

AREA SUMMARIES

1996 PATENT LAW DECISIONS OF THE FEDERAL CIRCUIT*

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INTRODUCTION

During 1996, the United States Court of Appeals for the Federal Circuit continued to build on its landmark *in banc* decisions handed down in 1995.¹ The following Article summarizes selected published opinions on substantive patent law by the Federal Circuit that are worthy of study for all intellectual property practitioners. This review is partitioned into four sections. Part I addresses the jurisdictional and procedural issues relating to federal court practice. Next, in Part II, the Article contains summaries of the Federal Circuit's decisions on patentability and validity issues. The Article then focuses on infringement issues in Part III, and finally, in Part IV, the Article concludes with a discussion of the court's decisions involving remedies.

I. PROCEDURAL ASPECTS OF FEDERAL COURT PRACTICE

This section of the Article focuses on the procedural aspects of patent related litigation in the federal courts.²

1. See *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 35 U.S.P.Q.2d (BNA) 1641 (Fed. Cir. 1995) (*in banc*), *rev'd*, 117 S. Ct. 1040 (1997); *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 34 U.S.P.Q.2d (BNA) 1321 (Fed. Cir. 1995) (*in banc*), *aff'd*, 116 S. Ct. 1384 (1996).

2. Under 28 U.S.C. § 1338, the Federal Circuit has exclusive jurisdiction over appeals from civil actions relating to patents. See 28 U.S.C. § 1338(a) (1994); *id.* § 1295(a)(1).

A. *Declaratory Judgments*

In three separate decisions, the Federal Circuit sought to rein in the improper use of declaratory judgment actions by competitors against patentees. That is, within the scope of patent law, a declaratory judgment suit traditionally allows a non-patent holder to seek a determination of whether its product or conduct infringes a valid and enforceable patent. In order to vest a district court with Article III jurisdiction, an actual case or controversy must exist between the potential infringer and patentee. In the field of patent law, an actual controversy exists if there is: "(1) an explicit threat or other action by the patentee, which creates a reasonable apprehension on the part of the declaratory plaintiff that it will face an infringement suit, and (2) present activity which could constitute infringement or concrete steps taken with the intent to conduct such activity."³ Nonetheless, even if jurisdiction exists, the presiding judge may exercise discretion and decline to hear the case.⁴ In this past year, the Federal Circuit upheld such exercises of discretion in three unique circumstances.

In *EMC Corp. v. Norand Corp.*,⁵ a party to an ongoing license negotiation, EMC, filed a declaratory judgment action in an apparent attempt to gain a tactical advantage over the patent holder, Norand.⁶ The district court, although declining to determine whether an actual controversy existed, exercised its discretion and refused to allow the action.⁷ The district court explained that, under circumstances where the parties were in the midst of ongoing negotiations, it would not allow a declaratory judgment action to be suborned to a tactical advantage or bargaining tool.⁸ EMC appealed, arguing, *inter alia*, that the district court abused its discretion in failing to rely on legitimate bases to support its decision to not hear the action.⁹

The Federal Circuit disagreed, remarking that the Declaratory Judgment Act¹⁰ affords district courts a "unique breadth . . . of

3. *B.P. Chems., Ltd. v. Union Carbide Corp.*, 4 F.3d 975, 978, 28 U.S.P.Q.2d (BNA) 1124, 1126 (Fed. Cir. 1993).

4. *See Spectronics Corp. v. H.B. Fuller Co.*, 940 F.2d 631, 634, 19 U.S.P.Q.2d (BNA) 1545, 1547 (Fed. Cir. 1991) (stating that even in cases where there is an actual controversy, the exercise of jurisdiction is discretionary).

5. 89 F.3d 807, 39 U.S.P.Q.2d (BNA) 1451 (Fed. Cir. 1996).

6. *See EMC Corp. v. Norand Corp.*, 89 F.3d 807, 809, 39 U.S.P.Q.2d (BNA) 1451, 1452 (Fed. Cir. 1996).

7. *See id.*, 39 U.S.P.Q.2d (BNA) at 1452.

8. *See id.* at 810, 39 U.S.P.Q.2d (BNA) at 1452-53.

9. *See id.* at 811, 39 U.S.P.Q.2d (BNA) at 1453.

10. 28 U.S.C. § 2201(a) (1994). The Declaratory Judgment Act provides in pertinent part: "In a case of actual controversy within its jurisdiction . . . any court of the United States, upon the filing of an appropriate pleading, may declare the rights and other legal relations of any

discretion to decline to enter a declaratory judgment¹¹ and requires appellate courts to review those decisions under the deferential abuse of discretion standard.¹² As such, the Federal Circuit explained that a district court may take into account the pendency of serious license negotiations, as well as the possibility that the parties may reach a non-judicial resolution in determining whether to exercise jurisdiction.¹³ The court cautioned the district courts, however, to be wary of patentees feigning interest in continued license negotiations in order to deflect a declaratory judgment action.¹⁴ Accordingly, the Federal Circuit upheld the district court's decision in that the court viewed EMC's complaint as a tactical measure filed to improve its posture in the ongoing negotiations, a purpose which the Declaratory Judgment Act was not designed to serve.¹⁵

Next, in *Cygnus Therapeutics Systems v. ALZA Corp.*,¹⁶ Cygnus sought a declaratory judgment ruling that ALZA's patent was invalid and unenforceable after unsuccessfully negotiating for a patent license.¹⁷ The district court dismissed Cygnus' claims for lacking an objectively reasonable apprehension that it would face an infringement suit.¹⁸ The district court based its ruling in part on the fact that ALZA had never expressly threatened to sue Cygnus.¹⁹

In a *de novo* review²⁰ of whether an actual controversy existed, the Federal Circuit held that a reasonable apprehension of suit did not arise merely because ALZA exercised its lawful commercial prerogative in refusing to grant a license to its competitor, effectively placing Cygnus in the position of having to choose between abandoning a specific commercial venture or running the risk of engaging in

interested party seeking such declaration, whether or not further relief is or could be sought." *Id.* The Supreme Court has interpreted the Act as giving district courts discretion to decline jurisdiction even if there is an actual controversy. See *Wilton v. Seven Falls Co.*, 515 U.S. 277, 285 (1995) (refuting assertion that district courts can only decline to exercise declaratory judgment jurisdiction in "exceptional circumstances"); *Public Serv. Comm'n v. Wycoff Co.*, 344 U.S. 237, 241 (1952) (stating that Declaratory Judgment Act gives courts discretion to grant relief and does not grant "absolute right" to litigant seeking redress).

11. *EMC Corp.*, 89 F.3d at 813, 39 U.S.P.Q.2d (BNA) at 1455 (quoting *Wilton v. Seven Falls Co.*, 515 U.S. 277, 287 (1995)).

12. See *id.* at 813, 39 U.S.P.Q.2d (BNA) at 1455-56.

13. See *id.* at 814, 39 U.S.P.Q.2d (BNA) at 1456.

14. See *id.* at 815, 39 U.S.P.Q.2d (BNA) at 1457.

15. See *id.*, 39 U.S.P.Q.2d (BNA) at 1457.

16. 92 F.3d 1153, 39 U.S.P.Q.2d (BNA) 1666 (Fed. Cir. 1996).

17. See *Cygnus Therapeutics Sys. v. ALZA Corp.*, 92 F.3d 1153, 1157-58, 39 U.S.P.Q.2d (BNA) 1666, 1669 (Fed. Cir. 1996).

18. See *id.* at 1159, 39 U.S.P.Q.2d (BNA) at 1670.

19. See *id.* at 1160, 39 U.S.P.Q.2d (BNA) at 1670.

20. The question of whether an actual controversy exists is one that the Federal Circuit must address *de novo*. See *B.P. Chems., Ltd. v. Union Carbide Corp.*, 4 F.3d 975, 978, 28 U.S.P.Q.2d (BNA) 1124, 1127 (Fed. Cir. 1993).

arguably infringing activities.²¹ Accordingly, the Federal Circuit upheld the district court's dismissal of the claims.²²

In a third case where a party improperly filed suit, *GAF Building Materials Corp. v. Elk Corp.*,²³ the Federal Circuit affirmed a lower court's dismissal of a declaratory judgment action because, at the time the suit was filed, the patent in question had not yet issued.²⁴ There, Elk had notified GAF of its pending design patent application in a cease-and-desist letter demanding that GAF halt all infringing activities.²⁵ Thereafter, GAF filed a declaratory judgment suit in the District of New Jersey prior to the issuance of the patent, but amended its complaint once the patent had issued.²⁶ On the day the patent issued, Elk filed suit for patent infringement in the Northern District of Texas.²⁷ Elk also sought to dismiss GAF's declaratory judgment action in the New Jersey court for want of subject matter jurisdiction.²⁸ Rather than dismiss the case, the New Jersey court transferred the case to the Texas court, which consolidated the actions.²⁹ The Texas court then entered a final decision dismissing GAF's declaratory judgment action for lack of subject matter jurisdiction from which GAF appealed.³⁰

In upholding the dismissal, the Federal Circuit agreed that at the time GAF commenced its suit, it had a reasonable apprehension that it would be sued for patent infringement.³¹ However, at the time GAF filed suit, a real and substantial controversy could not have existed because the patent had yet to issue.³² The court reasoned that because the district court did not know with certainty that the patent

21. See *Cygnus*, 92 F.3d at 1160, 39 U.S.P.Q.2d (BNA) at 1671.

22. See *id.*, 39 U.S.P.Q.2d (BNA) at 1672.

23. 90 F.3d 479, 39 U.S.P.Q.2d (BNA) 1463 (Fed. Cir. 1996).

24. See *GAF Bldg. Materials Corp. v. Elk Corp.*, 90 F.3d 479, 482, 39 U.S.P.Q.2d (BNA) 1463, 1466 (Fed. Cir. 1996) (reaffirming that the existence of an issued patent claim is a requisite to litigation of declaratory judgment action).

25. See *id.* at 480, 39 U.S.P.Q.2d (BNA) at 1464.

26. See *id.*, 39 U.S.P.Q.2d (BNA) at 1464.

27. See *id.*, 39 U.S.P.Q.2d (BNA) at 1464.

28. See *id.*, 39 U.S.P.Q.2d (BNA) at 1464.

29. See *id.* at 481, 39 U.S.P.Q.2d (BNA) at 1464.

30. See *id.* at 481-82, 39 U.S.P.Q.2d (BNA) at 1464.

31. See *id.*, 39 U.S.P.Q.2d (BNA) at 1465. At the time that GAF filed the declaratory judgment action in January 1994, Elk had received a Notice of Allowance from the Patent Office and paid the issue fee; issuance of the patent, therefore, seemed imminent. See *id.*, 39 U.S.P.Q.2d (BNA) at 1465. Furthermore, GAF had continued to manufacture and market the accused product since receipt of Elk's "cease-and-desist" letter on December 8, 1993. See *id.*, 39 U.S.P.Q.2d (BNA) at 1465.

32. See *id.* at 482, 39 U.S.P.Q.2d (BNA) at 1466.

would issue, the dispute was purely hypothetical,³³ and the district court could not fashion specific relief without the patent before it.³⁴

Moreover, perhaps exalting form over substance, the Federal Circuit considered it irrelevant that the patent had issued while the action was pending, or that GAF had amended its complaint the day the patent issued.³⁵ Rather, the Federal Circuit held that the justiciability requirements of Article III jurisdiction are measured at the time a suit is filed, not at an indeterminable future date when the district court might reach the merits after a patent issues.³⁶ Accordingly, the court affirmed the dismissal of GAF's claim.³⁷

B. Standing

In the federal system, a litigant must satisfy constitutional standing requirements in order to create a legitimate case or controversy within the meaning of Article III of the Constitution; otherwise a district court will lack jurisdiction to adjudicate the alleged conflict.³⁸ Standing is established if a party is sufficiently affected by the conduct of another, thereby insuring that a justiciable controversy is presented to the court.³⁹

During this past year, the Federal Circuit confronted a unique approach toward circumventing the constitutional standing requirements. In *Gaia Technologies, Inc. v. Reconversion Technologies, Inc.*,⁴⁰ the Federal Circuit overturned a district court's decision that a party had standing to sue even though it did not own the asserted intellectual property at the time it filed suit.⁴¹ Gaia had sued Reconversion under federal and state law alleging, *inter alia*, infringement of various patents and trademarks.⁴² As a defense, Reconversion asserted that Gaia did not own the patent and trademarks at the time suit was filed,

33. *See id.*, 39 U.S.P.Q.2d (BNA) at 1466 (stating that a declaratory judgment on GAF's complaint would have constituted an "impermissible advisory opinion").

34. *See id.*, 39 U.S.P.Q.2d (BNA) at 1466.

35. *See id.* at 483, 39 U.S.P.Q.2d (BNA) at 1466-67.

36. *See id.*, 39 U.S.P.Q.2d (BNA) at 1467.

37. *See id.* at 484, 39 U.S.P.Q.2d (BNA) at 1467.

38. *See* *Sierra Club v. Morton*, 405 U.S. 727, 731-32 (1972) ("Whether a party has a sufficient stake in an otherwise justiciable controversy to obtain judicial resolution of that controversy is what has traditionally been referred to as the question of standing to sue.").

39. *See id.*; *see also* *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 560-61 (1992) (stating that standing requires a party to have suffered "injury in fact," with a causal connection between the injury and conduct complained of, which will "likely" be redressed by judicial action).

40. 93 F.3d 774, 39 U.S.P.Q.2d (BNA) 1826 (Fed. Cir.), *amended on reh'g*, 109 F.3d 1296, 41 U.S.P.Q.2d (BNA) 1130 (Fed. Cir. 1996).

41. *See* *Gaia Techs., Inc. v. Reconversion Techs., Inc.*, 93 F.3d 774, 780, 39 U.S.P.Q.2d (BNA) 1826, 1831 (Fed. Cir.), *amended on reh'g*, 109 F.3d 1296, 41 U.S.P.Q.2d (BNA) 1130 (Fed. Cir. 1996).

42. *See id.* at 775-76, 39 U.S.P.Q.2d (BNA) at 1827-28.

and thus lacked standing to assert its claims of infringement.⁴³ Gaia countered that its pre-suit ownership of the property was established by (1) a third party's documents approving the future sale of the intellectual property to Gaia, and (2) the fact that Gaia subsequently purchased the intellectual property after the suit was filed from the third party. The third party contract contained a clause purporting that Gaia had received retroactive ownership of the property.⁴⁴

After reviewing the district court's decision that Gaia had standing to sue, the Federal Circuit rejected the district court's determination that jurisdiction was proper, and held that the third party document was merely an agreement to assign and did not actually transfer to Gaia legal title granting it the right to sue.⁴⁵ The court also rejected Gaia's argument that a retroactive assignment of patent rights conferred Gaia ownership as of the property at the time the third party allegedly agreed to sell the property.⁴⁶ In doing so, the court stated that to allow subsequent assignments to cure standing defects would "unjustifiably expand the number of people who are statutorily authorized to sue" and would inevitably result in increased litigation.⁴⁷ Accordingly, the Federal Circuit dismissed the federal claims and remanded the case to the district court to determine whether supplemental jurisdiction under 28 U.S.C. § 1367(a) still existed for the remaining state law claims.⁴⁸

C. Personal Jurisdiction

Personal jurisdiction grants a court power over a party when the party is physically present in the state where the court resides, or, if that party's activities are somehow connected with the forum state and the maintenance of the suit, the exercise of such power would not offend traditional standards of "fair play and substantial justice."⁴⁹

In *Viam Corp. v. Iowa Export-Import Trading Co.*,⁵⁰ the Federal Circuit reversed a district court's dismissal of Viam's declaratory judgment action for lack of personal jurisdiction.⁵¹ Viam filed an invalidity suit in California against Spal, an Italian company that owned the patent

43. See *id.* at 777, 39 U.S.P.Q.2d (BNA) at 1828.

44. See *id.* at 779, 39 U.S.P.Q.2d (BNA) at 1830-31.

45. See *id.*, 39 U.S.P.Q.2d (BNA) at 1831.

46. See *id.* at 779-80, 39 U.S.P.Q.2d (BNA) at 1831.

47. See *id.* at 780, 39 U.S.P.Q.2d (BNA) at 1831 (citing *Procter & Gamble Co. v. Paragon Trade Brands, Inc.*, 917 F. Supp. 305, 310, 38 U.S.P.Q.2d (BNA) 1678, 1682 (D. Del. 1995)).

48. See *id.* at 780-81, 39 U.S.P.Q.2d (BNA) at 1831-32.

49. *International Shoe Co. v. Washington*, 326 U.S. 310, 316 (1945).

50. 84 F.3d 424, 38 U.S.P.Q.2d (BNA) 1833 (Fed. Cir. 1996).

51. See *Viam Corp. v. Iowa Export-Import Trading Co.*, 84 F.3d 424, 430, 38 U.S.P.Q.2d (BNA) 1833, 1837 (Fed. Cir. 1996).

at issue, as well as Iowa Export, the exclusive licensee of the patent.⁵² Spal moved for dismissal on the grounds that the district court was without personal jurisdiction.⁵³ Similarly, Iowa Export moved for dismissal on the grounds that, without Spal, which it considered a necessary party to the suit, it too was entitled to dismissal.⁵⁴ The district court granted both motions,⁵⁵ and Viam appealed.

The Federal Circuit, in applying a stream of commerce analysis to satisfy the minimum contacts test,⁵⁶ determined that Spal had established a "regular distribution channel" with Iowa Export, who had the exclusive right to advertise, market, and distribute products covered by the patent throughout the United States, and had sold several million dollars worth of Spal's products in the country.⁵⁷ The court also determined that Spal "knowingly and intentionally exploited the California market" through its exclusive distributor's advertising and sales in California.⁵⁸ Thus, because Spal placed its products in the stream of commerce and knew that the products would likely reach the forum state, it should have reasonably anticipated the possibility of being hailed into a California court.⁵⁹

In determining whether concepts of fair play and substantial justice would be offended in forcing Spal to defend its patent in the forum state, the court explained that "[i]t is not unfair to require that an out-of-state patent holder who asserts its rights through a local distributor in its regular chain of distribution against an in-state party to be held to have subjected itself to the due process of the relevant jurisdiction."⁶⁰ Otherwise, the court reasoned, out-of-state corporations could establish domestic offices through which they could do business without subjecting their parents to the high level of scrutiny demanded by U.S. patent law.⁶¹ Accordingly, the Federal Circuit held that personal jurisdiction existed in the California forum, and reversed in part the district court's ruling.⁶²

52. *See id.* at 426, 38 U.S.P.Q.2d (BNA) at 1834.

53. *See id.* at 426-27, 38 U.S.P.Q.2d (BNA) at 1834.

54. *See id.* at 427, 38 U.S.P.Q.2d (BNA) at 1834.

55. *See id.*, 38 U.S.P.Q.2d (BNA) at 1834.

56. *See id.*, 38 U.S.P.Q.2d (BNA) at 1835.

57. *See id.* at 428-429, 38 U.S.P.Q.2d (BNA) at 1836.

58. *Id.* at 429, 38 U.S.P.Q.2d (BNA) at 1836.

59. *See id.*, 38 U.S.P.Q.2d (BNA) at 1836.

60. *Id.* at 429-30, 38 U.S.P.Q.2d (BNA) at 1837.

61. *See id.* at 430, 38 U.S.P.Q.2d (BNA) at 1837.

62. *See id.*, 38 U.S.P.Q.2d (BNA) at 1837.

D. Preemption

The judicial doctrine of preemption is founded on the supremacy of federal legislation over state legislation, thereby preventing state legislatures from interfering with legal rights previously defined by Congress.⁶³ In *Cover v. Hydramatic Packing Co.*,⁶⁴ the Federal Circuit reversed a district court's ruling that the patent code preempted a provision of the Pennsylvania Uniform Commercial Code ("U.C.C.") governing warranties for merchants dealing regularly in goods.⁶⁵ Cover sued Sea Gull for patent infringement and Sea Gull's supplier Hydromatic for contributory infringement.⁶⁶ Hydromatic filed a cross-claim against Sea Gull for indemnification under 13 Pa.C.S.A. § 2312(c),⁶⁷ which requires a buyer furnishing blue print specifications to a seller to hold the seller harmless against any rightful claims of infringement that arise out of compliance with those specifications.⁶⁸ Cover settled with Sea Gull and Hydromatic before trial.⁶⁹ As a result, the only claim at trial was Hydromatic's cross-claim against Sea Gull for indemnification under the Pennsylvania statute.⁷⁰ The district court ruled that, considering that Cover had failed to mark its product, Sea Gull was not liable for damages because it had not received notice of infringement until the complaint was filed, and that Hydromatic's cross-claim was preempted under the federal patent statutes.⁷¹

The Federal Circuit reversed, explaining that Title 35 of the United States Code governs only the field of patent law, not commercial law between buyers and sellers.⁷² Further, the court explained that "there is no conflict preemption because Pennsylvania's commercial law neither renders compliance with the patent code a 'physical impossibility' nor 'stands as an obstacle to the accomplishment and

63. See *Gibbons v. Ogden*, 22 U.S. (9 Wheat) 1, 24 (1824) (holding that state laws are invoked if they "interfere with, or are contrary to, the laws of Congress, made in pursuance of the constitution."); *Interpart Corp. v. Italia*, 777 F.2d 678, 684, 228 U.S.P.Q. (BNA) 124, 128 (Fed. Cir. 1985) (explaining that state law is invalid if it "clashes with the objectives of the federal patent laws").

64. 83 F.3d 1390, 38 U.S.P.Q.2d (BNA) 1783 (Fed. Cir.), *cert. denied*, 117 S. Ct. 183 (1996).

65. See *Cover v. Hydramatic Packing Co.*, 83 F.3d 1390, 1394, 38 U.S.P.Q.2d (BNA) 1783, 1787 (Fed. Cir.), *cert. denied*, 117 S. Ct. 183 (1996).

66. See *id.* at 1391, 38 U.S.P.Q.2d (BNA) at 1784.

67. See *Cover v. Hydramatic Packing Co.*, 36 U.S.P.Q.2d (BNA) 1199, 1200 (E.D. Pa. 1995), *rev'd*, 83 F.3d 1390, 38 U.S.P.Q.2d (BNA) 1783 (Fed. Cir.), *cert. denied*, 117 S. Ct. 183 (1996).

68. See PA. CONS. STAT. ANN. § 2312(c) (West 1995).

69. See *Cover*, 36 U.S.P.Q.2d (BNA) at 1201.

70. See *id.* at 1200.

71. See *Cover*, 83 F.3d at 1391, 38 U.S.P.Q.2d (BNA) at 1785.

72. See *id.* at 1393, 38 U.S.P.Q.2d (BNA) at 1786.

execution' of the patent law."⁷³ Once the parties had settled the patent issues, the patent code ceased to affect the parties' legal relationships as defined by commercial law.⁷⁴ Accordingly, the Federal Circuit reversed, holding that there was no preemption.⁷⁵

E. Interlocutory Appeals⁷⁶

In *Spraytex, Inc. v. Homax Corp.*,⁷⁷ the Federal Circuit confronted a question of first impression, specifically, "whether a judgment that disposes of fewer than all actions consolidated by the district court into one case may be separately appealed."⁷⁸ In March 1995, Spraytex filed suit seeking a declaratory judgment that it had not infringed Homax's patent.⁷⁹ Five months later, Spraytex sought a second declaratory judgment that it had not infringed a second patent owned by Homax, which issued from a continuation application of the original patent during the pendency of the first suit.⁸⁰ The district court consolidated the two cases, granted Spraytex's motion for summary judgment of noninfringement of the first patent, and entered final judgment on the first claim.⁸¹ Homax appealed, and Spraytex moved to dismiss the appeal on the grounds that the Federal Circuit lacked jurisdiction because the district court had not disposed of the action concerning the continuation patent or granted certification under Rule 54(b) of the Federal Rules of Civil Procedure.⁸²

73. *Id.* at 1393-94, 38 U.S.P.Q.2d (BNA) at 1786.

74. *See id.*, 38 U.S.P.Q.2d (BNA) at 1786.

75. *See id.* at 1394, 38 U.S.P.Q.2d (BNA) at 1787.

76. *See id.*, 40 U.S.P.Q.2d (BNA) at 1146. Rule 54(b) provides:

[W]hen more than one claim for relief is presented in an action, whether as a claim, counterclaim, cross-claim, or third party claim, or when multiple parties are involved, the court may direct the entry of a final judgment as to one or more but fewer than all of the claims or parties only upon an express determination that there is no just reason for delay and upon an express direction for the entry of judgment. In the absence of such determination and direction, any order or other form of decision, however designated, which adjudicated fewer than all the claims or the rights and liabilities of fewer than all the parties shall not terminate the action as to any of the claims or parties, and the order or other form of decision is subject to revision at any time before the entry of judgment adjudicating all the claims and the rights and liabilities of all the parties.

FED. R. CIV. P. 54(b).

77. 96 F.3d 1377, 40 U.S.P.Q.2d (BNA) 1145 (Fed. Cir. 1996).

78. *Spraytex, Inc. v. Homax Corp.*, 96 F.3d 1377, 1379, 40 U.S.P.Q.2d (BNA) 1145, 1146 (Fed. Cir. 1996).

79. *See Spraytex, Inc. v. Homax Corp.*, 38 U.S.P.Q.2d (BNA) 1566, 1567 (C.D. Cal. 1995), *appeal dismissed*, 96 F.3d 1377, 40 U.S.P.Q.2d (BNA) 1145 (Fed. Cir. 1996).

80. *See id.* at 1568.

81. *See id.* at 1573.

82. *See id.*

In considering the scope of its jurisdiction, the Federal Circuit noted that the U.S. circuit courts of appeal were split in their treatment of appeals from consolidated actions.⁸³ Ultimately, the Federal Circuit adopted the rationale of the Ninth and Tenth Circuits, holding that consolidated actions merge into one for jurisdictional purposes (being similar to a case having several claims or counter-claims) and may not be appealed separately *absent* certification under Rule 54(b).⁸⁴ The court reasoned that “[because] consolidated cases are generally based on the same factual circumstances, appellate review of the total consolidated case serves the purposes of appellate efficiency.”⁸⁵ Further, by establishing a bright-line rule, as opposed to those circuits that consider such jurisdictional issues on a case-by-case basis, the court elected to provide more certainty to the appellate process.⁸⁶ Accordingly, the Federal Circuit dismissed the appeal, holding that it lacked jurisdiction until the district court issued “a final judgment disposing of all aspects of the consolidated case.”⁸⁷

F. *Res Judicata and Collateral Estoppel*

In 1996, the Federal Circuit addressed the effects of administrative rulings by the International Trade Commission (“ITC”) on subsequent litigations involving the same parties under the doctrines of res judicata and collateral estoppel. The legal doctrine of res judicata (or claim preclusion) prevents a party from litigating a legal claim that should have been raised in a prior litigation, if the prior litigation was fully litigated on the merits.⁸⁸ The doctrine of collateral estoppel (or issue preclusion) recognizes that the determination of facts litigated between two parties in a proceeding is binding on those parties in all future proceedings against each other.⁸⁹

83. See *Spraytex*, 96 F.3d at 1380, 40 U.S.P.Q.2d (BNA) at 1147 (noting that the First and Sixth Circuits permit separate appeals of “judgments disposing of fewer than all claims in a consolidated case” while, in contrast, the Ninth and Tenth Circuits prohibit the appeal of judgments involving part of a consolidated claim unless certified pursuant to 54(b)).

84. See *id.* at 1382, 40 U.S.P.Q.2d (BNA) at 1148 (rejecting adoption of case-by-case approach utilized by First and Sixth Circuits).

85. *Id.*, 40 U.S.P.Q.2d (BNA) at 1149.

86. See *id.*, 40 U.S.P.Q.2d (BNA) at 1149 (rejecting case-by-case analysis in part because it results in premature appeals).

87. *Id.*, 40 U.S.P.Q.2d (BNA) at 1149.

88. See RESTATEMENT (SECOND) OF JUDGMENTS §§ 18-26 (1982) (“[W]hen a valid and final personal judgment is rendered in favor of the plaintiff: (1) The plaintiff cannot thereafter maintain an action on the original claim or any part thereof . . .”).

89. See *id.* § 27 (“When an issue of fact or law is actually litigated and determined by a valid and final judgment, and the determination is essential to the judgment, the determination is conclusive in a subsequent action between the parties, whether on the same or a different claim.”).

In *Bio-Technology General Corp. v. Genentech, Inc.*,⁹⁰ the Federal Circuit affirmed a district court's ruling that a prior decision of the ITC to dismiss the patentee's complaint did not have preclusive effect on an infringement claim in a district court.⁹¹ Genentech filed a complaint with the ITC alleging that Bio-Technology engaged in unfair methods of competition based upon the importation and sale of products covered by its patents.⁹² The ITC dismissed the complaint with prejudice under 19 U.S.C. § 1337 as a sanction for Genentech's violations of various discovery orders.⁹³ Bio-Technology subsequently sought a declaratory judgment that Genentech's patents were "invalid, unenforceable, and not infringed;" Genentech responded by filing a counterclaim for infringement.⁹⁴ As a defense, Bio-Technology argued that Genentech could not assert an infringement claim because Genentech was attempting to relitigate in the district court the same claim it lost before the ITC.⁹⁵

In rejecting the suggestion that the ITC's dismissal had a preclusive effect, the Federal Circuit evaluated whether the ITC had the same power to award the full measure of relief sought in the later litigation before the district court.⁹⁶ Under 19 U.S.C. § 1337(d), "when the ITC determines that a defendant has engaged in unfair practices in import trade, it may direct that the articles at issue be excluded from entry in the United States."⁹⁷ The Federal Circuit remarked, however, "the ITC does not have the power to award damages for patent infringement," a remedy exclusive to the United States district

90. 80 F.3d 1553, 38 U.S.P.Q.2d (BNA) 1321 (Fed. Cir.), cert. denied, 117 S. Ct. 274 (1996).

91. See *Bio-Technology Gen. Corp. v. Genentech, Inc.*, 80 F.3d 1553, 1564, 38 U.S.P.Q.2d (BNA) 1321, 1329 (Fed. Cir.), cert. denied, 117 S. Ct. 274 (1996).

92. See *id.* at 1563-64, 38 U.S.P.Q.2d (BNA) at 1328-29.

93. See *id.* at 1563, 38 U.S.P.Q.2d (BNA) at 1328. Section 1337 of the Tariff Act of 1930 authorizes the ITC to monitor unfair practices in:

the import trade, including: (B) [t]he importation into the United States, the sale for importation, or the sale within the United States after importation by the owner, importer, or consignee, of articles that—

- (i) infringe a valid and enforceable United States patent . . . or
- (ii) are made, produced, processed, or mined under, or by means of, a process covered by the claims of a valid and enforceable United States patent.

19 U.S.C. § 1337(a)(1)(B) (1994).

94. See *Genentech*, 80 F.3d at 1557, 38 U.S.P.Q.2d (BNA) at 1324.

95. See *id.* at 1563, 38 U.S.P.Q.2d (BNA) at 1328 (holding of administrative agency when acting in a judicial capacity, may sometimes be given preclusive effect).

96. See *id.* at 1563-64, 38 U.S.P.Q.2d (BNA) at 1329 ("[W]here a plaintiff was precluded from recovering damages in the initial action by formal jurisdictional or statutory barriers, not by plaintiff's choice, a subsequent action for damages will not normally be barred by *res judicata* even where it arises from the same factual circumstances as the initial action." (quoting *Burgos v. Hopkins*, 14 F.3d 787, 790 (2d Cir. 1994)).

97. *Id.* at 1564, 38 U.S.P.Q.2d (BNA) at 1329.

courts.⁹⁸ Accordingly, the Federal Circuit held that due to the "jurisdictional limitations on the relief available in the ITC . . . the ITC's prior decision cannot have claim preclusive effect in the district court."⁹⁹

Following the *Bio-Technology* decision, the Federal Circuit considered, in *Texas Instruments Inc. v. Cypress Semiconductor Corp.*,¹⁰⁰ whether a finding of infringement by the ITC—subsequently affirmed by the Federal Circuit—should have preclusive effect on a later district court infringement action involving the same patent and parties.¹⁰¹ Factually, Texas Instruments initiated an action with the ITC against, Cypress Semiconductor, asserting that Cypress Semiconductor engaged in unfair acts by importing and selling encapsulated circuits produced by processes covered by its patent.¹⁰² The Commission ultimately issued a ruling that Texas Instruments' patent was infringed and entered an exclusion order prohibiting the importation of the circuits.¹⁰³ This decision was later affirmed by the Federal Circuit.¹⁰⁴

Contemporaneously with the ITC proceeding, Texas Instruments sued Cypress Semiconductor alleging infringement of the same patents.¹⁰⁵ At trial, the jury returned a verdict of infringement, which the district court subsequently *set aside* on defendant's motion for a judgment as a matter of law.¹⁰⁶ On appeal, Texas Instruments argued that the ITC's previous finding of infringement (as affirmed by the Federal Circuit) should have preclusive effect on the district court.¹⁰⁷

In accordance with its prior decisions, the Federal Circuit rejected the proposition that a ruling by the ITC precluded a different ruling by a district court.¹⁰⁸ While the Federal Circuit recognized that a

98. *See id.*, 38 U.S.P.Q.2d (BNA) at 1329.

99. *See id.*, 38 U.S.P.Q.2d (BNA) at 1329.

100. 90 F.3d 1558, 39 U.S.P.Q.2d (BNA) 1492 (Fed. Cir. 1996), *cert. denied*, 117 S. Ct. 1818 (1997).

101. *See Texas Instruments Inc. v. Cypress Semiconductor Corp.*, 90 F.3d 1558, 1568, 39 U.S.P.Q.2d (BNA) 1492, 1500 (Fed. Cir. 1996), *cert. denied*, 117 S. Ct. 1818 (1997).

102. *See id.* at 1562, 39 U.S.P.Q.2d (BNA) at 1496.

103. *See id.*, 39 U.S.P.Q.2d (BNA) at 1496 (affirming prior decision by administrative law judge finding infringement under doctrine of equivalents).

104. *See Texas Instruments Inc. v. United States Int'l Trade Comm'n*, 988 F.2d 1165, 26 U.S.P.Q.2d (BNA) 1018 (Fed. Cir. 1993), *aff'g In re Certain Plastic Encapsulated Integrated Circuits*, Inv. No. 337-TA-315, USITC Pub. No. 2574 (Nov. 1992).

105. *See Texas Instruments*, 90 F.3d at 1563, 39 U.S.P.Q.2d (BNA) at 1496.

106. *See id.*, 39 U.S.P.Q.2d (BNA) at 1496 (stating that "no reasonable jury could have found literal infringement").

107. *See id.* at 1568, 39 U.S.P.Q.2d (BNA) at 1500 (arguing preclusive effect should be given to decisions of federal agencies acting in their judicial capacity).

108. *See id.* at 1569, 39 U.S.P.Q.2d (BNA) at 1501.

decision by an administrative agency may be given preclusive effect in a federal court if the agency acted in a judicial capacity, that doctrine is inapplicable "when Congress, either expressly or impliedly, indicated that it intended otherwise."¹⁰⁹ In reviewing the legislative history of the Trade Reform Act of 1974 and recent modifications of ITC procedure through various other bills, the court concluded that Congress did not intend that decisions by the ITC on patent issues should have preclusive effects.¹¹⁰ Furthermore, the court rejected Texas Instruments' arguments that, "by denying preclusive effect to an ITC determination, district courts would be free to ignore the court's appellate decisions."¹¹¹ Accordingly, the Federal Circuit held that the doctrine of collateral estoppel did not bind the district court.¹¹²

The Federal Circuit also addressed the limits of res judicata on a party who alleged infringement against another party and then later sued the same accused infringer on other patents. In *Kearns v. General Motors Corp.*,¹¹³ the Federal Circuit held that the involuntary dismissal of an infringement claim based on one patent does not automatically bar, on res judicata grounds, claims of infringement based on other related patents.¹¹⁴ Previously, Kearns had brought an action against GM in the Eastern District of Michigan, alleging infringement of five patents.¹¹⁵ That action was dismissed by the Michigan court for Kearns' failure to comply with specific deadlines and other court orders.¹¹⁶ Kearns then sued GM in the Eastern District of Virginia, alleging infringement of the original five patents as well as sixteen others.¹¹⁷ The Virginia court dismissed the *entire* action, stating that "all twenty-one patents should have been litigated in the Detroit litigation and they're barred by not having been so."¹¹⁸

109. *Id.* at 1568, 39 U.S.P.Q.2d (BNA) at 1501.

110. *See id.* at 1568-69, 39 U.S.P.Q.2d (BNA) at 1501.

111. *See id.* at 1569, 39 U.S.P.Q.2d (BNA) at 1501.

112. *See id.*, 39 U.S.P.Q.2d (BNA) at 1501.

113. 94 F.3d 1553, 39 U.S.P.Q.2d (BNA) 1949 (Fed. Cir. 1996), *cert. denied*, 117 S. Ct. 1469 (1997).

114. *See Kearns v. General Motors Corp.*, 94 F.3d 1553, 1555-56, 39 U.S.P.Q.2d (BNA) 1949, 1949-50 (Fed. Cir. 1996), *cert. denied*, 117 S. Ct. 1469 (1997).

115. *See id.* at 1555, 39 U.S.P.Q.2d (BNA) at 1951.

116. *See id.* at 1554, 39 U.S.P.Q.2d (BNA) at 1951. The district court dismissed the action under FED. R. CIV. P. 41(b), which allows for involuntary dismissal of an action if the plaintiff fails to prosecute or comply with court rules. *See* FED. R. CIV. P. 41(b). Unless otherwise specified by the court, dismissal under Rule 41(b) constitutes an adjudication upon the merits. *See id.*

117. *See Kearns*, 94 F.3d at 1554, 39 U.S.P.Q.2d (BNA) at 1949, 1950.

118. *See id.*, 39 U.S.P.Q.2d (BNA) at 1950.

The Federal Circuit upheld the district court's ruling as to the first five patents, but reversed in part the dismissal of the sixteen newly asserted patents.¹¹⁹ The court explained that each asserted patent raised an independent and distinct cause of action deserving of the procedural protections of due process.¹²⁰ The Federal Circuit rejected the argument that the sixteen new patents should have been litigated with the first five patents, pointing out that *res judicata* applied only if the first case had been litigated on the merits.¹²¹ Moreover, the court encouraged judicial restraint against the application of *res judicata* to bar causes of action previously dismissed on procedural grounds.¹²²

G. *Reexamination Procedures*

During the past year, the Federal Circuit sent clear signals that district courts were not to interfere with a patentee's right to seek reexamination, or the manner in which the Patent Office conducted those reexaminations. Under 35 U.S.C. § 302, "[a]ny person at any time may file a request for reexamination" by the Patent Office of "any claim of any patent on the basis of prior art . . ."¹²³ As the Federal Circuit held in two separate cases, however, § 302 does not allow a district court to order a patentee to seek reexamination of its patent, or to require an accused infringer to participate in the *ex parte* reexamination procedures.

In *In re Continental General Tire, Inc.*,¹²⁴ the Federal Circuit issued a writ of mandamus compelling a district court to vacate an order requiring Continental (an accused infringer in a patent infringement suit against Goodyear) to file with the Patent Office a request for reexamination of the allegedly infringed patents.¹²⁵ The Federal Circuit explained that although the statute authorizing a request for reexamination "permits any party to file a request for reexamination, it does not empower a district court to compel a party to file such a request or require that any party file such a request."¹²⁶ In rejecting analogies to powers of a court to compel parties to engage in

119. *See id.* at 1557, 39 U.S.P.Q.2d (BNA) at 1952.

120. *See id.* at 1556, 39 U.S.P.Q.2d (BNA) at 1952.

121. *See id.*, 39 U.S.P.Q.2d (BNA) at 1952.

122. *See id.*, 39 U.S.P.Q.2d (BNA) at 1952.

123. 35 U.S.C. § 302 (1994).

124. 81 F.3d 1089, 38 U.S.P.Q.2d (BNA) 1365 (Fed. Cir. 1996).

125. *See In re Continental Gen. Tire, Inc.*, 81 F.3d 1089, 1090, 38 U.S.P.Q.2d (BNA) 1365, 1366 (Fed. Cir. 1996) (noting that remedy of mandamus is drastic but "is available to correct a clear abuse of discretion or usurpation of judicial power") (internal citations omitted).

126. *See id.* at 1091, 38 U.S.P.Q.2d (BNA) at 1367.

mediation or to appoint a special master, the court concluded that "the district court exceeded its [statutory] power by compelling Continental General to request reexamination of Goodyear's patents."¹²⁷

In *Emerson Electric Co. v. Davoil, Inc.*,¹²⁸ the Federal Circuit reversed the district court's order requiring Emerson to submit materials prepared by the accused infringer during a reexamination proceeding of the patent-in-suit in the Patent Office.¹²⁹ During an infringement suit brought by Emerson, a third party filed a request for reexamination of the patent at issue, and Emerson moved for a stay of the suit until the reexamination's conclusion.¹³⁰ In granting the motion, the district court ordered Emerson to include with its submissions to the Patent Office all documents prepared by the alleged infringer as well as any affidavits so as to enable the alleged infringer to participate effectively in the document submission portion of the reexam.¹³¹ The Federal Circuit reversed that portion of the court order, explaining that the district court's power to stay did not authorize it to direct Emerson to include submissions from other parties.¹³² Accordingly, the Federal Circuit held that such an order "went beyond its inherent power to manage its docket and to stay proceedings."¹³³ Moreover, Emerson's choice of what, if anything, to file with the Patent Office in a reexamination proceeding should remain undisturbed by the courts.¹³⁴

II. PATENTABILITY AND VALIDITY

A. Patentable Subject Matter—35 U.S.C. § 101

Section 101 requires that, to be patentable, an invention must fall within the proper subject matter for patentability and be useful.¹³⁵ In the latter requirement, labeled the "utility" requirement, inventions

127. See *id.* at 1092-93, 38 U.S.P.Q.2d (BNA) at 1368-69.

128. 88 F.3d 1051, 39 U.S.P.Q.2d (BNA) 1474 (Fed. Cir. 1996); see *infra* notes 539-44.

129. See *Emerson Elec. Co. v. Davoil, Inc.*, 88 F.3d 1051, 1054, 39 U.S.P.Q.2d (BNA) 1474, 1476-77 (Fed. Cir. 1996) (arguing that the district court exceeded its "inherent powers to manage [its] docket and stay proceedings" (quoting *Emerson Elec. Co. v. Davoil, Inc.*, 907 F. Supp. 1303, 1304 (E.D. Mo. 1995))).

130. See *id.* at 1052, 39 U.S.P.Q.2d (BNA) at 1474-75.

131. See *id.*, 39 U.S.P.Q.2d (BNA) at 1475.

132. See *id.* at 1053-54, 39 U.S.P.Q.2d (BNA) at 1476-77.

133. See *id.*, 39 U.S.P.Q.2d (BNA) at 1476-77.

134. See *id.* at 1054, 39 U.S.P.Q.2d (BNA) at 1477.

135. "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." 35 U.S.C. § 101 (1994).

not functioning as claimed or having no useful application are unpatentable.

The Federal Circuit discussed the utility requirement in *Fujikawa v. Wattanasin*,¹³⁶ when it affirmed the determination by the Board of Patent Appeals and Interferences' ("Board") award of priority to Wattanasin for a pharmaceutical compound and its method of manufacture.¹³⁷

Wattanasin began his research in 1979, and through 1984 and 1985 synthesized three inventive compounds and performed *in vitro*¹³⁸ testing of the compounds. More inventive compounds were synthesized and tested both *in vitro* and *in vivo* from January 1987 through December 1987.¹³⁹ Fujikawa asserted that the tests failed to establish the practical utility and therefore reduction to practice.¹⁴⁰ The Board held, and the Federal Circuit affirmed, that the *in vitro* and *in vivo* testing was sufficient to establish the practical utility, and therefore reduction to practice, of the inventive compound and method. After also finding no suppression or concealment, the Board awarded Wattanasin priority of invention.¹⁴¹

Affirming this decision, the court observed that, "[i]n the pharmaceutical arts . . . practical utility may be shown by adequate evidence of pharmacological activity."¹⁴² Predicting whether a novel compound will exhibit pharmacological activity, however, is difficult; therefore, the court ruled that "there must be sufficient correlation between the tests and an asserted pharmacological activity so as to convince those skilled in the art that, to a reasonable probability, that the novel compound will exhibit the asserted pharmacological behavior."¹⁴³

As to the invented compound, the Board relied on testimony that the *in vitro* results showed that the claimed compounds would exhibit the desired pharmacological activity when administered *in vivo*.¹⁴⁴ Finding the Board's factual determination within its discretion, the

136. 93 F.3d 1559, 39 U.S.P.Q.2d (BNA) 1895 (Fed. Cir. 1996).

137. See *Fujikawa v. Wattanasin*, 93 F.3d 1559, 1563-64, 39 U.S.P.Q.2d (BNA) 1895, 1896 (Fed. Cir. 1996).

138. See *id.* at 1561, 39 U.S.P.Q.2d (BNA) at 1896-97. *In vitro* generally means testing performed in a test tube. *In vivo* generally means testing performed in an animal or human.

139. See *id.* at 1561-62, 39 U.S.P.Q.2d (BNA) at 1896-98. Testing resulted in significant differences between the four compounds during *in vitro* tests, subsequently the three most active compounds were tested by *in vitro* testing. See *id.*, 39 U.S.P.Q.2d (BNA) at 1896-98.

140. See *id.* at 1563, 39 U.S.P.Q.2d (BNA) at 1898.

141. See *id.* at 1561, 39 U.S.P.Q.2d (BNA) at 1896; see also *infra* notes 219-32 and accompanying text.

142. *Id.* at 1564, 39 U.S.P.Q.2d (BNA) at 1899.

143. *Id.* at 1564 & n.4, 39 U.S.P.Q.2d (BNA) at 1899 & n.4.

144. See *id.* at 1565, 39 U.S.P.Q.2d (BNA) at 1900.

court ruled that a "‘rigorous correlation’ need not be shown in order to establish practical utility; ‘reasonable correlation’ suffices."¹⁴⁵

As to the invented method, Fujikawa argued that an "anomaly" in the test data undercut the reliability of Wattanasin's *in vivo* tests. The court found that each party presented evidence on this issue and the Board had correctly resolved this disputed factual issue by finding that the test results were sufficient to establish the asserted pharmacological activity.¹⁴⁶

1. Double patenting

The rule against double patenting is intended to prevent an inventor from extending the term of exclusivity by the subsequent patenting of variations not distinct from the previously patented invention.¹⁴⁷ A double patenting rejection is not proper when the patent examiner imposes a restriction requirement under 35 U.S.C. § 121 and the double patenting rejection is based upon a patent issuing from the restricted application or a divisional application resulting from the requirement.¹⁴⁸

In *Applied Materials, Inc. v. Advanced Semiconductor Materials America, Inc.*,¹⁴⁹ the Federal Circuit, in a divided opinion, affirmed the district court's ruling that the restriction requirement under § 121 in a parent application precluded a finding of double patenting of non-elected claims pursued in a divisional application.¹⁵⁰

In *Applied Materials*, a restriction requirement was made in the parent application dividing the inventions into three groups: "an oven-type radiation heated reactor," "a reactor with means for introducing gaseous reactants," and "a gaseous epitaxial coating process."¹⁵¹ Applicants elected the radiation-heated reactor and filed divisional applications for the non-elected groups of inventions.¹⁵² Three patents subsequently issued on each of the inventions.¹⁵³ At trial, Advanced Semiconductor Materials America, Inc.

145. *Id.*, 39 U.S.P.Q.2d (BNA) at 1899-1900.

146. *See id.* at 1564-66, 39 U.S.P.Q.2d (BNA) at 1899-1900 (noting that Board's capacity as fact finder includes valuing testimony of one witness above another).

147. *See In re Vogel*, 422 F.2d 438, 164 U.S.P.Q. (BNA) 619 (C.C.P.A. 1970) (involving dispute over patent protecting alleged method of processing pork).

148. *See* 35 U.S.C. § 121 (1994).

149. 98 F.3d 1563, 40 U.S.P.Q.2d (BNA) 1481, 1482-85 (Fed. Cir. 1996), *cert. denied*, 117 S. Ct. 1822 (1997); *see infra* notes 337-40, 425-34, 464-74 and accompanying text (discussing other aspects of *Applied Materials* decision).

150. *See Applied Materials, Inc. v. Advanced Semiconductor Materials Am., Inc.*, 98 F.3d 1563, 1567-69, 40 U.S.P.Q.2d (BNA) 1481, 1482-85 (Fed. Cir. 1996), *cert. denied*, 117 S. Ct. 1822 (1997).

151. *See id.* at 1567, 40 U.S.P.Q.2d (BNA) at 1483.

152. *See id.*, 40 U.S.P.Q.2d (BNA) at 1483.

153. *See id.*, 40 U.S.P.Q.2d (BNA) at 1484.

(ASM) argued that the patent issued to the process was invalid on the ground of double patenting.¹⁵⁴

Under the third sentence of § 121, invalidity based on double patenting is improper in view of a "patent issuing on an application with respect to which a requirement for restriction under this section has been made, or on an application filed as a result of such a requirement . . ." ¹⁵⁵ ASM, however, argued that Applied Materials was not entitled to the protection of the third sentence of § 121 because, during prosecution of the process claims, Applied Materials broadened the scope of the process claims.¹⁵⁶ Thus, the Federal Circuit reviewed whether the process claims in the divisional application were consonant with the restriction requirement in the parent application.¹⁵⁷ Judge Newman held that the broadening in question was "in consonance with" the restriction requirement and that the claims in question were protected by the third sentence of 35 U.S.C. § 121.¹⁵⁸ Chief Judge Archer disagreed, however, finding instead that the claims in question were invalid for obviousness-type double patenting.¹⁵⁹ Circuit Judge Mayer held that the claims in question were invalid on different grounds, thus never reaching this issue.¹⁶⁰

B. Anticipation—35 U.S.C. § 102

1. Anticipation

Anticipation under 35 U.S.C. § 102(a) requires that for a printed publication to be prior art, it must be published before the invention date of the claimed invention.¹⁶¹ In *Mahurkar v. C.R. Bard, Inc.*,¹⁶² the Federal Circuit affirmed the district court's denial of Bard's motion for judgment as a matter of law, based on the finding that no reasonable jury could have found that a catalog constituted prior art under 35 U.S.C. § 102(a).¹⁶³

154. See *id.*, 40 U.S.P.Q.2d (BNA) at 1483 (arguing that benefits derived from § 121 no longer apply due to actions of ASM).

155. 35 U.S.C. § 121 (1994).

156. See *Applied Materials*, 98 F.3d at 1567-68, 40 U.S.P.Q.2d (BNA) at 1484.

157. See *id.* at 1568, 40 U.S.P.Q.2d (BNA) at 1484.

158. See *id.* at 1569, 40 U.S.P.Q.2d (BNA) at 1484.

159. See *id.*, 40 U.S.P.Q.2d (BNA) at 1490 (affirming judgment of invalidity of patent).

160. *Id.* at 1579, 40 U.S.P.Q.2d (BNA) at 1493.

161. See 35 U.S.C. § 102(a) (1994).

162. 79 F.3d 1572, 38 U.S.P.Q.2d (BNA) 1288 (Fed. Cir. 1996); see *infra* notes 224-32, 1055-63 and accompanying text.

163. See *Mahurkar v. C.R. Bard, Inc.*, 79 F.3d 1572, 1579, 38 U.S.P.Q.2d (BNA) 1288, 1292 (Fed. Cir. 1996).

Mahurkar filed suit against Bard for infringement of his patent claiming a double lumen catheter.¹⁶⁴ In its defense, Bard alleged invalidity of the Mahurkar patent as being anticipated by the Cook catalog under 35 U.S.C. § 102(a).¹⁶⁵ To rebut this assertion, Mahurkar offered corroborating evidence that he was working on the catheter prior to the catalog's publication date and acted from conception through the filing of the patent application in compliance with 35 U.S.C. § 102(g).¹⁶⁶ The Federal Circuit affirmed the district court's ruling that no reasonable jury could have found that Bard proved the Cook catalog was prior art.¹⁶⁷

2. *The public use bar*

Under 35 U.S.C. § 102(b), an inventor is entitled to a patent unless the invention was in public use in the U.S. more than one year prior to the filing date of the patent application.¹⁶⁸ Public use is supported by "any use of [the claimed] invention by a person other than the inventor who is under no limitation, restriction or obligation of secrecy to the inventor."¹⁶⁹ The Federal Circuit reviews questions of public use as a matter of law in light of the totality of the circumstances.¹⁷⁰

3. *The experimental use exception to public use*

An exception to invalidity for the public use exists where the inventor's public use constitutes experimental use of the invention.¹⁷¹ This exception is counterbalanced by the policies of "allowing the inventor a reasonable amount of time . . . to determine the potential economic value of a patent" on the one hand and "prohibiting the inventor from commercially exploiting the invention for a period greater than the statutorily prescribed time" on the other.¹⁷² A determination of public use is reviewed by the Federal Circuit as a

164. *See id.* at 1575, 38 U.S.P.Q.2d (BNA) at 1289.

165. *See id.* at 1576, 38 U.S.P.Q.2d (BNA) at 1289.

166. *See id.* at 1578, 38 U.S.P.Q.2d (BNA) at 1290.

167. *See id.* at 1579, 38 U.S.P.Q.2d (BNA) at 1291.

168. *See* 35 U.S.C. § 102(b) (1994).

169. *In re Smith*, 714 F.2d 1127, 1134, 218 U.S.P.Q. (BNA) 976, 983 (Fed. Cir. 1983).

170. *See* *Tone Bros., Inc. v. Sysco Corp.*, 28 F.3d 1192, 1198, 31 U.S.P.Q.2d (BNA) 1321, 1324 (Fed. Cir. 1994), *cert. denied*, 514 U.S. 1015 (1995).

171. *See* *City of Elizabeth v. Pavement Co.*, 97 U.S. 126, 135 (1877) ("[S]uch use is not a public use, within the meaning of the statute, so long as the inventor is engaged, in good faith, in testing its operation.").

172. *See* *Tone Bros., Inc.*, 28 F.3d at 1198, 31 U.S.P.Q.2d (BNA) at 1324-25.

matter of law.¹⁷³ In 1996, the Federal Circuit reviewed three cases involving the experimental use exception.

In *Lough v. Brunswick Corp.*,¹⁷⁴ the Federal Circuit refused to extend the experimental use exception to an inventor who failed to maintain control of the invention and obtain feedback regarding prototypes of his invention for more than one year prior to filing a patent application.¹⁷⁵ Lough had invented an improvement to an upper seal assembly used in Brunswick inboard/outboard boats to prevent the corrosion of the upper seal assembly.¹⁷⁶ In the spring of 1986, Lough made six usable upper seal assembly prototypes and installed them in his own boat and in other acquaintances' boats.¹⁷⁷ He charged nothing for these prototypes,¹⁷⁸ nor did he receive any comments about the operability of the prototypes.¹⁷⁹

Lough filed a patent application on June 6, 1988 for the upper seal assembly and a patent issued on July 18, 1989.¹⁸⁰ Lough then sued Brunswick for infringement of his patent and won a jury verdict of literal infringement.¹⁸¹ Brunswick filed a motion for judgment as a matter of law, arguing that the claimed invention was invalid because it had been in public use more than one year prior to the filing of the patent application.¹⁸² The district court denied the motion without comment and awarded damages to Lough.¹⁸³

In this case, the Federal Circuit reviewed the district court's decision. Specifically, the Federal Circuit considered whether Lough's installation of prototypes constituted an experimental use,¹⁸⁴ recognizing that individual inventors and small businesses may have less formal and casual experiments than larger corporations.¹⁸⁵ However, the court held that, at a minimum, inventors must maintain supervision and control over the prototypes during the alleged testing.¹⁸⁶ The court noted that Lough did not keep any records as

173. *Petrolite Corp. v. Baker Hughes, Inc.*, 96 F.3d 1423, 1425, 40 U.S.P.Q.2d (BNA) 1201, 1203 (Fed. Cir. 1996).

174. 86 F.3d 1113, 39 U.S.P.Q.2d (BNA) 1100 (Fed. Cir. 1996).

175. *Lough v. Brunswick Corp.*, 86 F.3d 1113, 1122, 39 U.S.P.Q.2d (BNA) 1100, 1102, 1105 (Fed. Cir. 1996).

176. *See id.*, 39 U.S.P.Q.2d (BNA) at 1102, 1105.

177. *See id.*, 39 U.S.P.Q.2d (BNA) at 1102, 1105.

178. *See id.*, 39 U.S.P.Q.2d (BNA) at 1102, 1105.

179. *See id.*, 39 U.S.P.Q.2d (BNA) at 1102, 1105.

180. *See id.*, 39 U.S.P.Q.2d (BNA) at 1102.

181. *See id.* at 1118, 39 U.S.P.Q.2d (BNA) at 1103.

182. *See id.*, 39 U.S.P.Q.2d (BNA) at 1103.

183. *See id.*, 39 U.S.P.Q.2d (BNA) at 1103.

184. *See id.* at 1120-21, 39 U.S.P.Q.2d (BNA) at 1104-05.

185. *See id.* at 1121, 39 U.S.P.Q.2d (BNA) at 1105.

186. *See id.* at 1122, 39 U.S.P.Q.2d (BNA) at 1105-06.

to the alleged testing,¹⁸⁷ did not inspect the seal assemblies after installation by other mechanics,¹⁸⁸ and did not inquire as to (or require follow-up analysis of) the operability of the prototypes subsequent to installation.¹⁸⁹ On these grounds, the Federal Circuit held that Lough did not maintain the requisite supervision and control over the seals during the alleged testing period.¹⁹⁰

The Federal Circuit, affording only minimal value to Lough's subjective testimony during trial, stated that the prototypes were not used for experimental purposes and in such a manner as to not have been likely to be seen in public, especially in light of the totality of the circumstances surrounding the alleged experimentation.¹⁹¹ These factors further supported the Federal Circuit's conclusion that the district court erred in denying Brunswick's motion in that the jury had no legal basis to conclude that Lough's use of the prototypes was experimental. Therefore, the use of the prototypes constituted public use and the patent was invalid under § 102(b).¹⁹²

In *Baxter International, Inc. v. Cobe Laboratories, Inc.*,¹⁹³ the Federal Circuit reviewed an inventor's defense against an allegation of public use by a third party under § 102(b).¹⁹⁴ The court analyzed whether the use by the third party was merely experimental, thereby negating the public use claim.¹⁹⁵ It found, however, that the use by the third party was not experimental, and further affirmed the district court's holding that "the experimental use exception is limited to the inventor or people working for the inventor or under the direction and control of the inventor"¹⁹⁶

Baxter owned a patent for a sealless centrifuge for separating blood from its components and brought a lawsuit against Cobe Laboratories for patent infringement.¹⁹⁷ In its defense, Cobe asserted that two researchers from the National Institute of Health ("NIH") developed and designed a sealless centrifuge for their own purposes more than

187. *See id.*, 39 U.S.P.Q.2d (BNA) at 1106.

188. *See id.*, 39 U.S.P.Q.2d (BNA) at 1106.

189. *See id.*, 39 U.S.P.Q.2d (BNA) at 1106.

190. *See id.*, 39 U.S.P.Q.2d (BNA) at 1106.

191. *See id.*, 39 U.S.P.Q.2d (BNA) at 1106.

192. *See id.*, 39 U.S.P.Q.2d (BNA) at 1107.

193. 88 F.3d 1054, 39 U.S.P.Q.2d (BNA) 1437 (Fed. Cir. 1996).

194. *See Baxter Int'l, Inc. v. Cobe Labs., Inc.*, 88 F.3d 1054, 1058, 39 U.S.P.Q.2d (BNA) 1437, 1439 (Fed. Cir. 1996).

195. *See id.* at 1057, 39 U.S.P.Q.2d (BNA) at 1439.

196. *Id.*, 39 U.S.P.Q.2d (BNA) at 1439.

197. *See id.*, 39 U.S.P.Q.2d (BNA) at 1438-39.

one year prior to Baxter's filing date.¹⁹⁸ Baxter countered that the researcher's use was experimental.¹⁹⁹

In reviewing the facts of the case, the court noted that the NIH researchers' laboratory was publicly accessible, the lab work was not subject to a confidentiality policy, the centrifuge designed and used by the researchers worked for its intended purpose, and there was a free flow of people into and out of the lab.²⁰⁰ Moreover, the court recognized that the researchers' refinement of the centrifuge for their own purposes did not negate its public use.²⁰¹ Finally, the court noted that for the experimental use exception to apply, the inventor must exercise direction and control over the invention.²⁰²

In view of the totality of the circumstances, the majority affirmed, stating:

[P]ublic testing before the critical date by a third party for his own unique purposes of an invention previously reduced to practice and obtained from someone other than the patentee, when such testing is independent of and not controlled by the patentee, is an invalidating public use, not an experimental use.²⁰³

In her dissent, Judge Newman contended that this decision permits public use by a third party that is unknown or unknowable to patentees, supporting the use of "secret prior art" to invalidate a patent under 35 U.S.C. § 102(b).²⁰⁴ The effects of this decision, according to Judge Newman, "produces a perpetual cloud on any issued patent, defeating the objective standards and policy considerations embodied in the § 102 definitions of prior art."²⁰⁵

After the *Lough* and *Baxter* decisions, the Federal Circuit returned to the question of experimental use in *Petrolite Corp. v. Baker Hughes Inc.*²⁰⁶ Petrolite acquired a patent for a hydrogen sulfide scavenger process useful in cold weather from Quaker Petroleum Chemicals Co. Inc. and sued Baker on the patent.²⁰⁷ The district court granted Baker's summary judgment motion for patent invalidity because the

198. See *id.* at 1059, 39 U.S.P.Q.2d (BNA) at 1440.

199. See *id.*, 39 U.S.P.Q.2d (BNA) at 1441.

200. See *id.* at 1058-59, 39 U.S.P.Q.2d (BNA) at 1440.

201. See *id.* at 1059, 39 U.S.P.Q.2d (BNA) at 1441.

202. See *id.* at 1060, 39 U.S.P.Q.2d (BNA) at 1442.

203. *Id.* at 1060-61, 39 U.S.P.Q.2d (BNA) at 1442.

204. See *id.* at 1061, 39 U.S.P.Q.2d (BNA) at 1442 (Newman, J., dissenting).

205. *Id.* at 1062, 39 U.S.P.Q.2d (BNA) at 1443 (Newman, J., dissenting).

206. 96 F.3d 1423, 40 U.S.P.Q. 2d (BNA) 1201 (Fed. Cir. 1996).

207. *Petrolite Corp. v. Baker Hughes Inc.*, 96 F.3d 1423, 1424, 40 U.S.P.Q. 2d (BNA) 1201, 1202 (Fed. Cir. 1996).

claimed invention was publicly used or sold more than one year prior to filing the patent application.²⁰⁸ The Federal Circuit affirmed.²⁰⁹

Petrolite argued that it had not publicly used the claimed invention because it had not been shown to work for its intended purpose and the uses and sales were experimental.²¹⁰ The Federal Circuit found that the objective evidence showed the invention worked for its intended purpose and in its intended environment. The Federal Circuit rejected the subjective evidence of the inventors that they were not completely satisfied the invention would work in cold temperatures.²¹¹

The Federal Circuit distinguished *Petrolite* from *Manville Sales Corp. v. Paramount Systems, Inc.*,²¹² where an experimental use was found because the inventor had not yet tested the invention in the winter season.²¹³ Here, however, Quaker had used its invention in its intended environment and found no objective evidence that the invention was ineffective in cold temperatures.²¹⁴

The Federal Circuit also considered the district court's finding that Quaker did not maintain exclusive control of the invention, an important but non-determinative factor in the experimental use question.²¹⁵ The evidence presented by Quaker were security measures required by a third party in analyzing the invention and not related to the experimental nature of the invention.²¹⁶ Moreover, there was no evidence that Quaker informed purchasers that the invention was still experimental.²¹⁷ The Federal Circuit, therefore, affirmed the decision that Quaker publicly used and sold the claimed invention prior to the statutory bar date.²¹⁸

4. Previous inventor

Section 102(g) prohibits an inventor from obtaining a patent if the claimed invention "was made in this country by another who had not

208. *See id.*, 40 U.S.P.Q. 2d (BNA) at 1203.

209. *See id.*, 40 U.S.P.Q. 2d (BNA) at 1202.

210. *See id.* at 1426, 40 U.S.P.Q. 2d (BNA) at 1204.

211. *See id.* at 1427, 40 U.S.P.Q. 2d (BNA) at 1205.

212. 917 F.2d 544, 16 U.S.P.Q.2d (BNA) 1587 (Fed. Cir. 1990).

213. *Manville Sales Corp. v. Paramount Sys., Inc.*, 917 F.2d 544, 550, 16 U.S.P.Q.2d (BNA) 1587, 1592 (Fed. Cir. 1990).

214. *Petrolite*, 96 F.3d at 1427, 40 U.S.P.Q.2d (BNA) at 1204-05.

215. *See id.*, 40 U.S.P.Q.2d (BNA) at 1205 (citing *U.S. Environmental Prods. Inc. v. Westall*, 911 F.2d 713, 717, 15 U.S.P.Q.2d (BNA) 1898, 1902 (Fed. Cir. 1990)).

216. *See id.* at 1428, 40 U.S.P.Q.2d (BNA) at 1205.

217. *See id.*, 40 U.S.P.Q.2d (BNA) at 1205.

218. *See id.*, 40 U.S.P.Q.2d (BNA) at 1206.

abandoned, suppressed or concealed it."²¹⁹ To establish priority of inventorship under 35 U.S.C. § 102(g),²²⁰ an applicant must show either that he (1) reduced the invention to practice²²¹ before the other inventor or (2) conceived²²² the invention before the other inventor, even though he reduced the invention to practice later, if coupled with a reasonably diligent effort to reduce the invention to practice from the date of conception until the reduction to practice is achieved.²²³

In *Mahurkar v. C.R. Bard, Inc.*,²²⁴ the Federal Circuit affirmed the district court's decision granting a patentee's motion for judgment as a matter of law that a catalog (published after the invention was conceived and reduced to practice) was not prior art.²²⁵ At trial, patentee Mahurkar testified that he conceived and began working on the claimed invention in 1979 and then constructed and tested prototypes from late 1980 through early 1981 in his kitchen.²²⁶ Noting that reduction to practice²²⁷ typically requires evidence of test results under conditions of actual use,²²⁸ the Federal Circuit observed that less complicated inventions do not demand such stringent testing.²²⁹ The court ruled that Mahurkar had showed

219. A person shall be entitled to a patent unless "(g) before the applicant's invention thereof the invention was made in this country by another who had not abandoned, suppressed, or concealed it." 35 U.S.C. § 102(g) (1994).

220. "[A]n applicant for a patent, or a patentee, may not establish a date of invention by reference to knowledge or use thereof, or other activity with respect thereto, in a foreign country other than a NAFTA country or a WTO member country, except as provided in sections 119 and 365 of this title." *Id.* § 104(a)(1).

221. An inventor can reduce an invention to practice by making a tangible embodiment of the invention and demonstrating a practical utility, or by filing a patent application. *See* *Popeil Bros., Inc. v. Schick Elec. Inc.*, 356 F. Supp. 240, 244, 176 U.S.P.Q. (BNA) 101, 102 (N.D. Ill. 1972) (noting ways an invention may be reduced to practice).

222. An inventor can establish that he conceived the invention by showing that he had in his mind a complete idea of the invention. *See* *Coleman v. Dines*, 754 F.2d 353, 224 U.S.P.Q. (BNA) 857 (Fed. Cir. 1985) (citing *Gunter v. Stream*, 573 F.2d 77, 80, 197 U.S.P.Q. (BNA) 482, 484 (C.C.P.A. 1978)).

223. "In determining priority of invention there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other." 35 U.S.C. § 102(g).

224. 79 F.3d 1572, 38 U.S.P.Q.2d (BNA) 1288 (Fed. Cir. 1996). *See supra* notes 162-67 and *infra* notes 1055-63 and accompanying text.

225. *See* *Mahurkar v. C.R. Bard, Inc.*, 79 F.3d 1572, 1577, 38 U.S.P.Q.2d (BNA) 1288, 1291 (Fed. Cir. 1996) ("Under section 102(a), a document is prior art only when published before the invention date.").

226. *See id.* at 1578, 38 U.S.P.Q.2d (BNA) at 1291.

227. *See id.*, 38 U.S.P.Q.2d (BNA) at 1291.

228. *See* *Gordon v. Hubbard*, 347 F.2d 1001, 1006, 146 U.S.P.Q. (BNA) 303, 307 (C.C.P.A. 1965) (noting that different testing methods may be required depending on nature of invention).

229. *See* *Mahurkar*, 79 F.3d at 1578, 38 U.S.P.Q.2d (BNA) at 1291.

reduction to practice adequately because his invention was less complicated.²³⁰

The Federal Circuit also found that Mahurkar exercised reasonable diligence from his conception date through the date when he filed his patent application.²³¹ Accordingly, the Federal Circuit concluded that no reasonable jury could have found clear and convincing evidence that the catalog was prior art because Mahurkar was the first inventor to conceive and reduce the invention to practice.²³²

C. Obviousness—35 U.S.C. § 103

The determination of obviousness under 35 U.S.C. § 103²³³ is based upon four factual inquiries.²³⁴ These inquiries are “(1) the scope and content of the prior art; (2) the differences between the claims and the prior art; (3) the level of ordinary skill in the pertinent art; and (4) secondary considerations, if any, of nonobviousness.”²³⁵ The secondary considerations, sometimes referred to as “objective evidence of nonobviousness,”²³⁶ include commercial success of the invention, satisfying a long-felt need, failure of others to find a solution to the problem, and copying of the invention by others.²³⁷

A suggestion or motivation to combine the teachings of a reference is required to support a *prima facie* case of obviousness.²³⁸ The suggestion to modify may be stated expressly from the references

230. See *Mahurkar*, 79 F.3d at 1578, 38 U.S.P.Q.2d (BNA) at 1292 (“Dr. Mahurkar adequately showed reduction to practice of his less complicated invention.”).

231. See *id.* at 1579, 38 U.S.P.Q.2d (BNA) at 1292.

232. See *id.*, 38 U.S.P.Q.2d (BNA) at 1292.

233. 35 U.S.C. § 103 (1994). Section 103 states:

A patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Id.

234. See *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 U.S.P.Q. (BNA) 459, 467 (1966) (noting that while the question of validity is one of law, the § 103 condition of nonobviousness leads to the factual inquiries discussed above).

235. See *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1050, 5 U.S.P.Q.2d (BNA) 1434, 1438 (Fed. Cir. 1988) (stating obviousness is a legal conclusion involving a determination of these four factors).

236. See *In re Huang*, 100 F.3d 135, 138, 40 U.S.P.Q.2d (BNA) 1685, 1689 (Fed. Cir. 1996); see also *infra* notes 249-59, 294-300, & 341-46 and accompanying text.

237. See *Huang*, 100 F.3d at 138, 40 U.S.P.Q.2d (BNA) at 1689; *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1566, 1 U.S.P.Q.2d (BNA) 1593, 1595 (Fed. Cir. 1987) (stating that these secondary considerations are facts to be taken into account in a § 103 determination).

238. See *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 U.S.P.Q. (BNA) 929, 932-33 (Fed. Cir. 1984) (asserting that under § 103, teachings of prior art to produce the claimed invention cannot be combined unless there is a suggestion or incentive to do so).

themselves²³⁹ or it may be implied.²⁴⁰ A suggestion may also come from the knowledge of those skilled in the art that certain disclosures in the references are known to be of special interest or importance in the particular field.²⁴¹ Further, the motivation may come from the nature of the problem to be solved.²⁴² In any event, the Federal Circuit reviews the question of obviousness under a *de novo* standard²⁴³ while it reviews the question of what a reference teaches is a question of fact under the clearly erroneous standard.²⁴⁴

I. Scope and content of the prior art

A finding of obviousness is premised on finding that each element of the claimed invention is either taught or suggested by the prior art.²⁴⁵ The Federal Circuit, for example, reviewed this issue in *Roton Barrier, Inc. v. Stanley Works*,²⁴⁶ in which it upheld the district court's finding that none of the prior art relied on by Stanley to invalidate the patent disclosed the claimed bearing means set forth in Roton's patent.²⁴⁷ Therefore, no finding of obviousness was warranted by the district court as a matter of law.²⁴⁸

Additionally, in *In re Huang*,²⁴⁹ the Federal Circuit noted the asserted differences between the prior art and the claimed invention, the latter being a shock absorbing grip comprising a polyurethane layer and a textile layer.²⁵⁰ The inventor asserted the importance

239. See, e.g., *In re Sernaker*, 702 F.2d 989, 994, 217 U.S.P.Q. (BNA) 1, 5 (Fed. Cir. 1983).

240. See *Cable Elec. Prods., Inc. v. Genmark, Inc.*, 770 F.2d 1015, 1025, 226 U.S.P.Q. (BNA) 881, 886 (Fed. Cir. 1985) (noting that a suggestion may be implied from what the combined teachings of references would have suggested).

241. See *Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573, 37 U.S.P.Q.2d (BNA) 1626, 1630 (Fed. Cir. 1996).

242. See *In re Rinehart*, 531 F.2d 1048, 1054, 189 U.S.P.Q. (BNA) 143, 149 (C.C.P.A. 1976) (considering problem to be solved in determining obviousness).

243. See *In re Kemps*, 97 F.3d 1427, 1429, 40 U.S.P.Q.2d (BNA) 1309, 1311 (Fed. Cir. 1996) ("The ultimate determination of obviousness is a question of law that we review *de novo* . . ."); *Jervis B. Webb Co. v. Southern Sys., Inc.*, 742 F.2d 1388, 1393, 222 U.S.P.Q. (BNA) 943, 946 (Fed. Cir. 1984) ("A determination of obviousness is a question of law that is subject to a full and independent review by an appellate court.").

244. See *Jervis B. Webb*, 742 F.2d at 1393, 222 U.S.P.Q. (BNA) at 946 (stating that a determination of obviousness under § 103 must be based on a set of factual inquiries which may not be overturned unless clearly erroneous).

245. See *Pro-Mold & Tool Co.*, 75 F.3d at 1573, 37 U.S.P.Q.2d (BNA) at 1629-30 (reasoning that an inquiry into the existence of a suggestion by the prior art is needed when the invention is different from what is described in one reference, but a combination with another reference would lead to what is claimed).

246. 79 F.3d 1112, 37 U.S.P.Q.2d (BNA) 1816 (Fed. Cir. 1996).

247. *Roton Barrier, Inc. v. Stanley Works*, 79 F.3d 1112, 1127-28, 37 U.S.P.Q.2d (BNA) 1816, 1828 (Fed. Cir. 1996).

248. See *id.*, 37 U.S.P.Q.2d (BNA) at 1828.

249. 100 F.3d 135, 40 U.S.P.Q.2d (BNA) 1685 (Fed. Cir. 1996).

250. See *In re Huang*, 100 F.3d 135, 138, 40 U.S.P.Q.2d (BNA) 1685, 1688-89 (Fed. Cir. 1996) (noting that inventor argued he discovered the fact that the polyurethane layer may be used to

of the rationale of the thickness of these layers as his contribution to the art.²⁵¹ However, the Court stated that the mere assertion that improvements over the prior art were important due to the reduced thickness of the textile layer to improve shock absorption were essentially irrelevant when the inventor's claims do not recite any limitation with regard to a decrease in the textile layer.²⁵² As a result, the Court ruled that there existed a prima facie case of obviousness because one of ordinary skill would have experimented with various thicknesses to achieve an optimum range.²⁵³

The Federal Circuit also noted the differences between the prior art and the claimed invention in its analysis in *In re Brouwer*, where an inventor claimed a process for the preparation of a novel, nonobvious compound.²⁵⁴ The examiner rejected the claims over Brouwer's own prior patent directed to the novel, nonobvious compound, and the Board of Patent Appeals and Inferences affirmed the rejection.²⁵⁵

The Federal Circuit reiterated the standard set forth in *In re Dillon*²⁵⁶—that method claims should be examined in light of all the relevant factors, “free from any presumed controlling effect of *Durden*,”²⁵⁷—and reversed the Board's finding.²⁵⁸ The court noted that “[w]ithout first knowing Brouwer's claimed process steps or the composition resulting from those steps, there is simply no suggestion in the references cited by the examiner to practice the claimed process.”²⁵⁹ Accordingly, the rejection was reversed.

2. *Requisite motivation*

In *B.F. Goodrich Co. v. Aircraft Braking Systems Corp.*,²⁶⁰ the Federal Circuit affirmed the district court's finding of invalidity under § 103.²⁶¹ B.F. Goodrich (“BFG”) owned a patent directed to a brake assembly having alternating thick and thin disks.²⁶² The patented

absorb shock while the prior art only used the layer for tackiness).

251. See *id.* at 139, 40 U.S.P.Q.2d (BNA) at 1688.

252. See *id.*, 40 U.S.P.Q.2d (BNA) at 1688.

253. See *id.* at 139, 40 U.S.P.Q.2d (BNA) at 1689.

254. See *In re Brouwer*, 77 F.3d 422, 424, 37 U.S.P.Q.2d (BNA) 1663, 1665 (Fed. Cir. 1996).

255. See *id.*, 37 U.S.P.Q.2d (BNA) at 1665.

256. 919 F.2d 688, 16 U.S.P.Q.2d (BNA) 1897 (Fed. Cir. 1990) (in banc).

257. *In re Dillon*, 919 F.2d 688, 695, 16 U.S.P.Q.2d (BNA) 1897, 1903 (Fed. Cir. 1990) (in banc).

258. See *Brouwer*, 77 F.3d at 426, 37 U.S.P.Q.2d (BNA) at 1666.

259. *Id.* at 425, 37 U.S.P.Q.2d (BNA) at 1666.

260. 72 F.3d 1577, 37 U.S.P.Q.2d (BNA) 1314 (Fed. Cir. 1996).

261. See *B.F. Goodrich Co. v. Aircraft Braking Sys. Corp.*, 72 F.3d 1577, 1579, 37 U.S.P.Q.2d (BNA) 1314, 1315 (Fed. Cir. 1996).

262. See *id.*, 37 U.S.P.Q.2d (BNA) at 1315.

brake assembly allowed only half of the disks to be replaced at each maintenance.²⁶³ Prior art brakes used disks of uniform thickness.²⁶⁴ BFG sued Aircraft Braking Systems Corp. and Allied-Signal ("ABS") on the patent.²⁶⁵ ABS counterclaimed asserting that the BFG patent was invalid under § 103 because the invention was obvious over a paper published by Dunlop, which ABS asserted was material to the patentability of the BFG patent.²⁶⁶ The district court held that certain claims of BFG's patent were invalid over the reference as being obvious under § 102(b).²⁶⁷

On appeal, the Federal Circuit dismissed BFG's arguments that there was no motivation or suggestion to modify the teachings of Dunlop and that the district court failed to give sufficient weight to the secondary considerations of commercial success, copying by others, long-felt need, and significant, unexpected advantages.²⁶⁸ The Federal Circuit, however, found the differences between the disclosure in the Dunlop paper and BFG's claimed invention to be minor, and that Dunlop provided the suggestion for an initial thick/thin carbon brake assembly.²⁶⁹ Moreover, the district court's review determined that the secondary considerations did not outweigh the strong teachings of the prior art.²⁷⁰ Thus, the Federal Circuit held that the district court did not err in its factual findings or in its finding of obviousness, and affirmed the district court's decision regarding obviousness.²⁷¹

The Federal Circuit further reviewed the issue of motivation to combine references in *Lamb-Weston, Inc. v. McCain Foods, Ltd.*²⁷² In *Lamb-Weston*, the Federal Circuit found that the extensive prior art disclosing the desirability of the potato products resulting from the patented product and the disclosure of these type of potato products provided the requisite motivation to render the Lamb-Weston process patent obvious and thus invalid.²⁷³

263. See *id.*, 37 U.S.P.Q.2d (BNA) at 1315.

264. See *id.*, 37 U.S.P.Q.2d (BNA) at 1315.

265. See *id.* at 1582, 37 U.S.P.Q.2d (BNA) at 1317-18.

266. See *id.*, 37 U.S.P.Q.2d (BNA) at 1317.

267. See *id.*, 37 U.S.P.Q.2d (BNA) at 1317.

268. See *id.* at 1583, 37 U.S.P.Q.2d (BNA) at 1318.

269. See *id.*, 37 U.S.P.Q.2d (BNA) at 1319.

270. See *id.*, 37 U.S.P.Q.2d (BNA) at 1319.

271. See *id.*, 37 U.S.P.Q.2d (BNA) at 1319.

272. 78 F.3d 540, 37 U.S.P.Q.2d (BNA) 1856 (Fed. Cir. 1996).

273. See *Lamb-Weston, Inc. v. McCain Foods, Ltd.*, 78 F.3d 540, 545, 37 U.S.P.Q.2d (BNA) 1856, 1860 (Fed. Cir. 1996).

Lamb-Weston owned a patent directed to a frozen, parfried, waffle-shaped potato product and sued McCain Foods, Ltd. on the patent.²⁷⁴ McCain counterclaimed for patent invalidity. During trial, Lamb-Weston conceded that waffle-cut potato products have been in the public market since the early 1900s.²⁷⁵ The district court also examined a prior art patent directed to a parfry process comprising parfrying and freezing potato slices similar to the Lamb-Weston process.²⁷⁶ The district court found motivation to combine the references for parfried frozen potato technology with the waffle fry slicing devices that were disclosed earlier to Lamb-Weston for licensing purposes.²⁷⁷

The Federal Circuit upheld the finding of obviousness, but did not review the appropriateness of the district court's use of the confidential waffle fry slicing devices disclosed to Lamb-Weston.²⁷⁸ Rather, the court held that the potato products resulting from these confidential products, which were not subject to the non-disclosure agreements, provided the requisite motivation to cook potato products of various shapes using a parfry process.²⁷⁹ Because the district court reached the correct conclusion of obviousness, its error in considering the confidential devices was harmless.²⁸⁰

Similarly, the Federal Circuit affirmed a finding of obviousness in *In re Kemps*,²⁸¹ wherein two references cited by the examiner taught the aspects of the claimed invention of removing old asphalt concrete containing a stone fraction using a two-step process.²⁸² The Federal Circuit also found that the references themselves produced the motivation to combine the references.²⁸³ The court also noted that the motivation to combine the references does not have to be identical to that of the applicant in order to establish obviousness.²⁸⁴

In *Sensonics, Inc. v. Aerosonic Corp.*,²⁸⁵ the Federal Circuit affirmed the district court's finding of validity on a patent directed to a device that provided advantages over the prior art, including easier manufac-

274. *See id.* at 542-43, 37 U.S.P.Q.2d (BNA) at 1857-58.

275. *See id.* at 543, 37 U.S.P.Q.2d (BNA) at 1858.

276. *See id.* at 544, 37 U.S.P.Q.2d (BNA) at 1858.

277. *See id.* at 544-45, 37 U.S.P.Q.2d (BNA) at 1858.

278. *See id.*, 37 U.S.P.Q.2d (BNA) at 1858-59.

279. *See id.*, 37 U.S.P.Q.2d (BNA) at 1859.

280. *See id.*, 37 U.S.P.Q.2d (BNA) at 1859-60.

281. 97 F.3d 1427, 40 U.S.P.Q.2d (BNA) 1309 (Fed. Cir. 1996).

282. *See In re Kemps*, 97 F.3d 1427, 1429-30, 40 U.S.P.Q.2d (BNA) 1309, 1311-12 (Fed. Cir. 1996).

283. *See id.* at 1430, 40 U.S.P.Q.2d (BNA) at 1311.

284. *See id.*, 40 U.S.P.Q.2d (BNA) at 1311.

285. 81 F.3d 1566, 38 U.S.P.Q.2d (BNA) 1551 (Fed. Cir. 1996).

ture, more accurate measurements, easier adjustments, and less expense.²⁸⁶ Sensonics owned the patent and sued Aerosonic for patent infringement.²⁸⁷

In its defense, Aerosonic asserted invalidity for obviousness over the inventor's earlier patent, asserting that the mere design change of an adjustable screw rendered the claimed invention obvious.²⁸⁸ The Federal Circuit found, however, the claimed device provided significant advantages and remedied deficiencies of prior devices, which supported the district court's finding of non-obviousness.²⁸⁹ Moreover, the Court noted that "simplicity does not establish obviousness; indeed, simplicity may represent a significant and unobvious advance over the complexity of prior devices."²⁹⁰

The Federal Circuit affirmed the lower court's holding that additional references cited by Aerosonic do not lead one of ordinary skill in the art to the claimed invention.²⁹¹ The court acknowledged that "[t]he invention must be viewed not after the blueprint has been drawn by the inventor, but as it would have been perceived in the state of the art that existed at the time the invention was made."²⁹² Thus, the appellate court affirmed the district court's finding of non-obviousness.

3. *Unexpected results*

The Federal Circuit has also reviewed cases in which the asserted improvements "produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art," rendering an otherwise obvious invention patentable.²⁹³

In *In re Huang*,²⁹⁴ the Federal Circuit affirmed the Board's finding that the use of a polyurethane layer and textile layer in a shock absorbing grip was taught by the reference, rendering the claimed

286. See *Sensonics, Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1569-70, 38 U.S.P.Q.2d (BNA) 1551, 1553-54 (Fed. Cir. 1996).

287. See *id.* at 1568, 38 U.S.P.Q.2d (BNA) at 1552-53.

288. See *id.* at 1569, 38 U.S.P.Q.2d (BNA) at 1553.

289. See *id.* at 1569-70, 38 U.S.P.Q.2d (BNA) at 1553-54.

290. *Id.* at 1570, 38 U.S.P.Q.2d (BNA) at 1554.

291. See *id.*, 38 U.S.P.Q.2d (BNA) at 1554.

292. *Id.*, 38 U.S.P.Q.2d (BNA) at 1554 (citing *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1138, 227 U.S.P.Q. (BNA) 543, 547 (Fed. Cir. 1985)).

293. See *In re Aller*, 220 F.2d 454, 456, 105 U.S.P.Q. (BNA) 233, 235 (C.C.P.A. 1955) (affirming decision of Board of Appeals rejecting patent for process for production of phenol, finding merely a difference in degree and not in kind from the reference process).

294. 100 F.3d 135, 40 U.S.P.Q.2d (BNA) 1635 (Fed. Cir. 1996); see *supra* notes 249-59 and accompanying text; *infra* notes 341-46 and accompanying text.

invention obvious.²⁹⁵ The inventor asserted, however, that the specific thickness ratios claimed in the application were not taught.²⁹⁶ In reviewing the obviousness rejection, the court acknowledged that the prior art taught the shock absorbing nature of the polyurethane.²⁹⁷ Based upon this teaching, the court held that one of ordinary skill in the art would logically infer that increasing this layer would increase the amount of shock absorption and would experiment with various ranges of thickness to obtain the optimum range.²⁹⁸ It may still have been patentable if the ranges produced a new and unexpected result which is different in kind and not merely in degree.²⁹⁹ The inventor did not contend that unexpected results were achieved by increasing the thickness of the polyurethane layer,³⁰⁰ however, and the prior art thus rendered the claimed invention obvious.

4. *Secondary considerations*

Secondary considerations, including commercial success, long-felt but unsolved need, and failure of others,³⁰¹ are based on factual inquiries and must be considered in determining obviousness.³⁰² The Federal Circuit reviewed the importance of these considerations in *Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*³⁰³ There, the Federal Circuit vacated the district court's grant of summary judgment holding a patent invalid under § 103.³⁰⁴ Pro-Mold manufactured and sold a patented card holder used for storing sports trading cards and sued Great Lakes Plastic on the patent.³⁰⁵ The district court granted Great Lakes' motion for summary judgment holding that the patent was invalid in view of the Squeeze Tite card holder and the Classic Line Thick and Thin card holders, while apparently discount-

295. See *In re Huang*, 100 F.3d 135, 138-39, 40 U.S.P.Q.2d (BNA) 1685, 1687-88 (Fed. Cir. 1996).

296. See *id.* at 138, 40 U.S.P.Q.2d (BNA) at 1688.

297. See *id.* at 139, 40 U.S.P.Q.2d (BNA) at 1688.

298. See *id.*, 40 U.S.P.Q.2d (BNA) at 1688-89.

299. See *id.*, 40 U.S.P.Q.2d (BNA) at 1688 (citing *In re Aller*, 220 F.2d 454, 456, 105 U.S.P.Q.2d 233, 235 (C.C.P.A. 1955)).

300. See *id.*, 40 U.S.P.Q.2d (BNA) at 1689.

301. See *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1050, 5 U.S.P.Q.2d (BNA) 1434, 1438 (Fed. Cir. 1988).

302. See *id.* at 1053, 5 U.S.P.Q.2d (BNA) at 1438.

303. 75 F.3d 1568, 37 U.S.P.Q.2d (BNA) 1626 (Fed. Cir. 1996).

304. See *Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1574, 37 U.S.P.Q.2d (BNA) 1626, 1627 (Fed. Cir. 1996).

305. See *id.* at 1571, 37 U.S.P.Q.2d (BNA) at 1628.

ing Pro-Mold's evidence of secondary considerations without explanation.³⁰⁶

In reviewing the grant of summary judgment *de novo*, the Federal Circuit was compelled to determine whether a "reasonable jury could return a verdict for the nonmoving party."³⁰⁷ The Federal Circuit confirmed that the combination of prior art references contained all the elements of the claimed invention as well as the requisite motivation to combine.³⁰⁸ However, the district court's dismissal of Pro-Mold's evidence of commercial success, which created a genuine issue of material fact precluding a grant of summary judgment, was an error as a matter of law.³⁰⁹ There were genuine issues of material fact as to whether there was a nexus between the commercial success of the invention and its patented features.³¹⁰

In reviewing the decision on summary judgment and drawing inferences in favor of the non-movant, Pro-Mold, the Federal Circuit reversed.³¹¹ The evidence of commercial success included card holders' sales, the testimony of the inventor attesting to the requisite nexus between the sales and the claimed invention, Pro-Mold's lack of experience in the field (further suggesting a nexus), a lack of market power, and affidavits from fourteen distributors attesting to the popularity of the card holders.³¹² As a result, the district court was to consider the secondary considerations, including Pro-Mold's evidence of commercial success, on remand.³¹³

306. *See id.*, 37 U.S.P.Q.2d (BNA) at 1628-29 (holding the patent invalid under 35 U.S.C. § 103 as obvious in light of the prior art and holding there was insufficient evidence of bad faith by Pro-Mold and thus dismissing Pro-Mold's patent claim and Great Lakes' unfair competition counterclaim).

307. *See id.* at 1572, 37 U.S.P.Q.2d (BNA) at 1629 (quoting *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986)).

308. *See id.* at 1572-73, 37 U.S.P.Q.2d (BNA) at 1629-30 (stating that Squeeze Tite Card Holder contained all elements of classic line thin except size and the motivation to combine arose from the size of the card intended to be enclosed).

309. *See id.* at 1573, 37 U.S.P.Q.2d (BNA) at 1630.

310. *See id.*, 37 U.S.P.Q.2d (BNA) at 1630.

311. *See id.* at 1573-74, 37 U.S.P.Q.2d (BNA) at 1630-31 (stating that Pro-Mold submitted evidence of commercial success to prove nonobviousness).

312. *See id.*, 37 U.S.P.Q.2d (BNA) at 1630-31. Pro-Mold sold approximately 3.2 million cardholders between June 1992 and issuance of patent in July 1993. Neugebauers, Sr.'s deposition testimony asserted Pro-Mold's high sales of the cardholder combined with lack of previous market experience suggests the patented cardholder lead to commercial success. Furthermore, fourteen sports card distributors stated the patented cardholder was extremely popular).

313. *See id.* at 1574, 37 U.S.P.Q.2d (BNA) at 1631 (stating it is the fact-finder's province to resolve factual disputes regarding the nexus between commercial success and patented features and to determine probative value of Pro-Mold's secondary evidence).

In *Litton Systems, Inc. v. Honeywell, Inc.*,³¹⁴ the Federal Circuit reversed the district court's grant of a motion for judgment as a matter of law, overturning the jury's verdict of infringement and validity of a reissue patent.³¹⁵ In *Litton*, the patent related to a method for using ion beams to coat a substrate with several layers of material to form an optical component.³¹⁶ The result is an almost perfectly reflective mirror, an essential part of sophisticated ring-laser gyroscopes (RLGs) used in navigational control of aircraft.³¹⁷

Louderback, a former employee of Litton, formed his own optical coating company, Ojai Research Inc., in 1981 and entered an exclusive consulting agreement with Litton.³¹⁸ This agreement authorized Louderback to practice the patented method, but prohibited Louderback from using the patented process to make RLG mirrors for anyone other than Litton or disclosing the method.³¹⁹ Litton also gained ownership of any inventions, developments, or discoveries that Louderback made on the licensed technology.³²⁰ While the consulting agreement was in force, Louderback improved and modified the Litton process, without disclosing these improvements to Litton.³²¹ Louderback also provided Honeywell with RLG mirrors made with the patented process.³²²

In 1990, Litton sued Honeywell, Louderback, and Ojai for infringement of its patent.³²³ A jury found that the asserted claims were infringed and not invalid.³²⁴ However, the district court granted Honeywell's renewed motion for judgment as a matter of law and held the claims obvious under 35 U.S.C. § 103.³²⁵

In reviewing the obviousness issue, the Federal Circuit emphasized that "the obviousness inquiry is highly fact-specific and not susceptible

314. 87 F.3d 1559, 39 U.S.P.Q.2d (BNA) 1321 (Fed. Cir. 1996), *vacated*, 117 S. Ct. 1240 (1997).

315. See *Litton Sys., Inc. v. Honeywell, Inc.*, 87 F.3d 1559, 1563, 39 U.S.P.Q.2d (BNA) 1321, 1322 (Fed. Cir. 1996), *vacated*, 117 S. Ct. 1240 (1997).

316. See *id.* at 1563, 39 U.S.P.Q.2d (BNA) at 1322.

317. See *id.* at 1563-64, 39 U.S.P.Q.2d (BNA) at 1322 (stating that without nearly perfect mirrors the RLG navigational device will not perform).

318. See *id.* at 1564, 39 U.S.P.Q.2d (BNA) at 1322 (stating that Louderback and Wei were designated as inventors of patented optical method with Litton as assignee and when Louderback left, he preserved his relationship with Litton regarding patented optical process).

319. See *id.*, 39 U.S.P.Q.2d (BNA) at 1322-23 (stating that Louderback's exclusive consulting contract lasted until Feb. 25, 1983).

320. See *id.*, 39 U.S.P.Q.2d (BNA) at 1323.

321. See *id.*, 39 U.S.P.Q.2d (BNA) at 1323 (stating that Louderback improved the Litton process and under the terms of the consulting agreement Litton owned the improvements and Louderback violated the agreement by withholding improvement from Litton).

322. See *id.*, 39 U.S.P.Q.2d (BNA) at 1323.

323. See *id.* at 1565, 39 U.S.P.Q.2d (BNA) at 1324.

324. See *id.* at 1565-66, 39 U.S.P.Q.2d (BNA) at 1324.

325. See *id.* at 1566, 39 U.S.P.Q.2d (BNA) at 1324.

to per se rules.³²⁶ The court then considered the scope and content of the prior art focusing on an article, the Molitor article, which the Patent Office did not consider during examination,³²⁷ and found substantial evidence that the Molitor article was not analogous art relevant to the problems of RLG mirrors.³²⁸ Moreover, the court looked to differences between the patented claims and the prior art and found that none of the references taught or suggested the limitations in the claimed method,³²⁹ or any evidence for combining the references.³³⁰ Finally, the Federal Circuit reviewed the objective indicia of nonobviousness and found evidence that Honeywell copied the process disclosed in Litton's patent.³³¹ The patented method was highly praised by others skilled in the art for its contribution to the pertinent technology,³³² which was confirmed by its highly lucrative commercial success.³³³ In fact, numerous other companies tried to meet the high demand for stable mirrors, but Litton was the only one to develop a successful method.³³⁴ The Federal Circuit found this evidence substantial enough to support the jury's verdict that the claims were not invalid for obviousness.³³⁵

The court also reviewed secondary considerations of nonobviousness in *Applied Materials, Inc. v. Advanced Semiconductor Materials America, Inc.*³³⁶ In this case, the Federal Circuit reiterated that the obviousness analysis must consider all the evidence together,³³⁷ including objective evidence of commercial success of the radiant energy process compared with the radio frequency process, the unexpected results including enhanced thermal stability and uniform deposition layers, and the evidence of unsuccessful attempts

326. *Id.* at 1567, 39 U.S.P.Q.2d (BNA) at 1325 (stating that court expressly recognized obviousness inquiry as highly fact-specific in *In re Ochiai*, 71 F.3d 1565, 1569, 37 U.S.P.Q.2d (BNA) 1127, 1131 (Fed. Cir. 1995)).

327. *See id.* at 1567-68, 39 U.S.P.Q.2d (BNA) at 1325. The Molitor article is a paper presented at the American Institute of Aeronautics and Astronautic International Electric Propulsion Conference in Nov. 1976, describing possible propulsion systems for space vehicles. *See id.*

328. *See id.* at 1568, 39 U.S.P.Q.2d (BNA) at 1326.

329. *See id.*, 39 U.S.P.Q.2d (BNA) at 1327.

330. *See id.* at 1569, 39 U.S.P.Q.2d (BNA) at 1327 (explaining that absence of suggestion to combine is critical in an obviousness determination).

331. *See id.*, 39 U.S.P.Q.2d (BNA) at 1327.

332. *See id.*, 39 U.S.P.Q.2d (BNA) at 1327.

333. *See id.*, 39 U.S.P.Q.2d (BNA) at 1327.

334. *See id.* at 1570, 39 U.S.P.Q.2d (BNA) at 1327.

335. *See id.*, 39 U.S.P.Q.2d (BNA) at 1327.

336. 98 F.3d 1563, 40 U.S.P.Q.2d (BNA) 1481 (Fed. Cir. 1996).

337. *See Applied Materials, Inc. v. Advanced Semiconductor Materials Am., Inc.*, 98 F.3d 1563, 1570, 40 U.S.P.Q.2d (BNA) 1481, 1486 (Fed. Cir. 1996); *supra* notes 149-60 and *infra* notes 425-34, 464-74 and accompanying text.

of other companies to achieve enhanced temperature uniformity and improved chemical deposition.³³⁸

In addition, the appellate court further considered the scope of the claims as compared to the objective evidence holding that a patentee need not show that all possible embodiments of the claimed invention were successfully commercialized to rely on evidence of commercial success.³³⁹ Therefore, the Federal Circuit affirmed the district court's finding that Applied Material's patent was not invalid for obviousness.³⁴⁰

In *In re Huang*, the Federal Circuit reviewed an inventor's attempt to overcome an obviousness rejection by providing a personal affidavit.³⁴¹ The affidavit alleged that the claimed invention was commercially successful because several hundred thousand units were sold.³⁴² The court noted, however, that evidence based solely on the number of units sold is a weak showing of commercial success.³⁴³ In addition, the court held that, the nexus between the sales and the merits of the claimed invention had not been established, even if commercial success were demonstrated.³⁴⁴ Indeed, the Federal Circuit reiterated the rule of commercial success: "success is relevant in the obviousness context only if there is proof that the sales were a direct result of the unique characteristics of the claimed invention—as opposed to other economic and commercial factors unrelated to the quality of the patented subject matter."³⁴⁵ Since the nexus had not been proven, the Federal Circuit upheld the Board's finding of obviousness of the claimed invention.³⁴⁶

D. Design Patents—35 U.S.C. § 171

Under 35 U.S.C. § 171, a patent is available for a "new, original and ornamental design for an article."³⁴⁷ Design patents are subject to the same conditions of patentability as patents for inventions also known as "utility patents."³⁴⁸

338. See *id.* at 1569-70, 40 U.S.P.Q.2d (BNA) at 1486.

339. See *id.* at 1570, 40 U.S.P.Q.2d (BNA) at 1486.

340. See *id.*, 40 U.S.P.Q.2d (BNA) at 1486.

341. See *In re Huang*, 100 F.3d 135, 137, 40 U.S.P.Q.2d (BNA) 1685, 1687-89 (Fed. Cir. 1996); see also *supra* notes 249-59, 294-300 and accompanying text.

342. See *id.* at 137, 40 U.S.P.Q.2d (BNA) at 1687.

343. See *id.* at 140, 40 U.S.P.Q.2d (BNA) at 1689; see also *Cable Elec. Prods., Inc. v. Genmark, Inc.*, 770 F.2d 1015, 1026-27, 226 U.S.P.Q. (BNA) 881, 888 (Fed. Cir. 1985).

344. See *Huang*, 100 F.3d at 140, 40 U.S.P.Q.2d (BNA) at 1689.

345. *Id.*, 40 U.S.P.Q.2d (BNA) at 1689 (internal citations omitted).

346. See *id.*, 40 U.S.P.Q.2d (BNA) at 1689.

347. 35 U.S.C. § 171 (1994).

348. See *L.A. Gear, Inc. v. Thom McAn Shoe Co.*, 988 F.2d 1117, 1124-25, 25 U.S.P.Q.2d (BNA) 1913, 1917 (Fed. Cir. 1993).

1. *Ornamental vs. utility designs*

A design patent must claim a design that is ornamental or aesthetically pleasing and that is not dictated by the function of the article of manufacture alone.³⁴⁹ Alternative designs for the article of manufacture imply that a design is not dictated solely by its function.³⁵⁰

In *Best Lock Corp. v. Ilco Unican Corp.*,³⁵¹ the Federal Circuit affirmed the district court's holding that Best Lock's design patent was invalid.³⁵² Best Lock owned a design patent for a key blade shape.³⁵³ Ilco, a manufacturer of duplicate and replacement keys for existing locks, copied Best Lock's patented key blade shape.³⁵⁴ Best Lock sued Ilco for infringement and Ilco counterclaimed, seeking a declaratory judgment of invalidity and noninfringement.³⁵⁵ The district court held that the design patent was invalid because the key blades were not of ornamental concern to the buyer or the user of the key and because the shape of the key blade was dictated solely by its function.³⁵⁶

On appeal, the Federal Circuit disagreed with Best Lock's assertions that although a particular key and its corresponding lock must mate to operate the lock, choice of any design is arbitrary, and therefore not dictated solely by function.³⁵⁷ The court noted that it was undisputed that the key blade must be designed as such to perform its intended function.³⁵⁸ For example, creating a differently designed key blade would fail to fit into the corresponding lock.³⁵⁹

In addition, the variety of possible shapes of keys and locks did not alter the decision of the Federal Circuit.³⁶⁰ The design patent claimed only the key and not the combination of the lock and key set; because the design patent was limited only to the key blade, the blade

349. See *In re Carletti*, 328 F.2d 1020, 1022, 140 U.S.P.Q. (BNA) 653, 654 (C.C.P.A. 1964).

350. See *L.A. Gear*, 988 F.2d at 1123, 25 U.S.P.Q.2d (BNA) at 1917 (explaining that if there are several ways to achieve the function of an article, a particular design is more likely to be seen as ornamental rather than functional).

351. 94 F.3d 1563, 40 U.S.P.Q.2d (BNA) 1048 (Fed. Cir. 1996).

352. See *Best Lock Corp. v. Ilco Unican Corp.*, 94 F.3d 1563, 1564, 40 U.S.P.Q.2d (BNA) 1048 (Fed. Cir. 1996).

353. See *id.* at 1565, 40 U.S.P.Q.2d (BNA) at 1048. A key blade is the portion of a key which is inserted into a lock and key blades are originally blank blades that fit into certain types of locks which once cut to the combination of an individual lock will operate the lock. See *id.*

354. See *id.*, 40 U.S.P.Q.2d (BNA) at 1049.

355. See *id.*, 40 U.S.P.Q.2d (BNA) at 1049.

356. See *id.*, 40 U.S.P.Q.2d (BNA) at 1049.

357. See *id.* at 1566, 40 U.S.P.Q.2d (BNA) at 1048.

358. See *id.*, 40 U.S.P.Q.2d (BNA) at 1050.

359. See *id.*, 40 U.S.P.Q.2d (BNA) at 1050.

360. See *id.*, 40 U.S.P.Q.2d (BNA) at 1050.

must be designed according to that described in the design patent in order to perform its intended function.³⁶¹ The existence of a separate patent on the keyway did not affect the Federal Circuit's analysis since the validity of a patent must be evaluated based on what is claimed, and not on the totality of claims of multiple patents.³⁶²

Thus, the Federal Circuit affirmed the district court's finding that the claimed design was solely dictated by its function and therefore, invalid under 35 U.S.C. § 171 for failing to satisfy the ornamentality requirement.³⁶³

2. *Obviousness of designs*

For design patents, the central obviousness inquiry is whether the design would have been obvious to a "designer of ordinary capability who designs articles of the type presented in the application."³⁶⁴ This inquiry focuses on the visual impression of the claimed design as a whole and not on selected individual features.³⁶⁵ A basic design reference must describe basically the same design characteristics of the claimed design and may be supplemented by secondary references in determining obviousness.³⁶⁶ Of course, there must be some suggestion in the prior art to modify the basic design with features of the secondary references.³⁶⁷

In *In re Borden*,³⁶⁸ the Federal Circuit reviewed an ornamental design for a twin neck dispensing container for obviousness.³⁶⁹ The court affirmed the Board of Patent Appeals and Interferences' finding that the examiner's rejection of the claimed design was unpatentable over a combination of references.³⁷⁰ The court noted the Board's finding that the secondary references were so closely related to the design in the primary reference to suggest modifying the primary

361. *See id.*, 40 U.S.P.Q.2d (BNA) at 1050.

362. *See id.*, 40 U.S.P.Q.2d (BNA) at 1050.

363. *See id.* at 1567, 40 U.S.P.Q.2d (BNA) at 1050. Judge Newman's dissent, however, noted that "the fact that the key blade is the mate of a keyway does not convert the arbitrary key profile into a primarily functional design. It is not the design of the key profile that is functional, but the key itself." *Id.* at 1569, 40 U.S.P.Q.2d (BNA) at 1052.

364. *Avia Group Int'l, Inc. v. L.A. Gear Cal., Inc.*, 853 F.2d 1557, 1564, 7 U.S.P.Q.2d (BNA) 1548, 1554 (Fed. Cir. 1988) (quoting *In re Nalbandian*, 661 F.2d 1214, 1216, 211 U.S.P.Q. (BNA) 782, 784 (C.C.P.A. 1981)).

365. *See Petersen Mfg. Co. v. Central Purchasing, Inc.*, 740 F.2d 1541, 1548-49, 222 U.S.P.Q. (BNA) 562, 567-68 (Fed. Cir. 1984).

366. *See In re Rosen*, 673 F.2d 388, 390, 213 U.S.P.Q. (BNA) 347, 349-50 (C.C.P.A. 1982).

367. *See id.* at 391, 213 U.S.P.Q. (BNA) at 350.

368. 90 F.3d 1570, 39 U.S.P.Q.2d (BNA) 1524 (Fed. Cir. 1996).

369. *See In re Borden*, 90 F.3d 1570, 1574-76, 39 U.S.P.Q.2d (BNA) 1524, 1526-27 (Fed. Cir. 1996).

370. *See id.* at 1575, 39 U.S.P.Q.2d (BNA) at 1527.

design to make it identical to the Borden design.³⁷¹ Accordingly, upon *de novo* review of the prior art's teachings, the Federal Circuit saw no clear error in finding an implicit suggestion to combine references in the prior art, rendering Borden's design unpatentable for obviousness.³⁷²

In *Durling v. Spectrum Furniture Co.*,³⁷³ the Federal Circuit reversed the district court's holding of invalidity for obviousness.³⁷⁴ The Federal Circuit reviewed whether the design for a sectional sofa group was obvious over references not considered by the examiner during prosecution.³⁷⁵ Durling obtained a patent for the sofa design and sued Spectrum for infringement of the patent.³⁷⁶ The district court held that, because the differences between the prior art and Durling's patent were insignificant, and Durling had not established commercial success relating to the patented design, the patent was invalid as obvious under 35 U.S.C. § 103.³⁷⁷

In reviewing the district court's decision, the Federal Circuit noted that the initial step for obviousness is the search of a primary reference, which (1) discerns the correct visual impression by the claimed design, and (2) creates "basically the same" visual impression.³⁷⁸ Moreover, the Federal Circuit stated that the "focus in a design patent obviousness inquiry should be on visual appearances rather than design concepts."³⁷⁹

Applying these rules to the obviousness question, the Federal Circuit found that the district court erred in construing Durling's claimed design too broadly,³⁸⁰ as it had considered only the general concept of a sectional sofa with integrated end tables. A proper construction of the claims, the Federal Circuit noted, would focus on the visual impressions created by the design.³⁸¹ The Federal Circuit then pointed out the distinctions between the design of the claimed invention and the prior art, holding that significant differences precluded a finding of obviousness.³⁸² Based upon this analysis, the

371. *See id.* at 1575-76, 39 U.S.P.Q.2d (BNA) at 1527.

372. *See id.* at 1576, 39 U.S.P.Q.2d (BNA) at 1527.

373. 101 F.3d 100, 40 U.S.P.Q.2d (BNA) 1788 (Fed. Cir. 1996).

374. *See Durling v. Spectrum Furniture Co.*, 101 F.3d 100, 101, 40 U.S.P.Q.2d (BNA) 1788, 1789 (Fed. Cir. 1996).

375. *See id.* at 102, 40 U.S.P.Q.2d (BNA) at 1789.

376. *See id.*, 40 U.S.P.Q.2d (BNA) at 1789.

377. *See id.*, 40 U.S.P.Q.2d (BNA) at 1789-90.

378. *See id.* at 103, 40 U.S.P.Q.2d (BNA) at 1790.

379. *Id.* at 104, 40 U.S.P.Q.2d (BNA) at 1791.

380. *See id.* at 103-04, 40 U.S.P.Q.2d (BNA) at 1791.

381. *See id.* at 104, 40 U.S.P.Q.2d (BNA) at 1791.

382. *See id.*, 40 U.S.P.Q.2d (BNA) at 1791, *rev'g* 1995 U.S. Dist. LEXIS 16848 (M.D.N.C. Oct. 25, 1995).

Federal Circuit held that no primary reference existed and therefore reversed the district court's finding of invalidity.³⁸³

E. Disclosure—35 U.S.C. § 112

1. Written description under ¶ 1

When drafting a patent application, the practitioner must adequately describe in the specification the claimed subject matter.³⁸⁴ The specification need not utilize any particular form to describe the claimed subject matter, but it must convey with reasonable clarity to the skilled artisan that, as of the filing date, the inventor was in possession of the invention.³⁸⁵ The written description requirement of 35 U.S.C. § 112, ¶ 1, often is a concern when claims not presented in the original application are later presented.³⁸⁶

The Federal Circuit considered the written description requirement in *In re Alton*,³⁸⁷ holding that the Patent Office failed to show that the claims were not adequately described in the specification and therefore vacated and remanded the Board's rejection of claims under paragraph one of 35 U.S.C. § 112.³⁸⁸ The Board had reversed the examiner's rejection of the claims under 35 U.S.C. §§ 102 and 103, but rejected *sua sponte* the claims under the written description requirement of 35 U.S.C. § 112.³⁸⁹ The applicant then submitted a declaration providing evidence of what a person with ordinary skill in the art would have understood the specification to have disclosed.³⁹⁰ The examiner maintained the rejection under paragraph one of 35 U.S.C. § 112, stating that little weight was given to an opinion declaration on the legal question at issue.³⁹¹ The Board upheld this rejection.³⁹²

383. See *id.* at 104-05, 40 U.S.P.Q.2d (BNA) at 1791.

384. The written description requirement is set forth in 35 U.S.C. § 112, ¶ 1: "The specification shall contain a written description of the invention, and of the manner and process of making and using it . . ." 35 U.S.C. § 112, ¶ 1 (1994).

385. See *Vas-Cath, Inc. v Mahurkar*, 935 F.2d 1555, 19 U.S.P.Q.2d (BNA) 1111 (Fed. Cir. 1991) (reversing district court's decision that patents did not comply with requirements of United States Code); *In re Wertheim*, 541 F.2d 257, 262, 191 U.S.P.Q. (BNA) 90, 96 (C.C.P.A. 1976) (noting that function of written description requirement is to ensure that inventor had possession as of date of application).

386. See *In re Wright*, 866 F.2d 422, 424, 9 U.S.P.Q.2d (BNA) 1649 (Fed. Cir. 1989).

387. 76 F.3d 1168, 1170, 37 U.S.P.Q.2d (BNA) 1578, 1579 (Fed. Cir. 1996).

388. See *In re Alton*, 76 F.3d 1168, 1170, 37 U.S.P.Q.2d (BNA) 1578, 1579 (Fed. Cir. 1996).

389. See *id.* at 1171, 37 U.S.P.Q.2d (BNA) at 1580.

390. See *id.*, 37 U.S.P.Q.2d (BNA) at 1580. The appellant may submit this declaration upon rejection by the Board of Patent Appeals pursuant to 37 C.F.R. § 1.196(b) (1994). See *id.* at 1171 n.4, 37 U.S.P.Q.2d (BNA) at 1580 n.4.

391. See *id.* at 1171, 37 U.S.P.Q.2d (BNA) at 1580.

392. See *id.*, 37 U.S.P.Q.2d (BNA) at 1580.

The Federal Circuit held that the Patent Office erred in viewing the question of whether the specification adequately describes the claimed subject matter as a question of law.³⁹³ The court held that it is a question of fact, not law.³⁹⁴ Moreover, the Federal Circuit found the submitted declaration, even though it used the words "[i]t is my opinion," was a factual declaration offering evidence to show the claimed invention had support in the specification.³⁹⁵

The Federal Circuit also held that the Patent Office erred by summarily dismissing the declaration without adequately explaining why it failed to rebut the Board's rejection.³⁹⁶ The declaration addressed why the claimed subject matter, although not identical to the description in the specification, was in the inventor's possession. Therefore, to meet its burden of proof, the Patent Office had to provide reasons why the skilled artisan would not consider the description sufficient;³⁹⁷ conclusory statements by the Patent Office explaining why the declaration did not show that the skilled artisan would realize that the inventor had possession of the claimed subject matter were insufficient.³⁹⁸

In *Fujikawa v. Wattanasin*,³⁹⁹ the Federal Circuit also relied on the written description requirement of 35 U.S.C. § 112 to affirm the Board's denial of Fujikawa's motion, which sought to add a sub-genus count to an interference on the ground that Wattanasin's disclosure did not sufficiently describe the proposed sub-genus count.⁴⁰⁰

The Federal Circuit rejected the argument that the proposed count was disclosed *ipsis verbis* in Wattanasin's application.⁴⁰¹ Although Wattanasin disclosed a specie within the scope of the proposed sub-

393. See *id.* at 1174, 37 U.S.P.Q.2d (BNA) at 1580.

394. See *id.*, 37 U.S.P.Q.2d (BNA) at 1580. The court noted that the declaration offered factual evidence in an attempt to explain why one of ordinary skill in the art would have understood the specification. They also recognized that the phrase "it is my opinion" as a preface to what the skilled artisan would have known, does not transform the factual statements contained in the declaration into opinion testimony. See *id.*, 37 U.S.P.Q.2d (BNA) at 1582.

395. See *id.*, 37 U.S.P.Q.2d (BNA) at 1581-82.

396. See *id.* at 1175, 37 U.S.P.Q.2d (BNA) at 1583 (holding that examiner, or Board, has burden of showing *prima facie* unpatentability).

397. See *id.*, 37 U.S.P.Q.2d (BNA) at 1583 (noting that burden changes depending on what appellant asserts); see also *In re Wertheim*, 541 F.2d 257, 264, 191 U.S.P.Q. (BNA) 90, 98 (C.C.P.A. 1976) (acknowledging Patent Office has initial burden of proof and holding Patent Office met this burden as pertains to one claim on appellant's application).

398. See *Alton*, 76 F.3d at 1176, 37 U.S.P.Q.2d (BNA) at 1584.

399. 93 F.3d 1559, 39 U.S.P.Q.2d (BNA) 1895 (Fed. Cir. 1996); see *infra* notes 546-69 and accompanying text.

400. See *Fujikawa v. Wattanasin*, 93 F.3d 1559, 1569-70, 39 U.S.P.Q.2d (BNA) 1895, 1904 (Fed. Cir. 1996) (reviewing Board's decision under clear error standard and finding its decision was not "clearly erroneous").

401. See *id.* at 1571, 39 U.S.P.Q.2d (BNA) at 1905 (rejecting Wattanasin's argument because his disclosure would not lead "those skilled in the art" to a particular species).

genus, the court reasoned that disclosing a single specie did not amount to *ipsis verbis* support for every specie within the scope of sub-genus.⁴⁰² Under the circumstances, “such a disclosure would not ‘reasonably lead’ those skilled in the art to any particular species.”⁴⁰³

While agreeing that *ipsis verbis* disclosure was not necessary to satisfy the written description requirement, the Federal Circuit still found Wattanasin’s disclosure insufficient.⁴⁰⁴ The court ruled that unless an application contained “blazemarks” to indicate what compounds might be of special interest, “simply describing a large genus of compounds” will not be sufficient “to satisfy the written description requirement as to particular species or sub-genuses.”⁴⁰⁵ Modifying the “trailblazing” metaphor of *In re Ruschig*,⁴⁰⁶ the Federal Circuit concluded that Wattanasin’s preferred embodiments blazed a trail through the forest near Fujikawa’s proposed tree, but did not direct the skilled artisan to the proposed tree by teaching the point at which the skilled artisan should deviate from the trail to find the proposed tree.⁴⁰⁷

2. Enablement under ¶ 1

For claims to be patentable, they must also pass muster under the enablement requirement contained in paragraph one of 35 U.S.C. § 112.⁴⁰⁸ The enablement requirement assures that the inventor discloses sufficient information about the claimed invention to allow the skilled artisan, relying on the specification and the knowledge in the art, to make and use the invention without undue experimentation. *Some* experimentation is acceptable; the issue is whether the

402. See *id.*, 39 U.S.P.Q.2d (BNA) at 1905.

403. *Id.*, 39 U.S.P.Q.2d (BNA) at 1905.

404. See *id.*, 39 U.S.P.Q.2d (BNA) at 1905.

405. *Id.*, 39 U.S.P.Q.2d (BNA) at 1905.

406. 379 F.2d 990, 154 U.S.P.Q. (BNA) 118 (Fed. Cir. 1967). In discussing whether some of the claimed compounds could be found using “guides” in the specification, the court said:

It is an old custom in the woods to mark trails by making blaze marks on the trees.

It is no help in finding a trail or in finding one’s way through the woods where the trails have disappeared—or have not been made, which is more like the case here—to be confronted simply by a large number of unmarked trees. . . . We are looking for blaze marks which single out particular trees. We see none.

In re Ruschig, 379 F.2d 990, 994-95, 154 U.S.P.Q.2d (BNA) 118, 122 (1967).

407. See *Fujikawa*, 93 F.3d at 1571, 39 U.S.P.Q.2d (BNA) at 1905 (affirming Board’s denial of *Fujikawa*’s motion).

408. 35 U.S.C. § 112, ¶ 1 (1994) (“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”).

amount of experimentation amounts to *undue* experimentation.⁴⁰⁹ It is well-settled since *In re Fisher*⁴¹⁰ that the scope of a patent claim must bear a reasonable correlation to the scope of enablement provided by the specification; otherwise, practicing the broad scope of the claimed invention would require undue experimentation.⁴¹¹

The question of enablement was considered in *PPG Industries, Inc. v. Guardian Industries Corp.*,⁴¹² where the Federal Circuit affirmed the district court's finding that broad generic claims to a solar control glass were not invalid under 35 U.S.C. § 112, ¶ 1, even though some experimentation was necessary.⁴¹³

During development, PPG used flawed testing equipment software that reported the transmittance of the claimed invention at thirty-one percent, when the actual value was somewhat lower, specifically, at twenty-eight percent.⁴¹⁴ At trial, Guardian asserted that PPG's patent claims must be held invalid as non-enabled for those embodiments with an actual transmittance of less than thirty-one percent, but for which PPG's flawed software would have reported as having transmittance of more than thirty-one percent.⁴¹⁵

The Federal Circuit was unpersuaded that the calculation error and disclosure in the specification violated the enablement requirement.⁴¹⁶ Based on the district court's finding that PPG's calculation error was "harmless, inconsequential, and easily detectable by anyone who was skilled in the art,"⁴¹⁷ the Federal Circuit concluded that the district court found that PPG's error would be discovered without

409. See *In re Wands*, 858 F.2d 731, 737, 8 U.S.P.Q.2d (BNA) 1400, 1404 (Fed. Cir. 1988) (defining undue experimentation based on standard of reasonableness, "having due regard for the nature of the invention and the state of the art").

410. 427 F.2d 833, 166 U.S.P.Q. (BNA) 18 (C.C.P.A. 1970).

411. See *In re Vaeck*, 947 F.2d 488, 496, 20 U.S.P.Q.2d (BNA) 1438 (Fed. Cir. 1991) (holding that "limited disclosure" by applicants did not enable "one of ordinary skill to make and use the invention . . . without undue experimentation").

412. 75 F.3d 1558, 37 U.S.P.Q.2d (BNA) 1618 (Fed. Cir. 1996); see *infra* notes 493-501, 998-1002 and accompanying text.

413. See *PPG Indus., Inc. v. Guardian Indus. Corp.*, 75 F.3d 1558, 1564-65, 37 U.S.P.Q.2d (BNA) 1618, 1623-24 (Fed. Cir. 1996).

414. See *id.* at 1561, 37 U.S.P.Q.2d (BNA) at 1621.

415. See *id.* at 1562, 37 U.S.P.Q.2d (BNA) at 1621. Guardian pointed to a disclosure in PPG's specification suggesting that it would be necessary to employ a particularly low redox ratio (the ratio of iron in the ferrous state to total iron) to manufacture a product meeting the transmittance limitation without cerium present. See *id.*, 37 U.S.P.Q.2d (BNA) at 1621. Based on this disclosure, Guardian alleged that it would be necessary to use more iron and a lower redox ratio to make the claimed invention with an actual transmittance of 31%—a practice that Guardian argued was not enabled in the patent. See *id.* at 1564, 37 U.S.P.Q.2d (BNA) at 1622-23.

416. See *id.* at 1564, 37 U.S.P.Q.2d (BNA) at 1623 (noting that "careful reader of the specification" might notice the calculation).

417. *Id.*, 37 U.S.P.Q.2d (BNA) at 1623.

undue experimentation and the enablement requirement was satisfied.⁴¹⁸

In reviewing the district court's decision, the Federal Circuit held that "where the specification provide[d] guidance in selecting the operating parameters that would yield the claimed result," the experimentation required to make a particular embodiment was not "undue."⁴¹⁹ Even with the software error in the specification, the court observed that it was clear that the claimed composition could be made and the specification indicated to the skilled artisan how to maintain low transmittance while minimizing cerium content.⁴²⁰ Thus, considerable direction and guidance on how to practice the invention existed and the claims were enabled.⁴²¹

The Federal Circuit distinguished its decision from those in which it had refused to find broad generic claims enabled by specifications disclosing only one or a few embodiments.⁴²² The court held such broad generic claims were invalid because they did not "demonstrate with reasonable specificity how to make and use other potential embodiments across the full scope of the claim."⁴²³

Enablement was also addressed in *Applied Materials, Inc. v. Advanced Semiconductor Materials America, Inc.*,⁴²⁴ where a divided panel of the Federal Circuit affirmed the district court's conclusion of patent invalidity.⁴²⁵

The claimed invention was directed to a method for heating single crystal with "substantially no crystallographic slip."⁴²⁶ The '313 patent, a continuation-in-part (CIP) application of the '712 patent, added new disclosure about how to avoid crystallographic slip.⁴²⁷

418. See *id.*, 37 U.S.P.Q.2d (BNA) at 1623.

419. *Id.* at 1565, 37 U.S.P.Q.2d (BNA) at 1624 (quoting *In re Colianni*, 561 F.2d 220, 224, 195 U.S.P.Q. (BNA) 150, 153 (C.C.P.A. 1977) (Miller, J., concurring)).

420. See *id.* at 1564-65, 37 U.S.P.Q.2d (BNA) at 1623-24.

421. See *id.* at 1565, 37 U.S.P.Q.2d (BNA) at 1624 (affirming district court's decision that patent could be considered validly enabled).

422. See *id.* at 1564, 37 U.S.P.Q.2d (BNA) at 1623-24 (finding that specifications at issue disclosed embodiments and that undue experimentation "is a matter of degree").

423. See *id.*, 37 U.S.P.Q.2d (BNA) at 1623; see also *In re Goodman*, 11 F.3d 1046, 1050-52, 29 U.S.P.Q.2d (BNA) 2010, 2013-15 (Fed. Cir. 1993) (holding that patent was not enabled where specification listed only one example of production); *In re Vaeck*, 947 F.2d 488, 496, 20 U.S.P.Q.2d (BNA) 1438, 1455 (Fed. Cir. 1991) (holding that patent applications must provide "sufficient disclosure, either through illustrative examples or terminology"); *Amgen, Inc. v. Chugai Pharm. Co.*, 927 F.2d 1200, 1212-14, 18 U.S.P.Q.2d (BNA) 1016, 1026-28 (Fed. Cir. 1991) (holding disclosure inadequate for enablement).

424. 98 F.3d 1563, 40 U.S.P.Q.2d (BNA) 1481 (Fed. Cir. 1996).

425. See *Applied Materials, Inc. v. Advanced Semiconductor Materials Am., Inc.*, 98 F.3d 1563, 1566, 40 U.S.P.Q.2d (BNA) 1481, 1482 (Fed. Cir. 1996); see also *supra* notes 149-60, 337-40 and *infra* notes 464-74 and accompanying text.

426. *Id.* at 1576, 40 U.S.P.Q.2d (BNA) at 1491 (Archer, C.J., concurring in part).

427. See *id.*, 40 U.S.P.Q.2d (BNA) at 1491 (Archer, C.J., concurring in part).

The district court held that the '313 patent was enabled by the disclosure of the '712 patent.⁴²⁸

Chief Judge Archer concluded that the '313 patent claims were not entitled to priority under 35 U.S.C. § 120 of the filing date of the '712 patent because its disclosure did not enable the '313 patent claims.⁴²⁹ He reasoned that the district court erred in holding that the '712 patent inherently enabled the '313 patent—there was no evidence in the '712 patent that reducing crystallographic slip would "inevitably" result from "same side" lamp heating.⁴³⁰ He also found that the '712 patent failed to show expressly how to produce the claimed material with "substantially no crystallographic slip."⁴³¹

Judge Newman dissented, reasoning that so long as the new matter in the CIP application was not added to enable the claims, the '313 patent was fully entitled to the benefits of 35 U.S.C. § 120 priority.⁴³² She noted that the general explanatory text added in the CIP application broadened neither the subject matter nor the claims.⁴³³

3. *Best mode under ¶ 1*

A further requirement for patentability is that a patent must disclose the best mode of practicing the invention.⁴³⁴ Whether a patent complies with this best mode requirement involves two underlying factual inquiries. First, a subjective inquiry: when the patent application was filed, did the inventor contemplate a best mode of practicing the claimed invention? This question complements an objective inquiry: if the inventor contemplated a best mode, did the specification adequately disclose this best mode so that the skilled artisan could practice it?⁴³⁵

The Federal Circuit focused on the first part of this two-part inquiry in *Great Northern Corp. v. Henry Molded Products, Inc.*⁴³⁶ The court

428. *See id.* at 1575, 40 U.S.P.Q.2d (BNA) at 1490 (Archer, C.J., concurring in part) (critiquing district court opinion).

429. *See id.*, 40 U.S.P.Q.2d (BNA) at 1490 (Archer, C.J., concurring in part).

430. *See id.* at 1575-76, 40 U.S.P.Q.2d (BNA) at 1490-91 (Archer, C.J., concurring in part).

431. *See id.*, 40 U.S.P.Q.2d (BNA) at 1490-91 (Archer, C.J., concurring in part).

432. *See id.* at 1581-82, 40 U.S.P.Q.2d (BNA) at 1496 (Newman, J., dissenting).

433. *See id.* at 1583, 40 U.S.P.Q.2d (BNA) at 1497 (Newman, J., dissenting).

434. "The specification shall . . . set forth the best mode contemplated by the inventor of carrying out his invention." 35 U.S.C. § 112, ¶ 1 (1994).

435. *See Chemcast Corp. v. Arco Indus. Corp.*, 913 F.2d 923, 930, 16 U.S.P.Q.2d (BNA) 1033, 1039 (Fed. Cir. 1990) (holding patent application invalid because applicant did not disclose the best mode for carrying out invention).

436. 94 F.3d 1569, 39 U.S.P.Q.2d (BNA) 1997 (Fed. Cir. 1996).

affirmed the district court's holding that the patent did not disclose the best mode of the invention.⁴³⁷

The Federal Circuit further divided the first subjective inquiry into two separate sub-parts: whether there was a best mode for practicing the invention, and if so, whether the inventors contemplated this best mode when they filed their patent application.⁴³⁸

As to the first sub-part, the court recognized the distinction between production details and the best mode,⁴³⁹ and focused on whether the feature at issue related to the claimed invention or to commercial considerations.⁴⁴⁰ Because the claimed invention could not be produced without this particular feature, the court concluded that the feature was critical to practicing the claimed invention, and therefore was the best mode of practicing the invention.⁴⁴¹

As to the second sub-part, the Federal Circuit found substantial evidence supporting the conclusion that the inventors had contemplated this best mode when they filed their application.⁴⁴² Considering the second objective inquiry of the two-part inquiry, the court held that the specification did not disclose the best mode.⁴⁴³ Both patentee and the alleged infringer conceded that the specification did not disclose the best mode, and the Federal Circuit refused to consider patentee's arguments to the contrary on appeal when they had not been presented to the district court.⁴⁴⁴

The Federal Circuit focused on the second part of this two-part inquiry in *United States Gypsum Co. v. National Gypsum Co.*,⁴⁴⁵ when it affirmed the district court's grant of summary judgment that the patent did not disclose the best mode of practicing the invention, even though the patentee later sold a commercial product embodying

437. See *Great Northern Corp. v. Henry Molded Prods., Inc.*, 94 F.3d 1569, 1571, 39 U.S.P.Q.2d (BNA) 1997, 1998 (Fed. Cir. 1996) (invalidating patent for not disclosing best mode of invention).

438. See *id.* at 1571-72, 39 U.S.P.Q.2d (BNA) at 1999-2000.

439. See *id.* at 1572, 39 U.S.P.Q.2d (BNA) at 1999. The court noted that a "production detail" is a commercial consideration, "such as the equipment on hand, or prior relationships with suppliers that were satisfactory." *Id.*, 39 U.S.P.Q.2d (BNA) at 1999; see *Wahl Instruments, Inc. v. Acvious, Inc.*, 950 F.2d 1575, 1581, 21 U.S.P.Q.2d (BNA) 1123, 1128 (Fed. Cir. 1991) (differentiating between best mode and production detail). In *Great Northern*, the court distinguished production detail from best mode because production detail does not relate to the quality or nature of the invention. "Production details" also encompass details relating to the quality or nature of the invention, but which need not be disclosed because they are routine. See *Great Northern*, 94 F.3d at 1572, 39 U.S.P.Q.2d (BNA) at 1999.

440. See *Great Northern*, 94 F.3d at 1572, 39 U.S.P.Q.2d (BNA) at 1999.

441. See *id.*, 39 U.S.P.Q.2d (BNA) at 1999.

442. See *id.*, 39 U.S.P.Q.2d (BNA) at 2000 (finding that inventors contemplated best mode before filing of application based on production drawings and parties' testimony).

443. See *id.* at 1572-73, 39 U.S.P.Q.2d (BNA) at 1999-2000.

444. See *id.* at 1573, 39 U.S.P.Q.2d (BNA) at 2000.

445. 74 F.3d 1209, 37 U.S.P.Q.2d (BNA) 1388 (Fed. Cir. 1996).

the invention.⁴⁴⁶ The district court ruled, and the Federal Circuit agreed, that the alleged infringer had brought forward clear and convincing evidence that the inventor believed that there was a best material for use in the invention.⁴⁴⁷ The material, made by a third party, was not identified by chemical description, method of manufacture, supplier, or tradename.⁴⁴⁸ As a result, the Federal Circuit held that the specification did not provide an adequate description of this material.⁴⁴⁹

The Federal Circuit rejected an argument that the material could be determined from a commercial product embodying the invention because compliance with paragraph one of 35 U.S.C. § 112 cannot depend on whether a patentee later commercializes the invention.⁴⁵⁰ The court further maintained that, even though the inventor had no intent to conceal the best mode, failure to find intentional concealment does not preclude a finding that the best mode requirement had been violated.⁴⁵¹

In *Zygo Corp. v. Wyko Corp.*,⁴⁵² however, the Federal Circuit affirmed the district court's holding that the patent at issue was not invalid for failure to disclose the best mode and focused on whether the best mode requirement required disclosure of commercialized features.⁴⁵³

446. See *United States Gypsum Co. v. National Gypsum Co.*, 74 F.3d 1209, 1210-14, 37 U.S.P.Q.2d (BNA) 1388, 1389 (Fed. Cir. 1996) (rejecting validity of patent where application failed to disclose chemical descriptions and method of manufacture).

447. See *id.* at 1212, 37 U.S.P.Q. (BNA) at 1391. Citing *Wahl Instruments, Inc. v. Acvious, Inc.*, 950 F.2d 1575, 1581, 21 U.S.P.Q.2d (BNA) 1123, 1128 (Fed. Cir. 1991), the patentee argued that this material was not part of the best mode, but merely preferred for purposes of developing a commercial product. The court disagreed, reasoning that the selection of the material was not a routine manufacturing choice due to the expected volume of production or cost considerations. See *Gypsum*, 74 F.3d at 1213, 37 U.S.P.Q.2d (BNA) at 1391.

448. See *id.* at 1212-13, 37 U.S.P.Q. (BNA) at 1391.

449. See *id.* at 1213-14, 37 U.S.P.Q.2d (BNA) at 1391-92. The court noted that even though the make-up and method of manufacture of the best mode material were trade secrets, and unknown to the inventor, this did not excuse compliance with the best mode requirement. The court noted that the specification should have identified the best mode material by supplier or trade name. See *id.* at 1214, 37 U.S.P.Q.2d (BNA) at 1391; see also *Chemcast Corp. v. Arco Indus. Corp.*, 913 F.2d 923, 929, 16 U.S.P.Q.2d (BNA) 1032, 1038 (Fed. Cir. 1990) (invalidating patent applicant for failure to disclose best mode).

450. See *Gypsum*, 74 F.3d at 1215, 37 U.S.P.Q.2d (BNA) at 1393.

451. See *id.*, 37 U.S.P.Q.2d (BNA) at 1393. The court reasoned that violation of the best mode requirement can occur if the disclosure of the best mode is "so objectively inadequate as to effectively conceal the best mode from the public." *Id.*, 37 U.S.P.Q.2d (BNA) at 1393. Moreover, the second inquiry concerning best mode compliance is objective, and an intent to conceal, being a subjective inquiry, is inconsistent with this objective nature. See *id.* at 1215-16, 37 U.S.P.Q.2d (BNA) at 1393.

452. 79 F.3d 1563, 38 U.S.P.Q.2d (BNA) 1281 (Fed. Cir. 1996); see *infra* notes 805-15.

453. See *Zygo Corp. v. Wyko Corp.*, 79 F.3d 1563, 1568, 38 U.S.P.Q.2d (BNA) 1281, 1284 (Fed. Cir. 1996).

The invention as set forth in the claims was an interferometer.⁴⁵⁴ One embodiment of the claimed invention, a commercial embodiment, was encased in a box.⁴⁵⁵ The court rejected the infringer's argument that the failure to disclose a box in the specification violated the best mode requirement.⁴⁵⁶ The parameters of the best mode inquiry are set by the claims, however, not a commercial embodiment.⁴⁵⁷ Here, the claims did not require a box, and the parties agreed that the disclosure was sufficient to practice the invention as set forth in the claims.⁴⁵⁸

The Federal Circuit decision in *Minco, Inc. v. Combustion Engineering, Inc.*,⁴⁵⁹ also illustrates the difference between the best mode of practicing the invention and production details. There the Federal Circuit found no violation of the best mode requirement and affirmed the district court's finding of validity and infringement.⁴⁶⁰

In *Minco*, the inventors disclosed and claimed a two-crane support furnace system in their patent for a rotary furnace. Prior to filing the patent application, however, Minco, the inventors' company, operated a furnace based on the claimed invention using a superior three-crane support system.⁴⁶¹

At trial, the record showed that the change in configuration between the two-crane and three-crane systems was merely a modification to impart stability and therefore a production detail.⁴⁶² Accordingly, the Federal Circuit found no evidence that the inventors appreciated the superiority of the three-crane support system, and therefore could not have concealed the best mode.⁴⁶³

In *Applied Materials, Inc. v. Advanced Semiconductor Materials America, Inc.*,⁴⁶⁴ the best mode requirement was one reason that the divided panel of the Federal Circuit affirmed the district court's finding of invalidity.⁴⁶⁵ The claimed invention was a method for heating single

454. See *id.* at 1565-66, 38 U.S.P.Q.2d at 1283 (describing invention).

455. See *id.* at 1567, 38 U.S.P.Q.2d (BNA) at 1283.

456. See *id.*, 38 U.S.P.Q.2d (BNA) at 1283.

457. See *id.*, 38 U.S.P.Q.2d (BNA) at 1283.

458. See *id.*, 38 U.S.P.Q.2d (BNA) at 1283.

459. 95 F.3d 1109, 40 U.S.P.Q.2d (BNA) 1001 (Fed. Cir. 1996); see *infra* notes 1042-53 and accompanying text.

460. See *Minco, Inc. v. Combustion Eng'g, Inc.*, 95 F.3d 1109, 1112, 40 U.S.P.Q.2d (BNA) 1001, 1003 (Fed. Cir. 1996).

461. See *id.* at 1113-14, 40 U.S.P.Q.2d (BNA) at 1003-04.

462. See *id.* at 1116, 40 U.S.P.Q.2d (BNA) at 1006.

463. See *id.*, 40 U.S.P.Q.2d (BNA) at 1006.

464. 98 F.3d 1563, 40 U.S.P.Q.2d (BNA) 1481 (Fed. Cir. 1996) (plurality opinion), *cert. denied*, 117 S. Ct. 1822 (1997); see *supra* notes 149-61, 337-40, 425-34 and accompanying text.

465. See *Applied Materials, Inc. v. Advanced Semiconductor Materials Am., Inc.*, 98 F.3d 1563, 1566, 40 U.S.P.Q.2d (BNA) 1481, 1482 (Fed. Cir. 1996) (plurality opinion), *cert. denied*, 117 S. Ct. 1822 (1997).

crystal with "substantially no crystallographic slip."⁴⁶⁶ The '313 patent, a continuation-in-part (CIP) application of the '712 patent, added new disclosure about crystallographic slip and how to avoid it.⁴⁶⁷ The district court held that the '313 patent was invalid for adding substantial new matter to the application without updating the best mode for practicing the newly claimed invention.⁴⁶⁸

In the plurality opinion, Judge Mayer concluded that the '313 patent failed the best mode requirement because the inventors did not update their best mode disclosure when filing the CIP application containing new matter pertinent to the best mode of practicing the claimed invention.⁴⁶⁹ Judge Mayer reasoned that the duty to update the best mode was not absolved even though the earlier '712 patent enabled the invention claimed in the '313 patent,⁴⁷⁰ and ruled that the language in *Transco*⁴⁷¹ regarding continuing applications could not abrogate the statutory requirement under 35 U.S.C. § 112.⁴⁷² To hold otherwise would encourage inventors to disclose only minimal parts of their inventions, and file continuations-in-part to claim the rest, thereby hiding the commercial value while also residing in the best mode and gaining the benefit of both the exclusionary right of the patent and the "quasi trade secret" of the best mode.⁴⁷³

Judge Newman dissented, considering the district court's best mode requirement that all features of the commercial reactor must be disclosed in the CIP application, regardless of whether they contributed to the claimed slip-free performance, to be unwarranted as entrapping the inventor.⁴⁷⁴

4. *Definiteness under ¶ 2*

The attorney must ensure that patent claims also satisfy 35 U.S.C. § 112, ¶ 2, which requires that the claims particularly point out and distinctly assert the subject matter which applicant regards as the

466. *Id.* at 1576, 40 U.S.P.Q.2d (BNA) at 1491 (plurality opinion).

467. *See id.* 40 U.S.P.Q.2d at 1491 (plurality opinion).

468. *See id.* at 1580, 40 U.S.P.Q.2d (BNA) at 1494-95 (plurality opinion).

469. *See id.* at 1579, 40 U.S.P.Q.2d (BNA) at 1493 (plurality opinion).

470. *See id.* at 1580-81, 40 U.S.P.Q.2d (BNA) at 1495 (plurality opinion).

471. *Transco Prods. Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 U.S.P.Q.2d (BNA) 1077 (Fed. Cir. 1994), *cert. denied*, 513 U.S. 1151 (1995).

472. *See Applied Materials*, 98 F.3d at 1579-80, 40 U.S.P.Q.2d (BNA) at 1494 (plurality opinion).

473. *See id.* at 1581, 40 U.S.P.Q.2d (BNA) at 1495 (plurality opinion).

474. *See id.* at 1583, 40 U.S.P.Q.2d (BNA) at 1497 (plurality opinion).

invention.⁴⁷⁵ Whether a claim satisfies this requirement or is definite, depends on whether the skilled artisan would understand the scope of the claim when read in light of the specification.⁴⁷⁶ If the claim language reasonably apprises the skilled artisan of the scope of the invention, and the language is as precise as the subject matter permits, nothing more is required.⁴⁷⁷ When interpreting the claims, the skilled artisan should look to all relevant sources of meaning within the patent, including the claim language, the specification, the prosecution history, and the doctrine of claim differentiation.

In *Athletic Alternatives, Inc. v. Prince Manufacturing, Inc.*,⁴⁷⁸ the Federal Circuit, after looking to all these sources and finding two plausible interpretations for the claim meaning, adopted the narrower interpretation, and therefore affirmed the district court's decision granting summary judgment of noninfringement against the patentee.⁴⁷⁹

The Federal Circuit found that the claim language, specification, prosecution history, and the doctrine of claim differentiation did not shed any light as to which interpretation of claim 1 must be adopted.⁴⁸⁰ Reaching this impasse, the court reasoned that allowing the patentee to assert the broader of the two interpretations would undermine the fair notice function of the statute.⁴⁸¹ Accordingly, the court held that if there is an equal choice between a broad and narrow reading of a claim, the notice function of the claim is best served by adopting the narrower meaning.⁴⁸²

Although concurring in the decision of noninfringement, Judge Nies disagreed that a new basis for construing a claim was necessary.⁴⁸³ She argued that adopting the narrower of two equally

475. "The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." 35 U.S.C. § 112 ¶ 2 (1994).

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

477. See *Shatterproof Glass Corp. v. Libbey-Owens Ford Co.*, 758 F.2d 613, 225 U.S.P.Q. (BNA) 634, 641 (Fed. Cir. 1985).

478. 73 F.3d 1573, 37 U.S.P.Q.2d (BNA) 1365 (Fed. Cir. 1996).

479. See *Athletic Alternatives, Inc. v. Prince Mfg., Inc.*, 73 F.3d 1573, 1574, 37 U.S.P.Q.2d (BNA) 1365, 1366 (Fed. Cir. 1996).

480. See *id.* at 1581, 37 U.S.P.Q.2d (BNA) at 1372.

481. A policy underlying 35 U.S.C. § 112, ¶ 2, was "to guard against unreasonable advantages to the patentee and disadvantages to others arising from uncertainty as to their respective rights." *Id.*, 37 U.S.P.Q.2d (BNA) at 1372.

482. See *id.*, 37 U.S.P.Q.2d (BNA) at 1372.

483. See *id.* at 1583, 37 U.S.P.Q.2d (BNA) at 1374.

plausible interpretations does not flow from 35 U.S.C. § 112, ¶ 2, because narrowness can not be equated with definiteness.⁴⁸⁴

Shortly after *Athletic Alternatives*, the Federal Circuit once again chose between alternative claim interpretations in *Modine Manufacturing Co. v. United States International Trade Commission*.⁴⁸⁵ The Federal Circuit affirmed a final determination by the International Trade Commission ("ITC") that certain claims of patent had not been proven invalid for indefiniteness.⁴⁸⁶

In *Modine*, the patent claims recited a limitation for "flow paths being of relatively small hydraulic diameter which is defined as the cross-sectional area of the corresponding flow path multiplied by four (4) and divided by the wetted perimeter of the corresponding flow path."⁴⁸⁷ The administrative law judge interpreted this limitation to require hydraulic diameters no larger than exactly 0.040 inch, and concluded that the claims were invalid for indefiniteness because other limitations reciting "about" and "relatively small" in the claims could read on flow paths having hydraulic diameters larger than exactly 0.040 inches.⁴⁸⁸ Upon review of the judge's initial determination, the Commission rejected this interpretation and held that the claims had not been proven to be invalid.⁴⁸⁹

The Federal Circuit, upholding the Commission's final determination on validity, ruled that technical terms are not *per se* indefinite when expressed in qualitative terms without numerical limits.⁴⁹⁰ Because nothing in the prosecution history suggested that the patentability of the claims required an exact numerical limit, the court reasoned that mathematical precision should not be imposed. To the contrary, the court ruled that a patentee has the right to claim the invention in terms that would be understood by the skilled artisan.⁴⁹¹ The court further held that when claims are amenable to more than one construction, they should be interpreted to preserve their validity.⁴⁹² Interestingly, the court did not discuss the earlier decision in *Athletic Alternatives* with respect to 35 U.S.C. § 112, ¶ 2.

484. Judge Nies relied on *In re Robins*, 429 F.2d 452, 458, 166 U.S.P.Q. (BNA) 552, 556 (C.C.P.A. 1970), and *In re Gardner*, 427 F.2d 786, 788, 166 U.S.P.Q. (BNA) 138, 140 (C.C.P.A. 1970), for this position. See *Athletic Alternatives*, 73 F.3d at 1583, 37 U.S.P.Q.2d (BNA) at 1374.

485. 75 F.3d 1545, 37 U.S.P.Q.2d (BNA) 1609 (Fed. Cir. 1996).

486. See *Modine Mfg. Co. v. United States Int'l Trade Comm'n*, 75 F.3d 1545, 1549, 37 U.S.P.Q.2d (BNA) 1609, 1617 (Fed. Cir. 1996).

487. *Id.* at 1549, 37 U.S.P.Q.2d (BNA) at 1611.

488. See *id.* at 1550, 37 U.S.P.Q.2d (BNA) at 1612, 1613.

489. See *id.* at 1550-51, 37 U.S.P.Q.2d (BNA) at 1617.

490. See *id.* at 1551, 37 U.S.P.Q.2d (BNA) at 1617.

491. See *id.* at 1557, 37 U.S.P.Q.2d (BNA) at 1617.

492. See *id.*, 37 U.S.P.Q.2d (BNA) at 1617.

Under 35 U.S.C. § 112, ¶ 2, the Federal Circuit has focused on the practical requirement that the skilled artisan need only understand the claims only when they are read in light of the specification. For example, in *PPG Industries, Inc. v. Guardian Industries Corp.*,⁴⁹³ the Federal Circuit affirmed the grant of a preliminary injunction over Guardian's validity challenge under 35 U.S.C. § 112, ¶ 2.⁴⁹⁴ Guardian argued that the patent claims failed to meet the requirements of particularity and definiteness under 35 U.S.C. § 112, ¶ 2.⁴⁹⁵ Alternatively, Guardian argued that the claims were invalid because they did not state the method used to measure the transmittance of the invention.⁴⁹⁶ The district court and the Federal Circuit both disagreed.⁴⁹⁷

Responding to the first argument, the Federal Circuit held that the claims precisely quantified the essential ingredients and transmittance, and that such precision reasonably apprised the skilled artisan of both the utilization and scope of the invention.⁴⁹⁸ The court ruled that an issue of indefiniteness is not raised where the claim language is as precise as the subject matter permits.⁴⁹⁹

As to Guardian's alternative argument, the Federal Circuit observed that the record demonstrated that conventional methods of testing transmittance produce essentially identical results.⁵⁰⁰ Accordingly, the court held that the transmittance claim limitation, in conjunction with the other claim limitations, sufficiently put the public on fair notice of the scope of the claims and, therefore, satisfied 35 U.S.C. § 112, ¶ 2.⁵⁰¹

5. *Means-plus-function under ¶ 6*

Paragraph six of § 112 permits an element of a claim for a combination to be expressed as a "means for performing a specified function," without reciting structure in support thereof, thereby not limiting the claim to a single structure.⁵⁰² A claim limitation written

493. 75 F.3d 1558, 37 U.S.P.Q.2d (BNA) 1618 (Fed. Cir. 1996); see *supra* notes 412-23 and *infra* notes 998-1002 and accompanying text.

494. See *PPG Indus., Inc. v. Guardian Indus. Corp.*, 75 F.3d 1558, 1560, 37 U.S.P.Q.2d (BNA) 1618, 1620 (Fed. Cir. 1996).

495. See *id.* at 1562, 37 U.S.P.Q.2d (BNA) at 1621.

496. See *id.*, 37 U.S.P.Q.2d (BNA) at 1621.

497. See *id.*, 37 U.S.P.Q.2d (BNA) at 1620.

498. See *id.*, 37 U.S.P.Q.2d (BNA) at 1622.

499. See *id.* at 1562-63, 37 U.S.P.Q.2d (BNA) at 1622 (citing *Shatterproof Glass Corp. v. Libbey-Owens Ford Co.*, 758 F.2d 613, 624, 225 U.S.P.Q. (BNA) 634, 641 (Fed. Cir. 1985)).

500. See *id.* at 1563, 37 U.S.P.Q.2d (BNA) at 1622.

501. See *id.*, 37 U.S.P.Q.2d (BNA) at 1622.

502. See 35 U.S.C. 112, ¶ 6 (1994).

in "means-plus-function" language is interpreted to cover corresponding structures disclosed in the specification and equivalents thereof.⁵⁰³

In *York Products, Inc. v. Central Tractor Farm & Family Center*,⁵⁰⁴ the Federal Circuit held that a claim did not contain a "means plus function" limitation and therefore could invoke the benefits of U.S.C. § 112, ¶ 6.⁵⁰⁵ Claim 1 of the litigated patent recited that a truck bed's vertically extending ridge members must protrude from the linear sidewall portions "for at least a substantial part of the entire height thereof."⁵⁰⁶ Claim 32 did not include this limitation, but instead recited a "means formed on the . . . sidewall portions including . . . ridge members . . . forming load locks . . . having a depth sufficient to anchor a structure . . . in the cargo bed."⁵⁰⁷ The district court interpreted both claims 1 and 32 to require that the ridge member should "extend from near the bottom of the sidewall to near the top of the sidewall."⁵⁰⁸

The Federal Circuit affirmed the district court's construction of the claim 1 limitation as requiring that the ridges must cover nearly the entire height of the sidewall portion.⁵⁰⁹ The Federal Circuit, however, reversed the district court's construction of claim 32.⁵¹⁰ Determining whether the "means" language in this claim fell within the scope of the means-plus-function clauses of 35 U.S.C. § 112, ¶ 6,⁵¹¹ the court concluded that because claim 32 did not sufficiently link the term "means" to a function and instead recited detailed structure, it did not fall within the ambit of 35 U.S.C. § 112, ¶ 6.⁵¹² Thus, the Federal Circuit construed claim 32 without reference to § 112, ¶ 6, and remanded for revised findings on infringement in light of the proper claim construction.⁵¹³

503. See *Valmont Indus., Inc. v. Reinke Mfg. Co.*, 983 F.2d 1039, 25 U.S.P.Q.2d (BNA) 1451 (Fed. Cir. 1993).

504. 99 F.3d 1568, 40 U.S.P.Q.2d (BNA) 1619 (Fed. Cir. 1996).

505. See *York Prods., Inc. v. Central Tractor Farm & Family Ctr.*, 99 F.3d 1568, 1574, 40 U.S.P.Q.2d (BNA) 1619, 1624 (Fed. Cir. 1996).

506. *Id.* at 1572, 40 U.S.P.Q.2d (BNA) at 1622.

507. *Id.* at 1573-74, 40 U.S.P.Q.2d (BNA) at 1623.

508. *Id.* at 1572-74, 40 U.S.P.Q.2d (BNA) at 1622, 1624.

509. See *id.* at 1573, 40 U.S.P.Q.2d (BNA) at 1622, 1624.

510. See *id.*, 40 U.S.P.Q.2d (BNA) at 1623.

511. See *id.* at 1574, 40 U.S.P.Q.2d (BNA) at 1624.

512. See *id.* at 1575, 40 U.S.P.Q.2d (BNA) at 1624.

513. See *id.* at 1576, 40 U.S.P.Q.2d (BNA) at 1624.

*F. Other Patentability Proceedings**I. Reissue*

Section 251 permits an applicant who have mistakenly claimed more or less than to which they are entitled to reenter prosecution of the patent application and, where possible, obtain claims of a broader scope in a reissue patent.⁵¹⁴ The claims in the reissue patent have the same rights and privileges⁵¹⁵ as the claims in the original patent.⁵¹⁶

In *Ethicon Endo-Surgery, Inc. v. United States Surgical Corp.*,⁵¹⁷ the Federal Circuit reviewed the district court's ruling that a competitor's product did not infringe the claims in a patent.⁵¹⁸ Construing a claim of the reissue patent, the district court found it ambiguous, and adopted the competitor's narrower claim interpretation, precluding infringement.⁵¹⁹ The district court reasoned that since the patentee sought reissue to encompass the competitor's product, an unambiguous indication of that coverage should be found in the reissue claim.⁵²⁰

The Federal Circuit reviewed the district court's claim construction and rejected the district court's reasoning. The Federal Circuit interpreted the claims, but found no literal infringement by U.S. Surgical.⁵²¹

514. Whenever any patent is, through error without any deceptive intention, deemed wholly or partly inoperative or invalid, by reason of a defective specification or drawing, or by reason of the patentee claiming more or less than he had a right to claim in the patent, the Commissioner shall, on the surrender of such patent and the payment of the fee required by law, reissue the patent for the invention disclosed in the original patent, and in accordance with a new and amended application, for the unexpired part of the term of the original patent.

35 U.S.C. § 251 (1994).

515. The rights and privileges of claims in a reissue patent will be limited by the "intervening rights" of an alleged infringer set forth in 35 U.S.C. § 251. *See id.*

516. Section 252 provides that "every reissued patent shall have the same effect and operation in law, on the trial of actions for causes thereafter arising, as if the same had been originally granted in such amended form." *Id.* § 252.

517. 93 F.3d 1572, 40 U.S.P.Q.2d (BNA) 1019 (Fed. Cir. 1996); *see infra* notes 659-69 and accompanying text.

518. *See Ethicon Endo-Surgery, Inc. v. United States Surgical Corp.*, 93 F.3d 1572, 1578-79, 40 U.S.P.Q.2d (BNA) 1019, 1023-24 (Fed. Cir. 1996).

519. *See id.* at 1579, 40 U.S.P.Q.2d (BNA) at 1024.

520. *See id.*, 40 U.S.P.Q.2d (BNA) at 1024.

521. *See id.* at 1581-83, 40 U.S.P.Q.2d (BNA) at 1024.

2. Reexamination

A patentee pursuing an infringement action may confront a counterclaim of invalidity on the grounds of lack of novelty or obviousness. To eliminate the proffered evidence from presenting an invalidity challenge, the patentee may request reexamination of the application under 35 U.S.C. § 302 based on this evidence.⁵²² The Patent Office may order reexamination of the patent if it determines that this evidence raises a "substantial new question of patentability" under 35 U.S.C. § 303(a).⁵²³

An apparent inconsistency was resolved in *In re Recreative Technologies Corp.*,⁵²⁴ between the statute and the Manual of Patent Examining Procedures (MPEP). In *Recreative*, the potential infringer requested reexamination based on eight references not considered during the original examination. Because these eight references raised a substantial new question of patentability, the Patent Office granted reexamination.⁵²⁵ The examiner then rejected the claims over the same reference using the same basis, obviousness, as in the original examination. In the original examination, however, the claims had been held patentable over this reference.⁵²⁶ On appeal, the Board reversed the examiner as to the lack of obviousness, but *sua sponte* rejected the claims over the same reference as lacking novelty.⁵²⁷

On appeal, the Commissioner cited to the MPEP that once the reexamination has been ordered, the Patent Office could consider any pertinent patents, printed publications, or issues previously addressed by the Patent Office.⁵²⁸ The Federal Circuit reversed, holding that it was improper to conduct reexamination on an issue that had been finally resolved during the original examination.⁵²⁹

522. "Any person at any time may file a request for reexamination by the Office of any claim of a patent on the basis of any prior art cited under the provisions of section 301 of this title. . . . The request must set forth the pertinency and manner of applying cited prior art to every claim for which reexamination is requested." 35 U.S.C. § 302 (1994).

523. Section 303(a) requires that "the Commissioner will determine whether a substantial new question of patentability affecting any claim of the patent concerned is raised by the request, with or without consideration of other patents or printed publications." *Id.* § 303(a).

524. 83 F.3d 1394, 38 U.S.P.Q.2d (BNA) 1776 (Fed. Cir. 1996).

525. *See In re Recreative Techs. Corp.*, 83 F.3d 1394, 1395, 38 U.S.P.Q.2d (BNA) 1776, 1777 (Fed. Cir. 1996).

526. *See id.*, 38 U.S.P.Q.2d (BNA) at 1777.

527. *See id.* at 1396, 38 U.S.P.Q.2d (BNA) at 1777.

528. *See* M.P.E.P. § 2258, before revision of July 1996. The MPEP has been amended to reflect the decision in *In re Recreative Technologies*.

529. The Patent Office argued that proposed legislative changes would broaden the Patent Office's reexamination authority to encompass such an action. The Federal Circuit dismissed this argument, reasoning that until changed by Congress, the Patent Office and the courts are bound by the statute as it exists. *See id.*, 38 U.S.P.Q.2d (BNA) at 1777.

The court found that the legislative history of 35 U.S.C. § 303(a),⁵³⁰ as well as policies underlying the reexamination statute,⁵³¹ supported this holding.⁵³²

The Federal Circuit held that M.P.E.P. § 2258 was void to the extent it conflicted with 35 U.S.C. § 303.⁵³³ The Federal Circuit did not consider whether the Board's rejection under 35 U.S.C. § 103 was a "substantial new question of patentability" because allowing the Board to cure an otherwise improper reexamination with the creation of a new issue at the appellate stage would undermine statutory safeguards.⁵³⁴

Often an alleged infringer will request the reexamination to invalidate the patent under 35 U.S.C. § 302. But may the alleged infringer be compelled to request reexamination? The Federal Circuit answered this question in the negative in *In re Continental General Tire, Inc.*⁵³⁵

At trial, the patentee moved to compel the alleged infringer to file a request for reexamination of patentee's claims.⁵³⁶ Granting patentee's motion, the district court reasoned that a request for reexamination would expedite disposition of the infringement action and conserve the limited resources of the court.⁵³⁷ The Federal Circuit held that the plain language of 35 U.S.C. § 302 permitted, but did not require, any party to file a request for reexamination.⁵³⁸

530. The legislative record reflected the serious concern that reexamination not create new opportunities for abusive tactics and burdensome procedures. Thus, reexamination, as enacted, was carefully limited to new prior art, that is, "new information about pre-existing technology which may have escaped review at the time of the initial examination of the patent application." *See id.*, 38 U.S.P.Q.2d (BNA) at 1778 (quoting H.R. REP. NO. 96-1307, at 3 (1980), reprinted in 1980 U.S.C.C.A.N. 6460, 6462). The matters to be decided in the original examination were barred from reexamination. *See id.*, 38 U.S.P.Q.2d (BNA) at 1777 (citing H.R. REP. NO. 96-1307, at 7).

531. Reexamination procedures may yield three principal benefits. First, reexamination based on references not previously considered in the original examination can resolve validity disputes with greater speed and less expense than litigation. Second, courts benefit from the technical expertise of the Patent Office for references not previously of record. Third, reexamination strengthens "confidence in patents whose validity was clouded because pertinent prior art had not previously been considered by the Patent Office." *See id.* at 1396, 38 U.S.P.Q.2d (BNA) at 1778.

532. *See id.* at 1396-97, 38 U.S.P.Q.2d (BNA) at 1777-78.

533. *See id.* at 1397-98, 38 U.S.P.Q.2d (BNA) at 1778-79.

534. *See id.* at 1398, 38 U.S.P.Q.2d (BNA) at 1779.

535. 81 F.3d 1089, 38 U.S.P.Q.2d (BNA) 1365 (Fed. Cir. 1996).

536. *See In re Continental Gen. Tire, Inc.*, 81 F.3d 1089, 1089-90, 38 U.S.P.Q.2d (BNA) 1365, 1366-67 (Fed. Cir. 1996).

537. *See id.* at 1090, 38 U.S.P.Q.2d (BNA) at 1366-67.

538. "Any person at any time may file a request for reexamination by the Office of any claim of a patent on the basis of any prior art cited under the provisions of section 301 of this title." *Id.* at 1091, 38 U.S.P.Q.2d (BNA) at 1367 (citing 35 U.S.C. § 302 (1994)) (emphasis added). While not extensively discussed, the Federal Circuit was probably influenced by one critical equitable consideration: A patentee has the right to seek reexamination if it considers such an

Similar reasoning produced the result in *Emerson Electric Co. v. Davoil, Inc.*,⁵³⁹ where the Federal Circuit held that the district court may not order the patentee to file the alleged infringer's papers in a reexamination requested by a third party.⁵⁴⁰

In *Emerson Electric*, the patentee moved for a stay after the Patent Office granted a third party's request for reexamination.⁵⁴¹ Granting the stay, the district court ordered that in the reexamination, the patentee must provide the Patent Office with documents prepared by the alleged infringer along with documents filed by the patentee.⁵⁴² The Federal Circuit relied on *In re Continental General Tire, Inc.*,⁵⁴³ to rule that determining "what documents to file in a reexamination proceeding is no less committed to the discretion of the patentee than the decision by the alleged infringer" of "whether to file a reexamination request."⁵⁴⁴

3. Interferences

Under the confidential procedures of the Patent Office, a patent applicant may not be aware that another has filed an application for the same invention. When there are two parties with the same invention, both parties are not entitled to a patent for the same invention. Rather, an interference proceeding must be entered pursuant to 35 U.S.C. § 135(a) to determine which party is the first inventor and will be awarded the patent.⁵⁴⁵

option to be a desirable expedient, *see id.* at 1093, 38 U.S.P.Q.2d (BNA) at 1369, but the patentee maintains no right to force its opponent to take an action which it has declined to pursue. *See id.* at 1093, 38 U.S.P.Q.2d (BNA) at 1369.

539. 88 F.3d 1051, 39 U.S.P.Q.2d (BNA) 1474 (Fed. Cir. 1996); *see supra* notes 128-34 and accompanying text.

540. *See Emerson Elec. Co. v. Davoil, Inc.*, 88 F.3d 1051, 1051, 39 U.S.P.Q.2d (BNA) 1474, 1474 (Fed. Cir. 1996).

541. *See id.* at 1052, 39 U.S.P.Q.2d (BNA) at 1475.

542. The district court relied on two published decisions of the Patent Office, namely *In re Blaes*, 19 U.S.P.Q.2d (BNA) 1232 (Comm'r Pat. 1991) (treating alleged infringer's papers submitted by the patentee in reissue proceeding, pursuant to an order of the district court, as having been submitted by the patentee); and *In re Chambers*, 20 U.S.P.Q.2d (BNA) 1470 (Comm'r Pat. 1991) (court should "treat papers of the non-applicant filed pursuant to an order of the bankruptcy court, as filed by the applicant for reexamination"). *See Emerson Elec. Co.*, 88 F.3d at 1052, 39 U.S.P.Q.2d (BNA) at 1475.

543. *Continental Gen. Tire*, 81 F.3d at 1093, 38 U.S.P.Q.2d (BNA) at 1369.

544. *See Emerson Elec. Co.*, 88 F.3d at 1054, 39 U.S.P.Q.2d (BNA) at 1476.

545. "Whenever an application is made for a patent which, in the opinion of the Commissioner, would interfere with any pending application, or with any unexpired patent, an interference may be declared The Board of Patent Appeals and Interferences shall determine questions of priority of the inventions and may determine questions of patentability." 35 U.S.C. § 135(a) (1994).

In *Fujikawa v. Wattanasin*,⁵⁴⁶ the Federal Circuit affirmed the Patent Office Board of Patent Appeals and Interferences' ("the Board") determination that Wattanasin was the first inventor of a pharmaceutical compound and its method of manufacture.⁵⁴⁷

Wattanasin began his research in 1979, and in 1984-1985 synthesized three compounds within the scope of the compound count⁵⁴⁸ and performed *in vitro*⁵⁴⁹ testing of those compounds. Then from January 1987 through December 1987, more compounds within the scope of the compound count were synthesized and tested both *in vitro* and *in vivo*. The decision to file a patent application was made in January 1988, but a completed application was not filed until March of 1989.⁵⁵⁰

Fujikawa's inventive activity occurred overseas. Therefore the earliest date on which he could rely to show priority of invention under 35 U.S.C. § 102(g)⁵⁵¹ was his effective filing date of August 20, 1987.⁵⁵²

Fujikawa did not challenge the Board's holdings as to Wattanasin's conception or diligence and, therefore, the Federal Circuit focused on Wattanasin's actual reduction to practice.⁵⁵³ To establish an actual reduction to practice, the Federal Circuit confirmed that practical utility for the compound must be shown.⁵⁵⁴ The court also acknowledged that, in the pharmaceutical arts, practical utility may be shown by adequate evidence of pharmacological activity.⁵⁵⁵ Combining these concepts, the court ruled that testing that is "reasonably indicative of the desired [pharmacological] response may establish practical utility and hence, actual reduction to practice."⁵⁵⁶

546. 93 F.3d 1559, 39 U.S.P.Q.2d (BNA) 1895 (Fed. Cir. 1996); see *supra* notes 399-407 and accompanying text.

547. See *Fujikawa v. Wattanasin*, 93 F.3d 1559, 1561, 39 U.S.P.Q.2d (BNA) 1895, 1896 (Fed. Cir. 1996).

548. In an interference, an applicant must copy the overlapping subject matter that is claimed in the opposing application or patent. See 37 C.F.R. § 1.601(i) (1996). This overlapping subject matter is presented as a hybrid claim, called a count, that defines the scope of the interfering subject matter. See *id.* § 1.601(f).

549. *In vitro* generally means testing performed in a test tube as compared to *in vivo* which generally means testing performed in an animal or human.

550. See *Fujikawa*, 93 F.3d at 1561-62, 39 U.S.P.Q.2d (BNA) at 1896-98.

551. 35 U.S.C. § 102(g) (1994).

552. See *Fujikawa*, 93 F.3d at 1561, 39 U.S.P.Q.2d (BNA) at 1896.

553. See *id.* at 1563, 39 U.S.P.Q.2d (BNA) at 1898.

554. See *id.*, 39 U.S.P.Q.2d (BNA) at 1898; see also *Cross v. Iizuka*, 753 F.2d 1040, 1044, 224 U.S.P.Q. (BNA) 739, 742 (Fed. Cir. 1985).

555. See *Fujikawa*, 93 F.3d at 1564, 39 U.S.P.Q.2d (BNA) at 1899; see also *Nelson v. Bowler*, 626 F.2d 853, 856, 206 U.S.P.Q. (BNA) 881, 883 (C.C.P.A. 1980).

556. See *Fujikawa*, 93 F.3d at 1564, 39 U.S.P.Q.2d (BNA) at 1899 (citing *Nelson*, 626 F.2d at 856, 206 U.S.P.Q. at 884). In other words, tests and an asserted pharmacological activity must be sufficiently correlated so that a skilled artisan would recognize, to a reasonable probability,

Relying on the principle that a desired pharmaceutical response may be shown by positive *in vitro* tests, when combined with a known correlation between *in vitro* results and *in vivo* activity, the court found that Wattanasin established an adequate correlation between *in vitro* tests and *in vivo* results.⁵⁵⁷ Therefore, the court held that Wattanasin showed the desired pharmaceutical response for practical utility using the *in vitro* tests and that Wattanasin actually reduced to practice the compound.⁵⁵⁸

With regard to the method count, the court agreed with the Board that Wattanasin reduced the method to practice in December 1987.⁵⁵⁹ The court found that Wattanasin completed successful *in vivo* testing of the compound by this date, despite an anomaly in the test data that allegedly undercut the reliability of the *in vivo* tests.⁵⁶⁰ Accordingly, Wattansin was awarded priority of inventorship.

Having established that Wattanasin was the prior inventor, the Federal Circuit then considered whether he forfeited his priority of invention by suppressing or concealing the invention between his reduction to practice and filing of the patent application.⁵⁶¹ The court found that Wattanasin did not intentionally suppress⁵⁶² his invention, despite the approximate year-and-a-half delay between reduction to practice and filing.⁵⁶³ Whether suppression could be inferred, the court ruled that the circumstances surrounding the delay and the reasonableness of that delay,⁵⁶⁴ rather than the time of delay,⁵⁶⁵ were the important factors to consider.⁵⁶⁶ "Given a total delay of seventeen months, an unexplained delay of three months, the complexity of the subject matter at issue," and the fact that Wattanasin "was moving, albeit slowly, towards filing an application,"

that the novel compound would exhibit the asserted pharmacological behavior. *See id.* at 1564, 39 U.S.P.Q.2d (BNA) at 1899.

557. *See Fujikawa*, 93 F.3d at 1565-66, 39 U.S.P.Q.2d (BNA) at 1900; *see also Cross*, 753 F.2d at 1051, 224 U.S.P.Q. (BNA) at 748.

558. *See id.* at 1566, 39 U.S.P.Q.2d (BNA) at 1901.

559. *See id.*, 39 U.S.P.Q.2d (BNA) at 1901.

560. *See id.*, 39 U.S.P.Q.2d (BNA) at 1901.

561. *See id.* at 1566-67, 39 U.S.P.Q.2d (BNA) at 1901.

562. There are two types of suppression and concealment: deliberate suppression or a legal inference of suppression based on a delay in filing a patent application. *See Paulik v. Rizkalla*, 760 F.2d 1270, 1273, 226 U.S.P.Q. (BNA) 224, 226 (Fed. Cir. 1985).

563. *See Fujikawa*, 93 F.3d at 1567, 39 U.S.P.Q.2d (BNA) at 1901-02; *see also Peeler v. Miller*, 535 F.2d 647, 653, 190 U.S.P.Q. 117, 122 (C.C.P.A. 1976) (implying that intentional suppression requires showing of specific intent which may be evidenced by an unreasonable delay).

564. *See Young v. Dworkin*, 489 F.2d 1277, 1285, 180 U.S.P.Q. (BNA) 388, 395 (C.C.P.A. 1974) (Rich, J., concurring) (finding conduct of first inventor as controlling factor).

565. *See Corrage v. Murphy*, 705 F.2d 1326, 1330, 217 U.S.P.Q. (BNA) 753, 756 (Fed. Cir. 1983) (noting no specific time constitutes a delay, but rather, court evaluates the circumstances to find a presumption of abandonment).

566. *See Fujikawa*, 93 F.3d at 1568, 39 U.S.P.Q.2d (BNA) at 1902.

the court concluded that an inference of suppression or concealment was not warranted.⁵⁶⁷ In light of the two year period of inactivity after Wattanasin reduced the invention to practice in 1984, the Court found, in disagreement with Fujikawa, that suppression or concealment was not present.⁵⁶⁸ Finally, the court ignored the question of whether Wattanasin was spurred to file the application because of the application of a third party inventor.⁵⁶⁹

The Federal Circuit again focused on reduction to practice in *Schendel v. Curtis*,⁵⁷⁰ by affirming the Board's grant of summary judgment in favor of Curtis because Schendel did not adequately corroborate his alleged reduction to practice and did not make a fusion protein⁵⁷¹ meeting all the limitations of the count.⁵⁷²

Schendel sought to provoke the interference, but since his filing date was more than three months after Curtis's effective filing date, the Patent Office required Schendel to show why he was *prima facie* entitled to a judgment that he was the prior inventor.⁵⁷³ To support such a position, Schendel submitted six declarations describing acts that he and fellow employees allegedly performed to reduce the invention to practice before Curtis's effective filing date.⁵⁷⁴

To show his actual reduction to practice, Schendel was required to prove that he prepared a fusion protein meeting every limitation of the count.⁵⁷⁵ After reviewing the six preferred declarations, the

567. See *id.* at 1569, 39 U.S.P.Q.2d (BNA) at 1903.

568. See *id.*, 39 U.S.P.Q.2d (BNA) at 1903-04; see also *Paulik v. Rizkalla*, 760 F.2d 1270, 226 U.S.P.Q. (BNA) 224 (Fed. Cir. 1985).

569. See *Fujikawa*, 93 F.3d at 1567-68, 39 U.S.P.Q.2d (BNA) at 1902. Spurring, or activities of another inventor, is always an important factor in priority determinations because it creates the inference that but for the other inventor's efforts, the public would not have gained knowledge of the invention. See *Brokaw v. Vogel*, 429 F.2d 476, 166 U.S.P.Q. (BNA) 428 (C.C.P.A. 1970).

570. 83 F.3d 1399, 38 U.S.P.Q.2d (BNA) 1743 (Fed. Cir. 1996).

571. A fusion protein is a molecule containing the amino acid sequences of two different proteins. See *Schendel v. Curtis*, 83 F.3d 1399, 1400, 38 U.S.P.Q.2d (BNA) 1743, 1744 (Fed. Cir. 1996).

572. See *id.* at 1402, 38 U.S.P.Q.2d (BNA) at 1745.

573. See *id.* at 1400-01, 38 U.S.P.Q.2d (BNA) at 1744; see also 37 C.F.R. § 1.608(b) (1996) providing that "the applicant, before an interference will be declared, shall file evidence which demonstrate that applicant is *prima facie* entitled to a judgment relative to the patentee and an explanation stating with particularity the basis upon which the applicant is *prima facie* entitled to the judgment").

574. See *Schendel*, 83 F.3d at 1401, 38 U.S.P.Q.2d (BNA) at 1745.

575. See *id.* at 1402, 38 U.S.P.Q.2d (BNA) at 1745; *Hahn v. Wong*, 892 F.2d 1028, 1032, 13 U.S.P.Q.2d (BNA) 1313, 1317 (Fed. Cir. 1989) ("To establish reduction to practice of a chemical composition, it is sufficient to prove 'that the inventor actually prepared the composition and knew it would work.'" (quoting *Mikus v. Wachtel*, 542 F.2d 1157, 1159, 191 U.S.P.Q.2d (BNA) 571, 573 (C.C.P.A. 1976))); see also *Newkirk v. Lulejian*, 825 F.2d 1581, 1582, 3 U.S.P.Q.2d (BNA) 1793, 1794 (Fed. Cir. 1987) ("[E]very limitation of the interference count must exist in the embodiment and be shown to have performed as intended.").

court concluded that Schendel did not provide sufficient, scientific evidence⁵⁷⁶ that he prepared a fusion protein which contained every limitation recited by the count,⁵⁷⁷ and therefore, did not make the required *prima facie* showing that he was entitled to judgment of priority.⁵⁷⁸ The court did not address whether Schendel's testimony was adequately corroborated because this conclusion mandated affirming the Board.⁵⁷⁹

In dissent, Judge Newman noted that review of the Board's grant of summary judgment was plenary, and neither the Board nor the Federal Circuit should have weighed the scientific sufficiency of the evidence.⁵⁸⁰ To the contrary, she opined reasonable factual inferences should have been drawn in favor of Schendel, and the truth of the factual evidence adduced should not have been determined in summary proceedings, unlike the majority's conclusions.⁵⁸¹ Specifically, Judge Newman maintained that the scientific sufficiency of Schendel's evidence was not challenged by skilled artisans in this field.⁵⁸² Judge Newman reasoned that for the majority and the Board to hold in summary judgment that the scientific record was insufficient when skilled artisans and the inventor deemed otherwise was an improper appellate action.⁵⁸³

In considering matters of jurisdiction in an interference, the Federal Circuit in *Guinn v. Kopf*⁵⁸⁴ affirmed the Board's retention of jurisdiction when an interfering party disclaimed the patent claim in his application corresponding to the count.⁵⁸⁵

After the Patent Office declared an interference between the parties, Guinn attempted to terminate the interference by filing a statutory disclaimer⁵⁸⁶ of his only claim corresponding to the sole

576. The court extensively reviewed every declaration in reaching this conclusion; the court's review of the declarations will not be discussed because of its length and technical complexity. See *Schendel*, 83 F.3d at 1403-04, 38 U.S.P.Q.2d (BNA) at 1746-47.

577. See *id.* at 1404, 38 U.S.P.Q.2d (BNA) at 1747-78.

578. See *id.*, 38 U.S.P.Q.2d (BNA) at 1748.

579. See *id.*, 38 U.S.P.Q.2d (BNA) at 1748.

580. See *id.* at 1406, 38 U.S.P.Q.2d (BNA) at 1749 (Newman, J., dissenting).

581. See *id.* at 1407, 38 U.S.P.Q.2d (BNA) at 1749 (Newman, J., dissenting); see also *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 255 (1986); *Kahl v. Scoville*, 609 F.2d 991, 995, 203 U.S.P.Q. (BNA) 652, 656 (C.C.P.A. 1979).

582. See *Schendel*, 83 F.3d at 1406-07, 38 U.S.P.Q.2d (BNA) at 1749-50.

583. See *id.*, 38 U.S.P.Q.2d (BNA) at 1749.

584. 96 F.3d 1419, 40 U.S.P.Q.2d (BNA) 1157 (Fed. Cir. 1996), *cert. denied*, 117 S. Ct. 1692 (1997).

585. See *Guinn v. Kopf*, 96 F.3d 1419, 1422, 40 U.S.P.Q.2d (BNA) 1157, 1160 (Fed. Cir. 1996), *cert. denied*, 117 S. Ct. 1692 (1997).

586. Section 253 states a "patentee, whether of the whole or any sectional interest therein, may, on payment of the fee required by law, make disclaimer of any complete claim." 35 U.S.C. § 253 (1994).

count of the interference. Guinn stated in the disclaimer that “[t]his disclaimer is not a request for entry of an adverse judgment under 37 C.F.R. § 1.662.”⁵⁸⁷ Simultaneously, he filed a 37 C.F.R. § 1.635 motion⁵⁸⁸ “to dismiss the interference for lack of jurisdiction.”⁵⁸⁹ Guinn argued that there was no controversy because he had no claim corresponding to the interference count remaining in his patent.⁵⁹⁰

The Board then “issued an order to show cause why judgment should not be entered against Guinn as a result of the statutory disclaimer.”⁵⁹¹ Despite Guinn’s assertion to the contrary, the Board treated the statutory disclaimer as a request for entry of an adverse judgment against Guinn in accordance with 37 C.F.R. § 1.662(c).⁵⁹²

The Federal Circuit held that Guinn’s disclaimer of the only patent claim corresponding to the count did not divest the Board of its jurisdiction to determine the priority question.⁵⁹³ The court ruled that the language of 35 U.S.C. § 135(a) required the Board to “determine questions of priority” after an interference was declared and did not relieve the Board of its jurisdiction solely because the claims corresponding to the count were disclaimed.⁵⁹⁴

The Federal Circuit, disagreeing with Guinn, further held that 37 C.F.R. § 1.662(c) was consistent with 35 U.S.C. § 253 and fell within the statutory authority granted to the Commissioner under 35 U.S.C. § 6.⁵⁹⁵ The court reasoned that 37 C.F.R. § 1.662(c) does not call for judgment as to a party’s claims remaining in an interference and therefore does not interfere with a patentee’s right to disclaim under 35 U.S.C. § 253.⁵⁹⁶

G. Term of Enforceability

The enforceable term of a U.S. patent traditionally is seventeen years from the date the patent is issued, regardless of how long the

587. See *Guinn*, 96 F.3d at 1420, 40 U.S.P.Q.2d (BNA) at 1158. Section 1.662(c) of 37 C.F.R. provides that “[t]he filing of a statutory disclaimer under 35 U.S.C. § 253 by a patentee will delete any statutorily disclaimed claims from being involved in the interference.” See 37 C.F.R. § 1.662(c) (1996). A statutory disclaimer will not be treated as a request for entry of an adverse judgment against the patentee unless it results in the deletion of all patent claims corresponding to a count. See *id.*

588. “A party seeking entry of an order relating to any matter other than a matter which may be raised under § 1.633 or § 1.634 may file a motion requesting entry of the order. See § 1.637(a) and (b).” 37 C.F.R. § 1.635 (1996).

589. See *Guinn*, 96 F.3d at 1420, 40 U.S.P.Q.2d (BNA) at 1158.

590. See *id.*, 40 U.S.P.Q.2d (BNA) at 1158.

591. See *id.*, 40 U.S.P.Q.2d (BNA) at 1158.

592. See *id.*, 40 U.S.P.Q.2d (BNA) at 1158.

593. See *id.* at 1421-22, 40 U.S.P.Q.2d (BNA) at 1159.

594. See *id.*, 40 U.S.P.Q.2d (BNA) at 1159.

595. See *id.* at 1422, 40 U.S.P.Q.2d (BNA) at 1160.

596. See *id.*, 40 U.S.P.Q.2d (BNA) at 1160.

application was pending in the Patent Office.⁵⁹⁷ However, the Uruguay Round Agreements Act ("URAA") provided an alternate term of twenty years, measured from the filing date of the patent application, if such term is longer than seventeen years from issuance, for those patents in force on June 7, 1995.⁵⁹⁸

The enforceable term of a U.S. patent may also be extended under The Drug, Price Competition and Patent Term Restoration Act (also known as the Hatch-Waxman Act).⁵⁹⁹ This statute permits a patent-term extension for a patented drug whose marketing was delayed by Food and Drug Administration (FDA) approval. The length of the extension will vary depending on the circumstances.⁶⁰⁰

In *Merck & Co. v. Kessler*,⁶⁰¹ the Federal Circuit addressed the limitations on granting a restoration extension (the extension period restored under the Hatch-Waxman Act) for patents with a term of twenty years granted pursuant to the URAA.⁶⁰² For patents issued prior to June 8, 1995, the Patent Office and FDA argued that the patent term should be seventeen years from issuance plus any restoration extension, or twenty years from filing (without a restoration extension), whichever was greater.⁶⁰³ The district court dis-

597. Section 154(a)(2) of 35 U.S.C. provides for a patent "term beginning on the date on which the patent issues and ending 20 years from the date on which the application for the patent was filed in the United States or, if the application contains a specific reference to an earlier filed application or applications under section 120, 121, or 365(c) of this title, from the date on which the earliest such application was filed." 35 U.S.C. § 154(a)(2) (1994).

598. *See id.*

599. 35 U.S.C. § 156(a) provides:

(a) The term of a patent which claims a product, a method of using a product, or a method of manufacturing a product shall be extended in accordance with this section from the original expiration date of the patent if—

(1) the term of the patent has not expired before an application is submitted under subsection (d)(1) for its extension;

....

(4) the product has been subject to a regulatory review period before its commercial marketing or use

Id. § 156(a).

600. If a patent was issued and FDA testing for approval began before the 1984 enactment of the Hatch-Waxman Act, the total extension period restored ("restoration extension") may not exceed two years. *See* 35 U.S.C. § 156(g)(6)(C). Otherwise, the restoration period must be less than five years. *See id.* § 156(g)(6)(B). The effective patent term, including the restoration period, may not exceed fourteen years following FDA approval of the new drug. *See id.* § 156(c)(3). The term of the patent may receive only one restoration extension and may not gain another, even for a different drug covered by the patent whose marketing is also delayed by FDA procedures. *See id.* § 156(a)(2).

601. 80 F.3d 1543, 38 U.S.P.Q.2d (BNA) 1347 (Fed. Cir. 1996), *cert. denied*, 117 S. Ct. 788 (1997).

602. *See Merck & Co., Inc. v. Kessler*, 80 F.3d 1543, 1546, 38 U.S.P.Q.2d 1347, 1348 (Fed. Cir. 1996), *cert. denied*, 117 S. Ct. 788 (1997).

603. *See id.* at 1550, 38 U.S.P.Q.2d (BNA) at 1352. Based on the Hatch-Wayman Act, 35 U.S.C. § 156(a), the Commissioner of the Patent Office had issued as "Final Determination" ruling that the term of a patent "shall be extended in accordance with this section from the

agreed, holding that the restoration extension under the Hatch-Waxman Act could be added to the twenty-year term calculated under URAA, even if the effective restoration period exceeded the two-year limitation for Hatch-Waxman extensions.⁶⁰⁴

The Federal Circuit affirmed that patents issued before June 8, 1995, may add the restoration extension to the twenty-year term regardless of when such extension is granted.⁶⁰⁵ Because Congress had not expressly addressed this issue, the court looked to the plain language of 35 U.S.C. § 156(a),⁶⁰⁶ noting that this statute now reads that a restoration extension may not be given if the patent has been “extended under subsection (e)(1) of this section,”⁶⁰⁷ clearly referring to a previous extension under the Hatch-Waxman Act.⁶⁰⁸

The court found that the legislative history of the URAA supported this holding.⁶⁰⁹ “[T]he phrase ‘original expiration date’ was inserted [in the Hatch-Waxman Act] in association with the limitation that to receive a restoration extension ‘the term of the patent had never been extended’ by a prior restoration extension.”⁶¹⁰

original expiration date of the patent,” the FDA/Patent Office concluded that the seventeen year date was its “original expiration date” and the restoration extension could only be added thereto. See 60 Fed. Reg. 30,069-71 (1995) (emphasis added).

604. See *id.* (noting district court decision that “patents in force on June 8, 1995, are entitled to add a restoration extension to a term calculated as 20 years from filing regardless of when the extension is granted”). The district court rejected the Patent Office’s reliance on the words “original expiration date” in 35 U.S.C. § 156(a), reasoning that this statute changed the “original expiration date” in some cases to mean twenty years from the filing date of the application. For patents expiring prior to June 8, 1995, but for a restoration extension, the district court concluded that permitting a two-year restoration extension to be added anew to a URAA extended term “was allowed under the Hatch-Waxman Act as a ‘second’ extension.” *Id.* at 1549, 38 U.S.P.Q.2d (BNA) at 1351.

605. See *id.* at 1550, 38 U.S.P.Q.2d (BNA) at 1352 (concluding that with this interpretation, all provisions of URAA and Hatch-Wayman Act could be given effect).

606. See *id.* at 1548, 38 U.S.P.Q.2d (BNA) at 1350 (noting that Patent Office “principally relied” on this language for determination of their position). The court concluded that the “original expiration date” means no more than that the expiration date has not been extended under section 156(e)(1) and, thus, the phrase can identify more than one date. See *id.* at 1550-51, 38 U.S.P.Q.2d (BNA) at 1352.

607. See *id.* at 1551, 38 U.S.P.Q.2d (BNA) at 1352 (acknowledging that a patent can only receive one restoration extension (citing 35 U.S.C. § 156(a)(2))).

608. See *id.*, 38 U.S.P.Q.2d (BNA) at 1352 (disagreeing with Patent Office/FDA and finding that § 156 is not a “linguistic barrier to an add-on to a term extended by URAA.”).

609. The Federal Circuit relied on a June 1982 letter from Congressman Tom Railsback to Mr. Bruce Lehman, then Counsel to the Subcommittee on Courts, Civil Liberties, and the Administration of Justice, describing in detail technical amendments to House Bill 6444, a 1982 predecessor of the Hatch-Waxman Act. See *id.* at 1550-51 & n.7, 38 U.S.P.Q.2d (BNA) at 1352 & n.7 (highlighting statement of Congressman Railsback regarding insertion of amendment reading “from the original expiration date of the patent”).

610. *Id.* at 1550 & n.7, 38 U.S.P.Q.2d (BNA) at 1352 & n.7.

The Federal Circuit held, however, that not all patents with a twenty-year term are entitled to a restoration extension.⁶¹¹ First, adding a restoration extension to the twenty-year term must not exceed the fourteen-year limit mandated by 35 U.S.C. § 156(c)(3), and minor adjustments must be made to the restoration extension period to comply with this fourteen-year limit.⁶¹² Second, no restoration extension period may be added to those patents with a twenty-year term that would have expired before June 8, 1995, but for the restoration extension.⁶¹³ To add a restoration extension period to the twenty-year term of these patents, the court reasoned, would circumvent the language and limits of 35 U.S.C. § 156(a)(2).⁶¹⁴

III. INFRINGEMENT

Title 35 U.S.C. § 271(a) defines infringement in the following manner: "[W]hoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent."⁶¹⁵ When a patent holder brings a patent infringement suit against an accused infringer, the court must address two main issues: (1) whether the accused infringer can show that the patent claims asserted by the patent holder are invalid; and (2) whether the accused device reads on⁶¹⁶ (and thus infringes) the claims of the patent.⁶¹⁷ Because 35 U.S.C. § 282 establishes a presumption of validity for all patents, an accused infringer has the burden to prove the invalidity of any patent⁶¹⁸ in

611. See *id.* at 1551, 38 U.S.P.Q.2d (BNA) at 1353 (noting problem with pre-URAA restoration extensions).

612. See *id.*, 38 U.S.P.Q.2d (BNA) at 1352-53 (stating that Congress has made it clear that the "14-year period is a mandatory limit on the extended term and must be given effect").

613. See *id.* at 1552, 38 U.S.P.Q.2d (BNA) at 1353-54 (remarking that "a minor adjustment" does not make them consistent with the Hatch-Wayman Act).

614. The court reasoned that 35 U.S.C. § 156(a)(2) "provides that a restoration extension may be given provided 'the term of the patent has never been extended under subsection (e)(1) of this section.'" *Id.*, 38 U.S.P.Q.2d (BNA) at 1353-54 (quoting 35 U.S.C. § 156(a)(2) (1994)). Therefore, because the terms of such patents had already been extended under subsection (e)(1), the court concluded that "[a] reapplication of the restoration extension would constitute a second extension contrary to the statute." *Id.*, 38 U.S.P.Q.2d (BNA) at 1354.

615. See 35 U.S.C. § 271(a).

616. See *Engel Indus., Inc. v. Lockformer Co.*, 96 F.3d 1398, 1405-06, 40 U.S.P.Q.2d (BNA) 1161, 1165-66 (Fed. Cir. 1996) (using term to describe infringement when imitations in "properly construed claim" are found in accused device).

617. See *Sensonic, Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1570, 38 U.S.P.Q.2d (BNA) 1551, 1553-55 (Fed. Cir. 1996) (holding that defendant did not prove plaintiff's patent was not valid and that defendant's infringement was not willful).

618. See 35 U.S.C. § 282 (listing four available defenses that accused infringer may employ).

a validity analysis by clear and convincing evidence.⁶¹⁹ By contrast, the patent holder in the infringement analysis has the burden to prove infringement by a preponderance of the evidence.⁶²⁰

The Federal Circuit has established a two-step infringement analysis: (1) construction of the claims of the patent to determine their meaning and scope; and (2) comparison of the properly construed claims with the accused structure to determine whether the claims encompass that structure.⁶²¹

A. *The First Step of the Analysis*

The claims of a patent represent the metes and bounds of the legal protection afforded to an invention.⁶²² In the first step of the infringement analysis, claim construction seeks to determine the meaning of the claims and thus the exact boundaries of protection.⁶²³ Prior to 1995, the Federal Circuit had treated claim construction somewhat inconsistently. In most cases, the court had recognized claim construction as a matter of law, which a court must decide, and subject to an independent (or *de novo*) standard of review on appeal.⁶²⁴ In some cases, however, the court also had indicated

619. See *Sensonic*, 81 F.3d at 1570, 38 U.S.P.Q.2d (BNA) at 1554 (affirming district court opinion that defendant did not meet the burden of proving that plaintiff's patent was invalid).

620. See *Lairam Corp. v. Rexnord, Inc.*, 939 F.2d 1533, 1535, 19 U.S.P.Q. 2d (BNA) 1367, 1369 (Fed. Cir. 1991) (noting that patentee must also show that "every limitation set forth in a patent claim must be found in an accused product or process exactly or by a substantial equivalent").

621. See *Engel Indus.*, 96 F.3d at 1403-04, 40 U.S.P.Q.2d (BNA) at 1164 (evaluating alleged infringement of patent for system for connecting ends of sheet metal duct sections); *Read Corp. v. Portec, Inc.*, 970 F.2d 816, 821, 23 U.S.P.Q. 2d (BNA) 1426, 1431 (Fed. Cir. 1992) (determining alleged infringement of patent for portable loam screening apparatus); *Senmed, Inc. v. Richard-Allan Med. Indus., Inc.*, 888 F.2d 815, 818, 12 U.S.P.Q.2d (BNA) 1508, 1511 (Fed. Cir. 1989) (reviewing infringement claim of patent for surgical staplers).

622. See *Zenith Labs., Inc. v. Bristol-Myers Squibb Co.*, 19 F.3d 1418, 1423-24, 30 U.S.P.Q.2d (BNA) 1285, 1289-90 (Fed. Cir. 1994).

623. See *id.*, 30 U.S.P.Q.2d (BNA) 1285, 1289-90.

624. See *Read Corp.*, 970 F.2d at 822-23, 23 U.S.P.Q.2d (BNA) at 1432 (affirming claim interpretation is question of law and detailing court's duty to look at "the description of the invention and specification of claim annexed to them."); *Intellicall, Inc. v. Phonometrics, Inc.*, 952 F.2d 1384, 1387, 21 U.S.P.Q.2d (BNA) 1383, 1386 (Fed. Cir. 1992) (noting that court is not bound by district court's holding but must make "independent determination" and stating that claim construction is a matter of law "amenable to summary judgment"); *Unique Concepts, Inc. v. Brown*, 939 F.2d 1558, 1561, 19 U.S.P.Q.2d (BNA) 1500, 1503 (Fed. Cir. 1991) (reasserting *de novo* review for claim construction and describing court's consideration of three sources to ascertain meaning of claims); *Specialty Composites v. Cabot Corp.*, 845 F.2d 981, 986, 6 U.S.P.Q.2d (BNA) 1601, 1604 (Fed. Cir. 1988) (reviewing *de novo* and as matter of law district court's claim interpretation of meaning of "platicizer"); *SRI Int'l v. Matsushita Elec. Corp. of Am.*, 775 F.2d 1107, 1118-22, 1138-40, 227 U.S.P.Q. (BNA) 577, 581 (Fed. Cir. 1985) (in banc) (affirming "matter of law" proceeding with own evaluation of alleged infringement of single tube television camera); *Fromson v. Advance Offset Plate, Inc.*, 720 F.2d 1565, 1569-71, 219 U.S.P.Q. (BNA) 1137, 1140 (Fed. Cir. 1983) (establishing that first prong of infringement test—determining what is patented—is matter of law); *SSIH Equip. v. United States Int'l Trade*

that underlying factual questions may arise for a jury to decide, and findings on disputed terms in the claim and on infringement matters are subject to a strict clearly erroneous standard of review on appeal.⁶²⁵ In 1995, the Federal Circuit resolved these inconsistent decisions in *Markman v. Westview Instruments, Inc.*,⁶²⁶ by establishing claim construction as an exclusive matter of law for the court, subject to *de novo* review.⁶²⁷ In 1996, the Supreme Court affirmed the decision.⁶²⁸

In granting *certiorari* to *Markman*, the Supreme Court sought to determine whether claim construction is a matter of law reserved entirely for the court, or subject to a Seventh Amendment guarantee that a jury will determine the meaning of any disputed term of art about which expert testimony is offered.⁶²⁹ The Court held that “[e]xisting precedent, the relative interpretive skills of judges and juries, and statutory policy considerations all favor allocating construction issues to the court.”⁶³⁰ According to the Court, “[f]unctional considerations also favor having judges define patent terms of art.”⁶³¹ The Court determined that the training and background of judges rendered them most qualified to properly interpret highly

Comm’n, 718 F.2d 365, 376, 218 U.S.P.Q. (BNA) 678, 688 (Fed. Cir. 1983) (asserting that “what is the thing patented” is matter of law, but whether the thing has been constructed, used, or sold is matter of fact); *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 770-71, 218 U.S.P.Q. (BNA) 781, 789 (Fed. Cir. 1983) (determining “identity of invention” is matter of fact and claim construction is matter of law).

625. See *Tol-O-Matic, Inc. v. Proma Produkt-Und Mktg. Gesellschaft m.b.H.*, 945 F.2d 1546, 1549, 20 U.S.P.Q.2d (BNA) 1332, 1338 (Fed. Cir. 1991) (clarifying that claim construction is “a matter of law based on underlying facts” which can be determined by jury); *Perini Am., Inc. v. Paper Converting Mach. Co.*, 832 F.2d 581, 584, 4 U.S.P.Q.2d (BNA) 1621, 1625 (Fed. Cir. 1987) (reminding that legal conclusions “rise out of and rests on” facts); *H. H. Robertson, Co. v. United Steel Deck, Inc.*, 820 F.2d 384, 389, 2 U.S.P.Q. 2d (BNA) 1926, 1929 (Fed. Cir. 1987) (stating that factual considerations regarding district court’s interpretation of “bottomless” are reviewed under clearly erroneous standard); *Moeller v. Ionetics, Inc.*, 794 F.2d 653, 656-57, 229 U.S.P.Q. (BNA) 992, 994-95 (Fed. Cir. 1986) (asserting that when underlying facts regarding claim interpretation are disputed, judge should allow expert testimony to clarify); *Palumbo v. Don-Joy Co.*, 762 F.2d 969, 974, 226 U.S.P.Q. (BNA) 5, 9 (Fed. Cir. 1985) (explaining that where scope of claim is undisputed, it is a matter of law, but where there is ambiguity the trier of fact must review underlying factual questions); *Bio-Rad Labs., Inc. v. Nicolet Instrument Corp.*, 739 F.2d 604, 614-15, 222 U.S.P.Q. (BNA) 654, 662 (Fed. Cir. 1984) (holding that juries can decide questions of law as long as they are adequately instructed).

626. 52 F.3d 967, 34 U.S.P.Q.2d (BNA) 1321 (Fed. Cir. 1995) (in banc), *aff’d*, 116 S. Ct. 1384 (1996).

627. See *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 970-71, 975, 34 U.S.P.Q.2d (BNA) 1321, 1322, 1326 (Fed. Cir. 1995) (in banc) (reviewing infringement action dealing with inventory control method for use in dry cleaning business), *aff’d*, 116 S. Ct. 1384 (1996).

628. See *Markman v. Westview Instruments, Inc.*, 116 S. Ct. 1384, 1387 (1996) (reasserting, however, that whether infringement occurred is still a question of fact for jury).

629. See *id.* at 1387.

630. *Id.* at 1392-95.

631. *Id.* at 1395.

technical patents.⁶³² The Court further explained that judges are also better suited than a jury to determine whether “an expert’s proposed definition of a claim term fully comports with the instrument as a whole.”⁶³³ Finally, the Court opined that “the need for uniformity in the treatment of a given patent favors allocation of patent claim construction issues to the court.”⁶³⁴ Accordingly, after reviewing all these factors, the Court concluded that claim construction must be a matter of law.⁶³⁵

1. *Guide to claim construction*

Since the *Markman* ruling and its subsequent affirmance by the Supreme Court, district courts have had to adjust to the new rule that claim construction is a matter of law. In *Hoechst Celanese Corp. v. BP Chemicals Ltd.*,⁶³⁶ for example, although the district court had relegated a disputed claim term to the jury in a pre-*Markman* suit, the Federal Circuit affirmed because the jury used the proper construction.⁶³⁷ *Hoechst Celanese* (“Celanese”) held a patent that claimed a method of reducing iodide contamination in an organic medium, and when BP Chemicals utilized a similar method for iodide contamination, Celanese sued for patent infringement.⁶³⁸ During the jury trial, the claim construction issue focused on the word “stable,” which in turn depended on the meaning of “dry physical dimension.”⁶³⁹ Celanese argued that the term “dimension” meant “linear measurement,” which would result in infringement, while BP argued that the term meant the volume dimension, which would result in noninfringement.⁶⁴⁰ The jury interpreted the claims and found that the patent was infringed.⁶⁴¹ After making a statement on the meaning of the claim terms,⁶⁴² the district court subsequently

632. *See id.*

633. *Id.* at 1395-96.

634. *Id.*

635. *See id.* at 1396.

636. 78 F.3d 1575, 38 U.S.P.Q.2d (BNA) 1126 (Fed. Cir.), *cert. denied*, 117 S. Ct. 275 (1996).

637. *See Hoechst Celanese Corp. v. BP Chems. Ltd.*, 78 F.3d 1575, 1584, 38 U.S.P.Q.2d (BNA) 1126, 1128 (Fed. Cir.) (reasserting that in light of *Markman*, defendant’s seeking of *de novo* review of claim interpretation on appeal is “clearly not frivolous”), *cert. denied*, 117 S. Ct. 275 (1996).

638. *See id.* at 1577-78, 38 U.S.P.Q.2d (BNA) at 1128.

639. *Id.* at 1578-79, 38 U.S.P.Q.2d (BNA) at 1128-29.

640. *See id.* at 1579, 38 U.S.P.Q.2d (BNA) at 1129.

641. *See id.* at 1578, 38 U.S.P.Q.2d (BNA) at 1128.

642. *See id.*, 38 U.S.P.Q.2d (BNA) at 1128 (highlighting that district court’s procedure was based on ruling in *Read Corp. v. Portec, Inc.*, 970 F.2d 816, 822 n.3, 23 U.S.P.Q.2d (BNA) 1426, 1432 & n.3 (Fed. Cir. 1992)).

denied a motion for new trial and motion for a judgment as a matter of law.⁶⁴³

On appeal, BP Chemicals argued that *Markman* required a *de novo* review of the disputed claim terms, and the Federal Circuit agreed.⁶⁴⁴ The court then made an independent claim construction based on the evidence of record.⁶⁴⁵ For intrinsic evidence, the court reviewed the claims and the specification, and for extrinsic evidence, the court considered dictionary definitions, technical experts, and even the testimony of the inventor.⁶⁴⁶ In the end, the court affirmed the holding of infringement because Celanese's position provided the only definition of the claim term consistent with the specification.⁶⁴⁷

Similarly, in *Texas Instruments Inc. v. Cypress Semiconductor Corp.*,⁶⁴⁸ the Federal Circuit applied a *de novo* claim construction.⁶⁴⁹ Texas Instruments ("TI") sued Cypress Semiconductor, LSI Logic, and VLSI Technology, alleging patent infringement of methods to encapsulate the electrical component of a semiconductor device (semiconductor die) in a plastic body.⁶⁵⁰ The case turned on the construction of the term "conductor."⁶⁵¹ The accused infringers argued that the term referred to the metal leads protruding from the plastic body of a semiconductor device.⁶⁵² In contrast, relying on the ordinary dictionary definition of the term, TI argued that "conductor" encompassed any element capable of conducting electricity.⁶⁵³ A

643. See *id.*, 38 U.S.P.Q.2d (BNA) at 1128.

644. See *id.*, 38 U.S.P.Q.2d (BNA) at 1128-29 (recounting that BP Chemicals reminded court that *Read Corp.* ruling was superseded by *Markman*).

645. See *id.* at 1581, 38 U.S.P.Q.2d (BNA) at 1130 (supporting Celanese's interpretation of "dry physical dimension").

646. See *id.*, at 1579-80, 38 U.S.P.Q.2d (BNA) at 1129-30 (reviewing "photographs and experimental data, the testimony of the scientists who produced the data and interpreted it, and the testimony of experts in the field."). The court also recognized that, under *Markman*, the court owes no deference to the testimony of the inventor. See *id.* at 1580, 38 U.S.P.Q.2d (BNA) at 1130 (citing *Markman*, 52 F.3d at 983, 34 U.S.P.Q.2d (BNA) at 1332).

647. See *id.* at 1581, 38 U.S.P.Q.2d (BNA) at 1130.

648. 90 F.3d 1558, 39 U.S.P.Q.2d (BNA) 1492 (Fed. Cir. 1996), *cert. denied*, 117 S. Ct. 1818 (1997).

649. See *Texas Instruments Inc. v. Cypress Semiconductor Corp.*, 90 F.3d 1558, 1563, 39 U.S.P.Q.2d (BNA) 1492, 1496 (Fed. Cir. 1996), *cert. denied*, 117 S. Ct. 1818 (1997). In the accused processes, the semiconductor die was not mechanically attached to the metal leads that protruded from the plastic body of the semiconductor device. These leads, however, were electrically attached to terminals on the die by means of "whisker wires" that did not extend outside of the plastic body. See *id.* at 1562, 39 U.S.P.Q.2d (BNA) at 1495-96. Second, the accused processes placed one end of the die just below the common plane of the leads. See *id.*, 39 U.S.P.Q.2d (BNA) at 1495-96.

650. See *id.* at 1560-61, 39 U.S.P.Q.2d (BNA) 1494-95.

651. See *id.* at 1564, 39 U.S.P.Q.2d (BNA) 1497.

652. See *id.*, 39 U.S.P.Q.2d (BNA) 1497.

653. See *id.*, 39 U.S.P.Q.2d (BNA) at 1497.

jury found the patents infringed and awarded TI more than \$51 million, but the district court set aside the verdict on a motion for judgment as a matter of law.⁶⁵⁴

On appeal, the Federal Circuit reviewed the patent claims and found that the term conductor was used to indicate an element that extended beyond the plastic body of a semiconductor device.⁶⁵⁵ It found that specification language further supported this interpretation.⁶⁵⁶ Accordingly, based on this *de novo* review, the court agreed that no infringement occurred and affirmed the district court.⁶⁵⁷

This new *de novo* standard of review for claim construction fundamentally changed the manner by which district courts approached claim construction.⁶⁵⁸ In *Ethicon Endo-Surgery, Inc. v. United States Surgical Corp.*,⁶⁵⁹ Ethicon obtained several patents relating to linear cutter staplers.⁶⁶⁰ After a *Markman* hearing was held, the district court determined that the claims in both patents had

654. *See id.* at 1563, 39 U.S.P.Q.2d (BNA) at 1496.

655. *See id.*, 39 U.S.P.Q.2d (BNA) at 1497.

656. *See id.*, 39 U.S.P.Q.2d (BNA) at 1497 (determining that patentee uses term to mean "leads that 'extend from inside the package to the outside, and connect the semiconductor device to an external circuit'" (quoting *Texas Instruments Inc. v. Cypress Semiconductor Corp.*, Civ. No. 3-90-CV1590-H, slip op. at 10 & n.6 (N.D. Tex. Sept. 6, 1995))).

657. *See id.* at 1570, 39 U.S.P.Q.2d (BNA) at 1502.

658. The most common new technique is the so-called "*Markman* hearing," during which a trial judge hears argument and testimony concerning the construction of claims at issue in a case. *See Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (in banc) (finding that meaning of language in patent claim is a question of law for which *de novo* review is appropriate), *aff'd*, 116 S. Ct. 1384 (1996); *see also* *Loral Fairchild Corp. v. Victor Co. of Japan, Ltd.*, 906 F. Supp. 798 (E.D.N.Y. 1995) (J. Rader, sitting by designation) (recounting application of *Markman* ruling at special two-day bench trial where judge heard expert testimony, "examined extensive briefing and requested additional briefing" on meaning of claims).

659. 93 F.3d 1572, 40 U.S.P.Q.2d (BNA) 1019 (Fed. Cir. 1996), *cert. denied*, 1997 WL 28561 (1997); *see also supra* notes 517-21 and accompanying text.

660. *See* *Ethicon Endo-Surgery, Inc. v. United States Surgical Corp.*, 93 F.3d 1572, 1574-75, 40 U.S.P.Q.2d (BNA) 1019, 1020-21 (Fed. Cir. 1996). A linear cutter stapler is a "surgical instrument used to cut internal body tissue while simultaneously placing rows of staples along both sides of the incision to prevent excessive bleeding." *See id.* at 1574, 40 U.S.P.Q.2d (BNA) at 1020. To accomplish its purpose, it is important that a linear cutter stapler not cut when its staple cartridge is empty. *See id.*, 40 U.S.P.Q.2d (BNA) at 1020. Accordingly, a linear cutter stapler must have a lockout mechanism to prevent that. *See id.*, 40 U.S.P.Q.2d (BNA) at 1020. Ethicon's first patent disclosed a locking mechanism that functioned by impeding the stapler's pusher bars, which cause the staple drivers to eject staples. *See id.*, 40 U.S.P.Q.2d (BNA) at 1020. Concerned that this patent might not cover several lockout mechanisms of its competitor, United States Surgical Corp., Ethicon sought to broaden its claims through a reissue patent, which it obtained. *See id.* at 1575-76, 40 U.S.P.Q.2d (BNA) at 1021. The Federal Circuit described the difference between the two patents as follows:

[f]acially, the primary distinction between [the two patents] is that [the claim at issue in the original patent] seems to tie the location of the lockout mechanism to the slots through which the pusher bars pass, while [the claim at issue in the reissue patent] broadly describes the location of the lockout as anywhere in the path of the pusher assembly.

Id. at 1576-77, 40 U.S.P.Q.2d (BNA) at 1022.

to be read narrowly.⁶⁶¹ On the basis of the claim language and the prosecution history, the court found no relevant distinctions between the claims and interpreted each to require the lockout mechanism to engage the pusher bars rather than any other part of the firing mechanism.⁶⁶² Because U.S. Surgical's lockout mechanisms did not engage the pusher bars, but instead engaged the cam bar retainers (the elements holding the pusher bars) or other portions of the firing assembly, the district court held that U.S. Surgical's staplers did not infringe Ethicon's patents as a matter of law.⁶⁶³

On appeal, the Federal Circuit agreed with the district court that the relevant claim language indicated that the lockout mechanism was located in the longitudinal slots through which the pusher bars passed.⁶⁶⁴ With regard to the reissue patent, however, the court disagreed with the lower court that the term "pusher assembly" could be construed synonymously with "pusher bars."⁶⁶⁵ Despite the obvious distinction between "pusher assembly" and "pusher bar," the court concluded that it was not possible to determine the meaning of "pusher assembly" solely from the claim language.⁶⁶⁶ Thus, relying on the prosecution history of the reissue patent, the court was able to determine that, at a minimum, both the pusher bars and the cam bar retainer were meant to be included as part of the pusher assembly.⁶⁶⁷ Accordingly, since some of U.S. Surgical's lockout mechanisms engaged the cam bar retainer, the Federal Circuit found that the reissue patent's claim read on such mechanisms.⁶⁶⁸ Notwithstanding this finding, the Federal Circuit ultimately affirmed the district court's judgment of non-literal infringement on other grounds, but it remanded for further proceedings with respect to infringement by equivalents.⁶⁶⁹

661. *See id.* at 1577, 40 U.S.P.Q.2d (BNA) at 1022.

662. The court focused particularly on a comparison of the claim language in the original patent that recited "the improvement comprising a lockout mechanism connected to said longitudinal slots for preventing said pusher bars from passing more than one time through said longitudinal slots," with the claim language in the reissue patent that recited "a lockout mechanism for preventing firing movement of the pusher assembly in the firing direction after the pusher assembly has been moved to the retracted position." *See id.* at 1575-77, 40 U.S.P.Q.2d (BNA) at 1021-23.

663. *See id.* at 1577, 40 U.S.P.Q.2d (BNA) at 1022.

664. *See id.* at 1576, 40 U.S.P.Q.2d (BNA) at 1021, 1022.

665. *See id.*, 40 U.S.P.Q.2d (BNA) at 1022.

666. *See id.*, 40 U.S.P.Q.2d (BNA) at 1022.

667. *See id.*, 40 U.S.P.Q.2d (BNA) at 1022.

668. *See id.*, 40 U.S.P.Q.2d (BNA) at 1022. The court concluded that the claim "is limited to an apparatus that blocks the pusher bars rather than more distal portions of the firing mechanisms, such as the cam bar retainer." *Id.* at 1578, 40 U.S.P.Q.2d (BNA) at 1023.

669. *See id.*, 40 U.S.P.Q.2d (BNA) at 1023. The court pointed out that the terms "pusher assembly" and "pusher bars" were both used within the same claim and clause, and that "[i]f the

In *General American Transportation Corp. v. Cryo-Trans, Inc.*,⁶⁷⁰ Cryo-Trans was the assignee of a patent covering cryogenic railcars for use in transporting frozen foods.⁶⁷¹ Unlike conventional refrigerated railcars that employ mechanical refrigeration systems and consume fossil fuels, cryogenic railcars use inexpensive carbon dioxide as the refrigerant.⁶⁷² The cryogenic railcar disclosed in Cryo-Trans's patent contained an insulated compartment along the top of the car, which stored the carbon dioxide.⁶⁷³ The compartment's bottom contained openings adjacent to each of the car's side and end walls.⁶⁷⁴ In operation, the compartment was filled with solid carbon dioxide; then, during transit, the carbon dioxide sublimated, flowing through the compartment's openings and down along the side and end walls.⁶⁷⁵

General American Transportation Corp. ("GATC") made a cryogenic railcar similar to the one disclosed by Cryo-Trans's patent.⁶⁷⁶ The ceiling compartment in GATC's railcar, however, had a "row of openings lengthwise along its center and two rows of openings adjacent to the car's opposite side walls."⁶⁷⁷ "The openings adjacent to the side walls were each three inches from the nearest side wall, and the endmost of such openings were three feet from the nearest end wall."⁶⁷⁸ GATC argued that its railcar did not infringe Cryo-Trans's patent because its ceiling compartment lacked openings adjacent to the railcar's end walls.⁶⁷⁹ Relying on a dictionary definition, the district court interpreted the term "adjacent" in the claims to mean "not far off" or "not necessarily at but nearby or near."⁶⁸⁰ Finding that the end of the openings adjacent to the side

terms 'pusher assembly' and 'pusher bar' described a single element, one would expect the claim to consistently refer to this element as *either* a 'pusher bar' or a 'pusher assembly,' but not both, especially not within the same clause." *Id.*, 40 U.S.P.Q.2d (BNA) at 1023.

670. 93 F.3d 766, 39 U.S.P.Q.2d (BNA) 1801 (Fed. Cir. 1996), *cert. denied*, 117 S. Ct. 1334 (1997); *see infra* notes 734-55.

671. *See* *General Am. Transp. Corp. v. Cryo-Trans., Inc.*, 93 F.3d 766, 767, 39 U.S.P.Q.2d (BNA) 1801, 1802 (Fed. Cir. 1996), *cert. denied*, 117 S. Ct. 1334 (1997).

672. *See id.*, 39 U.S.P.Q.2d (BNA) at 1802.

673. *See id.*, 39 U.S.P.Q.2d (BNA) at 1802.

674. *See id.*, 39 U.S.P.Q.2d (BNA) at 1802.

675. *See id.*, 39 U.S.P.Q.2d (BNA) at 1802. The claim language in dispute recited "a plurality of openings through said ceiling means adjacent each of said side walls and end walls for permitting the flow of sublimated carbon dioxide gas from said compartment . . ." *Id.*, 39 U.S.P.Q.2d (BNA) at 1802.

676. *See id.*, 39 U.S.P.Q.2d (BNA) at 1802 (providing physical descriptions of both designs).

677. *Id.*, 39 U.S.P.Q.2d (BNA) at 1802.

678. *Id.*, 39 U.S.P.Q.2d (BNA) at 1802.

679. *See id.* at 769, 39 U.S.P.Q.2d (BNA) at 1802-03.

680. *Id.*, 39 U.S.P.Q.2d (BNA) at 1803.

walls were also adjacent to the end walls, the district court held that GATC's railcar infringed Cryo-Trans' patent.⁶⁸¹

On appeal, the Federal Circuit held that the district court had erred in construing the patent claims.⁶⁸² Reviewing the claims and patent specification, the Federal Circuit found that both distinguished between the openings adjacent to the side and end walls.⁶⁸³ For example, the claim language at issue recited openings adjacent to "each of said side walls and end walls . . ."⁶⁸⁴ The court found that the claims and specification treated the openings adjacent to the side walls and end walls as structurally distinct.⁶⁸⁵ As a result, the Federal Circuit reversed, holding that GATC's railcar did not literally infringe Cryo-Trans's patent.⁶⁸⁶

2. Considerations of claim construction

In *Markman v. Westview Instruments, Inc.*,⁶⁸⁷ the Federal Circuit explained that claim construction entails analyses of the patent claims, the specification, and the prosecution history.⁶⁸⁸ The patent document contains the patent claims and the specification, but the administrative history of the patent during the application procedures before the Patent Office set forth the prosecution history. Although not contained within the patent, the prosecution history is considered part of the patent used to construe the patent claims.⁶⁸⁹

In *Amhil Enterprises, Ltd. v. WAWA, Inc.*,⁶⁹⁰ the Federal Circuit reiterated the importance of prosecution history in construing the patent claims.⁶⁹¹ By assignment, Amhil Enterprises held a patent for a thin, flexible, plastic lid to cover beverage containers with various structural improvements over prior lid types.⁶⁹² When WAWA began to provide beverage container lids to its convenience stores with similar features, Amhil sued for patent infringement.⁶⁹³ The district

681. See *id.*, 39 U.S.P.Q.2d (BNA) at 1803.

682. See *id.*, 39 U.S.P.Q.2d (BNA) at 1803.

683. See *id.* at 769-70, 39 U.S.P.Q.2d (BNA) at 1803.

684. *Id.* at 770, 39 U.S.P.Q.2d (BNA) at 1803.

685. See *id.*, 39 U.S.P.Q.2d (BNA) at 1804.

686. *Cryo-Trans, Inc.*, 93 F.3d at 772, 39 U.S.P.Q.2d (BNA) at 1805.

687. 52 F.3d 967, 34 U.S.P.Q.2d (BNA) 1321 (Fed. Cir. 1995), *aff'd*, 116 S. Ct. 1384 (1996).
688. See *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979-80, 34 U.S.P.Q.2d (BNA) 1321, 1329-30 (Fed. Cir. 1995), *aff'd*, 116 S. Ct. 1384 (1996).

689. See *id.* at 980, 34 U.S.P.Q.2d at 1330; *Autogiro Co. of Am. v. United States*, 384 F.2d 391, 398, 155 U.S.P.Q. (BNA) 697, 703 (Ct. Cl. 1967) (using entire record of Patent Office proceedings to determine infringement).

690. 81 F.3d 1554, 38 U.S.P.Q.2d (BNA) 1471 (Fed. Cir. 1996).

691. *Amhil Enters., Ltd. v. WAWA, Inc.*, 81 F.3d 1554, 1559, 38 U.S.P.Q.2d (BNA) 1471, 1475 (Fed. Cir. 1996).

692. See *id.* at 1556, 38 U.S.P.Q.2d (BNA) at 1472.

693. See *id.* at 1557, 38 U.S.P.Q.2d (BNA) at 1472.

court granted a motion for summary judgment of noninfringement.⁶⁹⁴

On appeal, the Federal Circuit focused their claim construction analysis on the faces of the projections on the lid.⁶⁹⁵ The patented invention contained a face with "vertical" or "substantially vertical" projections, whereas the allegedly infringing structure had a face with sloping projections.⁶⁹⁶ The court used the prosecution history, in addition to the patent claim and the specification, to construe the claim's meaning.⁶⁹⁷ Noting the relevance of prosecution history for purposes of prosecution history estoppel, the court explained that claim construction also requires utilization of the prosecution history, especially where the invention "is in a crowded art."⁶⁹⁸ Within the prosecution history, the court pointed out that the patentee had overcome a rejection for obviousness over a lid with a sloping face by emphasizing that the claimed invention only pertained to "vertical" or "substantially vertical" projections.⁶⁹⁹ The court thus interpreted "vertical" or "substantially vertical" as "essentially vertical," excluding lids with sloping faces.⁷⁰⁰ Based on this distinction from the prosecution history, *inter alia*, the court affirmed the district court's ruling.⁷⁰¹

In *Markman*, the Federal Circuit also provided that trial courts may receive extrinsic evidence such as expert and inventor testimony and learned treatises; the purpose of this evidence is "to aid the court in coming to a correct conclusion' as to the 'true meaning of the language employed' in the patent."⁷⁰² For example, in *Vitronics Corp. v. Conceptronic, Inc.*,⁷⁰³ the Federal Circuit addressed the role of extrinsic evidence, severely restricting its use as "improper" when the disputed terms of a claim may be understood from a careful reading of the public record.⁷⁰⁴

694. *See id.*, 38 U.S.P.Q.2d (BNA) at 1473.

695. *See id.* at 1558-59, 38 U.S.P.Q.2d (BNA) at 1474-75.

696. *See id.*, 38 U.S.P.Q.2d (BNA) at 1474-75.

697. *See id.*, 38 U.S.P.Q.2d (BNA) at 1473-75 (discussing district court's prior analysis).

698. *Id.* at 1559-60, 38 U.S.P.Q.2d (BNA) at 1475.

699. *See id.* at 1561, 38 U.S.P.Q.2d (BNA) at 1475.

700. *Id.* at 1562, 38 U.S.P.Q.2d (BNA) at 1476.

701. *See id.*, 38 U.S.P.Q.2d (BNA) at 1476.

702. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 980, 34 U.S.P.Q. (BNA) 1321, 1330 (Fed. Cir. 1995) (citations omitted), *aff'd*, 116 S. Ct. 1384 (1997). The court nonetheless cautioned that "[e]xtrinsic evidence is to be used for the court's understanding of the patent, not for the purpose of varying or contradicting the terms of the claims." *Id.* at 981, 34 U.S.P.Q. (BNA) at 1331 (emphasis added).

703. 90 F.3d 1576, 39 U.S.P.Q.2d 1573 (Fed. Cir. 1996).

704. *See Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583, 39 U.S.P.Q.2d (BNA) 1573, 1577 (Fed. Cir. 1996).

Vitronics charged Conceptronic with infringement of a patented method used in the production of printed circuit boards.⁷⁰⁵ Specifically, the patent claimed a "three zone" method for reflow soldering of surface mounted devices to a printed circuit board.⁷⁰⁶ In the third zone, the board and solder are heated to a "solder reflow temperature for a period of time sufficient to cause said solder to reflow and solder said devices to the board while maintaining the temperature of said devices below said solder reflow temperature."⁷⁰⁷

Relying heavily on the patent specification, Vitronics argued that the claimed "solder reflow temperature" is a "peak solder reflow temperature," that is, "a temperature 20° above a liquid's temperature" at which the solder melts completely and moves freely.⁷⁰⁸ On the other hand, Conceptronic argued that the "solder reflow temperature mean[t] . . . the liquidus temperature of a particular type of solder . . ."⁷⁰⁹ Conceptronic relied on extrinsic evidence, including expert testimony, testimony of Vitronics engineers, and a memorandum filed by Vitronics.⁷¹⁰ The district court delayed construction of the claim until the close of testimony, at which time it ruled in favor of Conceptronic.⁷¹¹ Vitronics conceded that, as a matter of law, the court had to grant judgment in favor of Conceptronic because Vitronics had presented no evidence of infringement under the court's interpretation of the claim.⁷¹²

The Federal Circuit used the appeal to lay down strict guidelines for the consideration of extrinsic evidence for claim construction.⁷¹³ First, the court observed that numerous sources are available to guide claim construction, including intrinsic and extrinsic evidence.⁷¹⁴ As the court wrote, "in interpreting an asserted claim, the court should look first to the intrinsic evidence of record, . . . [because it] is the most significant source of the legally operative meaning of disputed claim language."⁷¹⁵ The court instructed that it was improper to rely on extrinsic evidence when an analysis of the intrinsic evidence

705. *See id.* at 1579, 39 U.S.P.Q.2d (BNA) at 1574.

706. *See id.*, 39 U.S.P.Q.2d (BNA) at 1574.

707. *Id.*, 39 U.S.P.Q.2d (BNA) at 1574.

708. *See id.* at 1580, 39 U.S.P.Q.2d (BNA) at 1574.

709. *Id.*, 39 U.S.P.Q.2d (BNA) at 1574.

710. *See id.* at 1581, 39 U.S.P.Q.2d (BNA) at 1575.

711. *See id.* at 1580, 39 U.S.P.Q.2d (BNA) at 1575.

712. *See id.*, 39 U.S.P.Q.2d (BNA) at 1575.

713. *See id.* at 1582, 39 U.S.P.Q.2d (BNA) at 1576.

714. *See id.*, 39 U.S.P.Q.2d (BNA) at 1576.

715. *Id.*, 39 U.S.P.Q.2d (BNA) at 1576.

alone will resolve any ambiguity in disputed claim terms.⁷¹⁶ As the court explained, the claims, specification, and file history, rather than extrinsic evidence, constitute the public record of the patentee's claim, a record on which the public is entitled to rely.⁷¹⁷ "In other words, competitors are entitled to review the public record, apply the established rules of claim construction, ascertain the scope of the patentee's claimed invention and, thus, design around the claimed invention."⁷¹⁸ It is imperative, the court stated, that the public record not be altered or changed by extrinsic evidence introduced at trial, such as expert testimony.⁷¹⁹ If this were permitted, the right of competitors to rely on the public record for a determination of the scope of patent claims would be rendered meaningless.⁷²⁰ Using these principles regarding the use of intrinsic and extrinsic evidence for claim construction, the Federal Circuit reversed and held that the district court had relied impermissibly on extrinsic evidence to construe Vitronics' patent claims in favor of Conceptronic.⁷²¹

Vitronics signals to the patent practitioner that extrinsic evidence and, particularly, expert testimony may not be allowed in construing claims. Additionally, *Vitronics* acts as a warning to trial counsel that the practice of a judge construing patent claims at the conclusion of trial may require counsel to present evidence on infringement under either party's interpretation of the claims. In *Vitronics*, the late claim construction by the district court forced the patentee to concede noninfringement because of its failure to present infringement evidence consistent with the claim construction sought by the accused infringer and accepted by the court. Because a court may still adopt a construction of the claims that neither party has advocated, the preferred time to construe claims thus would appear to be before and not after the introduction of evidence at trial.⁷²²

Ironically, although the Federal Circuit treats claim construction as a pure question of law⁷²³ and routinely accords no deference to

716. See *id.* at 1583, 39 U.S.P.Q.2d (BNA) at 1577.

717. See *id.*, 39 U.S.P.Q.2d (BNA) at 1577.

718. *Id.* at 1582, 39 U.S.P.Q.2d (BNA) at 1577.

719. See *id.*, 39 U.S.P.Q.2d (BNA) at 1577.

720. See *id.*, 39 U.S.P.Q.2d (BNA) at 1577.

721. See *id.* at 1585, 39 U.S.P.Q.2d (BNA) at 1579. "Only if there were still some genuine ambiguity in the claims, after consideration of all intrinsic evidence," the Federal Circuit wrote, "should the trial court have resorted to extrinsic evidence . . . to construe claim 1." *Id.* at 1584, 39 U.S.P.Q.2d (BNA) at 1578.

722. See *Maxwell v. J. Baker, Inc.*, 86 F.3d 1098, 39 U.S.P.Q.2d (BNA) 1001 (Fed. Cir. 1996).

723. See *Exxon Chem. Patents, Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1556, 35 U.S.P.Q.2d (BNA) 1801, 1803 (Fed. Cir. 1995) ("No matter when or how a judge performs the *Markman* task, on appeal we review the issue of claim interpretation independently without deference to the trial judge."), *cert. denied*, 116 S. Ct. 2554 (1996); *cf. Hoechst Celanese Corp. v. BP Chems.*

district court determinations, not all members of the court agree with this approach to claim construction. Also, in some cases, these uncertainties have caused district court judges to criticize the Federal Circuit for not deferring to lower court factual findings in appropriate circumstances.⁷²⁴

In *Metaullics System Co. v. Cooper*,⁷²⁵ the Federal Circuit dismissed as moot the appeal of Metaullics from an adverse ruling on its preliminary injunction motion because the patent in suit expired after the appeal.⁷²⁶ The court also commented on the request that the Federal Circuit should construe the claims of the patent on appeal.⁷²⁷ Judge Mayer, writing for the majority, stated that the Federal Circuit is likely to construe claims better when considering a developed record.⁷²⁸ He observed that to construe claims prematurely in the context of a preliminary judgment proceeding would undermine the wisdom of reserving claim construction for judges.⁷²⁹

In contrast, Judge Lourie concluded in his concurrence that there was no basis, even *in dictum*, for the majority to state that the appellate court would have to defer to the trial court on so-called issues of fact arising in claim construction.⁷³⁰ Judge Lourie ex-

Ltd., 78 F.3d 1575, 1578, 38 U.S.P.Q.2d (BNA) 1126, 1128 (Fed. Cir.) (stating that, under *Markman*, the Federal Circuit decides "disputed questions of claim interpretation without deference to the trier of fact"), *cert. denied*, 117 S. Ct. 275 (1996); *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 72 F.3d 857, 863, 37 U.S.P.Q.2d (BNA) 1161, 1165 (Fed. Cir. 1995) (observing that the Federal Circuit engages in "independent determination of the construction of claims, as a matter of law, unencumbered by the trial process"), *vacated*, 117 S. Ct. 1240 (1997).

724. District court judges have expressed concern that the standard of review employed by the Court of Appeals effectively has rendered the fact finding in which they regularly engage in construing patent claims a pointless exercise, thus diminishing their role in patent infringement actions. See *Lucas-Aerospace, Ltd. v. Unison Indus., L.P.*, 890 F. Supp. 329, 36 U.S.P.Q.2d (BNA) 1235 (D. Del. 1995) (criticizing Federal Circuit's refusal to acknowledge that trial courts make factual findings based on extrinsic evidence). In *Lucas-Aerospace*, District Judge Schwartz stated that extrinsic evidence is a vital and integral part of the claim interpretation process:

If those possessed of a higher commission wish to rely on a cold written record and engage in *de novo* review of all claim constructions, that is their privilege. But when the Federal Circuit Court of Appeals states that the trial court does not do something that the trial court does and must do to perform [its] judicial function, that court knowingly enters a land of sophistry and fiction.

Id. at 333-34 n.7, 36 U.S.P.Q.2d at 1239 n.7; see *Elf Atochem North Am. Inc. v. Libbey-Owens Ford Co.*, 894 F. Supp. 844, 850, 37 U.S.P.Q.2d 1065, 1074-75 (D. Del. 1995) (suggesting Federal Circuit's *de novo* review of claim construction will upset trial courts' ability to efficiently administer patent trials).

725. 100 F.3d 938, 40 U.S.P.Q.2d (BNA) 1798 (Fed. Cir. 1996).

726. See *Metaullics Sys. Co. v. Cooper*, 100 F.3d 938, 939-40, 40 U.S.P.Q.2d (BNA) 1798, 1799 (Fed. Cir. 1996).

727. See *id.*, 40 U.S.P.Q.2d (BNA) 1799.

728. See *id.* at 939, 40 U.S.P.Q.2d (BNA) at 1799.

729. See *id.*, 40 U.S.P.Q.2d (BNA) at 1799.

730. See *id.* at 940, 40 U.S.P.Q.2d (BNA) at 1799.

plained that the Supreme Court in *Markman* did not expressly characterize elements of claim construction as questions of fact.⁷³¹ He pointed out that, because the Supreme Court did not criticize or overrule any aspect of the *in banc Markman* opinion,⁷³² the *in banc* Federal Circuit statement in *Markman* controlled that claim construction is properly viewed solely as a question of law.⁷³³

General American Transportation Corp. v. Cryo-Trans, Inc.,⁷³⁴ also focused on the respective responsibilities of the trial court and the court of appeals under the *Markman* regime. The Cryo-Trans patent issued in 1987 disclosed a railcar refrigerated by carbon dioxide snow held in a compartment that ran along the length of the car above the cargo area, containing openings, or vents adjacent the side and end walls of the car to allow sublimation and proper distribution of carbon dioxide gas around the frozen cargo.⁷³⁵ GATC manufactured a prototype cryogenic railcar, known as the "GARX 68000."⁷³⁶ The prototype consisted of simply blocking the openings closest to the end walls of the car.⁷³⁷ GATC argued that with this change, the Arcticar did not have openings "adjacent" the end walls as specified in the '876 patent claims, even though the nearly 68-foot railcar still had openings located less than three feet from the end walls that provided the same cooling effect.⁷³⁸ The trial judge relied on various sources of extrinsic evidence as a factual basis for interpreting "adjacent" as used in the patent claims and for determining whether the Arcticar has openings "adjacent" the end walls.⁷³⁹

In view of the evidence adduced at trial, the district court found that the term "adjacent" as used in patents means "not necessarily at but nearby or near," and concluded that the term as used in the

731. See *id.*, 40 U.S.P.Q.2d (BNA) at 1799.

732. See *id.*, 40 U.S.P.Q.2d (BNA) at 1799.

733. See *id.*, 40 U.S.P.Q.2d (BNA) at 1800.

734. 93 F.3d 766, 39 U.S.P.Q.2d (BNA) 1801 (Fed. Cir. 1996), *cert. denied*, 117 S. Ct. 1334 (1997); see *supra* notes 670-86 and accompanying text.

735. See *General Am. Transp. Corp. v. Cryo-Trans, Inc.*, 93 F.3d 766, 767, 39 U.S.P.Q.2d (BNA) 1801, 1802 (Fed. Cir. 1996), *cert. denied*, 117 S. Ct. 1334 (1997). The effective flow of the cold carbon dioxide gas around the load keeps the frozen food refrigerated, even on long cross-country journeys. See *id.*, 39 U.S.P.Q.2d (BNA) at 1802.

736. *General Am. Transp. Corp. v. Cryo-Trans, Inc.*, 893 F. Supp. 774, 778 (N.D. Ill. 1995), *aff'd in part & rev'd in part*, 93 F.3d 766, 39 U.S.P.Q.2d (BNA) 1801 (Fed. Cir. 1996), *cert. denied*, 117 S. Ct. 1334 (1997).

737. See *id.* at 779.

738. See *id.* at 791.

739. See *Cryo-Trans, Inc.*, 93 F.3d at 769, 39 U.S.P.Q.2d (BNA) at 1803. Significantly, in addition to reviewing numerous technical documents and photographs detailing the structure of the accused Arcticar and a physical embodiment of the '876 patent (i.e., the production version of the CRYX 1000 railcar), the trial judge conducted a site visit to inspect and view the railcars at issue.

patent means "not far off."⁷⁴⁰ Moreover, the court determined that "the purpose of the bunker vents of the '876 patent is to facilitate the passage of sublimating CO₂ along the corrugations making up the walls of the car" and that the "Arcticar's bunker vents are close enough to provide the same function."⁷⁴¹ Thus, the district court ruled that, "[g]iven the proximity of the Arcticar bunker vents to the end walls, the Arcticar literally infringes the '876 patent."⁷⁴²

On appeal, a split panel of the Federal Circuit reversed the district court's finding of infringement on the ground that the court had misconstrued the claims at issue.⁷⁴³ In articulating the applicable standard of review, the majority (Judge Lourie, writing for the majority, with Judge Schall) emphasized that "[c]laim construction is a question of law, reviewed *de novo* on appeal."⁷⁴⁴ The Federal Circuit majority rejected the district court's claim construction, adopting instead a contrary construction of the claims based on its own reading of the patent.⁷⁴⁵ The majority confined itself exclusively to the "intrinsic" evidence, *i.e.*, the claim language and the specification of the '876 patent as well as the prosecution history. It gave no consideration to the "extrinsic" evidence which informed the trial judge, and undertook to interpret the claim anew, without according any deference to the trial court's findings of fact based on evaluation of all the evidence.⁷⁴⁶

740. *Id.*, 39 U.S.P.Q.2d (BNA) at 1803.

741. *Cryo-Trans, Inc.*, 893 F. Supp. at 791-92.

742. *Id.*

743. *See Cryo-Trans, Inc.*, 93 F.3d at 769, 39 U.S.P.Q.2d (BNA) at 1803.

744. *Id.*, 39 U.S.P.Q.2d (BNA) at 1803.

745. *See id.*, 39 U.S.P.Q.2d (BNA) at 1803 (reviewing construction claim *de novo* to reach result contrary to district court conclusion).

746. *See id.*, 39 U.S.P.Q.2d (BNA) at 1803. Relying heavily on its interpretation of the patent specification, the majority concluded that the phrase "openings . . . adjacent each of said side walls and end walls" in claim 1 referred to:

structurally distinct openings that are provided adjacent to each of the railcar's four walls. Each opening is "adjacent" to only one wall, the nearest one to which it directs the downward flow of carbon dioxide gas. Thus, an opening "adjacent" to a side wall cannot also be an opening "adjacent" to an end wall. The patent does not contemplate the openings performing double duty in this manner. We therefore reject the district court's claim construction, which was inconsistent with the specification and drawings and rendered superfluous the claim requirement for openings adjacent to the end walls.

Id., 39 U.S.P.Q.2d (BNA) at 1804. In reaching this conclusion, the Federal Circuit ignored the findings of fact that compelled the trial judge's construction of the claims. *See id.*, 39 U.S.P.Q.2d (BNA) at 1803. Although the trial judge found that the GATC Arcticar met the claimed requirement of openings "adjacent" the end walls because the Arcticar included openings that are located near to the end walls and achieve the disclosed purpose of refrigerating the entire frozen food load, the Federal Circuit majority concluded that there are no openings in the Arcticar "adjacent" to the end walls because the specification appeared to indicate that "the openings were all closest to and thus 'adjacent' to the side walls." *Id.*, 39 U.S.P.Q.2d (BNA) at 1803-04 (emphasis added).

Circuit Judge Mayer, dissenting, was clearly critical of the majority's rejection of the lower court's claim analysis without deferring properly to its assessment of the evidence.⁷⁴⁷ Mayer accepted the ordinary meaning of "adjacent" found by the trial judge, stating that "the term 'adjacent' as used in the '876 patent means 'not far off,'"⁷⁴⁸ and criticized the majority's "citations to the claim language and specification to support a meaning other than the ordinary meaning of 'adjacent' [to be] misplaced."⁷⁴⁹ He reasoned that:

[T]his court's *de novo* claim construction would necessarily prevent a finding of infringement whenever a vent is nearer a side wall than an end wall. This cannot be. For example, a vent only an inch away from an end wall will not be considered "adjacent" to the end wall as long as the vent is less than an inch from a side wall. Given the dimensions at issue, surely a vent such a short distance from an end wall is "adjacent" to that wall and must be infringing. The difference between this hypothetical and our case is only a matter of degree. The vent here was only 33 inches from the end wall of a railcar which is 812 inches long. *The district court is in a much better position to evaluate this matter of degree.*⁷⁵⁰

B. Second Step: Comparison of Claims to Accused Structure

After the construction of the claims, the second step of the infringement analysis requires a comparison of the accused structure with the claims to determine whether the structure falls within the claim's scope.⁷⁵¹ Under the "all limitations rule," for either literal infringement or infringement under the doctrine of equivalents, the accused structure must contain each and every limitation of a patent claim.⁷⁵² This comparison of the accused structure to the patent claims is a question of fact subject to a clearly erroneous standard of review on appeal.⁷⁵³

747. *See id.* at 772, 39 U.S.P.Q.2d (BNA) at 1805-06 (Mayer, J., dissenting) (disagreeing with majority's *de novo* claim construction).

748. *Id.*, 39 U.S.P.Q.2d (BNA) at 1805 (Mayer, J., dissenting).

749. *Id.*, 39 U.S.P.Q.2d (BNA) at 1805 (Mayer, J., dissenting).

750. *Id.* at 772, 39 U.S.P.Q.2d (BNA) at 1806 (emphasis added).

751. *See Engel Indus., Inc. v. The Lockformer Co.*, 96 F.3d 1398, 1403-04, 40 U.S.P.Q.2d (BNA) 1161, 1164 (Fed. Cir. 1996) (outlining phases of patent infringement analysis).

752. *See Becton Dickinson & Co. v. C.R. Bard, Inc.*, 922 F.2d 792, 796, 17 U.S.P.Q.2d 1097, 1099 (Fed. Cir. 1990) (setting forth standard for establishing infringement of patent).

753. *See Engel Indus.*, 96 F.3d at 1405-06, 40 U.S.P.Q.2d (BNA) at 1165 (adhering to view that identity of accused device for patent claim is question of fact to be reviewed for clear error).

1. *Literal infringement*

Literal infringement occurs when the accused structure contains all the limitations recited in a patent claim.⁷⁵⁴ Due to this requirement that an accused device "read on" the claims of a patent, few cases are appealed on the issue of literal infringement as compared to the issue of infringement under the doctrine of equivalents. As demonstrated above by the *Celanese* case, however, when a true issue of literal infringement exists, the importance of claim construction becomes critical.⁷⁵⁵

In *Modine Manufacturing Co. v. United States International Trade Commission*,⁷⁵⁶ for example, the Federal Circuit demonstrated the importance of claim construction on literal infringement analyses.⁷⁵⁷ Modine held a patent directed to a highly efficient and environmentally advanced condenser for use in automotive air conditioning,⁷⁵⁸ Showa Aluminum imported, sold, and used several models of condensers similar to those patented by Modine.⁷⁵⁹ Modine brought a patent infringement action before the ITC.⁷⁶⁰ Some of the disputed claim terms included the phrase, "relatively small hydraulic diameter."⁷⁶¹ During the prosecution of the patent, an upper limit of hydraulic diameters was given in some of the claims from 0.070 to 0.040 inches, although the claims at issue only included the "relatively small" definition and the specification stated the range as "about."⁷⁶² The accused products all used a diameter greater than 0.040 inches.⁷⁶³ The ITC construed the patent claims as all requiring an upper limit of 0.040 inches and, because the accused

754. See *Johnston v. IVAC Corp.*, 885 F.2d 1574, 1580, 12 U.S.P.Q.2d (BNA) 1382, 1384 (Fed. Cir. 1984) (defining elements of literal infringement).

755. See *Hoechst Celanese Corp. v. BP Chems. Ltd.*, 78 F.3d 1575, 1581, 38 U.S.P.Q.2d (BNA) 1126, 1130 (Fed. Cir.) (describing basis for court's decision, which was based on construction of terms "dry physical dimension" and "stable"), *cert. denied*, 117 S. Ct. 275 (1996).

756. 75 F.3d 1545, 37 U.S.P.Q.2d (BNA) 1609 (Fed. Cir. 1996).

757. See *Modine Mfg. Co. v. United States Int'l Trade Comm'n*, 75 F.3d 1545, 1554-55, 37 U.S.P.Q.2d (BNA) 1609, 1615 (Fed. Cir. 1996) (demonstrating that finding of literal noninfringement was based on incorrect claim construction).

758. See *id.* at 1549, 37 U.S.P.Q.2d (BNA) at 1610 (describing patent at issue).

759. See *id.* at 1548, 37 U.S.P.Q.2d (BNA) at 1610 (elucidating role of respondent Showa Aluminum in controversy).

760. See *id.* at 1549, 37 U.S.P.Q.2d (BNA) at 1610.

761. *Id.*, 37 U.S.P.Q.2d (BNA) at 1611.

762. See *id.* at 1552-54, 37 U.S.P.Q.2d (BNA) at 1613-14. The specification also explained that the exact diameter depended on specified conditions. See *id.* at 1554, 37 U.S.P.Q.2d (BNA) at 1615.

763. See *id.*, 37 U.S.P.Q.2d (BNA) at 1615 (describing characteristics of accused products).

product did not fall within the range, the ITC found no infringement.⁷⁶⁴

On appeal, the Federal Circuit reversed and remanded.⁷⁶⁵ The court explained that ordinarily a claim limitation is described in descriptive words and, if a numerical range appears in the specification or in other claims, such a range does not limit the claim to the recited numbers.⁷⁶⁶ The court emphasized: "It is usually incorrect to read numerical precision into a claim from which it is absent, particularly when other claims contain the numerical limitation."⁷⁶⁷ The court recognized that the preferred embodiment even included the 0.015-0.040 inch range, but because the specification used the word "about" to delimit the hydraulic diameter range, the court concluded that the ITC erred by specifying a meaning not specified within the claims.⁷⁶⁸ Indeed, the Federal Circuit resolved that, where a limitation is included in several claims in terms of different scope, a presumption arises that a difference in scope arises as to each claim.⁷⁶⁹

2. *Infringement under the doctrine of equivalents*

If an accused structure does not literally infringe a patent claim, then the structure still may infringe under the doctrine of equivalents.⁷⁷⁰ In *Lifescan, Inc. v. Home Diagnostics, Inc.*,⁷⁷¹ the Federal Circuit emphasized the requirement that a court not only consider literal infringement but also consider infringement under the doctrine of equivalents.⁷⁷²

Lifescan held a patent to a method of determining the amount of test material in a fluid, such as the amount of glucose in blood.⁷⁷³

764. See *id.* at 1554-55, 37 U.S.P.Q.2d (BNA) at 1615 (recounting Commission's determination and basis for its decision).

765. See *id.* at 1558, 37 U.S.P.Q.2d (BNA) at 1615.

766. See *id.* at 1551, 37 U.S.P.Q.2d (BNA) at 1612 (stating rule of claim interpretation).

767. *Id.*, 37 U.S.P.Q.2d (BNA) at 1612; see *Specialty Composites v. Cabot Corp.*, 845 F.2d 981, 987, 6 U.S.P.Q.2d (BNA) 1601, 1604 (Fed. Cir. 1988) ("Particular embodiments appearing in the specification will not generally be read into the claims.").

768. See *Modine Mfg. Co.*, 75 F.3d at 1554, 37 U.S.P.Q.2d (BNA) at 1615 (discussing proper significance that term "about" should receive).

769. See *id.* at 1551, 37 U.S.P.Q.2d (BNA) at 1612 (explaining effect of including limitation in several claims with terms of varying scope (citing *Tandon Corp. v. United States Int'l Trade Comm'n*, 831 F.2d 1017, 1023, 4 U.S.P.Q.2d (BNA) 1283, 1288 (Fed. Cir. 1987))).

770. See *Dolly, Inc. v. Spalding & Evenflo Cos.*, 16 F.3d 394, 397, 29 U.S.P.Q.2d (BNA) 1767, 1769 (Fed. Cir. 1994) (defining how accused structure may infringe under doctrine of equivalents).

771. 76 F.3d 358, 37 U.S.P.Q.2d (BNA) 1595 (Fed. Cir. 1996).

772. See *LifeScan, Inc. v. Home Diagnostics, Inc.*, 76 F.3d 358, 359, 37 U.S.P.Q.2d (BNA) 1595, 1596 (Fed. Cir. 1996) (indicating that court must rule out both literal infringement and infringements under doctrine of equivalents before summary judgment can be granted).

773. See *id.*, 37 U.S.P.Q.2d (BNA) at 1596.

The method involved the comparison of dry and wet reflectance measurements on a test strip as compared to the reflectance after an incubation period under identical timing schemes.⁷⁷⁴ Home Diagnostics utilized a similar method, except that the patent claim called for an initial dry measurement from the actual test strip, but the Home Diagnostics method took an advance dry measurement from a strip at the factory.⁷⁷⁵ Based on this distinction, the district court granted a motion for summary judgment of noninfringement.⁷⁷⁶

On appeal, the Federal Circuit affirmed the literal infringement decision, but reversed with regard to infringement under the doctrine of equivalents.⁷⁷⁷ The court emphasized that the infringement analysis involves a two-step process, construction of the claims and comparison of the properly construed claims to the accused structure.⁷⁷⁸ In addition, the court held that this two-step process must be applied both to literal infringement and infringement under the doctrine of equivalents.⁷⁷⁹ For the literal infringement analysis, the court found no error because of the differences between the claimed invention and the accused device pertaining to the manner of taking the dry measurements.⁷⁸⁰ The court, however, could not rule similarly on infringement under the doctrine of equivalents.⁷⁸¹ Because a genuine issue of material fact existed on whether the advanced dry measurement at the factory constituted an equivalent of the dry measurement from the actual test strip, the court determined that a reasonable trier of fact could have found infringement under the doctrine of equivalents.⁷⁸² It found the grant of summary judgment improper and reversed.⁷⁸³

774. *See id.* at 359-60, 37 U.S.P.Q.2d (BNA) at 1597 (detailing preferred embodiment derived in Lifescan's patent).

775. *See id.* at 360, 37 U.S.P.Q.2d (BNA) at 1597 (outlining similarities and differences between Home Diagnostics' method and Lifescan's method).

776. *See id.* at 361, 37 U.S.P.Q.2d (BNA) at 1597-98 (recounting basis for district court's ruling).

777. *See id.* at 362, 37 U.S.P.Q.2d (BNA) at 1598, 1599 (announcing appellate court's ruling).

778. *See id.* at 359, 37 U.S.P.Q.2d (BNA) at 1596 (detailing two-step analysis for infringement).

779. *See id.*, 37 U.S.P.Q.2d (BNA) at 1596 (addressing extent to which infringement analysis must be applied).

780. *See id.* at 361-62, 37 U.S.P.Q.2d (BNA) at 1598 (asserting reasoning behind finding of non-infringement).

781. *See id.* at 362, 37 U.S.P.Q.2d (BNA) at 1599 (reaching different conclusion on infringement under doctrine of equivalents).

782. *See id.*, 37 U.S.P.Q.2d (BNA) at 1599.

783. *See id.*, 37 U.S.P.Q.2d (BNA) at 1599 (reversing and remanding for resolution of outstanding factual question concerning infringement under doctrine of equivalents).

In *Insituform Technologies, Inc. v. Cat Contracting, Inc.*,⁷⁸⁴ the Federal Circuit further demonstrated the necessity of the infringement analysis for the doctrine of equivalents.⁷⁸⁵ Insituform held a patent for an apparatus and method for impregnating the lining of a flexible tube used to repair underground pipes with resin.⁷⁸⁶ The invention utilized a vacuum allowing the removal of air from the flexible tube during the resin impregnation process.⁷⁸⁷ Inliner utilized a similar impregnation process, except that, whereas the patented invention used a single "cap" to connect to the flexible tube, Inliner utilized multiple "caps."⁷⁸⁸ Insituform sued Inliner for infringement, and the district court returned a verdict of infringement under the doctrine of equivalents.⁷⁸⁹

On appeal, the Federal Circuit concurred that the Inliner device did not literally infringe the patented invention because of the apparent distinction between a single cap and multiple caps.⁷⁹⁰ The court also agreed that the district court had properly determined that prosecution history estoppel did not prevent a finding of infringement under the doctrine of equivalents.⁷⁹¹ Due to an error in claim construction, however, the Federal Circuit remanded the case.⁷⁹² In so doing, the court warned against misconceptions regarding the application of the doctrine of equivalents: "[I]t is incorrect to refer to a claim as being expanded or enlarged when infringement is found under the doctrine of equivalents."⁷⁹³

a. The function-way-result test

The function-way-result test represents the traditional test for determining infringement under the doctrine of equivalents, that is, whether the accused structure performs substantially the same overall

784. 99 F.3d 1098, 40 U.S.P.Q.2d (BNA) 1602 (Fed. Cir. 1996), *cert. denied*, 117 S. Ct. 1555 (1997).

785. *See Insituform Techs., Inc. v. Cat Contracting, Inc.*, 99 F.3d 1098, 1107, 40 U.S.P.Q.2d (BNA) 1602, 1608 (Fed. Cir. 1996) (discussing significance of undertaking infringement analysis under doctrine of equivalents, in addition to literal infringement), *cert. denied*, 117 S. Ct. 1555 (1997).

786. *See id.* at 1102, 40 U.S.P.Q.2d (BNA) at 1604.

787. *See id.*, 40 U.S.P.Q.2d (BNA) at 1605 (detailing process used in Insituform patent).

788. *Id.* at 1104-05, 40 U.S.P.Q.2d (BNA) at 1607 (referring to use of multiple caps in Insituform patent).

789. *See id.* at 1101, 40 U.S.P.Q.2d (BNA) at 1604.

790. *See id.* at 1105-07, U.S.P.Q.2d (BNA) at 1607-08.

791. *See id.* at 1107-09, U.S.P.Q.2d (BNA) at 1609-10.

792. *See id.* at 1109, 40 U.S.P.Q.2d (BNA) at 1610.

793. *Id.*, 40 U.S.P.Q.2d (BNA) at 1610 (citing *Wilson Sporting Goods Co. v. David Geoffrey & Assoc.*, 904 F.2d 677, 684, 14 U.S.P.Q.2d (BNA) 1942, 1948 (Fed. Cir. 1990)).

function, in substantially the same way, to obtain substantially the same overall result as the described in the patent claim.⁷⁹⁴

In *Engel Industries, Inc. v. The Lockformer Co.*,⁷⁹⁵ the Federal Circuit applied the traditional function-way-result analysis.⁷⁹⁶ Lockformer, succeeded later by Met-Coil, held a duct connecting system patent.⁷⁹⁷ The system facilitated the connection of sheet metal ducts sections by "a retainer means," described in the specification as crimping of the ends.⁷⁹⁸ Engel manufactured a competing duct connection system, which provided for the connection of ducts by a continuous spring force.⁷⁹⁹ Lockformer sued Engel, and the district court ruled that Engel had infringed the patented duct connection system under the doctrine of equivalents.⁸⁰⁰

On appeal, the Federal Circuit applied the function-way-result analysis.⁸⁰¹ Because the system used by Engel utilized a spring force, and not crimping, to connect the ducts, the court reversed the finding of infringement.⁸⁰² The court explained: "[A]lthough both duct connecting systems may perform substantially the same function . . . and may achieve substantially the same result . . . they do not perform in substantially the same way."⁸⁰³ Thus, because a spring force is not the same as a crimping force, the "way" of connecting the ducts was not equivalent, and the Federal Circuit reversed the district court's holding.⁸⁰⁴

In *Zygo Corp. v. Wyko Corp.*,⁸⁰⁵ the Federal Circuit further refined the function-way-result analysis.⁸⁰⁶ Zygo held a patent for an interferometer.⁸⁰⁷ The interferometer contained a stationary diffuse screen on which a visible cross-hair reticle marked the center of the

794. See *Graham v. John Deere Co.*, 383 U.S. 1, 1718 (1966).

795. 96 F.3d 1398, 40 U.S.P.Q.2d (BNA) 1161 (Fed. Cir. 1996).

796. See *Engel Indus., Inc. v. The Lockformer Co.*, 96 F.3d 1398, 1407, 40 U.S.P.Q.2d (BNA) 1161, 1167 (Fed. Cir. 1996) (relying on function-way-result rationale in reaching non-infringement conclusion).

797. See *id.* at 1399, 40 U.S.P.Q.2d (BNA) at 1162.

798. *Id.* at 1406-07, 40 U.S.P.Q.2d (BNA) at 1166-67.

799. See *id.* at 1406-07, 40 U.S.P.Q.2d (BNA) at 1166-67.

800. See *id.* at 1403, 40 U.S.P.Q.2d (BNA) at 1163 (recounting legal and procedural history of case).

801. See *id.* at 1406-07, 40 U.S.P.Q.2d (BNA) at 1166-67 (applying function-way-result analysis to find non-infringement).

802. See *id.* at 1407, 40 U.S.P.Q.2d (BNA) at 1166-67 (finding no infringement and reversing district court's decision).

803. *Id.* at 1406, 40 U.S.P.Q.2d (BNA) at 1166.

804. See *id.* at 1406-07, 40 U.S.P.Q.2d at 1166-67 (reasoning that no infringement occurred under doctrine of equivalents because Engells' system performed in a substantially different way).

805. 79 F.3d 1563, 38 U.S.P.Q.2d (BNA) 1281 (Fed. Cir. 1996); see *supra* notes 453-58.

806. See *Zygo Corp. v. Wyko Corp.*, 79 F.3d 1563, 1565, 38 U.S.P.Q.2d (BNA) 1281, 1282 (Fed. Cir. 1996) (analyzing means by which Zygo interferometer patent achieved its result).

807. See *id.* at 1565, 38 U.S.P.Q.2d (BNA) at 1282.

optical axis.⁸⁰⁸ Wyko produced two interferometer systems, one with a stationary diffuse screen on which light produced an output generated by computer software for purposes of alignment, and another with a diffuse screen on which images from a prism provided alignment.⁸⁰⁹ Zygo sued Wyko for patent infringement and, although the district court found no literal infringement, the court found infringement under the doctrine of equivalents.⁸¹⁰

On appeal, the Federal Circuit reiterated that to find infringement under the doctrine of equivalents, a court must find the presence of every element or its substantial equivalent within the accused device.⁸¹¹ Thus, with regard to the Wyko interferometer using computer software to produce the alignment output, the court concurred that a software output may serve as an equivalent of a physical entity.⁸¹² With regard to the Wyko interferometer using the prism to produce the alignment output, however, the court disagreed that this structure could serve as an equivalent.⁸¹³ The court explained that merely showing that a device performs the same function to achieve the same result is not sufficient. "The result must be achieved in substantially the same way."⁸¹⁴ The court concluded that, because the prism entailed a different structure and operation, there could be no equivalent "way."⁸¹⁵

b. Limitations on the function-way-result test

The function-way-result test is not the sole consideration for a finding of infringement under the doctrine of equivalents. In *Hilton-Davis Chemical Co. v. Warner-Jenkinson Co., Inc.*,⁸¹⁶ the Federal Circuit clearly explained that several methodologies exist to determine infringement under the doctrine of equivalents.⁸¹⁷ For example, the

808. See *id.*, 38 U.S.P.Q.2d (BNA) at 1282.

809. See *id.* at 1566, 38 U.S.P.Q.2d (BNA) at 1283 (describing interferometer devices produced by Wyko).

810. See *id.*, 38 U.S.P.Q.2d (BNA) at 1283 (recounting procedural history of case).

811. See *id.* at 1568, 38 U.S.P.Q.2d (BNA) at 1285 (reasserting elements of infringement under doctrine of equivalents).

812. See *id.* at 1569, 38 U.S.P.Q.2d (BNA) at 1285 (agreeing with trial court finding regarding equivalency).

813. See *id.*, 38 U.S.P.Q.2d (BNA) at 1285 (reaching different conclusion than trial court concerning equivalency of Wyko's prism to Zygo's design).

814. *Id.*, 38 U.S.P.Q.2d (BNA) at 1285.

815. *Id.*, 38 U.S.P.Q.2d (BNA) at 1286. The court explained: "A finding of equivalency just because the same result is achieved is 'a flagrant abuse' of the term 'equivalent.'" *Id.* (quoting *Burr v. Duryee*, 68 U.S. (1 Wall.) 531, 573 (1863)).

816. 62 F.3d 1512, 35 U.S.P.Q.2d (BNA) 1641 (Fed. Cir. 1995) (in banc), *rev'd*, 117 S. Ct. 1040 (1997).

817. See *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1518-20, 35 U.S.P.Q.2d (BNA) 1641, 1645-47 (Fed. Cir. 1995) (in banc), *rev'd*, 117 S. Ct. 1040 (1997).

court held that in addition to the function-way-result test, the test can also be whether a substitute element plays a role that is substantially different from the claimed element.⁸¹⁸ Yet, the court did not stop with the addition of the insubstantial difference analysis but held that there is simply no definitive test for infringement under the doctrine of equivalents.⁸¹⁹ The court recognized the importance of evidence of copying, designing around, and independent development, in addition to the insubstantial difference analysis.⁸²⁰ *Hilton Davis* thus expanded the utility of the doctrine of equivalents in infringement analysis. Although now reversed, *Hilton Davis*⁸²¹ provided the framework for subsequent decisions in 1996 by the Federal Circuit on the doctrine of equivalents.

In *National Presto Industries, Inc. v. West Bend Co.*,⁸²² the Federal Circuit reviewed a jury determination of infringement based on the doctrine of equivalents in light of *Hilton Davis*.⁸²³ National Presto developed and applied for a patent on a device for cutting vegetables into spiral curls.⁸²⁴ However, West Bend heard rumors about the device, developed a similar product, and began to sell the product before the National Presto patent issued.⁸²⁵ After issuance, National Presto sued West Bend, and a jury found the patent infringed under the doctrine of equivalents.⁸²⁶

On appeal, the Federal Circuit considered several arguments relating to the jury's infringement finding.⁸²⁷ First, West Bend argued that the issue of infringement under the doctrine of equivalents was a question of law for the judge, not a question of fact for the jury.⁸²⁸ The court quickly rejected this argument, citing *Hilton-Davis*.⁸²⁹ Second, West Bend argued that National Presto had failed to proffer sufficient evidence to satisfy the factual questions of "function, way, result, and 'why.'"⁸³⁰ Again citing *Hilton Davis*, the

818. *Id.* at 1517-1518, 35 U.S.P.Q.2d (BNA) at 1644-45.

819. *See id.* at 1521-22, 35 U.S.P.Q.2d (BNA) at 1648.

820. *See id.* at 1519-20, 35 U.S.P.Q.2d (BNA) at 1646-47.

821. *See Hilton Davis*, 117 S. Ct. 1040 (1997), *rev'g* 62 F.3d 1512 (Fed. Cir. 1995) (in banc).

822. 76 F.3d 1185, 37 U.S.P.Q.2d (BNA) 1685 (Fed. Cir. 1996).

823. *See National Presto Indus., Inc. v. West Bend Co.*, 76 F.3d 1185, 1191, 37 U.S.P.Q.2d (BNA) 1685, 1688 (Fed. Cir. 1996).

824. *See id.* at 1188, 37 U.S.P.Q.2d (BNA) at 1686.

825. *See National Presto Indus., Inc. v. West Bend Co.*, 28 U.S.P.Q.2d (BNA) 1049, 1051 (W.D. Wis. 1993), *rev'd*, 76 F.3d 1185, 37 U.S.P.Q.2d (BNA) 1685 (Fed. Cir. 1996).

826. *See National Presto*, 76 F.3d at 1190-92, 37 U.S.P.Q.2d (BNA) at 1688-89.

827. *See id.* at 1191, 37 U.S.P.Q.2d (BNA) at 1688.

828. *See id.*, 37 U.S.P.Q.2d (BNA) at 1688.

829. *See id.*, 37 U.S.P.Q.2d (BNA) at 1688 (relying on *Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512 (Fed. Cir. 1995) (in banc), *rev'd*, 117 S. Ct. 1040 (1997), which held that infringement under equivalency analysis was a question for the jury).

830. *See id.*, 37 U.S.P.Q.2d (BNA) at 1688.

court rejected this contention, explaining that there was no definite formula for establishing infringement under the doctrine of equivalents.⁸³¹ Quoting *Graver Tank & Manufacturing Co. v. Linde Air Products Co.*,⁸³² the court emphasized that the evidence needed to prove equivalency "is not the prisoner of a formula."⁸³³ Finally, West Bend argued that its product could not infringe the National Presto patent because West Bend had received its own patent for its vegetable slicer.⁸³⁴ The court also rejected this argument,⁸³⁵ explaining that, "improvements or modifications of a product may indeed be separately patentable,"⁸³⁶ but these differences do not "[prevent] infringement of the prior patent."⁸³⁷

In *Athletic Alternatives, Inc. v. Prince Manufacturing, Inc.*,⁸³⁸ the Federal Circuit also demonstrated the application of the new *Hilton-Davis* standard for infringement under the doctrine of equivalents.⁸³⁹ Athletic Alternatives held a patent to a tennis racket with splayed strings.⁸⁴⁰ When Prince manufactured and sold a tennis racket with a similar string structure, Athletic sued for patent infringement.⁸⁴¹ On a motion for summary judgment of noninfringement, Prince argued that the splaying methodology used by Athletic utilized three offset distances, whereas the Prince tennis racket utilized only two offset differences.⁸⁴² The district court agreed with Prince's claim construction and granted the motion.⁸⁴³

831. See *id.*, 37 U.S.P.Q.2d (BNA) at 1688.

832. 339 U.S. 605, 609 (1950).

833. *National Presto*, 76 F.3d at 1191, 37 U.S.P.Q.2d (BNA) at 1688.

834. See *id.* at 1191, 37 U.S.P.Q.2d (BNA) at 1689.

835. See *id.*, 37 U.S.P.Q.2d (BNA) at 1689.

836. *Id.*, 37 U.S.P.Q.2d (BNA) at 1689.

837. See *id.* at 1191-92, 37 U.S.P.Q.2d (BNA) at 1689. West Bend made one additional argument to avoid infringement under the doctrine of equivalents, namely, that the district court had failed to make a hypothetical claim analysis. See *id.* at 1192, 37 U.S.P.Q.2d (BNA) at 1689. West Bend alleged that the trial court had an obligation to identify the available range of equivalents and so instruct the jury, clarifying the content of the prior art. See *id.*, 37 U.S.P.Q.2d (BNA) at 1689. The Federal Circuit likewise rejected this argument, explaining that West Bend (and not the court) had the burden to show that the accused device is in the prior art. See *id.*, 37 U.S.P.Q.2d (BNA) at 1689.

838. 73 F.3d 1573, 37 U.S.P.Q.2d (BNA) 1365 (Fed. Cir. 1996).

839. See *Athletic Alternatives, Inc. v. Prince Mfg. Inc.*, 73 F.3d 1573, 1581, 37 U.S.P.Q.2d (BNA) 1365, 1373 (Fed. Cir. 1996).

840. See *id.* at 1574, 37 U.S.P.Q.2d (BNA) at 1366.

841. See *id.*, 37 U.S.P.Q.2d (BNA) at 1367. Prior to the suit, Prince and Athletic Alternatives had been working together to develop and license a splayed string racket. See *id.*, 37 U.S.P.Q.2d (BNA) at 1367. As part of a confidentiality agreement, Athletic had shared its prototype with Prince, which later abandoned the project in favor of a similar product. See *id.*, 37 U.S.P.Q.2d (BNA) at 1367.

842. See *id.* at 1577, 37 U.S.P.Q.2d (BNA) at 1369.

843. See *id.*, 37 U.S.P.Q.2d (BNA) at 1369.

On appeal, the Federal Circuit agreed that the patented tennis racket contained three offset distances and that the Prince racket contained only two distances.⁸⁴⁴ Although affirming the absence of literal infringement, the court closely examined whether the Prince racket infringed under the doctrine of equivalents.⁸⁴⁵ The court recited the *Hilton Davis* standard, whether the differences between the accused structure and the patent claim are insubstantial to one of "ordinary skill in the relevant art."⁸⁴⁶ It also reiterated that, for infringement under the "all limitations" rule of the doctrine of equivalents, the accused structure must contain each limitation in the patent claim or its equivalent.⁸⁴⁷ Because the patent claim required three offset distances—the accused structure contained only two—the court concluded that the "all limitations" rule could not be satisfied and thus affirmed the judgment of the district court.⁸⁴⁸

In *Roton Barrier, Inc. v. Stanley Works*,⁸⁴⁹ the Federal Circuit similarly considered the issue of insubstantial differences between accused and claimed structures.⁸⁵⁰ Stanley appealed from a judgment of the district court finding, *inter alia*, willful infringement of Roton's patent on a pinless hinge structure.⁸⁵¹ On appeal, the Federal Circuit adhered to its insubstantial differences test, set forth in *Hilton-Davis*.⁸⁵² According to the court, *Hilton Davis* teaches that evidence of copying implies that the differences between the claimed and the accused product or process are insubstantial.⁸⁵³ Conversely, evidence of designing around weighs against finding infringement under the doctrine of equivalents, because such evidence may indicate that the competitor designed substantial differences into the accused product or process to avoid an infringement claim.⁸⁵⁴ The apparent reason for the difference in the court's treatment of copying versus designing around is that the patent system finds copying to be reprehensible while designing around "is the stuff of which competition is made."⁸⁵⁵

844. *See id.*, 37 U.S.P.Q.2d (BNA) at 1372.

845. *See id.*, 37 U.S.P.Q.2d (BNA) at 1373.

846. *See id.*, 37 U.S.P.Q.2d (BNA) at 1373.

847. *See id.* at 1582, 37 U.S.P.Q.2d (BNA) at 1375 (listing relevant cases).

848. *See id.* at 1582-83, 37 U.S.P.Q.2d (BNA) at 1373 (finding that Athletic Alternatives could not prevail as a matter of law).

849. 79 F.3d 1112, 37 U.S.P.Q.2d (BNA) 1816 (Fed. Cir. 1996).

850. *See Roton Barrier, Inc. v. Stanley Works*, 79 F.3d 1112, 1126, 37 U.S.P.Q.2d (BNA) 1816, 1827 (Fed. Cir. 1996).

851. *See id.* at 1125, 37 U.S.P.Q.2d (BNA) at 1826.

852. *See id.* at 1126, 37 U.S.P.Q.2d (BNA) at 1827.

853. *See id.*, 37 U.S.P.Q.2d (BNA) at 1827.

854. *See id.*, 37 U.S.P.Q.2d (BNA) at 1827.

855. *Id.*, 37 U.S.P.Q.2d (BNA) at 1827 (citation omitted).

In *Roton*, the Federal Circuit opined that the district court failed to consider the substantial differences between the claimed hinge structure and the accused hinge.⁸⁵⁶ The court also noted that Stanley was aware of the patent at issue and attempted to design around it, which provided “an inference of no infringement under the doctrine.”⁸⁵⁷ The Federal Circuit therefore concluded that Stanley’s attempts to design around, coupled with the substantial differences that resulted, dictated reversal of the district court’s finding of infringement.⁸⁵⁸

c. Dedication to the public—failure to claim an embodiment

When a patentee’s failure to claim a distinct alternative embodiment set forth in the specification evidences a clear intent to surrender that alternative embodiment to the public, the patentee later may be estopped from asserting infringement under the doctrine of equivalents.⁸⁵⁹

In *Maxwell v. J. Baker, Inc.*,⁸⁶⁰ the Federal Circuit considered such a case. The patent at issue related to a system for joining pairs of shoes together.⁸⁶¹ The asserted claim unambiguously called for a “fastening tab” that “extend[ed] horizontally between the inside surfaces of the outer sole . . . and inner sole . . . of the shoe.”⁸⁶² This “preferred embodiment” of the invention was also shown in Figure 2 of the patent.⁸⁶³ The specification further taught that “[a]lternatively, [the tabs] may be stitched into a lining seam of the shoes at the sides or back of the shoes.”⁸⁶⁴ That alternative embodiment, however, was not claimed.⁸⁶⁵ Due to this omission, the jury found infringement, and the district denied a motion for judgment as a matter of law.⁸⁶⁶

On appeal, the Federal Circuit held that a person of ordinary skill in the art would conclude from a review of the specification, claims,

856. *See id.* at 1126-27, 37 U.S.P.Q.2d (BNA) at 1827 (outlining differences between the two devices).

857. *See id.*, 37 U.S.P.Q.2d (BNA) at 1827.

858. *See id.* at 1127, 37 U.S.P.Q.2d (BNA) at 1827.

859. *See Maxwell v. J. Baker, Inc.*, 86 F.3d 1098, 1107, 39 U.S.P.Q.2d (BNA) 1001, 1007 (Fed. Cir. 1996).

860. 86 F.3d 1098, 39 U.S.P.Q.2d (BNA) 1001 (Fed. Cir. 1996); *see infra* notes 1064-76, 1200-07 and accompanying text.

861. *See Maxwell v. J. Baker, Inc.*, 86 F.3d 1098, 1101, 39 U.S.P.Q.2d (BNA) 1001, 1003 (Fed. Cir. 1996).

862. *Id.* at 1102, 39 U.S.P.Q.2d (BNA) at 1003.

863. *See id.* at 1101-02, 39 U.S.P.Q.2d (BNA) at 1003.

864. *Id.* at 1106, 39 U.S.P.Q.2d (BNA) at 1005.

865. *See id.*, 39 U.S.P.Q.2d (BNA) at 1006.

866. *See id.* at 1104, 39 U.S.P.Q.2d (BNA) at 1004.

and prosecution history that Maxwell intended to dedicate this unclaimed embodiment to the public.⁸⁶⁷ The court explained:

Here, Maxwell limited her claims to fastening tabs attached between the inner and outer soles. She disclosed in the specification, without claiming them, alternatives in which the fastening tabs could be "stitched into the lining seam of the shoes." . . . By failing to claim these alternatives, the Patent and Trademark Office was deprived of an opportunity to consider whether these alternatives were patentable. *A person of ordinary skill in the shoe industry, reading the specification and prosecution history, and interpreting the claims, would conclude that Maxwell, by failing to claim the alternate shoe attachment systems in which the tabs were attached to the inside shoe lining, dedicated the use of such systems to the public.*⁸⁶⁸

Thus, the court held that an intentional surrender of subject matter during prosecution may create an estoppel precluding application of the doctrine of equivalents.⁸⁶⁹ Importantly, the estoppel was found not simply because subject matter was disclosed in the specification and not claimed, but because the applicant's failure to claim the distinct alternative embodiment described in the specification unequivocally showed an intent to give up patent protection for that embodiment.⁸⁷⁰ Accordingly, this is perhaps no different than the typical case of prosecution history estoppel.⁸⁷¹

C. *Special Infringement Analyses*

1. *Means-plus-function claims*

A means-plus-function claim, as denoted at 35 U.S.C. § 112, specifies that a claim element expressed "as a means or step for performing a specified function, without the recital of structure, material, or acts in support thereof . . . shall be construed to cover corresponding structure, material, or acts described in the specification and equivalents thereof."⁸⁷² To determine whether a claim limitation is met literally when expressed as a means for performing a stated function, a court must compare the accused structure with

867. *See id.* at 1107-08, 39 U.S.P.Q.2d (BNA) at 1007.

868. *Id.* at 1108, 39 U.S.P.Q.2d (BNA) at 1005 (emphasis added) (footnote omitted).

869. *See id.* at 1107, 39 U.S.P.Q.2d (BNA) at 1006.

870. *See id.* at 1106, 39 U.S.P.Q.2d (BNA) at 1006.

871. It is noteworthy that the Maxwell panel distinguished this case from *Graver Tank & Manufacturing Co. v. Linde Air Products Co.*, 339 U.S. 605 (1950). Unlike the patentee in *Graver*, who intended to claim the subject matter in dispute, Maxwell "limited her claims" to a specific embodiment. *See Maxwell*, 86 F.3d at 1107-08, 39 U.S.P.Q.2d (BNA) at 1006-07.

872. 35 U.S.C. § 112, ¶ 6 (1994).

the disclosed structure.⁸⁷³ In addition, a court must also find “*equivalent structure*” as well as identity of claimed function for that structure.⁸⁷⁴

In *Markman*, the Federal Circuit did not decide whether the determination of structures equivalent to those disclosed in the specification is a question of fact or law or whether the issue is decided by the jury or judge.⁸⁷⁵ When a determination may be made based on a review of the prosecution history, however, as in *Alpex Computer Corp. v. Nintendo Co.*,⁸⁷⁶ the Federal Circuit has resolved this issue in favor of the judge. In that case, Alpex held the patent to an invention in the field of home video game systems.⁸⁷⁷ The patent described a “keyboard-controlled apparatus for producing video signals by means of random access memory (RAM) with storage positions corresponding to each discrete position of the raster for a standard television.”⁸⁷⁸ “The television raster comprises numerous discrete dots or bars, approximately 32,000, which the cathode ray beam illuminates on a standard cycle,” thereby creating the image on the television screen.⁸⁷⁹ Sufficient RAM was thus required “to accommodate each of the approximately 32,000 memory positions needed to represent the raster image.”⁸⁸⁰ The system used a so-called “bit mapping” technique in which the RAM held “at least one “bit” of data for each position in the memory “map” of the raster.”⁸⁸¹

The Nintendo Entertainment System (“NES”), manufactured by Nintendo Co., was another apparatus for producing video signals by means of storage positions corresponding to discrete positions of the raster for a standard television receiver.⁸⁸² The NES’s video display

873. See *Palumbo v. Don-Joy Co.*, 762 F.2d 969, 975, 226 U.S.P.Q.2d (BNA) 5, 8 (Fed. Cir. 1985); see also *supra* Part II.E.5.

874. See *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 934, 4 U.S.P.Q.2d (BNA) 1737, 1739 (Fed. Cir. 1987) (in banc) (citations omitted).

875. In *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 977, 34 U.S.P.Q.2d (BNA) 1321, 1327 (Fed. Cir. 1995) (in banc), *aff’d*, 116 S. Ct. 1384 (1996), the Federal Circuit held that claim construction is a matter of law for the judge to decide. Chief Judge Archer, writing for the court, presented one intriguing issue that the court declined to answer: “[W]hether a determination of equivalents under § 112, para. 6 is a question of law or fact.” *Id.* at 977 n.8, 34 U.S.P.Q.2d (BNA) at 1327 n.8.

876. 102 F.3d 1214, 40 U.S.P.Q.2d (BNA) 1667 (Fed. Cir. 1996).

877. See *Alpex Computer Corp. v. Nintendo Co.*, 102 F.3d 1214, 1216, 40 U.S.P.Q.2d (BNA) 1667, 1668 (Fed. Cir. 1996). The inventors patented a micro-processor-based home video game system that used modular plug-in units—replaceable, read-only memory, or ROM, cartridges—to permit home video systems to play multiple games. See *id.*, 40 U.S.P.Q.2d (BNA) at 1668.

878. See *id.*, 40 U.S.P.Q.2d (BNA) at 1669.

879. See *id.* at 1217, 40 U.S.P.Q.2d (BNA) at 1669.

880. See *id.*, 40 U.S.P.Q.2d at 1669.

881. See *id.*, 40 U.S.P.Q.2d (BNA) at 1669.

882. See *id.* at 1217-18, 40 U.S.P.Q.2d (BNA) at 1669-70.

system did not include RAM with storage positions corresponding to each discrete position of the raster; but used a patented picture processing unit ("PPU") to generate images.⁸⁸³ NES's device placed pre-formed, horizontal slices of data in one of eight shift registers capable of storing a maximum of eight pixels.⁸⁸⁴ The data was then processed directly to the screen.⁸⁸⁵ The PPU repeated this process to assemble the initial image on the screen.⁸⁸⁶ Based on this technology, Alpex sued Nintendo for patent infringement.⁸⁸⁷ The dispute centered on whether the NES employed a "means for generating a video signal," as recited in the asserted claims.⁸⁸⁸ Following a jury trial, the district court entered judgment holding Alpex's '555 patent valid and willfully infringed, and awarded \$253,641,445 in damages and interest.⁸⁸⁹

On appeal, Nintendo argued that the asserted claims of the Alpex patent required the use of a RAM memory map for all of the 32,000 pixels in the raster, whereas the NES used shift registers that provide a maximum of only sixty-four pixels.⁸⁹⁰ According to Nintendo, there could be no literal infringement or infringement under the doctrine of equivalents.⁸⁹¹ Nintendo maintained that the prosecution history for the '555 patent barred Alpex from claiming that the NES infringes because Alpex distinguished the '555 patent claims from a prior art patent that uses shift registers like Nintendo.⁸⁹²

At the outset, the Federal Circuit noted that prosecution history is relevant not only for prosecution history estoppel purposes but also for construing the meaning and scope of claims.⁸⁹³ During the prosecution of the application that became the Alpex patent, the examiner rejected a claim that specified a series of limitations in

883. *See id.* at 1218, 40 U.S.P.Q.2d (BNA) at 1670.

884. *See id.*, 40 U.S.P.Q.2d (BNA) at 1670.

885. *See id.*, 40 U.S.P.Q.2d (BNA) at 1670.

886. *See id.*, 40 U.S.P.Q.2d (BNA) at 1670.

887. *See id.*, 40 U.S.P.Q.2d (BNA) at 1670.

888. *See id.*, 40 U.S.P.Q.2d (BNA) at 1670.

889. *See id.* at 1215, 40 U.S.P.Q.2d (BNA) at 1668.

890. *See id.* at 1219, 40 U.S.P.Q.2d (BNA) at 1670-71.

891. *See id.*, 40 U.S.P.Q.2d (BNA) at 1671.

892. *See id.*, 40 U.S.P.Q.2d at 1671. Specifically, during prosecution for the '555 patent, Alpex explained to the Patent Office that, unlike Okuda's patent, which claimed a shift register-based video display structure, the claimed structure used a bit-map system. *See id.*, 40 U.S.P.Q.2d at 1671. Distinguishing the Okuda patent, Alpex argued that "[b]ecause random access to the shift registers is not possible, Okuda is unable to selectively modify a single bit . . . but, instead, must operate on a line at a time to modify the stored display data." *Id.*, 40 U.S.P.Q.2d at 1671. Alpex added that "[t]he random access techniques of applicants' invention enables any single point on the TV screen to be altered at will (under control of the micro-processor)." *Id.*, 40 U.S.P.Q.2d at 1671.

893. *See id.* at 1220, 40 U.S.P.Q.2d (BNA) at 1671.

means-plus-function format to a display control apparatus using a RAM-based, bit-map system.⁸⁹⁴ Specifically, Alpex distinguished *Okuda* based on the structural difference between a RAM-based and a shift register-based video display system.⁸⁹⁵ The district court gave no weight to Alpex's statement regarding *Okuda*, however, because Alpex asserted infringement of different claims.⁸⁹⁶

On appeal, the Federal Circuit concluded it was error to ignore the prosecution history, discerning "no reason why prosecution history relating to the structure of the video display in the means-plus-function limitations of [one claim] is not pertinent to the same structure of the same display system in the means-plus-function limitations of [other claims]."⁸⁹⁷ The court declared emphatically that "[s]tatements made during the prosecution relating to structures disclosed in the specification are certainly relevant to determining the meaning of the means-plus-function limitations of the claims at issue."⁸⁹⁸ Accordingly, the court concluded that Alpex's arguments that a system based on shift registers is not structurally or functionally equivalent to a RAM-based system that can randomly access a single bit constituted an admission that its claims did not cover a video system based on shift registers.⁸⁹⁹ The court thus held that, because the invention disclosed in the patent possessed the same structural and functional traits as *Okuda*, Alpex's claims could not be construed to cover the NES, either literally or under the doctrine of equivalents.⁹⁰⁰

Of all the cases to construe means-plus-function claims in 1996, however, *York Products, Inc. v. Central Tractor Farm & Family Center*,⁹⁰¹ is perhaps the most interesting in light of the court's determination of what constitutes a means-plus-function claim. York held a patent to a vehicle cargo bed liner, such as those used in the bed of a pickup

894. See *id.*, 40 U.S.P.Q.2d (BNA) at 1671-72.

895. See *id.*, 40 U.S.P.Q.2d (BNA) at 1672.

896. See *id.*, 40 U.S.P.Q.2d (BNA) at 1672.

897. *Id.*, 40 U.S.P.Q.2d (BNA) at 1672.

898. *Id.*, 40 U.S.P.Q.2d (BNA) at 1672.

899. See *id.*, 40 U.S.P.Q.2d (BNA) at 1672.

900. See *id.*, 40 U.S.P.Q.2d (BNA) at 1672. In reaching this conclusion, the court construed the claimed means for generating a video signal by looking at the specification to determine the disclosed structure corresponding to the claimed means and the prosecution history regarding that structure. The court thus considered the determination of structural equivalents is a question of law for the judge when the decision turns on information from the prosecution history. See *id.*, 40 U.S.P.Q.2d (BNA) at 1672. But the court did not answer, however, whether the structural equivalents determination is a question of law or fact when prosecution history like that in *Alpex* is not pivotal to the decision. See *id.*, 40 U.S.P.Q.2d (BNA) at 1672.

901. 99 F.3d 1568, 40 U.S.P.Q.2d (BNA) 1619 (Fed. Cir. 1996).

truck.⁹⁰² When Central Tractor sold similar bed liners manufactured by Custom Form, York sued for patent infringement.⁹⁰³ The parties were unable to agree on the issue of claim construction, so the district court adopted a construction advocated by Custom Form, who also defended Central Tractor,⁹⁰⁴ and granted a motion for judgment as a matter of law on the issue.⁹⁰⁵

On appeal, the Federal Circuit applied a *de novo* standard of review on the issue of claim construction.⁹⁰⁶ Significantly, the court considered the construction of claim 32 of the patent, which described the depth of the load lock as "means formed on the upwardly extending liner sidewall portions . . ."⁹⁰⁷ The court stated that the use of the word 'means' gave rise to a presumption of the use of means-plus-function language.⁹⁰⁸ The court cautioned, however, that the "mere incantation of the word 'means' in a clause reciting predominately structure cannot evoke section 112, ¶ 6."⁹⁰⁹ Accordingly, although the claim used the word "means," because there was no link of the term to a function, the court determined that the claim did not invoke paragraph six of 35 U.S.C. § 112.⁹¹⁰ As a result, the court concluded that if a recitation of the word "means" does not contain a link to some function "the presumption in use of the word 'means' does not operate."⁹¹¹

In *Cole v. Kimberly-Clark Corp.*,⁹¹² the Federal Circuit also considered the interpretation of the use of the term "means."⁹¹³ Cole held a patent to a disposable brief used for toilet training that could be torn open for removal without pulling it over the legs.⁹¹⁴ Kimberly-Clark developed a similar brief, which also could be torn open for removal, except that it formed the means of removal by ultrasonic-bonded side seams.⁹¹⁵ Cole sued Kimberly-Clark for

902. See *York Prods., Inc. v. Central Tractor Farm & Family Ctr.*, 99 F.3d 1568, 1569, 40 U.S.P.Q.2d (BNA) 1619, 1620 (Fed. Cir. 1996).

903. *Id.* at 1570, 40 U.S.P.Q.2d (BNA) at 1620-21.

904. *Id.*, 40 U.S.P.Q.2d (BNA) at 1620.

905. *Id.* at 1571, 40 U.S.P.Q.2d (BNA) at 1621.

906. *Id.*, 40 U.S.P.Q.2d (BNA) at 1621.

907. See *id.* at 1573, 40 U.S.P.Q.2d (BNA) at 1623.

908. See *id.* at 1574, 40 U.S.P.Q.2d (BNA) at 1623 (citing *Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1584, 39 U.S.P.Q.2d (BNA) 1783, 1787 (Fed. Cir. 1996)).

909. *Id.*, 40 U.S.P.Q.2d (BNA) at 1623.

910. See *id.*, 40 U.S.P.Q.2d (BNA) at 1624.

911. *Id.*, 40 U.S.P.Q.2d (BNA) at 1624.

912. 102 F.3d 524, 41 U.S.P.Q.2d (BNA) 1001 (Fed. Cir. 1996), *cert. denied*, 139 L. Ed. 2d 20 (1997).

913. See *Cole v. Kimberly-Clark Corp.*, 102 F.3d 524, 530-32, 41 U.S.P.Q.2d (BNA) 1001, 1006-1007 (Fed. Cir. 1996), *cert. denied*, 139 L. Ed. 2d 20 (1997).

914. See *id.* at 526, 41 U.S.P.Q.2d (BNA) at 1002.

915. See *id.* at 527, 41 U.S.P.Q.2d (BNA) at 1003.

patent infringement, but the district court found noninfringement because the Cole patent claimed the perforation as a "perforation means," which the court determined could not encompass an ultrasonic weld.⁹¹⁶ The court restricted the scope of the term "perforation means," concluding that the claim was not a means-plus-function claim pursuant to 35 U.S.C. § 112, ¶ 6.⁹¹⁷

On appeal, the Federal Circuit reviewed the district court's decision that "perforation means" was not a means-plus-function claim.⁹¹⁸ The court acknowledged that to invoke 35 U.S.C. § 112, ¶ 6, a claim must not recite a definite structure that performs the described function.⁹¹⁹ The court then stated that the mere use of the word "means" does not automatically indicate a means-plus-function claim, and similarly, that the absence of the word "means" does not automatically prevent the construction of a claim as means-plus-function.⁹²⁰ Yet, because the claim in the Cole patent contained not only function but also a specific structure for the function, the court concluded that the claim could not be interpreted pursuant to 35 U.S.C. § 112, ¶ 6.⁹²¹ Accordingly, the Federal Circuit affirmed.⁹²²

Interestingly, Judge Rader, the same judge who ruled in *York Products* that the "mere incantation of the word 'means' in a clause reciting predominately structure [could not] evoke section 112, ¶ 6,"⁹²³ dissented in this case, based on the statement regarding the presumption under 35 U.S.C. § 112, ¶ 6.⁹²⁴ He argued that "[m]ere invocation of the word 'means' also does not magically conjure all the

916. *See id.*, 41 U.S.P.Q.2d (BNA) at 1003. The district court granted summary judgment on the literal infringement claim, concluding that none of Kimberly-Clark's products included perforations. *See id.*, 41 U.S.P.Q.2d (BNA) at 1003. On reconsideration, the court also granted summary judgment on the claim of infringement under the doctrine of equivalents, concluding that, "because of prosecution history estoppel, 'perforation means' cannot be read to include the seams formed by the ultrasonic welds in [Kimberly-Clark's] accused products." *Id.* at 528, 41 U.S.P.Q.2d (BNA) at 1003.

917. *See id.* at 527, 41 U.S.P.Q.2d (BNA) at 1003.

918. *See id.* at 530-32, 41 U.S.P.Q.2d (BNA) at 1006-07.

919. *See id.* at 531, 41 U.S.P.Q.2d (BNA) at 1006.

920. *See id.*, 41 U.S.P.Q.2d (BNA) at 1006. The court must decide on an element-by-element basis, based on the patent and prosecution history, whether to apply 35 U.S.C. § 12, ¶ 6. *See id.*, 41 U.S.P.Q.2d (BNA) at 1006.

921. *See id.*, 41 U.S.P.Q.2d (BNA) at 1006. The court stated:

The claim describes not only the structure that supports the tearing function, but also its location (extending from the leg band to the waist band) and extent (extending through the outer permeable layer). An element with such a detailed recitation of its structure, as opposed to its function, cannot meet the requirements of the statute.

Id., 41 U.S.P.Q.2d (BNA) at 1006.

922. *See id.* at 533, 41 U.S.P.Q.2d (BNA) at 1007-08.

923. *York Prods., Inc. v. Central Tractor*, 99 F.3d 1568, 1574, 40 U.S.P.Q.2d (BNA) 1619, 1623 (Fed. Cir. 1996).

924. *See Kimberly-Clark*, 102 F.3d at 533, 41 U.S.P.Q.2d (BNA) at 1008 (Rader, J., dissenting).

implications of means-plus-function claiming, but *Laitram* suggests that the use of 'means' creates at least a presumption in favor of section 112, ¶ 6.⁹²⁵

2. *Product-by-process and product claims*

Like means-plus-function claims, product-by-process claims are another special type of claim drafting technique.⁹²⁶ If a product is difficult to define, then the product-by-process claim allows a description of the invention by the process steps which result in the creation of the product.⁹²⁷

In contrast to product-by-process claims, one may also simply claim the product.⁹²⁸ Indeed, one of the most heralded of the recent product patent cases involved the 1995 case, *Exxon Chemical Patents, Inc. v. Lubrizol Corp.*⁹²⁹ Exxon held a patent to a lubricating oil composition used as a crankcase lubricant.⁹³⁰ Based on the patent, Exxon sued Lubrizol for patent infringement.⁹³¹ The patent recited the elements of the patent claim by specifying (or listing) the five ingredients that comprised the product.⁹³² Exxon contended that the patent to the product encompassed all recipes for the creation of the product, even if one of the ingredients recited in the patent was missing, but Lubrizol argued that the patent could not also protect the process (or ingredients) utilized to obtain the product because the patent only extended to a product and not a process.⁹³³ A jury found the patent not invalid, but willfully infringed, and awarded damages; the district court granted Exxon's request for an injunction and the award of attorney fees and costs.⁹³⁴

925. *Id.*, 41 U.S.P.Q.2d (BNA) at 1008 (Rader, J., dissenting) (citing *Laitram Corp. v. Rexnord, Inc.*, 939 F.2d 1533, 1536, 19 U.S.P.Q.2d (BNA) 1367, 1369 (Fed. Cir. 1991)).

926. A product-by-process claim describes how a product is made, not how it is used. *See Mentor Corp. v. Coloplast, Inc.*, 998 F.2d 992, 997, 27 U.S.P.Q.2d (BNA) 1521, 1526 (Fed. Cir. 1993).

927. *See In re Hughes*, 496 F.2d 1216, 1219, 182 U.S.P.Q. 106, 108 (C.C.P.A. 1974) (holding that, "where [a] product is incapable of description by product claims . . . , [the patent applicant] is entitled to product-by-process claims that recite [the] novel process of manufacture").

928. *Cf. In re Hack*, 245 F.2d 246, 248-49, 114 U.S.P.Q. (BNA) 161, 163 (C.C.P.A. 1957) (holding that, in order to claim a product patent based on the discovery of a new use of a known composition of matter, the patent must claim a composition that is both new and obvious).

929. 64 F.3d 1553, 35 U.S.P.Q.2d (BNA) 1801 (Fed. Cir. 1995), *cert. denied*, 116 S. Ct. 2554 (1996).

930. *Exxon Chem. Patents, Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1555, 35 U.S.P.Q.2d (BNA) 1801, 1802 (Fed. Cir. 1995), *cert. denied*, 116 S. Ct. 2554 (1996).

931. *See id.*, 35 U.S.P.Q.2d (BNA) at 1802.

932. *See id.*, 35 U.S.P.Q.2d (BNA) at 1802.

933. *See id.*, 35 U.S.P.Q.2d (BNA) at 1802.

934. *See id.*, 35 U.S.P.Q.2d (BNA) at 1802.

On appeal, the Federal Circuit found that the district court had applied an improper claim construction, reversed the infringement ruling, and vacated the injunction as well as the award of damages and attorney fees.⁹³⁵ Specifically, the court concluded that patent claims directed solely to a product could not extend to cover the process for making the product.⁹³⁶

In a powerful dissent, Circuit Judge Nies explained that the majority had invented overly technical requirements for the drafting of claims in chemical patents.⁹³⁷ Judge Nies noted that, although Lubrizol had used all five of the ingredients recited in Exxon's patent, the resulting product did not contain a traceable amount of all five ingredients in the claimed amounts.⁹³⁸ She explained: "[T]o show infringement, the majority believes that it was Exxon's burden to prove that, at some point during production of Lubrizol's products, the mixing pot contained [the claimed ingredients]."⁹³⁹ As such, Judge Nies contended that the majority had created unduly "technical rules for how chemical compositions must be claimed."⁹⁴⁰

In 1996, the Federal Circuit considered and rejected a petition for rehearing *in banc*.⁹⁴¹ Circuit Judge Newman, dissenting from the rejection of the petition, disagreed with the panel's decision in *Exxon*:

It is incorrect as a matter of law, as a matter of chemistry, and as a matter of patent practice. The panel majority's new rule of "claim construction" will cast a cloud upon many thousands of existing patents, and major classes of chemical invention will confront unclear, unnecessary, confusing, expensive, and perhaps impossible scientific requirements.⁹⁴²

In her dissent, Judge Newman further criticized the majority panel's decision as holding that a claim to a chemical composition is not

935. *See id.*, 35 U.S.P.Q.2d (BNA) at 1802.

936. *See id.* at 1557-58, 35 U.S.P.Q.2d (BNA) at 1804:

In sum, a review of the claims, the specification, and the prosecution history all point to the conclusion that Exxon claims a product, not merely a recipe for making whatever product results from the use of the recipe ingredients. This conclusion respects that which is claimed, namely a chemical composition. The chemical composition exists at the moment the ingredients are mixed together. Before creation of the mixture, the ingredients exist independently. The particular proportions specified in the claims simply define the characteristics of the claimed composition.

Id., 35 U.S.P.Q.2d (BNA) at 1804.

937. *See id.* at 1564, 35 U.S.P.Q.2d (BNA) at 1809 (Nies, J., dissenting).

938. *See id.* at 1564-65, 35 U.S.P.Q.2d (BNA) at 1810 (Nies, J., dissenting).

939. *Id.*, 35 U.S.P.Q.2d (BNA) at 1810 (Nies, J., dissenting).

940. *Id.* at 1564, 35 U.S.P.Q.2d (BNA) at 1809 (Nies, J., dissenting).

941. *Exxon Chem. Patents, Inc. v. Lubrizol Corp.*, 77 F.3d 450, 451, 37 U.S.P.Q.2d (BNA) 1767, 1767 (Fed. Cir. 1996) (in banc).

942. *Id.* at 451, 37 U.S.P.Q.2d (BNA) at 1768 (Newman, J., dissenting from denial of reh'g in banc).

infringed if there is any interaction between any of the ingredients after being added to the composition.⁹⁴³ She stated: "Under the court's new law, table salt dissolved in water will not be an adequate description of the composition for infringement purpose, since the sodium chloride molecule no longer 'exists': in dissolution the sodium and chloride ions will have broken their bonds to each other, in interaction with molecules of water."⁹⁴⁴ Judge Newman then warned that such a claim construction could possibly render "[m]any thousands" of chemical patents fatally unenforceable as a matter of law.⁹⁴⁵

3. *Infringement by importation*

In the Process Patent Amendments Act of 1988 ("PPAA"),⁹⁴⁶ Congress amended the patent infringement provisions of 35 U.S.C. § 271 to include § 271(g), which provided patent infringement remedies for the importation, sale, or use in the United States, without authorization, of a product made by a process patented in the United States.⁹⁴⁷ Several years later, Congress amended section 271(g) to include offers to sell, an amendment effective as of January 1, 1996.⁹⁴⁸

In *Bio-Technology General Corp. v. Genentech, Inc.*,⁹⁴⁹ the Federal Circuit considered the limited exceptions when the importation, sale, use, or offer for sale of a product made by a process patent in the United States does not violate § 271(g).⁹⁵⁰ Genentech held by assignment a patent relating to the process of making a human growth hormone ("hGH") that is identical, or functionally identical, to the natural hormone and another patent relating to a cloning vehicle capable of replicating hGH.⁹⁵¹ Bio-Technology General, which manufactured and imported hGH into the United States, sued Genentech seeking a declaratory judgment.⁹⁵² Genentech counter-

943. *See id.* at 452, 37 U.S.P.Q.2d (BNA) at 1768 (Newman, J., dissenting from denial of reh'g in banc).

944. *Id.*, 37 U.S.P.Q.2d (BNA) at 1769 (Newman, J., dissenting from denial of reh'g in banc).

945. *See id.*, 37 U.S.P.Q.2d (BNA) at 1768 (Newman, J., dissenting from denial of reh'g in banc).

946. Omnibus Trade and Competitiveness Act of 1988, Pub. L. No. 100-418, 102 Stat. 1107, 1563 (codified in scattered titles of 35 U.S.C.).

947. *See* 35 U.S.C.A. § 271(g) (West Supp. 1997).

948. *See* Uruguay Round Agreements Act, Pub. L. No. 103-465, 108 Stat. 4809, 4988 (1994) (effective Jan. 1, 1996).

949. 80 F.3d 1553, 38 U.S.P.Q.2d (BNA) 1321 (Fed. Cir.), *cert. denied*, 117 S. Ct. 274 (1996).

950. *See* *Bio-Technology Gen. Corp. v. Genentech, Inc.*, 80 F.3d 1553, 1560, 38 U.S.P.Q.2d (BNA) 1321, 1326 (Fed. Cir.), *cert. denied*, 117 S. Ct. 274 (1996).

951. *See id.* at 1556-57, 38 U.S.P.Q.2d (BNA) at 1323.

952. *See id.* at 1557, 38 U.S.P.Q.2d (BNA) at 1323-24.

claimed for infringement under § 271(g) and moved for a preliminary injunction.⁹⁵³ The district court found that Genentech would suffer irreparable harm absent a preliminary injunction and granted the motion.⁹⁵⁴

On appeal, the Federal Circuit reviewed the standards for issuance of a preliminary injunction⁹⁵⁵ and emphasized that the patentee has the burden of establishing a likelihood of success on the merits of the infringement suit.⁹⁵⁶ The court then emphasized the role of § 271(g) in patent infringement cases, explaining how the provision deals not with the making of a product by a patented process in the United States but with the importation, sale, use, or offer to sell such a product.⁹⁵⁷ Next, the court considered the statutory exclusion of any product “materially changed by a subsequent process” and any product that has become “a trivial and nonessential component of another product.”⁹⁵⁸ Additionally, the court recognized that the statute contained a grandfather clause, stating that liability would not arise if (1) on January 1, 1988, the product was already in substantial and continuous use or sale by the accused infringer in the United States, or (2) substantial preparation for the use or sale of the product was made before January 1, 1988.⁹⁵⁹ Bio-Technology argued that, because it had made substantial preparation for sale or use of hGH in the United States, it was entitled to the grandfather clause.⁹⁶⁰ The Federal Circuit disagreed, however, holding that merely raising money does not satisfy the requirement of “substantial preparation.”⁹⁶¹

In *Eli Lilly & Co. v. American Cyanamid Co.*,⁹⁶² the Federal Circuit looked at the “materially changed” clause of § 271(g).⁹⁶³ Eli Lilly held a process patent to an intermediate compound necessary for the

953. See *id.*, 38 U.S.P.Q.2d (BNA) at 1324.

954. See *id.*, 38 U.S.P.Q.2d (BNA) at 1324. The court also concluded that Genentech had demonstrated a reasonable likelihood of success on the merits, and that a balance of the hardships as well as the public interest favored granting the injunction. See *id.*, 38 U.S.P.Q.2d (BNA) at 1324.

955. The determination of whether to grant a preliminary injunction is within the discretion of the district court. See *Genentech, Inc.*, 80 F.3d at 1557, 38 U.S.P.Q.2d at 1324. A reviewing court must apply an abuse of discretion standard to the district court's decision to grant or deny a preliminary injunction. See *id.*, 38 U.S.P.Q.2d (BNA) at 1324.

956. See *id.* at 1558, 38 U.S.P.Q.2d (BNA) at 1324.

957. See *id.* at 1560, 38 U.S.P.Q.2d (BNA) at 1326.

958. *Id.* at 1561, 38 U.S.P.Q.2d (BNA) at 1326-27 (quoting 35 U.S.C.A. § 271(g)).

959. See *id.* at 1562, 38 U.S.P.Q.2d (BNA) at 1327-28.

960. See *id.*, 38 U.S.P.Q.2d (BNA) at 1328.

961. See *id.*, 38 U.S.P.Q.2d (BNA) at 1328.

962. 82 F.3d 1568, 38 U.S.P.Q.2d (BNA) 1705 (Fed. Cir. 1996).

963. See *Eli Lilly Co. v. American Cyanamid Co.*, 82 F.3d 1568, 1572, 38 U.S.P.Q.2d (BNA) 1705, 1708 (Fed. Cir. 1996).

production of an antibiotic generic drug.⁹⁶⁴ American Cyanamid produced the generic drug outside the United States and when American Cyanamid began to import and sell the drug, Lilly sought a preliminary injunction.⁹⁶⁵ The district court determined that Lilly had demonstrated a likelihood of success on the merits of the validity issue, but had failed to demonstrate a likelihood of success on the question of infringement.⁹⁶⁶ Accordingly, the district court denied the preliminary injunction.⁹⁶⁷

On appeal, the Federal Circuit determined whether the production of a generic drug, necessitating the use of a process patent, violated § 271(g).⁹⁶⁸ In deciding this infringement question, the court reviewed the legislative history of the PPAA.⁹⁶⁹ The court noted that, although Congress recognized the importance of protecting direct and unaltered products of patented processes, it also created two exceptions for products produced abroad by a patented process but modified or incorporated into other products before importation into the United States. As a result, a product made by a patented process is not considered within the terms of § 271(g) after (1) it is materially changed by subsequent process, or (2) it becomes a trivial or nonessential component of another product.⁹⁷⁰ American Cyanamid argued that no infringement occurred because the intermediate was “materially changed by subsequent process”⁹⁷¹ into the generic drug.⁹⁷² After an exhaustive review of the legislative history to § 271(g), the Federal Circuit agreed and affirmed.⁹⁷³ Notably, however, the court concluded that there is no clear definition of what constitutes “materially changed” in terms of § 271(g).⁹⁷⁴

964. *See id.* at 1570, 38 U.S.P.Q.2d (BNA) at 1706.

965. *See id.* at 1570-71, 38 U.S.P.Q.2d (BNA) at 1706-07.

966. *See id.* at 1571, 38 U.S.P.Q.2d (BNA) at 1707.

967. *See id.*, 38 U.S.P.Q.2d (BNA) at 1707.

968. *See id.* at 1571-72, 38 U.S.P.Q.2d (BNA) at 1707-08.

969. *See id.* at 1573-74, 38 U.S.P.Q.2d (BNA) at 1709.

970. *See id.* at 1572-73, 38 U.S.P.Q.2d (BNA) at 1708-09 (rejecting contention that § 271(g) did not bar importation of compound that had no commercial use in United States other than one used by existing patent).

971. 35 U.S.C. § 271(g)(1) (1994).

972. *See Eli Lilly*, 82 F.3d at 1573, 38 U.S.P.Q.2d (BNA) at 1709 (arguing that the chemical was materially changed through a four-step process).

973. *See id.* at 1573-78, 38 U.S.P.Q.2d (BNA) at 1709-13 (reviewing legislative history of 35 U.S.C. § 271(g)).

974. *See id.* at 1578, 38 U.S.P.Q.2d (BNA) at 1713 (stating that legislative history does not provide conclusive answer on how to define “materially challenged”).

4. *Preliminary injunction infringement analysis*

Upon an allegation of patent infringement, the law provides for a preliminary injunction if the patentee can show (1) a reasonable likelihood of success on the merits, (2) an irreparable harm, (3) the balance of hardships tipping in its favor, and (4) a tolerable effect on the public interest.⁹⁷⁵ The grant of a preliminary injunction, however, remains within the discretion of the trial court.⁹⁷⁶ The patentee bears the burden of proving entitlement to the injunction.⁹⁷⁷ In patent infringement cases, moreover, the trial court's determination whether to grant a preliminary injunction often involves at least an initial construction of the patent claims in order to determine the likelihood of success.⁹⁷⁸

In *Sofamor Danek Group, Inc. v. DePuy-Motech, Inc.*,⁹⁷⁹ the Federal Circuit demonstrates the typical approach given by both a trial court and the appeals court on a preliminary injunction issue. Sofamor held three patents on surgical implant devices to correct deformities or traumas in the human spine.⁹⁸⁰ When DePuy-Motech introduced a competing surgical implant device similar to those covered by the Sofamor patents, Sofamor sued for patent infringement and sought a preliminary injunction.⁹⁸¹ Based on an initial construction of the words "body attaching means" and "threaded plug," the district court concluded that Sofamor had not demonstrated a likelihood of success on the merits and denied the preliminary injunction.⁹⁸²

On appeal, the Federal Circuit reviewed the standards for the grant of a preliminary injunction and concluded that the district court had denied properly the preliminary injunction.⁹⁸³ The court reviewed

975. See *Hybritech Inc. v. Abbott Labs.*, 849 F.2d 1446, 1451, 7 U.S.P.Q.2d (BNA) 1191, 1195 (Fed. Cir. 1988) (listing requirements for award of preliminary injunction).

976. See *We Care, Inc. v. Ultra-Mark Int'l Corp.*, 930 F.2d 1567, 1570, 18 U.S.P.Q.2d (BNA) 1562, 1564 (Fed. Cir. 1991) (declaring that abuse of discretion must be shown to overturn lower court's decision).

977. See *Reebok Int'l Ltd. v. J. Baker, Inc.*, 32 F.3d 1552, 1555, 31 U.S.P.Q.2d (BNA) 1781, 1783 (Fed. Cir. 1994). If the patentee makes a "clear showing" that the asserted patent is not invalid and demonstrates that the patent's infringement, a presumption of irreparable harm arises. See *Atlas Powder Co. v. Ireco Chems.*, 773 F.2d 1230, 1233, 227 U.S.P.Q. (BNA) 289, 292 (Fed. Cir. 1985) (stating that preliminary injunction should issue, after balance of equities, when evidence shows that valid patent has been infringed).

978. See *Hybritech*, 849 F.2d at 1455, 7 U.S.P.Q.2d (BNA) at 1198 (interpreting claims to determine likely success on the merits of alleged infringement).

979. 74 F.3d 1216, 37 U.S.P.Q.2d (BNA) 1529 (Fed. Cir. 1996).

980. See *Sofamor Danek Group, Inc. v. Depuy-Motech, Inc.*, 74 F.3d 1216, 1218, 37 U.S.P.Q.2d (BNA) 1529, 1530 (Fed. Cir. 1996).

981. See *id.* at 1218-19, 37 U.S.P.Q.2d (BNA) at 1530.

982. See *id.* at 1219, 37 U.S.P.Q.2d (BNA) at 1530-31.

983. See *id.* at 1219-21, 37 U.S.P.Q.2d (BNA) at 1531-32 (affirming district court's decision).

the means-plus-function claims of the disputed patents and determined that the district court had decided properly that Sofamor had not shown a reasonable likelihood of success.⁹⁸⁴ Notably, Sofamor had argued that the district court erred by providing only an initial construction of the claims, but the Federal Circuit ruled that "*Markman* does not obligate the trial judge to conclusively interpret claims at an early stage in a case."⁹⁸⁵

In *Novo Nordisk of North America, Inc. v. Genentech, Inc.*,⁹⁸⁶ the Federal Circuit ruled on another appeal involving a claim construction issue, but in this case, the court reversed the district court.⁹⁸⁷ Genentech held a patent directed to a recombinant DNA method for producing a "hGH" expression product equivalent to the natural hormone.⁹⁸⁸ In contrast to the prior art, which had required the removal of a "leader sequence," the Genentech patent disclosed a method for directly expressing hGH without a leader sequence, using a "cleavable fusion expression" process.⁹⁸⁹ Cognizant of the Genentech patent, Novo sued Genentech seeking a declaratory judgment of invalidity or noninfringement. Genentech counter-claimed for infringement under § 271(g) and sought a preliminary injunction.⁹⁹⁰ Before the district court, Genentech argued that its patent covered the direct expression of hGH as well as the cleavable fusion expression of the hormone, and that the company thus had established a likelihood of success on the merits. The district court granted the injunction.⁹⁹¹

On appeal, the Federal Circuit reviewed the district court's claim construction, specifically reviewing the meaning applied by the district court to the term "human growth hormone."⁹⁹² Genentech argued that the patent covered both the direct expression of hGH and the cleavable fusion process, but the court did not accept the proffered

984. See *id.* at 1220-21, 37 U.S.P.Q.2d (BNA) at 1531 (stating that means-plus-function test revealed that two devices were distinguishable).

985. *Id.* at 1221, 37 U.S.P.Q.2d (BNA) at 1532. The court continued: "A trial court may exercise its discretion to interpret the claims at a time when the parties have presented a full picture of the claimed invention and prior art." *Id.*, 37 U.S.P.Q.2d (BNA) at 1532.

986. 77 F.3d 1364, 37 U.S.P.Q.2d (BNA) 1773 (Fed. Cir. 1996).

987. See *Novo Nordisk of N. Am., Inc. v. Genentech, Inc.*, 77 F.3d 1364, 1371, 37 U.S.P.Q.2d (BNA) 1773, 1779 (Fed. Cir. 1996), *cert. denied*, 66 U.S.L.W. 3324 (U.S. Nov. 3, 1997), *vacated*, 108 F.3d 1361 (Fed. Cir. 1997).

988. See *id.* at 1365, 37 U.S.P.Q.2d (BNA) at 1774.

989. *Id.* at 1366, 37 U.S.P.Q.2d (BNA) at 1774-75.

990. See *id.*, 37 U.S.P.Q.2d (BNA) at 1775.

991. See *id.*, 37 U.S.P.Q.2d (BNA) at 1775.

992. See *id.* at 1368-71, 37 U.S.P.Q.2d (BNA) at 1777-79 (discussing definition of human growth hormone as used in Genentech's patent to determine whether Novo's hormone violated the patent).

construction.⁹⁹³ The court recognized that, although the specification recited both hGH processes, the claims only recited the direct expression.⁹⁹⁴ The court specified: "While claims are to be interpreted in light of the specification, all that appears in the specification is not necessarily within the scope of the claims and thus entitled to protection. What is not claimed, even though disclosed as part of the 'invention,' cannot be enjoined."⁹⁹⁵ Furthermore, the court noted that the prosecution history indicated that the claimed invention was directed only to the direct expression of hGH.⁹⁹⁶ Accordingly, the court rejected the district court's claim construction and reversed the grant of a preliminary injunction.⁹⁹⁷

In *PPG Industries, Inc. v. Guardian Industries Corp.*,⁹⁹⁸ however, the Federal Circuit demonstrated that a district court may properly grant a preliminary injunction. PPG held a patent on a composition of solar control glass, the type of glass used in automobiles that transmits most visible light of the spectrum while filtering out ultraviolet and infrared radiation.⁹⁹⁹ PPG sued Guardian for patent infringement and sought a preliminary injunction.¹⁰⁰⁰ The district court granted the motion for a preliminary injunction, and the Federal Circuit affirmed.¹⁰⁰¹ Guardian strenuously contested the injunction, but the Federal Circuit rejected all the arguments, explaining that Guardian would have ample opportunity to pursue its arguments (both old and new) further in the merits phase of the litigation.¹⁰⁰²

D. Exceptions to Infringement

The sale of a patented article includes an implied license to use the article for its intended purpose.¹⁰⁰³ This implied license also includes the right to repair the patented article and the right to

993. See *id.* at 1369, 37 U.S.P.Q.2d (BNA) at 1777 (finding that patent claim limited used to product hGH).

994. See *id.*, 37 U.S.P.Q.2d (BNA) at 1778.

995. *Id.*, 37 U.S.P.Q.2d (BNA) at 1777.

996. See *id.* at 1370, 37 U.S.P.Q.2d (BNA) at 1778 (finding that patent claim was limited to direct expression human growth hormone).

997. See *id.* at 1371, 37 U.S.P.Q.2d (BNA) at 1779 (vacating injunction issued by district court).

998. 75 F.3d 1558, 37 U.S.P.Q.2d (BNA) 1618 (Fed. Cir. 1996); see *supra* notes 412-23, 493-501 and accompanying text.

999. See *PPG Indus., Inc. v. Guardian Indus. Corp.*, 75 F.3d 1558, 1560, 37 U.S.P.Q.2d (BNA) 1618, 1619 (Fed. Cir. 1996).

1000. See *id.*, 37 U.S.P.Q.2d (BNA) at 1619.

1001. See *id.* at 1567, 37 U.S.P.Q.2d (BNA) at 1626 (ruling that district court's issuance of preliminary injunction was not abuse of discretion).

1002. See *id.*, 37 U.S.P.Q.2d (BNA) at 1626.

1003. See *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 484 (1964).

purchase necessary repair parts from others. This right is known as the "repair doctrine."¹⁰⁰⁴

In *Kendall Co. v. Progressive Medical Technology, Inc.*,¹⁰⁰⁵ the Federal Circuit had a recent opportunity to consider the scope of the repair doctrine. Kendall held a patent to a medical device for applying compressive pressure to a patient's limbs, comprised of the following parts: a pump, a pair of pressure sleeves that wrap around the patient's limbs, and connecting tubes.¹⁰⁰⁶ In order to use the medical device, the pressure sleeves were replaced for each successive use in order to reduce the risk of contamination.¹⁰⁰⁷ Both Kendall and Progressive sold the replacement sleeves, and as Progressive sales began to affect the repair market, Kendall sued the company for contributory infringement.¹⁰⁰⁸ Because the district court could find no basis for the direct infringement of the patent pursuant to the repair doctrine, however, the court granted Progressive's motion for summary judgment of noninfringement.¹⁰⁰⁹

On appeal, the Federal Circuit considered the arguments pertaining to the repair doctrine.¹⁰¹⁰ Kendall argued that for the repair doctrine to apply, the replacement part must be physically worn-out.¹⁰¹¹ The court rejected this argument and ruled that the sleeves were effectively worn-out upon the replacement of the pressure sleeves for hygienic reasons.¹⁰¹² The court applied a broad interpretation of the doctrine, explaining that the purchaser of a patented product may rightfully choose premature repair.¹⁰¹³ Kendall also argued that because the products were labeled for single use, the

1004. *See, e.g., Standard Havens Prods., Inc. v. Gencor Indus., Inc.*, 953 F.2d 1360, 1375-76, 21 U.S.P.Q.2d (BNA) 1321, 1333 (Fed. Cir. 1991) (noting that repair doctrine is extension of implied right of purchaser or licensee to use patented item); *Everpure, Inc. v. Cuno, Inc.*, 875 F.2d 300, 302-03, 10 U.S.P.Q.2d (BNA) 1855, 1856 (Fed. Cir. 1989) (declaring that repair doctrine permits lawful user to preserve and maintain through repairs to patented combination).

1005. 85 F.3d 1570, 38 U.S.P.Q.2d (BNA) 1917 (Fed. Cir. 1996).

1006. *See Kendall Co. v. Progressive Med. Tech., Inc.*, 85 F.3d 1570, 1571, 38 U.S.P.Q.2d (BNA) 1917, 1918 (Fed. Cir. 1996).

1007. *See id.* at 1572, 38 U.S.P.Q.2d (BNA) at 1918.

1008. *See id.*, 38 U.S.P.Q.2d (BNA) at 1919 (alleging that selling devices to replace unworn sleeves constituted direct infringement).

1009. *See id.* at 1572-73, 38 U.S.P.Q.2d (BNA) at 1919 (holding that replacement of pressure sleeves was within customers' rights under the repair doctrine and did not constitute a direct infringement).

1010. *See id.* at 1573-76, 38 U.S.P.Q.2d (BNA) at 1919-22.

1011. *See id.* at 1573, 38 U.S.P.Q.2d (BNA) at 1920 (maintaining that customers could have used pressure sleeves for three or more years).

1012. *See id.* at 1576, 38 U.S.P.Q.2d (BNA) at 1922 (stating that replacement of pressure sleeves after each use was necessary).

1013. *See id.* at 1575, 38 U.S.P.Q.2d (BNA) at 1921 (asserting that time of repair is decision to be made by purchaser, not patentee).

repair doctrine should not apply.¹⁰¹⁴ Citing the fact that the products specifically recommended replacement of the sleeves, the court rejected this argument.¹⁰¹⁵

E. Licensing Considerations

One of the advantages of holding a patent is the ability to license another to make, use, or sell the claimed invention, usually in exchange for royalty payments. To the patentee who has chosen to license his invention, the contractual rights set forth in the license are tantamount. If the licensee has exceeded the rights contracted for in the license, the licensee may be liable to the licensor-patentee for infringing the patent.

Although most licensing disputes are contractual, and therefore settled in state courts, the Federal Circuit may often decide such disputes when the validity or infringement of a patent underlying the license is at issue.

In *Cyrix Corp. v. Intel Corp.*,¹⁰¹⁶ the Federal Circuit affirmed the district court's grant of summary judgment that the licensees were within the scope of their respective patent license rights and did not infringe the patent.¹⁰¹⁷ Cyrix sold microprocessors that incorporated patented products made by two licensees (IBM and ST) under their respective license agreements with the patentee (Intel).¹⁰¹⁸ ST was operating under a license agreement between Mostek and Intel, which ST acquired by assignment.¹⁰¹⁹ Initially, ST manufactured the microprocessors, but when it was unable to meet Cyrix's demand, ST requested its affiliate (ST-Italy) to manufacture the needed chips for sale.¹⁰²⁰ The district court ruled against Intel and found no infringement because the licensees were within their respective contractual rights.¹⁰²¹

1014. *See id.*, 38 U.S.P.Q.2d (BNA) at 1921.

1015. *See id.* at 1376, 38 U.S.P.Q.2d (BNA) at 1921 (noting that customers were only following notice of single use and that this safety obligation did not require customers to purchase pressure sleeves from Kendall only).

1016. 77 F.3d 1381, 37 U.S.P.Q.2d (BNA) 1884 (Fed. Cir. 1996).

1017. *See Cyrix Corp. v. Intel Corp.*, 77 F.3d 1381, 1385, 37 U.S.P.Q.2d (BNA) 1884, 1887 (Fed. Cir. 1996) (finding that license agreement between Intel and IBM did not prohibit IBM from making and selling products to Cyrix that were assigned by Cyrix).

1018. *See id.* at 1383, 37 U.S.P.Q.2d (BNA) at 1885. In the first license, the licensee (IBM) had the right to "make, use, lease, sell and otherwise transfer IBM Licensed Products." *Id.*, 37 U.S.P.Q.2d (BNA) at 1885. In the second license, the licensee (ST) had the right "to have made, to use, to sell (either directly or indirectly), to lease and to otherwise dispose of LICENSED PRODUCTS." *Id.*, 37 U.S.P.Q.2d (BNA) at 1885-86.

1019. *See id.*, 37 U.S.P.Q.2d (BNA) at 1886.

1020. *See id.* at 1383, 37 U.S.P.Q.2d (BNA) at 1886.

1021. *See id.* at 1384, 37 U.S.P.Q.2d (BNA) at 1886.

On appeal, the Federal Circuit affirmed that IBM acted within the scope of the first license.¹⁰²² The agreement granted IBM the right to make and sell "IBM Licensed Products;" it was not limited to products designed by IBM, as Intel alleged.¹⁰²³

The Federal Circuit also affirmed that ST acted within the scope of the second license.¹⁰²⁴ The agreement granted ST the right to have the product made for it by another company such as ST-Italy, and the right to sell that product to third parties such as Cyrix.¹⁰²⁵ The court distinguished *E.I. du Pont de Nemours & Co. v. Shell Oil Co.*,¹⁰²⁶ reasoning that the arrangement in *du Pont* was a sham because a third-party, acting under defendant's "have made" rights, manufactured and sold the product to defendant and then bought it back in a set of paper transactions.¹⁰²⁷ In *Cyrix*, however, the court determined that "the third-party (ST-Italy) properly manufactured microprocessors under ST's 'have made' rights, and ST then properly sold the products to a different entity, Cyrix."¹⁰²⁸

Royalty payments under a license agreement are usually a function of the number of patented articles sold. When it is not possible to measure the number of patented articles sold, however, the Federal Circuit stated in *Engel Industries, Inc. v. The Lockformer Co.*,¹⁰²⁹ that royalty payments may be based on the sales of non-patented articles without improperly extending the patent monopoly to unpatented articles.¹⁰³⁰ At trial, the district court held that a license agreement was valid¹⁰³¹ even though the royalty payments were calculated in part based on unpatented articles.¹⁰³² Relying on precedent, the

1022. See *id.* at 1385, 37 U.S.P.Q.2d (BNA) at 1887 (finding that IBM's actions were within scope of licensing agreement).

1023. See *id.*, 37 U.S.P.Q.2d (BNA) at 1887.

1024. See *id.* at 1388, 37 U.S.P.Q.2d (BNA) at 1889 (rejecting contention that manufacture by ST-Italy created sublicense in violation of license).

1025. See *id.* at 1387, 37 U.S.P.Q.2d (BNA) at 1889.

1026. 498 A.2d 1108, 1114, 227 U.S.P.Q. (BNA) 233, 237 (Del. 1985) (holding that agreements enabling a third party to manufacture a product for defendant and allowing the defendant to sell it back to the third party constituted a sublicense, which was prohibited under the original license).

1027. See *Cyrix Corp.*, 77 F.3d at 1387, 37 U.S.P.Q.2d (BNA) at 1889.

1028. See *id.*, 37 U.S.P.Q.2d (BNA) at 1889 (determining that transactions were separate, unlike exchanges in *du Pont*, which were two parts of one transaction).

1029. 96 F.3d 1398, 40 U.S.P.Q.2d (BNA) 1161 (Fed. Cir. 1996).

1030. See *Engel Indus., Inc. v. The Lockformer Co.*, 96 F.3d 1398, 1408, 40 U.S.P.Q.2d (BNA) 1161, 1167 (Fed. Cir. 1996); see also *supra* notes 751, 753, 795-804 and accompanying text.

1031. See *id.*, 40 U.S.P.Q.2d (BNA) at 1161. The license stated that, "to provide a convenient means for measuring the value of the license, ENGEL [licensee] agrees to compensate MET-COIL [licensor] with respect to corners designed for use in the practice of the [patented] invention." *Id.*, 40 U.S.P.Q.2d (BNA) at 1167. The license specified that the royalties paid to the licensor for each corner produced were "a measure of the value of the use of the [patented] invention." *Id.*, 40 U.S.P.Q.2d (BNA) at 1167.

1032. See *id.* at 1407-08, 40 U.S.P.Q.2d (BNA) at 1167.

Federal Circuit affirmed that royalties may be based on unpatented components if it provides a convenient means for measuring the value of the license.¹⁰³³ Noting that the voluntariness of the licensee's agreement to the royalty provisions was a key consideration,¹⁰³⁴ the court found that there was no improper exercise of market power.¹⁰³⁵

IV. INFRINGEMENT REMEDIES AND LIMITATIONS ON RECOVERY

Remedies for the infringement of a patent are available to the patentee. These remedies include damages, injunctive relief, and reasonable attorney fees.¹⁰³⁶

A. Damages

Prevailing in an infringement action entitles the patent holder to recover damages, interest, and costs.¹⁰³⁷ The damages must be sufficient to compensate for the infringement,¹⁰³⁸ but the damages may not be less than a reasonable royalty.¹⁰³⁹ A determination of damages may be based on the patentee's lost profits.¹⁰⁴⁰ If the patentee cannot establish lost profits, the court may award damages using a reasonable royalty rate based on a hypothetical negotiation between a willing licensor and licensee at the time the infringement began.¹⁰⁴¹

1. Lost profits and reasonable royalties

In *Minco, Inc. v. Combustion Engineering, Inc.*,¹⁰⁴² the Federal Circuit affirmed an award of damages of \$3.4 million in lost profits, \$7.4 million as a reasonable royalty, and a doubling of the damages

1033. See *id.* at 1408, 40 U.S.P.Q.2d (BNA) at 1167 (citing *Zenith Radio Corp. v. Hazeltine Research, Inc.*, 395 U.S. 100, 138, 161 U.S.P.Q. (BNA) 577, 592 (1969); *Automatic Radio Mfg. Co. v. Hazeltine Research, Inc.*, 339 U.S. 827, 85 U.S.P.Q. (BNA) 378 (1950)).

1034. See *Engel Indus.*, 96 F.3d at 1408, 40 U.S.P.Q.2d (BNA) at 1167. The record indicated that the licensee at least initially agreed voluntarily to the royalties provisions, and was not required to purchase unpatented parts from Met-Coil or to refrain from the manufacture of competing duct-connecting systems. See *id.* at 1408, 40 U.S.P.Q.2d (BNA) at 1168.

1035. See *id.* at 1409, 40 U.S.P.Q.2d (BNA) at 1168.

1036. See 35 U.S.C. §§ 284-287 (1994).

1037. See *id.* § 284.

1038. See *id.*

1039. See *id.*

1040. See *Rite-Hite Corp. v. Kelly Co.*, 56 F.3d 1538, 1555, 35 U.S.P.Q.2d (BNA) 1065, 1107 (Fed. Cir.) (in banc), *cert. denied*, 116 S. Ct. 184 (1995).

1041. See *State Indus. v. Mor-Flo Indus.*, 883 F.2d 1573, 1580, 12 U.S.P.Q.2d (BNA) 1026, 1031 (Fed. Cir. 1989).

1042. 95 F.3d 1109, 40 U.S.P.Q.2d (BNA) 1001 (Fed. Cir. 1996); see *supra* notes 459-63 and accompanying text.

for willful infringement.¹⁰⁴³ Minco also requested damages for price erosion and compensatory damages for the sale of Combustion Engineering's (CE) business.¹⁰⁴⁴ The district court found that CE's infringement caused Minco to lose \$3,455,329 in lost profits in the fused minerals market, *and* awarded a reasonable royalty of 20% on other sales.¹⁰⁴⁵ The district court denied Minco's request for damages resulting from price erosion and CE's sale of its business.¹⁰⁴⁶

The Federal Circuit affirmed the district court's awards of lost profits and a reasonable royalty, detecting no clear error in the lower court's conclusions.¹⁰⁴⁷ Despite CE's protest to the contrary, the Federal Circuit agreed that the district court had ample support for awarding lost profits, including the fact that the fused silica product from the patented invention was in significant demand and that the record showed a preference for that product.¹⁰⁴⁸ Moreover, two other primary fused silica manufacturers bowed out of the market because of the patent.¹⁰⁴⁹ Thus, the record supported strongly the district court's finding that, but for the infringement, Minco had a reasonable probability of completing the sales.¹⁰⁵⁰

The Federal Circuit also saw no error in the district court's determination of the royalty rate, which was based on a number of findings, including head-to-head competition, CE's inferior product prior to the infringement, the lack of noninfringing alternatives, the fact that CE regarded the invention as significant, high rates of profit in the industry, CE's earnings of 22.4% of sales under the new technology, and CE's substantial increase in earnings after they began operating the patented furnaces.¹⁰⁵¹ The Federal Circuit also affirmed the district court's refusal to award Minco further damages on price erosion, a claim the Court found speculative in light of other forces in the market.¹⁰⁵² Additionally, the Federal Circuit affirmed denial of compensatory damages for Minco's sale of its fused silica

1043. *See* *Minco, Inc. v. Combustion Eng'g, Inc.*, 95 F.3d 1109, 1112, 40 U.S.P.Q.2d (BNA) 1001, 1003 (Fed. Cir. 1996).

1044. *See id.* at 1118, 40 U.S.P.Q.2d (BNA) at 1007.

1045. *See id.* at 1119, 40 U.S.P.Q.2d (BNA) at 1008.

1046. *See id.* at 1120, 40 U.S.P.Q.2d (BNA) at 1009.

1047. *See id.* at 1119, 40 U.S.P.Q.2d (BNA) at 1009 (noting that the industry enjoyed high profitability and the patented process produced higher quality product).

1048. *See id.*, 40 U.S.P.Q.2d (BNA) at 1008.

1049. *See id.*, 40 U.S.P.Q.2d (BNA) at 1008.

1050. *See id.*, 40 U.S.P.Q.2d (BNA) at 1008.

1051. *See id.* at 1119-20, 40 U.S.P.Q.2d (BNA) at 1009-10.

1052. *See id.* at 1120, 40 U.S.P.Q.2d (BNA) at 1009.

business because little evidence supported this element of damages.¹⁰⁵³

The Federal Circuit reversed the district court's addition of a "kicker"¹⁰⁵⁴ in *Mahurkar v. C.R. Bard, Inc.*,¹⁰⁵⁵ finding that the district court had abused its discretion.¹⁰⁵⁶ The district court awarded a reasonable royalty rate of 34.88%, which comprised a 25.88% rate plus a 9% kicker.¹⁰⁵⁷ The district court calculated the initial royalty rate of 25.88% based upon actual net profit, the profit margin Bard would have been able to negotiate, and Bard's savings for research and development.¹⁰⁵⁸ The district court added an additional 9%, labeling it a "*Panduit* kicker."¹⁰⁵⁹

The Federal Circuit reversed, stating that the district court invoked the *Panduit* case out of context;¹⁰⁶⁰ *Panduit* supplied a method for determining lost profits, whereas this case did not involve lost profits, only the calculation of reasonable royalties.¹⁰⁶¹ Moreover, the Federal Circuit clarified that the *Panduit* case could not authorize additional damages or a "kicker" on top of a reasonable royalty rate because of heavy litigation or other expenses.¹⁰⁶² Rather, if other expenses were to be compensated, those must be proven by clear and convincing evidence of willfulness and exceptionality, which the court found was not evident in this case.¹⁰⁶³

The Federal Circuit vacated the award of damages in *Maxwell v. J. Baker, Inc.*¹⁰⁶⁴ after reversing the district court's finding of infringement under the doctrine of equivalents.¹⁰⁶⁵ The district court found that three fastening systems infringed Maxwell's patent for fastening shoes together.¹⁰⁶⁶ One system infringed literally and two

1053. See *id.* at 1121, 40 U.S.P.Q.2d (BNA) at 1009-10.

1054. See *Panduit Corp. v. Stahl Bros. Fibre Works, Inc.*, 575 F.2d 1152, 197 U.S.P.Q. (BNA) 726 (6th Cir. 1978) (establishing methodology for determining damages in case involving extensive litigation).

1055. 79 F.3d 1572, 38 U.S.P.Q.2d (BNA) 1288 (Fed. Cir. 1996); see *supra* notes 162-67, 224-32 and accompanying text.

1056. See *Mahurkar v. C.R. Bard, Inc.*, 79 F.3d 1572, 1580, 38 U.S.P.Q.2d (BNA) 1288, 1294 (Fed. Cir. 1996).

1057. See *id.*, 38 U.S.P.Q.2d (BNA) at 1293.

1058. See *id.*, 38 U.S.P.Q.2d (BNA) at 1293.

1059. See *id.*, 38 U.S.P.Q.2d (BNA) at 1293.

1060. See *id.* at 1581, 38 U.S.P.Q.2d (BNA) at 1293-94.

1061. See *id.*, 38 U.S.P.Q.2d (BNA) at 1293.

1062. See *id.*, 38 U.S.P.Q.2d (BNA) at 1294.

1063. See *id.*, 38 U.S.P.Q.2d (BNA) at 1294.

1064. 86 F.3d 1098, 39 U.S.P.Q.2d (BNA) 1001 (Fed. Cir. 1996); see *supra* notes 860-71 and *infra* notes 1200-07 and accompanying text.

1065. See *Maxwell v. J. Baker, Inc.*, 86 F.3d 1098, 1108, 39 U.S.P.Q.2d (BNA) 1098, 1109 (Fed. Cir. 1996).

1066. See *id.* at 1106, 39 U.S.P.Q.2d (BNA) at 1007.

systems infringed under the doctrine of equivalents.¹⁰⁶⁷ In the jury instructions, the district court asked the jury to determine both a reasonable royalty and additional damages necessary to compensate for the infringement.¹⁰⁶⁸ The jury awarded a reasonable royalty of \$.05 per pair of shoes and an additional \$1.5 million for damages in excess of the royalty, which the district court upheld.¹⁰⁶⁹

The Federal Circuit vacated the damages after reversing the district court's decision to deny J. Baker's motion for a judgment as a matter of law that two of the systems did not infringe.¹⁰⁷⁰ The court held, however, that the district court did not abuse its discretion in instructing the jury to award a reasonable royalty as well as any additional damages required to compensate for infringement.¹⁰⁷¹ The Federal Circuit also found substantial evidence to support the damages determined by the jury, including evidence of other agreements entered into by the patentee at a similar rate and expert testimony that the effective royalty rate was reasonable.¹⁰⁷² The Federal Circuit vacated the award and remanded the case to the district court for a determination of damages based solely on the infringing system.¹⁰⁷³

In a footnote, the Federal Circuit stated that the decision to award \$1.5 million in damages in addition to the reasonable royalty in *Maxwell* was not inconsistent with the recent decision in *Mahurkar v. C.R. Bard, Inc.*,¹⁰⁷⁴ in which the Federal Circuit held that a district court may not increase a reasonable royalty with a "kicker" based on litigation or other expenses.¹⁰⁷⁵ Rather, the court indicated that such an increase must be awarded under §§ 284 and 285 as enhanced damages or attorney's fees.¹⁰⁷⁶

In *Sensonics, Inc. v. Aerosonic Corp.*,¹⁰⁷⁷ the Federal Circuit affirmed the award of lost profits for infringement by Aerosonic, but reversed the district court's reduction in the amount to account for re-

1067. *See id.*, 39 U.S.P.Q.2d (BNA) at 1007.

1068. *See id.* at 1109, 38 U.S.P.Q.2d (BNA) at 1008.

1069. *See id.* at 1104, 39 U.S.P.Q.2d (BNA) at 1007.

1070. *See id.* at 1110, 39 U.S.P.Q.2d (BNA) at 1009.

1071. *See id.*, 39 U.S.P.Q.2d (BNA) at 1009.

1072. *See id.*, 39 U.S.P.Q.2d (BNA) at 1009.

1073. *See id.*, 39 U.S.P.Q.2d (BNA) at 1009.

1074. *See id.* at 1110 n.4, 39 U.S.P.Q.2d (BNA) at 1011 n.4 (citing *Mahurkar v. C.R. Bard, Inc.*, 79 F.3d 1572, 1580-81, 38 U.S.P.Q.2d (BNA) 1288, 1293 (Fed. Cir. 1996)).

1075. *See Maxwell*, 86 F.3d at 1110 n.4, 39 U.S.P.Q.2d (BNA) at 1011 n.4.

1076. *See id.*, 39 U.S.P.Q.2d (BNA) at 1011 n.4.

1077. 81 F.3d 1566, 38 U.S.P.Q.2d (BNA) 1551 (Fed. Cir. 1996); *see infra* notes 1160-65 and accompanying text.

pairs.¹⁰⁷⁸ Aerosonic had apparently destroyed most of its manufacturing records after litigation had begun, making it impossible to determine the exact number of infringing devices manufactured.¹⁰⁷⁹ The district court used a manufacturing log from the last six months as evidence of the number of manufactured devices and extrapolated this number back over the years of infringement, assuming an equal rate of production during that period.¹⁰⁸⁰ The district court reduced this number by 33% "in order to account for any duplication resulting from device repair or inefficiency in the production of the vibrators."¹⁰⁸¹

Sensonics appealed, arguing that the failure to retain production records required a strong adverse inference.¹⁰⁸² The Federal Circuit agreed, but affirmed the extrapolation to determine the number of infringing devices because Sensonics did not suggest an alternative method and the extrapolation was the best available reconstruction of the activity.¹⁰⁸³ The court reversed the 33% reduction, however, because Aerosonic failed to produce evidence to support the reduction and uncertainty is resolved against the infringer.¹⁰⁸⁴ Therefore, the Federal Circuit modified the district court's decision to include payment of damages for the total number of units produced.¹⁰⁸⁵

In *Hebert v. Lisle Corp.*,¹⁰⁸⁶ the Federal Circuit remanded the case for a determination of infringement under the doctrine of equivalents and damages after reversing the finding of inequitable conduct.¹⁰⁸⁷ Although the issues of infringement and damages were tried, they were not decided.¹⁰⁸⁸ The district court also did not reach Lisle's post-trial motion requesting that the district court rule, as a matter of law, that Hebert was not entitled to lost profits as a measure of damages.¹⁰⁸⁹

1078. *See* *Sensonics, Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1573, 38 U.S.P.Q.2d (BNA) 1551, 1556-57 (Fed. Cir. 1996).

1079. *See id.* at 1572, 38 U.S.P.Q.2d (BNA) at 1556.

1080. *See id.*, 38 U.S.P.Q.2d (BNA) at 1556.

1081. *Id.*, 38 U.S.P.Q.2d (BNA) at 1556.

1082. *See id.*, 38 U.S.P.Q.2d (BNA) at 1556.

1083. *See id.* at 1573, 38 U.S.P.Q.2d (BNA) at 1556.

1084. *See id.*, 38 U.S.P.Q.2d (BNA) at 1556-57.

1085. *See id.*, 38 U.S.P.Q.2d (BNA) at 1556.

1086. 99 F.3d 1109, 40 U.S.P.Q.2d (BNA) 1611 (Fed. Cir. 1996).

1087. *See Hebert v. Lisle Corp.*, 99 F.3d 1109, 1120, 40 U.S.P.Q.2d (BNA) 1611, 1619 (Fed. Cir. 1996) (the jury found the patent valid but unenforceable because Hebert allegedly withheld material prior art and submitted a false declaration/oath with an intent to deceive or mislead the Patent Office); *see also infra* Part IV.C (discussing inequitable conduct).

1088. *See id.* at 1112, 40 U.S.P.Q.2d (BNA) at 1612.

1089. *See id.* at 1119, 40 U.S.P.Q.2d (BNA) at 1618.

The Federal Circuit, in remanding the case, provided some guidance to the district court for awarding damages, should Hebert prevail on his charge of infringement.¹⁰⁹⁰ The Federal Circuit's guidance included a review of several basic principles of patent damages: damages must be established by evidence and may include lost profits due to diverted sales, price erosion, and increased expenditures caused by the infringement.¹⁰⁹¹ The Federal Circuit also cautioned the district court that it was incorrect to bar a patentee who had not yet manufactured the product from proving that its actual damages were larger than a reasonable royalty, but advised that the burden to prove such damages is "commensurately heavy."¹⁰⁹²

The Federal Circuit affirmed a \$72 million damage award for infringement of the patent at issue in *Stryker Corp. v. Intermedics Orthopedics, Inc.*¹⁰⁹³ The patent in suit covered a femoral prosthesis and in particular its stem portion,¹⁰⁹⁴ which had a removable distal tip.¹⁰⁹⁵ The district court awarded damages for all femoral prostheses regardless of whether the distal tip on the infringing device was inserted into the patient or not.¹⁰⁹⁶ Intermedics appealed the portion of the damage award reflecting sales of its stems that were never implanted in patients with distal sleeves.¹⁰⁹⁷

The Federal Circuit affirmed the district court's decision to award damages for all stems.¹⁰⁹⁸ The district court based its decision on a finding that the infringement occurred by reason of manufacture, use, or sale of the stem, for Intermedics had always manufactured its sleeves with the distal tip, or the sleeve option.¹⁰⁹⁹ Moreover, the district court found that surgeons could not decide to implant the distal sleeve until they were in the operating room, so they needed the entire system, including the sleeve.¹¹⁰⁰ As a result, the court held that basing the damages on all sales was correct because each time Intermedics supplied a system to a surgeon, Stryker Corp. lost the ability to make the sale.¹¹⁰¹ The Federal Circuit affirmed,

1090. *See id.*, 40 U.S.P.Q.2d (BNA) at 1618.

1091. *See id.*, 40 U.S.P.Q.2d (BNA) at 1618.

1092. *Sensonic, Inc.*, 81 F.3d at 1120, 40 U.S.P.Q.2d (BNA) at 1618.

1093. 96 F.3d 1409, 40 U.S.P.Q.2d (BNA) 1065 (Fed. Cir. 1996); *see infra* notes 1166-74 and accompanying text.

1094. *See Stryker Corp. v. Intermedics Orthopedics, Inc.*, 96 F.3d 1409, 1411, 40 U.S.P.Q.2d (BNA) 1065, 1066 (Fed. Cir. 1996).

1095. *See id.*, 40 U.S.P.Q.2d (BNA) at 1066.

1096. *See id.* at 1416-17, 40 U.S.P.Q.2d (BNA) at 1070.

1097. *See id.* at 1416, 40 U.S.P.Q.2d (BNA) at 1070.

1098. *See id.*, 40 U.S.P.Q.2d (BNA) at 1071.

1099. *See id.* at 1416, 40 U.S.P.Q.2d (BNA) at 1070.

1100. *See id.* at 1416-17, 40 U.S.P.Q.2d (BNA) at 1070.

1101. *See id.* at 1416, 40 U.S.P.Q.2d (BNA) at 1071.

stating that Intermedics' supply of prostheses to surgeons kept the plaintiff "out of the operating room."¹¹⁰²

Intermedics also appealed the district court's application of the four-factor test for lost profits originally set forth in *Panduit*.¹¹⁰³ Of these four factors, Intermedics challenged the finding that there were no acceptable noninfringing substitutes during the period of the infringement.¹¹⁰⁴ The appellants alleged the district court defined acceptable alternatives only as those devices that infringe, dismissing testimony of acceptable substitutes in internal documents that identified three other companies as competitors.¹¹⁰⁵

The Federal Circuit rejected this argument,¹¹⁰⁶ agreeing with the district court that Intermedics' own documents established that its competitors lacked the distal modularity of both the patented product and the infringing product. As a result, these devices were not acceptable substitutes.¹¹⁰⁷ Therefore, the Federal Circuit held that the appellants had failed to establish clear error by the district court and affirmed the damages award.¹¹⁰⁸

In *Zygo Corp. v. Wyko Corp.*,¹¹⁰⁹ the Federal Circuit vacated a \$2.7 million damage award after reversing the trial court's finding of infringement by one of two accused devices because the trial court did not distinguish between the two devices in addressing the issues of lost profits, convoyed sales, and reasonable royalty.¹¹¹⁰ The district court awarded lost profits to Zygo because it found that the SIRIS device, the device marketed by Wyko prior to the two accused devices, was not an acceptable noninfringing alternative.¹¹¹¹ Wyko argued that the award of lost profits was inappropriate because they could have continued to manufacture the SIRIS device, which Wyko

1102. *Id.* at 1417, 40 U.S.P.Q.2d (BNA) at 1071.

1103. *See Panduit Corp. v. Stahl Bros. Fibre Works, Inc.*, 575 F.2d 1152, 197 U.S.P.Q. (BNA) 726 (6th Cir. 1978) (promulgating test with four factors: (1) demand for patented product; (2) ability to meet demand; (3) absence of noninfringing substitutes; and (4) amount of lost profits per unit).

1104. *See Stryker*, 96 F.3d at 1418, 40 U.S.P.Q.2d (BNA) at 1071.

1105. *See id.*, 40 U.S.P.Q.2d (BNA) at 1071.

1106. *See id.*, 40 U.S.P.Q.2d (BNA) at 1072.

1107. *See id.*, 40 U.S.P.Q.2d (BNA) at 1072; *see also Standard Havens Prods., Inc. v. Gencor Indus., Inc.*, 953 F.2d 1360, 1373, 21 U.S.P.Q.2d (BNA) 1321, 1331 (Fed. Cir. 1991) ("[T]he mere existence of a competing device does not necessarily make the device an acceptable substitute. A product on the market which lacks the advantages of the patented product can hardly be termed a substitute.").

1108. *See Stryker*, 96 F.3d at 1418, 40 U.S.P.Q.2d (BNA) at 1072.

1109. 79 F.3d 1563, 38 U.S.P.Q.2d (BNA) 1281 (Fed. Cir. 1996); *see supra* notes 453-58, 805-15 and accompanying text.

1110. *See Zygo Corp. v. Wyko Corp.*, 79 F.3d 1563, 1570-71, 38 U.S.P.Q.2d (BNA) 1281, 1287-88 (recognizing uncertainty concerning whether trial court's findings are applicable only to Original Wyko).

1111. *See id.* at 1571, 38 U.S.P.Q.2d (BNA) at 1287.

ceased selling when it began selling the accused 6000 and 6000 Redesign devices.¹¹¹²

The Federal Circuit vacated the award of lost profits and remanded with instructions for the court to provide findings in support of its conclusion that the SIRIS was not an acceptable noninfringing alternative,¹¹¹³ even though the court did not have a firm conviction that a mistake had been made that warranted a reversal on this issue.¹¹¹⁴ The Federal Circuit questioned the district court's conclusion because the record regarding the acceptability of SIRIS was insufficient.¹¹¹⁵ If SIRIS were an acceptable noninfringing alternative, then an award of lost profits would not have been appropriate.¹¹¹⁶ The Federal Circuit also noted that if the SIRIS device were an acceptable alternative, then Wyco, with a competitive noninfringing device "in the wings," would have been in a stronger position to negotiate for a lower royalty rate than the 25% royalty rate determined by the district court.¹¹¹⁷

In *Oiness v. Walgreen Co.*,¹¹¹⁸ a retrial on damages, the Federal Circuit reversed a jury award of \$1.1 million in lost profits and \$10.2 million in future profits.¹¹¹⁹ Evidence of damages presented by Oiness included pictures of three stores with infringing headrests and an estimation, based on average sales per unit floor space, that the sales of headrests resulted in lost profits between \$4.8 and \$6.5 million.¹¹²⁰ The jury awarded Oiness damages for lost profits as well as damages for loss of future profits, including those in the premium market, the retail market, and the advertising specialty market.¹¹²¹ Walgreen moved for a judgment as a matter of law, a remittitur, and a new trial, because Walgreen presented evidence that it sold only 142,230 headrests in the retail market at an average net profit of \$1.33, for profits of \$189,000.¹¹²²

1112. *See id.*, 38 U.S.P.Q.2d (BNA) at 1287.

1113. *See id.*, 38 U.S.P.Q.2d (BNA) at 1287 (noting that whether Siris device was acceptable noninfringing alternative was relevant only for period that Siris device was marketed by Wyco).

1114. *See id.*, 38 U.S.P.Q.2d (BNA) at 1287 (citing *United States v. United States Gypsum Co.*, 333 U.S. 364, 395 (1948)).

1115. *See id.*, 38 U.S.P.Q.2d (BNA) at 1287.

1116. *See id.*, 38 U.S.P.Q.2d (BNA) at 1287.

1117. *See id.* at 1571-72, 38 U.S.P.Q.2d (BNA) at 1287-88 (acknowledging relevance of fact that Wyco could have continued marketing Siris device to determination of royalty during hypothetical negotiations).

1118. 88 F.3d 1025, 39 U.S.P.Q.2d (BNA) 1304 (Fed. Cir. 1996).

1119. *Oiness v. Walgreen Co.*, 88 F.3d 1025, 1034, 39 U.S.P.Q.2d (BNA) 1304, 1310-11 (Fed. Cir. 1996).

1120. *See id.* at 1029, 39 U.S.P.Q.2d (BNA) at 1307.

1121. *See id.* at 1028, 39 U.S.P.Q.2d (BNA) at 1306.

1122. *See id.* at 1030, 39 U.S.P.Q.2d (BNA) at 1307. The court also noted that 23,610 headrests were unaccounted for and held that the jury could reasonably assume that Walgreen

The Federal Circuit found that the award was based on estimation and extrapolation¹¹²³ and vacated the jury's award, remanding with instructions to order judgment of \$220,567 in actual sales reasonably inferred by the jury or a new trial on damages.¹¹²⁴ It also reversed the jury's award of projected lost profits.¹¹²⁵ The court concluded that Oiness' experts failed to consider another infringer,¹¹²⁶ identify other market forces that also could cause decreases in prices,¹¹²⁷ or provide credible economic testimony for all projected lost profits categories.¹¹²⁸ In addition, the Federal Circuit also reversed the interest award, finding that the judge had abused his discretion in awarding prejudgment interest on the future profits portion of the damages award.¹¹²⁹ The court's remand included directions to the district court to award interest on only the \$220,567 of lost profits supported by the record.¹¹³⁰

In *Hughes Aircraft Co. v. United States*,¹¹³¹ the Federal Circuit affirmed the district court's determination that a 1% royalty would provide reasonable and entire compensation.¹¹³² In arriving at the royalty rate, the Court of Federal Claims determined that a royalty rate ceiling in a hypothetical negotiation would be 1.2%.¹¹³³ In coming to this conclusion, the court considered three letters from Hughes to other companies containing acceptable terms for licensing the patent for scientific or experimental vehicles.¹¹³⁴ Based on these three offers, the court concluded the negotiations would be between the 1.2% ceiling and the 1% rate the government conceded would be just compensation.¹¹³⁵ From these values, the court concluded that the royalty rate would settle at 1%.¹¹³⁶

sold these as well. Thus, the total value of actual sales was \$220,567. *See id.*, 39 U.S.P.Q.2d (BNA) at 1307.

1123. *See id.* at 1029-30, 39 U.S.P.Q.2d (BNA) at 1307 (determining that pictures of three Walgreen stores did not support conclusion for all 1600 Walgreen stores).

1124. *See id.* at 1030, 39 U.S.P.Q.2d (BNA) at 1307.

1125. *Id.*, 39 U.S.P.Q.2d (BNA) at 1307.

1126. *Id.* at 1031-33, 39 U.S.P.Q.2d (BNA) at 1308-10.

1127. *Id.* at 1033, 39 U.S.P.Q.2d (BNA) at 1310.

1128. *Id.*, 39 U.S.P.Q.2d (BNA) at 1310.

1129. *See id.*, 39 U.S.P.Q.2d (BNA) at 1310 (stating that awarding interest on projected lost profits compensated plaintiff unduly for losses it had not yet suffered).

1130. *See id.*, 39 U.S.P.Q.2d (BNA) at 1310.

1131. 86 F.3d 1566, 39 U.S.P.Q.2d (BNA) 1065 (Fed. Cir. 1996).

1132. *Hughes Aircraft Co. v. United States*, 86 F.3d 1566, 1574, 39 U.S.P.Q.2d (BNA) 1065, 1071 (Fed. Cir. 1996).

1133. *See id.* at 1570, 39 U.S.P.Q.2d (BNA) at 1067.

1134. *See id.* at 1569-70, 39 U.S.P.Q.2d (BNA) at 1067.

1135. *See id.*, 39 U.S.P.Q.2d (BNA) at 1067.

1136. *See id.* at 1570, 39 U.S.P.Q.2d (BNA) at 1067-68.

The Federal Circuit affirmed the court's decision, stating that it was not convinced that the court clearly erred in determining that a royalty rate of 1% was appropriate.¹¹³⁷ The Court of Federal Claims considered the offers made to other aerospace firms, the context in which those offers were made, and even Hughes' allegations that widespread infringement must have lowered the rates.¹¹³⁸ Hughes, could point to no evidence showing that the offers in the letters were reduced because of widespread infringement; one of the letters contained an indication that it was its "normal" royalty rate.¹¹³⁹ Because Hughes' evidence was insufficient to overturn the court's findings and Hughes failed to show that any error in such findings would be harmful error, the Federal Circuit affirmed.¹¹⁴⁰

2. *Enhanced damages, attorney fees, and costs*

The determination of increased damages is a two step process.¹¹⁴¹ First, the court determines whether there is guilty conduct upon which increased damages may be based.¹¹⁴² Second, if there is such conduct, then the court may use its discretion to increase the award of damages, given the totality of the circumstances.¹¹⁴³ Guilty conduct requires some culpability, such as willful infringement, bad faith litigation, or failure to satisfy the affirmative duty to use care to avoid infringing another's patent.¹¹⁴⁴ The Federal Circuit will affirm a district court's decision of enhanced damages unless it was based on clearly erroneous findings of fact or constitutes an abuse of discretion.¹¹⁴⁵

In *National Presto Industries, Inc. v. West Bend Co.*,¹¹⁴⁶ the Federal Circuit affirmed a jury finding that West Bend had willfully infringed

1137. *See id.* at 1571, 39 U.S.P.Q.2d (BNA) at 1071.

1138. *See id.* at 1570, 39 U.S.P.Q.2d (BNA) at 1070.

1139. *See id.* at 1573, 39 U.S.P.Q.2d (BNA) at 1070.

1140. *See id.* at 1574, 39 U.S.P.Q.2d (BNA) at 1071.

1141. *See State Indus. v. Mor-Flo Indus.*, 948 F.2d 1573, 1576, 20 U.S.P.Q.2d (BNA) 1738, 1740 (Fed. Cir. 1991).

1142. *See id.*, 20 U.S.P.Q.2d (BNA) at 1740.

1143. *See id.*; *Read Corp v. Portec, Inc.*, 970 F.2d 816, 826-27, 23 U.S.P.Q.2d (BNA) 1426, 1435-36 (Fed. Cir. 1992) (outlining specific factors, reflecting egregiousness of defendant's conduct, which court may consider in applying second prong of damages inquiry).

1144. *See Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1523, 35 U.S.P.Q.2d (BNA) 1641, 1649 (Fed. Cir. 1996) (in banc, *rev'd and remanded on other grounds*, 117 S. Ct. 1040 (1997) (noting that inquiry into defendant's intent is necessary only when patent owner seeks enhanced damages or attorney fees).

1145. *See Modine Mfg. Co. v. Allen Group, Inc.*, 917 F.2d 538, 542-43, 16 U.S.P.Q.2d 1622, 1624-25 (Fed. Cir. 1990).

1146. 76 F.3d 1185, 37 U.S.P.Q.2d (BNA) 1685 (Fed. Cir. 1996); *see supra* notes 822-37 and accompanying text.

patents held by National Presto.¹¹⁴⁷ West Bend appealed, using a two-pronged attack.¹¹⁴⁸ First, West Bend argued that the question of willful infringement was an equitable issue for the court to consider, not the jury.¹¹⁴⁹ Second, West Bend argued that it could not have willfully infringed the patent because National Presto filed suit on the day the patent issued.¹¹⁵⁰

Dismissing West Bend's first argument, the Federal Circuit held that willful infringement "turns on considerations of intent, state of mind, and culpability," and remains with the trier of fact.¹¹⁵¹ The Federal Circuit also found substantial evidence to support the jury's verdict that West Bend's infringement was willful, despite the filing of suit on the day the patent issued.¹¹⁵² West Bend cited *State Industries, Inc. v. A.O. Smith Corp.*¹¹⁵³ for the proposition that "the patent must exist and one must have knowledge of it to be a willful infringer."¹¹⁵⁴ The Federal Circuit distinguished *State Industries*, however, noting that the infringer in that case had no knowledge of the patent, but West Bend knew exactly when Presto's patent came into existence and had several months advance notice.¹¹⁵⁵ Moreover, the district court observed that West Bend (1) did not obtain a written opinion of counsel until eleven months after Presto's suit was filed,¹¹⁵⁶ (2) recognized that the jury could have disbelieved testimony regarding West Bend's accessibility of the patent, (3) noted the evidence of West Bend copying of the design,¹¹⁵⁷ and (4) realized that West Bend continued its infringing sales even after suit was filed.¹¹⁵⁸ Thus, there was substantial evidence whereby a jury could have found willful infringement.¹¹⁵⁹

In *Sensonics, Inc. v. Aerosonic Corp.*,¹¹⁶⁰ the Federal Circuit remanded the case back to the district court for a determination of bad faith,

1147. *National Presto Indus., Inc. v. West Bend Co.*, 76 F.3d 1185, 1188, 37 U.S.P.Q.2d (BNA) 1685, 1686 (Fed. Cir. 1996).

1148. *See id.* at 1192-93, 37 U.S.P.Q.2d (BNA) at 1690-91.

1149. *See id.*, 37 U.S.P.Q.2d (BNA) at 1690.

1150. *See id.* at 1193, 37 U.S.P.Q.2d (BNA) at 1690-91.

1151. *See id.*, 37 U.S.P.Q.2d (BNA) at 1690.

1152. *See id.*, 37 U.S.P.Q.2d (BNA) at 1690.

1153. 751 F.2d 1226, 224 U.S.P.Q. (BNA) 418 (Fed. Cir. 1985).

1154. *National Presto Indus., Inc.*, 76 F.3d at 1193, 37 U.S.P.Q.2d (BNA) at 1690 (citing *State Indus., Inc. v. A.O. Smith Corp.*, 751 F.2d 1226, 1236, 224 U.S.P.Q. (BNA) 418, 425 (Fed. Cir. 1985)).

1155. *See id.*, 37 U.S.P.Q.2d (BNA) at 1690.

1156. *See id.*, 37 U.S.P.Q.2d (BNA) at 1690.

1157. *See id.*, 37 U.S.P.Q.2d (BNA) at 1690.

1158. *See id.*, 37 U.S.P.Q.2d (BNA) at 1690.

1159. *See id.*, 37 U.S.P.Q.2d (BNA) at 1690.

1160. 81 F.3d 1566, 38 U.S.P.Q.2d (BNA) 1551 (Fed. Cir. 1996); *see supra* notes 1077-85 and accompanying text.

vexatious behavior, or other grounds warranting an award of attorney fees.¹¹⁶¹ The district court initially refused to award either attorney fees or enhanced damages, but did not discuss whether the parties' actions were sufficient to deem the case an "exceptional" one—the criterion for an award of attorney fees.¹¹⁶² The factual basis for Sensonics' request for attorney fees included false Aerosonic pre-litigation statements that led to Sensonics filing a suit against a third company, Aerosonic attorney's conduct of passing notes in a deposition about the copying of the invention, misleading the district court about the issuance of a reexamination certificate, and Aerosonic's failure to preserve manufacturing records.¹¹⁶³

The Federal Circuit found that the district court acted within its discretion in declining to enhance damages because the infringement was not willful.¹¹⁶⁴ However, the Federal Circuit remanded with directions to determine whether attorney's fees were also warranted, as the court failed to discuss willful infringement or bad faith in the context of those particular fees.¹¹⁶⁵

In *Stryker Corp. v. Intermedics Orthopedics, Inc.*,¹¹⁶⁶ the Federal Circuit affirmed the district court's finding of willful infringement.¹¹⁶⁷ The district court found that Intermedics deliberately copied the ideas or design of the patent and failed to investigate the scope of the patent and to form a good faith belief that the patent was either invalid or not infringed.¹¹⁶⁸ Intermedics argued the district court clearly erred in finding that copying occurred because Intermedics did not make a "slavish," or nearly identical, copy of the commercial embodiment of the '023 patent,¹¹⁶⁹ as required by *State Industries, Inc. v. A.O. Smith Corp.*¹¹⁷⁰ Intermedics also alleged that the district court committed clear error when determining the issue of notice because of "unrefuted, un rebutted evidence in the record

1161. *Sensonics, Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1575, 38 U.S.P.Q.2d (BNA) 1551, 1558.

1162. *See id.* at 1574, 38 U.S.P.Q.2d (BNA) at 1557-58 (recognizing that award of attorney fees requires "exceptional case" which may be demonstrated by bad faith or willful infringement as well as litigation misconduct or unprofessional behavior).

1163. *Id.* at 1574-75, 38 U.S.P.Q.2d (BNA) at 1558.

1164. *See id.* at 1574, 38 U.S.P.Q.2d (BNA) at 1557 (stating that, absent willful infringement or other indicium of bad faith, punitive damages such as enhancement are not warranted).

1165. *See id.*, 38 U.S.P.Q.2d (BNA) at 1558.

1166. 96 F.3d 1409, 40 U.S.P.Q.2d (BNA) 1065 (Fed. Cir. 1996); *see supra* notes 1093-1108 and accompanying text.

1167. *Stryker Corp. v. Intermedics Orthopedics, Inc.*, 96 F.3d 1409, 1419, 40 U.S.P.Q.2d (BNA) 1065, 1068 (Fed. Cir. 1996).

1168. *Id.* at 1414, 40 U.S.P.Q.2d (BNA) at 1068.

1169. *Id.*, 40 U.S.P.Q.2d (BNA) at 1068.

1170. 751 F.2d 1226, 224 U.S.P.Q. (BNA) 418 (Fed. Cir. 1985) (holding that "slavish" copy, or use of patentee's product as template for production of copy, alone indicates willfulness).

that in January 1990 [the patent attorney] was not aware that the '023 patent raised an infringement issue."¹¹⁷¹ The district court, however, found that Intermedics had notice of the patent on January 23, 1989, when the manager of product development sent a letter to patent counsel regarding consideration of Intermedics' new product and a brochure of the patented stem marked, "U.S. patent pending."¹¹⁷² The district court also found that Intermedics had actual notice of the '023 patent as of January 5, 1990, when the attorney saw a reference to the '023 patent in the Official Gazette.¹¹⁷³ Despite his knowledge of the patent, he failed to conduct an investigation as to possible infringement by Intermedics' new product.¹¹⁷⁴

The Federal Circuit commenced its review of this controversy by surveying its prior willfulness decisions regarding copying, including *In re Hayes Microcomputer Products, Inc.*¹¹⁷⁵ and *Bott v. Four Star Corp.*¹¹⁷⁶ Rejecting Intermedic's argument, the court found that "slavish copying" need not be found for willful infringement.¹¹⁷⁷ Rather, according to the court, the correct inquiry was whether the infringer "intentionally copied the ideas of another"¹¹⁷⁸ or "deliberately copied the ideas or design of another."¹¹⁷⁹ In its eyes, *State Industries* did not require "slavish copying," but instead looked at the totality of the circumstances with copying as one relevant factor.¹¹⁸⁰

The Federal Circuit also held that Intermedics did not establish clear error by the district court in critical findings of fact.¹¹⁸¹ Intermedics alleged that the patent attorney was not aware that the '023 patent raised an infringement issue, citing the patent attorney's own testimony.¹¹⁸² The Federal Circuit, however, found sufficient evidence in the record to support the district court's finding that the attorney had knowledge of the product as well as the patent.¹¹⁸³

1171. *Stryker Corp.*, 96 F.3d at 1415, 40 U.S.P.Q.2d (BNA) at 1069.

1172. *Id.* at 1414-15, 40 U.S.P.Q.2d (BNA) at 1069.

1173. *See id.* at 1415, 40 U.S.P.Q.2d (BNA) at 1069.

1174. *See id.*, 40 U.S.P.Q.2d (BNA) at 1069.

1175. 982 F.2d 1527, 25 U.S.P.Q.2d (BNA) 1241 (Fed. Cir. 1992).

1176. 807 F.2d 1567, 1 U.S.P.Q.2d (BNA) 1210 (Fed. Cir. 1986).

1177. *Stryker Corp.*, 96 F.3d at 1414, 40 U.S.P.Q.2d (BNA) at 1068.

1178. *Id.*, 40 U.S.P.Q.2d (BNA) at 1068 (quoting *In re Hayes Microcomputer Prods., Inc.*, 982 F.2d 1527, 1543, 25 U.S.P.Q.2d (BNA) 1241, 1253 (Fed. Cir. 1992)).

1179. *Id.*, 40 U.S.P.Q.2d (BNA) at 1068 (quoting *Bott v. Four Star Corp.*, 807 F.2d 1567, 1572, 1 U.S.P.Q.2d (BNA) 1210, 1213 (Fed. Cir. 1986)).

1180. *See id.*, 40 U.S.P.Q.2d (BNA) at 1068.

1181. *See id.* at 1415, 40 U.S.P.Q.2d (BNA) at 1069.

1182. *See id.* at 1416, 40 U.S.P.Q.2d (BNA) at 1069.

1183. *See id.* at 1415-16, 40 U.S.P.Q.2d (BNA) at 1070.

Therefore, the Federal Circuit affirmed the district court's decision as not clearly erroneous.¹¹⁸⁴

In *Hoechst Celanese Corp. v. BP Chemicals Ltd.*,¹¹⁸⁵ the Federal Circuit affirmed the jury verdict of willful infringement, even though the question of infringement was a close one.¹¹⁸⁶ Evidence was submitted to the jury that BP had conducted research in an effort to avoid the patented process, and turned to the process that was found to be infringing after failing to find some other solution to its problem.¹¹⁸⁷ BP argued that infringement by equivalency cannot be willful infringement since it shows BP's good faith effort to avoid the patent.¹¹⁸⁸ Although the jury did not indicate whether the infringement by BP was literal or under the doctrine of equivalents,¹¹⁸⁹ the Federal Circuit found that there was literal infringement.¹¹⁹⁰

The Federal Circuit rejected BP's arguments that a new trial was required because the jury was not asked to distinguish between literal and equivalent infringement.¹¹⁹¹ The court also dismissed BP's argument that the patent examiner's acceptance of its reexamination request of the Celanese patent six months prior to trial supported the closeness of the infringement question and demonstrated that the infringement was nonwillful.¹¹⁹² The court held that an examiner's grant of a Request for Reexamination is not probative of unpatentability.¹¹⁹³ Moreover, in the court's view, the grant of a Request for Reexamination does not establish the likelihood of patent invalidity.¹¹⁹⁴ Therefore, despite the closeness of the question, the Federal Circuit found substantial evidence in the record whereby a reasonable jury could have found willfulness and sustained the verdict.¹¹⁹⁵

1184. *See id.* at 1416, 40 U.S.P.Q.2d (BNA) at 1070.

1185. 78 F.3d 1575, 38 U.S.P.Q.2d (BNA) 1126 (Fed. Cir. 1996); *see supra* notes 636-47, 723, 755 and accompanying text.

1186. *See Hoechst Celanese Corp. v. BP Chems. Ltd.*, 78 F.3d 1575, 1583, 38 U.S.P.Q.2d (BNA) 1126, 1132-33 (Fed. Cir. 1996).

1187. *See id.*, 38 U.S.P.Q.2d (BNA) at 1133.

1188. *See id.*, 38 U.S.P.Q.2d (BNA) at 1133.

1189. *See id.* at 1584, 38 U.S.P.Q.2d (BNA) at 1133.

1190. *See id.* at 1582, 38 U.S.P.Q.2d (BNA) at 1132.

1191. *See id.* at 1581, 38 U.S.P.Q.2d (BNA) at 1131 (finding that BP was fully apprised that jury was instructed on equivalent infringement and that judge chose jury verdict form lacking questions regarding specificity of the verdict).

1192. *See id.* at 1584, 38 U.S.P.Q.2d (BNA) at 1133.

1193. *See id.*, 38 U.S.P.Q.2d (BNA) at 1133.

1194. *See id.*, 38 U.S.P.Q.2d (BNA) at 1133.

1195. *See id.*, 38 U.S.P.Q.2d (BNA) at 1133.

B. *Marking*

A patentee, or a person making or selling a patent article for or under the patentee, may mark those articles to give notice the public that the articles are patented.¹¹⁹⁶ A failure to mark the products prevents recovery in an action for infringement unless the infringer was notified of the infringement and continued to infringe thereafter;¹¹⁹⁷ damages may be recovered only for infringement occurring after such notice.¹¹⁹⁸ A patentee has the burden of proving at trial that it has complied with statutory requirements and that the marking has been substantially consistent and continuous.¹¹⁹⁹

In *Maxwell v. J. Baker, Inc.*,¹²⁰⁰ the Federal Circuit affirmed the district court's denial of J. Baker's motion for a judgment as a matter of law on the issue of patent marking under 35 U.S.C. § 287(a).¹²⁰¹ J. Baker alleged that damages should not have been awarded for infringement occurring before actual notice was given in June 1990, and that substantial evidence did not support the jury's verdict that Maxwell had complied with the marking statute as of November 1987.¹²⁰²

The Federal Circuit found substantial evidence that Maxwell had complied with the marking statute as of November 1987 and affirmed the district court's denial of a motion for a judgment as a matter of law on the issue of marking. Maxwell had licensed the invention to a third party, making it more difficult to insure compliance with the marking provisions.¹²⁰³ When third parties are involved, however, a rule of reason approach is justified and the court may look towards the patentee's reasonable efforts to ensure compliance with the marking requirements.¹²⁰⁴ In this case, Maxwell had made extensive and continuous efforts to ensure Target's (the licensee) compliance.¹²⁰⁵ The Federal Circuit noted that at least ninety-five percent of the shoes sold were marked, even though a numerically large

1196. See 35 U.S.C. § 287(a) (1994).

1197. See *id.*

1198. See *id.*; see also *American Med. Sys., Inc. v. Medical Eng'g Corp.*, 6 F.3d 1523, 1537, 28 U.S.P.Q.2d (BNA) 1321, 1331 (Fed. Cir. 1993).

1199. See *American Med. Sys.*, 6 F.3d at 1537, 28 U.S.P.Q.2d (BNA) at 1331; see also *Motorola, Inc. v. United States*, 729 F.2d 765, 770, 221 U.S.P.Q. (BNA) 297, 300-01 (Fed. Cir. 1984).

1200. 86 F.3d 1098, 39 U.S.P.Q.2d (BNA) 1001 (Fed. Cir. 1996); see *supra* notes 860-71, 1064-76 and accompanying text.

1201. See *Maxwell v. J. Baker, Inc.*, 86 F.3d 1098, 1112, 39 U.S.P.Q.2d (BNA) 1001, 1010 (Fed. Cir. 1996).

1202. See *id.* at 1111, 39 U.S.P.Q.2d (BNA) at 1009.

1203. See *id.*, 39 U.S.P.Q.2d (BNA) at 1010.

1204. See *id.* at 1111-12, 39 U.S.P.Q.2d (BNA) at 1010.

1205. See *id.* at 1112, 39 U.S.P.Q.2d (BNA) at 1010.

number of shoes were sold without the proper marking.¹²⁰⁶ Further evidence of the purportedly extensive and continuous efforts included the imposition of a requirement in the licensing agreement mandating the inclusion of the patent number on all shoes, notification to Target's manufacturer of the requirement, notification to Target of errors in the marking of shoes, and Maxwell's insistence that Target exercise its best effort to correct failures to mark.¹²⁰⁷

C. *Inequitable Conduct*

Applicants and their representatives have a duty of candor and good faith in dealing with the Patent Office.¹²⁰⁸ Inequitable conduct consists of an affirmative misrepresentation of a material fact, a failure to disclose material information, or submission of false material information, coupled with an intent to deceive.¹²⁰⁹ Clear and convincing evidence must be used to prove allegations of inequitable conduct.¹²¹⁰ Using its discretion, the court weighs the threshold findings of materiality and intent in light of all the circumstances of the case to determine if inequitable conduct is committed.¹²¹¹ The Federal Circuit reviews the district court's judgment for an abuse of discretion.¹²¹²

The Federal Circuit in *Refac International, Ltd. v. Lotus Development Corp.*¹²¹³ affirmed the district court's holding of inequitable conduct.¹²¹⁴ The district court found the patent unenforceable because of omissions in the inventors' affidavits, which were submitted to overcome a rejection on the grounds of inadequate disclosure.¹²¹⁵ The examiner previously rejected the inventor's Rule 132¹²¹⁶ affidavit because it was self-serving and had little probative value regarding an adequate disclosure.¹²¹⁷ In response, the inven-

1206. *See id.*, 39 U.S.P.Q.2d (BNA) at 1010.

1207. *See id.*, 39 U.S.P.Q.2d (BNA) at 1010.

1208. *See* 37 C.F.R. § 1.56(a) (1996).

1209. *See* *Molins PLC v. Textron Inc.*, 48 F.3d 1172, 1178, 33 U.S.P.Q.2d (BNA) 1823, 1826 (Fed. Cir. 1995) (citing *J.P. Stevens & Co. v. Lex Tex, Ltd.*, 747 F.2d 1553, 1559, 223 U.S.P.Q. (BNA) 1089, 1092 (Fed. Cir. 1984)).

1210. *See id.* at 1178, 33 U.S.P.Q.2d (BNA) at 1826.

1211. *See id.*, 33 U.S.P.Q.2d (BNA) at 1827.

1212. *See* *Kingsdown Med. Consultants, Ltd. v. Hollister, Inc.*, 863 F.2d 867, 876, 9 U.S.P.Q.2d (BNA) 1384, 1392 (Fed. Cir. 1988).

1213. 81 F.3d 1576, 38 U.S.P.Q.2d (BNA) 1665 (Fed. Cir. 1996).

1214. *See* *Refac Int'l, Ltd. v. Lotus Dev. Corp.*, 81 F.3d 1576, 1585, 38 U.S.P.Q.2d (BNA) 1665, 1672 (Fed. Cir. 1996).

1215. *See id.* at 1578-80, 38 U.S.P.Q.2d (BNA) at 1666-68.

1216. *See* 37 C.F.R. § 1.132 (1996) ("When any claim of an application or a patent under reexamination is rejected . . . affidavits or declarations traversing . . . objections may be received.").

1217. *See* *Refac Int'l, Ltd.*, 81 F.3d at 1578, 38 U.S.P.Q.2d (BNA) at 1666.

tors filed three affidavits containing opinions or factual statements directed to the sufficiency of the applicant's disclosure.¹²¹⁸ Each of the three affidavits failed, however, to disclose a prior association of the affiant with the inventor's company or that they had a pre-existing knowledge of a commercial embodiment of the invention, LANPAR.¹²¹⁹ The district court found that one of the affidavits, the Jones' affidavit, contained material omissions intended to mislead the Patent Office into granting the patent.¹²²⁰ The omissions included Jones' employment with the inventor's company, Jones' previous knowledge of the commercial embodiment LANPAR, instruction relating to LANPAR, and Jones' drafting text for a LANPAR manual.¹²²¹ The district court noted that the other two affidavits alone did not provide a basis for inequitable conduct.¹²²²

The Federal Circuit found the district court's credibility determination supported an intent to mislead the Patent Office and was not clearly erroneous.¹²²³ The district court believed the patent attorney's testimony that he inquired into the backgrounds of the affiants, and that the inventors did not inform him of the association with the company or the knowledge of the company.¹²²⁴ As a result, the district court was entitled to conclude that the inventors intentionally withheld the information from the Patent Office.¹²²⁵

The Federal Circuit dismissed two arguments that the Jones' affidavit did not support a finding of inequitable conduct.¹²²⁶ First, Refac argued that the Jones' affidavit was cumulative of the other two affidavits and therefore not material as a matter of law.¹²²⁷ Second, Refac argued the Jones' affidavit contained only opinion, and not the required factual statements needed to be given probative value, thereby preventing an inference of an intent to mislead.¹²²⁸ The Federal Circuit held that affidavits are inherently material even if only cumulative and the affirmative act of submitting one must be construed as evidencing an intent that they be relied upon.¹²²⁹

1218. *See id.* at 1578-80, 38 U.S.P.Q.2d (BNA) at 1666-68.

1219. *See id.*, 38 U.S.P.Q.2d (BNA) at 1667-68.

1220. *See id.* at 1580, 38 U.S.P.Q.2d (BNA) at 1668.

1221. *See id.*, 38 U.S.P.Q.2d (BNA) at 1668.

1222. *See id.* at 1579-80, 38 U.S.P.Q.2d (BNA) at 1667-68 (noting that "the effect of the fraudulent omission in the Jones Affidavit was heightened by the omissions in the other [two] Affidavits").

1223. *See id.* at 1581-82, 38 U.S.P.Q.2d (BNA) at 1669.

1224. *See id.* at 1582, 38 U.S.P.Q.2d (BNA) at 1669.

1225. *See id.*, 38 U.S.P.Q.2d (BNA) at 1670.

1226. *See id.* at 1580-85, 38 U.S.P.Q.2d (BNA) at 1668-72.

1227. *See id.* at 1583, 38 U.S.P.Q.2d (BNA) at 1670.

1228. *See id.* at 1584, 38 U.S.P.Q.2d (BNA) at 1671.

1229. *See id.* at 1583, 38 U.S.P.Q.2d (BNA) at 1671.

Moreover, since the examiner did not allow the claims in response to the inventor's own affidavit, the inventors were on notice that the examiner would consider it important to know of the affiant's pre-existing knowledge of the invention or connection with the inventors.¹²³⁰ Therefore, Federal Circuit could not hold as a matter of law that the omissions in the affidavit did not constitute inequitable conduct.¹²³¹

The Federal Circuit reversed the judgment of unenforceability for inequitable conduct in *Hebert v. Lisle Corp.*¹²³² Lisle alleged that letters it sent to Hebert containing references to other exhaust manifold spreaders, the invention at issue, and the results of a prior art search, were required to be disclosed to the Patent Office as prior art.¹²³³ Hebert did not disclose either the letters or the search results to the Patent Office.¹²³⁴ Lisle also alleged that Hebert used the spreader more than one year before filing his application, and argued that filing an oath averring to the contrary was inequitable conduct.¹²³⁵ The jury determined that Hebert had committed inequitable conduct.¹²³⁶

When reviewing a jury verdict finding inequitable conduct, the Federal Circuit determines whether substantive evidence at trial supported presumed factual findings of material withholding and deceptive intent.¹²³⁷ The Federal Circuit also determines whether there was substantial evidence whereby a reasonable jury could have reached the verdict on the entirety of the record and in light of correct instructions on the applicable law.¹²³⁸ In reviewing the record in *Lisle*, the Court ruled that there was not substantial evidence to support a finding of material withholding and intent to deceive the examiner.¹²³⁹ The Federal Circuit found that the information alleged to be withheld from the examiner was not conclusively shown to be prior art.¹²⁴⁰ Lisle's own expert, who alleged that the failure to cite the letters constituted inequitable conduct, could not even

1230. See *id.* at 1584, 38 U.S.P.Q.2d (BNA) at 1671.

1231. See *id.* at 1584-85, 38 U.S.P.Q.2d (BNA) at 1672.

1232. 99 F.3d 1109, 40 U.S.P.Q.2d (BNA) 1611 (Fed. Cir. 1996); see *supra* notes 1086-92 and accompanying text.

1233. See *Hebert v. Lisle Corp.*, 99 F.3d 1109, 1113, 40 U.S.P.Q.2d (BNA) 1611, 1613 (Fed. Cir. 1996).

1234. See *id.*, 40 U.S.P.Q.2d (BNA) at 1613.

1235. See *id.* at 1116, 40 U.S.P.Q.2d (BNA) at 1615.

1236. See *id.* at 1113, 40 U.S.P.Q.2d (BNA) at 1613.

1237. See *id.* at 1114, 40 U.S.P.Q.2d (BNA) at 1614.

1238. See *id.*, 40 U.S.P.Q.2d (BNA) at 1614.

1239. See *id.* at 1116, 40 U.S.P.Q.2d (BNA) at 1614.

1240. See *id.*, 40 U.S.P.Q.2d (BNA) at 1615.

testify that the submissions referred to in the letters were prior art.¹²⁴¹ The court determined that Lisle did state that Hebert did not know of closer prior art than that cited by the examiner.¹²⁴² Finally, the jury specifically rejected the argument that the patent was invalid for public use or sale, the basis for Lisle's charge of filing a false oath.¹²⁴³ Therefore, no substantial evidence supported the findings of material withholding or an intent to deceive.¹²⁴⁴

The Federal Circuit reversed the finding of inequitable conduct in a reissue patent proceeding, *Litton Systems, Inc. v. Honeywell, Inc.*¹²⁴⁵ The district court's finding of inequitable conduct rested on three findings. The district court first found that a declaration deliberately misled the examiner about the declarant's experience and gained allowance of the application.¹²⁴⁶ The second finding was that Litton intentionally withheld a reference from the examiner.¹²⁴⁷ Finally, the district court found culpable the citation of catalogs in a footnote in a patentability report.¹²⁴⁸

The Federal Circuit reversed, finding that the district court both overestimated and misconstrued the declaration.¹²⁴⁹ According to the court, the declaration contained no misleading or exaggerated claims of the declarant's experience.¹²⁵⁰ Moreover, the declaration at issue was only one of four different declarations upon which the examiner relied.¹²⁵¹ Secondly, there was no reference withheld from the examiner because the Federal Circuit had previously held that an applicant cannot intentionally withhold a reference the Patent Office has already examined even though the applicant may not have disclosed the reference.¹²⁵² Furthermore, the record did not disclose that anyone knew of the allegedly withheld reference.¹²⁵³ Finally, the Federal Circuit held that the citation of the catalogs in a

1241. *See id.* at 1115, 40 U.S.P.Q.2d (BNA) at 1615.

1242. *See id.* at 1116, 40 U.S.P.Q.2d (BNA) at 1615.

1243. *See id.* at 1116-17, 40 U.S.P.Q.2d (BNA) at 1616.

1244. *See id.* at 1117, 40 U.S.P.Q.2d (BNA) at 1616.

1245. 87 F.3d 1559, 1571, 39 U.S.P.Q.2d (BNA) 1321, 1329 (Fed. Cir. 1996).

1246. *See Litton Sys., Inc. v. Honeywell, Inc.*, 87 F.3d 1559, 1570, 39 U.S.P.Q.2d (BNA) 1321, 1328 (Fed. Cir. 1996).

1247. *See id.* at 1570-71, 39 U.S.P.Q.2d (BNA) at 1328.

1248. *See id.* at 1571, 39 U.S.P.Q.2d (BNA) at 1328.

1249. *See id.*, 39 U.S.P.Q.2d (BNA) at 1328.

1250. *See id.*, 39 U.S.P.Q.2d (BNA) at 1328.

1251. *See id.*, 39 U.S.P.Q.2d (BNA) at 1328; *see also supra* notes 1213-31 and accompanying text; *cf. Refac Int'l, Ltd. v. Lotus Dev. Corp.*, 81 F.3d 1576, 1583, 38 U.S.P.Q.2d (BNA) 1665, 1670-71 (Fed. Cir. 1996) (rejecting argument that one of three affidavits submitted was cumulative, making it immaterial as a matter of law).

1252. *See Litton Sys.*, 87 F.3d at 1571, 39 U.S.P.Q.2d (BNA) at 1328 (citing *Molins PLC v. Textron Inc.*, 48 F.3d 1172, 1185, 33 U.S.P.Q.2d (BNA) 1823, 1832 (Fed. Cir. 1995)).

1253. *See id.*, 39 U.S.P.Q.2d (BNA) at 1328.

footnote was not a substantial violation of the duty of candor since the catalogs were cumulative of references which were already before the examiner.¹²⁵⁴

In *Nordberg, Inc. v. Telsmith, Inc.*,¹²⁵⁵ the Federal Circuit affirmed the district court's decision that Nordberg did not engage in inequitable conduct for failing to disclose an invalidating reference and a prior use, even though the reference and prior use were not disclosed to the examiner.¹²⁵⁶ Telsmith argued that Nordberg should have known of the *Saunders* patent, the invalidating reference, because it owned the patent and had a copy in its own files.¹²⁵⁷ Additionally, Telsmith argued that the high materiality of the *Saunders* patent and the prior use required an inference of an intent to mislead the Patent Office, which Nordberg did not rebut.¹²⁵⁸

The Federal Circuit found these arguments unpersuasive. It held that, although a copy of the *Saunders* patent was in Nordberg's files, those files contained several hundred patents and Telsmith did not show that any Nordberg employee had actually searched the files and found a copy during the pendency of the application.¹²⁵⁹ The Federal Circuit further held that the applicant's actual knowledge of the reference's existence must be proven.¹²⁶⁰ The court, therefore, rejected Telsmith's argument that Federal Circuit precedent only required proof that the representative should have known of the art or information,¹²⁶¹ pointing out that *Molins* could not support Telsmith's argument as the applicant knew of the existence of the undisclosed references in that case.¹²⁶²

In rejecting Telsmith's second argument, the Federal Circuit held as not clearly erroneous the district court's finding that the prior use, which occurred under a confidentiality agreement, was not prior art.¹²⁶³ The evidence tended to support, rather than undermine, the district court's finding that the use was not material prior art and, therefore, did not need to be disclosed to the examiner.¹²⁶⁴

1254. *See id.*, 39 U.S.P.Q.2d (BNA) at 1328-29.

1255. 82 F.3d 394, 38 U.S.P.Q.2d (BNA) 1593 (Fed. Cir. 1996).

1256. *Nordberg, Inc. v. Telsmith, Inc.*, 82 F.3d 394, 396, 38 U.S.P.Q.2d (BNA) 1593, 1596 (Fed. Cir. 1996) (discussing Telsmith's allegations of misconduct and deception).

1257. *See id.* at 396-97, 38 U.S.P.Q.2d (BNA) at 1595.

1258. *See id.* at 396, 38 U.S.P.Q.2d (BNA) at 1595.

1259. *See id.* at 397, 38 U.S.P.Q.2d (BNA) at 1595.

1260. *See id.*, 38 U.S.P.Q.2d (BNA) at 1595.

1261. *See id.* (citing *Molins TLC v. Textron, Inc.*, 48 F.3d 1172, 1178, 33 U.S.P.Q.2d (BNA) 1823, 1826 (Fed. Cir. 1995)).

1262. *See id.*, 38 U.S.P.Q.2d (BNA) at 1595.

1263. *See id.* at 398, 38 U.S.P.Q.2d (BNA) at 1596 (holding that Telsmith did not demonstrate that the district court's finding was clearly erroneous).

1264. *See id.*, 38 U.S.P.Q.2d (BNA) at 1596.

D. Laches and Estoppel

Laches and estoppel are two equitable defenses to a charge of patent infringement.¹²⁶⁵ The application of these defenses are committed to the sound discretion of the district court. As such, the Federal Circuit's review is limited to a search for an abuse of discretion.¹²⁶⁶ To invoke laches as a defense, the defendant must prove two factors.¹²⁶⁷ The first factor to be proven is a delay in filing suit for an unreasonable and inexcusable length of time from the time the plaintiff knew or should have known of its claim.¹²⁶⁸ The second factor is that the delay caused injury to the defendant.¹²⁶⁹ If the length of delay is more than six years, borrowed from the limitations on damages,¹²⁷⁰ there is a presumption that laches applies.¹²⁷¹ This presumption creates a prima facie defense of laches¹²⁷² that the plaintiff may dispel "by offering evidence to show an excuse for the delay or that the delay was reasonable."¹²⁷³ Proof of both factors, whether by actual proof or by presumption, does not mandate the recognition of a laches defense.¹²⁷⁴ The court must still exercise its discretion.¹²⁷⁵

Equitable estoppel, like laches, is not governed by hard and fast rules, but is also committed to the discretion of the district court.¹²⁷⁶ Estoppel requires the proof of three elements.¹²⁷⁷ First, the actor having knowledge of the true facts must communicate something in a misleading way, either by words, conduct, or silence.¹²⁷⁸ Second, the other party must have relied on the communication.¹²⁷⁹ Finally, the other party would be harmed materially

1265. See *A.C. Aukerman Co. v. R.L. Chaides Constr. Co.*, 960 F.2d 1020, 1028, 22 U.S.P.Q.2d (BNA) 1321, 1325 (Fed. Cir. 1992).

1266. See *id.*, 22 U.S.P.Q.2d (BNA) at 1325.

1267. See *id.* at 1032, 22 U.S.P.Q.2d (BNA) at 1328.

1268. See *id.*, 22 U.S.P.Q.2d (BNA) at 1328.

1269. See *id.*, 22 U.S.P.Q.2d (BNA) at 1328 (stating that the defendant must show that plaintiff's delay "operated to the prejudice or injury of the defendant").

1270. See 35 U.S.C. § 286 (1994).

1271. See *A.C. Aukerman Co.*, 960 F.2d at 1037-38, 22 U.S.P.Q.2d (BNA) at 1332-33.

1272. See *id.* at 1037, 22 U.S.P.Q.2d (BNA) at 1332.

1273. See *id.* at 1038, 22 U.S.P.Q.2d (BNA) at 1332.

1274. See *id.* at 1036, 22 U.S.P.Q.2d (BNA) at 1331.

1275. See *id.*, 22 U.S.P.Q.2d (BNA) at 1331 (stating that laches are equitable judgments that courts may deny in light of present circumstances).

1276. See *A.C. Aukerman Co.*, 960 F.2d at 1041, 22 U.S.P.Q.2d (BNA) at 1335 (stating that equitable estoppel is not confined to a particular set of facts).

1277. See *id.*, 22 U.S.P.Q.2d (BNA) at 1335-36 (discussing the elements of equitable estoppel).

1278. See *id.*, 22 U.S.P.Q.2d (BNA) at 1335 (discussing the elements of equitable estoppel).

1279. See *id.*, 22 U.S.P.Q.2d (BNA) at 1335.

if the actor may successfully assert a claim inconsistent with the prior conduct.¹²⁸⁰

The Federal Circuit affirmed in part and vacated in part the district court's decision in *Hall v. Aqua Queen Manufacturing Inc.*¹²⁸¹ concerning laches and estoppel.¹²⁸² Hall had a patent directed to a waterbed that the waterbed industry did not highly regard.¹²⁸³ Toward the end of the life of the patent, Hall obtained a judgment for \$6.8 million from one manufacturer.¹²⁸⁴ Hall then filed eight suits against other manufacturers of waterbeds, six in 1991 and two in 1992.¹²⁸⁵

The district court granted summary judgment in favor of all eight accused infringers on the alternative grounds of laches and equitable estoppel.¹²⁸⁶ The court found that Hall knew or should have known of the defendants' allegedly infringing activities six or more years prior to the filing date of the suits.¹²⁸⁷ Furthermore, the court found no justifiable excuse for Hall's delay and that each of the defendants had established economic or evidentiary prejudice stemming from that unreasonable delay.¹²⁸⁸ Finally, after weighing the equities of applying the laches bar against an alleged conspiracy and willful infringement by the industry, the court concluded that application of the laches bar was appropriate.¹²⁸⁹

On appeal, Hall argued that the district court misapplied the *Aukerman* presumption, erroneously rejected his excuses for the delay, and abused its discretion by barring his suits despite evidence of a conspiracy and willful infringement.¹²⁹⁰ Agreeing with Hall in part, the Federal Circuit found that the district court did err in its application of the *Aukerman* presumption.¹²⁹¹ The Federal Circuit,

1280. *See id.*, 22 U.S.P.Q.2d (BNA) at 1335-36.

1281. 93 F.3d 1548, 39 U.S.P.Q.2d (BNA) 1925 (Fed. Cir. 1996).

1282. *See Hall v. Aqua Queen Mfg., Inc.*, 93 F.3d 1548, 1558, 39 U.S.P.Q.2d (BNA) 1925, 1933 (Fed. Cir. 1996) (affirming district court's grant of summary judgment as to all defendants except U.S. Watermattress).

1283. The Water Bed Institute, a trade organization, had issued an opinion in 1973 that the '356 patent was of limited scope and probably invalid. It therefore advised members not to pay royalties to Hall for use of the patent. *See id.* at 1551, 39 U.S.P.Q.2d (BNA) at 1927. Hall's failure to assert the patent against anyone in litigation following this opinion reinforced belief that it was invalid. *See id.*, 39 U.S.P.Q.2d (BNA) at 1927.

1284. *See id.* at 1552, 39 U.S.P.Q.2d (BNA) at 1928 (stating that Hall obtained an infringement verdict in 1991, which was affirmed on appeal and satisfied in 1992).

1285. *See id.*, 39 U.S.P.Q.2d (BNA) at 1928.

1286. *See id.*, 39 U.S.P.Q.2d (BNA) at 1928.

1287. *See id.* at 1553, 39 U.S.P.Q.2d (BNA) at 1928.

1288. *See id.*, 39 U.S.P.Q.2d (BNA) at 1928.

1289. *See id.*, 39 U.S.P.Q.2d (BNA) at 1928.

1290. *See id.*, 39 U.S.P.Q.2d (BNA) at 1928-29.

1291. *See id.* at 1553, 39 U.S.P.Q.2d (BNA) at 1929.

however, found that the district court's misapplication of the presumption was harmless, as it "adversely affected the defendants rather than Hall."¹²⁹² As to Hall's other contentions, the court held that Hall's reasons for delay were not acceptable excuses¹²⁹³ and the district court's rejection of them was not an abuse of discretion.¹²⁹⁴ It also upheld the district court in refusing to find that defendants willfully infringed and, therefore, could not justify a refusal to apply the laches defense.¹²⁹⁵

The Federal Circuit, however, reversed the district court's decision regarding one of the defendants, U.S. Watermattress.¹²⁹⁶ Hall raised the triable issue of fact regarding when he knew or should have known of U.S. Watermattress' activities.¹²⁹⁷ Hall contended that he did not know or should not have known of U.S. Watermattress' activities more than six years before filing suit.¹²⁹⁸ Both the district court and the Federal Circuit agreed.¹²⁹⁹ As a result, U.S. Watermattress had the burdens both of production and persuasion regarding the unreasonableness of Hall's delay in bringing suit.¹³⁰⁰ Instead, however, the district court required Hall to bear these burdens and found in favor of U.S. Watermattress only because Hall had failed to excuse his delay.¹³⁰¹ The Federal Circuit also found error in the district court's determination of prejudice, since no prejudicial action cited by U.S. Watermattress was shown to have occurred after 1987, the beginning of the delay period.¹³⁰² For these reasons, the Federal Circuit held that the district court's grant of summary judgment in favor of U.S. Watermattress was improvident and vacated it.¹³⁰³

1292. *See id.*, 39 U.S.P.Q.2d (BNA) at 1929. According to the Federal Circuit, the lower court erroneously required the defendants, rather than Hall, to come forward with evidence demonstrating prejudice while the presumption was in effect. "The *Aukerman* presumption places a burden of production on [Hall]." *Id.*, 39 U.S.P.Q.2d (BNA) at 1929.

1293. Hall proffered the following excuses for his delay: poverty from the mid-1970s through the mid-1980s, inability to find counsel during that time, and pendency of litigation with another company from 1985-1992. *See id.*, 39 U.S.P.Q.2d (BNA) at 1928.

1294. *See id.* at 1554-55, 39 U.S.P.Q.2d (BNA) at 1929-30.

1295. *See id.* at 1555, 39 U.S.P.Q.2d (BNA) at 1930 (stating that Hall's allegations of willful infringement lacked substantial support and that there could be no abuse of discretion in applying the laches defense).

1296. *See id.* at 1557, 39 U.S.P.Q.2d (BNA) at 1931.

1297. *See id.* at 1555, 39 U.S.P.Q.2d (BNA) at 1930.

1298. *See id.* at 1555-56, 39 U.S.P.Q.2d (BNA) at 1930.

1299. *See id.*, 39 U.S.P.Q.2d (BNA) at 1930.

1300. *See id.* at 1556, 39 U.S.P.Q.2d (BNA) at 1930.

1301. *See id.*, 39 U.S.P.Q.2d (BNA) at 1930-31.

1302. *See id.* at 1556-57, 39 U.S.P.Q.2d (BNA) at 1931-32.

1303. *See id.* at 1557, 39 U.S.P.Q.2d (BNA) at 1932.

Because the Federal Circuit affirmed the district court's decision on laches for the first seven defendants, it did not reach their arguments on equitable estoppel.¹³⁰⁴ Reversing the laches decision as to U.S. Watermattress, however, required the Federal Circuit to address equitable estoppel.¹³⁰⁵ As with laches, U.S. Watermattress bore the burdens of proof and production for the elements of equitable estoppel, which include statements or conduct that communicate something misleading, actions taken in reliance, and resulting prejudice.¹³⁰⁶ The Federal Circuit did not need to review the district court's finding regarding a misleading communication in light of its determination of the reliance and prejudice issues.¹³⁰⁷ As to showing reliance, the Federal Circuit agreed with Hall that U.S. Watermattress had failed to demonstrate that any expansions occurred during the relevant delay period.¹³⁰⁸ Hall also raised genuine issues of fact regarding U.S. Watermattress' true motivation in light of the evidence, which compelled the court to consider that U.S. Watermattress' action may have resulted from a belief that the patent was invalid, rather than from a belief that Hall would not sue under the patent.¹³⁰⁹ Finally, since the district court relied on the same insufficient evidence to find for prejudice for equitable estoppel as it did for laches, the Federal Circuit reversed the district court and vacated the summary judgment.¹³¹⁰

1304. *See id.* at 1551, 39 U.S.P.Q.2d (BNA) at 1926.

1305. *See id.* at 1557-58, 39 U.S.P.Q.2d (BNA) at 1932-33.

1306. *See id.* at 1557, 39 U.S.P.Q.2d (BNA) at 1932.

1307. *See id.* at 1558, 39 U.S.P.Q.2d (BNA) at 1932.

1308. *See id.*, 39 U.S.P.Q.2d (BNA) at 1932.

1309. *See id.*, 39 U.S.P.Q.2d (BNA) at 1933.

1310. *See id.*, 39 U.S.P.Q.2d (BNA) at 1933.