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Eat Your Vegetables and Be Sued for Patent Infringement

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Eat Your Vegetables and Be Sued for Patent Infringement

M. R. Carrillo-Heian*

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I. INTRODUCTION

The field of intellectual property (IP) law refers generally to the law of trademarks, patents, copyrights and trade secrets. Each area of IP gives the owner different rights and is directed to particular subject matter, though some overlap occurs. Trademark law protects anything that may serve to identify a source of goods or services,¹ but protection does not extend to anything functional.² Patent law protects novel and useful compositions of matter, machines, articles of manufacture and processes,³ that is, functional items. Copyright law protects “original works of authorship,”⁴ and expressly excludes discoveries, ideas, and processes from its ambit.⁵ Trade secret law protects information that is valuable because of its secret nature.⁶ The cost to obtain each type of protection may also differ radically; the government fees are \$325 to file a trademark application,⁷ \$710 to file a patent application,⁸ and \$30 to register a copyright.⁹ The government charges nothing for trade secret protection; the cost of such protection entails an amount necessary for “efforts that are reasonable under the circumstances to maintain [the secret’s]

1. See 15 U.S.C.A. § 1127 (West Supp. 2000) (defining “trademark” and “service mark”).

2. See, e.g., *Keene Corp. v. Paraflex Indus., Inc.*, 653 F.2d 822, 824 (3d Cir. 1981) (“One of the essential elements of the law of trademarks . . . was the principle that no legal protection would be available for products or features that were functional . . .”).

3. See 35 U.S.C.A. § 101 (West 1984) (defining the scope of patentable subject matter). All references to patents in this Comment are directed to utility patents. Design patents, *id.* §§ 171-173 (West 1984 & Supp. 2000), and plant patents, *id.* §§ 161-164 (West 1984 & Supp. 2000), are outside the scope of this Comment.

4. 17 U.S.C.A. §§ 102(a) (West 1996) (defining the subject matter of copyright). Similar protection is available for semiconductor chips and mask works. See *id.* §§ 901-914 (West 1995).

5. *Id.* § 102(b) (West 1996).

6. See Uniform Trade Secrets Act, CAL. CIV. CODE § 3426.1(d)(1) (West 1997) (defining “trade secret”). The formula for Coca-Cola is a famous example of information protected by trade secret law.

7. 37 C.F.R. § 2.6(a)(1) (2000).

8. *Id.* § 1.16(a). But see *id.* § 1.9(f) (defining a small entity); *id.* § 1.16 (allowing reduced fees for those inventors having small entity status).

9. *Id.* § 201.3(c).

secrecy.”¹⁰ When seeking to protect intellectual property, one must evaluate the types of protection available and select that which would be most valuable. In addition to the initial cost of obtaining IP protection, the cost of enforcing one’s rights is a significant consideration. If enforcement costs are prohibitive, obtaining protection is useless.

Patent law offers the most extensive protection, but the requirements are more stringent than in the other IP disciplines and the examination procedure is much more involved.¹¹ The protection obtained by a patent, however, is limited in time.¹² Inventors are encouraged to effectively license or market their inventions to offset the high costs of patenting. This Comment examines several patents and their prospects for enforcement as an evaluation of their economic worth.¹³ If there is no practical way to enforce a patent, the opportunities for realizing economic value are severely curtailed. Part II provides an overview of patent law requirements and patent examination procedure, as well as the advantages and disadvantages of obtaining a patent. Part III addresses five patents that have been granted by the Patent and Trademark Office (PTO), detailing their prosecution history and evaluating their prospects for economic viability. Part IV explores certain patents obtained by researchers at Johns Hopkins University—the lawsuit that spawned from these patents demonstrates that seemingly unenforceable patents may find life if the right defendant is identified. These patents are also indicative of the outer limits of patent protection, perhaps even crossing the line of impermissibility. This Comment concludes with an evaluation of the conflict between examination procedure policy and the interest of the public in the patent system.

II. PATENT LAW

American patent law has its foundation in English common law, in which the Crown had the power to issue patents.¹⁴ In America, one finds the basis of the patent statutes in the Constitution: “The Congress shall have Power . . . To promote the Progress of Science and useful Arts, by securing for limited Times to . . . Inventors

10. See Uniform Trade Secrets Act, CAL. CIV. CODE § 3426.1(d) (defining “trade secret”).

11. Compare 17 U.S.C.A. § 102 (West 1996) (“Copyright protection subsists . . . in original works of authorship . . .”) with 35 U.S.C.A. §§ 100-212 (West 1996) (setting forth the rigorous requirements for both patentability and examination of patent applications).

12. See 35 U.S.C.A. § 154(a)(2) (West Supp. 2000) (granting the right to exclude for a term of twenty years from the filing date of the original application). Patents granted before June 8, 1995, were subject to a term of seventeen years from the date of the patent’s issue.

13. Enforcement of patents is not a consideration of the United States Patent and Trademark Office (PTO). This Comment does not suggest that it should be; it merely looks to enforcement as a measure of economic viability with respect to specific patents. As an aside, it suggests that certain patents are, or should be, outside the realm of permissible subject matter.

14. See generally Michael D. Davis, *The Patenting of the Products of Nature*, 21 *RUTGERS COMPUTER & TECH. L.J.* 293, 298 (1995).

the exclusive Right to their respective . . . Discoveries”¹⁵ The patent statutes grant the owner of the patent the right to exclude others from making, using, or selling the invention.¹⁶ These rights are granted in exchange for full disclosure of how to make and use the invention, and the best mode of doing so.¹⁷

A. Patentable Subject Matter

To obtain a patent, one must have statutory subject matter. The requirements for statutory subject matter are threefold: the invention must be useful,¹⁸ novel,¹⁹ and nonobvious.²⁰ In addition to the requirement of statutory subject matter, an inventor must disclose how to make and use the invention²¹ and the best mode of practicing the invention known to the inventor at the time the invention was made.²²

The usefulness, or utility, requirement is met when the applicant shows that the invention operates and has a practical use.²³ The novelty requirement means that the invention must not be “anticipated”²⁴ by the prior art,²⁵ either in the form of a

15. U.S. CONST. art. I, § 8, cl. 8. Many consider Thomas Jefferson “the father of the American patent system.” Edward C. Walterscheid, *Patents and the Jeffersonian Mythology*, 29 J. MARSHALL L. REV. 269, 269 (1995) (reviewing Jefferson’s writings on patents).

16. 35 U.S.C.A. § 154(a)(1) (West Supp. 2000).

17. *Id.* § 112 (West 1984).

18. *Id.* § 101 (West 1984) (“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.”). For a discussion of standards used to determine utility, see generally Andrew T. Kight, Note, *Pregnant with Ambiguity: Credibility and the PTO Utility Guidelines in Light of Brenner*, 73 IND. L.J. 997 (1998) (evaluating the lowering of the utility standard from “substantial utility” to “credible utility”).

19. *Id.* § 102 (West 1984 & Supp. 2000).

20. *Id.* § 103 (West Supp. 2000).

21. *Id.* § 112 (requiring an enabling disclosure).

22. *Id.* (requiring disclosure of the best mode of practicing the invention).

23. See *Bedford v. Hunt*, 3 F. Cas. 37, 37 (C.C.D. Mass. 1817) (No. 1217) (“The law . . . simply requires, that [the invention] shall be capable of use”). A guarantee of utility is not necessary; a potential for utility is sufficient. Cf. *Ex parte McKay*, 200 U.S.P.Q. 324, 325-26 (PTO Bd. App. 1975) (concluding that a method for “obtaining oxygen from extraterrestrial materials” met the utility requirement, even though it was not useful on earth). Similarly, an invention need not be complicated to qualify for patent protection. See, e.g., *Bedford*, 3 F. Cas. at 37 (“The law . . . does not look to the degree of utility”); *Earle v. Sawyer*, 8 F. Cas. 254, 256 (C.C.D. Mass. 1925) (“It is of no consequence, whether the thing be simple or complicated”); *Goodyear Tire & Rubber Co. v. Ray-O-Vac Co.*, 321 U.S. 275, 279 (1944) (“[T]he means . . . seem simple . . . but this is not enough to negative invention.”); *Panduit Corp. v. Dennison Mfr. Co.*, 810 F.2d 1561, 1572 (Fed. Cir. 1987), cert. denied, 481 U.S. 1052 (1987) (“The statute requires utility, novelty, and nonobviousness, not complexity.”); *In re Oetiker*, 977 F.2d 1443, 1447 (Fed. Cir. 1992) (“Simplicity is not inimical to patentability.”).

24. Anticipation requires that the all aspects of the applicant’s invention be disclosed in a single reference, that is, a single patent, patent application, or printed publication. *RCA Corp. v. Applied Digital Data Sys., Inc.*, 730 F.2d 1440, 1444 (Fed. Cir. 1984), cert. dismissed sub nom. *Hazeltine Corp. v. RCA Corp.*, 468 U.S. 1228 (1984).

25. “Prior art is knowledge that is available, including what would be obvious from it, at a given time, to a person of ordinary skill in the art.” ROBERT L. HARMON, *PATENTS AND THE FEDERAL CIRCUIT* 11 (3d ed. 1994). See *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696-97 (Fed. Cir. 1983) (listing factors relevant to determining the level of ordinary skill in the art). See generally MAN. PAT. EXAM. PROC. §§ 901.01-901.09 (7th ed. Revision No. 1, 2000) (setting forth the types of references that may be used as prior art during examination of

publication²⁶ or another patent or patent application,²⁷ and that the invention has not been “in public use or on sale in this country[] more than one year prior” to the filing date of the application.²⁸ Not all new and useful inventions, however, are entitled to patent protection. A new invention “may still not be patentable if the differences between the new thing and what was known before is not considered sufficiently great to warrant a patent.”²⁹ This third test, an obviousness determination, is neither well-defined nor simple to understand.³⁰ During the 1952 revisions to the Patent Act, Congress’ evident intent was to define the scope of statutory subject matter as broadly as possible. In fact, the records of the House and Senate hearings contain a remark that “anything under the sun that was made by man” may be statutory subject matter.³¹ In 1980, however, Chief Justice Burger explicitly stated that “[t]his is not to suggest that §. 101 has no limits or that it embraces every discovery. The laws of nature, physical phenomena, and abstract ideas have been held not patentable.”³²

Whether products of nature may be patented continues to be a source of controversy.³³ For example, a patent claim for a naturally-occurring fiber in the

applications) [hereinafter MPEP].

26. See 35 U.S.C.A. § 102(a), (b) (West 1984 & Supp. 2000) (referring to foreign and domestic printed publications).

27. See *id.* § 102(d), (e) (regarding foreign and domestic patents and applications for patents).

28. *Id.* § 102(b).

29. *In re Bergy*, 596 F.2d 952, 962 (C.C.P.A. 1979), *rev'd on other grounds*, *Diamond v. Chakrabarty*, 447 U.S. 303 (1980).

30. See generally George M. Sirilla & Honorable Giles S. Rich, 35 U.S.C. § 103: *From Hotchkiss to Hand to Rich, the Obvious Patent Law Hall-of-Famers*, 32 J. MARSHALL L. REV. 437 (1999). The Patent Act of 1952 made nonobviousness a statutory requirement and explicitly stated that “[p]atentability shall not be negated by the manner in which the invention was made.” 35 U.S.C.A. § 103(c) (West Supp. 2000). This wording was a response to historical treatment and conflict regarding the threshold of patentability, which included the rise and fall of the “flash of genius” test. See, e.g., *Earle v. Sawyer*, 8 F. Cas. 254, 256 (C.C.D. Mass. 1825) (“It is of no consequence . . . whether it be by accident, or by long laborious thought, or by an instantaneous flash of mind, that [the invention] is first [made]. The law looks to the fact, and not to the process by which it is accomplished.”); *Hotchkiss v. Greenwood*, 52 U.S. 248, 267 (1850) (requiring greater “ingenuity” than that of a “skillful mechanic”); *Cuno Eng’g Corp. v. Automatic Devices Corp.*, 314 U.S. 84, 91 (1941) (“[T]he new device, however useful it may be, must reveal the flash of creative genius not merely the skill of the calling.”). The tension was resolved in *Graham v. John Deere Co.*:

It is undisputed that [35 U.S.C.A. § 103] was, for the first time, a statutory expression of an additional requirement for patentability, originally expressed in *Hotchkiss*. It also seems apparent that Congress intended by the last sentence of § 103 to abolish the test it believed this court announced in the controversial phrase “flash of creative genius,” used in *Cuno Corp. v. Automatic Devices Corp.*, 314 U.S. 84, 51 USPQ 272 (1941).

383 U.S. 1, 15 (1966).

31. S. REP. NO. 82-1979 at 5 (1952); H.R. REP. NO. 82-1923 at 6 (1952) (“A person may have ‘invented’ a machine or manufacture, which may include anything under the sun that is made by man, but it is not necessarily patentable under section 101 unless the conditions of the title are fulfilled.”).

32. *Diamond v. Chakrabarty*, 447 U.S. 303, 309 n.6. (citations omitted).

33. See generally Davis, *supra* note 14 (providing a history of patent law and addressing its application to biotechnology); Stephen McKenna, Comment, *Patentable Discovery?*, 33 SAN DIEGO L. REV. 1241 (1996) (utilizing an example similar to the situation examined in Part IV of this Comment).

needle of the *Pinus australis* tree was rejected, and the Commissioner of Patents affirmed the rejection:

It cannot be said that the applicant in this case has made any discovery, or is entitled to patent the idea, or fact, rather, that fiber can be found in the needle of the *Pinus australis*, or that it is a longer fiber than can be found in other leaves, or that it possesses more or less strength of fineness, because the mere ascertaining of the character or quality of trees that grow in the forest and the construction of the woody fiber and tissue of which they are composed is not a patentable invention, recognized by the statute, any more than to find a new gem or jewel in the earth would entitle the discoverer to patent all gems which should be subsequently found The result would be that . . . patents might be obtained upon the trees of the forest and the plants of the earth, which of course would be unreasonable and impossible.³⁴

Similarly, applications claiming natural elements were rejected, because natural elements are products of nature.³⁵ Man-made elements, on the other hand, are not products of nature, and patents were accordingly granted.³⁶ Patents have been allowed for purified versions of not only artificial compounds,³⁷ but also natural compounds.³⁸ The rationale for allowing patents on purified natural products is that the pure form is not known to exist in nature, so production of a purified form is therefore “novel.”³⁹ Methods drawn to new uses for old compounds have been held patentable, but old compounds do not necessarily become “novel” when such a new use is discovered absent a surprisingly unexpected benefit.⁴⁰

34. *In re Bergy*, 596 F.2d 952, 982-83 (C.C.P.A. 1979) (citing *Ex parte Latimer*, 1889 C.D. 123, 125, *cert. granted*, 444 U.S. 924 (1979), *dismissed as moot*, 444 U.S. 1028 (1980)).

35. *See, e.g., In re Marden*, 47 F.2d 957, 957 (C.C.P.A. 1931) (uranium); *In re Marden*, 47 F.2d 958, 959 (C.C.P.A. 1931) (vanadium); *General Electric Co. v. DeForest Radio Co. et al.*, 28 F.2d 641, 643 (3d Cir. 1928) (tungsten), *cert. denied*, 278 U.S. 656 (1929).

36. *See, e.g., In re Seaborg*, 328 F.2d 996, 999 (C.C.P.A. 1964) (americium); *In re Seaborg*, 328 F.2d 993, 995 (C.C.P.A. 1964) (curium).

37. *E.g., Kuehnmsted v. Farbenfabriken of Elberfeld Co.*, 179 F. 701, 705 (7th Cir. 1910) (aspirin), *cert. denied*, 220 U.S. 622 (1911).

38. *See, e.g., In re Bergstrom*, 427 F.2d 1394, 1402 (1970) (prostaglandins); *Merck & Co. v. Olin Matheson Chem. Corp.*, 253 F.2d 156, 164 (Fed. Cir. 1958) (vitamin B₁₂-active compositions); Rebecca S. Eisenberg, *Re-examining the Role of Patents in Appropriating the Value of DNA Sequences*, 49 EMORY L.J. 783, 785-86 (2000) (DNA sequences).

39. *Bergstrom*, 427 F.2d at 1240.

40. *See In re May*, 574 F.2d 1082, 1090 (C.C.P.A. 1978) (“While appellants have discovered a hitherto unknown property [of the prior art compound] . . . such discovery does not constitute a new use.”). In *May*, the applicants discovered that a prior art compound known to be an analgesic was also nonaddictive. *Id.* at 1089. *See also Titanium Metals Corp. v. Banner*, 778 F.2d 775, 782 (1985) (“Congress has not seen fit to permit the patenting of an old alloy . . . by one who has discovered its corrosion resistance or other useful properties . . .”).

The landmark case of *Diamond v. Chakrabarty*⁴¹ discussed whether 35 U.C.S.A. § 101 encompasses living material, and peripherally discussed the patenting of products of nature.⁴² *Chakrabarty* involved a patent on a strain of bacteria that had been genetically-engineered to break down crude oil, making it useful in the cleanup of oil spills.⁴³ The PTO and the court below found the invention not within the parameters of the statute because (1) bacteria are “products of nature,” and (2) patents could not be obtained on living organisms.⁴⁴ The Supreme Court disagreed, finding that the bacteria were man-made; such an organism was not found in nature (at least, in concentrated “purified” form),⁴⁵ and the fact that the organism was “alive” had no bearing.⁴⁶ The determination that living things are within statutory subject matter continues to the present day.⁴⁷

B. Examination Procedure

Patent applications are prosecuted,⁴⁸ or examined, before the PTO.⁴⁹ While an application may be prosecuted by an inventor who is not a patent practitioner,⁵⁰ an inventor should appoint a patent practitioner to prosecute the application in the inventor’s name.⁵¹ The practitioner prepares a patent application based on information about the invention that the inventor provides. The application contains the following parts: (1) a title, (2) cross references to related applications, (3) a statement if the invention is the product of federally-sponsored research, (4) a background, (5) a summary, (6) a brief description of the drawings, (7) a detailed description of the preferred embodiment, (8) claims directed to the invention, and

41. 447 U.S. 303 (1980).

42. *Id.* at 306, 309.

43. *Id.* at 305.

44. *Id.* at 306.

45. *Id.* at 310 (“His discovery is not nature’s handiwork . . .”).

46. *Id.* at 313. The Court determined that if Congress wanted to exclude living things, it would have expressly done so. *Id.* at 318. *See, e.g.*, 42 U.S.C.A. § 2181(a) (West 1994) (excluding atomic energy utilized in an atomic weapon from the scope of patent protection).

47. *See, e.g.*, U.S. Patent No. 4,736,866 (issued Apr. 12, 1988) (protecting the “Harvard mouse,” a genetically altered mouse that is susceptible to cancer); *Pioneer Hi-Bred Int’l Inc. v. J.E.M. Ag Supply, Inc.*, 200 F.3d 1374, 1378 (2000) (finding seeds and seed-grown plants patentable under 35 U.S.C.A. § 101).

48. In patent law, prosecution is a term of art, referring to the process that begins when a patent application is filed and ends when the application is abandoned or when a patent issues. *See* BLACK’S LAW DICTIONARY 1237 (7th ed. 1999) (defining prosecution history as “[t]he complete record of proceedings . . . from the initial application to the issued patent.”).

49. *See generally* 35 U.S.C.A. §§ 131-135 (West 1984 & Supp. 2000).

50. A patent practitioner is one who has been registered to practice in front of the Patent and Trademark Office, as either a Patent Agent or a Patent Attorney. 37 C.F.R. § 10.1(r) (2000). One need not be an attorney to meet the registration requirements of the PTO. *Id.* § 10.6.

51. In the United States, patent applications must be filed in the name of the inventor or inventors. *See* 35 U.S.C.A. § 111(a)(1) (West Supp. 2000) (“application for patent shall be made . . . by the inventor”); *id.* § 116 (West Supp. 2000) (regarding joint inventors); *id.* § 117 (West 1984) (concerning death or incapacity of inventors); *id.* § 118 (West Supp. 2000) (addressing the situation when an inventor cannot be located or refuses to sign).

(9) an abstract.⁵² The specification must contain enough information to support the invention disclosed in the claims.⁵³ When the application is filed, its priority with respect to other applications is based on its filing date.⁵⁴ While the application may be amended after filing, no new matter may be added.⁵⁵

After the inventor approves the application, the application is filed with the PTO. The PTO opens a new file wrapper⁵⁶ and assigns it to an examining group.⁵⁷ The application is assigned to an examiner, who determines whether the application contains statutory subject matter, whether that subject matter is entitled to a patent, and whether the other application requirements are met.⁵⁸ If the examiner believes that the application contains more than one invention, the examiner may issue a restriction requirement, dividing the claims into groups and requiring that a subset of the groups of claims be prosecuted.⁵⁹ The claims that are not prosecuted may be prosecuted in a separate application, called a divisional application.⁶⁰ If a restriction requirement is not appropriate, the examiner then conducts a search of the prior art, evaluates the application in light of the results, and prepares and sends an Office Action to the patent practitioner.⁶¹ The Office Action specifies those claims in the application the examiner will and will not allow.⁶² Allowance of claims is generally considered with reference to the prior art that the examiner locates. Rejection of a claim indicates that the subject matter of the claim is not patentable.⁶³ Claims may be rejected for anticipation or lack of novelty.⁶⁴ To reject claims on the basis of

52. MPEP, *supra* note 25, at §§ 601, 608.01(a).

53. The specification includes the written description of how to make and use the invention and the best mode known to the inventor of practicing the invention. MPEP, *supra* note 25, at § 608.01. The claims define the scope of the patent. *See generally* MPEP, *supra* note 25, at § 608.01(i)-(o) (establishing the requirement and form of the claims).

54. *See generally* MPEP, *supra* note 25, at §§ 201.11-201.16 (recognizing a right of priority). This scenario assumes that no applications for foreign patents have been filed regarding this invention. Priority may be obtained for some foreign applications, awarding the U.S. application the benefit of the foreign filing date. 35 U.S.C.A. § 119(a) (West Supp. 2000).

55. MPEP, *supra* note 25, at § 706.03(o). "Any effort to define new matter is hopeless. It is more useful simply to say that an amendment that conforms the written specification to the original drawing or claims, or that clarifies something inherent in the original disclosure, does not introduce new matter." HARMON, *supra* note 25, at 160-61.

56. The file wrapper contains all papers related to the prosecution of the application. MPEP, *supra* note 25, at § 719.

57. MPEP, *supra* note 25, at § 504. Examiners in the PTO are parceled out into examining groups; each group examines applications relevant to a particular art. *See* MPEP, *supra* note 25, at § 903.08 (allowing primary examiners "to accept any application submitted to them that they believe is properly classifiable in a class in their art unit").

58. *See* 35 U.S.C.A. § 112 (West 1984) (requiring a written description of the invention, an enabling disclosure and disclosure of the best mode known to the inventor of practicing the invention).

59. *Id.* § 121 (West Supp. 2000). *See generally* MPEP, *supra* note 25, at ch. 800 (focusing on restriction practice).

60. 35 U.S.C.A. § 121; MPEP, *supra* note 25, at § 201.06 (regarding division applications).

61. 37 C.F.R. § 1.104(a)(1)-(2) (2000).

62. *Id.* § 1.104; MPEP, *supra* note 25, at § 707.

63. *See generally* MPEP, *supra* note 25, at § 706 (regarding rejections of claims).

64. 35 U.S.C.A. § 102 (West 1984 & Supp. 2000).

anticipation, the examiner must cite one reference that contains each and every element of the claimed invention in the application.⁶⁵ Claims may also be rejected for obviousness.⁶⁶ If the examiner rejects claims for obviousness, the examiner may combine references to cite against the application.⁶⁷ An objection, rather than a rejection, is issued if only the form of a claim is improper.⁶⁸

The patent practitioner consults with the inventor regarding the Office Action and files an amendment in response to the Office Action. Each ground the examiner raises must be addressed or the response will be deemed incomplete and the application held abandoned.⁶⁹ The response may cancel or amend claims to comply with requirements that the examiner has made or to distinguish over the cited prior art, or it may add entirely new claims.⁷⁰ In addition, the practitioner includes remarks that point out inaccuracies by the examiner, acquiesce in the examiner's determinations, or introduce new issues into the process by adding new claims to the application. The practitioner must file the reply within the statutory six-month period for response, or the application is considered abandoned.⁷¹

Communication between the practitioner and the examiner continues until the examiner allows all of the claims, the practitioner appeals a non-final second Office Action, or the examiner issues a final rejection.⁷² After the examiner issues a final rejection, the practitioner may file an amendment to put the application in position for issue, but entering this amendment is subject to the examiner's discretion.⁷³ If no claims in the application are passed to issue, the practitioner may appeal the examiner's rejection or file a continuation application, which begins another round

65. MPEP, *supra* note 25, at § 2131.

66. 35 U.S.C.A. § 103 (West Supp. 2000).

67. MPEP, *supra* note 25, at § 706.02(j) ("35 U.S.C. 103 authorizes a rejection where . . . it is necessary to modify a single reference or to combine it with one or more references."). For instance, if all of the elements of the claimed invention except one are found in reference A, and the missing element is found in reference B, the examiner will reject the claims as unpatentable over A in view of B. If, in fact, the state of the art at the time the invention was made was such that one skilled in the art would have found it obvious to combine these references, then the obviousness standard is not met, and the invention is not patentable. Hindsight is not permissible in an obviousness determination. 35 U.S.C.A. § 103(a) ("at the time the invention was made"); *In re Oetiker*, 977 F.2d 1443, 1447 (Fed. Cir. 1992) ("There must be some reason, suggestion, or motivation found in the prior art whereby a person of ordinary skill in the field of the invention would make the combination. That knowledge cannot come from the applicant's invention itself.").

68. MPEP, *supra* note 25, at § 706.01. One must petition the Commissioner of Patents for review of objections. *Id.*

69. MPEP, *supra* note 25, at §§ 711.02, 711.02(a) (regarding insufficient replies).

70. 35 U.S.C.A. § 133 (West 1984). There must be support in the specification for the new claims to retain the benefit of the priority date from the filing. *See also, supra* note 25, at § 2163.06 ("If new matter is added to the claims, the examiner should reject the claims . . ."); *supra* note 55 (regarding new matter).

71. MPEP, *supra* note 25, at § 710.01. The examiner usually sets a three-month, shortened statutory period for response to Office Actions. MPEP, *supra* note 25, at § 710.02(b). If a response is filed between three and six months, the applicant must file a petition for extension of time and submit the appropriate fee. MPEP, *supra* note 25, at § 710.02(e). *See also* MPEP, *supra* note 25, at §§ 711-711.05 (regarding abandonment of applications).

72. MPEP, *supra* note 25, at § 706.07.

73. *See* MPEP, *supra* note 25, at § 714.13 (noting that entry of such an amendment is not a matter of right).

of the process.⁷⁴ If some claims are passed to issue, the practitioner may file a continuation or divisional application that includes rejected claims and non-elected claims, and the process continues for those claims. Generally, continuation and divisional applications retain the benefit of the filing date of the original application.⁷⁵

Applicants may request interviews with the examiner to discuss patentability of the invention; such interviews may take place by telephone, in person, or by electronic mail.⁷⁶ If prior art relevant to the application is discovered after filing, the references must be added to the file wrapper by filing them with an Information Disclosure Statement (IDS).⁷⁷ If the examiner decides that the applicant is entitled to a patent, a Notice of Allowability is sent, requiring payment of an issue fee before the patent issues.⁷⁸

The PTO has issued over six million patents since 1790.⁷⁹ Clearly, we are in a patent boom, as increasing numbers of patents are issued each year.⁸⁰ The five millionth patent was issued in 1990 and the six millionth issued in 1999.⁸¹ Advances in technology, especially biotechnology and computer science, have played a significant role in the proliferation of patents, but perhaps such advances are not the only reason.

C. Advantages and Disadvantages of Patenting

An inventor may obtain several benefits from patenting an invention, in addition to any personal gratification that results from simply owning a patent. A patent owner may realize profits from making, using, or selling the invention, or by

74. See generally MPEP, *supra* note 25, at ch. 1200 (detailing appeal procedures); MPEP, *supra* note 25, at § 201.07 (focusing on continuation applications).

75. The exception is continuation-in-part applications, in which new matter is added. The new matter has the benefit of the date the new matter was added, rather than the priority date of the original application. MPEP, *supra* note § 201.08. This may be important in infringement proceedings when the alleged infringement concerns the new matter, and the alleged date of alleged infringement is after the original filing date but before the effective filing date of the new matter.

76. MPEP, *supra* note 25, at § 713.01 (allowing interviews); 37 C.F.R. § 1.133(a) (2000) (specifying that interviews for original applications are not granted prior to a first Office Action); MPEP, *supra* note 25, at § 713.02 (same).

77. MPEP, *supra* note 25, at § 609.

78. MPEP, *supra* note 25, at § 1303; MPEP, *supra* note 25, at § 1306.

79. Tod Preston, *An Active Eight Years for IP*, USPTO TODAY ONLINE, at 4, at <http://www.uspto.gov/ac/ahrpa/opa/ptotoday/ptotoday12.pdf> (Dec. 2000).

80. 47,521 patents were issued in 1998, 111,984 in 1997, 109,646 in 1996, and 101,419 in 1995. *U.S. Patent Activity, Calendar Years 1790-1999*, at http://www.uspto.gov/web/offices/ac/ido/oeip/taf/h_counts.htm (last modified Nov. 28, 2000). The PTO reports that approximately 66% of applications filed result in issued patents. PATENT AND TRADEMARK OFFICE, GENERAL INFORMATION CONCERNING PATENTS: EXAMINATION OF APPLICATIONS AND PROCEEDINGS IN THE PATENT AND TRADEMARK OFFICE, at <http://www.uspto.gov/web/offices/pac/doc/general/exam.html> (last visited Jan. 17, 2001).

81. Preston, *supra* note 79, at 4.

assigning or licensing rights to make, use or sell the invention.⁸² The protection that a patent provides is as close as one can come to idea protection, and the grant of patent rights is exclusive.⁸³ Competitors may then be forced to design around the patent if they decide to market competing products. Independent invention and reverse engineering are not defenses to patent infringement;⁸⁴ any unlicensed practice of the claimed invention constitutes infringement.⁸⁵

On the other hand, obtaining a patent is also rife with disadvantages. In exchange for the right to exclude, one must disclose the invention such that one skilled in that art could practice the invention after reading the patent.⁸⁶ During the patent term, the patent serves only as a hurdle to competition, rather than a complete bar. Once the patent term is over, the invention passes into the public domain such that anyone may make, use, or sell it.⁸⁷ A patent may take years to obtain, which cuts into the patent term and affects the potential profit that the patent owner may realize.⁸⁸ Patents are, by far, the most expensive form of intellectual property protection.⁸⁹ They are expensive to obtain and maintain, and even more expensive to enforce.⁹⁰ Accordingly, an inventor should consider whether the ends justify the means when obtaining a patent.

82. Regarding licensing, see generally Paul L. Hickman, *The Patent and Technology License*, 496 PLI/PAT 251 (1997).

83. See 35 U.S.C.A. § 154 (a)(1) (West Supp. 2000) ("Every patent shall contain . . . a grant to the patentee, his heirs or assigns, the right to exclude others . . .").

84. In other areas of intellectual property law, such as copyright law and trade secret law, independent invention and reverse engineering are valid defenses to infringement. See *Baltimore Orioles, Inc. v. Major League Baseball Players Ass'n.*, 805 F.2d 663, 668 n.6 (7th Cir. 1986) ("For a work to be copyrightable, it must be original and creative, but need not be novel. (Thus, in contrast to patent law, a work that is independently produced by two separate authors may be copyrighted by both.)"), *cert. denied*, 480 U.S. 941 (1987); Uniform Trade Secrets Act, CAL. CIV. CODE § 3426.1 (1984 Addition, West 1997) (remarking that independent invention and reverse engineering are permissible methods of obtaining a trade secret).

85. See generally 35 U.S.C.A. §§ 271-272 (West 1984 & Supp. 2000) (concerning infringement of patents).

86. *Id.* § 112.

87. See *id.* § 154(a)(2) (granting exclusionary rights for a term of twenty years from the filing date of the application, after which time the patent expires).

88. See *id.* (mandating that the term of patent protection begin at the filing date, rather than the issue date, of the application).

89. See *supra* text accompanying notes 7-10 (comparing government fees for different forms of intellectual property protection); *infra* Part III.F (discussing the cost of patent protection with respect to particular patents).

90. At a minimum, an applicant must pay a basic filing fee and the issue fee. 37 C.F.R. § 1.16(a) (2000); *id.* 1.18(a) (2000). After the patent issues, maintenance fees are required to maintain the patent in force. *Id.* § 1.20(e)-(g) (2000) (regarding maintenance fees due at three and a half, seven and a half, and eleven and a half years after the patent grant). See *infra* Part III.F (exploring cost details for particular patents). Estimates of patent infringement costs are in the range of 6-7 figures, but patent insurance is available. See Lawrence Lessig, *The Problem with Patents*, at <http://www.thestandard.com/article/display/0,1151,4296,00.html> (Apr. 23, 1999) ("On average it takes \$1.2 million to challenge the validity of a patent . . .").

III. PATENTS YOU CAN INFRINGE IN YOUR OWN HOME

The right to exclude others from practicing a patent is desirable. Revenue or royalties from other people involved in the making, selling, or using of a product can be lucrative, even if for a limited time. A patent, however, is only valuable to the extent that the holder may enforce it against infringers. Without a practicable method of enforcement, the patent is economically worthless. Economic viability of a patent is an important consideration, considering the cost of patent protection.⁹¹ Some of the following patents beg the question of whether the cost of patent protection is justified, considering their prospects for enforcement and profitability.

A. *U.S. Patent No. 3,418,999*
Method of Swallowing a Pill

“The invention relates to overcoming the difficulty experienced by some persons of gagging or choking while swallowing medicinal pills.”⁹² The inventor further notes the problem of the “playful tongue” in traditional pill-swallowing methods.⁹³ The claims are drawn to a new method of swallowing a pill, requiring a pill of a particular density and volume range.⁹⁴ Davis teaches a “bowed head” method in which the person’s head is tilted forward, such that the pill floats, is nearer the throat, and is more easily swallowed.⁹⁵ This method is consistent with “the procedure used by animals, as well as by primitive man, in drinking from ponds, streams, etc.”⁹⁶ Pills may be treated to ensure flotation by adjusting their densities.⁹⁷

The original application was filed on February 12, 1964⁹⁸ with twelve claims, nine directed to a pill and the remaining three directed to a method for swallowing a pill.⁹⁹ The PTO issued an Office Action in May 1967, rejecting all claims.¹⁰⁰ The nine claims to the pill itself were rejected for obviousness¹⁰¹ or as reading on prior art.¹⁰² The method claims were rejected as “obvious or inherent” in taking a pill with

91. See *infra* Part III.F (discussing the costs of obtaining a patent).

92. U.S. Patent No. 3,418,999, col. 1, ll. 10-13 (issued Dec. 31, 1968).

93. *Id.*, col. 1, ll. 45-47.

94. *Id.*, col. 6, ll. 25-57.

95. *Id.*, col. 3, ll. 4-11; *id.*, Fig. 2.

96. *Id.*, col. 3, ll. 13-15.

97. *Id.*, col. 4, l. 10-col. 5, l. 47.

98. File Wrapper, U.S. Patent No. 3,418,999, Form PO-436a.

99. *Id.*, Patent as Filed, at 12-13.

100. *Id.*, Office Action, May 1967, at 4.

101. *Id.* at 1-2 (citing U.S. Patent No. 2,797,201 (issued June 25, 1957) (buoyant plastics), U.S. Patent No. 2,841,528 (issued July 1, 1958) (medicinals), U.S. Patent No. 3,012,893 (issued Dec. 12, 1961) (gasified fused sugar confection)).

102. *Id.* at 2 (referring to puffed cereals and “slack-filled gelatin capsule[s] containing powdered medicine”).

water from a drinking fountain.¹⁰³ Additionally, these claims were rejected under section 101 “as being frivolous and lacking statutory evidence establishing the applicant’s unsubstantiated allegations and inventive objectives of eliminating the discomforts of gagging and/or a pill stuck in the esophagus,”¹⁰⁴ with a report of the assistant examiner’s attempts to practice the method.¹⁰⁵ In response, the applicant filed an amendment canceling the nine claims directed to the pill¹⁰⁶ and requested reconsideration of the rejection of the method claims, detailing results of trials using the method.¹⁰⁷ A supplemental amendment was subsequently filed to amend the method claims to further specify the relevant density of the pills in conformity with a telephone interview with the examiner.¹⁰⁸ A Notice of Allowance was mailed on August 29, 1968,¹⁰⁹ and the patent issued on December 31, 1968.¹¹⁰

This patent offers virtually no prospects for enforcement. Possible prospects for licensing this patent might include health care professionals or perhaps schools to use as an alternate method for people who have trouble swallowing pills. Perhaps the inventor could have licensed the method for use in a motion picture in which a character chooses to swallow pills in this manner on screen, but it is unlikely that a filmmaker would pay to use this method in a motion picture when there are a multitude of pill-swallowing methods in the public domain. Realistically, the practice of this invention is a relatively private issue; it is rather difficult to know how one takes pills in the privacy of one’s own home (or one’s own mouth!). Detering infringement of this particular patent is practically impossible, so there would be little point in paying the inventor for a license. Thus, this patent has very little economic viability for the inventor.

B. *U.S. Patent No. 4,887,543*
Unforgettable Umbrella Method

“Most all persons have forgotten and ultimately lost a number of umbrellas during their lifetime.”¹¹¹ The ‘543 patent¹¹² addresses this problem by providing “a method to aid the memory in remembering to retrieve an umbrella upon leaving a building from a location where the umbrella was placed upon entrance to the

103. *Id.* at 2-3.

104. *Id.* at 3.

105. *Id.*

106. *Id.*, Amendment, Nov. 27, 1967, at 1.

107. *Id.* at 3-7.

108. *Id.*, Supplemental Amendment, Jan. 25, 1968, at 1-3.

109. *Id.*, Notice of Allowance, Aug. 29, 1968.

110. U.S. Patent No. 3,418,999 (issued Dec. 31, 1968).

111. U.S. Patent No. 4,887,543, col. 1, ll. 7-8 (issued Dec. 19, 1989).

112. Because there are over six million patents, the convention is to refer to patents by the last three digits once the entire reference has been provided.

building”¹¹³ The claims provide for an “eye means”¹¹⁴ on the umbrella handle, which receives an identification “member.”¹¹⁵ This member may also attach to a key ring.¹¹⁶ When the umbrella is left at a location, the member is detached from the umbrella and attached to a key ring.¹¹⁷ Upon looking at one’s keys, one may easily determine that the umbrella was left behind and backtrack to retrieve it.¹¹⁸ Dependent claims regarding the design on the identification clip are also present in the patent.¹¹⁹

The prosecution history for the ‘543 patent is rather unrevealing. The application, as filed on March 9, 1989, contained fifteen claims and cited six patents as prior art.¹²⁰ The examiner conducted a telephone interview with the applicant’s lawyer on July 26, 1989, and he mailed a Notice of Allowability on July 27th.¹²¹ As a result of the interview, two claims were combined to avoid duplicating a different claim, and the claim whose contents were incorporated was deleted.¹²² The Notice also contained several patents that the examiner cited as prior art, some involving umbrellas¹²³ and others involving identification and retrieval systems.¹²⁴ This patent issued on December 19, 1989, with a total prosecution time of approximately nine months.¹²⁵

The broadest claim of the patent is directed to a method for remembering to retrieve an umbrella—requiring an umbrella with “eye means,” a clip-bearing identification member and a key ring.¹²⁶ Some of the dependent claims are directed to the elements of the method: the umbrella with eye means,¹²⁷ the identification

113. U.S. Patent No. 4,887,543, col. 3, ll. 46-49 (issued Dec. 19, 1989).

114. *Id.*, col. 3, l. 50.

115. *Id.*, col. 3, ll. 52-57.

116. *Id.*, col. 3, ll. 65-67.

117. *Id.*, col. 3, ll. 58-67.

118. *Id.*, col. 4, ll. 1-3.

119. *Id.*, col. 4, ll. 19-20 (specifying a “flower design”); *id.*, col. 4, ll. 62-63 (same); *id.* col. 6, ll. 15-16 (same).

120. File Wrapper, U.S. Patent No. 4,887,543, Patent as Filed, Mar. 9, 1989, at 9-12; *id.*, Form PTO-1449, List of Prior Art Cited by Applicant, Mar. 9, 1989 (citing U.S. Patent No. 2,128,634 (issued Aug. 30, 1938) (umbrella); U.S. Patent No. 2,759,486 (issued Aug. 21, 1956) (attachment for beach umbrella); U.S. Patent No. 2,838,058 (issued June 10, 1958) (drip-retaining attachment for umbrella); U.S. Patent No. 4,542,757 (issued Sept. 24, 1985) (umbrella with advertising flag); U.S. Patent No. 4,257,342 (issued Mar. 24, 1981) (position indicator for fireplace damper); U.S. Patent No. 4,236,479 (issued Dec. 2, 1980) (device for reminding driver to turn off auto headlights)).

121. *Id.*, Examiner Interview Summary Record, July 26, 1989; *id.*, Notice of Allowability, July 27, 1989.

122. *Id.*, Examiner Interview Summary Record, July 26, 1989; *id.*, Notice of Allowability, July 27, 1989.

123. *See id.*, Notice of Allowability, July 27, 1989, at 2-3 (citing U.S. Design Patent No. D287,665 (umbrella with integral eye means); U.S. Patent No. 2,493,705 (same); U.S. Patent No. 4,586,524 (combination umbrella and garment hanger); Swiss Patent 584,016 (indicia sewn on umbrella cover); British Patent 481,581 (indicia that may be attached to the handle of umbrella)).

124. *See id.*, Notice of Allowability, July 27, 1989, at 2-3 (citing U.S. Patent No. 1,369,846 (umbrellas); U.S. Patent No. 4,521,981 (key ring); U.S. Patent No. 4,592,157 (vehicles); French patent 1,497,493 (key ring)).

125. U.S. Patent No. 4,887,543 (issued Dec. 19, 1989).

126. *Id.*, col. 3, l. 45-col. 4, l. 3. *See also id.*, col. 4, ll. 4-8.

127. *Id.*, col. 4, ll. 9-11.

member,¹²⁸ and so on. An eye means for the umbrella could include, for example, the straps often attached to umbrella handles. Any clip capable of being removably attached to either a key ring or the umbrella strap would function as the identification means. A person who moves the clip from the key ring to the umbrella strap upon leaving the umbrella somewhere would then infringe the patent. Infringement of this patent would be simple to effect and difficult to detect.

Prospects for licensing this patent are greater than those for the pill-swallowing patent of Part III.A. One could imagine manufacturing umbrella handles with integral eye means that the claims would read on.¹²⁹ Since the use of such a product is more public than, for example, swallowing a pill, the existence of this type of license is easier to imagine. Apparently, the inventor found little success with her patent, however, for the patent expired after four years due to failure to pay the first maintenance fee.¹³⁰

C. *U.S. Patent No. 5,443,036*
Method of Exercising a Cat

The inventors of a cat-exercising method decry the lack of methods for inducing cats to engage in aerobic exercise.¹³¹ They state that cats are “fascinated by light”¹³² and maintain that cats will chase after “lighted image[s],”¹³³ but note that “[t]he disruption of having to darken a room to stage a cat workout and the uncertainty of collecting a convenient sunbeam in a lens or mirror render these approaches to establishing a regular life-enhancing cat exercise routine inconvenient at best.”¹³⁴ Accordingly, the claims are directed to a cat-exercising method that entails using, for example, a laser pointer’s beam to produce a “pattern [of light] of visual interest to a cat”¹³⁵ and moving that pattern of light “to induce said cat to run and chase [the pattern].”¹³⁶ The patent has three dependent claims, which limit the independent claim with regard to the size of the pattern,¹³⁷ the visibility of the beam,¹³⁸ and the speed at which the beam is moved about.¹³⁹

128. *Id.*, col. 4, ll. 12-14; *id.* col. 4, ll. 55-57.

129. If a claim “reads on” a reference, that claim includes the reference within its scope. *See, e.g.*, MPEP, *supra* note 25, at § 806.04(d) (“In an application presenting three species . . . , a generic claim should read on each of these views”); MPEP, *supra* note 25, at § 2173.04 (“If the claim is too broad because it reads on the prior art, a rejection under either 35 U.S.C. 102 or 103 would be appropriate.”).

130. *See supra* note 90 (relating to the requirement of maintenance fees); *infra* Part III.F (discussing PTO fees, including maintenance fees, for the patents in this section).

131. U.S. Patent No. 5,443,036, col. 1, ll. 11-15 (issued Aug. 22, 1995).

132. *Id.*, col. 1, l. 16.

133. *Id.*, col. 1, l. 23.

134. *Id.*, col. 1, ll. 24-28.

135. *Id.*, col. 2, ll. 62-66.

136. *Id.*, col. 2, l. 68-col. 3, l. 2.

137. *Id.*, col. 3, ll. 3-4.

138. *Id.*, col. 3, l. 5-col. 4, l. 2.

139. *Id.*, col. 4, ll. 3-6.

The application was filed on November 2, 1993; the applicants subsequently cited several prior art patents directed to laser pointers, “illuminators,” and “light toys” in an Information Disclosure Statement (IDS).¹⁴⁰ The original filing contained five claims:

1. A method of exercising a cat comprising the steps of:
 - (a) directing a coherent beam of light produced by a hand-held laser apparatus to produce a bright pattern of light at the intersection of the beam and an opaque surface, said pattern being of visual interest to a cat; and
 - (b) selectively redirecting said beam to induce said cat to chase said beam and pattern of light around an exercise area.
2. The method of claim 1 wherein said hand-held laser apparatus produces a beam of coherent red light.
3. The method of claim 1 wherein said bright pattern of light is small in area relative to a paw of the cat.
4. The method of claim 1 wherein said beam remains invisible between said laser and said opaque surface until impinging on said opaque surface.
5. The method of claim 1 wherein step (b) includes sweeping said beam at an angular speed to cause said pattern to move along said opaque surface at a speed in the range of five to twenty-five feet per second.¹⁴¹

The examiner mailed a first Office Action on August 22, 1994, rejecting all five claims for obviousness.¹⁴² In rejecting the claims, the examiner cited a publication by Carayan et al. involving the use of light for stimulation of reflexive movements in cats.¹⁴³ The reference involved a beam of light that was directed using an electronic system; the examiner stated that manually directing the beam would be obvious to one skilled in the art.¹⁴⁴ Additionally, the examiner rejected claim 2, finding the color of the light irrelevant to the method.¹⁴⁵ The examiner cited two additional prior art references in this Office Action.¹⁴⁶ In response, the applicants

140. File Wrapper, U.S. Patent No. 5,443,036, Information Disclosure Statement, Jan. 10, 1994 (citing U.S. Patent No. 4,208,701 (issued June 17, 1980) (luminous toy); U.S. Patent No. 4,231,077 (issued Oct. 28, 1980) (light toy); U.S. Patent No. 4,757,515 (issued July 12, 1988) (laser tube casing); U.S. Patent No. 4,761,715 (issued Aug. 2, 1988) (laser pointer); U.S. Patent No. 4,926,438 (issued May 15, 1990) (laser pointer); U.S. Patent No. 4,985,029 (issued Jan. 15, 1991) (laser apparatus for medical treatment); U.S. Patent No. 5,056,097 (issued Oct. 8, 1991) (target illuminators); U.S. Patent No. 5,194,007 (issued Mar. 16, 1993) (semiconductor laser weapon trainer)).

141. *Id.*, Patent as Filed, Nov. 2, 1993, at 7.

142. *Id.*, Office Action, Aug. 22, 1994, at 2.

143. *Id.* at 2-3; *id.*, Form PTO-892, Notice of References Cited, Aug. 16, 1994.

144. *Id.*, Office Action, Aug. 22, 1994, at 2.

145. *Id.* at 2-3.

146. *Id.*, Form PTO-892, Notice of References Cited, Aug. 16, 1994 (citing U.S. Patent No. 3,877,171 (issued Apr. 15, 1975) and a publication by Levesque, et al., containing a method similar to Carayan, et al.).

attempted to distinguish the examiner's publication references by amending claim 1 to recite "under normal lighting conditions."¹⁴⁷ The applicants noted the use of an "arcane apparatus" which was "analogous to nothing in the home of a typical cat owner."¹⁴⁸ They claimed that the publications actually taught away¹⁴⁹ from the invention because the cats in the experiment were restrained,¹⁵⁰ while the purpose of the invention is to exercise the cat by enticing it to move about.¹⁵¹ Claim 2 was cancelled.¹⁵²

A second Office Action was mailed on January 10, 1995, rejecting the four remaining claims using the Carayan et al. reference.¹⁵³ The examiner again stated that manipulating the laser manually would be obvious to one skilled in the art.¹⁵⁴ Carayan et al., according to the examiner, makes no reference to lighting conditions and "is deemed to take place 'under normal lighting conditions'"; thus, the applicant gained no advantage from the amendment to claim 1.¹⁵⁵ This Office Action was made final, requiring either an amendment to place the application in a position to issue, the filing of a continuation application to continue prosecution, or the filing of a notice of appeal.¹⁵⁶

A telephone interview between the examiner and the practitioner was conducted on March 8, 1995.¹⁵⁷ The examiner viewed a videotape of the invention and the Carayan et al. reference, in addition to a patent issued to Sloop,¹⁵⁸ was discussed with respect to claim 1. According to the record, the examiner required and proposed an amendment to claim 1 to overcome prior art.¹⁵⁹ The applicants filed an amendment on March 10, 1995, incorporating the examiner's changes.¹⁶⁰ In addition, further remarks were included to distinguish the invention from that

147. *Id.*, Amendment, Nov. 1, 1994, at 1.

148. *Id.* at 3.

149. *Id.* (stating that Carayan, et al. "solves a non-analogous problem with non-analogous apparatus"). "Teaching away" is a part of the obviousness determination. See *United States v. Adams*, 383 U.S. 39, 714-15 (1966) ("[K]nown disadvantages in old devices which would naturally discourage the search for new inventions may be taken into account in determining obviousness."); *In re Rosenberger*, 386 F.2d 1015, 1018 (C.C.P.A. 1967) ("The teaching [of the prior art] therefore discourages research in the very field where appellants made their invention. . . . They have invented a method . . . in the face of art which strongly suggests that such a method would produce unacceptable results. This is the very antithesis of obviousness.").

150. File Wrapper, U.S. Patent No. 5,443,036, Amendment, Nov. 1, 1994, at 3.

151. See U.S. Patent No. 5,443,036, col. 2, ll. 12-17 (issued Aug. 22, 1995) (regarding the purpose of the invention).

152. File Wrapper, U.S. Patent No. 5,443,036, Amendment, Nov. 1, 1994, at 1.

153. *Id.*, Office Action, Jan. 10, 1995, at 2-3.

154. *Id.* at 2.

155. *Id.* at 2-3.

156. MPEP, *supra* note 25, at § 714.13.

157. File Wrapper, U.S. Patent No. 5,443,036, Examiner Interview Summary Record, Mar. 8, 1995.

158. *Id.*, Office Action, Form PTO-892, Notice of References Cited, Aug. 16, 1994 (citing U.S. Patent No. 3,877,171 (issued Apr. 15, 1975)).

159. *Id.*, Examiner Interview Summary Record, Proposed Amendment, Mar. 8, 1995.

160. *Id.*, Amendment, Mar. 10, 1995, at 1-3.

disclosed in Sloop.¹⁶¹ Great emphasis was placed on the description of the laser beam as having “focused coherence.”¹⁶² Sloop is distinguished by characterizing its beam of light as “eccentrically rotating” and “better suited to visual entertainment than directed exercise.”¹⁶³ The patent ultimately issued on August 22, 1995.¹⁶⁴

Licensing prospects for this patent are about as bleak as those for the pill-swallowing method, for one typically plays with cats in the privacy of one’s home. A filmmaker might wish to pay to use this type of method in a movie, or develop instructional videos on how to exercise a cat. According to the file wrapper, an action was filed on this patent in March of 1997, but further details were not available.¹⁶⁵ This patent continues to be in force; evidently, the inventor found it worthwhile to pay the first maintenance fee.

*D. U.S. Patent No. 5,616,089
Method of Putting*

“Many golfers would like to improve their putting.”¹⁶⁶ Accordingly, this patent teaches a method to improve control when putting a golf ball by using the golfer’s dominant hand to lead the stroke while the non-dominant hand acts as a stabilizer.¹⁶⁷ All thirteen claims are drawn to the position of the hands in the grip used by the golfer.¹⁶⁸

This patent, like that of the umbrella method, was granted rather speedily, taking about a year from filing to issue.¹⁶⁹ The applicant filed an application on March 29, 1996¹⁷⁰ and an IDS on May 30, 1996;¹⁷¹ the examiner mailed a Notice of Allowability on September 5, 1996.¹⁷² The applicant cited prior art references referring to grips used by two professional golfers.¹⁷³ The examiner cited five patents as prior art references with the Notice of Allowability¹⁷⁴ and cited the lack

161. *Id.* at 3.

162. *Id.*

163. *Id.*

164. U.S. Patent No. 5,443,036 (issued Aug. 22, 1995).

165. *Id.*, Report on the Filing or Determination of Action Regarding a Patent or Trademark.

166. U.S. Patent No. 5,616,089, col. 1, l. 9 (issued Apr. 1, 1997).

167. *Id.*, col. 1, ll. 28-32; *id.* Figs. 1-3.

168. *Id.*, col. 4, l. 1-col. 6, l. 13.

169. File Wrapper, U.S. Patent No. 5,616,089, Cover Sheet.

170. *Id.*, Patent as Filed, Mar. 29, 1996.

171. *Id.*, Information Disclosure Statement, May 30, 1996.

172. *Id.*, Notice of Allowability, Sept. 5, 1996.

173. *Id.*, Information Disclosure Statement, May 30, 1996, at 1.

174. *Id.*, Form PTO-892, Notice of References Cited (citing U.S. Patent No. 3,263,998 (issued Aug. 2, 1966) (method of using a golf club), U.S. Patent No. 3,486,755 (issued Dec. 30, 1969) (putter with head-aligning means), U.S. Patent No. 4,067,573 (issued Jan. 10, 1978) (putter grip), U.S. Patent No. 4,272,077 (issued June 9, 1981) (putter grip), U.S. Patent No. 4,605,228 (issued Aug. 12, 1986) (method of putting)).

of prior art as a reason for allowance in his comments.¹⁷⁵ The patent issued on April 1, 1997.¹⁷⁶

When regarding this patent, directed to a particular hand grip on a golf club, it seems to lack viability. This patent, however, is unlike the cat-exercising patent discussed in Part III.C in that golf instructional videos are a lucrative business. While the local, small-time golfer may be able to infringe this patent without much fear of a lawsuit, no professional golfer could do so in this age of televised sports. If the inventor were an avid follower of golf, he might one day spot a professional golfer infringing his patented method on television and subsequently bring suit. Identifying the right potential defendants in a patent infringement suit is an important strategic consideration, and this patent is ideally suited to such a strategy.¹⁷⁷

E. *U.S. Patent No. 5,638,831*

Method of Preventing Repetitive Stress Injuries During Computer Keyboard Usage

“Typing at a computer keyboard may not be a sport, but with [repetitive stress injuries] becoming so prevalent, it is clear that it must be seen as an athletic activity . . . Typing may be microathletic, but it is athletic nonetheless.”¹⁷⁸ Solutions to the problems of repetitive stress injuries (RSIs) have been ineffective and impractical, providing the impetus for this inventor to develop a method for preventing RSIs.¹⁷⁹ The claims of this patent are directed to hand-positioning methods for both keyboards and computer mice.¹⁸⁰

The application, filed November 8, 1994, contained fourteen claims and cited no prior art.¹⁸¹ Subsequently, an IDS was filed, listing several references directed to methods of playing a piano.¹⁸² An Office Action dated March 6, 1996, objected to the specification as not meeting the written description requirement,¹⁸³ objected to all fourteen claims for failing to meet the written description requirement,¹⁸⁴ and rejected all fourteen claims for indefiniteness.¹⁸⁵ The examiner also cited four prior

175. *Id.*, Notice of Allowability, Sept. 5, 1996, at 2.

176. U.S. Patent No. 5,616,089 (issued Apr. 1, 1997).

177. See generally Jeffrey A. Smith, Comment, *It's Your Move—No It's Not! The Application of Patent Law to Sports Moves*, 70 U. COLO. L. REV. 1051 (1999).

178. U.S. Patent No. 5,638,831, col. 1, ll. 39-43 (issued Jun. 17, 1997).

179. *Id.*, col. 1, l. 52-col. 2, l. 46.

180. Cf. *id.*, col. 12, ll. 48-55 (keyboard); *id.*, col. 12, ll. 56-63 (computer mouse).

181. See generally File Wrapper, U.S. Patent No. 5,638,831, Patent as Filed, Nov. 8, 1994.

182. *Id.*, Information Disclosure Statement, Form PTO-1449, List of References Cited by Applicant, Feb. 8, 1995.

183. *Id.*, Office Action, Mar. 6, 1996, at 2.

184. *Id.*

185. *Id.*

art references disclosing keyboards and support braces,¹⁸⁶ though none of these references were used to reject any of the claims in the application.¹⁸⁷

The objections and the rejections rested on the examiner's statement that the reference to a "fluid line" was unclear.¹⁸⁸ The amendment in response to this Office Action replaced "fluid line" with "natural line" to indicate that the arm position referred to in the method was the natural line of the arm when it rests at one's side.¹⁸⁹ The applicant also chose to further distinguish the examiner's prior art references.¹⁹⁰ A Notice of Allowability was mailed on June 25, 1996, allowing all fourteen claims.¹⁹¹ An amendment was filed after this notice, correcting various typographical errors and assuring conformity between the specification and the drawings.¹⁹² All other communications regarding the application before issuance of the patent related to the submission of formal drawings, rather than any substantive patentability issues.¹⁹³ The patent issued on June 17, 1997.¹⁹⁴

The economic viability of this patent, like that of the putting method discussed in Part III.D, lies in the proliferation of instructional videos. While many people may practice such a method in private and are therefore undetectable vis-à-vis patent infringement suits, the computer industry has made ergonomics a profitable business. One may imagine instructional videos demonstrating the patented method, or even training courses for the method as a separate avenue of profitability.¹⁹⁵

186. *Id.*, Office Action, Form PTO-892, Notice of References Cited, Mar. 6, 1996 (citing U.S. Patent No. 5,086,762 (issued Feb. 11, 1992) (typing brace), U.S. Patent No. 5,336,001 (issued Aug. 9, 1994) (keyboard), U.S. Patent No. 5,369,805 (issued Dec. 6, 1994) (arm support), U.S. Patent No. 5,492,291 (issued Feb. 20, 1996) (keyboard)).

187. *Id.*, Office Action, Mar. 6, 1996.

188. *Id.* at 2.

189. *Id.*, Amendment, Apr. 3, 1996, at 8-9.

190. *Id.* at 9-11.

191. *Id.*, Notice of Allowability, June 25, 1996.

192. *Id.*, Amendment Under 37 C.F.R. § 1.312(a), Aug. 16, 1996, at 3. *See* 37 C.F.R. § 1.312(a) (2000).

193. File Wrapper, U.S. Patent No. 5,638,831, Interview Summary, Oct. 8, 1996; *id.*, Request Under 37 C.F.R. § 1.312(b) for Approval of Drawing Changes, Oct. 7, 1996; *id.*, Submission of Formal Drawings, Sept. 25, 1996.

194. U.S. Patent No. 5,638,831 (issued June 17, 1997).

195. Ergonome, Inc., the assignee of this patent, published a book and computer software demonstrating the patented method. In 1997, Compaq Computer Corporation filed suit against Ergonome, seeking a declaration of noninfringement for the guide that Compaq distributes with its computers. Memorandum Opinion and Order, Compaq Computer Corp. v. Ergonome, Inc. et al., Civil Action No. H-97-1026, at 3 (S.D. Tex. 2001). In 1998, Ergonome filed suit against Compaq Computer Corporation in the Southern District of New York, seeking \$10.2 billion in damages for copyright infringement and fraud. Rebecca Sykes, *Compaq Named in \$US10 Billion Lawsuit*, at <http://www.idg.net.nz/webhome.nsf/ArchiveDate/68CBD9AAA07BFBA6CC25684C000D59EF!OpenDocument> (June 15, 1998); *Too Close for Ergonomic Comfort*, HOUSTON BUS. J., June 19, 1998, available at <http://houston.bcentral.com/houston/stories/1998/06/22/tidbits.html> (June 22, 1998). The latter action was transferred to the Southern District of Texas where it was consolidated with the first. Memorandum Opinion and Order, *supra*, at 3. *See also* Ergonome Incorporated's Second Amended Complaint and Counterclaim, Civil Action No. H-97-1026 (Consolidated with CA H-98-3159) (S.D. Tex. 2001), at <http://www.justiceseekers.com/files/NLP/P00000/032.PDF>. *See generally* <http://www.justiceseekers.com> (last modified Apr. 18, 2001) (providing information about the litigation).

F. The Cost of an "Unenforceable" Patent

The following table reflects the costs involved in obtaining and maintaining these patents.¹⁹⁶ Fees for the patent practitioner's services in handling the application and maintenance of the patent in force, in addition to other PTO costs incurred in prosecuting the application to issuance, increase the total cost. In all likelihood, the present benefit to most of these inventors in obtaining these patents does not justify the costs of prosecution and maintenance.

Patent	Filing Fee	Issue Fee	1st Maint.	2nd Maint.	3rd Maint.	Total Fees
Davis (12/31/68)	\$30	\$134	N/A	N/A	N/A	\$164
Rockhill (12/19/89)	\$170	\$310	\$465 (6/93)	\$1,025 (6/97)	\$1,455 (6/01)	\$3,425
Amiss, et al. (8/22/95)	\$355	\$605	\$470 (2/99)	\$950 (10/04)	\$1,455 (10/08)	\$3,935
Miller (4/01/97)	\$414	\$625	\$470 (10/00)	\$950 (10/04)	\$1,455 (10/08)	\$4,014
Brown (6/17/97)	\$365	\$625	\$470 (12/00)	\$950 (12/04)	\$1,455 (12/08)	\$3,965

IV. CASE IN POINT: BROCCOLI SPROUTS

Perhaps the question of whether a patent is economically viable is more appropriately answered by considering against whom it may be enforced. A patent owner may be willing to forgo enforcement of the patent against some, such as the undetectable home infringer, but may pursue a more accessible infringer. The

196. With respect to the numbers in the table, the amounts actually paid for filing and issue fees are available on the cover sheet of the file wrapper for the relevant patent. Regarding maintenance fees, any fees due after October 1, 2000 used fees in the 2000 edition of 37 C.F.R. as an approximation. 37 C.F.R. § 1.16(a) (2000) (basic filing fees); *id.* § 1.18(a) (2000) (issue fees); *id.* § 1.20(e)-(g) (2000) (maintenance fees). Older fee schedules are found in 63 Fed. Reg. 67,578, 67,580 (Dec. 8, 1998, superseding final rule published on July 24, 1998 and corrected on Sept. 3, 1998) (effective Nov. 10, 1998) (maintenance fees in effect on Feb. 22, 1999); 61 Fed. Reg. 39,585, 39,588 (July 30, 1996) (effective Oct. 1, 1996) (maintenance fees in effect on June 19, 1997); 57 Fed. Reg. 38,190, 38,195 (Aug. 21, 1992) (effective Oct. 1, 1992) (maintenance fees in effect on June 19, 1993). Maintenance fees were not necessary for applications filed before December 12, 1980. MPEP, *supra* note 25, at § 2501. Each of these inventors filed as a small entity, entitling them to pay one-half of the regular fees. *See* 37 C.F.R. § 1.9(f) (2000) (defining "small entity" and establishing when small entity status is relevant); *id.* § 1.27 (2000) (regarding statements verifying small entity status).

following patents emanated from research at Johns Hopkins University. Researchers discovered that certain types of vegetables, including broccoli, contained compounds, synthetic analogues of which were found to “block chemical carcinogenesis in animals.”¹⁹⁷ Four patents were granted relating to this research.¹⁹⁸ The claims in these patents seem to be easily infringed, similar to the patents considered in Part III. These patent owners, however, have found a target for infringement suits.¹⁹⁹

A. The Four Patents

Green and yellow vegetables have been linked to lower incidence of cancer.²⁰⁰ Induction of phase II enzymes was thought to be connected to these chemoprotective properties.²⁰¹ Broccoli, in particular, was found to have significant phase II enzyme-inducing characteristics.²⁰² In 1992, researchers at Johns Hopkins University published an article reporting the isolation of a particular compound from broccoli responsible for inducing phase II enzyme activity.²⁰³ Spectroscopic analysis revealed that the compound in question was likely to be sulforaphane, an isothiocyanate.²⁰⁴ Previous studies revealed that isothiocyanates, in particular, produced anticarcinogenic effects, suspected to be linked to their phase II enzyme-inducing activities.²⁰⁵ In 1997, these researchers published a paper reporting that broccoli sprouts contained very high levels of isothiocyanates, including sulforaphane.²⁰⁶ They concluded that young (3-day) sprouts contain ten to one-hundred times as much phase II enzyme inducer activity as mature broccoli vegetables.²⁰⁷

Each of the four patents issuing from this research contains claims directed to germinating and harvesting sprouts of certain plants in the *Brassica* family and to administering those sprouts to a mammal.²⁰⁸

197. U.S. Patent No. 5,968,505, col. 2, ll. 4-6 (issued Oct. 19, 1999). See generally Jed W. Fahey et al., *Broccoli Sprouts: An Exceptionally Rich Source of Inducers of Enzymes that Protect Against Chemical Carcinogenesis*, 94 PROC. NAT'L ACAD. SCI. 10,367 (1997); Marion Nestle, *Broccoli Sprouts as Inducers of Carcinogen-Detoxifying Enzyme Systems: Clinical, Dietary and Policy Implications*, 94 PROC. NAT'L ACAD. SCI. 11,149 (1997); Hans J. Prochaska et al., *Rapid Detection of Inducers of Enzymes that Protect Against Carcinogens*, 89 PROC. NAT'L ACAD. SCI. 2,394 (1992); Yuesheng Zhang et al., *A Major Inducer of Anticarcinogenic Protective Enzymes from Broccoli: Isolation and Elucidation of Structure*, 89 PROC. NAT'L ACAD. SCI. 2,399 (1992).

198. See *infra* Part IV.A.1-4 (exploring the four patents).

199. See *infra* Part IV.B (regarding lawsuits filed by Johns Hopkins and the patent assignees).

200. Zhang et al., *supra* note 197, at 2,399; U.S. Patent No. 5,411,986, col. 2, ll. 14-26 (issued May 2, 1995).

201. Zhang et al., *supra* note 197, at 2,399.

202. *Id.*

203. *Id.*

204. *Id.* at 2,400-01.

205. *Id.* at 2,402-03.

206. Fahey et al., *supra* note 197, at 10,367.

207. *Id.* at 10,372.

208. See *infra* Part IV.A.1-4 (quoting relevant language from each of the four patents).

1. U.S. Patent No. 5,411,986 (Cho et al.)
Chemoprotective Isothiocyanates

U.S. Patent No. 5,411,986 is the first of the four patents granted to the researchers from Johns Hopkins concerning their discovery of the chemoprotective effects of glucosinates. It contains claims directed to the compounds discovered and to "administering to a mammal a chemoprotective composition . . . in an amount effective in producing a mammary tumor or hepatoma formation suppressing effect."²⁰⁹

The patent application was filed on March 12, 1993, with twenty-five claims.²¹⁰ Claims 1 through 23 were directed to chemical compounds, claim 24 was directed to "a method for protecting against cancer induction," and claim 25 was directed to "a food product . . . supplemented with" the compound of the instant invention.²¹¹ Two IDSs were filed prior to issuance of the first Office Action on October 20, 1993.²¹² The examiner rejected claims 1 through 24 and withdrew claim 25 from consideration, the applicant earlier having elected to prosecute the invention of claims 1 through 24.²¹³ The specification and claims were rejected for failure to provide an enabling disclosure and for indefiniteness.²¹⁴ The claims were also rejected for lack of utility: "Applicant discloses that the compounds of the invention are useful as anti-tumor (cancer) agents. However, in view of the contemporary knowledge in the art, this assertion is incredible on its face. One skilled in the art would deem this assertion unlikely to be correct."²¹⁵ To overcome this rejection, the examiner required proof "which would be convincing to those of ordinary skill in the art."²¹⁶ In response, the applicants began by distinguishing claims which were not indefinite under the examiner's rejection, then traversing the indefiniteness rejection.²¹⁷ Regarding the alleged lack of utility, the applicants pointed to recitations in the specification and submitted a declaration as the requested proof of chemoprotective properties.²¹⁸ A second Office Action, issued on April 7, 1994, again rejected claims one through twenty-four.²¹⁹ The examiner persisted in his rejection for indefiniteness²²⁰ and found the declaration inadequate in providing an enabling disclosure for the claims, finding it to be "not commensurate in scope with

209. U.S. Patent No. 5,411,986, col. 22, ll. 31-48 (issued May 2, 1995).

210. File Wrapper, U.S. Patent No. 5,411,986, Cover Sheet.

211. *Id.*, Patent as Filed, at 38-41.

212. *Id.*, Information Disclosure Statement, May 12, 1993; *id.*, Supplemental Information Disclosure Statement, July 16, 1993.

213. *Id.*, Office Action, Oct. 20, 1993, at 1-2.

214. *Id.* at 3-4.

215. *Id.* at 4.

216. *Id.* at 4-5.

217. *Id.*, Amendment, Jan. 21, 1994, at 2-4.

218. *Id.* at 5-6; *id.*, Declaration Under Rule 132, Jan. 20, 1994.

219. *Id.*, Office Action, Apr. 7, 1994, at 1.

220. *Id.* at 2-3.

the breadth of protection sought.”²²¹ He also took exception to the “‘prevention’ of cancer” claim and to the use of only one kind of cancer cell in the submitted test data.²²² This Office Action was made final.²²³

The applicants submitted an amendment after the final rejection, attacking the examiner’s characterization of the claims as indefinite.²²⁴ Additionally, they asserted that the examiner improperly characterized a term as indefinite, submitting a reference to demonstrate the well-known meaning of the term “in the art of chemistry.”²²⁵ The applicants then addressed the lack of an enabling disclosure, which related to the asserted lack of utility, claiming that “an assertion of chemopreventive activity is not incredible on its face.”²²⁶ Finally, the applicants addressed the dismissal of the submitted declaration and argued that none of the reasons given by the examiner should prevent the issuance of a patent.²²⁷ In response, the examiner issued an Advisory Action, indicating that the rejections were not overcome.²²⁸ An interview with the examiner took place on September 20, 1994; no agreement was reached about allowance.²²⁹ The examiner agreed to review a proposed draft amendment before it was filed.²³⁰ The amendment deleted references to chemoprotective properties in the claims, deleted several claims, and included text to overcome the rejections based on lack of specificity.²³¹ The applicant filed a Notice of Appeal on October 7, 1994.²³² The examiner subsequently issued a Notice of Allowability, allowing all of the claims then at issue except one.²³³ The patent issued May 2, 1995.²³⁴

After issue, the applicants requested a Certificate of Correction to print a particular reference on the patent.²³⁵ The PTO denied this request, stating that the applicants cited the reference, but that the citation itself did not conform to the Manual of Patent Examining Procedure (MPEP).²³⁶ Because of this deficiency, the examiner did not consider the reference, and it was thus ineligible for citation on the

221. *Id.* at 3.

222. *Id.* at 3.

223. *Id.* at 1.

224. *Id.*, Amendment After Final Rejection, Aug. 8, 1994, at 2-4.

225. *Id.* at 4 (referring to an organic chemistry textbook).

226. *Id.* at 5-6.

227. *Id.* at 6-8.

228. *Id.*, Advisory Action, Aug. 31, 1994.

229. *Id.*, Examiner Interview Summary Record, Sept. 29, 1994.

230. *Id.*

231. *Id.*, Amendment B After Final Rejection, Oct. 5, 1994, at 1-5.

232. *Id.*, Notice of Appeal, Oct. 5, 1994.

233. *Id.*, Notice of Allowability, Oct. 17, 1994.

234. U.S. Patent No. 5,411,986 (issued May 2, 1995).

235. File Wrapper, U.S. Patent No. 5,411,986, Request for Certificate of Correction, May 24, 1995, at 1.

236. *Id.*, Letter from Mary H. Allen, June 14, 1995.

face of the patent.²³⁷ Subsequently, the applicants filed for reissue of this patent in 1997.²³⁸

2. *U.S. Patent No. 5,725,895 (Fahey et al.)
Method of Preparing a Food Product from Cruciferous Seeds*

U.S. Patent No. 5,725,895 is the first of three patents originating from the same application. Claim 1 of this patent is directed to germinating particular types of cruciferous seeds and harvesting them “prior to the 2-leaf stage, to form a food product comprising a plurality of sprouts.”²³⁹

The application for the ‘895 patent was filed on September 15, 1995.²⁴⁰ As filed, the application contained forty-seven claims, which included thirteen independent claims.²⁴¹ The examiner issued a restriction requirement, requiring the applicants to choose one of eight sets of claims to prosecute in that particular application.²⁴² The applicants chose to prosecute the sixteen claims in Group III, “drawn to a method of preparing a food product rich in glucosinates,”²⁴³ and reserved the right to file divisional applications on the non-elected claims.²⁴⁴ On December 24, 1996, the examiner issued an Office Action rejecting all of the elected claims for obviousness, citing a Japanese patent (Kenjirou), three publications (Beecher and two by Zhang et al.), and one U.S. Patent (Cho et al., addressed in Part IV.A.1).²⁴⁵ According to the examiner, the references disclose broccoli sprouts and “the cancer preventive properties of *Brassica*,” such that “[a]pplicant’s claims are drawn to a combination of known components which produces expected results”²⁴⁶

The applicants and their patent attorney conducted an interview with the examiner on March 11, 1997.²⁴⁷ The applicants presented information regarding the chemistry involved in the application and particularly addressed the applicability of the Kenjirou reference to the application, concluding that the translation was improper and that the elected claims were allowable.²⁴⁸ In an amendment filed on March 17, 1997, the applicants asserted that Kenjirou addresses mature broccoli

237. *Id.*

238. *Id.*, Reissue Declaration and Power of Attorney, rec’d Nov. 7, 1997.

239. U.S. Patent No. 5,725,895, col. 21, ll. 53-54 (issued Mar. 10, 1998).

240. U.S. Patent No. 5,725,895 (issued Mar. 10, 1998; reexamination certificate issued Oct. 10, 2000). The original patent was assigned to Johns Hopkins School of Medicine, but at the time the reexamination certificate issued, the patent was assigned to The National Institutes of Health. *Id.*

241. File Wrapper, U.S. Patent No. 5,725,895, Cover Sheet.

242. *Id.*, Office Action, Sept. 3, 1996, at 1-3.

243. *Id.* at 2.

244. *Id.*, Response to Restriction Requirement, Oct. 3, 1996, at 1. The nonelected claims were eventually canceled from this application. *Id.*, Amendment, June 18, 1997, at 1. Some of these claims appeared in U.S. Patent Nos. 5,968,505 and 5,968,567. See *infra* Part IV.A.3-4 (discussing these two patents and their prosecution history).

245. File Wrapper, U.S. Patent No. 5,725,895, Office Action, Dec. 24, 1996, at 2-3.

246. *Id.* at 3 (citing *In re Kerkhoven*, 205 U.S.P.Q. 1069 (1980), and *In re Gershon*, 152 U.S.P.Q. 602 (1967)).

247. *Id.*, Examiner Interview Summary Record, Mar. 11, 1997.

248. *Id.*

rather than broccoli sprouts, rendering Kenjirou inapplicable to the application.²⁴⁹ The other cited references, the applicants claimed, are directed to mature vegetables and do not teach methods of using sprouts to form anticarcinogenic food products.²⁵⁰ The Notice of Allowability was mailed on August 14, 1997,²⁵¹ after a minor amendment to one of the claims.²⁵² Interestingly, the applicants requested an expedited printing of their patent “due to [its] great commercial importance.”²⁵³ The patent issued on March 10, 1998, with sixteen claims.²⁵⁴

On October 12, 1999, a request for reexamination of this patent was filed in connection with a patent infringement lawsuit.²⁵⁵ Several publications were cited against the patent, but the patentability of all sixteen claims was upheld.²⁵⁶

3. *U.S. Patent No. 5,968,505 (Fahey et al.)
Cancer Chemoprotective Food Products*

U.S. Patent No. 5,968,505 is the second of three patents originating from the application of the ‘895 patent discussed in Part IV.A.2. Accordingly, the specification of this patent is the same as that of the ‘895 patent. The claims in the two patents arguably cover different subject matter. Claim 1 of this patent is directed to “[a] method of increasing the chemoprotective amount of Phase 2 enzymes in a mammal,” which includes the steps of identifying and germinating seeds, harvesting them “up to and including the 2-leaf stage,” and “administering said food product . . . to said mammal.”²⁵⁷ Dependent claims are directed to particular varieties of sprouts, and to varying amounts of other enzymes contained in said sprouts.

The ‘505 patent issued from a divisional application having a filing date of December 24, 1997.²⁵⁸ The divisional was filed with a preliminary amendment, canceling all forty-seven claims and adding claims 48-71, directed to methods of “increasing the chemoprotective amount of Phase [II] enzymes in a mammal” and

249. *Id.*, Amendment and Request for Reconsideration, Mar. 11, 1997, at 2-5. The applicants provided a translation for the Kenjirou reference and a declaration from their translator with this amendment.

250. *Id.* at 3.

251. *Id.*, Notice of Allowability, Aug. 14, 1997.

252. *Id.*, Examiner Interview Summary Record, Aug. 14, 1997 (noting that a claim that made reference to a canceled claim was amended to add the language from the canceled claim).

253. *Id.*, Letter from Richard C. Peet, Sept. 22, 1997.

254. U.S. Patent No. 5,725,895 (issued Mar. 10, 1998; reexamination certificate issued Oct. 10, 2000).

255. *Statement Regarding New Patents Issued and BroccoSprouts®*, at <http://www.brassica.com/press/pr0004.htm> (Oct. 21, 1999); File Wrapper, U.S. Patent No. 5,725,895, Information Disclosure Statement, Oct. 18, 1999.

256. Reexamination certificate, U.S. Patent No. B1 5,725,895, col. 2, l. 3 (issued Oct. 10, 2000); *Unique Properties of BroccoSprouts® Validated by Patent: High-Quality Broccoli Sprouts Continue to Be Available to Consumers*, at <http://www.brassica.com/press/pr0008.htm> (July 25, 2000).

257. U.S. Patent No. 5,968,505, col. 21, l. 52-col. 22, l. 2 (issued Oct. 19, 1999).

258. U.S. Patent No. 5,968,505 (issued Oct. 19, 1999).

“reducing the level of carcinogens in a mammal.”²⁵⁹ At this time, the applicants also filed an IDS containing U.S. Patent No. 5,411,986 (Cho et al.), discussed in Part IV.A.1, and seventeen publication references concerning carcinogens, sprouts, and Brassica vegetables.²⁶⁰

The examiner mailed a first Office Action on September 24, 1998, rejecting all but four of the claims for obviousness over the Cho et al. patent.²⁶¹ According to the examiner, Cho et al. teaches chemoprotective compounds present in certain *Brassica* varieties.²⁶² She further claimed that administering sprouts harvested at the two-leaf stage would have been obvious because the compounds are taught by Cho et al. to be chemoprotective.²⁶³ The examiner objected to the four remaining claims because they were dependent claims descending from a rejected independent claim; these claims would be allowable if rewritten in independent claim form.²⁶⁴ The applicants filed an IDS on January 11, 1999, disclosing another sprout reference,²⁶⁵ and also filed an amendment on January 25, 1999, in response to the September Office Action, canceling and amending various claims, adding eight new claims²⁶⁶ and supplying a declaration by one of the inventors.²⁶⁷ The applicants responded to the examiner’s charge of obviousness by alleging that Cho et al. does not teach that broccoli sprouts, as opposed to mature vegetables, contain very high levels of Phase II enzymes.²⁶⁸ The same health benefit gained by eating a small quantity of sprouts would involve eating “impractically large quantities” of mature vegetables.²⁶⁹ This result, an unexpected health benefit, argues in favor of nonobviousness.²⁷⁰ Additionally, the applicants alleged that the examiner did not make a prima facie case for obviousness, because there is no teaching in the prior art of either increasing the amount of Phase II enzymes or reducing the level of carcinogens in a mammal.²⁷¹ The declaration filed with the amendment provides data and chromatography results with respect to the amounts of Phase II enzymes in sprouts

259. See, e.g., File Wrapper, U.S. Patent No. 5,968,505, Preliminary Amendment, Dec. 24, 1997, at 1, 4 (setting forth new claims 48 and 68, each directed to such a method).

260. *Id.*, Form PTO-1449, List of References Cited by Applicant(s), Sept. 21, 1998.

261. *Id.*, Office Action, September 24, 1998, at 1 (rejecting claims 48-55, 58-65, and 68-71).

262. *Id.* at 2.

263. *Id.* at 2-3.

264. *Id.* at 3 (discussing claims 56, 57, 66 and 67).

265. *Id.*, Information Disclosure Statement, Jan. 11, 1999.

266. *Id.*, Amendment and Request for Reconsideration, Jan. 25, 1999, at 1-3. See *id.* at 1 (noting that claims 48-57, 68-69, and 72-78 are pending). Note also that new claim 79 is also pending, even if the practitioner failed to include it in the list. *Id.* at 3 (adding new claim 79).

267. *Id.*, Declaration of Paul Talalay, Jan. 25, 1999.

268. *Id.*, Amendment and Request for Reconsideration, Jan. 25, 1999, at 4.

269. *Id.* at 5. A declaration filed by one of the inventors avers that one would need to consume such large quantities of mature vegetables that “bowel irritation and/or flatulence” could result. *Id.*, Declaration of Paul Talalay, Jan. 25, 1999, at 4.

270. MPEP, *supra* note 25, at §§ 716.02, 716.02(a).

271. File Wrapper, U.S. Patent No. 5,968,505, Amendment and Request for Reconsideration, Jan. 25, 1999, at 7.

and mature vegetables.²⁷² The applicants emphasized aspects of their method, which provided not only high amounts of chemoprotective Phase II enzymes, but also low amounts of Phase I enzymes, which are involved in increasing carcinogen levels.²⁷³

On February 17, 1999, the applicants and their representative met with the examiner to discuss the application.²⁷⁴ According to the record, those present discussed the results of the tumor research undertaken at Johns Hopkins and all of the claims with respect to the Cho et al. patent.²⁷⁵ The examiner indicated that she would favorably consider the claims regarding high amounts of Phase II enzymes and low levels of Phase I enzymes.²⁷⁶ A supplemental IDS disclosing more sprout references was filed at this time, necessitating review.²⁷⁷ A Notice of Allowability was mailed on March 1, 1999, indicating allowance of all pending claims.²⁷⁸ The patent issued on October 19, 1999.²⁷⁹

4. *U.S. Patent No. 5,968,567 (Fahey, et al.)
Method of Preparing a Food Product from Cruciferous Sprouts*

U.S. Patent No. 5,968,567, the final patent issuing from the application of the '895 patent discussed in Part IV.A.2, issued on the same day as the '505 patent discussed in Part IV.A.3. This application was a continuation of the previous application,²⁸⁰ and thus recites the same information in its specification. Claim 1 of this patent is directed to "preparing a human food product comprising cruciferous sprouts," including the steps of identifying and germinating the particular types of seeds, and harvesting them "up to and including the 2-leaf stage, to form a food product comprising a plurality of said sprouts."²⁸¹

Unfortunately, the file wrapper for this patent was not available for public inspection at the time this Comment was written, leaving the details of its prosecution unexplored herein.

272. *Id.*, Declaration of Paul Talalay, Jan. 25, 1999, Appendices.

273. *Id.*, Amendment and Request for Reconsideration, Jan. 25, 1999, at 6-7.

274. *Id.*, Examiner Interview Summary Record, Feb. 17, 1999.

275. *Id.*

276. *Id.*

277. *Id.*, Information Disclosure Statement, Feb. 17, 1999.

278. *Id.*, Notice of Allowability, Mar. 1, 1999.

279. U.S. Patent No. 5,968,505 (issued Oct. 19, 1999). A copy of the Information Disclosure Statement regarding the Reexamination of the '895 patent and the Reexamination Certificate for that patent are included in the File Wrapper for the '505 patent. No Request for Reexamination is present in the File Wrapper for the '505 patent.

280. U.S. Patent No. 5,968,567, col. 1, ll. 4-5 (issued Oct. 19, 1999).

281. *Id.*, col. 21, ll. 54-67.

B. *The Lawsuits*

The researchers at Johns Hopkins created Brassica Protection Products L.L.C. (BPP), which was subsequently granted the exclusive license to the patents for sprout-growing methods and chemoprotective compounds discussed in Parts IV.A.2-4.²⁸² Publication of the Johns Hopkins research created a flurry of excitement, prompting sprout growers to add broccoli sprouts to their repertoire.²⁸³ BPP markets BroccoSprouts®, broccoli sprouts which contain “consistently high levels of the natural antioxidant sulforaphane GS (SGS™).”²⁸⁴ Growers of BroccoSprouts® are licensed by BPP and pay royalties for the privilege.²⁸⁵ As of November 2000, fifteen sprout growers were licensed to grow BroccoSprouts®.²⁸⁶

Unlicensed growers continued to market broccoli sprouts and were subsequently sued by BPP and Johns Hopkins. The first suit was filed against The Sproutman, Inc. (Sproutman), a Pennsylvania corporation, in June of 1999.²⁸⁷ During the lawsuit, Sproutman filed for reexamination of the ‘895 patent.²⁸⁸ A consent judgment was entered in early 2000, wherein “Sproutman was found to have infringed upon all three of BPP’s patents covering sulforaphane-rich broccoli sprouts.”²⁸⁹ Approximately six months after the judgment was entered, the PTO upheld all sixteen claims in the ‘895 patent.²⁹⁰ Since fall of 2000, BPP and Johns Hopkins have filed similar patent infringement suits against at least six unlicensed sprout growers across the nation for infringement of the ‘895, ‘567, and ‘505 patents.²⁹¹ In the suit against Banner Mountain Sprouts, a Sacramento sprout

282. *Cancer Protection Compound Abundant in Broccoli Sprouts*, at <http://hopkins.med.jhu.edu/NewsMedia/press/1997/SEPT/970903.HTM> (Sept. 15, 1997); *From Laboratory Research to Supermarket Shelves: The History of BroccoSprouts® Broccoli Sprouts*, at <http://www.brassica.com/products/prhistory.htm> (last modified June 1, 2000).

283. *See, e.g., Legal Battle over Broccoli Sprouts*, at <http://www.wfaa.com/investigatesarticle/1,1417,3094,00.html> (Sept. 26, 1999) (regarding Murray Tizer, “the Sproutman”); Celia Lamb, *South Sac Firm in Broccoli Brouhaha*, SACRAMENTO BUS. J., Nov. 3, 2000, at <http://www.bizjournals.com/sacramento/stories/2000/11/06/story5.html> (Nov. 6, 2000) (regarding Larry Ravitz and Banner Mountain Sprouts).

284. *Unique Properties of BroccoSprouts® Validated by Patent: High-Quality Broccoli Sprouts Continue to Be Available to Customers*, at <http://www.brassica.com/press/pr0008.htm> (July 25, 2000); *Nutrition of the Future: How a Broccoli Seed Becomes a BroccoSprout®*, at <http://www.brassica.com/products/prgrowing.htm> (last modified June 1, 2000).

285. International Sprout Growers Association, *Should Broccoli Sprouts Be Patented?*, at <http://www.isga-sprouts.org/featur2.htm> (last modified Jan. 8, 2001).

286. Lamb, *supra* note 283.

287. *Statement Regarding New Patents Issued and BroccoSprouts®*, at <http://www.brassica.com/press/pr0004.htm> (Oct. 21, 1999).

288. *Id.*

289. *Brassica Protection Products Wins Patent Suit for Its Sulforaphane-Rich Broccoli Sprouts*, at <http://www.brassica.com/press/pr0005.htm> (Jan. 19, 2000).

290. *Unique Properties of BroccoSprouts® Validated by Patent: High-Quality Broccoli Sprouts Continue to Be Available to Consumers*, at <http://www.brassica.com/press/pr0008.htm> (July 25, 2000).

291. *News from the International Sprout Growers Association: We Think You Should Know*, at <http://isga-sprouts.org/news.htm> (last modified Jan. 25, 2001). *See, e.g., Complaint for Damages and Injunctive Relief for Patent Infringement and Demand for Jury at 6-11, Brassica Protection Products, L.L.C. et al. v. Banner Mountain*

producer, and its owner, Larry Ravitz, the complaint alleges that Banner Mountain “has for a time past and still is infringing and/or inducing infringement” of the three patents²⁹² and that Banner Mountain and Ravitz “ha[ve] been and now [are] infringing” the three patents.²⁹³

Suing commercial sprout growers for infringement of the sprout-growing patents is an excellent example of using patents whose infringement is difficult to detect against the right defendants. The methods protected by the patents at issue are easily infringed in the privacy of one’s own home. Presumably, anyone may purchase broccoli seeds at a nursery to grow in their garden, and one may choose to harvest them when they are sprouts, rather than waiting for them to become mature vegetables. Harvesting them at the 2-leaf stage and then eating them, or even feeding them to your dog, is infringement. But like the instructional video market, the sprout trade is rife with possibilities for suit. The trade may be relatively small, but the prospect of controlling all of it, or even all of the cruciferous sprout trade, is rather attractive.

C. *The Policy in the Pudding: Desirable Results?*

Two aims of intellectual property law, the growth of a rich public domain and the encouragement and protection of new ideas, are constantly at odds. Theoretically, protecting ideas and inventions in the patent system should not greatly burden the public domain because only new ideas and inventions receive protection. Nothing is taken from the public in protecting that which is new. On the other hand, the trend of expansion in the PTO with regard to granting patents, evidenced by patents such as those granted to Johns Hopkins, endangers the rate of growth of the public domain and, in fact, risks taking ideas and inventions out of the

Sprouts, Inc. et al., No. S-00-2197 LKK GGH (E.D. Cal. filed Oct. 5, 2000) [hereinafter Complaint] (alleging six counts against the sprout company and its owner).

292. Complaint, *supra* note 291, at 6-11. In response, Ravitz and Banner Mountain have filed counter- and cross-claims against BPP, Johns Hopkins, The Sholl Group, and California Sprouts for federal and state antitrust violations, unfair trade practices, and interference with contract and prospective economic advantage. Answer of Defendants Lawrence Ravitz, Individually and Doing Business as Banner Mountain Sprouts, Inc., a California Corporation, to First Amended Complaint for Damages and Injunctive Relief for Patent Infringement and Demand for Jury, Brassica Protection Products, L.L.C. et al. v. Banner Mountain Sprouts, Inc. et al., No. S-00-2197 LKK GGH (E.D. Cal. filed Oct. 5, 2000). The Sholl Group, the exclusive marketing agent of BPP, has an interest in California Sprouts, a sprout distributor. *Id.* at 30-31. Ravitz and Banner Mountain allege, *inter alia*, that BPP, the Sholl Group, and California Sprouts are attempting to monopolize the entire cruciferous sprout trade by use of their patents on cruciferous sprouts. *Id.* at 31-34. That is, the distributor, with the knowledge of BPP, has persuaded sprout-selling establishments to cease purchase of not only broccoli sprouts, but also any other type of sprout from Banner Mountain. *Id.* at 31.

293. Complaint, *supra* note 291, at 7-10.

public domain.²⁹⁴ Thus, we are on the edge of a trend that threatens to diminish the public domain.²⁹⁵

Arguably, one cannot stop ideas from germinating, nor can one stop an inventor from inventing. New ideas and inventions will continue whether or not the government provides for their protection. Some scholars argue that the entire patent system should be phased out or restructured in view of new technologies.²⁹⁶ In that case, new ideas and inventions would immediately enter the public domain to the extent that other IP disciplines were unable to provide protection. A rich public domain could easily ensue, as anything orphaned by IP statutes would immediately belong to the public. That loss of the patent system, however, would most likely result in harm to the consumer.

Companies may continue to survive in a patentless system by diverting the cost of obtaining patents to a trade-secret-based scheme. The money that was used to pay for patents would then be used to keep ideas and inventions secret. While this lateral funding may keep costs at the same level, it may prove more expensive in the long run because the company would be much more vulnerable when using only trade secret law for protection. Other companies may instead choose to cut costs in research and development, finding it a less-profitable avenue without the prospect of patent licensing revenues. Cost-cutting in this fashion may initially benefit the company (who receives higher profits) or the consumer (if prices are decreased), but ultimately harms the economy through diminishing advances in technology.

The harm of allowing the PTO to run amok in granting patents is evident from the plight of the sprout growers. By allowing researchers to patent a method of growing sprouts simply because of the benefit of a naturally-occurring compound in the sprout, the PTO is removing from the public the ability to grow sprouts of vegetables of the *Brassica* family. The PTO either is not concerned that growing sprouts is already part of the public domain or it intended these patents to be construed narrowly, perhaps by limiting the scope of the patent to persons who

294. See generally Jeroen van Wilk, *Broad Biotechnology Patents Hamper Innovation*, BIOLOGY AND DEVELOPMENT MONITOR, December 1995, at 15.

295. The Sonny Bono Copyright Extension Act, which lengthened the term of copyright from life of the author plus fifty years to life plus seventy years, has had a similar effect on the public domain. Works that were poised to enter the public domain, like Mickey Mouse, have had their entrance date postponed, which deprives the public of something they should be in possession of, but are not. See Sonny Bono Copyright Term Extension Act, Pub. L. No. 105-298, 112 Stat. 2827, § 102 (Oct. 27, 1998) (amending 17 U.S.C. § 302). For a potentially further-reaching application of patent law, see generally Lester I. Yano, Comment, *Protection of the Ethnobiological Knowledge of Indigenous Peoples*, 41 UCLA L. REV. 443 (1993) (arguing that patent law could be used to protect certain types of knowledge).

296. See generally Kojo Yelapaala, *Owning the Secret of Life: Biotechnology and Property Rights Revisited*, 32 MCGEORGE L. REV. 111, 186-217 (2000) (addressing the patent system with regard to biotechnology); Robert P. Merges, *As Many as Six Impossible Patents Before Breakfast: Property Rights for Business Concepts and Patent System Reform*, 14 BERKELEY TECH. L.J. 577 (1999) (exploring PTO procedures with respect to business method patents); Lessig, *supra* note 90 (lamenting the growth of IP with regard to Internet-related technology). See also Chakravarthi Raghavan, *Scientists Call for Bio-Patent Ban, GMO Moratorium*, at <http://www.twinside.org.sg/title/gmo-cn.htm> (July 19, 1999) (addressing arguments related to the WTO and TRIPS).

select seeds based on their Phase II enzyme-inducing potential.²⁹⁷ A patent this narrow may include people who merely grow and eat sprouts for themselves for unspecified health benefits. If the scope of the patent does not cover this type of activity, it may only cover people who chose to grow sprouts after the results of the Johns Hopkins research were published. Again, these benefits are due to a *naturally-occurring* enzyme. The patented methods are not limited to purifying or purified compounds, and some of the methods do not utilize the compound in any state other than that occurring in nature.²⁹⁸

Essentially, Johns Hopkins' method involves choosing seeds that produce *Brassica* vegetables, germinating them, harvesting them before the 2-leaf stage, and "administering [the sprouts] to [a] mammal."²⁹⁹ Sprouts have been available as a food product for a number of years.³⁰⁰ The "inventors" have not purified or altered the compounds in the vegetables, nor have they converted them into something that is not naturally occurring. In fact, Johns Hopkins' patents are directed to a product of nature, namely, the glucosinates contained in *Brassica* vegetables.

Recall the discussion of Part II.A, regarding the traditionally unpatentable quality of natural compounds, even when new uses or qualities were discovered. Certainly, an unexpected benefit may be indicative of nonobviousness, but the problem with these patents is not obviousness. The problem is the clear lack of patentable subject matter. Compounds that occur in nature are simply not patentable in their naturally-occurring state. A sprout is a sprout is a sprout. No special knowledge is required to sprout any vegetable from a seed.³⁰¹ Would the PTO have allowed a patent on such a method for alfalfa sprouts or bean sprouts if new research revealed that a compound they contained had miraculous properties? In view of the Johns Hopkins patents, such a patent is conceivable. However, the true answer should be a resounding *no*. Granting these patents has left the PTO in an indefensible position, and the fact that one of them survived a reexamination is truly absurd.

297. See, e.g., U.S. Patent No. 5,968,505, col. 21, ll. 57-61 (issued Oct. 19, 1999) ("identifying seeds which produce cruciferous sprouts, . . . containing high Phase 2 enzyme-inducing potential").

298. See *Licensing Nature*, at <http://www.isga-sprouts.org/patent.htm> (last modified Mar. 26, 2001) (quoting Antony Talalay, BPP's CEO, son of the Johns Hopkins researcher: "We're not doing anything to the sprouts."). See also U.S. Patent No. 5,725,895, col. 21, ll. 52-55 (issued Mar. 10, 1998) ("A method . . . to form a food product comprising a plurality of sprouts."); U.S. Patent No. 5,968,567, col. 21, ll. 54-67 (issued Oct. 19, 1999) ("A method . . . to form a food product comprising a plurality of . . . sprouts.").

299. U.S. Patent No. 5,968,505, col. 22, ll. 1-2 (issued Oct. 19, 1999).

300. See, e.g., U.S. Patent No. 5,968,505, Cover Sheet (issued Oct. 19, 1999) (citing E. MUNROE, *SPROUTS TO GROW AND EAT* (1974), K.C. WHYTE, *THE COMPLETE SPROUTING COOKBOOK* (1983), JAMES C. SCHMIDT, *GROWING SPROUTS INDOORS* (1984), STEVE MEYEROWITZ, *SPROUT IT! ONE WEEK FROM SEED TO SALAD* (1993), INTERNATIONAL SPROUT GROWERS ASSOCIATION, *THE GOOD NEW SPROUTS RECIPE BOOK* (1992)).

301. U.S. Patent No. 5,725,895, col. 10, ll. 21-24 (issued Mar. 10, 1998) ("Numerous methods for the cultivation of sprouts are known, as ememplified by U.S. Pat. Nos. 3,733,745, 3,643,376, 3,945,148, 4,130,964, 4,292,760 or 4,086,725.").

D. An Aside: Two Related Patents

The Johns Hopkins patents stand in contrast to two patents assigned to Amway Corporation. U.S. Patent No. 5,686,108 concerns a method for making a vegetable supplement from *Brassica* vegetables,³⁰² and U.S. Patent No. 5,882,646 is directed to the supplement itself.³⁰³ These patents discuss the presence of glucosinates in *Brassica* vegetables and their potential for fighting disease.³⁰⁴ They report that enzymes present in the vegetables convert glucosinates into isothiocyanates, but are also active in other, less desirable, reactions.³⁰⁵ The claimed method maximizes the isothiocyanate content, minimizes undesirable compounds, and provides enough additional enzymes to drive the reaction when the supplement is ingested.³⁰⁶ According to the written description, the enzyme is deactivated by steaming the vegetable, an independent source of enzyme is added, and the resulting combination is processed to form a tablet.³⁰⁷

The object of these patents and of the Johns Hopkins patents is to utilize the glucosinates and the myrosinase enzymes present in *Brassica* vegetables.³⁰⁸ The Amway patents use mature vegetables as a source of enzymes, while the Johns Hopkins patents specify the use of sprouts.³⁰⁹ The important difference between the two, however, is that the inventors in the '108 patent *added* something. Amway's method involves performing steps theretofore not known in nature and producing something not known to exist in nature. The inventors in the Hopkins patents, on the other hand, have added nothing.³¹⁰

V. CONCLUSION

The challenges presented by new technologies will always hinder the issuance of patents. With innovations in biotechnology and computer technology, PTO examiners are forced to consider which innovations are truly "new," and which innovations are merely repackaged processes and manufactures. Patent protection is an expensive means of protection. The financial outlay is significant, as is the

302. U.S. Patent No. 5,686,108 (issued Nov. 11, 1997).

303. U.S. Patent No. 5,882,646 (issued Mar. 16, 1999).

304. *Id.*, col. 1, ll. 12-23. The specification of the '646 patent is the same as that of the '108 patent; citations to the '646 patent are provided.

305. *Id.*, col. 1, ll. 30-34; *id.*, col. 4, ll. 6-13.

306. *Id.*, col. 2, ll. 7-27.

307. *Id.*, col. 2, l. 46-col. 3, l. 5.

308. U.S. Patent No. 5,968,505, col. 1, ll. 17-29 (issued Oct. 19, 1999); U.S. Patent No. 5,686,108, col. 2, ll. 4-24 (issued Nov. 11, 1997); U.S. Patent No. 5,411,986, col. 1, ll. 10-16 (issued May 2, 1995).

309. *Compare, e.g.*, U.S. Patent No. 5,882,646, col. 2, ll. 52-54 (issued Mar. 16, 1999) (referring to "the entire broccoli plant" and "the broccoli floret"), with U.S. Patent No. 5,686,108, col. 9, l. 50 (issued Nov. 11, 1997) (referring to "[a] harvested sprout according to the present invention").

310. See *Licensing Nature*, *supra* note 298 (quoting Antony Talalay, son of the Johns Hopkins researcher and CEO of BPP: "We're not doing anything to the sprouts.").

actual time of prosecution.³¹¹ In addition, the risk borne by those utilizing such resources in obtaining patents of questionable value seems unjustified. Accordingly, inventors should consider whether obtaining a patent is the best course of action.

Clearly, the current trend of the PTO in expanding the scope of patentable subject-matter cannot continue indefinitely. Patents such as those obtained by Johns Hopkins are arguably not new ideas and methods, but are old ideas that are no longer available to the public, as they once were.³¹² At least one of these particular patents was upheld by the PTO,³¹³ but others may not fare as successfully in the future. Inventors may currently reap the benefits of this expansion in patentable subject matter, but they will be in a difficult spot when patents are invalidated in years to come. As people become aware of the shrinking public domain and realize that less is available to future inventors, judges will likely respond, ruling in favor of reducing the scope of patentable subject matter and narrowing the interpretation of current patents. Practitioners and inventors alike should be wary of inventions walking that fine line of patentability.

311. See *supra* Part III.F (addressing cost factors); FY 1999 USPTO ANNUAL REPORT, FY 1999 PTO WORKLOAD TABLES, TABLE I: SUMMARY OF PATENT EXAMINING ACTIVITIES, at <http://www.uspto.gov/web/offices/com/annual/1999/99tbs1-10.pdf> (last modified Aug. 10, 2000) (reporting that average prosecution time for an application is twenty-five months).

312. See *supra* Part IV.C (commenting on the relationship between the Patent Office and the public domain).

313. See *supra* text accompanying notes 255-56 (stating that the patentability of all sixteen claims of U.S. Patent No. 5,725,895 was upheld by the PTO in a reexamination proceeding).