), *cert. denied*, 484 U.S. 954 (1987).

198. *Id.*

199. *Id.* The court stated:

If an invention pertains to an art where the results are predictable, e.g., mechanical as opposed to chemical arts, a broad claim can be enabled by disclosure of a single embodiment, and is not invalid for lack of enablement simply because it reads on another embodiment of the invention which is inadequately disclosed.

In *Christianson v. Colt Industries Operating Corp.*,²⁰⁰ the Federal Circuit considered whether failing to disclose, in each of its nine patents, all the dimensions, tolerances, and production drawings needed to mass produce the M-16 rifle was a violation of section 112's enablement and best mode requirements. With respect to enablement, the court observed that a patentee who elects to manufacture its claimed invention need not disclose in its patent the dimensions, tolerances, drawings, and other parameters needed for mass production.²⁰¹ The court concluded, therefore, that it was irrelevant whether Christianson was enabled by the patents to engage in mass production of the claimed invention.²⁰²

b. Availability of starting materials

A special problem with the "how-to-make" requirement concerns the availability of a material or apparatus essential to make the claimed product or carry out the claimed process. In *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*,²⁰³ discussed above in connection with the second paragraph of section 112, the Federal Circuit reversed the district court's holding that the patent-in-suit was invalid for failing to satisfy the "how-to-make" requirement.²⁰⁴ The district court held that the patent did not teach how to make the monoclonal antibodies employed in the claimed immunometric monoclonal antibody sandwich assay.²⁰⁵ The Federal Circuit found this holding especially problematic because the district court explicitly found that the prior art taught the availability of monoclonal antibodies. Given the district court's findings concerning the teachings of the prior art, the Federal Circuit reversed the invalidity holding based on section 112, first paragraph.²⁰⁶

200. 822 F.2d 1544, 3 U.S.P.Q.2d 1241 (Fed. Cir. 1987), *vacated on other grounds*, 486 U.S. 800 (1988).

201. *Christianson v. Colt Indus. Operating Corp.*, 822 F.2d 1544, 1562, 3 U.S.P.Q.2d 1241, 1254-55 (Fed. Cir. 1987), *vacated on other grounds*, 486 U.S. 800 (1988). The Federal Circuit observed that: "Patents are not production documents, and nothing in the patent law requires that a patentee must disclose data on how to mass-produce the invented product, in patents obtained on either individual parts of the product or on the entire product." *Id.*

202. *Id.* at 1563, 3 U.S.P.Q.2d at 1255.

203. 802 F.2d 1367, 231 U.S.P.Q. 81 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947 (1987).

204. *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384, 231 U.S.P.Q. 81, 94 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947 (1987).

205. *Id.* at 1371, 231 U.S.P.Q. at 84.

206. *Id.* at 1385, 231 U.S.P.Q. at 95.

3. The "how-to-use" requirement

In *Raytheon Co. v. Roper Corp.*,²⁰⁷ the Federal Circuit confronted the issue of whether the incorrectness of a patentee's theory explaining the operation of the claimed invention can render the invention invalid for lack of utility and for lack of an enabling disclosure.²⁰⁸ The invention at issue in *Raytheon* was directed to a "common cavity" oven capable of conventional thermal cooking, microwave cooking, and pyrolytic self-cleaning. Prior art ovens with these three modes of operation encountered problems, especially with a phenomenon known as "autoignition."²⁰⁹

The patentee developed an oven with proper ventilation during the microwave, thermal, and self-cleaning modes and encountered no fouling problems. Unfortunately, the patentee's theory of operation set forth in the specification to explain the absence of fouling, namely, the continuation of convection during autoignition, was incorrect. Evidence introduced at trial established that, during the period of autoignition, continuation of convection did not, and physically could not, happen. Because the district court interpreted certain claims as requiring a means for continuing convection during autoignition, it held the claims invalid under sections 101 and 112.²¹⁰

The Federal Circuit began its discussion in *Raytheon* by citing the district court in *Linde Air Products Co. v. Graver Tank & Manufacturing Co.*²¹¹ in which the court recognized that an otherwise valid patent covering a meritorious invention should not be struck down simply because of the patentee's misconceptions about scientific principles concerning the invention.²¹² The Federal Circuit held, however, that certain process claims are invalid because the misconception is embodied in the claim. The court stated: "To make a claim for a . . . process in which these erroneous ideas are incorporated is to stake out a process . . . which does not in point of fact exist within

207. 724 F.2d 951, 220 U.S.P.Q. 592 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 835 (1984).

208. *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 953, 220 U.S.P.Q. 592, 593 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 835 (1984); *see* *Fromson v. Advance Offset Plate, Inc.*, 720 F.2d 1565, 1570, 219 U.S.P.Q. 1137, 1140 (Fed. Cir. 1983) (holding that inventor's theory and belief as to how invention operates is unnecessary to meet enablement requirement of section 112). According to *Fromson*, an inventor "need not comprehend the scientific principles on which the practical effectiveness of his invention rests." *Id.*

209. *Raytheon*, 724 F.2d at 953, 220 U.S.P.Q. at 593.

210. *Id.* at 955, 220 U.S.P.Q. at 594.

211. 86 F. Supp. 191, 75 U.S.P.Q. 231 (N.D. Ind. 1947), *rev'd*, 167 F.2d 531, 77 U.S.P.Q. 207 (7th Cir. 1948), *aff'd*, 336 U.S. 271 (1949).

212. *Raytheon*, 724 F.2d at 956, 220 U.S.P.Q. at 596 (citing *Linde Air Prods. Co. v. Graver Tank & Mfg. Co.*, 86 F. Supp. 191, 197, 75 U.S.P.Q. 231, 235 (N.D. Ind. 1947), *rev'd*, 167 F.2d 531, 536-37, 77 U.S.P.Q. 207, 212 (7th Cir. 1948), *aff'd*, 336 U.S. 271, 277-79 (1949)).

the invention.”²¹³ Accordingly, in *Raytheon*, the Federal Circuit found that “because the impossible cannot be enabled, a claim containing a limitation impossible to meet may be held invalid.”²¹⁴

The Federal Circuit further stated that an invention with a claim requiring a means to attain an impossible result must be found inoperative, and the claim must be declared invalid under section 101 or section 112.²¹⁵ Thus, the court affirmed the invalidity holding with respect to claim 1 of the patent because it construed the claim as including a “means for continuing convection during autoignition,” whereas the evidence established that this “does not and physically cannot happen.”²¹⁶

This limitation did not appear in the other claims that the district court held to be invalid. *Raytheon*, the accused infringer, argued that because the claims must be read in light of the specification, and because prevention of back flow was the essence of the patentee’s invention, all claims must be read to include the limitation that appeared in claim 1. The Federal Circuit rejected that contention, reasoning that while claims are to be interpreted in light of the specification, not everything expressed in the specification must be read into all of the claims.²¹⁷

The Federal Circuit found to be erroneous both the district court’s interpretation of the claims as requiring the prevention of autoignition and the district court’s conclusion that because autoignition occurred, the claims were invalid for lack of utility.²¹⁸ The Federal Circuit noted, however, that the claims merely required the prevention of “explosive reactions” and not the prevention of autoignition. The court further noted that “[i]t is only when greater amounts of air enter the cavity that autoignition might escalate into an ‘explosion.’ ”²¹⁹ The court found that the patentee did not claim to prevent autoignition; the patentee claimed only to prevent explosions by restricting the air path to limit excess air to a level below that productive of explosions.²²⁰

213. *Id.* at 956, 220 U.S.P.Q. at 596 (quoting *Linde Air Products*, 86 F. Supp. at 197, 75 U.S.P.Q. at 235).

214. *Id.* (citing *Linde Air Products*, 86 F. Supp. at 197, 75 U.S.P.Q. at 235).

215. *Id.*

216. *Id.*

217. *Id.* at 957, 220 U.S.P.Q. at 597.

218. *Id.* at 958, 220 U.S.P.Q. at 597-98.

219. *Id.*, 220 U.S.P.Q. at 598.

220. *Id.* at 958, 220 U.S.P.Q. at 598. The district court also held the patent-in-suit invalid because the ovens marketed by Roper (as set forth in claims interpreted by the district court as requiring prevention of back flow and autoignition) failed to accomplish all objectives stated in the patent. *Id.* The Federal Circuit noted, however, that claims do not have to satisfy all the objectives stated in the patent. *Id.* When a properly claimed invention meets at least one stated objective, utility under section 101 is clearly shown. *Id.* The court found the

In *Newman v. Quigg*,²²¹ the Federal Circuit considered whether the patent application for an energy generation system that purportedly had higher energy output than input was sufficient to teach one skilled in the art how to use the invention. The invention at issue related to a method and device for increasing the availability of usable electrical energy or usable motion, or both, from a given mass.²²² The examiner rejected the applicant's claims under section 112, first paragraph.²²³ The Board affirmed this rejection, stating that the claimed device was a "perpetual motion machine" and that perpetual motion is impossible because it violates both the first and second laws of thermodynamics.²²⁴ Newman appealed the Board's rulings to federal district court pursuant to 35 U.S.C. § 145.²²⁵ At trial, the district court held that the claimed invention was unpatentable under sections 101 and 112.²²⁶

On appeal of the district court's holding of lack of enablement, the Federal Circuit stated that while it is not essential that an inventor correctly set forth the theory behind the invention, the applicant must teach how to achieve the claimed result.²²⁷ Because the district court found that the applicant's device and method, when used in accordance with the teachings of the specification, did not produce the claimed result, the Federal Circuit affirmed the district

claimed invention accomplished the major objective of preventing explosive reactions. *Id.* at 958-59, 220 U.S.P.Q. at 598.

221. 877 F.2d 1575, 11 U.S.P.Q.2d 1340 (Fed. Cir. 1989), *cert. denied*, 110 S. Ct. 2173 (1990).

222. *Newman v. Quigg*, 877 F.2d 1575, 1577, 11 U.S.P.Q.2d 1340, 1341 (Fed. Cir. 1989), *cert. denied*, 110 S. Ct. 2173 (1990).

223. *Id.*

224. *Id.*

225. *Id.* The district court, in turn, referred the matter to a special master. *Id.* The master reported to the court that applicant's results appeared to conflict with the laws of thermodynamics and that the theory for the invention was suspect. Nevertheless, the master found the evidence in support of applicant's claimed results to be overwhelming and reported to the court that applicant should be entitled to a patent if he otherwise meets the requirements of the patent statutes. *Id.*

The Commissioner of the PTO objected to the master's report and requested, as the master recommended, that the district court refer the application back to the PTO for review by another examiner. *Id.* at 1578, 11 U.S.P.Q.2d at 1342. The second examiner rejected the claims under sections 101, 102, 103, and 112. *Id.* Additionally, the applicant was ordered, under penalty of abandonment, to submit working models of three embodiments of the invention to the National Bureau of Standards (NBS) for testing. *Id.* The PTO declared the application abandoned when the applicant, Newman, did not comply with the order. *Id.* at 1579, 11 U.S.P.Q.2d at 1342. At the district court's suggestion, the Commissioner ordered the applicant to produce a model of the invention so that an *inter partes* test could be conducted at NBS. *Id.* at 1580, 11 U.S.P.Q.2d at 1343. Newman did eventually produce a model of his invention as directed. *Id.* at 1581, 11 U.S.P.Q.2d at 1344.

226. *Id.* at 1577, 11 U.S.P.Q.2d at 1341.

227. *Id.* at 1581-82, 11 U.S.P.Q.2d at 1345.

court's holding that Newman did not meet the requirements of section 112, first paragraph.²²⁸

4. *Undue experimentation*

The PTO or the accused infringer has the burden of giving reasons, supported by the record as a whole, why a specification is not enabling for purposes of either "how-to-make" or "how-to-use." There is no enablement defect, however, where, given the specification's teachings, one of ordinary skill in the relevant art could make or use the claimed invention without "undue experimentation."²²⁹

In *Cross v. Iizuka*,²³⁰ the Federal Circuit considered the sufficiency of enabling disclosures and addressed the issue of "undue experimentation." This case involved an interference in which both parties had made inventions directed to imidazole derivative compounds which inhibit the synthesis of thromboxane synthetase.²³¹ Both Cross and Iizuka claimed the benefit of foreign priority applications under section 119, and each contended that the other's foreign priority application failed to comply with the disclosure requirements of section 112.²³²

The examiner accorded both parties the benefit of the filing dates of their respective foreign applications.²³³ Noting that the utility alleged in each application was of a "pharmacological nature," the examiner concluded that it was unnecessary to establish utility with tests and dosages with respect to humans. The examiner further noted that one of ordinary skill in the art would be able to deter-

228. *Id.* at 1582, 11 U.S.P.Q.2d at 1345.

229. *See, e.g.,* Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 941, 15 U.S.P.Q.2d 1321, 1328 (Fed. Cir.) (addressing enablement provision of 35 U.S.C. § 112 and finding that determinations of invalidity for lack of enablement is question of law which must be answered using facts and supported by clear and convincing evidence), *cert. denied*, 111 S. Ct. 296 (1990); *In re Wands*, 858 F.2d 731, 735, 8 U.S.P.Q.2d 1400, 1402 (Fed. Cir. 1988) (explaining that patent does not need to explain what is well known in art but rather must enable person skilled in art to make and use claimed invention); Lindemann Maschinenfabrik, GmbH v. American Hoist & Derrick Co., 730 F.2d 1452, 1463, 221 U.S.P.Q. 481, 489 (Fed. Cir. 1984) (stating that enablement is legal issue and question is whether disclosure is sufficient to allow one skilled in art to practice claimed invention); Atlas Powder Co. v. E.I. Du Pont de Nemours & Co., 750 F.2d 1569, 1576, 224 U.S.P.Q. 409, 413 (Fed. Cir. 1984) (concluding that patent disclosure which requires some experimentation will not preclude enablement as long as amount of experimentation is not unduly extensive); W.L. Gore & Assocs., Inc. v. Garlock, Inc., 721 F.2d 1540, 1557, 220 U.S.P.Q. 303, 316 (Fed. Cir. 1983) (finding that patent is invalid only when undue experimentation is needed to practice invention), *cert. denied*, 469 U.S. 851 (1984).

230. 753 F.2d 1040, 224 U.S.P.Q. 739 (Fed. Cir. 1985).

231. *Cross v. Iizuka*, 753 F.2d 1042, 224 U.S.P.Q. 739, 740-41 (Fed. Cir. 1985). Thromboxane synthetase is an enzyme which leads to the formation of thromboxane A (TXA), a highly unstable, biologically active compound thought to be active in platelet aggregation. *Id.*

232. *Id.* at 1042, 224 U.S.P.Q. at 741.

233. *Id.*

mine specific dosages for biological purposes without undue experimentation.²³⁴ Although both parties complied with the disclosure requirements, the examiner declared Iizuka the senior party because its foreign priority application had a filing date earlier than that of Cross.²³⁵ Cross appealed to the Board on the issue of the sufficiency of Iizuka's application.²³⁶ The Board affirmed, holding that Iizuka's priority application contained an adequate "how-to-use" disclosure.²³⁷

The issue before the Federal Circuit was whether the Board erred in holding Iizuka's foreign priority application sufficient to meet the "how-to-use" requirement.²³⁸ The court upheld the Board's decision and noted that although Iizuka's foreign priority application failed to reveal dosage levels, the record clearly showed evidence that those of ordinary skill had sufficient information, as of the critical date, to determine the approximate dosage for the desired pharmacological activity.²³⁹

The Federal Circuit addressed the issue of "undue experimentation" in *Atlas Powder Co. v. E. I. Du Pont de Nemours & Co.*²⁴⁰ and *W.L. Gore & Associates v. Garlock, Inc.*²⁴¹ In *Atlas Powder*, the patent at issue related to an improved water-resistant emulsion "blasting agent," consisting of a water-in-oil emulsion of ammonium nitrate, fuel oil, and a water-in-oil emulsifying agent that served as a blasting agent in the presence of occluded air.²⁴² Du Pont argued, inter alia, that the patent was invalid under the first paragraph of section 112 be-

234. *Id.*

235. *Id.* at 1042-43, 224 U.S.P.Q. at 741.

236. *Id.* at 1043, 224 U.S.P.Q. at 741.

237. *Id.*, 224 U.S.P.Q. at 742.

238. *Id.* at 1043-44, 224 U.S.P.Q. at 743.

239. *Id.* at 1051-52, 224 U.S.P.Q. at 748. The court distinguished this situation from the situation in *In re Gardner*, 427 F.2d 786, 166 U.S.P.Q. 138 (C.C.P.A. 1970), observing that *Gardner* dealt with a therapeutic use, not a pharmacological activity. *Cross*, 753 F.2d at 1042-43, 224 U.S.P.Q. at 741.

240. 750 F.2d 1569, 224 U.S.P.Q. 409 (Fed. Cir. 1984).

241. 721 F.2d 1540, 220 U.S.P.Q. 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). The facts of *Gore* are discussed *supra* notes 41-51 and accompanying text. In *Gore* the district court invalidated both patents for "indefiniteness" because "trial and error" would be required to determine the stretch rate of polytetrafluoroethylene (PTFE). *W.L. Gore & Assocs. v. Garlock, Inc.*, 721 F.2d 1540, 1557, 220 U.S.P.Q. 303, 316 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). The Federal Circuit ruled that the district court erred in this determination because the specifications were directed to "enablement" as opposed to "indefiniteness." The court stated: "Assuming some experimentation were needed, a patent is not invalid because of a need for experimentation." *Id.* (citing *Minerals Separation, Ltd. v. Hyde*, 242 U.S. 261, 270-71 (1916)). The court also held that "[a] patent is invalid only when those skilled in the art are required to engage in *undue* experimentation to practice the invention." *Id.* (citing *In re Angstadt*, 537 F.2d 498, 503-04, 190 U.S.P.Q. 214, 218 (C.C.P.A. 1976)). There was no evidence, and the court made no finding, that undue experimentation was required. *Id.*

242. *Atlas Powder Co. v. E.I. Du Pont de Nemours & Co.*, 750 F.2d 1569, 1569, 224 U.S.P.Q. 409, 409-10 (Fed. Cir. 1984).

cause the specification listed only ingredients that could form "thousands of emulsions," and that it failed to teach which combinations would work.²⁴³ The district court rejected Du Pont's argument and concluded that it would have been impossible for the patentee to have listed all operable emulsions and exclude inoperable ones.²⁴⁴ Moreover, the district court observed that one of ordinary skill in the art could easily select the proper ingredients by applying a basic principle of emulsion chemistry.²⁴⁵

The Federal Circuit agreed with the district court and repeated the well-established rule that the mere presence of possibly inoperative combinations does not necessarily invalidate claims.²⁴⁶ According to the Federal Circuit, invalidation would occur only if the number of inoperative combinations was so large that, in effect, it forced one of ordinary skill in the art to conduct unduly extensive experimentation in order to practice the claimed invention.²⁴⁷ The court found, based on the facts before it, that such a situation did not exist.²⁴⁸

In *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*,²⁴⁹ the invention related to hydraulic shears used to cut scrap metal into small, uniform pieces for recycling. The district court held the patent non-enabling because it did not disclose a hydraulic and electrical system for controlling the operation of the rams that crushed and compacted the scrap.²⁵⁰ American Hoist argued that undue experimentation was shown by the great deal of time it spent in designing its split ram shear.²⁵¹

The Federal Circuit reversed because the evidence of record established that hydraulic and electrical systems for metal scrap shears were well known to those skilled in the art and that selection and connection of those elements was simply a matter of "plumbing."²⁵² The court observed that the time American Hoist spent in its design efforts was only slightly more than the time Lindemann spent designing the entire split ram shear, including the control system.²⁵³ The court found no evidence to suggest that this time resulted from

243. *Id.* at 1576, 224 U.S.P.Q. at 413.

244. *Id.* at 1572, 224 U.S.P.Q. at 411.

245. *Id.*

246. *Id.* at 1576, 224 U.S.P.Q. at 414.

247. *Id.* at 1576-77, 224 U.S.P.Q. at 414.

248. *Id.*

249. 730 F.2d 1451, 221 U.S.P.Q. 481 (Fed. Cir. 1984).

250. *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1451, 1452, 221 U.S.P.Q. 481, 483 (Fed. Cir. 1984).

251. *Id.*

252. *Id.* at 1463, 221 U.S.P.Q. at 489.

253. *Id.*

any difficulty in designing a suitable hydraulic-electrical control system due to an inadequate description in the disclosure. Furthermore, the court noted that American Hoist spent some of this time attempting to create a different connection device, when the patent already disclosed a simple connection pin. Thus, the Federal Circuit concluded that no undue experimentation was required in practicing the claimed invention.²⁵⁴

In *In re Wands*,²⁵⁵ the Federal Circuit addressed the issue of undue experimentation in connection with a patent sought for monoclonal antibodies. The applicant appealed the Board's affirmation of the examiner's rejection of the patent application for lack of enablement based on undue experimentation.²⁵⁶ The application involved immunoassay methods for the detection of hepatitis B surface antigen by using high-affinity monoclonal antibodies of the immunoglobulin M (IgM) isotype.²⁵⁷ The examiner found that the data presented by Wands to show the production of the antibodies was unpredictable and unreproducible, requiring undue experimentation to make the antibodies.²⁵⁸ The method for producing the antibodies used in Wands' claimed method was disclosed in U.S. Patent No. 4,271,145 (the '145 patent) and was incorporated by reference into the application on appeal.²⁵⁹

There was no contention that the starting materials were not available to the public, and the PTO conceded that the methods used to prepare and screen hybridomas were either well known in the art or adequately disclosed in both the '145 patent and the current application.²⁶⁰ Therefore, the only question was whether undue experimentation was needed to produce the high affinity monoclonal antibodies.²⁶¹

The Federal Circuit noted that the necessity of undue experimentation is not a single, simple factual determination. Instead, undue experimentation is reached by weighing many factual considerations including: (1) the quantity of experimentation necessary; (2) the amount of direction or guidance presented; (3) the presence or absence of working examples; (4) the nature of the invention; (5) the state of the prior art; (6) the relative skill of those in the art; (7) the predictability or unpredictability of the art; and (8) the breadth of

254. *Id.*

255. 858 F.2d 731, 8 U.S.P.Q.2d 1400 (Fed. Cir. 1988).

256. *In re Wands*, 858 F.2d 731, 733, 8 U.S.P.Q.2d 1400, 1401 (Fed. Cir. 1988).

257. *Id.*

258. *Id.* at 739, 8 U.S.P.Q.2d at 1405-06.

259. *Id.* at 733, 8 U.S.P.Q.2d at 1401.

260. *Id.* at 736, 8 U.S.P.Q.2d at 1404.

261. *Id.*

the claims.²⁶² In a declaration, Wands stated that only a few of the antibodies from the processes were chosen for further screening.²⁶³ The remainder of the antibodies and the hybridomas (those that produce the antibodies) were then saved by freezing.²⁶⁴ Only nine antibodies were analyzed further, and of those nine, only four were found to fall within the claims of the application.²⁶⁵

The Board focused on the fact that the stored hybridomas were not tested and that only 4 of the total 143 hybridomas had actually been shown to fall within the claims.²⁶⁶ Therefore, based on statistics showing a two percent success rate, the Board concluded that a person skilled in the art would have to engage in undue experimentation to make antibodies that fell within the claims.²⁶⁷ Wands, on the other hand, argued that four of the nine, or forty-four percent of the hybridomas actually tested, produced antibodies which fell within the claims.²⁶⁸ According to Wands, the remaining 134 unanalyzed and stored cell lines should not have been presumed failures.²⁶⁹ Wands submitted a second declaration, stating that another fusion experiment had been performed and the result was yet another hybridoma producing a high-affinity antibody.²⁷⁰

The Federal Circuit agreed with Wands, stating that it was unduly harsh to classify the stored cell lines as failures which demonstrated that the claimed method was unpredictable or unreliable.²⁷¹ The court noted that, in the monoclonal antibody art, an experiment is not the screening of a hybridoma, but the entire procedure of making a monoclonal antibody against a particular antigen.²⁷² Wands carried out the entire procedure three times and each time made at least one antibody satisfying all the claim limitations.²⁷³ This evidence, the court concluded, rebutted the PTO's challenge to the enablement of the disclosure.²⁷⁴

In *Northern Telecom, Inc. v. Datapoint Corp.*,²⁷⁵ the Federal Circuit held that the district court properly found certain claims invalid on

262. *Id.* at 737, 8 U.S.P.Q.2d at 1404.

263. *Id.* at 738, 8 U.S.P.Q.2d at 1405.

264. *Id.* Wands, in compliance with 37 C.F.R. § 1.56 (1991), disclosed that the hybridomas that had been stored were not tested. *Id.*

265. *Id.*

266. *Id.* at 739, 8 U.S.P.Q.2d at 1405.

267. *Id.*, 8 U.S.P.Q.2d at 1405-06.

268. *Id.*, 8 U.S.P.Q.2d at 1406.

269. *Id.*

270. *Id.*

271. *Id.*

272. *Id.* at 740, 8 U.S.P.Q.2d at 1407.

273. *Id.*

274. *Id.*

275. 908 F.2d 931, 15 U.S.P.Q.2d 1321 (Fed. Cir.), *cert. denied*, 111 S. Ct. 296 (1990).

the basis that the patent applicant concealed the best mode for carrying out the invention of those claims.²⁷⁶ The court held that the district court should not have held other claims invalid for lack of enablement for failure to provide an enabling disclosure of the software program used to carry out the claimed invention.²⁷⁷ The invention was directed to a programmable processor-based batch data entry terminal which provided an improved way of entering, verifying, and storing data.²⁷⁸ According to the invention, data is keyed in and printed on a screen where an operator can make visual checks and edits. Because entry and verification of data are done at the source by persons who understand the data, the system removes a source of error in data processing. A storage area holds the data until a complete and correct record is obtained, after which it is transferred to a magnetic tape cassette.²⁷⁹

With respect to the enablement requirement, the district court held certain claims invalid because the patent specification did not contain an enabling disclosure of the software program used to carry out the claimed invention.²⁸⁰ Before ruling on the propriety of the district court's actions, the Federal Circuit reiterated two well-established principles of patent law. First, an analysis of the enablement issue requires a determination of whether a person skilled in the pertinent art, using both the knowledge available to such a person and the disclosure in the patent document, could make and use the invention without undue experimentation. Second, it is not fatal if some experimentation is needed because the patent document is not intended to be a production document.²⁸¹ For the legal standard to be applied to cases in which a computer program is challenged, the court stated that enablement is determined from "the viewpoint of a skilled programmer using the knowledge and skill with which such person is charged."²⁸² The court also noted that the amount of disclosure required to enable the practice of this type of invention would vary according to such factors as the nature of the invention, the role of the program in carrying it out, and the complexity of the programming involved.²⁸³ The patentability of

276. *Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 933, 15 U.S.P.Q.2d 1321, 1322 (Fed. Cir.), *cert. denied*, 111 S. Ct. 296 (1990).

277. *Id.*

278. *Id.*

279. *Id.*

280. *Id.* at 941, 15 U.S.P.Q.2d at 1328.

281. *Id.*, 15 U.S.P.Q.2d at 1329.

282. *Id.*

283. *Id.* (citing *In re Sherwood*, 613 F.2d 809, 817, 204 U.S.P.Q. 537 (C.C.P.A. 1980), *cert. denied*, 450 U.S. 994 (1981)).

the invention was not in the details of the program writing, the court explained, but in the apparatus and method that was based on a combination of components and steps.²⁸⁴ Important to the court on this issue was the fact that experts for each side testified that "an experienced programmer could, without unreasonable effort, write a program to carry out the invention of the . . . patent."²⁸⁵

The Federal Circuit acknowledged that there have been circumstances where production of the computer program was not routine.²⁸⁶ In reversing the district court's lack of enablement holding, however, the Federal Circuit found that such circumstances were not shown or suggested in the present invention, and that the great weight of the expert testimony on both sides indicated that a programmer of reasonable skill could write a satisfactory program with ordinary effort.²⁸⁷

5. *Proving enablement*

a. Claim interpretation in determining enablement

Before an enablement analysis can be undertaken, the claims must be properly construed. Several Federal Circuit opinions have resolved the enablement issue through proper claim construction. In *Alco Standard Corp. v. Tennessee Valley Authority*,²⁸⁸ the Federal Circuit considered the enablement and written description requirements for a patent covering a boresonic method of an apparatus for inspecting turbine rotors in electrical generators by use of ultrasonic waves to detect discontinuities within the rotors.²⁸⁹ The district court ruled that the patent met the requirements of section 112, giving three reasons for such a finding. First, anyone with the skills required in the art of ultrasonic testing could have determined how to make and use the patented invention simply by reading the patent specification. Second, the evidence established that the speci-

284. *Id.*

285. *Id.*, 15 U.S.P.Q.2d at 1329. The district court referred in its opinion to an expert who testified that one skilled in the art of computer programming could not tell where the program format would be loaded, what a typical program format would be, what characters would be used, or what would be the range or limitations of the format program. *Id.* at 942, 15 U.S.P.Q.2d at 1329-30. Certain sections of this expert's testimony were refuted on cross-examination. *Id.*

286. *Id.* at 942, 15 U.S.P.Q.2d at 1330 (citing *White Consol. Indus., Inc. v. Vega Servo-Control, Inc.*, 713 F.2d 788, 791, 218 U.S.P.Q. 961, 963 (Fed. Cir. 1983)).

287. *Id.* at 943, 15 U.S.P.Q.2d at 1330.

288. 808 F.2d 1490, 1 U.S.P.Q.2d 1337 (Fed. Cir. 1986), *cert. dismissed*, 483 U.S. 1052 (1987).

289. *Alco Standard Corp. v. Tennessee Valley Auth.*, 808 F.2d 1490, 1493, 1 U.S.P.Q.2d 1337, 1338-39 (Fed. Cir. 1986), *cert. dismissed*, 483 U.S. 1052 (1987).

cation adequately described the claimed invention. Third, the language of the specification supported the claim.²⁹⁰

On appeal, each party's argument centered around the language of the claims pertaining to "correlating" and "combining" the information derived from the ultrasonic scans. The Federal Circuit noted that the prosecution history of the patent demonstrated specific and definite meanings of the words "correlating" and "combining," and that one skilled in the art of the invention would have understood these meanings.²⁹¹ The court accepted the meaning of "correlate" as set forth in the specification and the meaning of "combine" as set forth in the specification and the October 19, 1975 amendment (generally, to gather all the ultrasonic blips that have been correlated for one defect and use those blips to derive information about the nature of the defect that any single blip might not have revealed).²⁹² The Federal Circuit concluded that the district court's holding, that one skilled in the art would have known how to correlate and combine the ultrasonic scan data from a reading of the patent disclosure, was not erroneous.²⁹³

In *DeGeorge v. Bernier*,²⁹⁴ the Federal Circuit decided whether a claim was properly construed in determining an award of priority in an interference action. The Board held that the claim language of the patent at issue defined a combination of a word processor and a two-counter comparison paragraph indent (TCCPI) circuit, rather than a TCCPI circuit alone. Further, the Board found that the senior party, DeGeorge, was not entitled to its application filing date.²⁹⁵ Reversing the Board's holding, the court found that a broad construction of the claim as referring to a TCCPI circuit only, was proper. Further, the court found that the DeGeorge disclosure adequately described the TCCPI circuit for purposes of enablement under this construction.²⁹⁶ The court explained that the enablement analysis conducted by the Board was hampered by its erroneous interpretation of count one as including a word processor.²⁹⁷ The Federal Circuit concluded that the disclosure of the detailed, claimed TCCPI circuitry satisfied the enablement requirement with-

290. *Id.* at 1495, 1 U.S.P.Q.2d at 1340.

291. *Id.* at 1495-96, 1 U.S.P.Q.2d at 1340-41.

292. *Id.* at 1496, 1 U.S.P.Q.2d at 1341.

293. *Id.*

294. 768 F.2d 1318, 226 U.S.P.Q. 758 (Fed. Cir. 1985).

295. *DeGeorge v. Bernier*, 768 F.2d 1318, 1320, 226 U.S.P.Q. 758, 760 (Fed. Cir. 1985).

296. *Id.* at 1323, 226 U.S.P.Q. at 762.

297. *Id.*

out a detailed disclosure of all related, unclaimed circuitry with which the TCCPI might be interfaced.²⁹⁸

In *Hughes Aircraft Co. v. United States*,²⁹⁹ the Federal Circuit considered how the claims of the patent differed from disclosure of the parent application, in order to determine if Hughes could avoid the effect of a publication under section 102(b) by invoking section 120.³⁰⁰ The patent at issue, the Williams patent, resulted from a CIP application to the parent application.³⁰¹ The Williams patent recited a practical system for altitude control of a spin-stabilized satellite.³⁰²

The Federal Circuit ruled that to avoid invalidity under section 102(b), the Williams patent must have been entitled to the parent application's filing date and, to gain the benefit under section 120, the parent must have been enabling under section 112 with respect to the invention set forth in the claims of the patent.³⁰³ The Federal Circuit noted that the trial judge's use of language relied on by the government in its appeal was not the language finally set forth in the claims.³⁰⁴ The court further stated that that language may be viewed as a sufficient enablement present in the parent application because the CIP application merely added an "amplification of the language in the parent application."³⁰⁵ The Federal Circuit thus affirmed the Court of Claims' holding that the Williams patent was not invalid under section 102(b) and was valid under section 112; the patent was entitled to the patent applications filing date, and was under section 112, since the patent was enabling with respect to the invention set forth in the claims.³⁰⁶

b. Use of post-filing date evidence

Use of documentary evidence dated after the application is not relevant to prove enablement, unless that documentary evidence reflects the state of the art at the time the application was filed.³⁰⁷ In

298. *Id.* at 1324, 226 U.S.P.Q. at 763.

299. 717 F.2d 1351, 219 U.S.P.Q. 473 (Fed. Cir. 1983).

300. *Hughes Aircraft Co. v. United States*, 717 F.2d 1351, 1358, 219 U.S.P.Q. 473, 478 (Fed. Cir. 1983).

301. *Id.* at 1352, 219 U.S.P.Q. at 474.

302. *Id.* at 1353, 219 U.S.P.Q. at 474.

303. *Id.* at 1358-59, 219 U.S.P.Q. at 478.

304. *Id.*

305. *Id.*

306. *Id.*

307. *Compare* *W.L. Gore & Assocs. v. Garlock, Inc.*, 721 F.2d 1540, 1556, 220 U.S.P.Q. 303, 315 (Fed. Cir. 1983) (concluding that section 112 requires inventor to explain best mode of practicing invention known to him at time application is filed) *with* *Gould v. Quigg*, 822 F.2d 1074, 1078, 3 U.S.P.Q.2d 1302, 1304 (Fed. Cir. 1987) (holding information introduced

W.L. Gore & Associates v. Garlock, Inc.,³⁰⁸ the Federal Circuit had an opportunity to comment on the attempted use of post-filing date art to invalidate a patent. In *Gore*, the district court concluded that the patents did not enable one skilled in the art to make and use the invention because the specification did not define "stretch rate," and because different formulae for computing stretch rate were developed and presented at trial.³⁰⁹ The Federal Circuit held that with respect to "stretch rate," the district court erred in focusing on formulae developed subsequent to the time the applications were filed.³¹⁰ The court further stated that there was uncontradicted evidence in the record that at the time the application was filed "stretch rate" meant, to those skilled in the art, the percent of stretch divided by the time of stretching.³¹¹ Accordingly, the court found that the absence from the specification of a formula for calculating stretch rate was irrelevant, as were any formulae developed subsequent to the filing dates.³¹²

As *Gould v. Quigg*³¹³ illustrates, however, an applicant or patentee is not precluded from introducing post-filing date evidence in all instances. The patent in *Gould* involved laser technology, specifically gas discharge light amplifiers employing atomic and subatomic particle collisions in gases to amplify light by simulated emission of radiation.³¹⁴ The patent-in-suit resulted from a series of continuation and divisional applications dating back to 1959. Gould's application was rejected by the PTO for lack of enablement under section 112, and the rejection was affirmed by the Board.³¹⁵ Gould then filed a section 145 action and introduced new evidence not presented to the PTO.³¹⁶ In light of that new evidence, the district court set aside the PTO's decision.³¹⁷

In appealing the district court's findings, the PTO argued that the Board's affirmation of the examiner's decision should be upheld be-

to demonstrate level of ordinary skill in art admissible despite being dated after application was filed).

308. 721 F.2d 1540, 220 U.S.P.Q. 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984); see *supra* notes 41-51 and accompanying text (discussing facts of *Gore*).

309. *W.L. Gore & Assocs. v. Garlock, Inc.*, 721 F.2d 1540, 1556, 220 U.S.P.Q. 303, 315 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984).

310. *Id.* at 1557, 220 U.S.P.Q. at 315-16 ("[S]ubsequently developed and therefore irrelevant formulae cannot be used to render non-enabling or indefinite that which was enabling and definite at the time the application was filed.").

311. *Id.*

312. *Id.* at 1556, 220 U.S.P.Q. at 315.

313. 822 F.2d 1074, 3 U.S.P.Q.2d 1302 (Fed. Cir. 1987).

314. *Gould v. Quigg*, 822 F.2d 1074, 1075, 3 U.S.P.Q.2d 1302, 1302 (Fed. Cir. 1987).

315. *Id.* at 1076, 3 U.S.P.Q.2d at 1303.

316. *Id.*

317. *Id.*, 3 U.S.P.Q.2d at 1303.

cause the examiner had a reasonable basis for doubting the enablement of Gould's application, and because Gould presented no evidence to the Board or the district court to rebut this prima facie case.³¹⁸ The PTO also contended that the district court erred in relying on the testimony of Gould's technical expert.³¹⁹ According to the PTO, Gould's expert based his opinion on knowledge acquired by him after 1959, the relevant inquiry date.³²⁰ The Federal Circuit deferred to the trial judge, however, who expressly stated that he viewed Gould's expert to have more impressive credentials and to be more credible than the PTO's expert.³²¹ The court further stated that it was not improper for Gould's expert to refer in his testimony to a technical article published after Gould's filing date because the later-dated publication was not offered as evidence to supplement the disclosure of the earlier-filed application.³²² Rather, the later-dated publication was offered as evidence of the level of ordinary skill in the art at the time of the application, and as evidence that the disclosed device would have been operative.³²³ The Federal Circuit concluded that it was entirely proper to refer to the post-filing date publication for these purposes.³²⁴ While acknowledging that enablement is a question of law, the court noted that the ultimate legal question of enablement is often based on "numerous factual underpinnings."³²⁵ Because the factual underpinnings of the district court's opinion were not shown to be clearly erroneous, the Federal Circuit affirmed the district court's holding that Gould's application was enabling.³²⁶

c. Use of expert declarations

In *In re Buchner*,³²⁷ the Federal Circuit considered the sufficiency of an expert declaration to overcome a rejection for nonenablement. The PTO found that the declaration set forth only a conclusion unsupported by factual documentation to provide adequate indication that the technology was well known as of the effective fil-

318. *Id.* at 1077, 3 U.S.P.Q.2d at 1304.

319. *Id.*

320. *Id.*

321. *Id.* at 1078, 3 U.S.P.Q.2d at 1304. Further, the Federal Circuit stated: "Perhaps one reason the district court credited Dr. Franken's [Gould's expert] testimony over that of Dr. Feldman [the PTO's expert] is that Dr. Franken was a person skilled in the art at the time of Gould's filing date." *Id.*

322. *Id.*

323. *Id.*

324. *Id.*

325. *Id.* at 1077, 3 U.S.P.Q.2d at 1303-04.

326. *Id.* at 1079, 3 U.S.P.Q.2d at 1305-06.

327. 929 F.2d 660, 18 U.S.P.Q.2d 1331 (Fed. Cir. 1991).

ing date.³²⁸ The claimed invention related to a higher order digital transmission system that communicated a plurality of separate digital streams over a common channel and included a transmitter and receiver.³²⁹ The receiver further included a phase comparator that had four inputs and one output, and a divider that had two inputs and one output.³³⁰

The PTO rejected Buchner's application on the ground that it failed to describe how to make and use the phase comparator and divider without undue experimentation.³³¹ Although the examiner found that the application adequately described the functions of these two elements, it rejected the application because the design structures of the two elements were not disclosed.³³² The examiner asserted that the comparator was atypical because it was not a two-input phase comparator and because the divider was not a typical one-input divider.³³³ Applicant Buchner then offered the testimony of an expert, Professor Jan Louis de Kroes, who stated that the phase comparator and the divider were well known to those of ordinary skill in the art as of the filing date of a foreign priority application. The expert also stated that these elements were "routinely built," providing details concerning the structure and function of these elements.³³⁴

The Board found a reasonable basis for the examiner to question the sufficiency of the disclosure. The Board further found that the declarant's assertions that these elements were "well known" and "routinely built" were conclusory statements unsupported by any other evidence.³³⁵ The Board stated that if the phase comparator and the divider were so "well known" and "routinely built" as of the effective filing date, the expert should have been able to document his conclusions.³³⁶

On appeal to the Federal Circuit, Buchner argued that the declaration of the expert, de Kroes, unequivocally established a fact that could not be dismissed without evidence of a contrary inference.³³⁷ The court noted that an examiner may reject a claim if it is reasonable from the facts to conclude that one skilled in the art would be

328. *In re Buchner*, 929 F.2d 660, 661, 18 U.S.P.Q.2d 1331, 1332 (Fed. Cir. 1991).

329. *Id.*

330. *Id.*

331. *Id.* at 660-61, 18 U.S.P.Q.2d at 1331-32.

332. *Id.*

333. *Id.* at 661, 18 U.S.P.Q.2d at 1332.

334. *Id.*

335. *Id.*

336. *Id.*

337. *Id.*

unable to carry out the claimed invention. In the instant case, the court concluded that it was reasonable for the examiner to question whether the claimed invention could have been carried out based on the disclosure because the elements at issue were integral to the practice of the invention and neither the application nor the prior art described their structure. Consequently, the Federal Circuit held that Buchner had the burden of overcoming the rejection.³³⁸

Despite the fact that the declaration provided significant detail with respect to the structure and function of the elements in question, the Federal Circuit stated that it was not sufficient to provide such "well-known" information only through an expert.³³⁹ Moreover, the court stated that it is necessary for an expert's opinion on ultimate legal issues to be supported by something more than conclusory statements.³⁴⁰ The court observed that in the present case, de Kroes did not provide adequate support for his conclusion. The court found that de Kroes only described how he would construct the divider and phase comparator and failed to demonstrate that such construction was well known to those of ordinary skill in the art.³⁴¹ Thus, the court concluded that the Board did not err in affirming the examiner's rejection of all claims under section 112, first paragraph.³⁴²

d. Use of extrinsic evidence

In *White Consolidated Industries, Inc. v. Vega Servo-Control, Inc.*,³⁴³ the Federal Circuit dealt with a patentee's attempt to rely on extrinsic evidence to show that it complied with enablement requirements. The patent in *White* was directed to a numerical control system for machine tools in which a computer program controlled the operation of a machine tool.³⁴⁴ The computer program, termed a "part program," was a series of instructions defining the operations performed by particular parts of the machine. The "part program" could be written in numerical control language or machine-readable form.³⁴⁵

338. *Id.*

339. *Id.* (citing *In re Smyth*, 184 F.2d 982, 990, 90 U.S.P.Q. 106, 112 (C.C.P.A. 1951)).

340. *Id.*

341. *Id.* In quoting the Board, the court stated that if the phase comparator and divider arrangement were so "well known" and "routinely built" as of the effective filing date, "the declarant should have [had] no trouble documenting the same . . ." *Id.*

342. *Id.* at 662, 18 U.S.P.Q.2d at 1332.

343. 713 F.2d 788, 218 U.S.P.Q. 961 (Fed. Cir. 1983).

344. *White Consol. Indus., Inc. v. Vega Servo-Control, Inc.*, 713 F.2d 788, 789, 218 U.S.P.Q. 961, 961-62 (Fed. Cir. 1983).

345. *Id.*

When the instructions were written in a numerical control language, a "processor" or translator was required to convert the instructions into a machine-readable form.³⁴⁶ The specification of the patent stated that the translator may be a known translator, and offered SPLIT as an example.³⁴⁷ At the time the application was filed, SPLIT was a trade secret of Sundstrand, White's predecessor in interest, and was available only by purchase from Sundstrand. The district court concluded that at the time the application was filed, SPLIT was the only language that worked in the patented system, and therefore the failure to disclose SPLIT rendered the patent non-enabling.³⁴⁸

White did not argue that SPLIT was undisclosed in the specification. Rather, White argued that the specification was enabling because it stated that a known or standard translator, "for example SPLIT," could be used and that the application specified the characteristics of such a translator.³⁴⁹ White argued that because there were other known translators that were interchangeable with SPLIT, the specification satisfied the enablement requirement.³⁵⁰ The Federal Circuit disagreed, stating that in order to claim an element of the invention as a trade secret and still satisfy the section 112 enabling requirements, there must be known equivalent elements available to those skilled in the art.³⁵¹ Applying this test to the facts before it, the Federal Circuit concluded that there was insufficient evidence to establish that suitable substitutes to SPLIT were known and widely available to those skilled in the art.³⁵²

White attempted to rely on evidence suggesting that there were other "take-off" translators of SPLIT.³⁵³ The Federal Circuit indicated, however, that the availability at the time the application was filed of other translators did not in itself provide a basis for finding that a person skilled in the art, on reading the specification, would know that another translator would be suitable.³⁵⁴ White's argument was further weakened by statements made by Sundstrand, one week after the patent application was filed, in which Sundstrand ex-

346. *Id.* at 789, 218 U.S.P.Q. at 962.

347. *Id.*

348. *Id.*

349. *Id.* at 790, 218 U.S.P.Q. at 962-63.

350. *Id.*, 218 U.S.P.Q. at 963.

351. *Id.*

352. *Id.*

353. *Id.*

354. *Id.*

pressed doubt that other translators would be compatible with the one used in their systems.³⁵⁵

An additional argument advanced by White asserted that SPLIT was available, although only upon purchase from Sundstrand.³⁵⁶ The Federal Circuit dismissed this argument, stating that the availability of SPLIT from Sundstrand could not cure the patent's invalidity because it did nothing to cure the inadequacy of the enabling description.³⁵⁷ The court noted that while the "language translator" itself was not the claimed invention, it was an integral part of the system and its disclosure was essential to enable those skilled in the art to make and use the device.³⁵⁸

In conducting a policy analysis, the Federal Circuit hypothesized that if it allowed Sundstrand (now White) to maintain SPLIT as a trade secret, White could actually enjoy exclusionary rights beyond the seventeen-year life of the patent through its control of access to SPLIT—a result contrary to the objectives of the patent system.³⁵⁹ Accordingly, the court ruled that Sundstrand (White) was obligated to disclose the details of SPLIT, unless its equivalent was known and available to those skilled in the relevant art or its equivalent could be acquired without undue experimentation.³⁶⁰

The Federal Circuit noted that the required experimentation must be reasonable and rejected White's argument that one skilled in the art could obtain a suitable substitute to SPLIT by conducting experimentation. The only evidence on this point was the testimony of a computer programmer who estimated that development of a language translator would require from one and one-half to two years of effort, a time period which the court viewed as clearly unreasonable.³⁶¹

White argued that the computer programmer's estimate was faulty because it ignored the fact that suitable substitutes for the translator were available at the time the application was filed. The Federal Circuit rejected this contention, stating that the language in the patent specification, which merely mentioned the need for a "known translator . . . as for example SPLIT," did not identify which language translators could be used.³⁶² The court also noted that White failed to present any evidence showing that one skilled in the

355. *Id.*

356. *Id.* at 790-91, 218 U.S.P.Q. at 963.

357. *Id.* at 791, 218 U.S.P.Q. at 963.

358. *Id.*

359. *Id.*

360. *Id.*

361. *Id.*

362. *Id.*, 218 U.S.P.Q. at 963-64.

art could select or develop a suitable translator without undue experimentation and delay.³⁶³

The Federal Circuit stressed that it does not look with favor on those who maintain important aspects of their patented invention as trade secrets.³⁶⁴ Although White provided evidence in the form of a magazine announcement that another translator, APT, was available prior to the filing date of its patent application, the court nonetheless found this reliance on extrinsic evidence insufficient to show that one skilled in the art would know that APT could be used as a substitute for SPLIT.³⁶⁵ The court ruled that because the announcement did not mention APT's compatibility with SPLIT, the announcement did not prove any recognized knowledge in the art that could save the validity of a patent application without an enabling disclosure.³⁶⁶

e. Review of jury findings

In *Allen Organ Co. v. Kimball International, Inc.*,³⁶⁷ the Federal Circuit reviewed a jury verdict finding a patent invalid for failure to describe the invention in sufficient detail to enable one skilled in the art to make and use it. The patents at issue, the '799 and '806 patents, dealt with organs that electronically reproduced the notes and tones of a pipe organ.³⁶⁸ In response to an interrogatory as part of its special verdict, the jury found the claims of the '806 patent invalid on nonenablement grounds, concluding that the '806 patent failed to describe the invention in sufficient detail to enable a person skilled in the art to make and use it.³⁶⁹ The Federal Circuit stated that although enablement is deemed to be a question of law, it is amenable to resolution by the jury.³⁷⁰ The court said that the relevant inquiry for appellate review of a jury's verdict is whether "a reasonable jury could have made the underlying factual findings

363. *Id.*, 218 U.S.P.Q. at 964. Additionally, White's reliance on publications issued after the filing date to establish the suitability of other translators was unavailing because a sufficient disclosure must exist as of the application filing date. *Id.*

364. *Id.* at 790-91, 218 U.S.P.Q. at 963-64.

365. *Id.*

366. *Id.* at 791, 218 U.S.P.Q. at 964. The court reached the same conclusion with respect to a technical paper on the patented system presented by one of the inventors at an IEEE machine tool conference prior to the filing date of the patent application. *Id.* at 791-92, 218 U.S.P.Q. at 964.

367. 839 F.2d 1556, 5 U.S.P.Q.2d 1769 (Fed. Cir.), *cert. denied*, 488 U.S. 850 (1988).

368. *Allen Organ Co. v. Kimball Int'l, Inc.*, 839 F.2d 1556, 1557, 5 U.S.P.Q.2d 1769, 1770 (Fed. Cir.), *cert. denied*, 488 U.S. 850 (1988).

369. *Id.* at 1565-66, 5 U.S.P.Q.2d at 1776-77.

370. *Id.* at 1566, 5 U.S.P.Q.2d at 1777 (citing *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524, 1533, 3 U.S.P.Q.2d 1737, 1742-43 (Fed. Cir.), *cert. denied*, 484 U.S. 954 (1987)).

necessary to provide substantial evidence in support to the jury's conclusion."³⁷¹

The court's analysis focused on whether the '806 patent provided enough information to build the "recognition logic block 172" from figure 11 of the specification.³⁷² Both parties presented conflicting evidence as to the sufficiency of the enabling disclosure. Kimball provided experts who testified that the '806 patent was non-enabling because it lacked information necessary to build the circuit and lacked information on the function of some of the parts. Allen Organ's witnesses contended that block 172 could be provided by a standard off-the-shelf item and that it readily could be designed by one of ordinary skill in the art.³⁷³

Allen Organ argued that there were two flaws in the jury instructions. First, the court did not instruct the jury that every minute detail of the patent need not be disclosed. Second, the court did not advise the jury of the underlying factual issues to be resolved.³⁷⁴ Dismissing these arguments, the Federal Circuit stated that pursuant to Rule 51 of the Federal Rules of Civil Procedure, Allen Organ waived its objection to the jury instruction because it failed to raise it in a timely fashion before the district court.³⁷⁵ Because Allen Organ previously agreed to the jury instruction, the instruction became part of the law of the case.³⁷⁶ The court concluded that a reasonable jury could have reached the conclusion it did, and that the district court did not err in denying Allen Organ's motion for judgment notwithstanding the verdict with respect to this issue.³⁷⁷

f. Deposit of biological material

Although it had been previously established that deposited biological material need not be available to the public as of the filing date, the Federal Circuit's decision in *In re Lundak*³⁷⁸ clearly established that a deposit in an independent depository need not be made as of the filing date of the application.³⁷⁹ In *Lundak*, the in-

371. *Id.* (citing *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 1551-52, 220 U.S.P.Q. 193, 200-01 (Fed. Cir. 1983)).

372. *Id.*

373. *Id.*

374. *Id.*

375. *Id.* at 1566, 5 U.S.P.Q.2d at 1777 (citing *Will v. Comprehensive Accounting Corp.*, 776 F.2d 665, 675, *cert. denied*, 475 U.S. 1120 (1986) and *Bio-Rad Lab., Inc. v. Nicolet Instrument Corp.*, 739 F.2d 604, 615, 222 U.S.P.Q. 654, 662 (Fed. Cir.), *cert. denied*, 469 U.S. 1038 (1984)).

376. *Id.*

377. *Id.*

378. 773 F.2d 1216, 227 U.S.P.Q. 90 (Fed. Cir. 1985).

379. *In re Lundak*, 773 F.2d 1216, 1222, 227 U.S.P.Q. 90, 95 (Fed. Cir. 1985).

ventor deposited the biological material in an independent depository seven days after filing the patent application.³⁸⁰ The PTO examiner rejected Lundak's claims under the first paragraph of section 112 as non-enabling for failure to meet the criteria of the Manual of Patent Examining Procedure (MPEP) section 608.01(p)C.³⁸¹ Among other requirements, the MPEP requires that a deposit necessary for complying with the requirements of section 112 include an adequate disclosure of the biological material "no later than the effective U.S. filing date of the application."³⁸²

Lundak appealed the examiner's rejection to the Board, arguing that his deposit of the cell line with colleagues in laboratories at the University of California and elsewhere met section 112's requirements.³⁸³ The Board, however, affirmed the rejection, holding that the university laboratory deposit was inadequate to meet the requirements of section 112 because the laboratories were not "recognized depositories" that would guarantee permanent availability. The Board also held that the deposit made with the American Type Culture Collection (ATCC) could not be used to overcome the examiner's section 112 rejection. The ATCC deposit was made after the application filing date, and thus was "new matter" that could not be added to the application under section 132 of the patent laws.³⁸⁴

The Federal Circuit reversed, reconciling the present case with *In re Argoudelis*³⁸⁵ and *Feldman v. Aunstrup*³⁸⁶ in a review of the law relating to the deposit of biological material for compliance of section 112, first paragraph. The Federal Circuit found that the deposit with the university laboratory satisfied the PTO's concern regarding access during pendency of the application.³⁸⁷ The court held that section 112, first paragraph, does not require a sample to be trans-

380. *Id.* at 1219, 227 U.S.P.Q. at 92; see MANUAL OF PATENT EXAMINING PROCEDURE § 608.01 (p) C. The manual provides as follows:

[T]he applicant, no later than the effective U.S. filing date of the application, [should make] a deposit of a culture of the microorganism in a depository affording permanence of the deposit and ready accessibility [sic] thereto by the public if a patent is granted, under conditions which assure (a) that access to the culture will be available during pendency of the patent application to one determined by the Commissioner to be entitled thereto under 37 CFR 1.14 and 35 U.S.C. 122, and (b) that all restrictions on the availability to the public of the culture so deposited will be irrevocably removed upon the granting of the patent

Id.

381. *Lundak*, 773 F.2d at 1218, 227 U.S.P.Q. at 92.

382. *Id.* at 1219, 227 U.S.P.Q. at 92.

383. *Id.*

384. *Id.*

385. 434 F.2d 1390, 168 U.S.P.Q. 99 (C.C.P.A. 1970).

386. 517 F.2d 1351, 186 U.S.P.Q. 108 (C.C.P.A. 1975), *cert. denied*, 424 U.S. 912 (1976).

387. *Lundak*, 773 F.2d at 1222, 227 U.S.P.Q. at 95 (citing *Feldman v. Aunstrup*, 517 F.2d 1351, 1355, 186 U.S.P.Q. 108, 112-13 (C.C.P.A. 1975)).

ferred to an independent depository prior to the filing date of the patent application.³⁸⁸ The court stated that while the PTO maintained its statutory right to request "specimens or ingredients" from the applicant, it was immaterial whether the request was to be filled by a third party entrusted with the specimen or the applicant himself.³⁸⁹

The Federal Circuit also held that the addition of information related to the post-filing date deposit in an independent depository did not constitute new matter prohibited under section 132.³⁹⁰ In reaching this decision, the court found it irrelevant that the cell line was under the control of an independent depository as of the filing date because "an accession number and deposit date add nothing to the written description of the invention."³⁹¹ The court held that such additions were not the type of "new matter" which section 132 was designed to guard against.³⁹² Moreover, because constructive reduction to practice does not turn on possession, the court ruled that Lundak's application constituted a constructive reduction to practice that would establish the application filing date as the prima facie date of invention.³⁹³ The Federal Circuit also addressed whether the absence of an independent depository would allow inventors to misrepresent post-filing date deposit information to the PTO. The court concluded that "[t]here is no greater or less risk of dishonesty in this procedure than in any other."³⁹⁴

388. *Id.*

389. *Id.*, 227 U.S.P.Q. at 94-95.

390. *Id.* at 1223, 227 U.S.P.Q. at 96.

391. *Id.*

392. *Id.*

393. *Id.* The new PTO deposit regulations address this concern by requiring that when a post-filing date independent deposit is made:

[T]he applicant shall promptly submit a verified statement from a person in a position to corroborate the fact, and shall state, that the biological material which is deposited is a biological material specifically identified in the application as filed, except if the person is an attorney or agent registered to practice before the Office, in which case the statement need not be verified.

37 C.F.R. § 1.804(b) (1991). One way an inventor can assure compliance is to set up standard procedures to document controlled possession of biological material. Such procedures can include placing biological material in an in-house, locked container with restricted and recorded access. Such a procedure is not, however, required for compliance.

394. *Lundak*, 773 F.2d at 1223, 227 U.S.P.Q. at 96.

6. *Statements concerning enablement as a basis for a finding of unenforceability*

In *Scripps Clinic & Research Foundation, Inc. v. Genentech, Inc.*,³⁹⁵ the Federal Circuit reversed the district court's finding of inequitable conduct based on Scripps' statements to the reissue application examiner concerning enablement.³⁹⁶ The invention at issue concerned a substance called Human Factor VIII:C, a complex protein that occurs naturally in normal blood and is essential to blood clotting.³⁹⁷ The claims in suit included product-by-process claims as well as product claims.³⁹⁸ The process portion of the product-by-process claims recited separation of the Factor VIII:C/VIII:RP complex from other materials in blood, followed by separation of Factor VIII:C from Factor VIII:RP.³⁹⁹ The procedure provided for a purified, but dilute, Factor VIII:C.⁴⁰⁰

The district court granted Genentech's motion for summary judgment of unenforceability of the claims on inequitable conduct grounds.⁴⁰¹ During prosecution of the reissue application, the examiner raised a number of issues relating to the proposed product claims, including one specifically targeted to the purity of the Factor VIII:C.⁴⁰² The examiner requested a showing of the mathematical relationship between specific activity and fold purification.⁴⁰³ The inventors provided this and other data requested by the examiner.⁴⁰⁴

In response to the inventors' argument that they had obtained human Factor VIII:C at "levels closely approaching the theoretical limit," the examiner withdrew his objection to the scope of the product claims.⁴⁰⁵ The reissue application, with the added product claims, was allowed to issue. The district court held, however, that the evidence did not support the inventors' statements about the purity of the product. On this basis, the district court adjudged all the claims unenforceable for inequitable conduct.⁴⁰⁶

395. 927 F.2d 1565, 18 U.S.P.Q.2d 1001 (Fed. Cir. 1991). This appeal addressed several issues, including best mode, compliance with the reissue statutes and regulations, anticipation, infringement, and alleged charges of inequitable conduct.

396. *Scripps Clinic & Research Found., Inc. v. Genentech, Inc.*, 927 F.2d 1565, 1574, 18 U.S.P.Q.2d 1001, 1008 (Fed. Cir. 1991).

397. *Id.* at 1568-70, 18 U.S.P.Q.2d at 1003-05.

398. *Id.* at 1570, 18 U.S.P.Q.2d at 1005.

399. *Id.* at 1569, 18 U.S.P.Q.2d at 1004.

400. *Id.*

401. *Id.* at 1568, 18 U.S.P.Q.2d at 1003.

402. *Id.* at 1571, 18 U.S.P.Q.2d at 1006.

403. *Id.* at 1572, 18 U.S.P.Q.2d at 1006.

404. *Id.*

405. *Id.* at 1571-72, 18 U.S.P.Q.2d at 1006.

406. *Id.* at 1572, 18 U.S.P.Q.2d at 1007.

Focusing on evidence on the record to determine whether the inventors had in fact obtained gels showing essentially pure Factor VIII:C, without certain impurities, the Federal Circuit observed that the district court erred in requiring more scientific precision than did any of the scientists who testified on the issue.⁴⁰⁷ The Federal Circuit recognized that the standard offered in the statute referred to persons of skill in the relevant art, and therefore ruled that Genentech failed to provide any evidence to show that those skilled in the field could not make or use the invention by following the disclosures provided by Scripps.⁴⁰⁸

Further, the Federal Circuit noted that in its inequitable conduct analysis, the district court made no findings on the issue of intent, an element which is essential to a ruling of inequitable conduct as a matter of law.⁴⁰⁹ Consequently, the Federal Circuit reversed the district court's grant of partial summary judgment of unenforceability of the reissue patent for inequitable conduct.⁴¹⁰

B. *The "Written Description" Requirement*

The "written description" requirement ensures that the inventor has possession of the specific subject matter claimed as of the filing date of the application. In general, the issue arises when, after filing, amended or new claims are presented by the patent applicant. The issue can also arise in the situation where a patent applicant seeks the benefit of a filing date of an earlier patent application with respect to a claim presented in a later patent application.

In *Vas-Cath Inc. v. Mahurkar*,⁴¹¹ the Federal Circuit addressed the scope and utility of this requirement. The court considered whether a design application provided "written description" support for two later-filed utility applications under section 120. Mahurkar filed the '081 design application for a "Double Lumen Catheter," which was subsequently abandoned.⁴¹² After filing the '081 design application, Mahurkar filed a "Canadian Industrial Design" application, which included the same drawings as the '081 application and an additional textual description.⁴¹³ This application resulted in the issue of the design patent. More than one year after the issuance of the Canadian Industrial Design patent, Mahurkar filed the first of

407. *Id.* at 1573, 18 U.S.P.Q.2d at 1007.

408. *Id.* at 1573-74, 18 U.S.P.Q.2d at 1007-08.

409. *Id.*, 18 U.S.P.Q.2d at 1008.

410. *Id.* at 1574, 18 U.S.P.Q.2d at 1008.

411. 935 F.2d 1555, 19 U.S.P.Q.2d 1111 (Fed. Cir. 1991).

412. *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1557-59, 19 U.S.P.Q.2d 1111, 1112-13 (Fed. Cir. 1991).

413. *Id.* at 1558, 19 U.S.P.Q.2d at 1112.

two utility applications that would give rise to the patents-in-suit. Both utility applications included the same drawings as the '081 design application and both claimed priority to the '081 design application.⁴¹⁴ While the examiner noted in the first utility application that "the prior application is a design application," the examiner did not dispute the fact that the first utility application was entitled to the earlier filing date.⁴¹⁵ In the second utility application, the examiner noted that the application was fully supported by the applicant's '081 design application.⁴¹⁶

Charged with infringement of the two utility applications, Vas-Cath argued on a motion for summary judgment that under section 120, the two utility applications were not entitled to the filing date of the '081 design application because its drawings did not provide an adequate "written description."⁴¹⁷ If so, the Canadian Industrial Design application would render the two utility patents invalid under section 102(b).⁴¹⁸ Concluding that the '081 design patent did not provide an adequate written description, the district court held the utility patents invalid under section 102(b).⁴¹⁹ Recognizing the absence of clarity in Federal Circuit law pertaining to this issue, the district court stated, "unfortunately, it is not so easy to tell what the law of the Federal Circuit is with respect to the written description requirement."⁴²⁰

The Federal Circuit responded and set forth a relatively thorough discussion of the "written description" requirement. The Federal Circuit first noted the three circumstances in which the "written description" requirement is triggered: (1) where claims not presented in the application when filed are presented thereafter; (2) when the benefit of sections 119 or 120 is sought for a later-filed application; and (3) in the interference context, where the issue is whether the specification of one party of the interference can support the claim(s) corresponding to the count(s) at issue.⁴²¹

Citing *In re Wright*,⁴²² the Federal Circuit said that to the uninitiated it may seem anomalous that a separate written description requirement is contained in the first paragraph of section 112, where

414. *Id.*

415. *Id.* at 1559, 19 U.S.P.Q.2d at 1113.

416. *Id.*

417. *Id.*

418. *Id.* (noting that for purposes of summary judgment motion, Vas-Cath conceded that '081 design drawings provided enabling disclosure for two utility applications).

419. *Id.*

420. *See id.* at 1560, 19 U.S.P.Q.2d at 1114 (citing *Vas-Cath Inc. v. Mahurkar*, 745 F. Supp. 517, 522, 17 U.S.P.Q.2d 1353, 1356 (N.D. Ill. 1990)).

421. *Id.*

422. 866 F.2d 422, 9 U.S.P.Q.2d 1649 (Fed. Cir. 1989).

the second paragraph of section 112 expressly requires that the applicant conclude the specification "with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention."⁴²³ The court provided two explanations, however, for the written description requirements of section 112. First, the court stated that the written description requirement was a part of the patent statutes at a time before claims were required by the statute.⁴²⁴ Second, the court provided a policy-based rationale for the inclusion in section 112 of the first paragraph written description requirement and the second paragraph "definiteness" requirement, as set forth in *Rengo Co. v. Molins Machine Co.*⁴²⁵ In *Rengo*, the Third Circuit stated that the definiteness requirement "shapes the future conduct of persons other than the inventor, by insisting that they receive notice of the scope of the patented device while the written description requirement ensures a definite scope for the patent."⁴²⁶

The Federal Circuit next reviewed some of the most significant decisions of one of its predecessor courts, the Court of Customs and Patent Appeals (C.C.P.A.). The court noted that in *In re Ruschig*,⁴²⁷ the C.C.P.A. recognized the severability of the written description requirement from the enablement provision.⁴²⁸ Furthermore, in *In re DiLeone*,⁴²⁹ the C.C.P.A. recognized the possibility that the specification could enable the practice of an invention as broadly as it is claimed, yet still not describe that invention.⁴³⁰

In *In re Lukach*,⁴³¹ the C.C.P.A. also recognized a subtle distinction between a written description adequate to support a claim under

423. See *Vas-Cath*, 935 F.2d at 1560-61, 19 U.S.P.Q.2d at 1114-15 (quoting *In re Wright*, 866 F.2d 422, 424, 9 U.S.P.Q.2d 1649, 1651 (Fed. Cir. 1989)).

424. *Id.*

425. 657 F.2d 535, 211 U.S.P.Q. 303 (3d Cir.), *cert. denied*, 454 U.S. 1055 (1981). In *Rengo*, the "adequate description" requirement was expressed in the following manner:

[T]here is a subtle relationship between the policies underlying the description and definiteness requirements, as the two standards, while complementary, approach a similar problem from different directions. Adequate description of the invention guards against the inventor's overreaching by insisting that he recount his invention in such detail that thus future claims can be determined to be encompassed within his original creation.

Rengo Co. v. Molins Mach. Co., 657 F.2d 535, 551, 211 U.S.P.Q. 303, 321 (3d Cir.), *cert. denied*, 454 U.S. 1055 (1981).

426. See *Vas-Cath*, 935 F.2d at 1561, 19 U.S.P.Q.2d at 1115 (quoting *Rengo*, 657 F.2d at 551, 211 U.S.P.Q. at 321).

427. 379 F.2d 990, 154 U.S.P.Q. 118 (C.C.P.A. 1967).

428. See *Vas-Cath*, 935 F.2d at 1561, 19 U.S.P.Q.2d at 1115 (citing *In re Ruschig*, 379 F.2d 990, 154 U.S.P.Q. 118 (C.C.P.A. 1967)).

429. 436 F.2d 1404, 168 U.S.P.Q. 592 (C.C.P.A. 1971).

430. See *Vas-Cath*, 935 F.2d at 1561, 19 U.S.P.Q.2d at 1115 (citing *In re DiLeone*, 436 F.2d 1404, 168 U.S.P.Q. 592 (C.C.P.A. 1971)).

431. 442 F.2d 967, 169 U.S.P.Q. 795 (C.C.P.A. 1971).

section 112 and a written description sufficient to anticipate the claimed subject matter under section 102(b).⁴³² In *Lukach*, the question was whether a United States "grandparent" application sufficiently described the later-claimed invention or whether the appellant's intervening British application, which was a counterpart to the United States application, anticipated the claimed subject matter. The decision hinged on the difference between "claim-supporting disclosures" and "claim-anticipating disclosures."⁴³³

The Federal Circuit itself has addressed the written description requirement, and has, according to the *Vas-Cath* panel, established a fairly uniform standard for determining compliance with the requirement.⁴³⁴ The court did, however, recognize some confusion in its decisions concerning the extent to which the written description requirement is separate and distinct from the enablement requirement. For example, in *In re Wilder*⁴³⁵ the Federal Circuit flatly stated that the two requirements were separate, while in *Kennecott Corp. v. Kyocera International, Inc.*,⁴³⁶ the court stated that, while the purpose of the written description requirement is to define what is needed to fulfill the enablement criteria, "these requirements may be viewed separately, but they are intertwined."⁴³⁷ The Federal Circuit stated that to the extent that *Kennecott* conflicts with *Wilder*, decisions of a three-judge panel of the court cannot overturn prior precedential

432. See *Vas-Cath*, 935 F.2d at 1561, 19 U.S.P.Q.2d at 1115 (citing *In re Lukach*, 442 F.2d 967, 169 U.S.P.Q. 795 (C.C.P.A. 1971)).

433. *In re Lukach*, 442 F.2d 967, 970, 169 U.S.P.Q. 795, 797 (C.C.P.A. 1971). Other written description cases decided by the C.C.P.A. stressed the fact specificity of the issue. See, e.g., *In re Driscoll*, 562 F.2d 1245, 1250, 195 U.S.P.Q. 434, 438 (C.C.P.A. 1977) (stressing that question of compliance with description requirement of section 112 depends on unique facts of each case); *In re Wertheim*, 541 F.2d 257, 262, 191 U.S.P.Q. 90, 96 (C.C.P.A. 1976) (examining application of written description requirement to invention centering around process for making freeze-dried instant coffee); *In re Smith*, 458 F.2d 1389, 1395, 173 U.S.P.Q. 679, 683 (C.C.P.A. 1972) (indicating fact specificity necessary to make a determination regarding opportunities of rejection of patent application for compounding of glossy water-base emulsion paint); *In re DiLeone*, 436 F.2d 1404, 1404, 168 U.S.P.Q. 592, 593 (C.C.P.A. 1971) (addressing rejection of patent application for new and unobvious class of polyimides useful in making molded articles).

434. *Vas-Cath*, 935 F.2d at 1563, 19 U.S.P.Q.2d at 1117 (citing *In re Gosteli*, 872 F.2d 1008, 1012, 10 U.S.P.Q.2d 1614, 1618 (Fed. Cir. 1989) as support for application of clearly erroneous standard for determining compliance). Concerning the written description requirement, the court stated that "[a]lthough [the applicant] does not have to describe exactly the subject matter claimed, . . . the description must clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." *Id.*

435. 736 F.2d 1516, 222 U.S.P.Q. 369 (Fed. Cir. 1989), *cert. denied*, 469 U.S. 1209 (1985).

436. 835 F.2d 1419, 5 U.S.P.Q.2d 1194 (Fed. Cir. 1987), *cert. denied*, 486 U.S. 1008 (1988).

437. See *Vas-Cath*, 935 F.2d at 1563, 19 U.S.P.Q.2d at 1117 (citing *In re Wilder*, 736 F.2d 1516, 1520, 222 U.S.P.Q. 369, 372 (Fed. Cir. 1984), *cert. denied*, 469 U.S. 1209 (1985) and *Kennecott Corp. v. Kyocera Int'l, Inc.*, 835 F.2d 1419, 1421, 5 U.S.P.Q.2d 1194, 1197 (Fed. Cir. 1987), *cert. denied*, 486 U.S. 1008 (1988)).

decisions.⁴³⁸ Thus, in *Vas-Cath*, the court reaffirmed the distinction between the two requirements.⁴³⁹

The Federal Circuit then turned to the district court's analysis. The court agreed with the district court's conclusion that drawings alone may be sufficient to provide a "written description," citing prior decisions relevant to this issue.⁴⁴⁰ The Federal Circuit, however, did not agree with the district court's legal standard for "written description" compliance or with its conclusion that no genuine issues of material fact were in dispute.⁴⁴¹ With respect to the legal standard, the Federal Circuit stated that the district court's concern with "what the invention is" was misplaced. The Federal Circuit further found that the district court's requirement that the '081 design application drawings "describe what is novel or important" was legal error, because with a combination patent there is no recognizable or essential "element, 'gist' or 'heart' of the invention."⁴⁴²

Focusing on the ratio range set forth in the claim of "substantially greater than one-half but substantially less than a full diameter," the district court stated that this range did not follow inevitably from the '081 drawings.⁴⁴³ To demonstrate the teachings of the '081 drawings with respect to this ratio, Mahurkar submitted the declaration of Dr. Stephen Ash.⁴⁴⁴ The Federal Circuit held that this, without more, gave rise to a genuine issue of material fact that was inappropriate for summary disposition.⁴⁴⁵

Furthermore, the Federal Circuit stated that the district court erred in taking into account Mahurkar's other patents which involved different range limitations.⁴⁴⁶ The Federal Circuit also found that the district court erred in applying a legal standard that required the drawings of the '081 design application to necessarily

438. *Id.*

439. *Id.* at 1563-64, 19 U.S.P.Q.2d at 1117.

440. *Id.* at 1564, 19 U.S.P.Q.2d at 1118; *see, e.g.*, *KangaROOS U.S.A., Inc. v. Caldor, Inc.*, 778 F.2d 1571, 1574, 228 U.S.P.Q. 32, 33 (Fed. Cir. 1985) (holding that there is no statutory prohibition against reliance on design application for purposes of section 120); *In re Berkman*, 642 F.2d 427, 429, 209 U.S.P.Q. 45, 46 (C.C.P.A. 1981) (recognizing that design applications may be satisfied through drawings, but finding those at issue insufficient to meet section 112, first paragraph); *In re Wolfensperger*, 302 F.2d 950, 951, 133 U.S.P.Q. 537, 537 (C.C.P.A. 1962) (holding that Board's statement that drawings alone cannot form basis of valid claim is too broad to be valid and is contrary to well-settled and long-established Patent Office practice).

441. *Vas-Cath*, 935 F.2d at 1565, 19 U.S.P.Q.2d at 1118.

442. *See id.* (quoting *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 345 (1961)).

443. *Id.* at 1559, 19 U.S.P.Q.2d at 1113.

444. *Id.* at 1567, 19 U.S.P.Q.2d at 1119. *Vas-Cath* submitted no technical evidence to refute Ash's conclusions. *Id.*

445. *Id.* at 1566-67, 19 U.S.P.Q.2d at 1119.

446. *Id.*

exclude all diameters other than those within the claimed range, stating that it was questionable whether any drawing could ever do so. Finally, absent a separate discussion of the remaining claims, the Federal Circuit assumed that the same erroneous legal standard was applied by the district court to the remaining claims.⁴⁴⁷ Consequently, the court reversed the district court's grant of summary judgment as to all claims.⁴⁴⁸

*In re Kaslow*⁴⁴⁹ was another Federal Circuit case concerning the written description requirement. The invention in *Kaslow* related to a method for automatically redeeming discount coupons at retail store checkout counters.⁴⁵⁰ Part of the claim included the step for "transmitting the summarized data obtained at each supermarket to a central computer linked to said supermarkets to provide an audit of the overall volume of coupon traffic."⁴⁵¹ The system used existing optical scanners and computer systems at supermarket checkout counters to scan or read universal product code (UPC) symbols and recognition code symbols impressed on discount coupons.⁴⁵²

Following a public use proceeding in which the examiner rejected the claims under sections 102(b) and 103, *Kaslow* amended his claims.⁴⁵³ He emphasized that in order to provide an audit, the memory at each supermarket identifies discount coupons according to individual manufacturers and transmits this data from each supermarket to a central computer.⁴⁵⁴ The examiner also rejected the claims under section 132 because *Kaslow* did not disclose the audit procedure in the specification.⁴⁵⁵ The Board affirmed both of the examiner's rejections and treated the section 132 rejection as if it had been made under the first paragraph of section 112.⁴⁵⁶

The Federal Circuit affirmed, stating that the test for determining compliance with the written description requirement is whether the

447. *Id.* at 1567, 19 U.S.P.Q.2d at 1120; see *In re Borkowski*, 422 F.2d 904, 909 n.4, 164 U.S.P.Q. 642, 646 n.4, (C.C.P.A. 1970) (stating that disclosure standard may vary according to claim).

448. *Vas-Cath*, 935 F.2d at 1567, 19 U.S.P.Q.2d at 1120.

449. 707 F.2d 1366, 217 U.S.P.Q. 1089 (Fed. Cir. 1983).

450. *In re Kaslow*, 707 F.2d 1366, 1368, 217 U.S.P.Q. 1089, 1091 (Fed. Cir. 1983).

451. *Id.*

452. *Id.*

453. *Id.* at 1371, 217 U.S.P.Q. at 1094; see 37 C.F.R. § 1.292 (1991) (outlining requirements for, and burdens of proof involved with, public use proceeding); see also MANUAL OF PATENT EXAMINING PROCEDURE § 720-720.05; 35 U.S.C. § 102(b) (1988) ("A person shall be entitled to a patent unless . . . the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States . . .").

454. *Kaslow*, 707 F.2d at 1371, 217 U.S.P.Q. at 1094.

455. *Id.* at 1372, 217 U.S.P.Q. at 1095.

456. *Id.*

application, as originally filed, reasonably conveys to one skilled in the art that the inventor, at that time, possessed the claimed subject matter.⁴⁵⁷ Applying this test, the Federal Circuit concluded that the specification did not support the amended claim language.⁴⁵⁸ Although Kaslow argued that the word “check” and the later-added “audit” meant the same thing, the Federal Circuit disagreed, concluding that the words did not describe any particular auditing or checking procedure to be carried out as part of the invention.⁴⁵⁹ The court found that the claim language simply implied some mechanism or step as part of the invention and that nowhere in the specification was either the step or method for performing an audit described.⁴⁶⁰

In *Bigham v. Godtfredsen*,⁴⁶¹ an interesting written description issue arose in an interference context. The invention at issue and the subject of count one of the interference was certain penicillanic compounds having a side chain containing the substituent “X.”⁴⁶² The substituent “X” was further defined as a “chloro, bromo, iodo, alkylsulfonyloxy having from 1-4 carbon atoms, benzenesulfonyloxy and toluenesulfonyloxy.”⁴⁶³ On Godtfredsen’s motion, the PTO split count one into separate counts two and three. The basis for the motion was that the various substituents were patentably distinct from each other. In count two, “X” was identified as iodo or bromo, and in count three, “X” was identified as “chloro, alkylsulfonyloxy having from 1-4 carbon atoms and toluenesulfonyloxy.”⁴⁶⁴

To prove a constructive reduction to practice of the subject matter of count two, Godtfredsen relied solely on his British priority

457. *Id.* at 1375, 217 U.S.P.Q. at 1096 (stating that presence or absence of literal support in specification of claim language is not test for compliance with written description requirement).

458. *Id.* The court found no support for allowing the claim language from the following passages of the specification:

More particularly, it is an object of the invention to provide a merchandise coupon having UPC indicia thereon which minimizes the possibility of misredemption and affords a running account of the number of valid coupons accepted, thereby simplifying auditing and redemption procedures.

With the present invention, the summarized data may include data relating to the coupons honored in the various stores linked to the central computer, so that a check may be made on the overall volume of coupon traffic and the relative trading of the coupons issued by various manufacturers.

Id. (emphasis in original).

459. *Id.*

460. *Id.*

461. 857 F.2d 1415, 8 U.S.P.Q.2d 1266 (Fed. Cir. 1988).

462. *Bigham v. Godtfredsen*, 857 F.2d 1415, 1415, 8 U.S.P.Q.2d 1266, 1266 (Fed. Cir. 1988).

463. *Id.*

464. *Id.* at 1416, 8 U.S.P.Q.2d at 1267.

application, which showed the claimed compounds and disclosed the substituents as "halogens."⁴⁶⁵ His priority application also contained a specific example where "X" was chloro. Bigham's United States application, filed several months after Godtfredsen's British application, named chloro, bromo, and iodo and contained specific examples where "X" was chloro. Bigham also proved actual reduction to practice of the chloro compound before Godtfredsen's British filing date.⁴⁶⁶ The Board awarded priority of count three to Bigham based on his prior actual reduction to practice, but awarded priority of count two to Godtfredsen, finding that the disclosure of "halogen" EH/VG in his British application was a constructive reduction to practice of fluoro, chloro, bromo, and iodo.⁴⁶⁷

On appeal to the Federal Circuit, Bigham argued that Godtfredsen's disclosure of halogen in his British application did not meet the requirements of section 112, first paragraph, with respect to the bromo and iodo substituents. For purposes of discussion, the court assumed that the bromo and iodo species were, in fact, patentably distinct from the other species.⁴⁶⁸ The Federal Circuit observed that while the term "halogen" is, in most circumstances, sufficient to describe all members of the class, this rule does not apply where the count is based on a patentable distinction between the members of the class.⁴⁶⁹ The court concluded that Godtfredsen could not, on one hand, claim that bromo and iodo were patentably distinct from each other for purposes of bifurcating count one, and then argue the contrary, that the term "halogen" encompassed all species, in another count.⁴⁷⁰ Thus, in view of the Board's holding of a patentable distinction between the counts, the Federal Circuit held that the disclosure of halogen and chloro did not serve as an adequate written description of the bromo and iodo compounds. Bigham was therefore also awarded priority as to count two.⁴⁷¹

In *Texas Instruments, Inc. v. United States International Trade Commission*,⁴⁷² the Federal Circuit considered whether the subject matter of a claim added during prosecution was in the possession of the inventor at the time of filing, i.e., whether the "written description" requirement was satisfied. The administrative law judge (ALJ)

465. *Id.*

466. *Id.*

467. *Id.*

468. *Id.* at 1417, 8 U.S.P.Q.2d at 1268.

469. *Id.*

470. *Id.*

471. *Id.*

472. 871 F.2d 1054, 10 U.S.P.Q.2d 1257 (Fed. Cir. 1989).

found that it was not.⁴⁷³ Citing *In re Wright*, the court reiterated that if the scope of a claim is amended to justify an assertion that the claim is directed to a "different invention" than the original claim, it is proper to inquire whether the newly claimed subject matter is described in the patent application.⁴⁷⁴ The court noted that the examiner recognized the "word boost" feature as the point of novelty, and also noted that the ALJ recognized that those skilled in the art were able to construct circuits with mid-point precharging without referring to the specification of the patent at issue.⁴⁷⁵ In reversing the ALJ's finding, the court concluded that the ability of the artisan to construct the invention by referring to well-known, standard references does not prove that the subject matter of the claim was not in the possession of the inventor at the time of filing.⁴⁷⁶

1. *In a reissue context*

*In re Peters*⁴⁷⁷ involved an invention related to improvements in structural elements of a flat panel television display device. Each of several support walls in this device had a metal tip compressed between it and the front wall.⁴⁷⁸ The tip was disclosed in the specification as having a thickness at its base substantially equal to that of the support wall and tapering toward the front wall.⁴⁷⁹ After Peters received a patent on his device, he realized that his claims were unduly restrictive. Consequently, he sought to broaden the claims in a reissue application to have them read on tapered and nontapered tips. The examiner, however, rejected the claims in the reissue on the grounds that they were unsupported by the original disclosure. The Board affirmed.⁴⁸⁰

In reversing the Board, the Federal Circuit found that the disclosed tip configuration in the original disclosure was not critical.⁴⁸¹ The court noted that the tip shape was not used to distinguish it from the prior art, nor was it used previously to reject the claim. The court concluded that one skilled in the art would readily under-

473. *Texas Instruments, Inc. v. United States Int'l Trade Comm'n*, 871 F.2d 1054, 1061, 10 U.S.P.Q.2d 1257, 1262 (Fed. Cir. 1989). Specifically, the ALJ found that the patent disclosure did not reasonably convey to the artisan that the mid-point charging or sensing concept was in the inventor's possession at the time of filing. *Id.*

474. *Id.* at 1061-62, 10 U.S.P.Q.2d at 1262-63 (citing *In re Wright*, 866 F.2d 422, 424, 9 U.S.P.Q.2d 1649, 1651 (Fed. Cir. 1989)).

475. *Id.* at 1062, 10 U.S.P.Q.2d at 1263.

476. *Id.*

477. 723 F.2d 891, 221 U.S.P.Q. 952 (Fed. Cir. 1983).

478. *In re Peters*, 723 F.2d 891, 892, 221 U.S.P.Q. 952, 953 (Fed. Cir. 1983).

479. *Id.*

480. *Id.* at 893, 221 U.S.P.Q. at 953.

481. *Id.*

stand that in practicing the invention, it was not important whether the tips were tapered.⁴⁸²

The Federal Circuit also found that there was much more to the claimed invention than the tips and that no other element of the claimed invention was related to the tapered shape of the tips. Accordingly, the court concluded that the broadened reissue claims merely omitted an unnecessary limitation that had restricted one element of the invention as originally claimed.⁴⁸³

The Federal Circuit further noted that while the original patent stated that it would be desirable for the tip ends to be as thin as possible to avoid "optical interference," this did not equate to a requirement that the tip base be wider than the ends. The original patent stated that the tips needed only to withstand forces of atmospheric pressure loading. The court further explained that if the Board's approach was accepted, it would be applicable to every broadened reissue claim which, by definition, would encompass an embodiment not specifically described in the specification.⁴⁸⁴

Where the limitation is critical, however, a lack of written description is fatal, and rejection is much more likely. This was illustrated by *In re Wilder*,⁴⁸⁵ in which the Federal Circuit distinguished *Peters*. *Wilder* involved an invention that was a mechanism for indicating the location of information recorded on a dictating machine.⁴⁸⁶ The person speaking into a dictating machine indicated the location of instructions on a recording medium, such as magnetic tape, by recording a control tone at the beginning or end of the instructions. A transcribing machine scanned the tape and detected the control tones. The locations of the control tones were stored in an electronic circuit. Lights on a linear array correlated with the location of the control tones on the tape. The transcriptionist could locate specific information by advancing the tape until an indicator light aligned with a light in the array.⁴⁸⁷

When the patent was put into reissue, the Board affirmed the rejection of certain claims of the reissue application as being subject matter not disclosed in the original patent.⁴⁸⁸ While the original claims required that the light be scanned "in synchronism with the scanning of said record medium," the reissue claims had no such

482. *Id.*

483. *Id.*

484. *Id.* at 894, 221 U.S.P.Q. at 954.

485. 736 F.2d 1516, 222 U.S.P.Q. 369 (Fed. Cir. 1984), *cert. denied*, 469 U.S. 1209 (1985).

486. *In re Wilder*, 736 F.2d 1516, 1517, 222 U.S.P.Q. 369, 370 (Fed. Cir. 1984), *cert. denied*, 469 U.S. 1204 (1985).

487. *Id.*

488. *Id.*

limitation.⁴⁸⁹ Consequently, while the original claims were directed to a species, the reissue claims were directed to the genus of indicating mechanisms that visually identified positions on a recording medium when the recording medium was scanned.⁴⁹⁰

The Federal Circuit upheld the Board's decision on appeal.⁴⁹¹ The court explained that while the claimed subject matter need not be described identically in the original and reissue applications, the original disclosure must convey to those skilled in the art that the applicant invented the subject matter later claimed.⁴⁹² Wilder admitted that synchronous scanning equipment was the only embodiment of the invention disclosed in the original patent, but argued that the general description of a drawing and the broadly phrased title of the specification demonstrated that other embodiments were contemplated.⁴⁹³ The Federal Circuit concluded that the broadly worded title of the original patent and the customarily broad description of the drawing did not satisfy the written description requirement of section 112.⁴⁹⁴

To satisfy the description requirement, Wilder attempted to rely on the stated objects of the invention.⁴⁹⁵ The Federal Circuit rejected this argument and agreed with the Board, stating that the objects of the invention did little more than outline goals that Wilder hoped the claimed invention would achieve, and it did not describe the way the claimed invention could actually be achieved.⁴⁹⁶ The court distinguished the case from its earlier decision in *In re Peters*, in which the appellants successfully rebutted the PTO's rejection under section 112, by proving that the broadened reissue claims merely omitted an unnecessary limitation.⁴⁹⁷

489. *Id.*

490. *Id.* at 1517-18, 222 U.S.P.Q. at 371.

491. *Id.* at 1521, 222 U.S.P.Q. at 373.

492. *Id.* at 1520, 222 U.S.P.Q. at 372; see *In re Koslow*, 707 F.2d 1366, 1375, 217 U.S.P.Q. 1089, 1096 (Fed. Cir. 1983) (noting that proper inquiry is whether invention as whole would have been obvious to person having ordinary skill in art).

493. *Wilder*, 736 F.2d at 1520, 222 U.S.P.Q. at 372. Specifically, Wilder contended that one of the drawings indicated that the dictation apparatus illustrated in the drawings was "one in which the present invention finds novel application." *Id.* The title of the patent was "[I]nstruction Indicating Apparatus For A Record And/Or Playback Device." *Id.*

494. *Id.* (explaining that "subjective desire" to claim as broadly as possible not enough to establish that broader invention being claimed in reissue application was adequately described in original patent).

495. *Id.* One of the recited objects stated: "[I]t is an object of the present invention to provide improved indicating apparatus for indicating the location of particular information on a record medium which overcomes the aforementioned problems." *Id.* at 1520-21, 222 U.S.P.Q. at 372.

496. *Id.* at 1521, 222 U.S.P.Q. at 372.

497. *Id.*

In *In re Weiler*,⁴⁹⁸ the Federal Circuit held that the fact that subject matter of the patent claims in question can be found somewhere in the overall disclosure of the patent does not entitle the applicant to such claims in a reissue application when the applicant fails to claim the subject matter in the original patent application, and when the subject matter of the reissue patent claims is clearly independent of, and distinct from, the original patent claims.⁴⁹⁹ In its analysis, the court considered the effect of compliance with section 112 on the determination of the "intent to claim" and the error requirements of the reissue provisions.⁵⁰⁰

In the original application, the examiner held that the Weiler application contained three independent and distinct inventions and required restrictions between claims 1-7 (assay method), claims 8 and 11 (an organic compound), and claims 9 and 10 (a protein compound).⁵⁰¹ Claims 1-7 were elected and the claims were allowed without amendment. No divisional application was filed on the other non-elected inventions.⁵⁰² Weiler filed a reissue application, stating that claims 8-11 were inadvertently abandoned.⁵⁰³ Claim 13 (method for developing citrus fruit strains low in limonin content by use of limonin-specific antibodies) and claim 19 (a gamma globulin factor with antibodies reactive with limonin) were finally rejected and appealed.⁵⁰⁴

The Board agreed with the examiner's view that failure to file a timely divisional application, even for non-elected claims, is deliberate and not an error in the prosecution of the first application.⁵⁰⁵ The Board held that the subject matter of claims 13 and 19 "was not claimed at all in the original application," and that nothing in the patent showed evidence of an "intent to claim" that subject matter.⁵⁰⁶

Referring first to the given support for the reissue claims, the Federal Circuit stated that the question of support in the disclosure is a threshold section 112 inquiry and that without such support, the inquiry ends.⁵⁰⁷ The court then noted that in broadening claim reissue applications, one may look to see whether the disclosure

498. 790 F.2d 1576, 229 U.S.P.Q. 673 (Fed. Cir. 1986).

499. *In re Weiler*, 790 F.2d 1576, 1580-81, 229 U.S.P.Q. 673, 675 (Fed. Cir. 1986).

500. *Id.* at 1581, 229 U.S.P.Q. at 676.

501. *Id.* at 1578, 229 U.S.P.Q. at 674.

502. *Id.*

503. *Id.*

504. *Id.*

505. *Id.* (citing *In re Orita*, 550 F.2d 1277, 193 U.S.P.Q. 145 (C.C.P.A. 1977)).

506. *Id.* at 1580, 229 U.S.P.Q. at 675 (citing *In re Rowand*, 526 F.2d 558, 560, 187 U.S.P.Q. 487, 489 (C.C.P.A. 1975)).

507. *Id.*

“reasonably conveys to one skilled in the art that the inventor had possession of the broad invention at the time the original application was filed.”⁵⁰⁸ That inquiry, however, did not apply because the court found that Weiler did not claim the subject matter of the reissue claims in the original application.⁵⁰⁹ The court stated that the applicant cannot assert error in failing to claim something that was not disclosed at all.⁵¹⁰ The court noted that when an applicant makes some disclosure, as Weiler did, and claims one invention and ignores the other inventions, it is difficult to find error in the failure to claim those ignored on the sole basis that they were disclosed.⁵¹¹

With respect to the “intent to claim” requirement, the Federal Circuit recognized that while occasionally including section 112 considerations, this requirement resolves ultimately into the question of error.⁵¹² Discussing *In re Mead*,⁵¹³ the court analogized evidence of intent to claim with the written description requirement.⁵¹⁴ The court stated that the absence of compliance with section 112’s written description requirement forecloses a finding of “intent to claim,” and thus precludes a grant of the reissue. The court continued, stating that the converse is not true because compliance with section 112, by itself, does not establish intent and error in a failure to claim.⁵¹⁵ The court held there was no “error,” effectively striking the reissue application.⁵¹⁶

2. *Essential material*

In *Quaker City Gear Works, Inc. v. Skil Corp.*,⁵¹⁷ the patent-in-suit related to a “speed-reduction gear train for the transmission of power in which a pinion with a relatively small number of teeth meshes and drives a parallel gear with a relatively large number of teeth.”⁵¹⁸ The specification disclosed both a single tooth and

508. *Id.*, 229 U.S.P.Q. at 676 (citing *In re Peters*, 723 F.2d 891, 894, 221 U.S.P.Q. 952, 954 (Fed. Cir. 1984)).

509. *Id.*

510. *Id.* at 1580-81, 229 U.S.P.Q. at 676.

511. *Id.* at 1581, 229 U.S.P.Q. at 676 (stating that such holding would strip statutory requirement that applicant point out and distinctly claim subject matter that applicant regards as his invention).

512. *Id.*, 229 U.S.P.Q. at 676-77.

513. 581 F.2d 251, 198 U.S.P.Q. 412 (C.C.P.A. 1978).

514. *Weiler*, 790 F.2d at 1581, 198 U.S.P.Q. at 676-77; see *In re Peters*, 723 F.2d 891, 894, 221 U.S.P.Q. 952, 954 (Fed. Cir. 1984) (discussing “intent to claim” requirement).

515. *Weiler*, 790 F.2d at 1581-82, 198 U.S.P.Q. at 677.

516. *Id.*

517. 747 F.2d 1446, 223 U.S.P.Q. 1161 (Fed. Cir. 1984), *cert. denied*, 471 U.S. 1136 (1985).

518. *Quaker City Gear Works, Inc. v. Skil Corp.*, 747 F.2d 1446, 1448, 223 U.S.P.Q. 1161, 1161 (Fed. Cir. 1984), *cert. denied*, 471 U.S. 1136 (1985).

double tooth pinion as embodiments of the invention.⁵¹⁹ The specification taught that to practice the invention, "the disclosed pinion is 'preferably [sic] combined' with a helical wheel gear made according to 'German Industrial Standard 58400 draft September 1963.'" ⁵²⁰ The German Standard was mentioned at six places in the specification and specifically claimed in one of the dependent claims.⁵²¹

Quaker City, the assignee of the patent, later instituted suit against Skil. The case was tried to a jury, which found the patent valid and infringed. Due in large part to testimony by the inventor characterizing the German Standard as "necessary" to design the invention, the district court set aside the verdict and entered judgment for Skil on the ground that the patent failed to comply with the disclosure requirements of section 112.⁵²² The district court reasoned that the German Standard constituted "essential material" which was unavailable, and that reference to an unavailable, nonpatent foreign publication to supply "essential material" was clearly insufficient to comply with section 112.⁵²³

The Federal Circuit affirmed, agreeing that the German Industrial Standard was essential.⁵²⁴ It stated that the inventor's testimony concerning the necessity of the German Standard "negates the reasonableness of a conclusion that the standard was not essential for an adequate disclosure."⁵²⁵ Although Quaker City argued that "all data of any significance" from the German Standard closely paralleled American standards, the court found the argument unavailing, in light of the concern expressed by Quaker City's patent attorney during prosecution of the patent.⁵²⁶

519. *Id.* at 1449, 223 U.S.P.Q. at 1162.

520. *Id.*

521. *Id.* During prosecution, Quaker City's patent attorney recognized there was a problem with the description of the standard. Nevertheless, he decided against a more complete description because the examiner raised no obligation. *Id.*

522. *Id.* at 1450-51, 223 U.S.P.Q. at 1163-64.

523. *Id.* at 1451-52, 223 U.S.P.Q. at 1164. Despite repeated requests by Skil during discovery, Quaker City was unable to produce a copy of the German Industrial Standard. *Id.*

524. *Id.* at 1455, 223 U.S.P.Q. at 1167.

525. *Id.*

526. *Id.* The Federal Circuit flatly rejected Quaker City's argument that the German Standard was incorporated by reference, noting that incorporation by reference of material necessary for an adequate disclosure which is unavailable to the public has never been permitted under section 112. *Id.*

3. *Supplementing the written description*

a. *Expert testimony*

In *Martin v. Mayer*,⁵²⁷ the Federal Circuit found that an applicant's specification relating to a high frequency attenuation cable having an electrically conductive outer jacket surrounding inner layers of absorptive, dielectric, and conductive media, did not support a claim requiring a "harness comprising a plurality" of such cables.⁵²⁸ In *Martin*, the issue of compliance with the description requirement arose in the context of an interference proceeding to determine priority of invention.

Mayer, the senior party, copied claims from Martin's patent. The key issue was whether Mayer had a "right to make" the interference counts. The only arguable support for a harness in Mayer's specification was a statement that "it is evident that a multiple wire coaxial structure can be achieved by the same means."⁵²⁹ Martin offered the deposition testimony of an expert and other evidence to the effect that "multiple wire coaxial structure" referred to a single cable, and that cables and wires were understood in the art to mean different things.⁵³⁰

Mayer prevailed on the counts relating to cables and on count six, which specified a "harness" of such cables. In determining that Mayer's specification supported the harness limitation, the Board relied on the fact that a harness of electrical cables was "conventional."⁵³¹ It discounted the expert testimony, noting that the disputed language was "easily understood" and that "expert testimony will not be received in an interference when it attempts to interpret or explain a disclosure."⁵³² Martin appealed the Board's decision on the "harness" count only.

The Federal Circuit reversed, finding that Mayer failed to present a prima facie case, by clear and convincing evidence, of compliance with the first paragraph of section 112.⁵³³ First, the court found error in the Board's decision to discount the testimony of Martin's expert, stating that there is no bright-line rule that requires the exclusion of expert testimony in an interference.⁵³⁴ The court distinguished situations in which a party attempted to explain its

527. 823 F.2d 500, 3 U.S.P.Q.2d 1333 (Fed. Cir. 1987).

528. *Martin v. Mayer*, 823 F.2d 500, 504, 3 U.S.P.Q.2d 1333, 1337 (Fed. Cir. 1987).

529. *Id.*

530. *Id.*

531. *Id.*

532. *Id.*

533. *Id.* at 505, 3 U.S.P.Q.2d at 1337.

534. *Id.* at 504, 3 U.S.P.Q.2d at 1337.

disclosure. Moreover, the Federal Circuit found that, regardless of whether harnesses of some cables were conventional, Mayer's specification did not fulfill the purposes of the written description requirement with respect to the particular harness of claim 6.⁵³⁵

b. Inherency as providing a basis

In *Kennecott Corp. v. Kyocera International, Inc.*,⁵³⁶ the Federal Circuit found sufficient written description for a physical property limitation in a product claim based on the previous disclosure of structures in examples in the parent application that inherently possessed the same physical property.⁵³⁷ The claims of the patent-in-suit, which issued from a CIP application, were directed to a high-alpha silicon carbide ceramic body "having a predominantly equiaxed microstructure."⁵³⁸ While the parent application was also directed to a high-alpha silicon carbide ceramic body, the parent application did not explicitly mention the equiaxed microstructure. The CIP application contained a substantial part of the disclosure of

535. *Id.* at 505, 3 U.S.P.Q.2d at 1337. The court stated:

The issue is not whether one skilled in the art would have been able to make a harness using knowledge of the art, but rather did [the inventor's] application sufficiently describe a harness of cables with conductive outer jackets. Section 112 does not require that the specification contain that which is known to those skilled in the art. But it does require specificity as to the claim limitations that characterize the interference count. It is "not a question of whether one skilled in the art *might* be able to construct the patentee's device from the teachings of the disclosure. . . . Rather, it is a question whether the application necessarily discloses that particular device."

Id. at 504-05, 3 U.S.P.Q.2d at 1337 (quoting *Jepson v. Coleman*, 314 F.2d 533, 536, 136 U.S.P.Q. 647, 649-50 (C.C.P.A. 1963)) (emphasis in original).

536. 835 F.2d 1419, 5 U.S.P.Q.2d 1194 (Fed. Cir. 1987), *cert. denied*, 486 U.S. 1008 (1988).

537. *Kennecott Corp. v. Kyocera Int'l, Inc.*, 835 F.2d 1419, 1423, 5 U.S.P.Q.2d 1194, 1199 (Fed. Cir. 1987), *cert. denied*, 486 U.S. 1008 (1988). The parties did not dispute the following facts:

(1) the high (over 95%) alpha silicon carbide ceramic body described in the parent application had an equiaxed microstructure;

(2) the parent application did not mention the equiaxed microstructure of the high-alpha silicon carbide ceramic body, nor did it state the requirements for forming such microstructure;

(3) the inventors knew the product disclosed in the parent application had an equiaxed microstructure;

(4) it was known that ceramics from high-alpha silicon carbide could have this structure;

(5) all the examples using high-alpha silicon carbide in the parent application produced a ceramic body having an equiaxed microstructure;

(6) the method set forth in the parent application using the high-alpha silicon carbide invariably produced a ceramic having the equiaxed microstructure; and

(7) the photomicrographs in the CIP were of the product made and described in the parent application and produced in the original examples.

Id.

538. *Id.* at 1420, 5 U.S.P.Q.2d at 1196.

the parent application, plus a description and photomicrographs of the equiaxed microstructure.⁵³⁹

The dispositive issue at the district court level was whether the claims of the patent had written description support in the earlier filed parent. It was crucial for Kennecott to obtain the benefit of the earlier filing date to avoid a section 102(b) "on sale" bar.⁵⁴⁰ Specifically, a sale of the claimed invention occurred in early 1977, more than one year before the May 1, 1978 filing date of the CIP application. The earlier application had a filing date of June 5, 1975. Thus, if Kennecott could obtain the date benefit of the prior application, it would avoid the "on sale" bar. The district court concluded that there was no written description support, and it denied Kennecott the benefit of the prior date under section 120.⁵⁴¹ Consequently, the district court found Kennecott's patent invalid because of the "on sale" bar, granted summary judgment, and dismissed Kennecott's claim of patent infringement.⁵⁴²

The district court also concluded that for the parent specification to meet the written description requirement of section 112, one reading the specification must know from the "four corners" of the specification itself, i.e., without referring to information outside the specification, that Kennecott's claimed ceramic body has an equiaxed microstructure.⁵⁴³ The district court held that although the specification of the parent application met the enablement requirement of section 112, it did not meet the written description requirement.⁵⁴⁴ To the district court, it was immaterial that the product disclosed in the parent application was the same as that claimed in the patent-in-suit.⁵⁴⁵

The Federal Circuit discussed the purpose of the written description requirement of the first paragraph of section 120. Citing *In re Wilder*, the Federal Circuit stated that the written description must communicate "that which is needed to enable" one skilled in the relevant art to make and use the claimed invention.⁵⁴⁶ The court further noted that the written description requirement ensures that

539. *Id.*

540. *Id.* at 1419, 5 U.S.P.Q.2d at 1194.

541. *Id.* at 1421, 5 U.S.P.Q.2d at 1197.

542. *Id.*

543. *Id.*

544. *Id.*

545. *Id.*

546. *Id.* (citing *In re Wilder*, 736 F.2d 1516, 1520, 222 U.S.P.Q. 369, 372 (Fed. Cir. 1984), *cert. denied*, 469 U.S. 1209 (1985)).

the inventor had "possession of the later-claimed invention on the filing date of the earlier application."⁵⁴⁷

Noting the undisputed fact that the only written description in the patent-in-suit not present in the parent application disclosure was the description of the structure and pictures of the product's microstructure, *Kennecott* argued that the "added description of the property of a previously-disclosed product does not deprive claims to that product of the benefit of a prior disclosure of the product."⁵⁴⁸ In view of its concessions for purposes of summary judgment, *Kyocera* was left with the argument that because the parent specification was silent as to the microstructure of the product, and because one would not know whether the product had an equiaxed microstructure merely by reading the specification, the specification was inadequate in law to support claims that required an equiaxed microstructure.⁵⁴⁹

Citing *In re Edwards*,⁵⁵⁰ the Federal Circuit noted that "earlier and later applications need not use identical words, if the earlier application shows the subject matter that is claimed in the later application, with adequate direction as to how to obtain it."⁵⁵¹ The Federal Circuit found the facts in *Edwards* to be strongly analogous to the facts of *Kennecott* because the parent application's examples all produced a ceramic with an equiaxed microstructure.⁵⁵² Furthermore, the court pointed out that in *In re Reynolds*,⁵⁵³ the question was whether words describing a function inherent in the claimed product could be added to the specification by amendment or whether such description was "new matter."⁵⁵⁴ In *Reynolds*, the C.C.P.A. concluded that the express description of the inherent property could be added to the specification with the effect of the original filing date because it was not "new matter."⁵⁵⁵ The Federal Circuit also cited *In re Kirchner*,⁵⁵⁶ in which the C.C.P.A. recognized that an invention may be described in different ways or may comply with section 112 in different ways, and still meet the requirements of section 120.⁵⁵⁷

547. *Id.* For a discussion of the substance of this quote, see *supra* notes 411-25 and accompanying text.

548. *Kennecott Corp.*, 835 F.2d at 1421, 5 U.S.P.Q.2d at 1197.

549. *Id.*

550. 568 F.2d 1349, 196 U.S.P.Q. 465 (C.C.P.A. 1978).

551. *Kennecott Corp.*, 835 F.2d at 1422, 5 U.S.P.Q.2d at 1197 (citing *In re Edwards*, 568 F.2d 1349, 1351-52, 196 U.S.P.Q. 465, 467-68 (C.C.P.A. 1978)).

552. *Id.*, 5 U.S.P.Q.2d at 1198.

553. 443 F.2d 384, 170 U.S.P.Q. 94 (C.C.P.A. 1971).

554. *Kennecott Corp.*, 835 F.2d at 1422, 5 U.S.P.Q.2d at 1198.

555. *Id.*

556. 305 F.2d 897, 134 U.S.P.Q. 324 (C.C.P.A. 1962).

557. *Kennecott Corp.*, 835 F.2d at 1422, 5 U.S.P.Q.2d at 1198 (discussing *In re Kirchner*, 305 F.2d 897, 904, 134 U.S.P.Q. 324, 330 (C.C.P.A. 1962)).

Although recognizing that in *Kirchner* the later addition was to the specification only, the Federal Circuit pointed out that in *In re Nathan*⁵⁵⁸ later-added limitations to the claims were found not to constitute new matter.⁵⁵⁹

In light of the precedent, the Federal Circuit concluded that explicitly disclosing an inherent property of a product in a subsequent patent application does not deprive that product of the benefit of an earlier filing date.⁵⁶⁰ Given Kyocera's concessions of the factual premises of inherency, the Federal Circuit held that Kennecott was entitled to the section 120 date benefit and reversed the district court's grant of summary judgment against Kennecott.⁵⁶¹

4. *Absence of precise wording in the specification*

In *In re Wright*,⁵⁶² the Federal Circuit reversed the PTO's section 112 rejection, holding that there was adequate written description support for the applicant's claim limitation despite the fact that it was not set forth expressly in the specification.⁵⁶³ Wright's invention involved a method of forming images using photosensitive microcapsules.⁵⁶⁴ During the prosecution of his application, Wright added a limitation which stated, in effect, that the microcapsules were distributed on the support "but not permanently fixed thereto."⁵⁶⁵ The examiner rejected the claim under section 112, contending that the term "not permanently fixed" was not supported in the disclosure and was therefore new matter.⁵⁶⁶ While the Board viewed the examiner's rejection as being actually based on a lack of written description support, it based its affirmance on different reasons. The Board considered the term "not permanently fixed" as being subject to different interpretations, and noted that it could be interpreted as meaning that the microcapsules were positioned on the support temporarily, or for a "relatively protracted" period.⁵⁶⁷

On appeal, the Federal Circuit dismissed the Board's discussion of whether the meaning of the term "permanently fixed" was clear, commenting that the Board's inquiry went to the scope of the

558. 328 F.2d 1005, 140 U.S.P.Q. 601 (C.C.P.A. 1964).

559. *Kennecott Corp.*, 835 F.2d at 1422, 5 U.S.P.Q.2d at 1198 (construing *In re Nathan*, 328 F.2d 1005, 1008-09, 140 U.S.P.Q. 601, 604 (C.C.P.A. 1964)).

560. *Id.* at 1423, 5 U.S.P.Q.2d at 1199.

561. *Id.*

562. 866 F.2d 422, 9 U.S.P.Q.2d 1649 (Fed. Cir. 1989).

563. *In re Wright*, 866 F.2d 422, 425, 9 U.S.P.Q.2d 1649, 1652 (Fed. Cir. 1989).

564. *Id.* at 423, 9 U.S.P.Q.2d at 1650.

565. *Id.* at 423-24, 9 U.S.P.Q.2d at 1650.

566. *Id.* at 424, 9 U.S.P.Q.2d at 1651.

567. *Id.* at 425, 9 U.S.P.Q.2d at 1652.

phrase, rather than to whether the specification had adequate support.⁵⁶⁸ Finding the meaning of the term clear, the court treated the rejection as having been made under the written description requirement of the first paragraph. The Federal Circuit noted that the examiner apparently did not understand that the claimed subject matter need not be described *in haec verba* for the specification to comply with the written description requirement. Reading the specification in light of the claims and the prior art, the court concluded that the phrase was adequately described in the specification.⁵⁶⁹

The court based its conclusion on two specific teachings in Wright's specification. First, the examples warned that it was important that the microcapsules not be "disturbed" until the image was formed.⁵⁷⁰ Although not explicitly stated, the implication was that a microcapsule cannot be "disturbed" if it is permanently fixed. Second, the last step of Wright's method called for the removal of the microcapsules.⁵⁷¹ Again, the implication was that if the microcapsules were to be removed, they could not be permanently fixed. To the court, these teachings clearly supported Wright's added limitation.⁵⁷²

In *Ralston Purina Co. v. Far-Mar-Co, Inc.*,⁵⁷³ the Federal Circuit decided that certain claims of the Flier patent were entitled to the effective filing date of a prior parent application because, with respect to the claims in question, the parent application complied with the written description requirement of the first paragraph.⁵⁷⁴ Far-Mar-Co argued that the allegedly infringed claims contained "new matter" compared to the parent application, at least with respect to the protein content of the starting material, total and added moisture, temperature ranges, and the situs of fiber formation.⁵⁷⁵ Far-Mar-Co also contended that although the parent application could enable one skilled in the art to practice the claimed invention, it did not meet the written description requirement with respect to these limitations.⁵⁷⁶ In support of its arguments, Far-Mar-Co cited several cases that it claimed demonstrated that ranges found in the appli-

568. *Id.*

569. *Id.*

570. *Id.*

571. *Id.*

572. *Id.*

573. 772 F.2d 1570, 227 U.S.P.Q. 177 (Fed. Cir. 1985).

574. *Ralston Purina Co. v. Far-Mar-Co, Inc.*, 772 F.2d 1570, 1572, 227 U.S.P.Q. 177, 177 (Fed. Cir. 1985). The Flier patent claimed the first successful process, and resultant product, for directly and continuously restructuring oil seed particles, preferably soy particles, into a textured, chewable, fibrous, meat-like food product. *Id.*

575. *Id.* at 1575, 227 U.S.P.Q. at 179.

576. *Id.*

cant's claim language must correspond exactly to ranges disclosed in the parent application.⁵⁷⁷ The Federal Circuit disagreed, stating that these cases precluded a determination that one skilled in the art could derive the claim limitations from the parent application under different factors not on point.⁵⁷⁸ In reviewing the district court's finding on each of the asserted disclosure deficiencies, the Federal Circuit held that the district court did not clearly err in determining that the patent's disclosure adequately supported the claim limitations at issue.⁵⁷⁹

In *Litton Systems, Inc. v. Whirlpool Corp.*,⁵⁸⁰ the Federal Circuit declined to accord the filing date of a parent application under section 120. The court reasoned that the issuance of a patent from a CIP application, filed in response to a PTO "new matter rejection," estopped the patentee from arguing that the PTO's rejection was erroneous.⁵⁸¹ Specifically, Litton was precluded from arguing that claim limitations in the patent, which were the basis for overcoming a "new matter rejection" that had been made in the parent application, were inherent in the disclosure of the parent application. The court found that Litton acquiesced in the "new matter rejection" by filing a CIP application, which ultimately issued as a patent.⁵⁸² The Federal Circuit asserted that the filing of a CIP application to overcome a PTO rejection does not, however, give rise to an unrebuttable presumption of acquiescence in the rejection.⁵⁸³ As with any other basis for asserting patent invalidity, Whirlpool had the burden of overcoming the presumption of validity by clear and convincing evidence that the filing of a CIP, and its issuance as a patent, constituted an acquiescence by the patentee in the PTO's rejection.⁵⁸⁴

577. *Id.*; see *In re Blaser*, 556 F.2d 534, 537, 194 U.S.P.Q. 122, 124 (C.C.P.A. 1977) (examining addition of critical limitation); *In re Sichert*, 566 F.2d 1154, 1162-63, 196 U.S.P.Q. 209, 215 (C.C.P.A. 1977) (focusing on unpredictability of art); *In re MacLean*, 454 F.2d 756, 758, 172 U.S.P.Q. 494, 496 (C.C.P.A. 1972) (exposing failure to distinguish one process from another); *In re Lukach*, 442 F.2d 967, 969, 169 U.S.P.Q. 795, 796-97 (C.C.P.A. 1971) (explaining failure to define essential term); *In re Ahlbrecht*, 435 F.2d 908, 911, 168 U.S.P.Q. 293, 296 (C.C.P.A. 1971) (questioning use of list that did not contain claimed substance). The court also noted that one of its predecessors held "that a claim may be broader than the specific embodiment disclosed in a specification is in itself of no moment." *Far-Mar-Co*, 772 F.2d at 1575-76, 227 U.S.P.Q. at 179-80 (quoting *In re Rasmussen*, 650 F.2d 1212, 1215, 211 U.S.P.Q. 323, 326 (C.C.P.A. 1981)).

578. *Ralston Purina*, 772 F.2d at 1575, 227 U.S.P.Q. at 179-80.

579. *Id.* at 1575-77, 227 U.S.P.Q. at 179-81.

580. 728 F.2d 1423, 221 U.S.P.Q. 97 (Fed. Cir. 1984).

581. *Litton Sys., Inc. v. Whirlpool Corp.*, 728 F.2d 1423, 1438, 221 U.S.P.Q. 97, 106 (Fed. Cir. 1984).

582. *Id.*

583. *Id.*

584. *Id.*

The fact that the patentee ultimately permitted the CIP, based on additional material, to issue as a patent established a prima facie cause of acquiescence by Litton. The patent owner then had the burden of coming forward with countervailing evidence.⁵⁸⁵ Moreover, the testimony of the patent owner's witnesses showed that acquiescence did occur.⁵⁸⁶ Litton therefore acquiesced and was estopped from relying on the benefit of the filing date of its parent application.⁵⁸⁷

5. *Obtaining the benefit of an earlier date under sections 119 or 120*

In *In re Gosteli*,⁵⁸⁸ the Federal Circuit affirmed the Board's holding that Gosteli's claims were not entitled to the benefit of the foreign priority date under section 119 because the foreign application did not adequately support the claims under the first paragraph of section 112.⁵⁸⁹ The United States patent application of Gosteli et. al. (Gosteli) contained independent Markush-type genus claims 48 and 49, each covering thousands of chemical species, and dependent subgenus claims 50 and 51, each consisting of twenty-one specific chemical species.⁵⁹⁰ The examiner rejected claims 48 through 51 under 35 U.S.C. § 102(e) as being anticipated by a Menard United States patent which disclosed, but did not claim, a first species within the scope of claims 48 and 50, and a second species within the scope of claims 49 and 51.⁵⁹¹ Gosteli unsuccessfully attempted to antedate Menard by the following two methods: first, by claiming the benefit, under section 119, of their Luxembourg patent application's foreign priority date, which was earlier than Menard's effective date as a reference; and second, via Rule 131 declarations.⁵⁹²

585. *Id.* at 1439, 221 U.S.P.Q. at 107.

586. *Id.*

587. *Id.*

588. 872 F.2d 1008, 10 U.S.P.Q.2d 1614 (Fed. Cir. 1989).

589. *In re Gosteli*, 872 F.2d 1008, 1008, 10 U.S.P.Q.2d 1614, 1614 (Fed. Cir. 1989).

590. *Id.* at 1009, 10 U.S.P.Q.2d at 1615.

591. *Id.*

592. *Id.* A Rule 131 declaration provides:

[W]hen any claim of an application or a patent under reexamination is rejected on reference to a domestic patent which substantially shows or describes but does not claim the same patentable invention . . . the owner of the patent under reexamination . . . shall make oath or declaration as to facts showing a completion of the invention in this country before the filing date of the application on which the domestic patent issued . . . , then the patent . . . cited shall not bar the grant of a patent to the inventor . . . unless the date of such patent . . . is more than one year prior to the date on which the inventor's . . . application was filed in this country.

37 C.F.R. § 1.131 (1991). The affidavit or declaration of a prior invention provided for in this regulation allows an inventor to overcome the cited patent which has resulted in the rejection of a patent application. *Id.*

The Board denied Gosteli the benefit of their priority date because claims 48 through 51 contained considerable subject matter that was not specifically disclosed in the Luxembourg application.⁵⁹³ Even though the Luxembourg application disclosed the two specific chemical species set forth in the intervening Menard reference, the Board held that the Luxembourg application did not satisfy the written description requirement of section 112, first paragraph, for claims 48 through 51. Therefore, the effective filing date of claims 48 through 51 was not the Luxembourg filing date, but rather the United States filing date.⁵⁹⁴ Accordingly, Gosteli could not antedate Menard under section 119.

Gosteli's Rule 131 declarations attempted to establish a constructive reduction to practice in this country, based on their foreign priority date of the two species disclosed by Menard. The Board rejected Gosteli's Rule 131 declarations because they did not include evidence indicating that the invention was completed in the United States prior to Menard's filing date.⁵⁹⁵

The parties agreed that Menard was not an effective anticipatory reference if Gosteli was entitled to its Luxembourg priority date.⁵⁹⁶ The Solicitor also conceded that the applicants were entitled to claims covering the two species disclosed both in Menard and in the Luxembourg priority application, or to any other claim properly supported by the Luxembourg disclosure under the first paragraph.⁵⁹⁷ The Federal Circuit concluded that claims 48 through 51 were entitled to the benefit of their foreign priority date under section 119 *only if* their Luxembourg priority application fully supported those claims under section 112, first paragraph. This is the same treatment that is given applications claiming the benefit of earlier filed United States applications under section 120.⁵⁹⁸

In its analysis, the Federal Circuit first addressed the government's argument that *In re Ziegler*⁵⁹⁹ should be overruled. The government asserted that *Ziegler*'s fundamental premise, namely "that a foreign application need show support for only so much of the claimed invention as is disclosed in the prior art reference to achieve a priority date for the entirety of the claimed invention," conflicted

593. *Gosteli*, 872 F.2d at 1009, 10 U.S.P.Q.2d at 1615.

594. *Id.* at 1010, 10 U.S.P.Q.2d at 1615.

595. *Id.*

596. *Id.*

597. *Id.* at 1011, 10 U.S.P.Q.2d at 1616.

598. *Id.*

599. 347 F.2d 642, 146 U.S.P.Q. 76 (C.C.P.A. 1965).

with several other C.C.P.A. decisions.⁶⁰⁰ The court, however, did not find a conflict because all of the claims in Ziegler's United States application were properly supported under the first paragraph by Ziegler's foreign priority applications.⁶⁰¹

The court next addressed Gosteli's argument that they could "swear behind Menard, under Rule 131, by establishing a constructive reduction to practice in this country based on their foreign priority date of the two species disclosed by Menard."⁶⁰² Citing *In re Mulder*,⁶⁰³ Gosteli argued that they could use their foreign priority date to establish the reduction to practice component for a Rule 131(b) showing.⁶⁰⁴ Therefore, citing the rationale in *In re Stempel*,⁶⁰⁵ Gosteli believed that they needed only to show priority with respect to as much of the invention as Menard disclosed.⁶⁰⁶

The Federal Circuit disagreed, stating that the requirements and operation of section 119 differ from those of Rule 131.⁶⁰⁷ Whereas Rule 131 provides a mechanism for removing prior art references, section 119 is concerned only with an applicant's effective filing date.⁶⁰⁸ Section 119 operates independently of the prior art, and thus the showing required for section 119 appropriately differs from a Rule 131 showing.⁶⁰⁹

The Federal Circuit then distinguished Gosteli's position from that in *Mulder* on two grounds. First, Gosteli's Rule 131 declarations did not mention acts in this country, whereas *Mulder* relied on United States activities to remove prior art. Second, there was no

600. *Gosteli*, 872 F.2d at 1011, 10 U.S.P.Q.2d at 1617 (construing *In re Ziegler*, 347 F.2d 642, 643, 146 U.S.P.Q. 76, 76 (C.C.P.A. 1965)); see, e.g., *In re Scheiber*, 587 F.2d 59, 62, 199 U.S.P.Q. 782, 784-85 (C.C.P.A. 1978) (rejecting attempt to claim earlier filing date under section 120 due to lack of specificity in application); *In re Wertheim*, 541 F.2d 257, 262 n.6, 191 U.S.P.Q. 90, 96 n.6 (C.C.P.A. 1976) ("All § 119 requires is that the foreign application describe and seek protection for 'broadly the same invention' as described in the U.S. application claiming its benefit."); *Kawai v. Metlesics*, 480 F.2d 880, 881, 178 U.S.P.Q. 158, 159 (C.C.P.A. 1973) (concluding that foreign application must satisfy requirement of 35 U.S.C. § 112, first paragraph, if it is to be basis of claim under section 119).

601. *Gosteli*, 872 F.2d at 1011, 10 U.S.P.Q.2d at 1617. The court, however, agreed that *Ziegler* did contain some language inconsistent with the C.C.P.A.'s later decisions in *Kawai*, *Wertheim*, and *Scheiber*, noting that those later decisions control because that court always sat *en banc*. *Id.*

602. *Id.*

603. 716 F.2d 1542, 219 U.S.P.Q. 189 (Fed. Cir. 1983).

604. *Gosteli*, 872 F.2d at 1011, 10 U.S.P.Q.2d at 1617 (citing *In re Mulder*, 716 F.2d 1542, 1544-46, 219 U.S.P.Q. 189, 192-94 (Fed. Cir. 1983)).

605. 241 F.2d 755, 113 U.S.P.Q. 77 (C.C.P.A. 1957).

606. *Gosteli*, 872 F.2d at 1012, 10 U.S.P.Q.2d at 1618 (citing *In re Stempel*, 241 F.2d 755, 760, 113 U.S.P.Q. 77, 81 (C.C.P.A. 1957)).

607. *Id.* In noting the difference, the Federal Circuit cited *In re Scheiber*, 587 F.2d 59, 61-62, 199 U.S.P.Q. 782, 784 (C.C.P.A. 1978), which explained a similar contrast between section 120 and Rule 131. *Id.*

608. *Id.*

609. *Id.*

dispute that *Mulder* complied with the section 112 requirements subsumed in section 119. The court thus affirmed the Board's holding that Gosteli could not use the Rule 131 declarations to swear behind Menard.⁶¹⁰

Finally, the court addressed the question of whether Gosteli's Luxembourg application provided a sufficient written description of the entire subject matter of claims 48 through 51. The court reiterated the general rule that although the claimed subject matter does not have to be exactly described, the description must clearly allow persons of ordinary skill in the art to recognize that Gosteli invented what is claimed.⁶¹¹ Finding that the PTO presented un rebutted evidence of a number of differences between the disclosure of the Luxembourg priority application and claims 48 through 51, the court held that Gosteli did not satisfy the written description requirement.⁶¹² Accordingly, the Federal Circuit affirmed the Board's decision.⁶¹³

In *Utter v. Hiraga*,⁶¹⁴ the Federal Circuit decided whether Hiraga could obtain the benefit of his Japanese filing date under section 119, and consequently gain priority in the subject interference.⁶¹⁵ The Board concluded that Hiraga's Japanese application complied with the enablement and written description requirements as to the subject matter of the interference count.⁶¹⁶ On appeal, Utter argued that the Board erred by ignoring Hiraga's burden to show that his disclosure met these requirements, and by holding that Hiraga's Japanese and United States applications met the enablement and written description requirements.⁶¹⁷ Utter argued to the Federal Circuit that the examiner erroneously relieved Hiraga of his burden by suggesting that Hiraga add the claim corresponding to the interference count to his application, and that the Board compounded that error by not mentioning any burden of proof in its opinion.⁶¹⁸

610. *Id.*

611. *Id.* (citing *In re Wertheim*, 541 F.2d 257, 262, 19 U.S.P.Q. 90, 96 (C.C.P.A. 1976)).

612. *Id.* at 1012, 10 U.S.P.Q.2d at 1618.

613. *Id.*

614. 845 F.2d 993, 6 U.S.P.Q.2d 1709 (Fed. Cir. 1988).

615. *Utter v. Hiraga*, 845 F.2d 993, 996-97, 6 U.S.P.Q.2d 1709, 1713 (Fed. Cir. 1988). The contested invention involved scroll compressors. Scroll compressors, which are used in air conditioners, have two spirals interfitted with each other. One spiral is fixed while the other orbits to compress pockets of fluid by pushing them inward around the ever-narrower space between the spirals. In the "radially" configured scroll compressor at issue, the outer surface of the orbiting spiral meets the inner surface of the fixed spiral as it pushes the fluid pockets around. *Id.*

616. *Id.*

617. *Id.*

618. *Id.*

The Federal Circuit first stated that the party who relies on an earlier-filed application under sections 119 or 120 has the burden to show that the foreign or parent application supports the later-added claims under sections 112, first paragraph.⁶¹⁹ This is true regardless of whether that party is the junior or senior party in an interference.⁶²⁰ Second, because written description is a question of fact, the Federal Circuit reviewed the Board's finding of fact under the clearly erroneous standard.⁶²¹ The court found nothing persuasive in the record to support the claim that the Board's conclusion was in error.⁶²² Finally, with respect to enablement, a question of law, the court similarly found nothing persuasive in the record to support the claim that the Board's conclusion was legally in error.⁶²³ The Federal Circuit affirmed the Board's decision.⁶²⁴

In *In re Salmon*,⁶²⁵ the Federal Circuit considered whether a design patent application was entitled to the benefit of the disclosure of a parent design patent application. If so, the parent application would be treated as antedating the references on which the Board relied in denying the reissue application as obvious.⁶²⁶ The Federal Circuit stated that the provisions of sections 112 and 120 require that for section 120 to apply, the first application must disclose "the invention" claimed in the second application.⁶²⁷ Applying this rule to the facts of *Salmon*, the court stated that the stool design claimed in the second application must be the same design disclosed in the parent application.⁶²⁸ The court held that the design for a stool with a round seat in the later application was not disclosed in the parent application, which disclosed only a stool with a square seat.⁶²⁹ Because the stool design claimed in the second application was not the same design disclosed in the parent application, the patent owners were not entitled to the benefit of the earlier filing date of the parent application.⁶³⁰

619. *Id.* at 998, 6 U.S.P.Q.2d at 1713.

620. *Id.* at 997-98, 6 U.S.P.Q.2d at 1713 (citing *Ralston Purina Co. v. Far-Mar-Co, Inc.*, 772 F.2d 1570, 1574 n.2, 227 U.S.P.Q. 177, 178 n.2 (Fed. Cir. 1985)).

621. *Id.* at 998, 6 U.S.P.Q.2d at 1714.

622. *Id.* at 999, 6 U.S.P.Q.2d at 1714.

623. *Id.* at 998, 6 U.S.P.Q.2d at 1714.

624. *Id.* at 999, 6 U.S.P.Q.2d at 1715.

625. 705 F.2d 1579, 217 U.S.P.Q. 981 (Fed. Cir. 1983).

626. *In re Salmon*, 705 F.2d 1579, 1581, 217 U.S.P.Q. 981, 983 (Fed. Cir. 1983).

627. *Id.*

628. *Id.*

629. *Id.* at 1581-82, 217 U.S.P.Q. at 983-84.

630. *Id.*

The court said that *Salmon* was unlike *In re Zahn*,⁶³¹ upon which appellants relied.⁶³² In *Zahn*, the applicant claimed only the design for the shank of a drill bit, not the design for the entire drill.⁶³³ The question before the C.C.P.A. was whether a patent could issue for a design for only part of an article. The court held that it could.⁶³⁴ In *Salmon*, however, the Federal Circuit found no indication that the appellant claimed the design for only the tubular support of the stool and not the entire stool as shown in the drawings, which included its square seat.⁶³⁵

C. The "Best Mode" Requirement

The "best mode" requirement is the third requirement of section 112, first paragraph. In essence, the requirement requires the applicant to set forth the best mode for carrying out the invention known to him at the time of filing the application. The Federal Circuit addressed this provision in the cases that follow.

In *Chemcast Corp. v. Arco Industries Corp.*,⁶³⁶ the Federal Circuit held a claim invalid for failure to disclose the best mode where an inventor knew of a preferred hardness of a constituent material of a claimed invention and specially ordered such material to make the only embodiment of the claimed invention, but failed to disclose the material hardness or the supplier and tradename of the preferred compound anywhere in the specification.⁶³⁷ The patent claimed a sealing member in the form of a grommet or plug button designed to seal an opening in, for example, a sheet metal panel.⁶³⁸ Specifically, the claim stated the grommet covered by claim 6, the only claim being asserted, may be composed either of two materials that differ in hardness or of a single material that varies in hardness, with the material forming the base portion of the grommet having a durometer hardness reading of less than 60 Shore A and the material forming the locking portion having a durometer hardness reading of more than 70 Shore A.⁶³⁹ Chemcast sued Arco for infringement of claim 6 of its patent. Arco counterclaimed that the patent was inva-

631. 617 F.2d 261, 204 U.S.P.Q. 988 (C.C.P.A. 1980).

632. *Salmon*, 705 F.2d at 1581, 217 U.S.P.Q. at 983 (distinguishing *In re Zahn*, 617 F.2d 261, 204 U.S.P.Q. 988 (C.C.P.A. 1980)).

633. *Zahn*, 617 F.2d at 268, 204 U.S.P.Q. at 995.

634. *Id.* at 267, 204 U.S.P.Q. at 994.

635. *Salmon*, 705 F.2d at 1582, 217 U.S.P.Q. at 984.

636. 913 F.2d 923, 16 U.S.P.Q.2d 1033 (Fed. Cir. 1990).

637. *Chemcast Corp. v. Arco Indus. Corp.*, 913 F.2d 923, 930, 16 U.S.P.Q.2d 1033, 1038-39 (Fed. Cir. 1990).

638. *Id.* at 924, 16 U.S.P.Q.2d at 1034.

639. *Id.* at 924-25, 16 U.S.P.Q.2d at 1034.

lid on several grounds, including failure to comply with section 112.⁶⁴⁰

The district court held the patent invalid because of a failure to disclose the best mode requirement and a failure to satisfy the requirements of section 112, second paragraph, by not particularly pointing out and distinctly claiming the subject matter of the invention.⁶⁴¹ Both parties appealed. The Federal Circuit vacated the district court's best mode holding on grounds that the district court relied on an incorrect legal standard.⁶⁴² The court reversed the district court's holding that claim 6 did not meet the particularity requirement.⁶⁴³

On remand, the district court again invalidated the patent for failure to satisfy the best mode requirement and made forty-seven factual findings detailing what the inventor considered to be the best mode of practicing his claimed invention at the time of filing and what the specification, as filed, disclosed to one of ordinary skill in the art.⁶⁴⁴ According to the district court, the patent failed to disclose the particular type, the hardness, the supplier, and the trade name of the material used to make the locking portion of the grommet.⁶⁴⁵

The Federal Circuit began its analysis of the district court's judgment on remand by reviewing some principles concerning the best mode requirement.⁶⁴⁶ One objective limitation noted by the court on the extent of the disclosure required to comply with the best mode requirement was that the disclosure be directed to those

640. *Id.* at 925, 16 U.S.P.Q.2d at 1035.

641. *Id.*

642. *Id.*

643. *Id.*

644. *Id.* (citing *Chemcast Corp. v. Arco Indus. Corp.*, 12 U.S.P.Q.2d 2005 (E.D. Mich. 1989)).

645. *Id.* (citing *Chemcast*, 12 U.S.P.Q.2d at 2008).

646. *Id.* The Federal Circuit stated:

The best mode inquiry focuses on the inventor's state of mind as to the time he filed his application—a subjective, factual question. But this focus is not exclusive. Our statements that “there is no objective standard by which to judge the adequacy of a best mode disclosure,” and that “only evidence of concealment (accidental or intentional) is to be considered,” assumed that both the level of skill in the art and the scope of the claimed invention were additional, objective metes and bounds of a best mode disclosure.

Id. at 926, 16 U.S.P.Q.2d at 1035-36.

skilled in the art.⁶⁴⁷ A second objective limitation recognized by the court was the scope of the claimed invention.⁶⁴⁸

The Federal Circuit summarized its discussion by stating that a proper best mode analysis must first determine whether the inventor, at the time of the filing of the patent application, knew of a mode of practicing the claimed invention that the inventor considered to be better than any other.⁶⁴⁹ This wholly subjective inquiry resolves whether the inventor must disclose any facts in addition to those sufficient for enablement.⁶⁵⁰ If the inventor in fact contemplated such a preferred mode, a comparison between what the inventor knew with what the inventor disclosed must occur. This objective inquiry resolves whether the disclosure was adequate to enable one skilled in the art to practice the best mode or, in other words, whether the inventor "concealed" his preferred mode from the "public."⁶⁵¹

Chemcast argued that the district court erred in its best mode analysis by failing to focus on the claimed invention and by incor-

647. *Id.* at 926-27, 16 U.S.P.Q.2d at 1036 (citing *Randomex, Inc. v. Scopus Corp.*, 849 F.2d 585, 587, 7 U.S.P.Q.2d 1050, 1053 (Fed. Cir. 1988)); *see, e.g.*, *Dana Corp. v. IPC Ltd. Partnership*, 860 F.2d 415, 418, 8 U.S.P.Q.2d 1692, 1696 (Fed. Cir. 1988) (holding that inventor violated best mode requirement by failing to disclose specific surface treatment that he knew was necessary in order to ensure satisfactory performance of his invention, even though how to perform treatment itself was known in art); *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524, 1536, 3 U.S.P.Q.2d 1737, 1745 (Fed. Cir.), *cert. denied*, 484 U.S. 954 (1987) (finding that inventors of laser violated best mode requirement by failing to disclose details of their preferred TiCuSil brazing method, which were not contained in prior art); *W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1556, 220 U.S.P.Q. 303, 316 (Fed. Cir. 1983) (deciding that no best mode violation occurred when inventor did not disclose only mode of calculating stretch rate he employed, because that mode would have been used by those of ordinary skill in art at time of filing application), *cert. denied*, 469 U.S. 851 (1984); *In re Sherwood*, 613 F.2d 809, 816, 204 U.S.P.Q. 537, 544 (C.C.P.A. 1980) (ruling that no best mode violation occurred where specification disclosed underlying concepts and mathematical equations that together with "menial tools known to all who practice th[e] art," would produce contemplated best mode digital computer program, even though inventor possessed more information concerning his contemplated best mode than he disclosed in specification), *cert. denied*, 450 U.S. 994 (1981).

648. *Chemcast*, 913 F.2d at 927, 16 U.S.P.Q.2d at 1036 (citing *Randomex, Inc.*, 849 F.2d at 588, 7 U.S.P.Q.2d at 1053) (explaining that, in *Randomex*, inventor's intentional concealment of his cleaning fluid formula did not violate best mode requirement because his "invention neither added anything nor claimed to add anything to the prior art respecting cleaning fluid."). *See* *Christianson v. Colt Indus. Operating Corp.*, 870 F.2d 1292, 1302, 10 U.S.P.Q.2d 1352, 1359 (7th Cir.) (asserting that district court erred in defining scope of invention when it held that inventor violated best mode requirement by omitting specifications and tolerances necessary to make claimed rifle parts interchangeable with M-16 rifles already in existence), *cert. denied*, 493 U.S. 822 (1989); *DeGeorge v. Bernier*, 768 F.2d 1318, 1325, 226 U.S.P.Q. 758, 763 (Fed. Cir. 1985) (holding that Board's finding that inventor violated best mode requirement in failing to identify at filing specific engineering level of MT/ST [word processor] with which it was contemplated that disclosed species should be employed was clearly erroneous, because properly construed claim did not include word processor).

649. *Chemcast*, 913 F.2d at 927-28, 16 U.S.P.Q.2d at 1036.

650. *Id.* at 928, 16 U.S.P.Q.2d at 1036.

651. *Id.*, 16 U.S.P.Q.2d at 1036-37.

rectly determining that the inventor concealed a better mode than the inventor disclosed.⁶⁵² In particular, Chemcast argued that because the patent claim did not call for any specific material for making the locking portion of the grommet, any failure to disclose the particular material that the inventor thought best did not violate the best mode requirement.⁶⁵³ The Federal Circuit dismissed this first argument by stating that Chemcast's argument confused the best mode inquiry with an enablement inquiry.⁶⁵⁴ The court stated that a patent applicant must disclose the best mode of carrying out the claimed invention, not merely a mode of making and using what is claimed. Further, the court noted that a specification can be enabling, yet fail to disclose an applicant's contemplated best mode.⁶⁵⁵ In fact, the court acknowledged cases where inventors violated the best mode requirement by failing to disclose nonclaimed elements that were, nevertheless, necessary to practice the best mode of carrying out the claimed invention.⁶⁵⁶

The Federal Circuit also dismissed Chemcast's second argument that the inventor had not concealed a better mode than the inventor had disclosed.⁶⁵⁷ The court noted that the district court devoted no fewer than thirteen factual findings to what inventor Rubright knew as of the filing date of the application.⁶⁵⁸

Proceeding to the second step of the analysis, the Federal Circuit reviewed the application disclosure.⁶⁵⁹ In its review of the application disclosure, the Federal Circuit concluded that one skilled in the art simply could not divine therefrom the inventor's preferred material hardness.⁶⁶⁰ The Federal Circuit agreed with the district court's finding that "the specification of the open-ended range of materials

652. *Id.*, 16 U.S.P.Q.2d at 1037.

653. *Id.*

654. *Id.*

655. *Id.*

656. *Id.* (citing *Dana Corp. v. IPC Ltd. Partnership*, 860 F.2d 415, 419, 8 U.S.P.Q.2d 1692, 1695 (Fed. Cir. 1988) (describing best mode violation for failure to disclose unclaimed fluoride surface treatment that was necessary for satisfactory performance of claimed seal)); see *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524, 1536, 3 U.S.P.Q.2d 1737, 1745 (Fed. Cir. 1987) (finding best mode violation for failure to disclose braze cycle which constituted preferred means of attachment, even though no particular attachment means was claimed).

657. *Chemcast*, 913 F.2d at 928-29, 16 U.S.P.Q.2d at 1037-38.

658. *Id.* 16 U.S.P.Q.2d at 1037. In particular, the district court found that the inventor knew that the preferred hardness of the material used to construct the grommet was 75+/-5 Shore D, and that the inventor purchased all of this material under the trade name R-4467 from Reynosol Corporation, which spent 750 man-hours developing the compounds specifically for Chemcast. *Id.* at 929, 16 U.S.P.Q.2d at 1037. Furthermore, the district court found that at the time Rubright filed the application, the only embodiment known to him was a grommet composed of R-4467. *Id.*

659. *Id.* at 929, 16 U.S.P.Q.2d at 1037-38.

660. *Id.* The application disclosed the following:

of 70 Shore A or harder conceals the best mode 75 Shore D material in part because materials of Shore A and Shore D hardnesses are recognized as different types of materials with different classes of physical properties.”⁶⁶¹ The court held that section 112 obligated Rubright to disclose the specific supplier and trade name of his preferred material for three reasons: (1) Chemcast had used only R-4467; (2) certain characteristics of the grommet material were claimed elements of the patented inventions; and (3) Rubright himself did not know the formula, composition, or method of manufacture of R-4467.⁶⁶²

Finally, the Federal Circuit dismissed as irrelevant Chemcast’s remaining arguments that the failure to disclose Reynosol R-4467 was justified because Reynosol considered the formulation of R-4467 a trade secret and had offered the compound only to Chemcast, and that the inventor developed his preferred mode with the requirements of a particular customer in mind.⁶⁶³ The court noted that the fact that the inventor’s preferred mode had been developed by Reynosol with the requirements of a particular customer in mind did not excuse the inventor’s concealment.⁶⁶⁴ The court stated that the inventor must disclose information necessary to carry out the best mode, whether the information is characterizable as “manufacturing data,” “customer requirements,” or even “trade secrets.”⁶⁶⁵

In *Amgen, Inc. v. Chugai Pharmaceutical Co.*,⁶⁶⁶ the court considered whether the ’008 patent was invalid for a “best mode” violation based on the inventor’s failure to disclose the best mammalian host

The annular open portion [] of the ceiling member [] is preferably comprised of a rigid castable material, such as a castable resinous material, either a thermal plastic or thermal setting resin or any mixtures thereof, for example, polyurethane or polyvinylchloride. The [locking] portion [] also should be made of a material that is sufficiently hard and rigid so that it cannot be radially compressed, such as when it is inserted in the opening [] in the panel []. Materials having a durometer hardness reading of 70 Shore A or harder are suitable in this regard.

Id. Additionally, the Federal Circuit noted that the material hardness (75 Shore D) and supplier/trade name (Reynosol compound R-4467) were not explicitly disclosed anywhere in the specification. *Id.* at 929, 16 U.S.P.Q.2d at 1038.

661. *Id.*

662. *Id.*

663. *Id.* at 930, 16 U.S.P.Q.2d at 1038 (citing *White Consol. Indus., Inc. v. Vega Servo-Control, Inc.*, 713 F.2d 788, 791, 218 U.S.P.Q. 961, 963 (Fed. Cir. 1983)).

664. *Id.*

665. *Id.* *But cf.* *Christianson v. Colt Indus. Operating Corp.*, 870 F.2d 1292, 1302, 10 U.S.P.Q.2d 1352, 1360 (7th Cir.) (stating that inventor need not disclose manufacturing data or requirements of particular customer if that information is not part of best mode of practicing claimed invention), *cert. denied*, 493 U.S. 822 (1989).

666. 927 F.2d 1200, 18 U.S.P.Q.2d 1016 (Fed. Cir.), *cert. denied*, 112 S. Ct. 169 (1991); see *supra* notes 158-63 and accompanying text (discussing facts of case in detail).

cells known to him as of the filing date of the patent application.⁶⁶⁷ The district court found that the use of a specific genetically heterogeneous strain of Chinese hamster ovary (CHO) cells, which produced EPO at a rate greater than that of other cells, represented the best mode of practicing the claimed invention.⁶⁶⁸ Moreover, the district court found that this strain was disclosed in the claim's example 10 and that the inventor knew of no better mode.⁶⁶⁹ Genetics Institute (GI) argued on appeal that the best mode was not adequately disclosed in example 10 because one skilled in the art could not duplicate this best mode without the inventor first having deposited a sample of the specific cells in a public depository.⁶⁷⁰

The Federal Circuit began its analysis by reviewing its recently formulated two-pronged "best mode" requirement analysis.⁶⁷¹ The Federal Circuit then agreed with the district court that the defendants had not met the burden of proving a "best mode" violation.⁶⁷² The district court had found that the claims at issue required the use of biological materials that could be prepared in laboratories from readily available biological cells by following the description in example 10.⁶⁷³ The district court also found that the starting materials were publicly available, described in the specification, and did not require undue experimentation for their preparation in order to carry out the best mode.⁶⁷⁴ Further, the district court relied on testimony that the invention, as it related to the best mode host cells, could be practiced by one skilled in the art following example 10.⁶⁷⁵

The Federal Circuit stated that this was not a case where the invention may be incapable of being practiced without access to an organism; if the cells can be prepared without undue experimentation from known materials based on the description in the patent specification, a deposit is not required.⁶⁷⁶ Nonetheless, the defendants also contended that the examiner's rejection of the application that matured into the '008 patent, for failure to make a publicly ac-

667. See *Amgen, Inc. v. Chugai Pharmaceutical Co.*, 927 F.2d 1200, 1209-12, 18 U.S.P.Q.2d 1016, 1023-26 (Fed. Cir.), cert. denied, 112 S. Ct. 169 (1991).

668. *Id.* at 1209, 18 U.S.P.Q.2d at 1023.

669. *Id.*

670. *Id.* at 1210, 18 U.S.P.Q.2d at 1024.

671. *Id.* (citing *Chemcast Corp. v. Arco Indus. Corp.*, 913 F.2d 923, 927, 16 U.S.P.Q.2d 1033, 1036 (Fed. Cir. 1990)).

672. *Id.*

673. *Id.* at 1210, 18 U.S.P.Q.2d at 1024-25.

674. *Id.*, 18 U.S.P.Q.2d at 1025.

675. *Id.* at 1211, 18 U.S.P.Q.2d at 1025.

676. *Id.*; see *Feldman v. Aunstrup*, 517 F.2d 1351, 1354, 186 U.S.P.Q. 108, 111 (C.C.P.A. 1975) (stating there is no best mode compliance problem when micro-organisms used are known and readily available to public), cert. denied, 424 U.S. 912 (1976).

cessible biological deposit, supported its argument.⁶⁷⁷ Addressing this contention, the court noted that the PTO only recently prescribed guidelines concerning the deposit of biological material.⁶⁷⁸ Furthermore, in response to a question as to whether the deposit requirement was applicable to the best mode requirement, as distinct from enablement, the court noted the PTO's statement that "[i]f a deposit is the only way to comply with a best mode requirement, then a deposit must be made."⁶⁷⁹ The court stated that it could not see any inconsistency between the district court's decision, which it affirmed, and the PTO guidelines.⁶⁸⁰

Next, the defendants asserted that its own scientists were unable to duplicate the inventor's genetically heterogeneous best mode cell strain.⁶⁸¹ The court stated that what is required is the adequate disclosure of the best mode, not a guarantee that every aspect of the specification be precisely and universally reproducible.⁶⁸² Finally, defendants argued that the inventor's failure to deposit the transfected cells, notwithstanding that he was willing to deposit essentially worthless cell material, was evidence of deliberate concealment.⁶⁸³ The court stated, however, that the deposit of the host cells containing the rEPO gene was not necessary to satisfy the best mode requirement. The fact that some cells were deposited, but not others, was irrelevant.⁶⁸⁴

In *Northern Telecom, Inc. v. Datapoint Corp.*,⁶⁸⁵ the alleged infringer argued that the applicant knew in advance of filing the patent application that standard audio tape was not the best mode for carrying out the invention.⁶⁸⁶ Based on the testimony of the patent owner's former Vice President of Engineering, the district court found that the applicant purchased tapes and cassettes of its own design and specifications and that were different from standard audio tapes in their yield strength and magnetic characteristics.⁶⁸⁷ The patent

677. *Amgen*, 927 F.2d at 1211, 18 U.S.P.Q.2d at 1025.

678. *Id.*; see 37 C.F.R. § 1.802(b) (1991) (codifying deposit requirement for biotechnology material inventions).

679. *Amgen*, 927 F.2d at 1211, 18 U.S.P.Q.2d at 1025; see 52 Fed. Reg. 34,086 (1987) (describing best mode requirement as safeguard against people who seek to obtain patent protection without making full disclosure).

680. *Amgen*, 927 F.2d at 1211, 18 U.S.P.Q.2d at 1023.

681. *Id.* at 1212, 18 U.S.P.Q.2d at 1025-26.

682. *Id.*, 18 U.S.P.Q.2d at 1026; see *In re Gay*, 309 F.2d 769, 773, 135 U.S.P.Q. 311, 316 (C.C.P.A. 1962) (stating that requirement of adequate disclosure is satisfied when one skilled in art could reproduce patented invention without undue experimentation).

683. *Amgen*, 927 F.2d at 1212, 18 U.S.P.Q.2d at 1026.

684. *Id.*

685. 908 F.2d 931, 15 U.S.P.Q.2d 1321 (Fed. Cir.), cert. denied, 111 S. Ct. 296 (1990).

686. *Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 940, 15 U.S.P.Q.2d 1321, 1328 (Fed. Cir.), cert. denied, 111 S. Ct. 296 (1990).

687. *Id.*

owner argued that 3M commercial audio tape on the market at the time met its specifications. Although the Federal Circuit found this fact perhaps relevant to enablement, it did not establish that the best mode "contemplated by the inventor" was in fact disclosed.⁶⁸⁸ The Federal Circuit consequently affirmed the district court's determination of a best mode violation.⁶⁸⁹

Another case dealing with the quality of disclosure in a best mode context, *Randomex, Inc. v. Scopus Corp.*,⁶⁹⁰ involved a patent for a portable apparatus for cleaning computer disk packs. In conjunction with the cleaning apparatus, the patent disclosed but apparently did not claim the use of a cleaning solution, such as a 91% alcohol solution or a nonresidue detergent, such as Randomex Cleaner No. 50281.⁶⁹¹ Although the inventor knew of no better nonresidue detergent solution than the Randomex Cleaner No. 50281, the inventor intentionally omitted the formula for No. 50281 from the disclosure.⁶⁹² The district court, in a jury trial, held that without revealing the formula, the application's reference to "Randomex Cleaner No. 50281" did not satisfy the best mode requirement, even though a chemical analysis of the solution would have revealed the formula. The district court concluded that Randomex kept the formula secret in order to sell No. 50281 to users of the Randomex apparatus.⁶⁹³ After purchasing several of these portable disk cleaners, the defendant became dissatisfied with the Randomex cleaning solution and created its own cleaning solution for use instead. Thereafter, Randomex sued for patent infringement.⁶⁹⁴

The Federal Circuit reversed, finding no best mode violation.⁶⁹⁵ The Federal Circuit held that the district court mistakenly focused on the users of the device rather than on those of ordinary skill in the art and therefore had unduly focused on jury question three as the best indicator of whether the best mode had been disclosed.⁶⁹⁶ The Federal Circuit stated that the answer to this jury question was

688. *Id.*; see *Dana Corp. v. IPC Ltd. Partnership*, 860 F.2d 415, 419, 8 U.S.P.Q.2d 1692, 1697 (Fed. Cir. 1988) (quoting *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524, 1536, 3 U.S.P.Q.2d 1737, 1745 (Fed. Cir.) (distinguishing aim of enablement requirement of disclosing invention to public so as to enable one skilled in art to make and use it from aim of best mode requirement of disclosing best mode of carrying out invention as contemplated by inventor at time of execution of patent application), *cert. denied*, 484 U.S. 954 (1987).

689. *Northern Telecom*, 908 F.2d at 941, 15 U.S.P.Q.2d at 1328.

690. 849 F.2d 585, 7 U.S.P.Q.2d 1050 (Fed. Cir. 1988).

691. *Randomex, Inc. v. Scopus Corp.*, 849 F.2d 585, 586, 7 U.S.P.Q.2d 1050, 1051 (Fed. Cir. 1988).

692. *Id.* at 588, 7 U.S.P.Q.2d at 1052-53.

693. *Id.* at 588-89, 7 U.S.P.Q.2d at 1053.

694. *Id.* at 586, 7 U.S.P.Q.2d at 1051.

695. *Id.*

696. *Id.* Jury question three read:

useless in determining whether the inventors failed to meet the best mode requirements.⁶⁹⁷ Rather, the Federal Circuit found jury question two to be more closely related to best mode, even though it was poorly framed and directed more toward enablement than best mode.⁶⁹⁸ Question 2 read: "Was the patent's disclosure with respect to cleaning fluid so inadequate that a person skilled in the art who did not use plaintiff's named cleaner would have to engage in an undue amount of experimentation, a) To use the invention? b) To find the best mode to use the invention?"⁶⁹⁹ Although the jury answered questions (a) and (b) in the negative, the district court nonetheless entered a judgment of invalidity of the patent based on a failure to disclose the best mode.⁷⁰⁰

In overturning the district court's decision, the Federal Circuit focused on the issue of whether question two was so legally deficient that the jury would have failed to make the underlying inquiries necessary to support its finding that the inventor fulfilled the best mode requirement.⁷⁰¹ In addressing this issue, the Federal Circuit relied on a statement by the Board that an applicant is not required to point out which of the embodiments is the best mode, but only that the disclosure include the best mode.⁷⁰² The Federal Circuit felt that the quality of disclosure was not so poor as to effectively constitute concealment of the best mode.⁷⁰³ Disclosure of a trade name may be unacceptable when suitable substitutes are not available.⁷⁰⁴ In this case, because commercial substitutes were readily available in the prior art, disclosure of the trade name, identified as a nonresidue solution, satisfied the best mode requirement.⁷⁰⁵

The Federal Circuit found a best mode violation in *Dana Corp. v. IPC Ltd. Partnership*,⁷⁰⁶ however, where it reviewed a patent related to a valve stem seal. IPC defended against Dana's infringement suit by arguing that the patent was invalid for failure to disclose the best

Did the applicants deliberately refrain from informing the users of the invention of the best cleaner formula with the intent that, to a substantial extent, users would be led to purchase plaintiff's cleaner rather than to experiment themselves to find the best?

Id. The jury answered this question in the affirmative. *Id.*

697. *Id.* at 589, 7 U.S.P.Q.2d at 1053.

698. *Id.*

699. *Id.* at 586, 7 U.S.P.Q.2d at 1051.

700. *Id.* at 586-87, 7 U.S.P.Q.2d at 1051-52.

701. *Id.* at 589, 7 U.S.P.Q.2d at 1053.

702. *Id.*, 7 U.S.P.Q.2d at 1054 (quoting *Ernsthausen v. Nakayama*, 1 U.S.P.Q.2d 1539, 1549 (Bd. Pat. App. Int. 1985), *aff'd*, 809 F.2d 787 (Fed. Cir. 1986)).

703. *Id.* at 589-90, 7 U.S.P.Q.2d at 1054.

704. *Id.* (citing *White Consol. Indus., Inc. v. Vega Servo-Control, Inc.*, 713 F.2d 788, 791, 218 U.S.P.Q. 961, 963 (Fed. Cir. 1983)).

705. *Id.*

706. 860 F.2d 415, 8 U.S.P.Q.2d 1692 (Fed. Cir. 1988), *cert. denied*, 490 U.S. 1067 (1989).

mode, because Dana did not identify a fluoride surface treatment of the seals. This treatment was recognized as the best method for carrying out the invention known to the inventor at the time the application was filed.⁷⁰⁷

The jury found no best mode violation, and the trial court refused to grant a JNOV motion based on best mode invalidity.⁷⁰⁸ To grant IPC's JNOV motion, the Federal Circuit had to find as a matter of law that, on the evidence presented at trial, reasonable minds could not have found that the best mode requirement was satisfied.⁷⁰⁹ The Federal Circuit thus focused on the state of mind of Wilson, the inventor, at the time the application for the patent-in-suit was filed.⁷¹⁰ One item of evidence involved Wilson's report of tests designed to determine the effect of surface treatment and the most effective design in controlling leakage.⁷¹¹ The Wilson report concluded that no design was acceptable when using nontreated rubber and that fluoride surface treatment was necessary for the satisfactory performance of the seal.⁷¹²

Additionally, IPC pointed to a letter from Wilson's superior to Dana's patent counsel which indicated that the fluoride surface treatment was not disclosed in the patent application.⁷¹³ Dana's patent counsel omitted disclosure of the fluoride treatment because Dana did not believe it was a part of the case.⁷¹⁴ Thus, the evidence in the record indicated that at the time of filing Wilson thought that the best way of carrying out his invention included the fluoride surface treatment.⁷¹⁵ Citing a technical journal article and expert testimony, Dana argued that the fluoride treatment need not be disclosed because such treatment was known to the public for years prior to the filing date of the patent application.⁷¹⁶ The district court agreed, concluding that the best mode requirement could be satisfied by reference to what the prior art disclosed.⁷¹⁷

The Federal Circuit reversed, holding that the district court erred as a matter of law by allowing a reference to articles or experts as evidence of the skill in the art to meet the best mode require-

707. *Dana Corp. v. IPC Ltd. Partnership*, 860 F.2d 415, 417, 8 U.S.P.Q.2d 1692, 1694 (Fed. Cir. 1988), *cert. denied*, 490 U.S. 1067 (1989).

708. *Id.*

709. *Id.* at 417-18, 8 U.S.P.Q.2d at 1694-95.

710. *Id.* at 418, 8 U.S.P.Q.2d at 1695.

711. *Id.*

712. *Id.*

713. *Id.*

714. *Id.*

715. *Id.* at 419-20, 8 U.S.P.Q.2d at 1696.

716. *Id.* at 418-19, 8 U.S.P.Q.2d at 1695.

717. *Id.* at 419, 8 U.S.P.Q.2d at 1695-96.

ment.⁷¹⁸ The court reiterated that, separate and distinct from enablement, the best mode requirement entails a comparison of the facts known to the inventor regarding the invention at the time the application is filed with the disclosure in the specification.⁷¹⁹ As discussed, the evidence in the record clearly indicated the inventor's belief that the best way of carrying out the invention included the fluoride treatment. The Federal Circuit found that the lack of such disclosure in the patent resulted in the failure to satisfy the best mode requirement. The Federal Circuit thus held that the defendants' JNOV motion on best mode invalidity should have been granted and the patent declared invalid.⁷²⁰

The requirement of disclosing the best mode known to the inventor at the time of filing applies even if the best mode constitutes an improvement to the invention that is separately patentable by someone else. The Federal Circuit commented on this matter, in dicta, in *Aktiebolaget Karlstads Mekaniska Werkstad (AKMW) v. United States International Trade Commission*,⁷²¹ which involved an appeal from an International Trade Commission (ITC) determination that the importation of certain paper-making machines violated section 337 of the Tariff Act. The ITC found that the imported goods infringed two patents, one of which was the Hill '269 patent.⁷²² In essence, the '269 patent disclosed and claimed a head box for a paper-making machine having self-positionable trailing elements that extend all the way across the head box slice chamber.⁷²³

Appellant AKMW asserted that the '037 patent issued to Hill, a named co-inventor of the '269 patent, was prior art to the '269 patent. The '037 patent was a continuation of a continuation-in-part of a division of the application which matured into the patent reissued as the '269 patent. The '037 patent disclosed, but did not claim, a self-positionable trailing element extending the full width of the slice chamber.⁷²⁴ The Federal Circuit concluded that the assignee of the '269 and '037 patents had admitted that Hill's work, which was prior art to that of the joint inventors, was limited to a head box having self-positionable trailing elements, but not full-width trailing elements.⁷²⁵

718. *Id.*

719. *Id.*

720. *Id.* at 420, 8 U.S.P.Q.2d at 1696-97.

721. 705 F.2d 1565, 217 U.S.P.Q. 865 (Fed. Cir. 1983).

722. *Aktiebolaget Karlstads Mekaniska Werkstad (AKMW) v. United States Int'l Trade Comm'n*, 705 F.2d 1565, 217 U.S.P.Q. 865, 866 (Fed. Cir. 1983).

723. *Id.* at 1569, 217 U.S.P.Q. at 868.

724. *Id.* at 1572, 217 U.S.P.Q. at 870.

725. *Id.* at 1574, 217 U.S.P.Q. at 871.

Appellant further argued that the description of the full-width trailing members in the '037 patent, in which Hill was named as the sole inventor, demonstrated that Hill himself invented a head box incorporating such full-width trailing members.⁷²⁶ The court dismissed this argument by stating that there is no presumption, or any reason to assume, that everything disclosed in a patent specification has been invented by that particular patentee.⁷²⁷

In *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*,⁷²⁸ the Federal Circuit reversed a district court's holding of invalidity based on failure to disclose the best mode and concluded that there was no evidence of concealment. The claimed invention in *Hybritech* required the use of certain monoclonal antibodies.⁷²⁹ The district court apparently relied on certain testimony by various Hybritech employees that sophisticated, competent people at Hybritech performed various screening processes for producing monoclonal antibodies.⁷³⁰ According to the Federal Circuit, it was not plausible that this evidence, by itself, amounted to proof of concealment of a best mode for screening or producing monoclonal antibodies. Because a best mode violation requires evidence that the applicant knew of and concealed a better mode than the applicant disclosed, the court reversed the district court's best mode holding.⁷³¹

Although the court in *Hybritech* did not expressly address the issue of whether intentional, as opposed to accidental, concealment is a requirement for a best mode violation, the Federal Circuit did address this issue in *Spectra-Physics, Inc. v. Coherent, Inc.*⁷³² The critical issue in *Spectra-Physics* was whether the patents disclosed the best mode for attaching certain copper cups to a ceramic tube. The patents disclosed brazing as the preferred method of attachment. The

726. *Id.*

727. *Id.* The court continued, stating:

The embodiment comprising full width trailing members is an improvement on, and thus the best mode of practicing, what has been conceded by Beloit [the assignee] to be Hill's prior invention. This improvement was unquestionably known to Hill, who participated in its development. Thus, 35 U.S.C. § 112, which requires an inventor to set forth the best mode contemplated by him of carrying out his invention, required Hill in this instance to retain the description of full width trailing sheets in his application when it was divided out of the joint application, regardless of whether it was his invention. Under these circumstances, there is no reason to believe that Hill's invention is anything more than Beloit has conceded.

Id.

728. 802 F.2d 1367, 231 U.S.P.Q. 81 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947 (1987).

729. *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1385, 231 U.S.P.Q. 81, 94 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947 (1987).

730. *Id.* at 1368, 231 U.S.P.Q. at 81-82.

731. *Id.*

732. 827 F.2d 1524, 3 U.S.P.Q.2d 1737 (Fed. Cir.), *cert. denied*, 484 U.S. 954 (1987).

preferred brazing material was TiCuSil.⁷³³ Although brazing using this material was indeed the best mode known to the inventors at the time of filing, the inventors knew at that time of a certain six-stage process for affecting the bond using TiCuSil.⁷³⁴ Although this six-stage process was not disclosed in the two patents, the district court concluded that there was no best mode violation because the patentees neither deliberately, intentionally, nor accidentally concealed brazing as the best mode of attaching the copper cups to the ceramic tube.⁷³⁵

In reversing the district court's holding, the Federal Circuit stated that the best mode provision of section 112 requires disclosure of the best mode "contemplated by the inventor," and is thereby a subjective determination.⁷³⁶ Only evidence of "concealment," whether accidental or intentional, is considered and the specificity of the disclosure required to comply with the best mode requirement must be determined from facts that the inventor possessed at the time of filing the application.⁷³⁷ The appropriate question then is not how the inventor should disclose the best mode, but whether the inventor has done so adequately under the statute.⁷³⁸ Despite a general reference to the best mode, the quality of the disclosure may be so poor as to effectively result in concealment.⁷³⁹ Far from being a "production specification," Coherent did not disclose any details about its brazing process.⁷⁴⁰ This complete lack of detail effectively resulted in its concealment.⁷⁴¹ Thus, even accidental concealment may be sufficient for a best mode violation.

In *DeGeorge v. Bernier*,⁷⁴² the Federal Circuit considered the best mode requirement in an interference context. In finding no best mode disclosure in the DeGeorge application, the Board stated that

733. *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524, 1536, 3 U.S.P.Q.2d 1737, 1745 (Fed. Cir.), *cert. denied*, 484 U.S. 954 (1987).

734. *Id.* at 1537, 3 U.S.P.Q.2d at 1745. The six-stage process, which is at issue because the inventors failed to disclose it, also results in a copper-ceramic bond, but instead requires six steps to do so (six brazing cycles). These steps involve brazing at specific temperatures and pressures for specific times in a six-step process. *Id.* The inventors explained that they had disclosed the brazing method and TiCuSil as the preferred brazing material, but not the six-stage process because the specifications of its steps were functions of its own factory's ovens, which differ from other manufacturers' ovens, and were therefore meaningless in practice to provide. *Id.*

735. *Id.* at 1536, 3 U.S.P.Q.2d at 1745.

736. *Id.* at 1535, 3 U.S.P.Q.2d at 1744-45.

737. *Id.*, 3 U.S.P.Q.2d at 1745.

738. *Id.* at 1536, 3 U.S.P.Q.2d at 1745.

739. *Id.*

740. *Id.* at 1537, 3 U.S.P.Q.2d at 1745-46.

741. *Id.*

742. 768 F.2d 1318, 1324-25, 226 U.S.P.Q. 758, 762-63 (Fed. Cir. 1985); *see supra* notes 294-98 and accompanying text (discussing facts of case).

"it was DeGeorge's responsibility to identify at [the time of] filing the specific engineering level of MT/ST [word processor] with which it was contemplated that the disclosed species should be employed rather than [sic] some other level."⁷⁴³ In reversing the Board, the Federal Circuit stated that a failure to meet the best mode requirement should not arise from an absence of information on the word processor because the properly construed count did not include a word processor.⁷⁴⁴ Thus, the court concluded that the Board's finding of no best mode was clearly erroneous.⁷⁴⁵

In *Magdo v. Kooi*,⁷⁴⁶ the Federal Circuit reviewed a Board finding of proper jurisdiction to consider a challenge concerning a best mode question in an interference action. In reaching its decision, the Board relied on *Tofe v. Winchell*,⁷⁴⁷ in which the C.C.P.A. held that the best mode requirement could be raised against an application in interference.⁷⁴⁸ Contrary to the Board's view, the Federal Circuit held that *Tofe* does not answer the question of whether a challenge to the satisfaction of the best mode requirement may be raised against a patent in interference.⁷⁴⁹ That question, the court stated, was not before the C.C.P.A. in *Tofe* and was not before the Federal Circuit here.⁷⁵⁰

In *Christianson v. Colt Industries Operating Corp.*,⁷⁵¹ the Federal Circuit addressed whether the best mode requirement was violated because Colt disclosed neither information on how to mass-produce the invention nor information on sales to customers having particular requirements.⁷⁵² Christianson argued that the best mode, interchangeability with M-16 parts, was not disclosed.⁷⁵³ The court held that mass production or sales to customers having particular requirements was irrelevant to the best mode requirement.⁷⁵⁴ The

743. *DeGeorge v. Bernier*, 768 F.2d 1318, 1325, 226 U.S.P.Q. 758, 763 (Fed. Cir. 1985).

744. *Id.*

745. *Id.*

746. 699 F.2d 1325, 1330, 216 U.S.P.Q. 1033, 1037 (Fed. Cir. 1983).

747. 645 F.2d 58, 209 U.S.P.Q. 379 (C.C.P.A. 1981).

748. *Magdo v. Kooi*, 699 F.2d 1325, 1330, 216 U.S.P.Q. 1033, 1037 (Fed. Cir. 1983) (citing *Tofe v. Winchell*, 645 F.2d 58, 63, 209 U.S.P.Q. 379, 384 (C.C.P.A. 1981)).

749. *Id.* at 1330, 216 U.S.P.Q. at 1037-38.

750. *Id.*, 216 U.S.P.Q. at 1038. For interferences declared after the effective date of the November 1984 amendment to 35 U.S.C. § 135(a), the issue in *Magdo* is rendered moot. Specifically, section 135(a) was amended to give the Board of Patent Appeals and Interferences jurisdiction over questions of patentability in addition to the previous jurisdiction the Board had to determine priority of invention.

751. 822 F.2d 1544, 3 U.S.P.Q.2d 1241 (Fed. Cir. 1987), *vacated on other grounds*, 486 U.S. 800 (1988); see *supra* notes 200-02 and accompanying text (discussing facts of case in detail).

752. *Christianson v. Colt Indus. Operating Corp.*, 822 F.2d 1544, 1563, 3 U.S.P.Q.2d 1241, 1255 (Fed. Cir. 1987), *vacated on other grounds*, 486 U.S. 800 (1988).

753. *Id.*

754. *Id.*

court stated that the interchangeability with M-16 parts did not appear anywhere as a limitation in any claim, and as Christianson conceded, the patents made no reference to the M-16 rifle.⁷⁵⁵ Therefore, the court concluded that the best mode for making, using, and carrying out the claimed invention did not entail or involve the M-16 rifle or interchangeability, but only related to the invention's use in any rifle.⁷⁵⁶ The court found no testimony or evidence in the record relating to the best mode of producing the claimed inventions to indicate that any of the patents failed to meet that requirement.⁷⁵⁷

The Federal Circuit recognized that the district court's only basis for invalidating Colt's claim to production trade secrets was its view that failure to disclose them constituted noncompliance with section 112.⁷⁵⁸ The court found this to be legal error because there was no evidence that Colt kept its inventions secret. Thus, the Federal Circuit reversed the summary judgment invalidating Colt's claims to trade secrets misappropriation or to patent infringement.⁷⁵⁹

In *Texas Instruments, Inc. v. United States International Trade Commission*,⁷⁶⁰ as in *Christianson*, the Federal Circuit considered whether a difference between the manufactured product and the claimed product was pertinent to a best mode violation. Samsung, a manufacturer and importer of computer components, asserted that the specification's failure to state any mode for boosting the wordline voltage amounted to a best mode violation.⁷⁶¹ The court reiterated that failure to disclose the best mode requires a showing that the applicant knew of and concealed a better mode than that disclosed.⁷⁶² Samsung's admission that the inventors had not considered the "word boost" feature to be part of the best mode of their invention refuted any argument that the inventor had known of and had concealed a better mode than had been disclosed.⁷⁶³

Moreover, the court noted that the specification did disclose a mode for boosting the address voltage to a magnitude substantially higher than the supply voltage, and that the applicant overcame any

755. *Id.*

756. *Id.*

757. *Id.*

758. *Id.*

759. *Id.* at 1563-64, 3 U.S.P.Q.2d at 1256.

760. 871 F.2d 1054, 10 U.S.P.Q.2d 1257 (Fed. Cir. 1989).

761. *Texas Instruments, Inc. v. United States Int'l Trade Comm'n*, 871 F.2d 1054, 1061, 10 U.S.P.Q.2d 1257, 1261 (Fed. Cir. 1989).

762. *Id.* (citing *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384-85, 231 U.S.P.Q.2d 81, 94 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947 (1987)).

763. *Id.*

suggestion that boosting circuitry was not adequately disclosed.⁷⁶⁴ Finally, the fact that Texas Instruments may have manufactured a DRAM (dynamic random access memory) containing a different or better form of boosting means was not pertinent to whether the specification disclosed the best mode contemplated by the inventor in carrying out the invention.⁷⁶⁵ The Federal Circuit affirmed the Administrative Law Judge's determination that the record did not show that the applicant knew of or concealed a better mode than he disclosed.⁷⁶⁶

I. Concealment of the best mode as a basis for a finding of unenforceability

The Federal Circuit has held that concealment of the best mode can also render the patent unenforceable. In *Consolidated Aluminum Corp. v. Foseco International Ltd.*,⁷⁶⁷ the court held that the failure to disclose the best mode and the disclosure of a fictitious and inoperable mode warranted a finding of invalidity for the patent-at-issue and other related patents.⁷⁶⁸ The inventions of the patents-in-suit related to the manufacture and use of ceramic foam filters for molten metal, particularly aluminum.⁷⁶⁹

After a six-week trial, a special master appointed by the district court found one of the patents-in-suit, U.S. Patent No. 3,893,917 (the '917 patent), invalid for failure to disclose the best mode.⁷⁷⁰ The special master found intentional withholding of the best mode through the disclosure of a fictitious and inoperative embodiment and consequently declared the '917 patent invalid and unenforceable. The special master found that in addition to certain claims of the '917 patent being invalid over the prior art, selected claims of five other patents were invalid in view of the prior art.⁷⁷¹ Finally, the special master also found that certain claims of the '081 patent, the '212 patent, and the '303 patent were valid and infringed.⁷⁷²

Although the parties submitted objections to the special master's findings, the district court held that in addition to the reasons stated by the special master, the '917 patent was unenforceable for failure

764. *Id.*

765. *Id.*

766. *Id.*

767. 910 F.2d 804, 15 U.S.P.Q.2d 1481 (Fed. Cir. 1990).

768. *Consolidated Aluminum Corp. v. Foseco Int'l Ltd.*, 910 F.2d 804, 809, 15 U.S.P.Q.2d 1481, 1484 (Fed. Cir. 1990).

769. *Id.* at 806, 15 U.S.P.Q.2d at 1482.

770. *Id.* at 806-07, 15 U.S.P.Q.2d at 1482-83.

771. *Id.* at 806, 15 U.S.P.Q.2d at 1482. The patents were U.S. Patent Nos. 3,962,081 ('081), 4,075,303 ('303), 4,024,212 ('212), 4,024,056 ('056), and 4,081,371 ('371).

772. *Id.* at 807, 15 U.S.P.Q.2d at 1483.

to disclose prior art.⁷⁷³ The district court further rejected Consolidated's argument that a failure to disclose the best mode cannot constitute inequitable conduct.⁷⁷⁴ Lastly, the district court held that the '081, '212, and the '303 patents, which the master found valid and infringed, were unenforceable because of Consolidated's "broad pattern of inequitable conduct."⁷⁷⁵

On appeal, the Federal Circuit concerned itself primarily with the district court's holdings with respect to the unenforceability of the '917, '081, '212, and '303 patents.⁷⁷⁶ The Federal Circuit addressed the issue of whether the district court committed error in holding the '917 patent unenforceable for failure to disclose the best mode and for disclosure of a fictitious and inoperable mode.⁷⁷⁷ The district court stated that the failure to disclose the best mode, a statutory requirement, is "inherently material" and "reaches the minimum level of materiality necessary for a finding of inequitable conduct."⁷⁷⁸ The district court said, however, that the intentional failure to disclose the best mode will not constitute inequitable conduct in every case, because while unintentional failure to disclose the best mode is inexcusable, inequitable conduct requires a "threshold" level of intent.⁷⁷⁹

The Federal Circuit rejected Consolidated's assertion that its failure to disclose the best mode was unintentional.⁷⁸⁰ Consolidated argued that although the district court found intentional nondisclosure, it did not make the express finding of "intent to deceive" as required for a finding of inequitable conduct by the case law. Consolidated further argued that the district court ignored evidence of subjective good faith.⁷⁸¹ The Federal Circuit then explained how Consolidated's argument misconstrued the court's statement in *Kingsdown Medical Consultants, Ltd. v. Hollister, Inc.*⁷⁸² that "a finding that particular conduct amounts to "gross negligence" does not of itself justify an inference of intent to deceive; the involved conduct, viewed in light of all of the evidence, including evidence indicative

773. *Id.*

774. *Id.*

775. *Id.*

776. *Id.*

777. *Id.* at 808, 15 U.S.P.Q.2d at 1484.

778. *Id.* (citing *J.P. Stevens & Co. v. Lex Tex Ltd.*, 747 F.2d 1553, 1559, 223 U.S.P.Q. 1089, 1092 (Fed. Cir. 1984), *cert. denied*, 474 U.S. 822 (1985) and *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524, 1535, 3 U.S.P.Q.2d 1727, 1745 (Fed. Cir.), *cert. denied*, 484 U.S. 954 (1987)).

779. *Id.*

780. *Id.*

781. *Id.*

782. 863 F.2d 867, 9 U.S.P.Q.2d 1384 (Fed. Cir. 1988) (in banc), *cert. denied*, 490 U.S. 1067 (1989).

of good faith, must indicate sufficient culpability to require a finding of intent to deceive."⁷⁸³

The Federal Circuit interpreted this language to require courts to view the conduct involved in light of all the evidence and then ascertain whether that conduct when considered as a whole suggests a sufficiently culpable state of mind to warrant a finding of the requisite intent to deceive.⁷⁸⁴ In *Consolidated Aluminum*, the Federal Circuit held that the district court properly made this determination in light of Consolidated's intentional concealment of the best mode and the disclosure of a fictitious and inoperable mode.⁷⁸⁵ Thus, a finding of intentional concealment, under the mask of a fictitious mode, is equal to a finding of intent to deceive for purposes of inequitable conduct.⁷⁸⁶

In addressing the district court's finding that Consolidated's unclean hands with respect to the '917 patent rendered the '081, '212, and '303 patents unenforceable, the Federal Circuit stated that this appeal presented the court with the "first opportunity" to consider the maxim "he who comes into equity must come with clean hands."⁷⁸⁷ To guide its review on this issue, the Federal Circuit looked to the United States Supreme Court decisions of *Keystone Driller Co. v. General Excavator Co.*⁷⁸⁸ and *Precision Instrument Manufacturing Co. v. Automotive Maintenance Machinery Co.*⁷⁸⁹ The Federal Circuit noted that in both of these cases, the maxim was applied "only where some unconscionable act of one coming for relief has immediate and necessary relation to the equity that he seeks in respect of the matter in litigation."⁷⁹⁰

Consolidated argued that the application of inequitable conduct considerations to the '081, '212, and '303 patents constituted an abuse of discretion because mere relatedness of subject matter is not a proper basis for such an application.⁷⁹¹ The Federal Circuit pointed out, however, that there was more than a "mere relatedness of subject matter" in this case. Instead, the prosecution histories of the patents-in-suit established that Consolidated's inequitable con-

783. *Consolidated*, 910 F.2d at 808-09, 15 U.S.P.Q.2d at 1484 (quoting *Kingsdown Medical Consultants, Ltd. v. Hollister, Inc.*, 863 F.2d 867, 876, 9 U.S.P.Q.2d 1384, 1392 (Fed. Cir. 1988)).

784. *Id.* at 809, 15 U.S.P.Q.2d at 1484.

785. *Id.*

786. *Id.*

787. *Id.*, 15 U.S.P.Q.2d at 1485.

788. 290 U.S. 240 (1933).

789. 324 U.S. 806 (1945).

790. *Consolidated*, 910 F.2d at 810, 15 U.S.P.Q.2d at 1485 (quoting *Keystone Driller Co. v. General Excavator Co.*, 290 U.S. 240, 245 (1933) (emphasis omitted)).

791. *Id.* at 810, 15 U.S.P.Q.2d at 1486.

duct in prosecuting the '917 patent bore an "immediate and necessary relation to the equity" Consolidated sought, namely enforcement of the '081, '212, and '303 patents.⁷⁹² The prosecution histories further revealed that Consolidated's concealment of the best mode in the application for the '917 patent "permeated" the prosecution of the other patents-in-suit.⁷⁹³

Consolidated also argued that the Federal Circuit's decision in *SSIH Equipment S.A. v. United States International Trade Commission*⁷⁹⁴ read the *Precision Instrument* and *Keystone Driller* cases to require a "fraud before the court" to render applicable the unclean hands doctrine.⁷⁹⁵ The Federal Circuit stated that Consolidated had taken a statement in *SSIH* out of context, and that Consolidated's reading of *SSIH* would place it at odds with *Precision Instrument*, which held that conduct before the PTO so soiled the patentee's hands as to render all the patents-in-suit unenforceable.⁷⁹⁶ Moreover, the Federal Circuit rejected this argument as "an invitation to limit a flexible doctrine of equity to conduct occurring before the court."⁷⁹⁷ The Federal Circuit explained that what it termed "inequitable conduct" is the unclean hands doctrine applied to particular conduct before the PTO and held that to limit application of the doctrine to conduct before the court would be contrary to Federal Circuit precedent.⁷⁹⁸

2. *In the context of obtaining the benefit of an earlier date under section 120*

In *Racing Strollers, Inc. v. Tri Industries, Inc.*,⁷⁹⁹ the Federal Circuit decided that the best mode requirement is inapplicable to an application for a design patent. The defendant argued that the design patent at issue was not entitled to the earlier filing date of a related utility application, and that the plaintiffs' prior sales rendered the design patent invalid under section 102(b).⁸⁰⁰ Defendant further ar-

792. *Id.* at 810-11, 15 U.S.P.Q.2d at 1486.

793. *Id.* at 812, 15 U.S.P.Q.2d at 1487.

794. 718 F.2d 365, 218 U.S.P.Q. 678 (Fed. Cir. 1983).

795. *Consolidated*, 910 F.2d at 812, 15 U.S.P.Q.2d at 1487 (discussing *SSIH Equip. S.A. v. United States Int'l Trade Comm'n*, 718 F.2d 365, 378, 218 U.S.P.Q. 678, 690 (Fed. Cir. 1983)).

796. *Id.* (construing *Precision Instrument Mfg. Co. v. Automotive Maintenance Mach. Co.*, 324 U.S. 806, 818-19 (1945)).

797. *Id.* (citing *Keystone Driller Co. v. General Excavator Co.*, 290 U.S. 240, 245-46 (1933)).

798. *Id.* (citing *J.P. Stevens & Co. v. Lex Tex Ltd.*, 747 F.2d 1553, 1561, 223 U.S.P.Q. 1089, 1093 (Fed. Cir. 1984), *cert. denied*, 474 U.S. 822 (1985)).

799. 878 F.2d 1418, 1420, 11 U.S.P.Q.2d 1300, 1301 (Fed. Cir. 1989).

800. *Racing Strollers, Inc. v. Tri Indus., Inc.*, 878 F.2d 1418, 1419, 11 U.S.P.Q.2d 1300, 1301 (Fed. Cir. 1989).

gued that the earlier utility application had not disclosed the best mode of the design patent.⁸⁰¹ The application for the design patent at issue, filed April 14, 1986, stated on its face that the patent was a division of the utility patent application filed October 22, 1984 and now abandoned.⁸⁰² The defendant, relying on *In re Campbell*,⁸⁰³ argued that an application for a design application cannot be a division of the application for a mechanical patent and thus, the design application is not entitled to the benefit of the mechanical application's filing date.⁸⁰⁴

The Federal Circuit first stated that as a generalized proposition, the question as to whether the design application is entitled to the prior filing date was incapable of being answered categorically "yes or no" because each case depends on its own fact situation.⁸⁰⁵ For a design patent application to claim priority from a utility patent application pursuant to section 120, the court required the invention subsequently claimed to be disclosed in the manner required by the first paragraph of section 112.⁸⁰⁶

The court next noted that the "best mode" requirement is not applicable to a design patent because a design has only one "mode" and can be described only by illustrations of its appearance.⁸⁰⁷ The court further stated that in the case of an ornamental design, satisfaction of the remaining requirements of section 112 is "simply a question of whether the earlier application contains illustrations," in any form, which depict the ornamental design illustrated in the later patent and claimed therein.⁸⁰⁸ Therefore, the question of whether the "divisional" design application gets priority over the utility application requires compliance with section 120, which in turn requires compliance with section 112, within which the detailed factual questions to be resolved can be found.⁸⁰⁹

In overruling *In re Campbell*, the Federal Circuit agreed with Judge O'Connell's dissent in the case that it was wrongly decided on the

801. *Id.* at 1419-20, 11 U.S.P.Q.2d at 1301.

802. *Id.* at 1418-19, 11 U.S.P.Q.2d at 1300-01.

803. 212 F.2d 606, 101 U.S.P.Q. 406 (C.C.P.A.), *cert. denied*, 348 U.S. 858 (1959), *overruled by* *Racing Strollers, Inc. v. Tri Indus., Inc.* 878 F.2d 1418, 11 U.S.P.Q.2d 1300 (Fed. Cir. 1987).

804. *Racing Strollers*, 878 F.2d at 1419, 11 U.S.P.Q.2d at 1301 (citing *In re Campbell*, 212 F.2d 606, 609, 101 U.S.P.Q. 406, 409 (C.C.P.A.), *cert. denied*, 348 U.S. 858 (1954), *overruled by* *Racing Strollers, Inc. v. Tri Indus., Inc.*, 878 F.2d 1418, 11 U.S.P.Q. 1300 (Fed. Cir. 1987)).

805. *Id.*

806. *Id.*

807. *Id.* at 1420, 11 U.S.P.Q.2d at 1301.

808. *Id.*

809. *Id.*, 11 U.S.P.Q.2d at 1301-02.

basis of faulty and inadequate reasoning.⁸¹⁰ Also, the court noted that section 120 gives any applicant the right to have the benefit of the filing date of an earlier application upon compliance with the terms of section 120, which in turn incorporates the requirements of section 112.⁸¹¹

In *Pennwalt Corp. v. Akzona, Inc.*,⁸¹² the Federal Circuit discussed the relative burdens of proof when an alleged infringer wants to show that the patent owner has acquiesced in rejections under section 112 for failing to meet the enablement and best mode requirements by filing a CIP application.⁸¹³ Again, in *Pennwalt*, the patent owner was attempting to rely on an earlier application to antedate a reference. The district court held that the claims of the patent were not entitled to the filing date of a grandparent application under section 120, not only because the grandparent application disclosed different insecticides than the claims of the patent-in-suit, but also because the grandparent application did not meet the enablement and best mode requirements.⁸¹⁴ Accordingly, the claims of the patent were only accorded the filing date of the parent application.⁸¹⁵

The PTO rejected the claims of the grandparent application under section 103 and section 112, first and second paragraphs.⁸¹⁶ The PTO based its rejection under the first paragraph of section 112 due to the specification's lack of an enabling disclosure and its failure to set forth a best mode; the specification only described the encapsulating material as a "polyamide" without setting forth a specific polyamide or a method of preparation.⁸¹⁷ Following this rejection, the patent owner filed the parent application and abandoned the grandparent application. The parent application described the claimed invention in substantially more detail than did the grandparent application by setting forth, inter alia, the best mode, which described methods of producing encapsulated insecticides with specific examples and a number of specific encapsulating materials.⁸¹⁸

The Federal Circuit stated that the patent owner presented no evidence rebutting the prima facie case of acquiescence in these en-

810. *Id.* at 1420-21, 11 U.S.P.Q.2d at 1302 (discussing *Campbell*, 212 F.2d at 612, 101 U.S.P.Q. at 411 (O'Connell, J., dissenting)).

811. *Id.* at 1421, 11 U.S.P.Q.2d at 1302.

812. 740 F.2d 1573, 222 U.S.P.Q. 833 (Fed. Cir. 1984).

813. *Pennwalt Corp. v. Akzona, Inc.*, 740 F.2d 1573, 1578-80, 222 U.S.P.Q. 833, 836-38 (Fed. Cir. 1984); see *supra* notes 580-87 and accompanying text (discussing *Litton Sys., Inc. v. Whirlpool Corp.*, 728 F.2d 1423, 221 U.S.P.Q. 97 (Fed. Cir. 1984)).

814. *Pennwalt*, 740 F.2d at 1577, 222 U.S.P.Q. at 835.

815. *Id.*

816. *Id.* at 1579, 222 U.S.P.Q. at 837.

817. *Id.*

818. *Id.*

ablement and best mode rejections.⁸¹⁹ The court noted that, in fact, the patent owner's own witnesses showed that acquiescence did occur. The patent owner was therefore estopped from arguing that section 112 had been complied with in order to gain the benefit of the grandparent application's earlier filing date under section 120.⁸²⁰

3. *Deposit of biological material to satisfy the best mode requirement*

In *Scripps Clinic & Research Foundation, Inc. v. Genentech, Inc.*,⁸²¹ the court considered whether a failure to deposit an antibody to the Factor VII:RP was a "best mode" violation. Genentech did not argue that Scripps had concealed any special manipulations or undisclosed techniques.⁸²² Rather, Genentech's primary argument was that because of the laborious nature of the process of screening monoclonal antibodies, the inventors should have voluntarily placed the antibody of Factor VII:RP in a depository and made it available to the public. This antibody was the first effective antibody obtained by Scripps' screening and was used by Scripps in carrying out the claimed invention.⁸²³ Scripps did not dispute that the antibody was indeed the first that had the described properties. In fact, three out of the first seven antibodies screened had these properties, and all were obtained by routine but admittedly time consuming procedures.⁸²⁴

The district court, in granting Genentech's motion for partial summary judgment on this issue, made only the following findings relating to concealment: (1) the inventors concealed the antibody; (2) this antibody was the best mode for carrying out the invention; and (3) a person of skill in the art would not have known "where to obtain it."⁸²⁵ Scripps did not dispute that the procedures by which the inventors obtained the antibody were the procedures stated in the patent specification, and the inventors' preferred procedures.⁸²⁶

The Federal Circuit found no evidence that the antibodies used by the inventors differed from those obtainable by the disclosed process.⁸²⁷ Further, the court had previously acknowledged the la-

819. *Id.*

820. *Id.* at 1579-80, 222 U.S.P.Q. at 836-37.

821. 927 F.2d 1565, 18 U.S.P.Q.2d 1001 (Fed. Cir. 1991).

822. *Scripps Clinic & Research Found., Inc. v. Genentech, Inc.*, 927 F.2d 1565, 1579, 18 U.S.P.Q.2d 1001, 1012 (Fed. Cir. 1991).

823. *Id.*

824. *Id.*

825. *Id.*

826. *Id.*

827. *Id.*

borious nature of this work in *Hybritech, Inc. v. Monoclonal Antibodies, Inc.* and *In re Wands*.⁸²⁸ The court noted that, in considering the question of enablement in *Wands*, it declined to require the deposit of antibody samples that could be obtained by screening following the procedures in the specification.⁸²⁹ The court further recognized that in *Hybritech* it considered the issue of best mode in the context of facts similar to those at bar.⁸³⁰

The Federal Circuit noted that it held in *Hybritech* that the only evidence even colorably related to concealment was Hybritech employees' testimony that sophisticated and competent people performed the screening and that the screening process was labor-intensive and time consuming. This was not enough evidence to prove concealment.⁸³¹ Applying *Hybritech* to the facts of *Scripps*, the court reversed the finding of concealment and remanded with instructions to enter partial summary judgment for Scripps on this ground.⁸³²

IV. THE SIXTH PARAGRAPH

A. Introduction

The sixth paragraph of section 112 provides that "an element in a claim for a combination may be expressed as a means or step for performing a specified function."⁸³³ An element expressed in this way is said to be in "means-plus-function" form, in "means-plus-function language," or to constitute functional language.⁸³⁴ An element in that format "shall be construed to cover the corresponding structure, material, or acts described in the specifications or equivalents thereof."⁸³⁵ "Means-plus-function" language has been construed by the courts for determining both the patentability and infringement of claims.⁸³⁶ The former situation is discussed in the

828. *Id.* (citing *Hybritech, Inc. v. Monoclonal Antibodies, Inc.* 802 F.2d 1367, 1369, 231 U.S.P.Q. 81, 90 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947 (1987) and *In re Wands*, 858 F.2d 731, 737-38, 8 U.S.P.Q.2d 1400, 1406-07 (Fed. Cir. 1988)).

829. *Id.*

830. *Id.* at 1579-80, 18 U.S.P.Q.2d at 1012-13.

831. *Id.* (discussing *Hybritech*, 802 F.2d at 1385, 231 U.S.P.Q. at 94).

832. *Id.* at 1580, 18 U.S.P.Q.2d at 1013.

833. 35 U.S.C. § 112, ¶ 6 (1988). The entire text of the sixth paragraph reads:

An element in 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.

Id.

834. See generally CHISUM, *supra* note 20, § 18.03[5] (discussing elements of means-plus-function in interpretation and application of claims).

835. *Id.*

836. *Id.*

section that immediately follows; the latter situation is discussed in the section thereafter.

B. Interpretation of "Means-Plus-Function" Language for Determining Patentability

In *In re Hyatt*,⁸³⁷ the Federal Circuit affirmed the Board's rejection of a claim which, although drafted in means-plus-function language, was actually a single means claim that recited one element instead of a combination.⁸³⁸ Although the claim listed several elements, these elements merely described the same single claimed means.⁸³⁹ While the language of the sixth paragraph contains no express prohibition against single means claims, the Board held that the sixth paragraph, taken as a whole, implies that single means claims are prohibited.⁸⁴⁰ The Board stated that this "implied prohibition" reflected the intent of the section 112 drafters.⁸⁴¹ The Board held that because the applicant used "means-plus-function" without reciting a combination of elements, it was unclear what the applicant intended to claim and thus warranted rejection under section 112, second paragraph.⁸⁴²

The Federal Circuit, however, held instead that the first paragraph of section 112 provided the proper grounds for rejection.⁸⁴³

837. 708 F.2d 712, 218 U.S.P.Q. 195 (Fed. Cir. 1983).

838. *In re Hyatt*, 708 F.2d 712, 712-13, 218 U.S.P.Q. 195, 195-96 (Fed. Cir. 1983). The claim in question read: "A Fourier transform processor for generating Fourier transformed incremental output signals in response to incremental input signals, said Fourier transform processor comprising incremental means for incrementally generating the Fourier transformed incremental output signals in response to the incremental input signals." *Id.* (emphasis in original).

839. *Id.* at 714, 218 U.S.P.Q. at 197. The court noted that a claim must be read in accordance with the precepts of English grammar and that a mere recital of a multitude of elements or claims is not determinative. *Id.* Furthermore, the appellant's denomination of every noun in the claim as a separate element ignored the fact that these words function as a mere description of the single claimed means. *Id.* Indeed, the appellant had admitted that the claim was drawn to only a single element. *Id.*

840. *Id.* at 713, 218 U.S.P.Q. at 196.

841. *Id.* at 713-14, 218 U.S.P.Q. at 196. "The language [of paragraph six] does not go so far as to permit a so-called single means claim, that is a claim which recites merely one means plus a statement of function and nothing else. Attempts to evade this by adding purely nominal elements to such a claim will undoubtedly be condemned." *Id.* (quoting P.J. Federico, *Commentary on the New Patent Act*, 35 U.S.C.A. § 1 (1954)).

842. *Id.* at 713, 218 U.S.P.Q. at 196. The court noted the decision of the United States Patent and Trademark Office Board of Appeals, which held that:

[I]t is our view that where an applicant uses the permissible claim format specified in the last paragraph of 35 U.S.C. [§] 112, by implication the applicant regards his invention to be a combination of elements. It follows that the recitation of a single 'means' or element would be an incomplete recitation of a combination and such a recitation would therefore fail to particularly point out and distinctly claim 'the subject matter which the applicant regards as his invention.'

Id. (stating position of Board on first and record appeals).

843. *Id.* at 714, 218 U.S.P.Q. at 197.

The court explained that “[t]he long-recognized problem with a single means claim is that it covers every conceivable means for achieving the stated result, while the specification discloses at most only those means known to the inventor.”⁸⁴⁴ The court stated that, under the sixth paragraph, means-plus-function language provides a format narrow enough to avoid what used to be known as “undue breadth,” but it does not authorize claims that do not recite a combination.⁸⁴⁵ On this basis, the court affirmed the Board’s rejection of the claim.⁸⁴⁶

In *In re Iwahashi*,⁸⁴⁷ the Federal Circuit considered another argument of unpatentability—that the claim “encompasses any and all means for performing the functions recited therein.”⁸⁴⁸ The claim at issue was directed to a computer auto-correlation unit.⁸⁴⁹ On appeal, the PTO solicitor argued that the claim could be reduced to a mere expression of algorithms, so was therefore a single means claim.

The Federal Circuit stated that the claim at issue was a combination of means, all but one of which was a means-plus-function limitation.⁸⁵⁰ The one exception was the recited ROM (read only memory), a structural limitation. Because the sixth paragraph authorized this “combination” claim, the Solicitor’s interpretation of the claims was precluded.⁸⁵¹

In *In re Bond*,⁸⁵² the Federal Circuit held, in the context of prior art analysis during patent prosecution, that a claim for a combination with means-plus-function elements must be analyzed under the standard of the sixth paragraph.⁸⁵³ Such a claim must be construed

844. *Id.*; *O’Reilly v. Morse*, 56 U.S. 62, 112 (1853) (discussing impropriety of single means claims as too broad).

845. *Hyatt*, 708 F.2d at 715, 218 U.S.P.Q. at 197; *see In re Borkowski*, 422 F.2d 904, 909, 164 U.S.P.Q. 642, 645-46 (C.C.P.A. 1970) (assessing basis for undue breadth rejection).

846. *Hyatt*, 708 F.2d at 715, 218 U.S.P.Q. at 197-98.

847. 888 F.2d 1370, 12 U.S.P.Q.2d 1908 (Fed. Cir. 1989).

848. *In re Iwahashi*, 888 F.2d 1370, 1375, 12 U.S.P.Q.2d 1908, 1911-12 (Fed. Cir. 1989); *see supra* note 844 and accompanying text (discussing problem of single means claims that encompass every conceivable means for achieving stated result).

849. *Iwahashi*, 888 F.2d at 1373, 12 U.S.P.Q.2d at 1910. The claim read, in pertinent part:

[a] An auto-correlation unit for providing auto-correlation coefficients for use as feature parameters in pattern recognition for N pieces of sampled input values X_n ($n = 0$ to $N - 1$), said unit comprising:

[b] means for extracting N pieces of sample input values X_n from a series of sample values in an input pattern expressed with an accuracy of optional multi-bits;

[c] means for calculating the sum of the sample values X_n and X_{n-Z} ($t = 0 - P$, $P < N$);

Id.

850. *Id.*

851. *Id.* at 1375, 12 U.S.P.Q.2d at 1912.

852. 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990).

853. *In re Bond*, 910 F.2d 831, 833, 15 U.S.P.Q.2d 1566, 1568 (Fed. Cir. 1990).

to cover the corresponding structure, material, or act described in the specification and equivalents thereof. Thus, prior art not identical to claimed structures could nevertheless anticipate those claimed structures.⁸⁵⁴

Bond invented a remote turn-on feature for answering machines whereby an owner forgetting to set the machine before leaving home could dial home and set the machine to the answering mode by letting the phone ring a fixed number of times.⁸⁵⁵ The specification taught that the seizure delay was implemented by digital means using a microcomputer that seized the phone line only after pin 31 went "high."⁸⁵⁶

The Board affirmed the examiner's rejection based on the prior art of patent owner Curtis, which disclosed a delay means that postponed line seizure by a set time after the machine was turned on by remote.⁸⁵⁷ The Board, however, made no finding that the delay means claimed was structurally equivalent to that structure disclosed in the prior art.⁸⁵⁸ The Federal Circuit pointed out that the delay means of the two devices were different; the Bond device used a digital means, while the Curtis device used an analog means.⁸⁵⁹ Furthermore, the Bond delay device was triggered after the answering machine was set, while the Curtis device was apparently triggered when the phone rang.⁸⁶⁰

Because the Board made no finding that the Bond and Curtis devices were structurally equivalent, the decision regarding anticipation was deficient.⁸⁶¹ The Federal Circuit vacated the anticipation rejection and remanded the question of fact of structural equivalence to the Board.⁸⁶² The court instructed the Board to consider

854. *Id.*

855. *Id.* at 832, 15 U.S.P.Q.2d at 1567. Bond's application included a claim to a combination of control means, a first circuit means, a second circuit means, and

delay means included in said control circuit means for delaying the seizure of said telephone line by said second circuit means for a predetermined time interval after said telephone answering machine has been set to said automatic answering mode so as to permit the calling party to get off the line and avoid telephone charges.

Id. at 833, 15 U.S.P.Q.2d at 1567.

856. *Id.*

857. *Id.* at 832, 15 U.S.P.Q.2d at 1567.

858. *Id.* at 833, 15 U.S.P.Q.2d at 1568.

859. *Id.*, 15 U.S.P.Q.2d at 1567-68.

860. *Id.* The court stated that:

While a "means-plus-function" limitation may appear to include all means capable of achieving the desired function, the statute requires that it "be construed to cover the corresponding structure, material, or acts described in the specification or equivalents thereof."

Id., 15 U.S.P.Q.2d at 1568.

861. *Id.* at 835, 15 U.S.P.Q.2d at 1569.

862. *Id.*

first, whether the delay occurring in the Curtis device after activation of the answering mode and before seizure of the telephone line was caused by a structure in that device, and second, whether this structure was equivalent to that disclosed in Bond's specification.⁸⁶³ Affirmative answers to both of these inquiries, asserted the court, would mean that the claim was anticipated by the Curtis disclosure.⁸⁶⁴

C. Claim Interpretation for Determining Infringement

The Federal Circuit reversed the district court's determination of noninfringement for a wheelbarrow in *Radio Steel & Manufacturing Co. v. MTD Products, Inc.*⁸⁶⁵ Radio's patented wheelbarrow was designed to be sold as a box of pieces to be assembled by the purchaser.⁸⁶⁶ The disputed claim described a wheelbarrow in which each handle was made of two pieces that adjoined end to end when assembled. The two ends were then supported on their underside by a cross brace between the handles and were bolted to the bottom of the wheelbarrow's bowl. The cross brace was a straight piece with three-sided channels at each end, into which the handles fit. The claim also described the bowl, a wheel at the front end of the handles, two legs with their upper ends connected to the handles, and a "means" for mounting and attaching the various pieces.⁸⁶⁷ MTD's wheelbarrow was virtually identical to Radio's, except the cross bars were flat, lacking a channel for the handles.⁸⁶⁸ Additionally, MTD used filler strips, which were shims fitting between the handles and the bowl.⁸⁶⁹

The district court held, inter alia, that MTD did not infringe Radio's patent.⁸⁷⁰ The district court stated that although the accused device's cross brace was equivalent to the claimed cross brace, the existence of the filler strips, not described in Radio's claim, was a significant difference.⁸⁷¹ The court noted that filler strips were de-

863. *Id.*

864. *Id.*

865. 731 F.2d 840, 849, 221 U.S.P.Q. 657, 664 (Fed. Cir.), *cert. denied*, 469 U.S. 831 (1984).

866. *Radio Steel & Mfg. Co. v. MTD Prods., Inc.*, 731 F.2d 840, 842, 221 U.S.P.Q. 657, 658 (Fed. Cir.), *cert. denied*, 469 U.S. 831 (1984).

867. *Id.*

868. *Id.*, 221 U.S.P.Q. at 659.

869. *Id.* at 843, 221 U.S.P.Q. at 659.

870. *Id.* at 842, 221 U.S.P.Q. at 659. The district court held the patent valid under section 102 and section 103 analyses. See *Radio Steel Mfg. Co. v. MTD Prods., Inc.*, 566 F. Supp. 609, 619, 220 U.S.P.Q. 35, 44 (N.D. Ohio 1983), *modified*, 731 F.2d 840, 221 U.S.P.Q. 657 (Fed. Cir.), *cert. denied*, 469 U.S. 831 (1984). The Federal Circuit affirmed that portion of the district court's holding. *Radio Steel*, 731 F.2d at 843-46, 221 U.S.P.Q. at 660-62.

871. *Radio Steel*, 731 F.2d at 843, 221 U.S.P.Q. at 659.

scribed in Radio's specification. The district court declined, however, to read the "means" language of the claims to include the filler strips.⁸⁷²

The Federal Circuit disagreed with the district court's interpretation of the filler strips relative to the means language.⁸⁷³ Because the disputed claim stated "means for securing the handle portions in the channel section," the court stated that such a claim must be construed to cover the corresponding structure, material, or acts described in the specification or equivalents thereof.⁸⁷⁴

Furthermore, the court explained that where a claim states a means for performing a function without reciting any specific structure for performing that function, the structure disclosed in the specification must be considered and the patent must be construed to cover both the disclosed structure and its equivalents.⁸⁷⁵

The court then examined the specification to see if the corresponding structure included filler strips.⁸⁷⁶ The specification disclosed that "the preferred practice of this invention wherein use is made of filler strip 20 in the form of a wedge-shaped channel . . . handle portions are secured . . . to the one piece filler strip on one side and to the one piece leg member on the other side securely to interconnect the handle portions . . . the filler strip, leg members and additionally spaced portions of the handle sections."⁸⁷⁷ In fact, the district court itself found that one of the functions of the strip was "[t]he rigid and secure assembly of the bowl, handle pieces and leg members."⁸⁷⁸ Noting this, the Federal Circuit held that the filler strips described in the specification were covered in the means claim language and that the MTD wheelbarrow infringed that claim.⁸⁷⁹

MTD further argued that because of its placement and triangular shape, the filler strips performed the additional function of leveling the bowl.⁸⁸⁰ Rejecting MTD's argument, the Federal Circuit held that the mere inclusion of additional features could not allow the accused device to escape infringement.⁸⁸¹ Similarly, the court found that an accused device containing the same feature as the pat-

872. *Id.*

873. *Id.* at 848, 221 U.S.P.Q. at 663.

874. *Id.*

875. *Id.* (citing *Lockheed Aircraft Corp. v. United States*, 553 F.2d 69, 82, 193 U.S.P.Q. 449, 460 (Ct. Cl. 1977)).

876. *Id.*

877. *Id.*

878. *Id.* at 847, 221 U.S.P.Q. at 663.

879. *Id.* The Federal Circuit similarly held that the accused wheelbarrow infringed under the doctrine of equivalents. *Id.*

880. *Id.* at 848, 221 U.S.P.Q. at 663.

881. *Id.*, 221 U.S.P.Q. at 663-64.

ented device cannot escape infringement simply because that feature performs an additional function not performed in the patented device.⁸⁸²

The court reversed summary judgment of noninfringement in *D.M.I., Inc. v. Deere & Co.*,⁸⁸³ holding that the district court had misapplied the standards of paragraph six. D.M.I. sued Deere for infringing its patent that claimed a plow system with a means for adjusting the plow units while the plow was in motion.⁸⁸⁴ Representative of the functional language at issue, claim 1 recites, "steering means including compensating means for maintaining said steering wheel . . . lateral settings of said plow units . . ." ⁸⁸⁵ While the "means" language of the claims involved was discernible, the Federal Circuit stated that the district court failed to recognize this language as being separately definable.⁸⁸⁶ Further, the Federal Circuit stated that while the district court looked to the specification for a definition of "compensation means," it did not look to the specification for a definition of "equivalents thereof."⁸⁸⁷

The Federal Circuit stated that, although section 112 requires patentees to disclose enabling means for their claimed function, every possible means cannot be described or predicted.⁸⁸⁸ Rather, the court acknowledged that the sixth paragraph was written to avoid a holding that a means-plus-function limitation would be read as covering only the means disclosed in the specification.⁸⁸⁹ The court reasoned that interpreting "means-plus-function" limitations as being restricted to a particular means set forth in the specification would nullify section 112's requirement that the limitation be construed to cover the structure described in the specification and its equivalents. The court went on to state that patentees must disclose in the specification some enabling means for performing the function set forth in the "means-plus-function" limitation. Thus, the Federal Circuit held that the district court erred in granting summary judgment without considering whether the alleged infringing means were equivalents of the specific means disclosed in the specification.⁸⁹⁰

882. *Id.*

883. 775 F.2d 1570, 225 U.S.P.Q. 236 (Fed. Cir. 1985).

884. *D.M.I., Inc. v. Deere & Co.*, 755 F.2d 1570, 1572, 225 U.S.P.Q. 236, 237 (Fed. Cir. 1985).

885. *Id.*

886. *Id.* at 1573, 225 U.S.P.Q. at 238.

887. *Id.*

888. *Id.* at 1574, 225 U.S.P.Q. at 238.

889. *Id.*

890. *Id.*

The Federal Circuit further instructed that the equivalent means analysis of the sixth paragraph should not be confused with the doctrine of equivalents analysis of infringement.⁸⁹¹ Under that doctrine, a district court would determine if the entirety of the alleged infringing device performed "substantially the same functions in substantially the same way, to achieve substantially the same result."⁸⁹² The court stated, however, that sixth paragraph equivalent means analysis is a different analysis, namely, "the sole question is whether the single means in the accused device which performs the function stated in the claim is the same as or an equivalent of the corresponding structure described in the patentee's specification as performing that function."⁸⁹³

In *Palumbo v. Don-Joy Co.*,⁸⁹⁴ the Federal Circuit reversed and remanded a grant of summary judgment, holding that a substantial issue of fact existed as to whether the accused device was equivalent to the patented invention.⁸⁹⁵ Palumbo's patented knee brace was designed to diagnose and treat patellar subluxation (kneecap dislocation) throughout a full range of knee motion.⁸⁹⁶ The claims included means-plus-function language, such as: "means for bracing the patella," "means for maintaining said patellar bracing," and "means for causing said patellar bracing means positioned laterally."⁸⁹⁷ The specification described one embodiment comprised of an elastic sleeve with a hole to align the kneecap, a kneecap bracing pad next to the hole, two elastic sideways force-applying arms attached to the pad, and an elastic, position-maintaining counter-arm attached to the bracing pad.⁸⁹⁸ The two force-applying arms wrapped around the knee, pushing the bracing pad medially.⁸⁹⁹

891. *Id.* at 1575, 225 U.S.P.Q. at 239.

892. *Id.* (citing *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 608 (1950)).

893. *D.M.I.*, 755 F.2d at 1575, 225 U.S.P.Q. at 239.

894. 762 F.2d 969, 226 U.S.P.Q. 5 (Fed. Cir. 1985).

895. *Palumbo v. Don-Joy Co.*, 762 F.2d 969, 974-75, 226 U.S.P.Q. 5, 8-9 (Fed. Cir. 1985).

896. *Id.* at 971, 226 U.S.P.Q. at 5.

897. *Id.* Claim 1, for example, read:

A dynamic patellar brace for preventing subluxation of a patella throughout the complete physiologic range of flexion and movement of the knee comprising:

means for bracing the patella;

means for maintaining said patellar bracing means positioned laterally of the patella throughout the complete physiologic range of flexion and movement of the knee when the brace is in use, and;

means for causing said patellar bracing means positioned laterally of the patella to apply a resultant force in the medial direction to the patella throughout the complete range of flexion and movement of the knee when the brace is in use.

Id.

898. *Id.*, 226 U.S.P.Q. at 6.

899. *Id.* at 972, 226 U.S.P.Q. at 6.

The counter-arm wrapped around in the opposite direction, stabilizing the pad position throughout knee movement.⁹⁰⁰ The accused Don-Joy device had an inner sleeve with a hole for the kneecap similar to Palumbo's.⁹⁰¹ It also employed an outer sleeve placed centrally over the inner sleeve. The district court ruled that Palumbo's claims were limited to the arms structure and that the Don-Joy brace, because it lacked these arms, did not infringe.⁹⁰²

The Federal Circuit, however, held that the means claims of Palumbo's patent must be construed to include equivalents under the sixth paragraph, and that such analysis involves a material question of fact.⁹⁰³ The court reiterated that an accused device performing the claimed function by a means specified in the disclosure, or its equivalent, would be guilty of literal infringement, rather than infringement under the doctrine of equivalents.⁹⁰⁴ The court noted that both doctrine of equivalents analysis and literal infringement analysis of the sixth paragraph involve *Graver Tank* concepts of equivalents.⁹⁰⁵

The court stated that the following should be considered in construing a "means-plus-function" claim: the language of the claim; the patent specification; the prosecution history; other claims in the patent history; and expert testimony.⁹⁰⁶ After that determination is made, the scope of the "means" and its relation to the accused device is a question of fact.⁹⁰⁷ Dr. Palumbo himself testified as an expert witness and one skilled in the art that the padding, combined with the friction between Don-Joy's inner and outer sleeve, accomplished the claimed function—stabilizing the kneecap during leg movement.⁹⁰⁸ The court held that Palumbo's conclusion that Don-Joy's brace was equivalent was more than a mere conclusory statement. The court found this testimony to be enough to indicate that a material question of fact existed, precluding summary judgment.⁹⁰⁹

900. *Id.*

901. *Id.* at 973, 226 U.S.P.Q. at 6.

902. *Id.*, 226 U.S.P.Q. at 7.

903. *Id.* at 974-75, 226 U.S.P.Q. at 8.

904. *Id.* at 975 n.4, 226 U.S.P.Q. at 8-9 n.4.

905. *Id.* The court suggested that because *Graver Tank* preceded the 1952 Act, the underlying principles of *Graver Tank* could be used in a literal infringement section 112 analysis. *Id.* The court suggested that the interchangeability test used in *Graver Tank* has been used in interpreting a "means-plus-function" claim for literal infringement. *Id.* (citing *Lockheed Aircraft Corp. v. United States*, 553 F.2d 69, 193 U.S.P.Q. 449 (Ct. Cl. 1977)).

906. *Id.*, 226 U.S.P.Q. at 8.

907. *Id.*, 226 U.S.P.Q. at 9.

908. *Id.* at 976, 226 U.S.P.Q. at 9.

909. *Id.*

The defendant in *King Instrument Corp. v. Otari Corp.*⁹¹⁰ appealed from a district court's determination of infringement, arguing that the district court failed to make the required finding of equivalency under the sixth paragraph.⁹¹¹ The patents-in-suit related to an automated machine for loading audio or video tapes into closed cassettes.⁹¹² Means-plus-function clauses appeared in several claims.⁹¹³ The corresponding structure to these clauses described in the specification was a "swing arm" device.⁹¹⁴

The Federal Circuit reiterated its holdings in *Palumbo* and *D.M.I.* that the sixth paragraph calls for claim construction covering equivalents of the disclosed embodiments, and that a number of factors may be analyzed in determining the breadth of equivalents: the patent specification, prosecution history, other claims, and expert testimony.⁹¹⁵ Examining the first three factors, the court noted that the defendant produced no evidence that the claims should be limited to the swing arm embodiment. The Federal Circuit reviewed the expert testimony, which purportedly provided the opinion of one skilled in the art.⁹¹⁶ The uncontested testimony of an expert, who viewed the patented and accused devices, convinced the court that the machines were equivalents.⁹¹⁷ The Federal Circuit maintained that the defendant failed to argue why the expert was incorrect or why his testimony was insufficient to support a holding of literal infringement.⁹¹⁸

910. 767 F.2d 853, 226 U.S.P.Q. 402 (Fed. Cir. 1985), *cert. denied*, 475 U.S. 1016 (1986).

911. *King Instrument Corp. v. Otari Corp.*, 767 F.2d 853, 858-59, 226 U.S.P.Q. 402, 405-06, *cert. denied*, 475 U.S. 1016 (1986). The Federal Circuit upheld the district court's holding that the "swing arm" patent was not invalid for obviousness and that the "shift lock" patent was invalid due to the on sale bar of section 102. The court further found the "swing arm" patent infringed. *Id.* at 860-61, 226 U.S.P.Q. at 406-07. The appellate court affirmed the lost profits award and denial of King's attorney fees, but vacated and remanded the lower court's holdings concerning damages for parts sales. *Id.* at 866-67, 226 U.S.P.Q. at 411-12.

912. *Id.* at 855, 226 U.S.P.Q. at 403.

913. *Id.* at 862, 226 U.S.P.Q. at 408. Claim 2 is illustrative:

Apparatus for severing a leader tape that is attached at its opposite ends to two hubs into two leaders and for splicing said leaders to the opposite ends of a length of use tape obtained from a supply roll of said use tape, said apparatus comprising: a splicing station comprising a first stationary tape support member and second and third moveable tape support members; *means for alternatively shifting said second and third support members . . .*; a knife operable to slit tape supported on said first and second splicing head; *means for holding said supply roll of use tape . . .*; selectively operable third tape-holding *means . . .*; selectively operable tape applicator *means . . .*; selectively operable tape-winding *means . . .*; *control means* for sequentially operating the foregoing *means . . .*

Id. (emphasis in original).

914. *Id.*

915. *Id.* (citing *Palumbo*, 762 F.2d at 975, 226 U.S.P.Q. at 8).

916. *Id.* at 862-63, 226 U.S.P.Q. at 408-09.

917. *Id.*

918. *Id.* at 863, 226 U.S.P.Q. at 408-09.

The dispute in *Medtronic, Inc. v. Intermedics, Inc.*⁹¹⁹ involved endocardial leads for pacemakers. Contesting the jury's verdict of infringement, Intermedics argued on appeal that the jury instructions should not have included matters of equivalency.⁹²⁰ The Federal Circuit upheld the jury verdict that Intermedics' product infringed Medtronic's patent. The court held that because the jury was considering literal infringement of a means-plus-function claim, it was necessary to instruct the jury so that they could properly undertake an equivalency determination under the sixth paragraph.⁹²¹ The jury could then consider expert testimony, prosecution history, claim language, other claims, as well as the patent specification.⁹²²

In *Texas Instruments, Inc. v. United States International Trade Commission*,⁹²³ the Federal Circuit held that technological changes made in imported electronic calculators necessitated a finding of noninfringement, despite the fact that each of the recited means-plus-function limitations read on the allegedly infringing devices.⁹²⁴ Texas Instruments (TI) alleged unfair competition and unfair importation of certain pocket-size calculators based on infringement of several claims of its patent, and petitioned the International Trade Commission (ITC) for relief. Ultimately, the ITC adopted the Administrative Law Judge's finding that TI failed to sustain its burden of proving that any patent claim was infringed, either literally or under the doctrine of equivalents.⁹²⁵

TI's patent was to a "miniature calculator."⁹²⁶ The court's representative claim contained three means-plus-function elements: (1) input means including a keyboard with a single set of number and command keys; (2) electronic memory, arithmetic, and transfer means to respond to commands; and (3) display means.⁹²⁷ The pat-

919. 799 F.2d 734, 230 U.S.P.Q. 641 (Fed. Cir. 1986), *cert. denied*, 479 U.S. 1033 (1987).

920. *Medtronic, Inc. v. Intermedics, Inc.*, 799 F.2d 734, 741, 230 U.S.P.Q. 641, 645 (Fed. Cir. 1986), *cert. denied*, 479 U.S. 1033 (1987).

921. *Id.* at 741-42, 230 U.S.P.Q. at 645.

922. *Id.* at 742, 230 U.S.P.Q. at 645.

923. 805 F.2d 1558, 231 U.S.P.Q. 833 (Fed. Cir. 1986).

924. *Texas Instruments, Inc. v. United States Int'l Trade Comm'n*, 805 F.2d 1558, 1569-70, 231 U.S.P.Q. 833, 839-40 (Fed. Cir. 1986).

925. *Id.* at 1561-62, 231 U.S.P.Q. at 833-34.

926. *Id.* at 1561, 231 U.S.P.Q. at 833.

927. *Id.*, 231 U.S.P.Q. at 834. Patent claim 1 reads:

1. A miniature, portable, battery operated electronic calculator comprising:
 - a. input means including a keyboard for entering digits of numbers and arithmetic commands into said calculator and generating signals corresponding to said digits and said commands, the keyboard including only one set of decimal number keys for entering plural digits of decimal numbers in sequence and including a plurality of command keys;
 - b. electronic means responsive to said signals for performing arithmetic calculations on the numbers entered into the calculator and for generating control signals,

ent specification, filed in 1967, set forth a detailed description of the preferred means to perform each step of the claim.⁹²⁸ By 1984, when the suit began, each of the recited means had undergone technological improvements.⁹²⁹

TI argued on appeal that substantial evidence existed to support a finding of infringement.⁹³⁰ First, TI claimed that the invention, as embodied in the accused devices, was fundamentally the same as the patented calculator.⁹³¹ Additionally, TI maintained that its patent represented a "giant step" in the technological development of semiconductors and integrated circuitry, and in fact constituted a step on which the entire hand-held calculator industry was based.⁹³² Furthermore, TI argued that the claims were not restricted to the preferred embodiments described on the original filing date and that the specification did not have to describe unforeseeable technological changes.⁹³³ Thus, TI asserted that its pioneering invention should be granted broad protection, and that the patent should be interpreted broadly.⁹³⁴

The Federal Circuit instructed that infringement analysis, as a matter of law, begins with determining the scope of the patent claim. The infringement analysis, the court went on, continues with a factual finding of whether the claims encompass the accused device.⁹³⁵ This process is identical for both literal infringement and doctrine of equivalents analyses.⁹³⁶ The court stated that literal in-

said electronic means comprising an integrated semiconductor circuit array located in substantially one plane, the area occupied by the integrated semiconductor array being no greater than that of the keyboard, said integrated semiconductor circuit array comprising:

- i. memory means for storing digits of the numbers entered into the calculator,
- ii. arithmetic means coupled to said memory means for adding, subtracting, multiplying and dividing said numbers and storing the resulting answers in the memory means, and
- iii. means for selectively transferring numbers from the memory means through the arithmetic means and back to the memory means in a manner dependent upon the commands to effect the desired arithmetic operation;
- c. means for providing a visual display coupled to said integrated semiconductor circuit array and responsive to said control signals for indicating said answer; and
- d. the entire calculator including keyboard, electronic means, means for providing a visual display, and battery being contained within a "pocket sized" housing.

Id.

928. *Id.*

929. *Id.* at 1561-62, 231 U.S.P.Q. at 834.

930. *Id.* at 1562, 231 U.S.P.Q. at 834.

931. *Id.*

932. *Id.*

933. *Id.*

934. *Id.*; see also *Continental Paper Bag Co. v. Eastern Paper Bag Co.*, 210 U.S. 405, 415 (1908) (maintaining that patents for pioneering inventions merit broader protection than do other kinds of patents).

935. *Texas Instruments*, 805 F.2d at 1562, 231 U.S.P.Q. at 834.

936. *Id.*

fringement requires the accused device to embody every element of the properly construed claim.⁹³⁷ The court, following *D.M.I.*, reiterated that whenever the claim describes a combination of functions, and each function is carried out by a means described in the specification or an equivalent thereof, then literal infringement exists.⁹³⁸

The court stated that the sixth paragraph provides that when the claimed invention is a combination of novel steps, all possible methods of carrying out those steps need not be described in the specification.⁹³⁹ The court explained that properly construed claims cover "equivalents of the described embodiments."⁹⁴⁰ The court stated that the rationale behind this rule is to provide the inventor of a combination invention an equitable scope of protection that is not dependent on a catalogue of alternative embodiments or examples in the specification.⁹⁴¹ Therefore, the court stated that details for performing each step should be included in the claims only when needed to claim distinctly the invention, or to distinguish it from the prior art.⁹⁴² The court cautioned, however, that these principles are not unlimited in scope, and reflect the equitable concept that claims should be read to avoid enabling infringers to "practice a fraud on a patent."⁹⁴³ The court stated that the range of permissible equivalents depends on the nature and extent of the invention and may be interpreted more generously for a basic invention than for a simple technological development.⁹⁴⁴

The law does not require that those skilled in the art know about asserted equivalent means of performing the functions claimed at the time the patent application is filed.⁹⁴⁵ Rather, the court noted that equivalence is to be determined as of the time the alleged infringement occurs, and even devices modified to the point that the modification warrants independent patentability may still infringe the basic patent.⁹⁴⁶ Additionally, the court stated that the modifica-

937. *Id.*

938. *Id.*, 231 U.S.P.Q. at 834-35.

939. *Id.*, 231 U.S.P.Q. at 835.

940. *Id.* (citing *King Instrument*, 767 F.2d at 862, 226 U.S.P.Q. at 408).

941. *Id.* at 1563, 231 U.S.P.Q. at 835.

942. *Id.* (citing *In re Lundberg*, 244 F.2d 543, 547-48, 113 U.S.P.Q. 530, 534 (C.C.P.A. 1957) and *In re Arbeit*, 206 F.2d 947, 958, 99 U.S.P.Q. 123, 131-32 (C.C.P.A. 1953)).

943. *Id.* (citing *Graver Tank & Mfg. Co. v. Linde Air Prods.*, 339 U.S. 605, 608 (1950) (providing that purpose of doctrine of equivalents is to prohibit practice of fraud on patents)).

944. *Id.* (citing *Continental Paper Bag Co.*, 210 U.S. at 414 and *Miller v. Eagle Mfg. Co.*, 151 U.S. 186, 207 (1894)).

945. *Id.*

946. *Id.* (citing *Atlas Powder Co. v. E.I. Du Pont de Nemours & Co.*, 750 F.2d 1569, 1575, 224 U.S.P.Q. 409, 416 (Fed. Cir. 1984)); see *American Hosp. Supply Corp. v. Travenol Labs., Inc.*, 745 F.2d 1, 8, 223 U.S.P.Q. 577, 583 (Fed. Cir. 1984) (arguing that ITC erred in deter-

tion of an accused device will not avoid infringement if that device has features of the claims or their equivalents.⁹⁴⁷

TI asserted that the Commission construed the claims too narrowly, limiting the claims to means illustrated in the specification.⁹⁴⁸ TI argued that this was contrary to the instructions in *D.M.I.*, in which the court held that patent applicants need not describe, nor predict, every conceivable means for performing a given function.⁹⁴⁹ TI maintained that the accused devices carried out each step of the claims by means equivalent to those in the specification.⁹⁵⁰

The ALJ examined each step of the claims and made extensive findings comparing the structure and operation of the accused devices with the patent specification.⁹⁵¹ Findings relating to structure were generally accepted on appeal, while findings regarding operation and noninfringement were contested.⁹⁵² The ALJ found that each accused calculator was miniature, portable, battery-operated, and encased in pocket-sized housing (preamble and claim 1, clause d); with a keyboard for entering numbers and commands (clause a); an integrated semiconductor circuit located in substantially one plane with memory, arithmetic, and transfer means (clause b); and a visual display (clause c).⁹⁵³ The ALJ also found that each function clause in clauses a, b, and c was performed by the accused devices by means not described in the patent, and that such means were not equivalent to means described in the specification.⁹⁵⁴

On appeal, the Federal Circuit held that although substantial evidence did not support each determination of the ALJ's determination of nonequivalence, when each element was considered individually, and when the invention and accused devices were

mining equivalence at time of invention without regard to later advancements in art); *Atlas Powder*, 750 F.2d at 1580, 224 U.S.P.Q. at 417 (reiterating that equivalency determination is to take place at time of infringement).

947. *Id.*; see *Radio Steel & Mfg. Co. v. MTD Prods., Inc.*, 731 F.2d 840, 848, 221 U.S.P.Q. 657, 663-64 (Fed. Cir.) (holding that modification of feature to accomplish equivalent function, as well as appropriation of patented feature to perform additional function, constitutes infringement), *cert. denied*, 469 U.S. 831 (1984); *Amstar Corp. v. Envirotech Corp.*, 730 F.2d 1476, 1482, 221 U.S.P.Q. 649, 653 (Fed. Cir.) (emphasizing that accused device cannot escape infringement merely because it is more or less efficient or that it performs additional functions), *cert. denied*, 469 U.S. 924 (1984).

948. *Texas Instruments*, 805 F.2d at 1564, 231 U.S.P.Q. at 835.

949. *Id.*, 231 U.S.P.Q. at 835-36 (citing *D.M.I., Inc. v. Deere & Co.*, 755 F.2d 1570, 1574, 225 U.S.P.Q. 236, 238 (Fed. Cir. 1985)).

950. *Id.*, 231 U.S.P.Q. at 836.

951. *Id.*

952. *Id.*

953. *Id.*

954. *Id.*

viewed as a whole, the accused devices did not infringe the properly construed claims.⁹⁵⁵

The Federal Circuit then reviewed the ALJ's analysis of each means, starting with clause a—the input means.⁹⁵⁶ The keyboard described in claim 1 as “including only one set of decimal number keys” was distinguished from the prior art keyboards during prosecution.⁹⁵⁷ All of the accused calculators employed “one set of decimal number keys,” which TI argued was the only critical limitation to the input means.⁹⁵⁸ TI argued additionally that the specific mode of internal operation was not limited to that illustrated in the specification.⁹⁵⁹

The patent specification described a mechanism whereby pressure on the key generated unique signals.⁹⁶⁰ The accused devices, however, used a scanning matrix system, which periodically scanned the keyboard sensing which key was depressed.⁹⁶¹ The ALJ found that the keyboard systems were not equivalent because they did not operate in substantially the same way.⁹⁶² Reviewing the ALJ's findings, the Federal Circuit held that the ALJ erred in construing the claim by requiring that the means of performing the input be technologically as well as functionally identical.⁹⁶³

After reviewing the remaining elements of the claim, the Federal Circuit examined the invention as a whole.⁹⁶⁴ The court agreed with TI that the accused devices performed every function set forth in the claims.⁹⁶⁵ The court also agreed that the ALJ interpreted the claims too narrowly, incorrectly limiting the claims only to means disclosed in the specification.⁹⁶⁶ The court stated that while the scope of claims under the sixth paragraph is a legal determination, equitable considerations must be weighed when determining the breadth of means as it applies to rapidly changing and complex technologies.⁹⁶⁷ The court maintained that “when each changed

955. *Id.*

956. *Id.* at 1564-65, 231 U.S.P.Q. at 836-37.

957. *Id.* at 1564, 231 U.S.P.Q. at 836.

958. *Id.*

959. *Id.*

960. *Id.* at 1564-65, 231 U.S.P.Q. at 836.

961. *Id.* at 1565, 231 U.S.P.Q. at 836.

962. *Id.*

963. *Id.*, 231 U.S.P.Q. at 837. TI asserted that the invention was a combination of essential elements contained in the claims, and that the Commission erred in limiting the claims to the specific input means illustrated in the specification, and then by deciding absence of infringement on that basis. *Id.*

964. *Id.* at 1568-71, 231 U.S.P.Q. at 839-41.

965. *Id.* at 1568, 231 U.S.P.Q. at 839.

966. *Id.*

967. *Id.*

means is considered separately, as part of the overall device as described by the inventors, substantial evidence may not support the finding that the resultant device is not an infringement"⁹⁶⁸ The court held, however, that there was no literal infringement when the devices were considered as a whole.⁹⁶⁹

The court reviewed the totality of changes in technology and held that, when taken cumulatively, the differences distinguished the accused calculators from the contemplated invention and transcended the fair range of equivalents of the patent.⁹⁷⁰

Finding no literal infringement under the sixth paragraph, the Federal Circuit considered whether infringement could be found under the doctrine of equivalents. The court stated that the same equitable considerations would apply under the doctrine.⁹⁷¹ First, the court distinguished equivalency analysis under literal infringement from that under the doctrine of equivalents. In the literal infringement analysis of a claim including a means clause with respect to paragraph six, the court explained that the accused device's structure, composition, or process is compared with that set forth in the specification for accomplishing the same result.⁹⁷² In a doctrine of equivalents analysis, however, the court stated that the accused device's structure, composition, or process is compared with the claimed invention as a whole.⁹⁷³ Further, the court stated that, irrespective of whether a given case involved literal infringement or infringement under the doctrine of equivalents, the same three-part

968. *Id.* at 1569, 231 U.S.P.Q. at 840.

969. *Id.*

[I]t is the claimed invention as a whole that must be considered in determining whether there is infringement by the accused devices also considered as a whole. It is not appropriate in this case, where all of the claimed functions are performed in the accused devices by subsequently developed or improved means, to view each such change as if it were the only change from the disclosed embodiments of the invention. It is the entirety of the technology embodied in the accused devices that must be compared with the patent disclosure. Any other view distorts both the correct interpretation of the claims and their application to the accused devices.

Id. at 1569-70, 231 U.S.P.Q. at 840 (citing *D.M.I.*, 755 F.2d at 1575, 239 U.S.P.Q. at 240).

970. *Id.* at 1571, 231 U.S.P.Q. at 841.

971. *Id.*

972. *Id.* at 1572, 231 U.S.P.Q. at 841.

973. *Id.* It appears that this approach was rejected in favor of an element-by-element analysis under the doctrine of equivalents by the Federal Circuit in *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 4 U.S.P.Q.2d 1737 (Fed. Cir. 1987) (in banc), *cert. denied*, 485 U.S. 961 (1988). *But see* *Malta v. Schulmerich Carillons, Inc.*, 952 F.2d 1320, 1327, 21 U.S.P.Q.2d 1161, 1166 (Fed. Cir. 1991) (upholding district court's grant of JNOV on issue of noninfringement). The Federal Circuit in *Malta* focused on the deficiency of the evidence that might have been relied on by the jury to support the finding of infringement under the doctrine of equivalents: "what is clearly lacking in that testimony is a sufficient explanation of both *why* the overall function, way and result of the accused device are substantially the same as those of the claimed device and *why* the plastic/slotted plastic/felt arrangement is the equivalent of the claimed buttons limitation." *Id.* (emphasis in original).

test of history is used: whether the asserted equivalent performs substantially the same function in substantially the same way to accomplish substantially the same result.⁹⁷⁴

The court explained that the interplay between the doctrine of equivalents and the permissible scope of the claims could be limited by the prosecution history.⁹⁷⁵ Furthermore, the court emphasized that although the prior art and prosecution history are necessary considerations in applying the doctrine of equivalents, these two factors alone do not control the breadth of equivalents available.⁹⁷⁶ The court held that because of the extensive technological advances in all the claimed functions, the accused devices were not equivalent and did not infringe under the doctrine of equivalents.⁹⁷⁷

In *Data Line Corp. v. Micro Technologies, Inc.*,⁹⁷⁸ the Federal Circuit affirmed a district court's failure to grant a judgment notwithstanding the verdict of a jury's finding of infringement.⁹⁷⁹ The patent at issue involved a device that isolated a defective terminal in department store cash register computers, so that nondefective registers could still be used.⁹⁸⁰ The patented invention automatically sensed when a defective terminal ceased to send data, and consequently cut the terminal out of the loop.⁹⁸¹ The accused device also detected this lack of data. The accused device, however, upon sensing the defective terminal, switched all the terminals off and tested each terminal to turn it back on.⁹⁸²

The disputed claim included a "means for sensing the presence or absence of output data at said output data terminals."⁹⁸³ The Federal Circuit looked to the specification to determine if a reasonable jury could have found the Micro Technologies system to use an equivalent "means for sensing."⁹⁸⁴ Micro Technologies argued that this claim should be limited by drawings in the patent which illustrated each terminal with its own switches and sensor.⁹⁸⁵ Micro Technologies' device employed a single switcher with data sensors mounted to a central panel.⁹⁸⁶ The jury heard expert testimony

974. *Texas Instruments*, 805 F.2d at 1571, 231 U.S.P.Q. at 841.

975. *Id.*

976. *Id.* at 1572, 231 U.S.P.Q. at 841.

977. *Id.*

978. 813 F.2d 1196, 1 U.S.P.Q.2d 2052 (Fed. Cir. 1987).

979. *Data Line Corp. v. Micro Technologies, Inc.*, 813 F.2d 1196, 1202, 1 U.S.P.Q.2d 2052, 2056 (Fed. Cir. 1987).

980. *Id.* at 1197, 1 U.S.P.Q.2d at 2053.

981. *Id.* at 1199, 1 U.S.P.Q.2d at 2054.

982. *Id.* at 1198-99, 1 U.S.P.Q.2d at 2053-54.

983. *Id.* at 1197, 1 U.S.P.Q.2d at 2053.

984. *Id.* at 1201-02, 1 U.S.P.Q.2d at 2055.

985. *Id.* at 1201, 1 U.S.P.Q.2d at 2055.

986. *Id.* at 1202, 1 U.S.P.Q.2d at 2055.

supporting the interchangeability and equivalence of the two sensor systems.⁹⁸⁷ The district court held that a reasonable jury could have found that the sensor systems in the two devices were equivalent "means for sensing" within the claim's scope of limitations.⁹⁸⁸

Micro Technologies also argued that the claimed "switching means" was not even present in its accused device.⁹⁸⁹ The jury, however, heard evidence that although both systems used the same circuitry, the accused device had an additional switcher. In the jury's opinion the circuitry was equivalent, and the court held that a reasonable jury could have come to that conclusion.⁹⁹⁰ Finally, Micro Technologies argued that additional features so changed their system as to make it operate in a noninfringing fashion.⁹⁹¹ Data Line countered with a step-by-step analysis identifying how each limitation was met by the accused device.⁹⁹² The court agreed with Data Line's analysis, holding that additional features did not produce a product "radically different" enough to avoid a determination of literal infringement.⁹⁹³

In *Rite-Hite Corp. v. Kelley Co.*,⁹⁹⁴ the Federal Circuit upheld the district court's ruling that a device for securing a parked vehicle to an adjacent upright structure using a rack-and-pinion mechanism literally infringed a patent for an apparatus with the same purpose, which recited a one-way locking ratchet-and-pawl.⁹⁹⁵ The Federal Circuit found literal infringement under the sixth paragraph of section 112.⁹⁹⁶

Kelley argued that Rite-Hite, during prosecution, narrowed clause (d) of claim 1 to allow its approval over the cited prior art.⁹⁹⁷ A prior patent issued to Taylor disclosed a nut-and-screw assembly for raising his hook assembly. The district court held that the patent was not limited to the ratchet-and-pawl mechanism and that equivalent devices could be substituted.⁹⁹⁸ Furthermore, the dis-

987. *Id.*

988. *Id.*, 1 U.S.P.Q.2d at 2055-56.

989. *Id.*, 1 U.S.P.Q.2d at 2056.

990. *Id.*

991. *Id.*

992. *Id.*

993. *Id.*; see *Radio Steel*, 731 F.2d at 848, 221 U.S.P.Q. at 663-64 (holding that mere addition of features does not avoid infringement).

994. 819 F.2d 1120, 2 U.S.P.Q.2d 1915 (Fed. Cir. 1987).

995. *Rite-Hite Corp. v. Kelley Co.*, 819 F.2d 1120, 1124, 2 U.S.P.Q.2d 1915, 1918 (Fed. Cir. 1987).

996. *Id.* at 1122-23, 2 U.S.P.Q.2d at 1916-17.

997. *Id.* at 1123, 2 U.S.P.Q.2d at 1917.

998. *Id.* at 1124, 2 U.S.P.Q.2d at 1917.

strict court held that the Kelley and Taylor devices were equivalent to the ratchet-and-pawl embodied in the patent.⁹⁹⁹

On appeal, Kelley argued that this nut-and-screw assembly was a direct analog of Kelley's rack-and-pinion mechanism and that both mechanisms were distinct from the one-way locking ratchet-and-pawl set forth in the patent specification.¹⁰⁰⁰ The Federal Circuit agreed that the scope of asserted claims was not limited to the ratchet-and-pawl mechanism. The Federal Circuit stated that, according to the rule from *D.M.I.*, "where some claims are broad and others are narrow, the narrow claim limitations cannot be read into the broad."¹⁰⁰¹ The court found no error in the district court's review of the specification and claims, prosecution history, or teachings of the Taylor patent in construing the patent claims.¹⁰⁰² Holding that the Kelley device literally infringed the patented device, the Federal Circuit affirmed the district court's determination that the ratchet-and-pawl was completely interchangeable with the rack-and-pinion mechanism.¹⁰⁰³ In so holding, the Federal Circuit reiterated the well-established notion that the interchangeability between two structures is an instrumental factor in determining equivalence.¹⁰⁰⁴

Literal infringement of a claim including means-plus-function language was found in *Spindelfabrik Suessen-Schurr v. Schubert & Salzer*.¹⁰⁰⁵ *Spindelfabrik* concerned an open-end yarn spinning machine.¹⁰⁰⁶ Yarn frequently breaks when first spun onto a spool; the patented device automatically reconnected the broken strands in a process called "piecing."¹⁰⁰⁷ To facilitate proper spooling during a piecing operation, the plaintiff claimed an "auxiliary driven feed means," which borrowed rolls of intact yarn to guide pieced yarn back into the packaging process.¹⁰⁰⁸ In reviewing the facts of record, the Federal Circuit found that the accused device performed the exact func-

999. *Id.*

1000. *Id.* at 1123-24, 2 U.S.P.Q.2d at 1917.

1001. *Id.*, 2 U.S.P.Q.2d at 1918 (citing *D.M.I.*, 755 F.2d at 1574, 225 U.S.P.Q. at 239).

1002. *Id.*

1003. *Id.*

1004. *Id.* (citing *Graver Tank*, 339 U.S. at 609 and *Lockheed Aircraft Corp. v. United States*, 553 F.2d 69, 82, 193 U.S.P.Q. 449, 460 (Ct. Cl. 1977)). The court then affirmed the opinion of the district court that Kelley's infringement was not willful. *Id.* at 1126, 2 U.S.P.Q.2d at 1919.

1005. 829 F.2d 1075, 4 U.S.P.Q.2d 1044 (Fed. Cir. 1987), *cert. denied*, 484 U.S. 1063 (1988).

1006. *Spindelfabrik Suessen-Schurr v. Schubert & Salzer*, 829 F.2d 1075, 1086, 4 U.S.P.Q.2d at 1044, 1052 (Fed. Cir. 1987), *cert. denied*, 484 U.S. 1063 (1988).

1007. *Id.* at 1078, 4 U.S.P.Q.2d at 1046.

1008. *Id.* at 1085, 4 U.S.P.Q.2d at 1052. The claim element in dispute was "auxiliary yarn guide means for guiding the yarn between the spool and a yarn outlet of a spinning rotor of the spinning assembly during piecing operation, said auxiliary yarn guide means including auxiliary driven feed means for said yarn." *Id.*

tion as the patented claim.¹⁰⁰⁹ The court further found that when the borrowed rolls were in their auxiliary position, they were the equivalent of the structure disclosed in the specification.¹⁰¹⁰ Thus, the Federal Circuit held that the accused device was a literal infringement.¹⁰¹¹

In *Pennwalt Corp. v. Durand-Wayland, Inc.*,¹⁰¹² the Federal Circuit held there was no infringement, neither literally nor under the doctrine of equivalents. Pennwalt sued Durand-Wayland for infringing the patent on its fruit sorter that separated fruit on the basis of weight, color, or both.¹⁰¹³ Pennwalt claimed a sorter which conveyed fruit along a track with an electronic weighing device that produced a signal proportional to the fruit's weight.¹⁰¹⁴ The claim included a signal comparison means, a clock means, a position indicating means, and a discharge means, each with a specified function. The specification described a "hard-wired" network of electrical components that performed each step of the claims. The sorter carried the fruit through the weighing device and on to an optical scanner that generated an electrical signal in proportion to the color of the fruit. The signals from the weight and color sensors were combined, and the appropriate signals were forwarded to discharge the fruit into a specified container.¹⁰¹⁵

Durand-Wayland produced two devices accused of infringing. The first device sorted by weight; the second device sorted by both weight and color.¹⁰¹⁶ Both of Durand-Wayland's systems used software as opposed to hard-wiring.¹⁰¹⁷ Pennwalt argued before the district court that its claims read literally on the accused devices.¹⁰¹⁸ The district court held that the accused devices did not infringe any of the claims at issue, neither literally nor under the doctrine of equivalents.¹⁰¹⁹

1009. *Id.*

1010. *Id.* at 1085-86, 4 U.S.P.Q.2d at 1052; see *D.M.I.*, 755 F.2d at 1575, 225 U.S.P.Q. at 239 (explaining that, in applying section 112's "means-plus-function" requirement, principal question is whether single means in accused device, which performs same function as claim or its equivalent, corresponds to structure described in patentee's specification as performing that function).

1011. *Spindelfabrik*, 829 F.2d at 1086, 4 U.S.P.Q.2d at 1052.

1012. 833 F.2d 931, 4 U.S.P.Q.2d 1737 (Fed. Cir. 1987) (in banc), *cert. denied*, 485 U.S. 961 (1988).

1013. *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 933, 4 U.S.P.Q.2d 1737, 1738 (Fed. Cir. 1987) (in banc), *cert. denied*, 485 U.S. 961 (1988).

1014. *Id.*

1015. *Id.*

1016. *Id.*

1017. *Id.*

1018. *Id.* at 932-33, 4 U.S.P.Q.2d at 1737-38.

1019. *Id.* at 933, 4 U.S.P.Q.2d at 1738.

On appeal, Pennwalt asserted that the district court erroneously went beyond the means-plus-function language of a claim limitation, comparing only the structure of the accused devices to the structure disclosed in the specification.¹⁰²⁰ The Federal Circuit, however, agreed with the district court's statement that Pennwalt's "test" for literal infringement would impermissibly encompass *any* means that performed the function of a claim element.¹⁰²¹

The Federal Circuit held that the sixth paragraph of section 112 directs the district court to compare the accused structure with the disclosed structure, and that a finding of identity or equivalence in structure, as well as identity of function, is required for literal infringement.¹⁰²² Furthermore, the court stated that paragraph six eliminated the possibility that all conceivable means of performing the function specified in the claim literally satisfy that limitation.¹⁰²³ While encompassing equivalents of those disclosed in the specification, the court stated that the provision nevertheless acts as a restriction on the literal satisfaction of a claim limitation.¹⁰²⁴ The court emphasized that if the required function is not performed exactly in the accused device, then paragraph six equivalency is not involved.¹⁰²⁵ Furthermore, the court asserted that paragraph six is not a factor under the doctrine of equivalents in determining whether an equivalent function is performed by the accused device.¹⁰²⁶

Regarding a means-plus-function claim limitation, the Federal Circuit stated that the burden of proof is on the patent owner to establish that the structure of the accused device performing that function is the same or equivalent to the disclosed structure.¹⁰²⁷ The court considered Pennwalt's argument that an accused structure performing the claimed function is per se structurally equivalent to be incorrect.¹⁰²⁸ The court held that functional differences between the patented and accused devices negated a finding of literal infringement.¹⁰²⁹

1020. *Id.*

1021. *Id.*, 4 U.S.P.Q.2d at 1738-39.

1022. *Id.* at 934, 4 U.S.P.Q.2d at 1739.

1023. *Id.*

1024. *Id.* (citing *Data Line Corp. v. Micro Technologies, Inc.*, 813 F.2d 1196, 1201, 1 U.S.P.Q.2d 2052, 2055 (Fed. Cir. 1987)).

1025. *Id.*

1026. *Id.*

1027. *Id.*

1028. *Id.*

1029. *Id.* The Federal Circuit held that the district court erred in looking for equivalent functions in its section 112, paragraph six analysis. *Id.* at 936, 4 U.S.P.Q.2d at 1740. The Federal Circuit also affirmed the district court's findings of no infringement under the doctrine of equivalents. *Id.* at 939, 4 U.S.P.Q.2d at 1473.

In *Durango Assocs., Inc. v. Refflange, Inc.*,¹⁰³⁰ the Federal Circuit affirmed the district court's finding of infringement of a portable flange facing machine.¹⁰³¹ A flange is a rim at the end of a pipe; a smooth flat-faced flange allows the pipe to be bolted to another pipe. The means-plus-function claim at issue stated in part: "means for releasably attaching said support column to said base; . . . said means for attaching comprising means for expanding said base internally of said support column after said base has been aligned relative to the tubular member for thereby locking said support column to the base in alignment therewith and with the tubular member."¹⁰³²

The defendant argued that this claim required a two-step installation, first aligning the base with the pipe, and then mounting the base to the support column.¹⁰³³ Because its machine could not perform the two-step installation, the defendant argued, it could not infringe. The Federal Circuit disagreed, reading the claim to require expansion of the base within the column after alignment.¹⁰³⁴ The court found no limitation on whether the support column was mounted on the base before or after alignment. The court asserted that while the patent specification did describe a two-step installation, nothing in the specification limited the claims to that interpretation.¹⁰³⁵ The defendant also argued that the prosecution history of the claim required the limitation of the two-step installation process.¹⁰³⁶ The court pointed out that the prior claim did not evolve into the claim at issue. Additionally, the court found that the prior and present claims were not dependent.¹⁰³⁷

The court stated that claim interpretation is a matter of law, freely reviewable on appeal.¹⁰³⁸ In contrast, the determination of whether an accused device is equivalent under the sixth paragraph is a question of fact, reviewable only under a clearly erroneous standard.¹⁰³⁹ A finding of fact is clearly erroneous "when although there is evidence to support it, the reviewing court on the entire evidence is left

1030. 843 F.2d 1349, 6 U.S.P.Q.2d 1290 (Fed. Cir. 1988).

1031. *Durango Assocs., Inc. v. Refflange, Inc.*, 843 F.2d 1349, 1359, 6 U.S.P.Q.2d 1290, 1296 (Fed. Cir. 1988).

1032. *Id.* at 1351 n.2, 6 U.S.P.Q.2d at 1291 n.2.

1033. *Id.* at 1356, 6 U.S.P.Q.2d at 1294.

1034. *Id.*

1035. *Id.* at 1357, 6 U.S.P.Q.2d at 1294.

1036. *Id.*

1037. *Id.*, 6 U.S.P.Q.2d at 1294-95. The court stated, however, that narrowing a claim during prosecution does not preclude the patentee from relying on the doctrine of equivalents in all circumstances. *Id.* at 1358, 6 U.S.P.Q.2d at 1295.

1038. *Id.* at 1356, 6 U.S.P.Q.2d at 1294.

1039. *Id.* at 1357, 6 U.S.P.Q.2d at 1295.

with the definite and firm conviction that a mistake has been committed.”¹⁰⁴⁰ The Federal Circuit affirmed, finding that the district court followed the rules of *D.M.I.* and *Pennwalt* respecting equivalence analysis in finding literal infringement under the sixth paragraph.¹⁰⁴¹

In *United States v. Telectronics, Inc.*,¹⁰⁴² the Federal Circuit, reversing the district court, held that the accused device literally infringed the patent for a bone growth stimulator.¹⁰⁴³ The stimulators worked by running a low current of electricity through the broken bone, affecting bone cell growth.¹⁰⁴⁴ The claimed device would “avoid fibrous tissue formation.” The accused device employed an internal anode, and sought to avoid claim inclusion by arguing that any implant would cause fibrous tissue growth.¹⁰⁴⁵ While the district court agreed, the Federal Circuit ruled that the claim was directed toward avoiding or minimizing fibrous growth through adjusting the electrical current.¹⁰⁴⁶ The claim, therefore, was not limited to the plaintiff’s surface anode.¹⁰⁴⁷ One claim included means-plus-function language, reciting “means for connecting said constant current means to the living being, such connection acting to produce current flow into said fracture or defect.”¹⁰⁴⁸ Thus, the court maintained, the sixth paragraph instructs that specified structures and equivalents thereof may literally infringe the claim.¹⁰⁴⁹ The Federal Circuit held that the patent specification described both surface and implanted anodes, thus supporting the district court’s findings of fact, and not requiring remand.¹⁰⁵⁰

1040. *Id.* (quoting *United States v. United States Gypsum Co.*, 333 U.S. 364, 395 (1948)).

1041. *Id.* at 1357, 6 U.S.P.Q.2d at 1295 (citing *D.M.I., Inc. v. Deere & Co.*, 755 F.2d 1570, 1575, 225 U.S.P.Q. 236, 239 (Fed. Cir. 1983) and *Pennwalt*, 833 F.2d at 934, 4 U.S.P.Q.2d at 1739, and maintaining that in determining equivalence under section 112, critical question is whether single means in accused device, which performs function stated in claim, is same as or equivalent of corresponding structure described in patentee’s specification as performing that function); see *Pennwalt*, 833 F.2d at 934, 4 U.S.P.Q.2d at 1739 (stressing that in determining equivalence, court must compare accused structure with disclosed structure, and must find equivalent structure, as well as identity of claimed function, for that structure). The court held, however, that the district court erred in its prior art analysis under the doctrine of equivalents, and reversed that part of the decision. *Durango*, 843 F.2d at 1359, 6 U.S.P.Q.2d at 1296.

1042. 857 F.2d 778, 8 U.S.P.Q.2d 1217 (Fed. Cir. 1988), *cert. denied*, 490 U.S. 1046 (1989).

1043. *United States v. Telectronics, Inc.*, 857 F.2d 780, 786, 8 U.S.P.Q.2d 1217, 1224 (Fed. Cir. 1988), *cert. denied*, 490 U.S. 1046 (1989).

1044. *Id.* at 780, 8 U.S.P.Q.2d at 1218.

1045. *Id.*, 8 U.S.P.Q.2d at 1219.

1046. *Id.* at 781, 8 U.S.P.Q.2d at 1219-20.

1047. *Id.*

1048. *Id.* at 782, 8 U.S.P.Q.2d at 1220.

1049. *Id.*

1050. *Id.* at 784, 8 U.S.P.Q.2d at 1222.

The Federal Circuit held that substantial evidence existed to support a jury verdict of infringement in *Snellman v. Ricoh Co.*¹⁰⁵¹ The patented device was a photocopy machine paper sorter. In dispute was the interpretation of the recited means for positioning a deflector mechanism that shunted outgoing paper into specified shelves.¹⁰⁵² The jury heard expert testimony that the patented and accused devices had structural elements that were equivalent, if not identical, to the claim language.¹⁰⁵³ The Federal Circuit also agreed with the jury that the devices performed the same function, and that language in the specification indicated that the means were equivalent.¹⁰⁵⁴

In *Johnston v. IVAC Corp.*,¹⁰⁵⁵ the Federal Circuit held that in order for a means-plus-function limitation to read on an accused device, the device must perform the identical function.¹⁰⁵⁶ Additionally, the accused device must incorporate the means for performing the function disclosed in the specification or a structural equivalent of that means.¹⁰⁵⁷ The invention at issue involved attaching a removable, disposable probe cover to the probe of an electronic thermometer.¹⁰⁵⁸ The patentee designed the probe with a flared sharp edge that gripped the inside probe cover when it was slipped over the probe, claiming a "means . . . for causing said sharp edge to inscribe itself fixedly into said probe cover."¹⁰⁵⁹

In the district court, the defendant, IVAC, moved for summary judgment for noninfringement based on affidavit and documentary evidence that the corresponding element was a smooth metal ring designed and constructed to perform a friction fit.¹⁰⁶⁰ Johnston submitted attorney and inventor affidavits in response. The district court considered these affidavits conclusory and nonprobative, finding that the inventor made legal opinions about the meaning of words and phrases in the claim that were inconsistent with the prosecution history.¹⁰⁶¹ Based on arguments made during the patent prosecution, the district court concluded that scratches incidental to

1051. 862 F.2d 283, 8 U.S.P.Q.2d 1996 (Fed. Cir. 1988), *cert. denied*, 491 U.S. 910 (1989).

1052. *Snellman v. Ricoh, Co.*, 862 F.2d 283, 287, 8 U.S.P.Q.2d 1996, 1999 (Fed. Cir. 1988), *cert. denied*, 491 U.S. 910 (1989).

1053. *Id.* at 287-88, 8 U.S.P.Q.2d at 2000.

1054. *Id.* at 288, 8 U.S.P.Q.2d at 2000.

1055. 885 F.2d 1574, 12 U.S.P.Q.2d 1382 (Fed. Cir. 1989).

1056. *Johnston v. IVAC Corp.*, 885 F.2d 1574, 1580, 8 U.S.P.Q.2d 1382, 1386 (Fed. Cir. 1989).

1057. *Id.* at 1580, 12 U.S.P.Q.2d at 1386-87.

1058. *Id.* at 1576, 12 U.S.P.Q.2d at 1383.

1059. *Id.* at 1578, 12 U.S.P.Q.2d at 1384.

1060. *Id.*

1061. *Id.* at 1578-79, 12 U.S.P.Q.2d at 1384-85.

the friction fit did not equal the claimed term "inscribe."¹⁰⁶² The district court granted IVAC's summary judgment motion, holding that there was no genuine issue of fact and that the claim limitations were not met by IVAC's probe cover, either exactly or by equivalents.¹⁰⁶³

On appeal, Johnston argued that the district court erred in failing to apply the sixth paragraph analysis correctly before eliminating literal infringement.¹⁰⁶⁴ The Federal Circuit disagreed, holding that the sixth paragraph does not set forth a separate test for infringement because an infringement determination involves all parts of the claims. Rather, the court explained, the sixth paragraph provides guidance on how the means-plus-function part of a claim must be interpreted within the overall infringement analysis.¹⁰⁶⁵

The court asserted that the sixth paragraph does not expand the scope of a claim couched in means-plus-function language.¹⁰⁶⁶ Instead, it serves to "cut back" on the types of means which could literally satisfy the claims.¹⁰⁶⁷ The court stressed that paragraph six does not affect the function recited in the claims and does not extend the claimed element to equivalent functions, stating, "[p]roperly understood section 112, paragraph 6 operates more like the reverse doctrine of equivalents than the doctrine of equivalents because it restricts the scope of the literal claim language."¹⁰⁶⁸ Therefore, literal infringement can never be found under the sixth paragraph if a function part of the element is not met literally in the accused device.¹⁰⁶⁹

In *Jonsson v. Stanley Works*,¹⁰⁷⁰ the Federal Circuit affirmed the district court's holding that the defendant's automatic door opening system did not infringe the patented system.¹⁰⁷¹ The court, relying heavily on the prosecution history, held that the plaintiff was estopped from broadening claims to cover the accused device.¹⁰⁷²

1062. *Id.*

1063. *Id.*

1064. *Id.* at 1580, 12 U.S.P.Q.2d at 1386.

1065. *Id.*

1066. *Id.*

1067. *Id.* (citing *Data Line*, 813 F.2d at 1201, 1 U.S.P.Q.2d at 2055).

1068. *Id.* at 1580, 12 U.S.P.Q.2d at 1386-87 (citing *Pennwalt*, 833 F.2d at 934, 4 U.S.P.Q.2d at 1739).

1069. *Id.*, 12 U.S.P.Q.2d at 1387. Additionally, the court held that without disputed factual issues, claim interpretation is a matter of law. *Id.* at 1577, 12 U.S.P.Q.2d at 1383. The court also found no infringement under the doctrine of equivalents. *Id.* at 1580-81, 12 U.S.P.Q.2d at 1387.

1070. 903 F.2d 812, 14 U.S.P.Q.2d 1863 (Fed. Cir. 1990).

1071. *Jonsson v. Stanley Works*, 903 F.2d 812, 821, 14 U.S.P.Q.2d 1863, 1871 (Fed. Cir. 1990).

1072. *Id.*

The claimed invention involved an automatic door opening system that employed diffuse light and multiple sensors to detect objects in front of the door, triggering the door's opening.¹⁰⁷³ To distinguish the means claim "for emitting a diverging beam of diffuse radiation" over the prior art, Jonsson argued that his invention used "diffuse light, originating from many sources" to illuminate the object.¹⁰⁷⁴ Jonsson defined the term "diffuse" as "moving in many directions," created by a plurality of light sources pulsing at the same time.¹⁰⁷⁵ The accused device, in contrast, used two sensors on each side of the door that emitted light sources one at a time in pulse bursts.¹⁰⁷⁶

The Federal Circuit stated that Congress enacted the sixth paragraph to instruct as to how means claims, which might otherwise be indefinite, should be interpreted.¹⁰⁷⁷ The court noted that paragraph six actually cuts back on the types of means that could literally satisfy the claim language.¹⁰⁷⁸ In this case, the court held that the patent specification and statements made during prosecution narrowed the means equivalents to exclude the accused device.¹⁰⁷⁹ Because prosecution history estopped the finding of literal infringement, the court held that it also estopped the finding of infringement under the doctrine of equivalents.¹⁰⁸⁰

In *Symbol Technologies Inc. v. Opticon Inc.*,¹⁰⁸¹ the Federal Circuit affirmed the district court's holding that the defendant infringed the plaintiff's patented laser bar code reader. The bar code reader was the type of aim-and-shoot scanner commonly employed at department store registers.¹⁰⁸² The court held that the plaintiff established a prima facie case of infringement with expert testimony, finding under paragraph six analysis that the accused device employed means equivalent to the patented means.¹⁰⁸³ The expert witness, using charts and drawings to point out equivalents, expressed his opinion that the accused devices infringed.¹⁰⁸⁴ The court held

1073. *Id.* at 814, 14 U.S.P.Q.2d at 1865.

1074. *Id.*, 14 U.S.P.Q.2d at 1865-66 (emphasis in original).

1075. *Id.* at 817, 14 U.S.P.Q.2d at 1868.

1076. *Id.* at 815, 14 U.S.P.Q.2d at 1866.

1077. *Id.* at 819, 14 U.S.P.Q.2d at 1869 (citing *Data Line*, 813 F.2d at 1201, 1 U.S.P.Q.2d at 2055); see also *Johnson*, 885 F.2d at 1580, 12 U.S.P.Q.2d at 1386 (explaining that section 112, paragraph 6 provides guidance in interpreting means-plus-function portions of claims within overall infringement analysis).

1078. *Jonsson*, 903 F.2d at 819, 14 U.S.P.Q.2d at 1869 (citing *Data Line*, 813 F.2d at 1201, 1 U.S.P.Q.2d at 2055).

1079. *Id.* at 819-20, 14 U.S.P.Q.2d at 1870.

1080. *Id.* at 821, 14 U.S.P.Q.2d at 1871.

1081. 935 F.2d 1569, 19 U.S.P.Q.2d 1241 (Fed. Cir. 1991).

1082. *Symbol Technologies, Inc. v. Opticon Inc.*, 935 F.2d 1569, 1572, 19 U.S.P.Q.2d 1241, 1243 (Fed. Cir. 1991).

1083. *Id.* at 1574-76, 19 U.S.P.Q.2d at 1244-46.

1084. *Id.* at 1574, 19 U.S.P.Q.2d at 1244.

that, because the defendant failed to cross-examine the expert witness, the evidence of equivalents was essentially uncontroverted.¹⁰⁸⁵ The district court ruled in the plaintiff's favor.¹⁰⁸⁶ On appeal, the defendant challenged only the establishment of prima facie infringement. The Federal Circuit affirmed the district court's finding of prima facie infringement, and refused to review further any infringement analysis.¹⁰⁸⁷

In *Laitram Corp. v. Rexnord, Inc.*,¹⁰⁸⁸ the Federal Circuit reversed the lower court's decision that Rexnord's conveyor product infringed claims 21 and 22 of Laitram's patent. The claimed invention kept conveyed containers from tipping over.¹⁰⁸⁹ A modular plastic conveyor belt with a raised rib construction allowed the container's smooth transfer to and from the conveyor via a transfer comb.¹⁰⁹⁰ The conveyor belt was made of a plurality of plastic modules pivotally connected at their link ends.¹⁰⁹¹ The focus of the dispute, which involved the means for joining the link ends, was set forth in claim 21, subparagraph 2: "means for joining said pluralities [of link ends] to one another so that the axes of said holes of said first plurality are arranged coaxially, the axes of said holes of said second plurality are arranged coaxially and the axes of respective holes of both pluralities of link ends are substantially parallel. . .".¹⁰⁹²

Rexnord maintained that as a means-plus-function claim, subparagraph 2 should be interpreted in light of the specification according to paragraph 6.¹⁰⁹³ Laitram argued that subparagraph 2 contained a recital of structure, and that such recital rendered the interpretation under paragraph 6 inapplicable.¹⁰⁹⁴ While the district court accepted this argument, the appellate court did not. Rather, the Federal Circuit held that a recital of structure would not bar an analysis under paragraph 6.¹⁰⁹⁵ The court stated that the structural description in subparagraph two's joining clause only specified the function of the means.¹⁰⁹⁶ The court further explained

1085. *Id.* at 1575-76, 19 U.S.P.Q.2d at 1245-46 (citing *Ricoh*, 862 F.2d at 287, 8 U.S.P.Q.2d at 2000).

1086. *Id.* at 1575, 19 U.S.P.Q.2d at 1246.

1087. *Id.* at 1576, 19 U.S.P.Q.2d at 1246.

1088. 939 F.2d 1533, 19 U.S.P.Q.2d 1367 (Fed. Cir. 1991).

1089. *Laitram Corp. v. Rexnord, Inc.*, 939 F.2d 1533, 1534, 19 U.S.P.Q.2d 1367, 1368 (Fed. Cir. 1991).

1090. *Id.* at 1534-35, 19 U.S.P.Q.2d at 1368-69.

1091. *Id.* at 1535, 19 U.S.P.Q.2d at 1369.

1092. *Id.*

1093. *Id.*

1094. *Id.*

1095. *Id.*

1096. *Id.*

that the recited structure specifies only what the means-for-joining does; it does not define the structure.¹⁰⁹⁷

The Federal Circuit stated that under paragraph 6, a means clause does not cover all means for carrying out a specified function.¹⁰⁹⁸ In determining whether a claim limitation is met literally, the court stated that one must compare the accused structure with the disclosed structure and find "equivalent structure as well as identity of claimed function" for that structure to be literally infringed.¹⁰⁹⁹ The court stated that the means-plus-function language must read on the accused device.¹¹⁰⁰ Additionally, the patentee must prove that the means of the accused structure, if differing from the described invention, is structurally equivalent to the means described in the specification.¹¹⁰¹

The Laitram patent specification described link ends connected by elongated bars, forming link elements.¹¹⁰² The link elements were then connected by cross members, forming an H-shape arrangement. Rexnord's structure had link ends connected by reach bars, forming an undulating V-shape arrangement.¹¹⁰³ Being on a molded plastic form, the V-shape arrangement lacked a grid structure joining link ends into link elements by cross members.¹¹⁰⁴ Thus, the court held, while the V-shape and H-shape structures performed the same function, they were not equivalent.¹¹⁰⁵

Laitram argued that the doctrine of claim differentiation prevented reading the cross member (H-shape) limitation into one claim merely because another claim specifically called for a cross member.¹¹⁰⁶ The court held, however, that the interpretation of the "means for joining" via a cross member arose from the specification, not from another claim.¹¹⁰⁷ Thus, the prohibition against reading the limitations from a dependent claim into the independent claim was not violated.¹¹⁰⁸ Furthermore, the court held that claim differentiation is a judicially developed guide to claim inter-

1097. *Id.* at 1536, 19 U.S.P.Q.2d at 1369.

1098. *Id.*, 19 U.S.P.Q.2d at 1370.

1099. *Id.* (quoting *Pennwalt*, 833 F.2d at 934, 4 U.S.P.Q.2d at 1370 (emphasis in original)). The court in *Pennwalt* stated "while encompassing equivalents of those means disclosed in the specification, [section 112, paragraph 6], nevertheless, acts as a restriction on the literal satisfaction of a claim limitation." *Pennwalt*, 833 F.2d at 934, 4 U.S.P.Q.2d at 1370.

1100. *Laitram Corp.*, 939 F.2d at 1536, 19 U.S.P.Q.2d at 1370.

1101. *Id.*

1102. *Id.*

1103. *Id.* at 1537-38, 19 U.S.P.Q.2d at 1370.

1104. *Id.* at 1538, 19 U.S.P.Q.2d at 1371.

1105. *Id.*

1106. *Id.*

1107. *Id.*

1108. *Id.*

pretation that cannot override a statute.¹¹⁰⁹ Finally, the court stated that to hold the V-shaped and H-shaped structures ipso facto equivalent simply because they perform the same function, effectively eliminates the statutory restriction of paragraph six.¹¹¹⁰

Laitram challenged the sufficiency of the evidence of equivalency. Even though Rexnord's expert admitted that the devices were "similar," and others testified that the link ends of both devices were parallel, the court held that the necessary equivalency was not established.¹¹¹¹ Furthermore, the court held that Laitram did not meet the burden of identifying a genuine issue of fact—structural equivalency under the sixth paragraph—warranting remand.¹¹¹²

The Federal Circuit stated that the doctrine of equivalents, set forth in *Graver Tank*, says that a device not infringing literally may still infringe a claim "if it performs substantially the same function in substantially the same way to obtain the same result."¹¹¹³ To function in "substantially the same way," every limitation of a claim must be satisfied at least equivalently.¹¹¹⁴ Thus, the court stated that Laitram needed to prove that Rexnord substituted an equivalent for the required joining-means element of the claim.¹¹¹⁵ The court held that even though the equivalency of the joining means might not be as limited under the doctrine of equivalents as under paragraph six, Laitram did not prove that the function of the joining means read on Rexnord's reach bars.¹¹¹⁶

V. THE THIRD, FOURTH, AND FIFTH PARAGRAPHS

Congress amended section 112 in 1965, adding a provision on independent and dependent claims.¹¹¹⁷ The 1975 amendment substituted more thorough instruction on independent, dependent, and

1109. *Id.*

A means-plus-function limitation is not made open-ended by the presence of another claim specifically claiming the disclosed structure which underlies the means clause or an equivalent structure. If Laitram's argument were adopted, it would provide a convenient way of avoiding the express mandate of Section 112, paragraph 6.

Id.

1110. *Id.*

1111. *Id.* at 1538-39, 19 U.S.P.Q.2d at 1371.

1112. *Id.* at 1539, 19 U.S.P.Q.2d at 1372.

1113. *Id.*

1114. *Id.* (citing *Becton Dickinson & Co. v. C.R. Bard, Inc.*, 922 F.2d 792, 798, 17 U.S.P.Q.2d 1097, 1101 (Fed. Cir. 1990)).

1115. *Id.*

1116. *Id.*

1117. Act of July 24, 1965, Pub. L. No. 89-83, § 9, 79 Stat. 259, 261 (current version at 35 U.S.C. § 112 (1988)). The original section 9 read: "A claim may be written in independent or dependent form, and if in dependent form, it shall be construed to include all limitations of the claim incorporated by reference into the dependent claim." *Id.*

multiple dependent claims.¹¹¹⁸ This amendment took effect in 1978 when the Patent Cooperation Treaty came into force.¹¹¹⁹ Multiple independent claims were allowable only in patent applications filed after that date.

The Federal Circuit's interpretations of paragraphs three, four, and five of section 112 have not addressed these paragraphs by name, although several opinions have discussed their subject matter.

In *In re Nielson*,¹¹²⁰ the Federal Circuit held that as to dependent claims, the Board did not err in holding that they stood or fell with the independent claims because they were not argued separately.¹¹²¹ The court, however, held that the Board erred in rejecting dependent claims that were argued separately.¹¹²² Similarly, in *In re Fine*,¹¹²³ the Federal Circuit held that dependent claims were nonobvious under 35 U.S.C. § 103 if the independent claims from which they depended were nonobvious.¹¹²⁴

In *In re Beaver*,¹¹²⁵ the Federal Circuit held that the applicant preserved the independent appeal of rejected dependent claims by arguing them separately before the Board.¹¹²⁶ The court said that the applicant's arguments for his subordinate claims, which were mini-

1118. Act of Nov. 14, 1975, Pub. L. No. 94-131, § 112, 89 Stat. 685, 691 (current version at 35 U.S.C. § 112 (1988)). These provisions now comprise section 112, paragraphs three, four, and five:

[3] A claim may be written in independent or, if the nature of the case admits, in dependent or multiple dependent form.

[4] Subject to the following paragraph, a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.

[5] A claim in multiple dependent form shall contain a reference, in the alternative only, to more than one claim previously set forth and then specify a further limitation of the subject matter claimed. A multiple dependent claim shall not serve as a basis for any other multiple dependent claim. A multiple dependent claim shall be construed to incorporate by reference all the limitations of the particular claim in relation to which it is being considered.

Id.

1119. Patent Cooperation Treaty, Pub. L. No. 94-131, § 112, 89 Stat. 691 (1975) (codified at 35 U.S.C. § 112 (1988)). The treaty became effective on Jan. 24, 1978. 35 U.S.C. § 112 (1988).

1120. 816 F.2d 1567, 2 U.S.P.Q.2d 1525 (Fed. Cir. 1987).

1121. *In re Nielson*, 816 F.2d 1567, 1572, 2 U.S.P.Q.2d 1525, 1528 (Fed. Cir. 1987) (citing *In re Sernaker*, 702 F.2d 989, 991, 217 U.S.P.Q. 1, 3 (Fed. Cir. 1983)) (noting that claims not argued separately stand or fall with those that are).

1122. *Id.* at 1570-71, 2 U.S.P.Q.2d at 1526-27; see *In re Kulling*, 897 F.2d 1147, 1149-50, 14 U.S.P.Q.2d 1056, 1057-58 (Fed. Cir. 1990) (holding that because applicant did not separately argue merits of dependent claims those claims stood or fell with independent claim).

1123. 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988).

1124. *In re Fine*, 837 F.2d 1071, 1076, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

1125. 893 F.2d 329, 13 U.S.P.Q.2d 1409 (Fed. Cir. 1989).

1126. *In re Beaver*, 893 F.2d 329, 330, 13 U.S.P.Q.2d 1409, 1410-11 (Fed. Cir. 1989).

mal by nature, automatically included previous arguments made with respect to the main claims by the action of paragraph four.¹¹²⁷

In *Perkin-Elmer Corp. v. Computervision Corp.*,¹¹²⁸ the Federal Circuit instructed that, generally, when independent and dependent claims are argued together for validity and infringement purposes, the dependent claim "stands or falls" with the independent claim.¹¹²⁹ The Federal Circuit refined the application of this rule in *Shelcore, Inc. v. Durham Industries, Inc.*,¹¹³⁰ defining different roles for the appellate and trial courts. The court explained that in the context of validity at the trial court level, the presumption of patent validity requires the challenger to submit evidence establishing the invalidity of each claim asserted to be invalid, regardless of the independent or dependent nature of the claim.¹¹³¹ The "stand or fall" rule, the court asserted, is properly applied by the PTO for pending or appealed claims, in which the applicant must overcome the rejection of each claim.¹¹³² The court said that the application of the rule by the Federal Circuit, in cases such as *Perkin-Elmer*, was one of convenience because at the appellate level the court was guided, not by the presumption of validity, but by findings and conclusions of the district court.¹¹³³

In *Hartness International, Inc. v. Simplimatic Engineering Co.*,¹¹³⁴ the Federal Circuit held that the district court erred in failing to consider that a dependent claim included all the limitations of the claim from which it depended, with an additional limitation in determining the novelty and nonobviousness of the dependent claim.¹¹³⁵ The court said that because the independent claim was nonobvious,

1127. *Id.* The court held, "[t]hat [the applicant] did not repeat, in his argument for the subordinate claims, everything he had said in arguing his principal claims did not convert 'dependent' claims into nonentities." *Id.*, 13 U.S.P.Q.2d at 1411.

1128. 732 F.2d 888, 221 U.S.P.Q. 669 (Fed. Cir.), *cert. denied*, 469 U.S. 857 (1984).

1129. *Perkin-Elmer Corp. v. Computervision Corp.*, 732 F.2d 888, 898, 221 U.S.P.Q. 669, 677 (Fed. Cir.), *cert. denied*, 469 U.S. 857 (1984).

1130. 745 F.2d 621, 223 U.S.P.Q. 584 (Fed. Cir. 1984).

1131. *Shelcore, Inc. v. Durham Indus., Inc.* 745 F.2d 621, 624, 223 U.S.P.Q. 584, 586 (Fed. Cir. 1984).

1132. *Id.* The court explained that this notion was codified in 35 U.S.C. § 282 (1982), which provides that "each claim of a patent (whether in independent, dependent, or multiple dependent form) shall be presumed to be valid independently of other claims; dependent or multiple dependent claims shall be presumed valid even though dependent upon an invalid claim." *Id.* (citing 35 U.S.C. § 282 (1982)).

1133. *Id.* at 624-25, 223 U.S.P.Q. at 586-87. *But see* N.V. Akzo v. E.I. Du Pont de Nemours & Co., 810 F.2d 1148, 1152, 1 U.S.P.Q.2d 1704, 1708 (Fed. Cir. 1987) (holding that because each claim contained certain limitation found not to be critical, basis for rejecting broadest claim would have applied to all claims and district court did not err in failing to address claims separately).

1134. 819 F.2d 1100, 2 U.S.P.Q.2d 1826 (Fed. Cir. 1987).

1135. *Hartness Int'l, Inc. v. Simplimatic Eng'g Co.*, 819 F.2d 1100, 1108, 2 U.S.P.Q.2d 1826, 1831 (Fed. Cir. 1987).

"[a] fortiori, [the] dependent claim was nonobvious (and novel) because it contained all the limitations of [the independent] claim, plus a further limitation."¹¹³⁶

Similarly, in *Ryco, Inc. v. Ag-Bag Corp.*,¹¹³⁷ the Federal Circuit held that a claim relating to an improved brake means for an agricultural bagging machine was nonobvious and thus invalid, and that its two dependent claims were invalid for the same reason. The court held that because the manual brake described in the patent performed the same function as a hydraulic brake, the invention was obvious as a matter of law.¹¹³⁸ The court also held, however, that the two dependent claims, which were not argued separately, were invalid because there was no independent basis for their validity.¹¹³⁹

In *Wahpeton Canvas Co. v. Frontier, Inc.*,¹¹⁴⁰ the Federal Circuit held that dependent claims cannot be found infringed unless the claims on which they depend are also found to have been infringed. In *Wahpeton*, the jury failed to answer special interrogatories of infringement or noninfringement concerning independent claims on which several more claims depended.¹¹⁴¹ The jury, on the other hand, found noninfringement of the dependent claims.¹¹⁴² The Federal Circuit reasoned that it was useless to ask the jury about the dependent claims because an answer about the independent claims would have been dispositive.¹¹⁴³ The court stated that "[o]ne may infringe an independent claim and not infringe a claim dependent on that claim. The reverse is not true. One who does not infringe an independent claim cannot infringe a claim dependent on (and thus containing all the limitations of) the claim."¹¹⁴⁴

Furthermore, the court explained that damages would be unaffected by verdicts concerning dependent claims once the verdicts concerning independent claims were answered.¹¹⁴⁵ While realizing

1136. *Id.*

1137. 857 F.2d 1418, 8 U.S.P.Q.2d 1323 (Fed. Cir. 1988).

1138. *Ryco, Inc. v. Ag-Bag Corp.*, 857 F.2d 1418, 1425, 8 U.S.P.Q.2d 1323, 1329 (Fed. Cir. 1988).

1139. *Id.*; see *Newell Co. v. Kenny Mfg. Co.*, 864 F.2d 757, 768-69, 9 U.S.P.Q.2d 1417, 1426-27 (Fed. Cir. 1988) (holding that, where patentee failed to argue validity of dependent claims on main claim separately, trial court properly found dependent claims invalid for obviousness), *cert. denied*, 493 U.S. 814 (1989); *Environmental Instruments, Inc. v. Sutron Corp.*, 877 F.2d 1561, 1568, 11 U.S.P.Q.2d 1132, 1138 (Fed. Cir. 1989) (holding that claim dependent on claim found obvious is invalid when its patentability was not argued separately).

1140. 870 F.2d 1546, 10 U.S.P.Q.2d 1201 (Fed. Cir. 1989).

1141. *Wahpeton Canvas Co. v. Frontier, Inc.*, 870 F.2d 1546, 1552-53, 10 U.S.P.Q.2d 1201, 1207-08 (Fed. Cir. 1989).

1142. *Id.* at 1553, 10 U.S.P.Q.2d at 1208.

1143. *Id.*

1144. *Id.* at 1552 n.9, 10 U.S.P.Q.2d at 1207 n.9 (citing *Teledyne McCormick Selph v. United States*, 558 F.2d 1000, 1004, 195 U.S.P.Q. 261, 264 (Ct. Cl. 1977)).

1145. *Id.* at 1553, 10 U.S.P.Q.2d at 1208.

it would make no sense to appeal the noninfringement finding of the dependent claims, the court remanded for determination of the independent claims.¹¹⁴⁶ Additionally, the court instructed that “[i]f validity were in issue, dependent claims might serve a useful role, for a necessarily narrower dependent claim may be valid when the claim from which it depends is not.”¹¹⁴⁷

In *Wilson Sporting Goods Co. v. David Geoffrey & Associates*,¹¹⁴⁸ the Federal Circuit raised the possibility that dependent claims may be infringed even if the claims on which they depend are not infringed. This possibility arises in circumstances where the doctrine of equivalents is asserted and where the prior art restricts the scope of the doctrine of equivalents for the independent claim in a way that could not apply to the dependent claim.¹¹⁴⁹ The court said that because of the limitations in the dependent claims, which were narrower than the independent claims, the dependent claims might not encompass the range of equivalents that included the prior art.¹¹⁵⁰ The court in *Wilson*, however, found that the dependent claims did not infringe under the doctrine of equivalents.¹¹⁵¹ The *Wilson* court, however, leaves open the possibility for another day that, contrary to *Wahpeton*, a dependent claim, as well as the independent claims, may be infringed even if the independent claim associated therewith is not infringed.

CONCLUSION

This concludes a review of the decisions interpreting section 112 handed down during the first ten years of the Federal Circuit’s history. Although one can argue to what extent the Federal Circuit has satisfied its mandate to bring uniformity to the patent law, a degree of consistency in enunciating the various legal principles undergirding the different subdivisions of section 112 has no doubt been achieved.

Nevertheless, it will be clear from the decisions that, as is true for many areas of patent law, compliance with the various requisites of section 112 is highly dependent on the particular circumstances of each case. The factual nature of such inquiries thus imposes a burden on those who prepare and prosecute patent applications to use

1146. *Id.* at 1556, 10 U.S.P.Q.2d at 1210.

1147. *Id.* at 1552 n.10, 10 U.S.P.Q.2d at 1207 n.10.

1148. 904 F.2d 677, 14 U.S.P.Q.2d 1942 (Fed. Cir.), *cert. denied*, 111 S. Ct. 537 (1990).

1149. *Wilson Sporting Goods Co. v. David Geoffrey & Assocs.*, 904 F.2d 677, 684-85, 14 U.S.P.Q.2d 1942, 1948-49 (Fed. Cir.), *cert. denied*, 111 S. Ct. 537 (1990).

1150. *Id.* at 686, 14 U.S.P.Q.2d at 1949.

1151. *Id.*, 14 U.S.P.Q.2d at 1949-50.

the utmost care to comply with the several requirements of section 112. Those patents that are litigated, moreover, will present ever new challenges to the judge or jury as each grapples to apply section 112 to the specific facts under consideration.