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CASES AND MATERIALS ON
PATENT LAW
Third Edition

■ ■ ■

By

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CHAPTER ONE

INTRODUCTION



Fueled both by its longstanding traditions and the extraordinary dynamism of the modern innovative community, patent law has risen from an obscure station to take a central place within the intellectual property law. Students taking a first look at patents have come at a good time. In recent years the patent law has become a more robust discipline, enriched by increasingly sophisticated legal and economic analysis; recognized as a key determinant of international trade; and marked by an expansion into a array of disciplines that span the entire range of human endeavor.

Now more than ever, patent law is not merely for technicians. The principles underlying this regime of property rights have a broad, humanistic focus that implicate essential societal goals. At heart these goals attempt to strike a balance between the encouragement of the labors that lead to innovation and the dissemination of the fruits of those labors. As you make your way through the materials that follow, consider whether this elusive balance has been achieved.

§ 1.1 OVERVIEW OF THIS CASEBOOK

Any study of patent law must ultimately focus on the current statute, which since 1952 has been codified as Title 35 of the United States Code. The starting point is patent-eligibility as governed by 35 U.S.C.A. § 101. Chapter 2 of this casebook addresses the precise scope of subject matter covered by patents. Section 101 additionally requires that an invention be “useful” to receive patent protection. Chapter 3 considers this requirement.

Perhaps the core requirement of the law is that a patentable invention must be new. If the invention is *precisely* the same as earlier work in the field eligible to be considered, then the inquiry is ended as to the claim in question: it lacks novelty and is denied patent protection by § 102. Chapters 4, 5, and 6 address the often intricate issues surrounding the novelty requirement under United States law.

Even though the invention may go towards novel subject matter, patentability is denied if the claimed invention is “obvious” to “a person

having ordinary skill in the art.” The § 103 statutory test for obviousness is judged from the viewpoint of the skilled artisan and denies patentability if the differences between the subject matter and the prior art would have rendered the subject matter obvious at the time the invention was made. The nonobviousness standard is addressed in Chapter 7.

Unlike some other forms of intellectual property, patents do not arise without the significant involvement of an administrative agency. In order to obtain protection, inventors must instead undertake the process of so-called “patent prosecution” at the United States Patent and Trademark Office, also called the “U.S. PTO” or simply the “PTO.” Chapters 8 and 9 consider the requirements of patent applications as to both their “specifications,” the often lengthy description of the technical problem the inventor faced and the invention produced to solve that problem, and their “claims,” the concise delineations of an invention that serve as the primary source of proprietary rights. Chapter 10 then reviews the patent acquisition process itself, along with applicant abuses of the procedure—so-called “inequitable conduct” and “double patenting”—and their ramifications.

Once the Patent and Trademark Office grants a patent, its proprietor obtains the right to exclude others practicing the invention in the United States. Those who make or use the invention without the authority of the patentee commit patent infringement, a topic addressed in Chapter 11. Beyond those topics already discussed, Chapter 12 considers additional defenses that accused infringers may raise during suit. Chapter 13 then addresses available remedies under the United States patent statute. Finally, Chapter 14 considers specialized legislation, known as the Hatch–Waxman Act, that established distinctive rules for patents on pharmaceuticals and other regulated products.

As you make your way through this casebook, you will note that it is *comparative*. Although certainly a tool designed to teach the patent law of the United States to the exclusion of that of other nations, this text will constantly refer to aspects of foreign patent systems as well. Where tribunals from abroad have provided more compelling reasoning to support a common legal doctrine, or are certain to have foreshadowed future developments in the United States, this casebook will unhesitatingly stress their reasoning over that of domestic fora. These comparative studies serve as an insightful focus for grasp of domestic doctrines and stimulate critical thinking about the array of alternatives which exist under varying statutory regimes.

A second rationale for the comparative approach is far more prosaic. In the current technological and economic climate, patent practitioners without an understanding of the international patent system place their clients at a significant disadvantage. It is not an overstatement to say that no patent attorney in the United States truly practices domestic patent law in our contemporary, globally-oriented

economy. Further, in recent years, reform of United States patent law has largely been motivated by the global international harmonization movement. Lacking a grasp of the relevant issues and actors from without the United States, a would-be patent attorney will not possess the analytical tools to comprehend future changes domestically.

Another focus of the book is on the *historical development* of patent law doctrines. Although certainly presenting the most current law from the United States Supreme Court, Court of Appeals for the Federal Circuit, United States Patent Office, and foreign sources, this casebook does not neglect their antecedents. Patent law is as much a process as a static entity; the ever-quickenings reforms of patent systems worldwide render snapshot views extremely inappropriate. Only an appreciation of the contours of earlier statutes and case law allows students to chart the possibilities of future reform and place older, yet frequently cited precedent, in context. In addition, because patent law has a fundamentally *economic* orientation, this casebook will also offer perspectives from law and economics studies to articulate and explain patent law principles.

With these concentrations in mind, the student can find no better introduction to the patent law than through an historical overview.

§ 1.2 FOUNDATIONS OF THE UNITED STATES PATENT SYSTEM

BONITO BOATS, INC. v. THUNDER CRAFT BOATS, INC.

United States Supreme Court, 1989
489 U.S. 141

O'CONNOR, JUSTICE.

II

Article I, § 8, cl. 8, of the Constitution gives Congress the power “[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.” The Patent Clause itself reflects a balance between the need to encourage innovation and the avoidance of monopolies which stifle competition without any concomitant advance in the “Progress of Science and useful Arts.” As we have noted in the past, the Clause contains both a grant of power and certain limitations upon the exercise of that power. Congress may not create patent monopolies of unlimited duration, nor may it “authorize the issuance of patents whose effects are to remove existent knowledge from the public domain, or to restrict free access to materials already available.” *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 6, 86 S.Ct. 684, 688, 15 L.Ed.2d 545 (1966).

From their inception, the federal patent laws have embodied a careful balance between the need to promote innovation and the recog-

inition that imitation and refinement through imitation are both necessary to invention itself and the very lifeblood of a competitive economy. Soon after the adoption of the Constitution, the First Congress enacted the Patent Act of 1790, which allowed the grant of a limited monopoly of 14 years to any applicant that “hath * * * invented or discovered any useful art, manufacture, * * * or device, or any improvement therein not before known or used.” 1 Stat. 109, 110. In addition to novelty, the 1790 Act required that the invention be “sufficiently useful and important” to merit the 14-year right of exclusion. *Ibid.* Section 2 of the Act required that the patentee deposit with the Secretary of State, a specification and if possible a model of the new invention, “which specification shall be so particular, and said models so exact, as not only to distinguish the invention or discovery from other things before known and used, but also to enable a workman or other person skilled in the art or manufacture * * * to make, construct, or use the same, to the end that the public may have the full benefit thereof, after the expiration of the patent term.” *Ibid.*

The first Patent Act established an agency known by self-designation as the “Commissioners for the promotion of Useful Arts,” composed of the Secretary of State, the Secretary of the Department of War, and the Attorney General, any two of whom could grant a patent. Thomas Jefferson was the first Secretary of State, and the driving force behind early federal patent policy. For Jefferson, a central tenet of the patent system in a free market economy was that “a machine of which we were possessed, might be applied by every man to any use of which it is susceptible.” 13 WRITINGS OF THOMAS JEFFERSON 335 (Memorial ed. 1904). He viewed a grant of patent rights in an idea already disclosed to the public as akin to an *ex post facto* law, “obstruct[ing] others in the use of what they possessed before.” *Id.*, at 326–327. Jefferson also played a large role in the drafting of our Nation’s second Patent Act, which became law in 1793. The Patent Act of 1793 carried over the requirement that the subject of a patent application be “not known or used before the application.” Ch. 11, 1 Stat. 318, 319. A defense to an infringement action was created where “the thing, thus secured by patent, was not originally discovered by the patentee, but had been in use, or had been described in some public work anterior to the supposed discovery of the patentee.” *Id.*, at 322. Thus, from the outset, federal patent law has been about the difficult business “of drawing a line between the things which are worth to the public the embarrassment of an exclusive patent, and those which are not.” 13 WRITINGS OF THOMAS JEFFERSON, *supra*, at 335.

Today’s patent statute is remarkably similar to the law as known to Jefferson in 1793. Protection is offered to “[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof.” 35 U.S.C. § 101. Since 1842, Congress has also made protection available for “any new, original and ornamental design for an article of manufacture.” 35

U.S.C. § 171. To qualify for protection, a design must present an aesthetically pleasing appearance that is not dictated by function alone, and must satisfy the other criteria of patentability. The novelty requirement of patentability is presently expressed in 35 U.S.C. §§ 102(a) and (b), which provide:

A person shall be entitled to a patent unless—

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country more than one year prior to the date of application for patent in the United States * * *.

Sections 102(a) and (b) operate in tandem to exclude from consideration for patent protection knowledge that is already available to the public. They express a congressional determination that the creation of a monopoly in such information would not only serve no socially useful purpose, but would in fact injure the public by removing existing knowledge from public use. From the Patent Act of 1790 to the present day, the public sale of an unpatented article has acted as a complete bar to federal protection of the idea embodied in the article thus placed in public commerce.

In the case of *Pennock v. Dialogue*, 2 Pet. 1, 7 L.Ed. 327 (1829), Justice Story applied these principles under the patent law of 1800. The patentee had developed a new technique for the manufacture of rubber hose for the conveyance of air and fluids. The invention was reduced to practice in 1811, but letters patent were not sought and granted until 1818. In the interval, the patentee had licensed a third party to market the hose, and over 13,000 feet of the new product had been sold in the city of Philadelphia alone. The Court concluded that the patent was invalid due to the prior public sale, indicating that, “if [an inventor] suffers the thing he invented to go into public use, or to be publicly sold for use” “[h]is voluntary act or acquiescence in the public sale and use is an abandonment of his right.” *Id.*, 2 Pet., at 23–24. The Court noted that under the common law of England, letters patent were unavailable for the protection of articles in public commerce at the time of the application, *id.*, at 20, and that this same doctrine was immediately embodied in the first patent laws passed in this country. *Id.*, at 21–22.

As the holding of *Pennock* makes clear, the federal patent scheme creates a limited opportunity to obtain a property right in an idea. Once an inventor has decided to lift the veil of secrecy from his work, he must choose the protection of a federal patent or the dedication of his idea to the public at large. As Judge Learned Hand once put it: “[I]t is a condition upon the inventor’s right to a patent that he shall not exploit his discovery competitively after it is ready for patenting; he must

content himself with either secrecy or legal monopoly." *Metallizing Engineering Co. v. Kenyon Bearing & Auto Parts Co.*, 153 F.2d 516, 520 (CA2), *cert. denied*, 328 U.S. 840, 66 S.Ct. 1016, 90 L.Ed. 1615 (1946).

In addition to the requirements of novelty and utility, the federal patent law has long required that an innovation not be anticipated by the prior art in the field. Even if a particular combination of elements is "novel" in the literal sense of the term, it will not qualify for federal patent protection if its contours are so traced by the existing technology in the field that the "improvement is the work of the skillful mechanic, not that of the inventor." *Hotchkiss v. Greenwood*, 11 How. 248, 267, 13 L.Ed. 683 (1851). In 1952, Congress codified this judicially developed requirement in 35 U.S.C. § 103, which refuses protection to new developments where "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person of ordinary skill in the art to which said subject matter pertains." The nonobviousness requirement extends the field of unpatentable material beyond that which is known to the public under § 102, to include that which could readily be deduced from publicly available material by a person of ordinary skill in the pertinent field of endeavor. See *Graham*, 383 U.S., at 15, 86 S.Ct., at 692. Taken together, the novelty and nonobviousness requirements express a congressional determination that the purposes behind the Patent Clause are best served by free competition and exploitation of either that which is already available to the public or that which may be readily discerned from publicly available material. See *Aronson v. Quick Point Pencil Co.*, 440 U.S. 257, 262, 99 S.Ct. 1096, 1099, 59 L.Ed.2d 296 (1979) ("[T]he stringent requirements for patent protection seek to ensure that ideas in the public domain remain there for the use of the public").

The applicant whose invention satisfies the requirements of novelty, nonobviousness, and utility, and who is willing to reveal to the public the substance of his discovery and "the best mode * * * of carrying out his invention," 35 U.S.C. § 112, is granted "the right to exclude others from making, using, or selling the invention throughout the United States," for a period of [20] years. 35 U.S.C. § 154. The federal patent system thus embodies a carefully crafted bargain for encouraging the creation and disclosure of new, useful, and nonobvious advances in technology and design in return for the exclusive right to practice the invention for a period of years. "[The inventor] may keep his invention secret and reap its fruits indefinitely. In consideration of its disclosure and the consequent benefit to the community, the patent is granted. An exclusive enjoyment is guaranteed him for seventeen years, but upon expiration of that period, the knowledge of the invention inures to the people, who are thus enabled without restriction to practice it and profit by its use." *United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 186-187, 53 S.Ct. 554, 557, 77 L.Ed. 1114 (1933).

The attractiveness of such a bargain, and its effectiveness in inducing creative effort and disclosure of the results of that effort, depend almost entirely on a backdrop of free competition in the exploitation of unpatented designs and innovations. The novelty and nonobviousness requirements of patentability embody a congressional understanding, implicit in the Patent Clause itself, that free exploitation of ideas will be the rule, to which the protection of a federal patent is the exception. Moreover, the ultimate goal of the patent system is to bring new designs and technologies into the public domain through disclosure. State law protection for techniques and designs whose disclosure has already been induced by market rewards may conflict with the very purpose of the patent laws by decreasing the range of ideas available as the building blocks of further innovation. The offer of federal protection from competitive exploitation of intellectual property would be rendered meaningless in a world where substantially similar state law protections were readily available. To a limited extent, the federal patent laws must determine not only what is protected, but also what is free for all to use. Cf. *Arkansas Electric Cooperative Corp. v. Arkansas Public Service Comm'n*, 461 U.S. 375, 384, 103 S.Ct. 1905, 1912, 76 L.Ed.2d 1 (1983) (“[A] federal decision to forgo regulation in a given area may imply an authoritative federal determination that the area is best left unregulated, and in that event would have as much pre-emptive force as a decision to regulate”).

NOTES

1. The Dual Grant. Scholars who have studied the aforementioned constitutional provision have concluded that it is really two grants of power rolled into one; first, to establish a copyright system and, second, to establish a patent system. Their conclusions have been that the constitutionally-stated purpose of granting patent rights to inventors for their discoveries is the promotion of progress in the “useful Arts,” (1979) (Rich, J.), *cert. granted and appeal dismissed*, *Diamond v. Bergy*, *aff'd as to related case sub nom Diamond v. Chakrabarty*, 447 U.S. 303 (1980).

2. Substantive Constitutional Patent Law. An argument is sometimes made that there is a “constitutional” standard of “invention” or that it is “unconstitutional” to have a law such as first-to-file or that a particular case should have a certain outcome to meet a “constitutional” standard. As pointed out by Judge Rich in *Bergy*, “the Constitutional clause . . . neither gave to nor preserved in inventors . . . any rights and set no standards for the patentability of individual inventions; it merely empowered Congress, if it elected to do so, to secure to inventors an ‘exclusive right’ for an unstated ‘limited’ time for the stated purpose of promoting useful arts.”

3. Promoting Progress. Much effort has been devoted towards the study of whether the patent system actually achieves its stated goal of promoting technology. Suppose an economic researcher is actually able to prove that

within a given technological field, the patent system actually hinders technological growth. That is, suppose that given the technological patterns within a particular industry—including, for example, product cycle, barriers to market entry, specialized knowledge required to compete—patents actually contributed to market concentration and decreased innovation. Would the grant of patents in that technological field therefore be unconstitutional?

4. Patent Term. As discussed here in Chapter 12, *Prosecution*, the term of a utility patent is 20 years, measured from the date the inventor filed a patent application. Suppose, however, that Congress chooses to extend the term of patents to say, 150 years each. Would such a term run afoul of the Constitution?

5. Inventorship. Under the United States Constitution, which party may obtain a patent? Suppose an inventor is employed by a corporation, and as part of his employment contract he is obliged to assign ownership of all of his inventions, along with any resulting patents, to his employer. However, the parties suffer a falling out and the inventor refuses to apply for any patents. Under the Constitution, does the employer have any redress? Alternatively, suppose the inventor is deceased or otherwise incapacitated. Does the Constitution allow a patent to issue? The legal concept of inventorship is also addressed here in Chapter 12.

§ 1.3 ORIGINS OF THE PATENT SYSTEM

Legal historians have been quick to seize upon venerable antecedents to our contemporary patent law regime. An ancient Greek system of rewarding cooks for excellent recipes, *see* BRUCE BUGBEE, *GENESIS OF AMERICAN PATENT AND COPYRIGHT LAW* 166 n.5 (1967), exclusive privileges granted for innovations relating to Tyrolean mines in the Fourteenth Century, *see* ERICH KAUFER, *THE ECONOMICS OF THE PATENT SYSTEM* (1989), and a Florentine patent granted in 1421, *see* M. Frumkin, *The Origin of Patents*, 27 J. PAT. OFF. SOC'Y 166 (1948), have been variously cited as predecessors to the modern patent law. However, most observers consider legislation enacted on March 19, 1474, by the Venetian Republic as the first true patent statute. *See* Giulio Mandich, *Venetian Patents (1450–1550)*, 30 J. PAT. OFF. SOC'Y 166 (1948). With its requirements that the invention be new, useful, and reduced to practice; provision for a ten-year term; and registration and remedial scheme, the Venetian statute bears a remarkable resemblance to the modern law. By the Seventeenth Century, numerous European states had enacted similar legislation. *See* F.D. Prager, *A History of Intellectual Property From 1545 to 1787*, 26 J. PAT. OFF. SOC'Y 711 (1944). For purposes of the common law world, the most significant of these successors was the English Statute of Monopolies, 21 Jac.1 c. 3 (1624), an important commercial statute of the Jacobean era.

§ 1.3[a] THE STATUTE OF MONOPOLIES

By the start of the Seventeenth Century, the English Crown had a long history of awarding importation franchises and other exclusive rights. But this practice had become subject to abuse during the reigns of Elizabeth I and James I, as favored subjects obtained grants of supervision or control over long-established industries. Parliament responded in 1624 by enacting the Statute of Monopolies. *See* Chris R. Kyle, *But a New Button to an Old Coat: The Enactment of the Statute of Monopolies*, 19 J. LEGAL HISTORY 203 (1998). Although the Statute was principally designed to proscribe monopolistic grants by the Crown, it did authorize the issuance of “letters patent:”

[B]e it declared and enacted that any declaration before mentioned shall not extend to any letters patent and grants of privilege for the term of fourteen years or under, hereafter to be made of the sole working or making of any manner of new manufactures within this realm, to the true and first inventors of such manufacture. . . .

This exception in section 6 of the Statute of Monopolies is the foundation of patent law in the common law world.

§ 1.3[b] THE U.S. PATENT SYSTEM

The patent tradition established by the Statute of Monopolies continued in many of the New World colonies. For example, a Connecticut statute of 1672 outlawed the award of monopolies except for “such new inventions as shall be judged profitable for the country and for such time as the general court shall judge meet.” As well, many colonial governments granted individuals privileges or rewards for their inventions very early in their histories. *See* Edward C. Walterscheid, *The Early Evolution of United States Patent Law: Antecedents (Part I)*, 78 J. PAT. & TRADEMARK OFF. SOC’Y 615 (1996).

§ 1.3[b][1] THE CONSTITUTION AND EARLY PATENT LAWS

By 1787, state grants of patents were at their zenith, and the delegates to the Constitutional Convention apparently realized the possibility of interstate conflicts among competing inventors. James Madison’s first draft of the Constitution, introduced as the Virginia Plan, focused on the structure of national government. 1 MAX FARRAND, RECORDS OF THE FEDERAL CONSTITUTION 20–22 (1911). Due to their concentration on these structural concerns, the delegates turned to discussion of many specific national powers late in the Convention. On August 18, 1787, Charles Pinckney proposed the following powers:

“To grant patents for useful inventions”

“To secure to Authors exclusive rights for a certain time”

“To establish public institutions, rewards and immunities for the promotion of agriculture, commerce, trades and manufactures”

FARRAND, Vol. 2 at 322. On the same day, Madison’s records of the Convention show that he himself proposed to grant Congress power:

“To secure to literary authors their copy rights for a limited time”

“To encourage by premiums & provisions, the advancement of useful knowledge and discoveries”

FARRAND, Vol. 2 at 325. These proposals featured both exclusive rights and outright subsidies for inventive activity. The Convention referred both sets of proposals to the Committee on Detail for incorporation into the next draft of the Constitution. FARRAND, Vol. 2 at 321, 325.

The limited records of the Constitutional Convention of 1787 suggest that Charles Pinckney was the principal source of the national power to grant patents. See BRUCE BUGBEE, *THE GENESIS OF AMERICAN PATENT AND COPYRIGHT LAW* 127 (1967). Pinckney served in the South Carolina legislature in 1784 during creation of one of the more detailed colonial patent statutes. More important, Pinckney served on the Committee on Detail which received his proposal for creation of a national patent power. FARRAND, Vol. 2 at 322.

On September 5, the Committee on Detail recommended to the Convention the intellectual property language now found in the Constitution. FARRAND, Vol. 2 at 509. No doubt the convention’s general inclination against direct national involvement in economic affairs inspired the Committee to limit their clause to exclusive rights alone. The Convention unanimously accepted this language. *Id.*

IN RE BERGY

Court of Customs and Patent Appeals, 1979
596 F.2d 952

RICH, JUDGE.

THE CONSTITUTION

The grant of power to Congress to establish a patent system is in these familiar words of Article I, section 8, clauses 8 and 18:

(The Congress shall have Power) * * * (8) To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries; * * * (And) (18) To make all Laws which shall be necessary and proper for carrying into Execution the foregoing Powers * * *.

Scholars who have studied this provision, its origins, and its subsequent history, have, from time to time, pointed out that it is really two grants of power rolled into one; first, to establish a copyright system

and, second, to establish a patent system. See R. DEWOLF, AN OUTLINE OF COPYRIGHT LAW 15 (1925); K. Lutz, *Patents and Science. A Clarification of the Patent Clause of the Constitution*, 18 GEO.WASH.L.REV. 50 (1949); P. Federico, *Commentary on the New Patent Act*, 35 U.S.C.A. § 1 to § 110, 1, 3 (1954); G. Rich, *Principles of Patentability*, 28 GEO.WASH.L.REV. 393 (1960). Their conclusions have been that the constitutionally-stated purpose of granting patent rights to inventors for their discoveries is the promotion of progress in the “useful Arts,” rather than in science. In enacting the 1952 Patent Act, both houses of Congress adopted in their reports this construction of the Constitution in identical words, as follows:

The background, the balanced construction, and the usage current then and later, indicate that the constitutional provision is really two provisions merged into one. The purpose of the first provision is to promote the progress of Science by securing for limited times To authors the exclusive right to their Writings, the word “science” in this connection having the meaning of knowledge in general, which is one of its meanings today. The other provision is that Congress has the power to promote the Progress of useful arts by securing for limited times to inventors the exclusive right to their Discoveries. The first patent law and all patent laws up to a much later period were entitled “Acts to promote the progress of useful arts.”

(H.R.Rep.No.1923, 82d Cong., 2d Sess. 4 (1952); S.Rep.No.1979, 82d Cong., 2d Sess. 3 (1952), U.S.Code Cong. & Admin.News 1952, pp. 2394, 2396.)

It is to be observed that the Constitutional clause under consideration neither gave to nor preserved in inventors (or authors) any rights and set no standards for the patentability of individual inventions; it merely empowered Congress, if it elected to do so, to secure to inventors an “exclusive right” for an unstated “limited” time for the stated purpose of promoting useful arts. We have previously pointed out that the present day equivalent of the term “useful arts” employed by the Founding Fathers is “technological arts.” *In re Musgrave*, 431 F.2d 882, 893, 57 CCPA 1352, 1367, 167 U.S.P.Q. 280, 289–90 (1970).

§ 1.3[b][2] THE 1790 AND 1793 ACTS

In his State of the Union address to Congress on January 8, 1790, President George Washington addressed intellectual property:

The advancement of agriculture, commerce, and manufactures, by all proper means, will not, I trust, need recommendation; but I cannot forbear intimating to you the expediency of giving effectual encouragement, as well to the introduction of new and useful inventions from abroad, as to the exertions of skill and genius in producing them at home.

ANNALS OF CONGRESS, 1st Cong., 2d Sess., I, 932–33. Spurred by this reminder and numerous petitions from authors and inventors for special national protection, Congress soon enacted the first patent act. Patent Act of 1790, 1 Stat. 109–112 (April 10, 1790). The Act created a board, known as the “Commissioners for the Promotion of the Useful Arts,” authorized to determine whether “the invention or discovery [was] sufficiently useful and important” to deserve a patent. The board consisted of the Secretary of State (Thomas Jefferson), Secretary of War (Henry Knox) and the Attorney General (Edmund Randolph). See KENNETH W. DOBYNS, *THE PATENT OFFICE PONY: A HISTORY OF THE EARLY PATENT OFFICE* (1994).

This heroic age of patent law proved short lived, as examination duties proved too onerous for the three-member board. Congress responded by enacting the Patent Act of 1793, Act of Feb. 21, 1793, Ch. 11, 2 Stat. 318, which abandoned patent examination in favor of a registration scheme. Under the 1793 Act, the State Department was assigned the wholly administrative task of maintaining a registry of patents. Whether a registered patent was valid and enforceable was left solely to the courts.

§ 1.3[b][3] THE 1836 AND 1870 ACTS

Observing that the registration system of the 1793 Act had sometimes encouraged duplicative and fraudulent patents, Congress restored an examination system with the Patent Act of 1836. Act of July 4, 1836, Ch. 357, 5 Stat. 117. The 1836 Act created a Patent Office within the Department of State and provided for the filing and formal examination of patent applications. The 1870 Act largely maintained the provisions of its predecessor, Act of July 8, 1870, Ch. 230, 16 Stat. 198, but at several points stressed that patentees define their proprietary interest in a distinctly drafted claim. Litigation under these two statutes frequently culminated at the Supreme Court, resulting in opinions that established nonobviousness, enablement, experimental use and other fundamental doctrines of contemporary patent law.

§ 1.3[c] THE PARIS CONVENTION

The foundational patent harmonization treaty, the Paris Convention for the Protection of Industrial Property, was formed in 1884. 13 U.S.T. 25. As of April 15, 2002, 163 nations had signed the Paris Convention. The World Intellectual Property Organization (WIPO), a specialized agency located in Geneva, Switzerland, administers this international agreement (and a number of subsequent instruments addressing intellectual property). The Paris Convention commits its signatories to the principle of national treatment, the principle of patent independence, and a system of international priority. Through the national treatment principle, Paris Convention signatories agree to treat foreign inventors no worse than domestic inventors in their patent laws, so long

as these foreign inventors are nationals of a Paris Convention signatory state. Paris Convention, Art. 2.

The Paris Convention also calls for the independence of different national patents. Paris Convention, Art. 4bis. Prior to the Paris Convention, many national laws applied a principle of patent dependence against foreign inventors. As a result, domestic patents would expire at the same time any foreign patent covering the same invention lapsed, regardless of the term the patentee was ordinarily due. These provisions sometimes worked a hardship against inventors who had obtained patent protection in many countries, only to discover that marketing the invention was feasible only in some subset of them. Such an inventor would prefer to let some patent rights lapse rather than incur expensive maintenance fees. In a world where patent rights depended on one another, however, allowing one patent to lapse would amount to a global forfeiture of patent rights.

The independence principle established by the Paris Convention put an end to this situation. One significant consequence of the independence of national patents is that they must be enforced individually. Even different national patent instruments with identically drafted descriptions, drawings and claims do not stand or fall together. A competitor who succeeds in invalidating one national patent may face the prospect of repeating the effort within another set of national borders. Similarly, the successful enforcement of a patent in one forum may simply signal the start of patent litigation elsewhere.

The international priority system allows an inventor to file a patent application in one Paris Convention signatory state, which is usually the inventor's home country. Paris Convention, Art. 4. If the inventor subsequently files patent applications in any other Paris Convention signatory state within the next 12 months, overseas patent-granting authorities will treat the application as if it were filed on the first filing date. Critically, information that enters the public domain between the priority date and subsequent filing dates does not prejudice the later applications. Paris Convention priority allows inventors to preserve their original filing dates as they make arrangements to file patent applications overseas. *See generally* G.H.C. BODENHAUSEN, *GUIDE TO THE PARIS CONVENTION FOR THE PROTECTION OF INDUSTRIAL PROPERTY* (United International Bureau for the Protection of Intellectual Property, Geneva, Switzerland 1968).

§ 1.3[d] PATENTS IN THE TWENTIETH CENTURY

§ 1.3[d][1] U.S. DEVELOPMENTS

The Depression era, with all its sentiments against monopoly, brought with it a vigorous distrust of patents. Although the United States had a statutory patent system more than a century before a

statutory antitrust policy, *see*, Sherman Act, 15 U.S.C.A. § 2, 26 Stat. 209 (July 2, 1890), courts often treated patent licensing and enforcement as antitrust violations. *See, e.g., Hensley Equip. Co. v. Esco Corp.*, 383 F.2d 252 (5th Cir.1967) (license restricting licensee to use of only patented product violated Sherman Act). Additionally, federal courts including the Supreme Court created stricter and stricter tests for sufficient “inventiveness” to qualify for a patent. For example, in 1941, the Supreme Court opined: “[T]he new device [a cordless, pop-out cigarette lighter for cars], however useful it may be, must reveal the flash of creative genius.” *Cuno Eng. Corp. v. Automatic Devices Corp.*, 314 U.S. 84 (1941); *see also Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp.*, 340 U.S. 147 (1950). As a workable rule of law, this standard creates more questions than answers: How much “flash” and how much “genius” suffices to show invention? How does the federal judiciary detect either the flash or the genius? The venerable Judge Learned Hand gave his pithy assessment of this legal test: “[The inventiveness test is] as fugitive, impalpable, wayward, and vague a phantom as exists in the whole paraphernalia of legal concepts.” *Harries v. Air King Prod. Co.*, 183 F.2d 158, 162 (2d Cir.1950).

Thus, following the depression and the world wars, these twin foes of intellectual property—misplaced antitrust priorities and subjective inventiveness tests—eroded the incentives of the patent system. The Supreme Court’s propensity to strike down patents in this era reached such proportions that Justice Jackson felt compelled to lament in dissent: “[T]he only patent that is valid is one which this Court has not been able to get its hands on.” *Jungersen v. Ostby & Barton Co.*, 335 U.S. 560, 571 (1949). Throughout this era, from the advent of its jurisdiction over appeals from the United States Patent Office in 1929, the Court of Customs and Patent Appeals strove to enunciate a more consistent patent policy. Because it had no jurisdiction to hear appeals from infringement actions in the district courts, however, this court could not influence the regional circuits which marched only to the unsteady drumbeat of the Supreme Court.

World War II forced the United States to innovate and experiment. When the war came to a close, the United State found itself in a position of world economic leadership that called for continued incentives for research and development. Market demands for innovation clashed with the confusion in the courts over enforcement of patent policies. This clash produced the first general reform of the patent system since 1870. The centerpiece of the Patent Act of 1952 replaced the subjective invention test with an objective test for nonobviousness. Drawing on the language from an early Supreme Court case, *see Hotchkiss v. Greenwood*, considered here at Chapter 7, the 1952 Act directed courts to determine patentability by an objective comparison of the claimed invention and the prior art at the time of invention. 35 U.S.C.A. § 103. To preclude subjectivity and hindsight analysis, the Act required this comparison to take place from the vantage point of one of ordinary skill in the art. *Id.*

Over a decade later, the Supreme Court finally construed the pivotal language of the 1952 Act. In a trilogy of 1966 cases, reprinted here in Chapter 7, the Supreme Court applied the § 103 obviousness test as the correct test for patentability. These landmark cases should have closed the book on the amorphous invention test. Unfortunately, another Supreme Court opinion (without the careful reasoning of the 1966 trilogy) revived vestiges of the invention test: "A combination of elements may result in an effect greater than the sum of the several effects taken separately. No such synergistic result is argued here." *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57, 61 (1969); see also *Sakraida v. Ag Pro, Inc.*, 425 U.S. 273 (1976). Synergism? The Supreme Court's dicta reawakened the ghosts of the invention test and haunted the regional circuits for years.

Two cases in the United States Court of Appeals for the Ninth Circuit present a microcosm of more than a decade of patent law confusion. These two cases, decided within a week of each other in the same circuit, applied vastly different law and reached vastly different results on patentability. In *Reeves Instr. Corp. v. Beckman Instr., Inc.*, the Ninth Circuit applied § 103 as directed by the Supreme Court's 1966 trilogy. The result was a valid patent for an electronic test circuit for analog computers. 444 F.2d 263 (9th Cir.1971). In *Regimbal v. Scymansky*, the same court applied a vague inventiveness test. The result was an invalid patent on a new hops-picking machine. 444 F.2d 333 (9th Cir.1971). This illustration of confusion within a single circuit magnifies as the lens turns to confusion amongst the circuits in this era.

In 1972, Congress created a Commission on Revision of the Federal Court Appellate System, known as the Hruska Commission after its Chairman, Senator Roman L. Hruska (R. Neb.). The Hruska Commission studied primarily the federal judiciary's difficulty in resolving conflicts amongst regional circuit courts. This subject led the Commission to examine patent law. The Commission's patent law consultants concluded:

Patentees now scramble to get into the 5th, 6th, and 7th circuits since the courts there are not inhospitable to patents whereas infringers scramble to get anywhere but in these circuits. . . . [Forum shopping of this magnitude] not only increases litigation costs inordinately and decreases one's ability to advise clients, it demeans the entire judicial process and the patent system as well.

Commission on Revision of the Federal Court Appellate System, Structure, and Internal Procedures: Recommendations for Change, 67 F.R.D. 195 (1975) (Conclusions of Commission's consultants, Professor James B. Gambrell and Donald R. Dunner). Despite this condemnation of patent law chaos, the Hruska Commission advised against the central recommendation for reform—a specialized appeals court for patent cases.

As more years passed without resolution of the central patent law conflicts, economic pressure encouraged reconsideration of appellate

court reform. By 1978, the Department of Justice had created a new Office for Improvements in the Administration of Justice (OIAJ) headed by Prof. Daniel J. Meador. After considering several models for reform, OIAJ settled on a plan to merge the Court of Claims and the Court of Customs and Patent Appeals into a single appellate court with national jurisdiction over all patent appeals. This proposal sought to resolve the conflicts and forum shopping in patent law by routing all patent appeals to a single court of appeals. This court of appeals would fashion a uniform patent policy, subject to appeal to the Supreme Court.

On March 15, 1979, the Chairman of the Senate Judiciary Committee, Edward M. Kennedy, introduced the OIAJ bill. The bill, S. 1477, passed the Senate before the close of the 96th Congress, but—due to the addition of a controversial amendment unrelated to the court reform proposal—did not pass the House. In the 97th Congress, the legislative process began anew. A few lawmakers expressed concerns that a specialized court might foster legal doctrines out of the mainstream of American jurisprudence or might fall captive to a narrow segment of the bar. This resistance gained little momentum for reasons mentioned in the House Judiciary Committee Report:

[T]he bill creates a new intermediate appellate court markedly less specialized than either of its predecessors and provides the judges of the new court with a breadth of jurisdiction that rivals in its variety that of the regional circuits.

H.R. Rep. No. 312, 97th Cong., 1st Sess. 19 (1981). Indeed the final version of the organic act for the Federal Circuit provided jurisdiction over more than ten categories of appeals, ranging from patents to customs to taxes to government contracts and more. 28 U.S.C.A. § 1295. Finally, on April 2, 1982, President Ronald Reagan signed into law the Federal Courts Improvements Act of 1982.

Immediately after formation, the Court of Appeals for the Federal Circuit adopted the law of its predecessor courts as binding precedent for its cases as well. *South Corp. v. United States*, 690 F.2d 1368 (Fed.Cir. 1982). Thus the decisions of the Court of Customs and Patent Appeals continued to bind the Federal Circuit. In other respects, however, the advent of the Federal Circuit changed significantly the decisional process for patent policy. For instance, the old Court of Customs and Patent Appeals—a five-judge body—always sat *en banc*. Thus later decisions always controlled any contrary earlier pronouncements. *In re Gosteli*, 872 F.2d 1008, 1011 (Fed.Cir.1989). The Federal Circuit, with up to 12 judges, rarely sits *en banc*. When it does sit *en banc*, of course, it has authority to overrule any prior ruling of the Federal Circuit or its predecessor courts. When sitting, as it customarily does, in three-judge panels, however, the Federal Circuit lacks authority to depart from decisions of earlier panels. The court in *Newell Companies, Inc. v. Kenney Mfg. Co.*, 864 F.2d 757, 765 (Fed.Cir.1988), explained: “This court has adopted the rule that prior decisions of a panel of the court are binding

precedent on subsequent panels unless and until overturned in banc. Where there is direct conflict, the precedential decision is the first.”

The creation of the Federal Circuit was the first major structural change in the federal appellate system since creation of the regional circuits in 1891. The confusion in patent law reached such proportions in the late 1960s and 1970s that only a structural change of this magnitude would correct the problem. Since its creation, the Federal Circuit has sought to bring uniformity and predictability to patent law. Much of this text tests the success of that venture.

More recently, Congress enacted significant substantive and procedural changes to U.S. patent law via the American Inventors Protection Act of 1999. Pub. L. No. 106–113, 113 Stat. 1501 (Nov. 29, 1999). Among the innovations of the AIPA were the creation of an infringement defense to first inventors of business methods later patented by another; the extension of patent term in the event of processing delays at the PTO; the mandate for publication of certain pending patent applications; and the provision of optional *inter partes* reexamination procedures.

As this book goes to press, discussion of even more dramatic reform continues in the 110th Congress. The proposed Patent Reform Act of 2007 arguably would work the most sweeping reforms to the U.S. patent system since the nineteenth century. Among the more notable of these proposed changes are a shift to a first-inventor-to-file priority system; a requirement that most inventors conduct a prior art search prior to filing a patent application, substantive and procedural modifications to the patent law doctrines of inequitable conduct and willful infringement; amendment of the best mode, venue, and damages statutes; and adoption of post-grant review proceedings. These legislative reform efforts appear likely to continue into the 111th Congress. For more on the ongoing patent reform effort, see John R. Thomas & Wendy H. Schacht, *Patent Reform in the 110th Congress: Innovation Issues*, CRS Report for Congress (Jan. 10, 2008).

§ 1.3[d][2] WORLD PATENT HARMONIZATION

Following World War II, global changes to the international patent system have proceeded at an accelerated pace. Numerous new treaties followed the Paris Convention now provide inventors with a network of global rights. Among the most significant of these treaties resulted from discussion of a uniform patent system for the then-emerging European Economic Community. Following adoption of a uniform patent classification system, European states agreed to the 1963 Convention on the Unification of Certain Points of Substantive Law on Patents for Inventions. This so-called “Strasbourg Convention” set forth certain common substantive patent law principles, and formed the cornerstone of the European Patent Convention (EPC) to follow a decade later.

In addition to mandating uniform patent-eligibility criteria for member states, the EPC establishes a single patent-granting authority, the European Patent Office. The EPC therefore allows an applicant to file a single patent application at the European Patent Office which may mature into a number of individual national patents. The EPC does not displace individual national patent regimes, but exists alongside them as an alternative route to obtaining intellectual property protection. The regional model of the EPC has been emulated to some degree by contracting states in Africa and the former Soviet Union.

The United States was not entirely idle during this period of European harmonization. As something of a reaction to these efforts, the United States took a leadership position in establishing the Patent Cooperation Treaty (PCT). This treaty was ultimately formed in 1970 by representatives of world patent offices in Washington, D.C., and is open to any country which has joined the Paris Convention. Drafters of the PCT took account for the burden of duplicative patent examination proceedings in many different countries. The PCT allows certain portions of patent acquisition efforts to be completed in a single patent office and applied elsewhere, which should streamline efforts elsewhere.

Subsequently, both the North American Free Trade Agreement (NAFTA) and the Trade-Related Aspects of Intellectual Property of the World Trade Organization (TRIPS Agreement) have provided several further measures of substantive reform. NAFTA sets minimal requirements for a substantive patent law among its signatory nations. The TRIPS Agreement provides even more significant reform, both in the scope of its substantive measures and the breadth of its signatories. The treaty provides uniform legal standards for patentability in every significant aspect of a modern patent system, and further sets forth a patent term of twenty years from the filing date, as well as exclusionary rights conferred to the holder of the patent. Most of these requirements conform with prevailing United States standards.

The TRIPS Agreement is one of the most important commercial treaties in modern history. It revolutionized the treatment of intellectual property in the signatory countries. It requires, for example, that India, a country which has had a weak intellectual property regime essentially since independence, adopt a modern strong system of protection that includes protection for pharmaceutical compounds.

Future multilateral harmonization appears likely at this point, albeit the precise vehicle for achieving this result cannot be named easily. In the early 1990's, the so-called "Patent Law Treaty" or "Basic Proposal" of the World Intellectual Property Organization (WIPO) appeared the most likely prospect for future reform. The Basic Proposal contained numerous substantive provisions regarding patent law reform, although in some aspects this treaty was less comprehensive than the TRIPS Agreement. Unlike the TRIPS Agreement, however, it did contain significant measures with respect to claim interpretation and the doc-

trine of equivalents. See HAROLD C. WEGNER, PATENT HARMONIZATION (1993). The shifted emphasis upon the TRIPS Agreement as the primary intellectual property treaty, in combination with a rather abrupt announcement by the United States concerning its continuing support of a first-to-invent system, suspended negotiation at WIPO. Efforts have continued on various WIPO-based international agreements on the patent law.

Recent Free Trade Agreements [FTAs] to which the United States is a signatory have also incorporated increasingly elaborate provisions concerning the patent law. With the Bipartisan Trade Promotion Act of 2002, Pub. L. No. 107-210, 116 Stat. 993 (2002), Congress stated that an overall negotiating objective of such agreements was to encourage our treaty partners to agree to “a standard of [intellectual property] protection similar to that found in United States law.” 19 U.S.C. § 3802(b)(4)(A)(i)(II) (2006). In keeping with this mandate, the United States has entered into numerous FTAs that have required their signatories to conform to stipulated standards of patent protection. See *generally Free Trade Agreements: US Strategies and Priorities* (Jeffery J. Schott, ed., 2004). Because the FTAs are drafted in a manner that complies with current U.S. law, their effect is to obligate U.S. treaty partners to amend their patent laws to match or resemble those of the United States.

Another international agreement, exclusively for the states of Europe, consists of the Luxembourg Community Patent Convention (CPC). The CPC provides for a true European patent, in that one administrative agency would issue a single patent effective in every signatory nation. Additionally, patent litigation fora are limited to certain national courts, a Common Appeal Court and the European Court of Justice. The CPC had such a strong start in 1975 that commentators offered varyingly optimistic predictions of the date it would come into effect, all of which have long since passed. Despite several subsequent diplomatic conferences held to promote the treaty, some European nations still have not ratified it, and possibilities for future action are uncertain. See JOSEPH STRAUS, THE PRESENT STATE OF THE PATENT SYSTEM IN THE EUROPEAN UNION (1997); KARA M. BONITATIBUS, *infra* at p. 902, note 4.

§ 1.4 FORMS OF PATENT PROTECTION

§ 1.4[a] UTILITY PATENTS

When lay persons use the term “patent,” they are most often referring to the intellectual property right more technically known as a “utility patent.” Utility patents are the usual sort of patent, pertaining generally to technological products and processes. Utility patents are governed by the Patent Act of 1952, codified in Title 35 of the U.S. Code.

Utility patent rights do not arise automatically. Inventors must prepare and submit applications to the U.S. Patent and Trademark

Office (“PTO”) if they wish to obtain utility patent protection. 35 U.S.C. § 111. PTO officials known as examiners then assess whether the application merits the award of a utility patent. 35 U.S.C. § 131.

In deciding whether to approve a utility patent application, a PTO examiner will consider whether the submitted application fully discloses and distinctly claims the invention. 35 U.S.C. § 112. The examiner will also determine whether the invention itself fulfills certain substantive standards set by the Patent Act of 1952. To be patentable, an invention must be useful, novel, and nonobvious. The requirement of usefulness, or utility, is satisfied if the invention is operable and provides a tangible benefit. 35 U.S.C. § 101. To be judged novel, the invention must not be fully anticipated by a prior patent, publication, or other knowledge within the public domain. 35 U.S.C. § 102. A nonobvious invention must not have been readily within the ordinary skills of a competent artisan at the time the invention was made. 35 U.S.C. § 103.

If the PTO allows the utility patent to issue, the proprietor obtains the right to exclude others from making, using, selling, offering to sell, or importing into the United States the patented invention. 35 U.S.C. § 271(a). These rights are not self-enforcing. A patentee bears responsibility for monitoring its competitors to determine whether they are using the patented invention or not. Patent proprietors who wish to compel others to observe their intellectual property rights must usually commence litigation in the federal courts.

The maximum term of utility patent protection is ordinarily set at 20 years from the date the application is filed. 35 U.S.C. § 154(a)(2). The patent applicant gains no enforceable rights until such time as the application is approved for issuance as a granted patent, however. Once the utility patent expires, others may employ the patented invention without compensation to the patentee.

The following example should provide a sense of the modern utility patent instrument. As you review this document, consider the extent to which it provides the following information to members of the technological community:

- A detailed technical description of the invention.
- The extent to which the disclosed technology is regarded as proprietary.
- The basis for the examiner’s decision that the patented invention presents a patentable advance over previously known technology.
- The term of the patent.
- An individual who can be contacted for purposes of licensing or obtaining further technical information.



US005190351A

United States Patent [19]
Clumpjan

[11] **Patent Number:** **5,190,351**
[45] **Date of Patent:** **Mar. 2, 1993**

- [54] **WHEELBARROW FOR TRANSPORTING ROCKS AND STONES**
- [76] **Inventor:** Joe Clumpjan, 1334 Sunset Dr. Rte. 3, Campbellsport, Wis. 53010
- [21] **Appl. No.:** 825,881
- [22] **Filed:** Jan. 27, 1992
- [51] **Int. Cl.⁵** B62B 1/24
- [52] **U.S. Cl.** 298/3; 280/47.31
- [58] **Field of Search** 280/47.31, 47.33, 47.23; 298/2, 3

2,852,304 9/1958 Harrison 298/3
2,889,152 6/1959 Hurst et al. 280/47.31
3,092,418 6/1963 Themascus 298/3

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537556 5/1955 Belgium 298/2
436020 10/1935 United Kingdom 298/3

Primary Examiner—David M. Mitchell
Attorney, Agent, or Firm—Andrus, Scales, Starke & Sawall

ABSTRACT

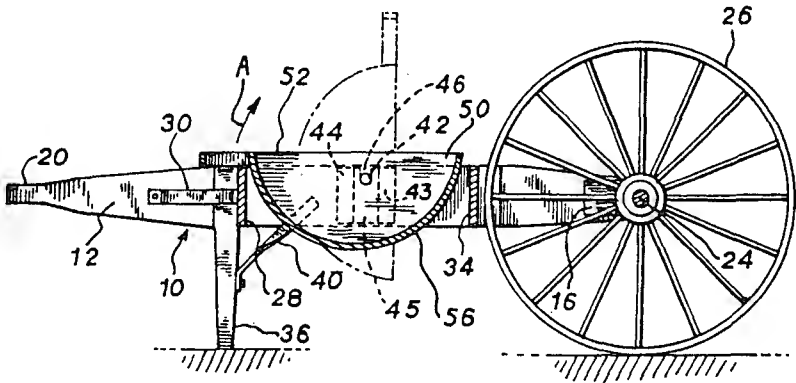
[57] A wheelbarrow has an enlarged wheel and a low center of gravity for transporting heavy loads. The enlarged wheel and low center of gravity increases the stability of the wheelbarrow. The wheelbarrow includes a payload bucket which is tiltable for dumping the payload. The bucket is mounted such that the dumping operation is behind the wheel of the wheelbarrow, whereby the dumping operation can be completed without substantially altering the center of gravity of the wheelbarrow, further enhancing the stability of the wheelbarrow when transporting heavy loads. The wheelbarrow bucket includes an arcuate or C-shaped bottom facilitating the dumping operation.

3 Claims, 1 Drawing Sheet

References Cited

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817,677	4/1906	Smith	280/47.23
845,207	2/1907	Tripp	280/47.3
868,462	10/1907	Lorenzi	280/47.23
1,232,387	7/1917	Parker	298/3
1,305,106	5/1919	Hofer	280/47.23
1,479,223	1/1924	Carroll	280/47.33
1,544,769	7/1925	Nalder	298/3
1,754,835	4/1930	Newton	298/2
2,234,879	3/1941	Shoesmith	298/3
2,608,360	8/1952	Cootware	280/47.3



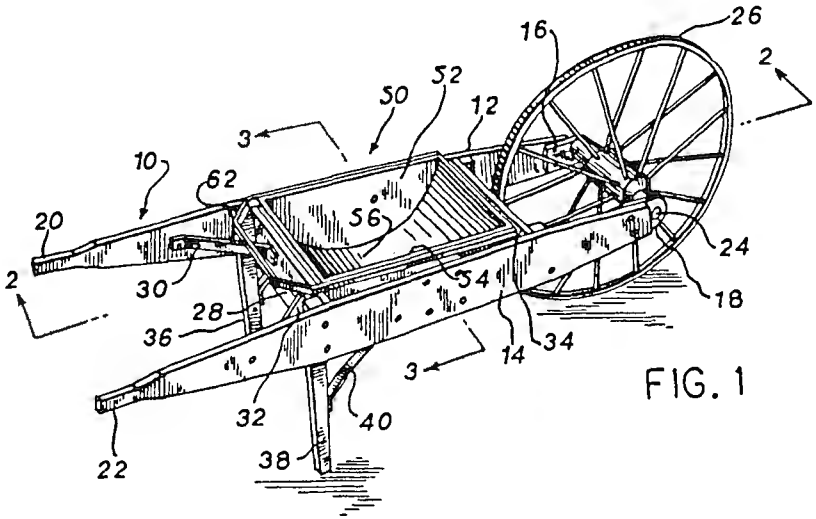


FIG. 1

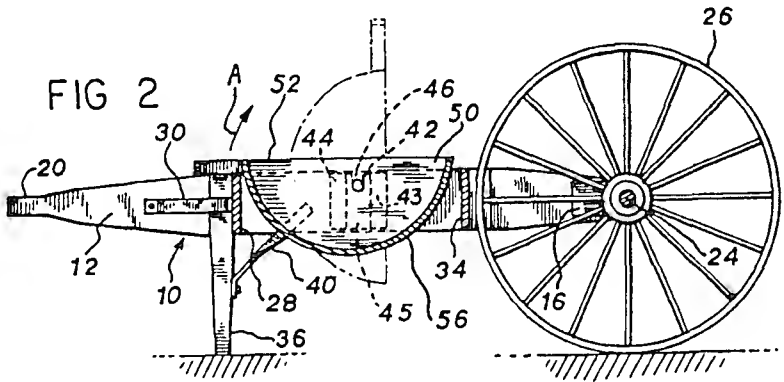


FIG. 2

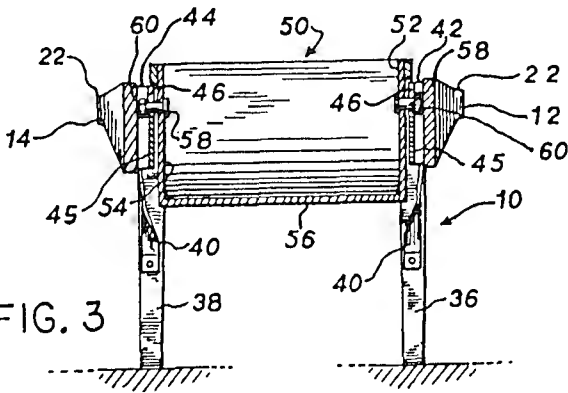


FIG. 3

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WHEELBARROW FOR TRANSPORTING ROCKS AND STONES

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention is generally related to wheelbarrows and is specifically directed to a wheelbarrow for transporting rocks and stones.

2. Description of the Prior Art

Wheelbarrows are well known. However, the wheelbarrows of the prior art are generally designed for general purpose use such as, by way of example, the wheelbarrow disclosed in U.S. Pat. No. 868,462 issued to L. Lorenzi on Oct. 15, 1907. There have also been a number of wheelbarrows designed for specific use such as the wheelbarrow of U.S. Pat. No. 642,569 issued to G. Baklund on Feb. 6, 1900. The Baklund wheelbarrow is specifically designed to carry milk cans and the like.

U.S. Pat. No. 1,479,223 issued to G. Carroll on Jan. 1, 1924 also discloses a wheelbarrow specifically designed for carrying cans but adaptable for general purpose use as well.

U.S. Pat. No. 845,207 issued to C. Tripp on Feb. 26, 1907 discloses a wheelbarrow adapted for carrying unusually large and heavy objects wherein the object such as a barrel is self-leveling and the wheelbarrow has an enlarged wheel to provide better stability.

U.S. Pat. No. 1,754,835 issued to H. B. Newton on Apr. 15, 1930 also discloses a large wheeled wheelbarrow for better distribution of weight when hauling heavy objects.

It is also known to provide dumping wheel barrows as shown, for example, in U.S. Pat. Nos. 1,544,769 issued to G. Nalder on Jul. 7, 1925; 2,234,879 issued to H. Shoemith on Mar. 11, 1941; 2,852,304 issued to L. E. Harrison on Sep. 16, 1958; and 3,092,418 issued to J. Themascus on Jun. 4, 1963. One of the problems with each of the dumping wheelbarrows of the prior art is the weight is generally distributed above and in substantial vertical alignment with the axis of the wheel, making the wheelbarrow unstable when carrying heavy loads.

U.S. Pat. No. 1,232,387 issued to I. Parker on Jul. 3, 1917 discloses a self-leveling wheelbarrow having a pivotable bucket. However, there is not sufficient clearance between the wheelbarrow and the wheel or other frame members to provide for dumping.

None of the wheelbarrows of the prior art are specifically directed to a transportation device for picking and hauling small stones and rocks from fields which are to be tilled for growing crops. In many regions of the country such as, by way of example, northern New England and Wisconsin and other areas where prehistoric glacier movements deposited large amounts of rubble just beneath the surface and the top soil, small rocks and stones surface with each spring thaw. This provides a continuing problem when preparing fields for planting at the beginning of each growing season. Typically, the rocks and stones must be physically and manually removed from the field before tilling in order to minimize damage to plow shares and the like. Even with the development of modern mechanized equipment for preparing fields, rock and stone removal still remains a substantially manual operation. Often this is accomplished by manually taking a wheelbarrow and a rock fork to the field and physically placing the rocks and stones in the wheelbarrow for transportation to a

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dump site. However, heretofore there have been no wheelbarrows specifically designed for this purpose. The wheelbarrows are either unstable under heavy load, difficult to manipulate, or are not well designed for the heavy loads and weight distribution generated during the rock picking activity. This requires that the wheelbarrow be used to carry lighter loads, increasing the number of trips and the amount of labor and time required to complete the task.

SUMMARY OF THE INVENTION

The subject invention is specifically directed to a wheelbarrow for picking and removing rocks from tillable fields. The wheelbarrow has a substantially oversized wheel supported on a sturdy frame. The payload bucket is supported on a plane substantially horizontal to the axis of the wheel and is adapted to be pivoted or tilted behind the wheel for dumping the rocks without disturbing the stability of the wheelbarrow. In the preferred embodiment of the invention, the bucket may be removed from the frame by lifting it out of the support channels. The handle for tilting the bucket also serves as the primary support member for supporting the bucket in a normally open, upright position during use. The axle, pivot bucket supports and handles are on a common line, minimizing back strain when lifting large loads.

The wheelbarrow has been found to be particularly well suited for removing rocks and stones from tillable fields. The enlarged wheel provides easy manipulation of the wheelbarrow and increases stability. The low center of gravity of the load increases stability and maneuverability of the wheelbarrow for this task. The low, in-line handles permit easy handling of substantially heavy loads with a minimum of back strain.

It is, therefore, an object and feature of the subject invention to provide for a wheelbarrow which is specifically designed for removing rocks and stones from tillable fields.

It is also an object and feature of the subject invention to provide for a wheelbarrow with a low center of gravity to provide stability in handling heavy loads.

It is a further object and feature of the subject invention to provide for a tiltable wheelbarrow wherein the payload is supported below the axle of the wheel, increasing stability of the wheelbarrow when transporting a heavy payload.

Other objects and features of the invention will be readily apparent from the accompanying drawings and detailed description of the preferred embodiment.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a wheelbarrow made in accordance with the subject invention.

FIG. 2 is a section view of the wheelbarrow taken generally along the line 2—2 of FIG. 1.

FIG. 3 is a section view of the wheelbarrow taken generally along the line 3—3 of FIG. 1.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The wheelbarrow of the subject invention is shown in FIG. 1 and includes a rigid frame 10 made of wood, steel, or other suitable material. In the preferred embodiment, the frame 10 includes two elongated side rails 12 and 14 having an axis support such as the brackets 16, 18 at one end of the respective side rails 12, 14

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and terminating in handles 20, 22 at the opposite end of respective side rails 12, 14. An axle 24 is supported between the brackets 16 and 18 for rotatably supporting the hubbed wheel 26. A cross brace 28 secures the side rails 12 and 14 in spaced apart relationship. In the preferred embodiment, a pair of angle brackets 30 and 32 are provided and are suitably secured to the respective side rails 12 and 14 and to the cross brace 28 to increase rigidity of the construction. Also, a second cross brace 34 may be provided just behind the wheel 26 to further increase rigidity of the assembly. In the preferred embodiment, the support legs 36 and 38 are mounted between the cross brace 28 and the respective side rails 12 and 14. An angle bracket 40 may be attached to each leg 36, 38 and to the respective side rail 12, 14 to further increase the rigidity of the assembly.

In the preferred embodiment of the invention, a pair of support brackets 42 and 44 are secured, one each, to the respective side rails 12 and 14. As is best shown in FIG. 2, each support bracket includes a pair of outer base plates 43 and 44 which are secured directly to the respective side rail. The center panel of the bracket includes a raised or spaced plate 45 (see FIG. 3) which includes a U-shaped channel 46. The bucket 50 of the wheelbarrow includes a pair of outer side walls 52 and 54. In the preferred embodiment, the side walls have an arcuate lower edge and a continuous, rounded bottom wall 56 as suitably secured thereto to make an arcuate bucket. Each side wall 52, 54 of the bucket includes a projecting mounting post 58 projecting outwardly from the side wall and having a smooth cylindrical surface adapted to be received in the U-shaped channel 46 of the respective mounting bracket 42, 44 on the side rails 12, 14. Each mounting post 58 includes an enlarged outer head 60 to assure that the bucket does not inadvertently slip from the mounting brackets. A handle 62 is secured to the rear edge of the bucket 50 and extends toward the wheelbarrow handles 20 and 22. The handle 62 facilitates in dumping or tilting the bucket, as indicated by arrow A in FIG. 2 and also provides the stop or support member for supporting the bucket in its normal position, by resting on the cross brace 28.

In the preferred embodiment, the wheel 26 of the wheel barrow is approximately 30 inches in diameter, greatly increasing the stability of the wheelbarrow over the prior art, particularly when carrying substantially heavy loads such as rocks and stones. Also, as can be seen in FIG. 2, the bucket 50 can be moved to the dump position without substantially altering the center of gravity of the load, further increasing the stability of the wheel barrow during a stone picking and removal operation. In addition, where desired, the bucket may be removed from the frame of the wheelbarrow by simply lifting the bucket and sliding the posts 58 upwardly in the U-shaped channels on the mounting brackets 42, 44. The arcuate bottom 56 of the bucket greatly facilitates in a dumping operation by permitting the stones to roll

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or slide out of the bucket without substantially altering the center of gravity during the dumping operation.

The wheelbarrow of the present invention is ideally suited for carrying heavy payloads and is particularly well suited for removing rocks and stones from tillable fields. While specific objects and features of the subject invention have been disclosed in detail herein, it will be readily understood that the invention encompasses all modifications and enhancements within the scope and spirit of the following claims.

I claim:

1. A wheelbarrow for transporting rocks and stones, comprising:

- a. a frame having two elongated, spaced side rails, each with opposite ends, one end of each rail defining a handle and the other end of each rail defining a forward axle support, and at least one cross brace spanning the spaced side rails and securing them in rigid assembly;
- b. an axle mounted in the axle supports;
- c. a wheel mounted on said axle for rotation relative to said frame, wherein the wheel is of a minimum diameter of 30 inches;
- d. a pair of mounting brackets, one each mounted on each side rail intermediately of the opposite ends;
- e. a box having a semicylindrical closed bottom, upstanding side walls having a C-shaped bottom edge and an open top, said box including a pair of axially aligned pivot posts extending from said side walls forwardly of the axis of said semicylindrical bottom to position the center of gravity of said box rearwardly of the axis of said pivot posts, each post adapted to be removably received in one of said brackets for tiltably supporting the box relative to said frame, whereby the box is movable between an upwardly opening filling position with the forward edge of the open top positioned rearwardly of the wheel and a dump position in which the contents of the box are discharged to the rear of the wheel, and wherein said cross brace defines a support for holding the box in the filling position; and
- f. a support secured to and extending downwardly from said frame between the handles and the box for supporting the frame and the box above the ground.

2. The wheelbarrow of claim 1 further including a handle mounted on the continuous member adjacent one end and adapted for engaging the cross-brace when the box is in the normal position.

3. The wheelbarrow of claim 2, wherein the side rails are substantially parallel and the side walls of the box are substantially parallel to the side rails, each mounting bracket further including a substantially U-shaped channel with an open upper end and wherein each post is of cylindrical cross-section, whereby the post may be rotated relative to the base for moving the box from the normal position to the dump position.

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§ 1.4[b] DESIGN PATENTS

Title 35 of the United States Code provides for design patents in a short series of provisions codified at §§ 171–173. Design patents may be awarded for “any new, original and ornamental design for an article of manufacture.” 35 U.S.C. § 171. The surface ornamentation, configuration, or shape of an object form the most typical subjects of design patents. The design may be patented only if it is embodied in an article of manufacture, such as furniture, tools, or athletic footwear. The chief limitation on the patentability of designs is that they must be primarily ornamental in character. If the design is dictated by the performance of the article, then it is judged “primarily functional” and ineligible for design patent protection. See *Best Lock Corp. v. Ilco Unican Corp.*, 94 F.3d 1563 (Fed.Cir.1996).

An inventor must file an application at the PTO in order to obtain design patent protection. Design patents are generally subject to all provisions applicable to utility patents, including originality and novelty. The design must also fulfill the requirement of nonobviousness, which is judged from the perspective of “the designer of ordinary capability who designs articles of the type presented in the application.” *In re Nalbandian*, 661 F.2d 1214 (CCPA 1981). If the application matures into an issued design patent, the resulting design patent instrument is relatively straightforward. It principally consists of one or more drawings illustrating the proprietary design. The term of a design patent is fourteen years. 35 U.S.C. § 173.

§ 1.4[c] PLANT PATENTS

The availability of utility patents for plants was for many years the subject of legal uncertainty. Congress responded by enacting the Townsend–Purcell Plant Patent Act. Act of May 23, 1930, 46 Stat. 376. This statute allows a plant patent to issue for distinct and new varieties of plants that have been asexually reproduced. Asexual reproduction results in a plant that is genetically identical to its parent. 35 U.S.C. § 161. Typical asexual reproduction techniques include grafting, budding, the use of cuttings, layering, and other methods. Plants that are produced through seeds, which involves sexual reproduction, are excluded. Also excluded from the Plant Patent Act are tuberpropagated plants or plants found in an uncultivated state. *Id.*

The acquisition and enforcement of plant patents is accomplished in a manner very similar to utility patents. Plant patents are issued by the PTO provided that the novelty and nonobviousness requirements are met. Applicants must submit an application featuring color drawings that disclose all the distinctive characteristics of the plant capable of visual representation. If approved, a plant patent enjoys a term of twenty years from the date of filing. Plant patents are infringed if another asexually reproduces the plant, or uses or sells the plant so reproduced. 35 U.S.C. § 163.

For more details on plant patents, see *J.E.M. AG Supply, Inc. v. Pioneer Hi-Bred International, Inc.*, 534 U.S. 124 (2001); and *Imazio Nursery, Inc. v. Dania Greenhouses*, 69 F.3d 1560 (Fed.Cir.1995).

§ 1.4[d] PATENT-LIKE PLANT VARIETY PROTECTION

Another intellectual property possibility for plants is the Plant Variety Protection Act, or PVPA. This statute may be found in 7 U.S.C. § 2321 and subsequent sections. The PVPA allows the United States to comply with the International Convention for the Protection of New Varieties of Plants, an agreement the United States joined in 1981. The PVPA provides for the issuance of plant variety protection certificates that act similarly to utility and plant patents. Plant variety protection certificates exclusively pertain to sexually reproduced plants, however, including most seed-bearing plants. Fungi and bacteria are ineligible for certification. The plant must be clearly distinguishable from known varieties and stable, in that its distinctive characteristics must breed true with a reasonable degree of reliability. 7 U.S.C. § 2402(a).

A key distinction between the plant patent and plant variety protection regimes is the manner in which the inventor has reproduced the protected plant. Asexual reproduction, which results in a plant genetically identical to its parent, forms the basis of plant patent protection. Certification under the PVPA instead depends upon sexual reproduction, which results in a distinct plant that combines the characteristics of its parents.

Unlike utility and plant patents, which are issued by the PTO, plant variety protection certificates are administered by the Department of Agriculture. To be entitled to a certificate, the plant must be new, distinct, uniform, and stable. If allowed to issue by the Department of Agriculture, the term of a plant variety protection certificate is twenty years (twenty-five years for trees and vines). 7 U.S.C. § 2483(b). The holder of a plant variety certificate obtains the right to “exclude others from selling the variety, or offering it for sale, or reproducing it, importing, or exporting it, or using it in producing (as distinguished from developing) a hybrid or different variety therefrom.” 7 U.S.C. § 2483(a).

An important distinction between the utility and plant patents, on one hand, and plant variety protection certificates, on the other, is the availability of two infringement exemptions under the PVPA. The PVPA includes an exemption that broadly states that the “use and reproduction of a protected variety for plant breeding or other bona fide research shall not constitute an infringement.” 7 U.S.C. § 2544. In addition, the PVPA grants farmers the right to plant new crops of seeds descended from protected seeds that were legitimately purchased. 7 U.S.C. § 2543. In contrast, neither the utility nor the plant patent statutes contain these exemptions. Such activities may constitute in-

fringements that may expose researchers and farmers to legal liability, including damages and an injunction.

§ 1.5 THE NATURE AND FUNCTION OF THE PATENT SYSTEM

§ 1.5[a] ECONOMIC RATIONALES

The literature relating the patent system to economic theory is enormous. Perhaps the most complete review of the various theories regarding patents was prepared by Professor Fritz Machlup of Johns Hopkins University and published as Subcomm. on Patents, Trademarks, and Copyrights, & Senate Comm. on the Judiciary, 85th Cong., 2d Sess., AN ECONOMIC REVIEW OF THE PATENT SYSTEM (Comm. Print 1958). The following passage comprises a contemporary overview of some of the most current economic theories relating to patents written by Professor Rebecca S. Eisenberg.

§ 1.5[a][1]

SELECTIONS FROM REBECCA S. EISENBERG, PATENTS AND THE PROGRESS OF SCIENCE: EXCLUSIVE RIGHTS AND EXPERIMENTAL USE

56 U. CHI. L. REV. 1017 (1989)

The United States Constitution posits an instrumental justification for patents, allowing Congress to enact patent legislation for the specific purpose of promoting scientific progress.¹ In analyzing how patents promote scientific progress, the courts have emphasized two mechanisms: first, the prospect of obtaining a patent monopoly provides an incentive to invest in research to make new inventions; and second, the patent system promotes disclosure of new inventions and thereby enlarges the public storehouse of knowledge.² Both of these theories have been elaborated and challenged in the economics literature.³

1. U.S. Const., Art. I, § 8, cl. 8. This instrumental justification is distinct from moral arguments for patent protection advanced in some European countries, notably France, in the nineteenth century, such as the argument that inventors have a natural property right in their ideas that society is morally obligated to recognize. See generally Fritz Machlup and Edith Penrose, *The Patent Controversy in the Nineteenth Century*, 10 J. ECON. HIST. 1, 10–20 (1950). The framers of the United States Constitution rejected the notion that inventors have a natural property right in their inventions. Thus Thomas Jefferson wrote:

Inventions then cannot, in nature, be a subject of property. Society may give an exclusive right to the profits arising from them, as an encouragement to men to pursue ideas which may produce utilities, but this may or may not be done according to the will and convenience of society, without claim or complaint from anybody.

See WALTER HAMILTON, INVESTIGATION OF CONCENTRATION OF ECONOMIC POWER: PATENTS & FREE ENTERPRISE 21 (TNEC Monograph No. 31) (GPO, 1941) (quoting Thomas Jefferson).

2. *Kewanee Oil Co. v. Bicron*, 416 U.S. 470, 480–81 (1974).

3. A third theory, that patents promote “innovation” or investment in the commercial development of inventions, has been advanced by some commentators but has received little attention from the courts.

I. INCENTIVE TO INVENT.

The incentive to invent theory holds that too few inventions will be made in the absence of patent protection because inventions once made are easily appropriated by competitors of the original inventor who have not shared in the costs of invention.⁴ If successful inventions are quickly imitated by free riders, competition will drive prices down to a point where the inventor receives no return on the original investment in research and development.⁵ As a result, the original inventor may be unable to appropriate enough of the social value of the invention to justify the initial research and development expenditures.⁶ The high risk involved in research compounds the likelihood of underinvestment in invention.⁷ Thus inventions with potentially great social benefits might never come about, or at least might be significantly delayed, unless private returns to invention were increased above their free market levels. Patents serve to bring the private benefits of inventions in line with their social value by allowing inventors to use their monopoly positions to extract a price that more closely approaches the value that users receive from inventions.⁸

4. See WARD S. BOWMAN, JR., *PATENT AND ANTITRUST LAW* 2-3 (Chicago, 1973); FREDERIC M. SCHERER, *INDUSTRIAL MARKET STRUCTURE AND ECONOMIC PERFORMANCE* 379-99 (Rand McNally, 1970); John S. McGee, *Patent Exploitation: Some Economic and Legal Problems*, 9 J. L. & ECON. 135 (1966); Dan Usher, *The Welfare Economics of Invention*, 31 *ECONOMICA* 279 (1964); Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources for Invention*, in *RATE AND DIRECTION OF INVENTIVE ACTIVITY* at 609; Richard R. Nelson, *The Economics of Invention: A Survey of the Literature*, 32 J. BUS. 101 (1959); FRITZ MACHLUP, *AN ECONOMIC REVIEW OF THE PATENT SYSTEM*, Subcomm. on Patents, Trademarks, and Copyrights of the Senate Comm on the Judiciary, Study No. 15, 85th Cong., 2d Sess. (GPO, 1958); Michael Polanyi, *Patent Reform*, 11 *REV. OF ECON. STUDIES* 61 (1944); Arnold Plant, *The Economic Theory Concerning Patents for Inventions*, 1 *ECONOMICA* 30 (1934).

5. The costs of research and development leading to a new invention are one-time, "sunk" costs. Once the invention has been made and disclosed, the marginal cost of using more intensively the knowledge gained through prior research is zero. There may still be other variable costs associated with producing goods and services through use of the invention, such as costs for labor and materials, but the invention cost is fixed in the past and need not be incurred again no matter how intensively the invention is used. In a competitive market in which anyone is free to use the invention to produce goods without obligation to the inventor, the cost of the goods sold will be driven down to a price approaching the marginal cost of their production, and thus the selling price will not allow for any return on the sunk cost of the research and development necessary to make the invention in the first place. See Machlup, Subcomm. on Patents, Study No 15 at 58-59.

6. See SCHERER, *INDUSTRIAL MARKET STRUCTURE* at 384; William F. Baxter, *Legal Restrictions on Exploitation of the Patent Monopoly: An Economic Analysis*, 76 *YALE L. J.* 267, 268-69 (1966); Machlup, Subcomm on Patents, Study No. 15 at 57-58.

7. Arrow, *Economic Welfare* at 614-15; Richard R. Nelson, *The Simple Economics of Basic Scientific Research*, 67 *J. POL. ECON.* 297 (1959). Arrow suggests that since the output of inventive effort is uncertain, and since there is no adequate market mechanism for shifting this risk, risk aversion can be expected to lead to underinvestment in invention. Arrow, *Economic Welfare* at 611-14, 616. McGee argues that inventors may display risk preference and therefore overinvest in inventive activity. McGee, 9 *J. L. ECON.* at 136. See EDWIN MANSFIELD, ET AL., *RESEARCH AND INNOVATION IN THE MODERN CORPORATION* 18-63 (Norton, 1971) (finding that firms tend to invest only in R & D projects with high estimated probability of success, but that firms tend to overpredict success).

8. See Baxter, 76 *YALE L. J.* at 270. An extreme version of this argument (attributed to John Stuart Mill) is that a patent holder can never use the patent monopoly to extract more than the value of the inventor's efforts to society, since consumers will pay the patent holder no more than the invention is worth to them. See Machlup and Penrose, 10 *J. ECON. HIST.* at 20. This argument rests on the often dubious assumption that the invention would never have been made were it not for the efforts of the inventor who patented it. If instead one assumes that somebody else would eventually have made the same invention, it is no longer clearly appropriate to attribute the full social value of the invention to the efforts of the first inventor. See BOWMAN, *PATENT AND ANTITRUST LAW* at 17.

Challenges to the incentive to invent justification for patents have taken a variety of forms. The most fundamental objection is that subjecting new inventions to monopoly control restricts their use and thereby reduces the social benefits of patented inventions. It is open to question whether it is necessary to endure the output-restricting effects of patent monopolies in order to stimulate invention.⁹ In some cases the head start advantage gained by being first in the market with a new invention may provide a sufficient incentive to promote investment in research.¹⁰ Similarly, the need to keep up with the technological progress of market rivals might stimulate invention without further incentives, or non-patent barriers to market entry may give enough protection from competition to make research and development profitable without patents.¹¹

Another objection to the incentive to invent justification is that patent incentives may distort economic activity in ways that undermine efficiency. For example, competing firms hoping to make patentable inventions ahead of their rivals in order to win lucrative patents may spend too much money trying to develop inventions quickly, when the same result could be achieved at less social cost through a less accelerated research effort.¹² The patent system may divert too many resources away from productive activities in which returns are limited by the forces of competition, or it may divert resources from research in fields where patent protection is unavailable to research that is more likely to yield profitable patent monopolies.

Finally, some writers have argued that the patent system may hinder progress through its effects on the research efforts of persons other than the patent holder. The existence of a patent may undermine the incentives of these other persons to make improvements in patented

9. Some critics of the patent system have suggested that government could stimulate invention at less social cost by awarding prizes to inventors in lieu of patents. See, for example, Polanyi, 11 *Rev. of Econ. Studies* at 65. Machlup states that such proposals for alternatives to patents are almost as old as the patent system, and notes that James Madison proposed a system of prizes and bonuses to inventors in lieu of patents at the Constitutional Convention in 1787. Machlup, *Subcomm on Patents*, Study No. 15 at 15 n. 83; see also Hamilton, *Patents and Free Enterprise* at 24-25.

Others have argued that inventions arise inevitably with or without government incentives when the state of basic knowledge and other social conditions become favorable. See ABBOTT P. USHER, *A HISTORY OF MECHANICAL INVENTIONS* 1-31 (McGraw Hill, 1929); S.C. GILFILLAN, *THE SOCIOLOGY OF INVENTION* 71-78 (Follett, 1935); WILLIAM F. OGBURN, *SOCIAL CHANGE* 86 (Huebsch, 1923); Machlup, *Subcomm on Patents*, Study No. 15 at 23 n. 120, 24 n. 127; Alfred E. Kahn, *Fundamental Deficiencies of the American Patent Law*, 30 *AM. ECON. REV.* 475, 479-81 (1940).

10. SCHERER, *INDUSTRIAL MARKET STRUCTURE* at 384-87; Machlup, *Subcomm on Patents*, Study No. 15 at 23 n. 121, 24 n. 128, 38-39 and sources cited therein. See generally Jack Hirshleifer, *The Private and Social Value of Information and the Reward to Inventive Activity*, 61 *AM. ECON. REV.* 561 (1971) (arguing that apart from the profits obtained from patents, innovators may profit by using their advance knowledge, or "foreknowledge," of new technologies to speculate in assets whose value will be affected by the release of the new technology).

11. SCHERER, *INDUSTRIAL MARKET STRUCTURE* at 387; see Arrow, *Economic Welfare* at 619-22 (arguing that if the problem of appropriability is ignored, firms in a competitive market will have a greater incentive to invent than would a monopolist because the competitive firm's incentive is equal to the full cost reduction on the competitive output, while the monopolist's incentive is diminished by the set-off of preinvention monopoly profits).

12. RICHARD POSNER, *ECONOMIC ANALYSIS OF LAW* 54 (Little, Brown, 2d ed 1977); Yoram Barzel, *The Optimal Timing of Innovations*, 50 *REV. ECON. & STAT.* 348 (1968).

technologies.¹³ Worse yet, it may force competitors of the patent holder to waste time and effort finding duplicative solutions to technological problems in order to avoid infringement.¹⁴

2. INCENTIVE TO DISCLOSE.

The incentive to disclose argument, which has been more popular with the courts than with commentators, rests on the premise that in the absence of patent protection inventors would keep their inventions secret in order to prevent competitors from exploiting them.¹⁵ Secrecy prevents the public from gaining the full benefit of new knowledge and leads to wasteful duplicative research.¹⁶

Economists have questioned whether patents in fact promote disclosure of inventions that would otherwise be kept secret.¹⁷ Secrecy is not

13. SCHERER, INDUSTRIAL MARKET STRUCTURE at 392; Baxter, 76 YALE L. J. at 270; Machlup, Subcomm on Patents, Study No. 15 at 64; Kahn, 30 AM. ECON. REV. at 482; PLANT, 1 ECONOMICA at 46. Edmund Kitch argues that this particular effect of the patent monopoly promotes efficiency in research.

The essence of the argument that patents undermine the incentives of persons other than the patent holders to make improvements in patented inventions is that once an invention is patented, only the patent holder and her licensees are able to reap rewards in the market for research leading to further refinements in the invention, while in the absence of patents competitors would also stand to benefit from such research. This argument overlooks the fact that the value of the improvement to the patent holder and her licensees might still give other researchers an incentive to develop it.

14. Judicial opinions often cite the incentive to invent around patents as a positive benefit of the patent system, reasoning that inventing around patents requires further research and thus stimulates further progress. See, for example, *Yarway Corp. v. Eur-Control U.S.A.*, 775 F.2d 268, 277 (Fed.Cir.1985); *State Indus. v. A.O. Smith Corp.*, 751 F.2d 1226, 1236 (Fed.Cir.1985); *Kimberly-Clark Corp. v. Johnson & Johnson*, 745 F.2d 1437 (Fed.Cir.1984). See also John C. Stedman, *Invention and Public Policy*, 12 J. L. & CONTEMP. PROBS 649, 662 (1947).

But some commentators argue that inventing around patents is socially wasteful in that it diverts resources from other productive uses to the task of finding redundant solutions to already solved problems. See, for example, Donald F. Turner, *The Patent System and Competitive Policy*, 44 N.Y.U. L. REV. 449, 455 (1969); Machlup, Subcomm on Patents, Study No 15 at 51. Machlup argues that research to find duplicative solutions to problems is particularly wasteful when done by the holder of the patent on the first solution in order to prevent competitors from inventing around the patent. Id. See BOWMAN, PATENT AND ANTITRUST LAW at 21-22 (arguing that inventing around patents is not necessarily socially wasteful if it leads to the development of superior products or processes, and that it is reasonable to assume that those who incur the costs of inventing around patents foresee inventing superior substitutes); SCHERER, INDUSTRIAL MARKET STRUCTURE at 386-87 (noting that although the pace of technological advance has probably been accelerated in some fields by efforts to invent around patented technologies, resources devoted to circumventing patents might otherwise be allocated to activities with "higher social incremental payoffs"); Martin J. Adelman, *The Supreme Court, Market Structure and Innovation: Chakrabarty, Rohm and Haas*, 27 ANTITRUST BULL. 457, 464 (1982) (arguing that efforts to invent around patent are unlikely to occur unless competitor and patent holder have different views of cost of developing alternative technology and thus are unable to agree on royalty for use of patented technology that makes it uneconomic to develop an alternative).

15. *Universal Oil Prods. Co. v. Globe Oil & Ref. Co.*, 322 U.S. 471, 484 (1944); *Grant v. Raymond*, 31 U.S. 218, 247 (1832); *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 331 (1945); *Cross v. Iizuka*, 753 F.2d 1040, 1046 (Fed.Cir.1985); *Flick-Reedy Corp. v. Hydro-Line Mfg. Co.*, 351 F.2d 546, 550-51 (7th Cir.1965); BOWMAN, PATENT AND ANTITRUST LAW at 12-13; S. C. Gillfillan, *The Root of Patents, or Squaring Patents by Their Roots*, 31 J. PAT. OFF. SOC'Y 611, 612 (1949) (deriding "disclosure incentive" as "minor motive" for granting patents and one falling "outside the root of patents").

16. Martin J. Adelman, *Property Rights Theory and Patent-Antitrust: The Role of Compulsory Licensing*, 52 N.Y.U. L. REV. 977, 982 (1977).

17. See SCHERER, INDUSTRIAL MARKET STRUCTURE at 381; Machlup, Subcomm on Patents, Study No. 15 at 32-33, 53, 76. See also CANADA DEP'T. OF CONSUMER & CORP. AFFAIRS, WORKING PAPER ON PATENT LAW REVISION 40-42 (1976) ("Canada Working Paper").

always a practical strategy for protection,¹⁸ and often secret technologies can eventually be uncovered through reverse engineering.¹⁹ Where long term secrecy is feasible, patent protection for a mere seventeen years might not be an attractive alternative.²⁰ Moreover, any technology that can be exploited in secrecy by its inventor can probably also be exploited in secrecy by an infringer, making a patent on such an invention difficult to enforce. Finally, some people have questioned whether patent disclosures in fact convey enough information to be useful to the public.²¹ The proposition that patents promote disclosure of new inventions by rewarding those who disclose their inventions in patent applications is thus open to doubt on a number of grounds.

Nonetheless, it seems likely that the patent system at least facilitates disclosure by creating rights in inventions that survive disclosure. Secrecy makes it difficult for inventors to sell or license their inventions to others because it is difficult to persuade someone to pay for an idea without disclosing it, yet once the invention is disclosed, the inventor has nothing left to sell. The patent system solves this problem by permitting inventors to disclose their patented inventions to potential users without losing their exclusive rights. If persons receiving disclosure use patented inventions without permission, the patent holders may sue them for infringement.²²

* * *

There is considerable empirical evidence suggesting that technological change has been an extremely important source of economic growth over time,²³ and that levels of invention are responsive to economic

18. Secrecy is impractical when efficient exploitation of the invention requires communication to a large number of firms. See BOWMAN, PATENT AND ANTITRUST LAW at 13.

19. Plant, 1 *Economica* at 44. See generally *Paulik v. Rizkalla*, 760 F.2d 1270, 1276 (Fed.Cir.1985) (“[I]t is a rare invention that cannot be deciphered more readily from its commercial embodiment than from the printed patent”).

20. BOWMAN, PATENT AND ANTITRUST LAW at 13.

21. Critics of the patent system charge that patent applicants often deliberately withhold important information from patent specifications so that they may continue to protect their “know-how” through trade secrecy. See, for example, *Brenner v. Manson*, 383 U.S. 519, 533-34 (1966). See also Canada Working Paper, at 50-53; Machlup, Subcomm on Patents, Study No. 15 at 32-33; WILLIAM D. NORDHAUS, INVENTION, GROWTH, AND WELFARE: A THEORETICAL TREATMENT OF TECHNOLOGICAL CHANGE 89 (MIT, 1969) (“It is well known that a firm tries not to disclose key parts of the invention in order to reduce the chance of imitation, thereby reducing the effective diffusion of knowledge”); S.C. GILFILLAN, INVENTION AND THE PATENT SYSTEM 61 (GPO, 1964) (“The information disclosed in patents is often not enough, taken by itself, to be of much use to the receiver”); Barkev S. Sanders, Joseph Rossman, and L. James Harris, *Attitudes of Assignees Toward Patented Inventions*, 2 PAT. TRADEMARK & COPYRIGHT J. RES. & EDUC. 463, 467-68 (Dec. 1958) (estimating that about one-half of patented inventions cannot be used without supplementary know-how).

22. Polanyi, 11 *REV. OF ECON. STUDIES* at 64. See also Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 *J. L. & ECON.* 265, 277-78 (1977) (asserting that patent law defines a framework of legal relations among firms to facilitate disclosure, licensing, etc.).

23. See, for example, Moses Abramovitz, *Resource and Output Trends in the U.S. Since 1870*, 46 *AM. ECON. REV.* 5 (1956) (Amer Econ Assoc Papers and Proceedings); Robert M. Solow, *Technological Change and the Aggregate Production Function*, 39 *REV. ECON. & STAT.* 312, 320 (1957) (estimating that approximately 80 percent of the growth in nonfarm output per worker in the United States between 1909 and 1949 was attributable to technological change rather than increased capital intensity); EDWARD F. DENISON, *THE SOURCES OF ECONOMIC GROWTH IN THE UNITED STATES AND THE ALTERNATIVES BEFORE US* 271-72 (Brookings Inst., 1962) (estimating that 36 percent of the rise in

stimuli.²⁴ But it does not necessarily follow that patent protection is necessary to preserve adequate economic incentives for invention and innovation.

Eric Schiff has compared the historical record of industrial development of countries with and without patent systems during the late nineteenth and early twentieth centuries, finding little evidence that the lack of a patent system hampered industrialization.²⁵ But the two countries he studied that did not have patent systems—the Netherlands and Switzerland—may have been free riding on domestic and foreign inventions that were stimulated by patent protection abroad.²⁶ Other studies have attempted to determine, through interviews and questionnaires, the impact of patent incentives on research and development (R & D) decision making in firms. C. T. Taylor and Z. A. Silberston, in their study of the economic impact of the patent system in the United Kingdom, found that the importance of patent protection to the R & D decision making of firms varied across industries.²⁷ They found that patent protection had a strong influence on the willingness of pharmaceutical firms to invest in research and development, but had no more than a marginal impact on R & D expenditures in the basic chemicals industry.²⁸ In a similar study of U.S. firms, F. M. Scherer found that

output per worker between 1929 and 1957 was attributable to the advance of scientific and technological knowledge; EDWARD F. DENISON, ACCOUNTING FOR UNITED STATES ECONOMIC GROWTH, 1929-69 128 (Brookings Inst., 1974) (estimating that 27 percent of U.S. economic growth between 1929 and 1969 was attributable to advances in knowledge); Frederic M. Scherer, *Inter-Industry Technology Flows and Productivity Growth*, 64 REV. ECON. & STAT. 627 (1982) (estimating that in the post-War era R & D has added to the rate of growth by about one percentage point per year, or about half of the annual rate of growth in productivity).

24. See generally JACOB SCHMOOKLER, INVENTION AND ECONOMIC GROWTH (Harvard, 1966) (finding strong correlation between level of invention as measured by patent statistics and level of investment in capital goods, with peaks and troughs in invention tending to precede rather than to follow peaks and troughs in investment, and concluding that patented inventions are made in response to rising demand in an industry); EDWIN MANSFIELD, ET AL., RESEARCH AND INNOVATION (showing correlation between research and development funds expended and expected success of a research project and profitability of its results, and showing that timing of research and development and innovation are responsive to profit expectations.)

25. ERIC SCHIFF, INDUSTRIALIZATION WITHOUT NATIONAL PATENTS 34-41, 96-106 (Princeton, 1971). Schiff's study focuses on the experiences of the Netherlands, which abolished its patent system in 1869 and did not replace it until 1912, and Switzerland, which did not introduce a comprehensive patent system until 1907.

26. Id. at 23-24, 102-04. During the period under study, citizens of both Switzerland and the Netherlands were eligible for foreign patent protection under the national patent laws of other countries. Id. at 21-23. Schiff found a marked increase in the number of foreign patent applications filed by Dutch citizens after the Netherlands introduced its own patent system, which he interprets as evidence that the availability of patent protection in the Netherlands stimulated an increase in domestic inventive efforts. Id. at 42-51. Scherer suggests a different interpretation of Schiff's data: the passage of a Dutch patent law may have made Dutch citizens more patent-conscious and induced the growth of patent law firms, leading to more patenting abroad of inventions that might have been made with or without patent protection. FREDERIC M. SCHERER, THE ECONOMIC EFFECTS OF COMPULSORY LICENSING 36-37 (N.Y.U., 1977).

27. C. T. TAYLOR AND Z. A. SILBERSTON, THE ECONOMIC IMPACT OF THE PATENT SYSTEM 331-50 (Cambridge, 1973).

28. Attempting to explain this difference, they noted that research expenditures are higher relative to sales volume in the pharmaceutical industry than in the chemical industry, that there are more non-patent barriers to competition in the chemical industry, that patents provide stronger protection in the pharmaceutical field than in the chemical field because of the relative ease of inventing around chemical patents, and that secrecy is not practical in the pharmaceutical industry. Id. at 332-36.

respondents did not consider patents to be particularly important in R & D decision making—except when patent lawyers prepared the responses.²⁹ Nonetheless, the authors of both studies interpreted their results to suggest that weakening patent protection by providing for compulsory licensing of patented inventions on reasonable terms would lead to greater reliance by firms on secrecy instead of patent protection.

Another empirical approach to determining the adequacy of the current level of patent incentives is to measure the difference between private and social rates of return to investments in research and development. In case studies of seventeen industrial innovations, Edwin Mansfield and his colleagues found that the median estimated social rate of return to investment in R & D was 56 percent, while the median private rate of return was about 25 percent.³⁰ According to the study, “in about 30% of the cases, the private rate of return was so low that with the benefit of hindsight no firm would have invested in the innovation, but the social rate of return was so high that from society’s standpoint the investment was entirely worthwhile.”³¹ While the authors caution against drawing any inferences about the extent of underinvestment in research and development from their results, the data are certainly consistent with the view that the current level of incentives to make and disclose new inventions is if anything too low. Other studies have tentatively suggested that private rates of return from investments in research and development are significantly higher than returns available on other investments,³² offering further evidence that firms underinvest in research and development.

* * *

C. *Incentive to Innovate and the Prospect Theory*

Although the courts have relied primarily on the incentive to invent and incentive to disclose arguments in support of the patent system,³³ commentators have offered the additional argument that a patent monopoly is necessary to induce firms to invest in “innovation”—i.e., putting existing inventions to practical use. Even after an invention has been made, considerable further investment is often necessary before it is ready for commercial exploitation. Further research and development may be needed to establish the commercial feasibility of the invention

29. SCHERER, COMPULSORY LICENSING at 52–62.

30. Edwin Mansfield, et al, *Social and Private Rates of Return from Industrial Innovations*, 91 Q J ECON 221, 233–34 (1977).

31. Id at 235. The gap between social and private rates of return was larger for more important innovations and for innovations that could be imitated at small cost by competitors. Id. at 237.

32. See, for example, EDWIN MANSFIELD, INDUSTRIAL RESEARCH AND TECHNOLOGICAL INNOVATION 65–80 (Norton, 1968).

33. A rare possible exception is the concurring opinion of Judge Frank in *Picard v. United Aircraft Corp.*, 128 F.2d 632 (2d Cir.1942), in which he states: “The controversy between the defenders and assailants of our patent system may be about a false issue—the stimulus to invention. The real issue may be the stimulus to investment.” Id. at 643. This statement suggests a view of the patent system as promoting innovation as well as invention. See also *SCM v. Xerox*, 645 F.2d 1195, 1206 n. 9 (2d Cir.1981).

and to bring it into large scale production. Use of the invention may call for the construction of new plant and equipment. A new product invention may require further refinements to suit the tastes of consumers, as well as promotion and advertising expenditures to persuade consumers to buy it. These additional investments may dwarf the initial research expenditures in making the invention.³⁴ The protection of a patent monopoly enhances the likelihood that a firm will be willing to undertake these investments.

Like the incentive to invent and incentive to disclose theories, the incentive to innovate theory holds that the patent system achieves its objectives by offering monopoly profits as a lure to promote desired behavior. But it differs from these other theories with respect to the time frame in which the incentive matters. The incentive to invent and incentive to disclose theories are concerned with incentives that operate before a patent issues. These theories assume that the patent monopoly has already served its social function of promoting invention and disclosure as soon as the patent issues, and that enforcement of the patent thereafter is simply the regrettable price that society must pay in order to live up to its end of the bargain.³⁵ Reducing the strength of existing patents would thus presumably offer short run social benefits by increasing the use of already patented inventions, although in the long run it would reduce incentives to make and disclose new inventions. By contrast, the incentive to innovate theory gives existing patents an ongoing role in preserving the incentives of patent holders to invest in development during the patent term. Reducing the strength of existing patent monopolies might thus have the effect of undermining incentives to put existing technologies into use.³⁶

34. EDWIN MANSFIELD, ET AL. *THE PRODUCTION AND APPLICATION OF NEW INDUSTRIAL TECHNOLOGY* (Norton, 1977); Scherer, *Industrial Market Structure* at 381 (noting that development outlays constitute more than three fourths of all industrial R & D expenditures); JOHN JEWKES, DAVID SAVERS, AND RICHARD STILLERMAN, *THE SOURCES OF INVENTION* 212-17 (MacMillan, 2d ed 1969). See also FREDERIC M. SCHERER, *INNOVATION AND GROWTH: THE SCHUMPETERIAN PERSPECTIVES* 3-7 (MIT, 1984) (explaining that firms are more willing to invest large sums in development than in invention because of the unpredictability of initial technical breakthroughs).

35. As Machlup explains:

If one accepts the theory that patent protection has the social function of serving as an incentive for inventive activity, one accepts, by implication, that the beneficial effects of this incentive system must flow, not from existing patents, but from the hope for future profits from future patents; this hope may induce people to undertake certain risky investments and useful activities—to wit, financing and arranging industrial research—which they might not undertake otherwise. . . . [E]xisting patents impose a burden on society, a burden which it has decided to carry in order to hold out to people the chance of obtaining future profits from future patents on future inventions.

Machlup, *Subcomm on Patents, Study No. 15* at 55.

36. While Machlup notes the emergence of "incentive to innovate" arguments and acknowledges that existing patents would play an ongoing role in stimulating post-patent innovation as opposed to pre-patent invention, he does not analyze these arguments beyond stating that they require demonstrating "that innovations based on patentable inventions are socially more desirable than other innovations, and that the free-enterprise system would not, without monopoly incentives, generate investment opportunities to an adequate extent." *Id.* at 56. He also suggests, without elaboration, that the use of patents to promote innovation rather than invention might not be properly subsumed in the Constitutional goal of promoting "the Progress of Science and useful Arts." *Id.*

1. THE SCHUMPETERIAN THEORY.

The thesis that monopolies are conducive to innovation is generally associated with the work of Joseph Schumpeter on economic development.³⁷ While Schumpeter does not focus exclusively on either technological innovations or the patent system, his analysis suggests how patent monopolies might promote technological innovation.³⁸ He emphatically distinguishes innovation from invention, noting that invention itself produces "no economically relevant effect at all."³⁹ Innovation, on the other hand, brings about incessant revolutionary changes in the economic system through what Schumpeter calls "a process of creative destruction."⁴⁰ In this process, new firms continually arise to carry out new innovations, driving out old firms that provide obsolete goods and services. Competition from new commodities and new technologies is far more significant in this model than price competition among firms offering similar goods and services.

Schumpeter argues that in a dynamic model of the capitalist system, monopoly conditions may promote innovation and growth more effectively than competition. He bases this view primarily on "the tritest common sense," although he also notes as a matter of casual observation that economic advances are more frequently traced to big business than to firms in atomistically competitive industries.⁴¹ He reasons that in the rapidly changing conditions of a capitalist economy, investment in innovation requires some sort of hedge against losses. Protection from competition also allows firms "to gain the time and space for further developments." Finally, and perhaps most important, the prospect of earning more than an ordinary return permits innovators to secure the

37. JOSEPH SCHUMPETER, *CAPITALISM, SOCIALISM AND DEMOCRACY* 81-110 (Harper & Row, 3d ed 1950); JOSEPH SCHUMPETER, *1 BUSINESS CYCLES* 84-192 (McGraw Hill, 1939); JOSEPH SCHUMPETER, *THE THEORY OF ECONOMIC DEVELOPMENT* 61-94 (Transaction reprint, Redvers Opie trans 1983). See also, generally, Scherer, Schumpeterian Perspective; Morton I. Kamien and Nancy L. Schwartz, *MARKET STRUCTURE AND INNOVATION* (Cambridge, 1982); Vernon W. Ruttan, *Usher and Schumpeter on Invention, Innovation, and Technological Change*, 73 Q. J. ECON. 596 (1959); Carolyn S. Solo, *Innovation in the Capitalist Process: A Critique of the Schumpeterian Theory*, 65 Q. J. ECON. 417 (1951).

38. Schumpeter defines innovation broadly to include not only putting new technological inventions into practice, but also carrying out any new combination of productive resources that amounts to "the setting up of a new production function." Schumpeter, *1 Business Cycles* at 87. In Schumpeter's usage the term innovation includes the development of new consumer goods, new methods of production, new markets, and new forms of industrial organization. Id. at 84; SCHUMPETER, *CAPITALISM, SOCIALISM & DEMOCRACY* at 82-83.

39. SCHUMPETER, *1 BUSINESS CYCLES* at 84. See also Schumpeter, *The Theory of Economic Development* at 88-89 ("As long as they are not carried into practice, inventions are economically irrelevant. And to carry any improvement into effect is a task entirely different from the inventing of it.").

40. SCHUMPETER, *CAPITALISM, SOCIALISM & DEMOCRACY* at 83.

41. Id. at 82. For other perspectives, see generally Arrow, *Economic Welfare* (arguing that incentive to innovate should be greater for competitive firms than for monopolists); Henry Villard, *Competition, Oligopoly and Research*, 66 J POL ECON 483 (1958) (arguing that "competitive oligopoly," characterized by a small number of big firms, promotes research better than either pure competition or monopoly).

Subsequent empirical studies to test Schumpeter's impression that monopoly conditions are more conducive to innovation than competition have been inconclusive. Scherer, *Schumpeterian Perspectives* at 169-255 and sources cited therein; Kamien and Schwartz, *Market Structure* at 49-104 and sources cited therein; Scherer, *Industrial Market Structure* at 363-64 and sources cited therein.

financial backing of capitalists and to bid productive resources away from their current uses. A monopoly position secured through patent protection thus may increase rather than restrict the use of known technologies by facilitating the commercial introduction of such technologies by innovating firms.

2. THE PROSPECT THEORY.

Edmund Kitch offers a more elaborate analysis of the role of patents in post-invention innovation in what he calls the "prospect theory" of patent protection. According to this theory, the patent system promotes efficiency in the allocation of resources to the development of existing inventions by awarding exclusive, publicly recorded ownership in new technological "prospects" shortly after their discovery. The term "prospect theory" highlights an analogy between the functions of patent monopolies and awards of exclusive mineral claims in government owned lands in the American West.⁴²

The prospect theory offers a justification for patents that is in keeping with broader theories of property rights elaborated by Harold Demsetz⁴³ and Richard Posner.⁴⁴ These commentators argue that private property rights promote greater efficiency in the use of resources than communal ownership because individuals can be expected to exploit communally owned resources too quickly in order to appropriate the resources for themselves before other community members deplete them. The result will be an exhaustion of resources by individuals in the present, with the costs to be borne by the community as a whole in the future. Private ownership avoids this problem by placing property owners in a position to realize the full costs as well as the benefits of exploitation, thereby internalizing what would be external costs in a system of communal ownership.

The analogy between patents and other types of property⁴⁵ is not immediately apparent because inventions that can be used to an unlimited extent without exhaustion do not seem to present the same problems of scarcity and depletion as tangible resources. Kitch clarifies the analogy by noting that while information may be used without exhausting it,

42. The analogy between patents and mineral claims was foreshadowed by George Frost in a footnote in a 1946 article. George Frost, *Legal Incidents of Non-Use of Patented Inventions Reconsidered*, 14 GEO. WASH. L. REV. 273, 279 n. 24 (1946) ("An interesting analogy may be drawn between the law relating to patents for inventions and the mining law, an analogy which emphasizes the fact that patents are only one of the many situations where an exclusive grant is provided to encourage effort and capital investment.").

43. Harold Demsetz, *Toward a Theory of Property Rights*, 57 AM. ECON. REV. 347 (1967) (Am Econ Assoc Papers & Proceedings).

44. POSNER, *ECONOMIC ANALYSIS OF THE LAW* at 27-31.

45. While judicial decisions often speak of patent rights as a species of "property," economists studying the patent system for the most part have not drawn on property rights theory. Indeed, Fritz Machlup argues that the characterization of patents as creating "property rights" in inventions reflects confusion as to the difference between "property" and "monopoly." Machlup, *Subcomm on Patents*, Study No. 15 at 53-54. Machlup and Penrose trace this confusion to a deliberate "political ruse" advanced by nineteenth century advocates of the patent system in order to claim for their cause the respectable connotations of the word "property" in place of the less favorable connotations of the word "privilege." Machlup and Penrose, 10 J. Econ Hist at 16-17.

resources available to use information are scarce, and property rights in inventions can improve the efficiency with which these resources are managed.

Kitch contends that patents promote efficiency in the use of resources to develop patented inventions in part by putting patent owners in a position to coordinate subsequent research and development efforts.⁴⁶ Since the owner of a patent has the exclusive right to exploit the technology defined in the patent claims, no one else is likely to invest in developing this technology without first making arrangements with the patent owner; otherwise, the subsequent researchers might ultimately be unable to benefit from their own investment in development for lack of a license to the underlying patented technology. The patent owner is thus in a position to cause researchers to share information and thereby avoid duplicative research efforts. In the absence of a patent, different investigators might try independently to develop the same invention in secrecy, each working without the benefit of the knowledge gained through the efforts of the others. Exclusive rights in technological prospects thus promote efficiency in research after the patent issues by putting the patent holder in a position to monitor and control such research.

Kitch finds support for the thesis that patent rights play a significant role in the ongoing development of patented inventions in two features of the patent system. First, the patent statute authorizes and promotes patent protection at an early stage in the development of new inventions,⁴⁷ making it likely that further research will remain to be done in order to develop an invention during the term of the patent. According to Kitch, inventions are commonly patented long before it becomes commercially feasible to exploit them.⁴⁸ The inventor who delays filing a patent application while continuing to develop the invention may lose the right to patent protection entirely if in the interim the

46. *Id.* at 276. Kitch also asserts that patents promote efficiency in the development of technological prospects by preserving the incentives of patent holders to develop their inventions without fear that the results of these efforts will be appropriated by competitors and by allowing patent holders to disclose their technological achievements to other firms without losing their exclusive rights, thereby facilitating the transfer of technology among firms and reducing the amount of duplicative research efforts. *Id.* at 276–79.

47. In order to obtain a patent, an applicant need only show that the invention works—i.e., that it is capable of performing some useful function. The applicant need not show that the invention works better than other means of accomplishing the same purpose, nor even that it works well. All that is necessary is a written disclosure of the invention sufficient to enable someone skilled in the field to reduce the invention to practice—i.e., to make and use it. 35 U.S.C.A. §§ 102(g), 112 (1982). The applicant does not have to describe every possible embodiment of the invention, although § 112 does require disclosure of the “best mode” of practicing the invention known to the inventor at the time the patent application is filed.

48. Empirical evidence contradicts Kitch on this point. Barkev Sanders, in a study of assigned patents issued in 1938, 1948, and 1952, found that of the estimated 10 percent of patented inventions ever put to commercial use, about 40 percent were first put to use before the patent application was filed, about 50 percent were first put to use while the application was pending, and only about 10 percent were first put to use after issuance of the patent. Barkev Sanders, *Speedy Entry of Patented Inventions into Commercial Use*, 6 *Pat, Trademark & Copyright J of Research & Educ* 87 (1962). See also Scherer, *Compulsory Licensing at 9–10* and sources cited therein (indicating that the making of a patentable invention accompanies or follows commercial development more frequently than it precedes a lengthy period of subsequent development).

inventor makes a public use of the invention⁴⁹ or begins to exploit it commercially in secrecy;⁵⁰ if the invention is described in the literature or used by others; if intervening progress in the field makes the invention obvious; or if a competitor files an earlier patent application on the same invention.⁵¹

Second, Kitch asserts that the patent monopoly is generally not limited to the primitive version of the invention described in the patent application, but extends to subsequent refinements as well.⁵² Subsequent improved versions of the invention falling within the scope of the patent claims and newly discovered uses for the invention, although the product of further research by others, will still be subject to the control of the patent holder until the patent expires.⁵³ The patent holder will therefore stand to benefit from subsequent research to improve the invention, while other researchers will have little incentive to pursue further research on a patented invention without first arranging for a license to the underlying patent. Kitch argues that taken together, these features of the patent system tend to promote control over subsequent research on patented inventions by patent holders and their licensees, and that such control promotes efficiency.

§ 1.5[a][2] ADDITIONAL THEORIES

Two other theories relating to the patent law have been discussed in the literature: the “rent dissipation theory” articulated in Mark F. Grady & Jay I. Alexander, *Patent Law and Rent Dissipation*, 78 VA. L. REV. 305 (1992), and the “race to invent” theory set forth in Robert P. Merges & Richard R. Nelson, *On the Complex Economics of Patent Scope*, 90 COLUM. L. REV. 839 (1990). The Merges and Nelson article is part of the burgeoning literature discussing the appropriate way to treat basic and improvement inventions. See generally Peter S. Menell, *Intellectual Property: General Theories*, ENCYCLOPEDIA OF LAW & ECONOMICS (2000).

As explained by Professor Eisenberg, one important economic aspect of the patent system that is generally overlooked concerns the

49. 35 U.S.C. § 102(b) (1982); *Egbert v. Lippmann*, 104 U.S. 333 (1881).

50. See generally *Pennock v. Dialogue*, 27 U.S. (2 Pet) 1 (1829); *Metallizing Engineering Co. v. Kenyon Bearing & Auto Parts Co.*, 153 F.2d 516 (2d Cir.1946).

51. Although in the U.S. patent system patent priority is awarded to the first inventor rather than to the first to file a patent application, the date of the patent application is presumed to be the same as the applicant's date of invention unless the inventor is able to prove an earlier invention date. See 35 U.S.C.A. § 102(g) (1982); *Lacotte v. Thomas*, 758 F.2d 611 (Fed.Cir.1985).

52. Kitch, 20 J L & Econ at 268–69. As an empirical matter, this assertion is also subject to doubt. The scope of patent claims will often have to be quite narrow in order to distinguish the patented invention from the prior art. See generally Robert P. Merges, *Commercial Success and Patent Standards: Economic Perspectives on Innovation*, 76 CAL. L. REV. 803, 840–41 (1988) and sources cited therein.

53. The subsequent inventor might be entitled to a patent on her improvement or new use of the earlier invention, but would not be able to exploit this patent without the permission of the holder of the patent on the underlying invention. The patent on the improvement or new use would enable the subsequent inventor to prevent the underlying patent holder from using this later invention. Thus no one could use the improvement without the permission of both patent holders. See, for example, *Marconi Wireless Tel. Co. v. DeForest Radio Tel. & Tel. Co.*, 236 F. 942 (S.D.N.Y.1916), *aff'd*, 243 F. 560 (2d Cir.1917).

extensive literature on the relationship between industrial structure and inventive activity. However, while the precise relationship between market structure and innovation is difficult to quantify, a strong patent system should reduce any disparity in incentives to innovate with respect to different market structures. In effect the existence of a patent system makes the industrial structure of a particular industry essentially irrelevant to the innovation process. This may be the most important practical effect of any patent system. See Martin J. Adelman, *The Supreme Court, Market Structure and Innovation: Chakrabarty, Rohm and Haas*, 27 ANTITRUST BULL. 457-61 (1982).

§ 1.5[b] PHILOSOPHICAL RATIONALES

In addition to economical studies, legal scholars have frequently, and productively, employed philosophical studies as a prism for critical thinking about the patent laws. In doing so, they have stressed the patent regime as one of property. Certainly the foundational philosophical text for these studies is John Locke's SECOND TREATISE OF GOVERNMENT. See JOHN LOCKE, THE SECOND TREATISE OF GOVERNMENT ¶ 27 (1690), in TWO TREATISES OF GOVERNMENT (Peter Laslett ed. 1960). Commentators have turned with less enthusiasm to Georg Wilhelm Friedrich Hegel, who acknowledged intellectual property laws explicitly in his most important political text, THE PHILOSOPHY OF RIGHT. See HEGEL'S PHILOSOPHY OF RIGHT (T. M. Knox trans. 1952).

The crux of Locke's celebrated argument concerning property is that divine authority created the world as a universal common, in which all individuals possessed an equal right. An exception to this rule lies in the body of each individual, over which each individual enjoys a property right. Not only is an individual's person his own, but "the labor of his body and the work of his hands, we may say, are properly his," as the immediate extension of his person. A significant condition qualifies this labor-based property right: whenever an individual removes something from the common, there must remain "enough and as good left in the common for others." Applied to the invention of technique and technological artifacts, Locke's theory provides a compelling rationale for the patent system.

In contrast, Hegel reasoned that property results from the expression of individual will. To Hegel, human personality results from the will's continuous effort to impose itself upon the world. Hegel recognized that the interaction of the human will with the external world occurs in part through the occupation and embodiment of external, enduring objects, which society recognizes as property. Importantly for students of the patent law, however, Hegel realized that physical objects need not be the only subject of patent protection; creative expression and the embodiment of ideas are also worthy of protection through a system of exclusive rights. As manifested in intellectual property schemes such as patent protection, Hegelian notions of property provide

a suitable mechanism for self-actualization, personal expression, and recognition of the dignity and worth of the individual.

Despite this focus on its place as a species of property, the patent law remains first and foremost a regime of technological evaluation. The writings of those thinkers who have contemplated the nature of technology itself therefore also present a relatively untapped lodestar for those who would assess the patent system. Although the philosophy of technology is a nascent field of study, such seminal figures as John Dewey, Martin Heidegger, and Karl Marx have presented mature thought on technological growth, the ethical context of technique and technological artifacts, and the relationship between man and the made world in which he exists. It is in minds such as these that students can find alternatives to the quantitatively rigid, yet morally ambiguous path of patent law and economics.

Further Reading. Recommended starting points are the scholarly analyses presented in PETER DRAHOS, *A PHILOSOPHY OF INTELLECTUAL PROPERTY* (1996); Wendy Gordon, *A Property Right in Self-Expression: Equality and Individualism in the Natural Law of Intellectual Property*, 102 *YALE L.J.* 1533 (1993); and Justin Hughes, *The Philosophy of Intellectual Property*, 77 *GEO. L.J.* 287 (1988).

§ 1.6 OTHER FORMS OF INTELLECTUAL PROPERTY PROTECTION

Other areas encompassed by the term intellectual property include trademarks, copyrights, semiconductor chip protection and trade secrets. Although a full description of these and related disciplines—including such disparate regimes as industrial design and database registration, anti-counterfeiting measures, and indications of origin—exceeds the scope of this casebook, the following brief review should inform a consideration of the patent law.

§ 1.6[a] TRADEMARKS

The fundamental federal legislation in this field, the Lanham Act, defines a trademark as “any word, name, symbol, or device, or any combination thereof [used] to identify and distinguish his or her goods, including a unique product, from those manufactured or sold by others and to indicate the source of the goods, even if that source is unknown.” 15 U.S.C. § 1127. Related concepts include trade names, used to identify a business or vocation, and service marks, used in connection with services, such as those provided by the hotel or restaurant industry. *Id.* Trademark law serves to benefit consumers by allowing them to establish a vocabulary upon which selections among various goods and services can be made.

The determination of whether a mark qualifies for trademark protection depends in part upon its classification as generic, descriptive,

suggestive, or arbitrary. See *Abercrombie & Fitch Co. v. Hunting World, Inc.*, 537 F.2d 4 (2d Cir.1976). Generic terms are defined as the ordinary name for that sort of marked product, such as “bread” or “sugar,” and can never receive trademark protection. Marks which are ordinarily and naturally used to characterize a product—referred to as descriptive marks—may also not be protected unless they have acquired a certain level of distinctiveness. This distinctiveness, so-called “secondary meaning,” refers to an acquired meaning of the mark, typically through exclusive use over a lengthy period, so that it comes to refer to the origin of the goods or services, rather than those goods or services themselves. Thus, terms which merely describe the function of a service, such as “vision center” for optical clinics, or indicate a product’s desirable characteristic, such as “honey-baked ham,” cannot be valid trademarks absent a further showing of secondary meaning.

Suggestive marks—those which do more than describe, but require some additional thought to indicate the product—are inherently distinctive and therefore subject to protection without the need to prove secondary meaning. Such terms as “Skinvisible” for transparent medical adhesive tape and “Orange Crush” for orange-flavored soft drinks have been held to be suggestive. Arbitrary marks such as “Camel” applied to cigarettes, or coined words like “Kodak” which lack a dictionary meaning, are also considered inherently distinctive.

Importantly when considered in the context of patents, trademark protection can never extend to the functional features of a product. See *Crescent Tool Co. v. Kilborn & Bishop Co.*, 247 F. 299 (2d Cir.1917). Whether a feature is considered functional depends upon its affect upon the cost or quality of the article, as well as the availability of alternative designs. This doctrine is founded on the public interest in preventing a monopoly in useful design features, thereby hindering competitors.

Trademark infringement occurs when another person markets goods bearing a mark sufficiently similar to the trademark that a likelihood of confusion exists as to the source of the goods. 15 U.S.C. § 1125. Factors that inform the likelihood of confusion inquiry include the similarity of appearance of the marks, the strength of the trademark, consumer sophistication, competition between the goods, similarity of sales and distribution channels, the intent of the defendant, and the existence of actual consumer confusion. See *Polaroid Corp. v. Polarad Electronics Corp.*, 287 F.2d 492 (2d Cir.1961).

In contrast to most trademark regimes overseas, the U.S. trademark law allows ownership to result from public use, rather than registration. However, trademarks may be registered with the United States Patent and Trademark Office when they are employed in interstate commerce, providing both evidentiary and substantive advantages in subsequent disputes. 15 U.S.C. § 1051. Trademarks are of potentially perpetual duration but may be extinguished through non-use or loss of distinctiveness. For example, use of the mark may become so widespread that it

loses its ability to identify a particular product, becoming generic in the fashion of terms like *aspirin* or *escalator*, or the owner may abandon the mark or license it without the ability to maintain product quality. See RESTATEMENT (THIRD) OF UNFAIR COMPETITION §§ 30, 33 (1995).

§ 1.6[b] COPYRIGHTS

Under the Copyright Act of 1976, copyright may extend to any work of authorship. 17 U.S.C. § 102(a). Exemplary of the works of authorship amenable to copyright protection are literary, musical, dramatic, choreographic, graphic, audiovisual, and architectural works, as well as sound recordings. Such works are eligible for copyright protection as soon as they are recorded in a sufficiently stable form, or, in the words of the copyright law, “fixed in any tangible medium of expression.” *Id.* No formalities are necessary to secure protection. However, authors that register their works with the Copyright Office, 17 U.S.C. §§ 408–412, and that place a notice of copyright on copies of their works, 17 U.S.C. § § 401–406, are provided certain advantages when enforcing their copyrights.

A work must be original to be protected under the copyright law. 17 U.S.C. § 102(a). The originality requirement is a lenient one, requiring that the work was created by that author and was not copied from another, and that there be a minimal amount of creative authorship. Importantly, copyright protection extends only to the expression of an idea, not the idea itself. 17 U.S.C. § 102(b). For example, no author can obtain copyright protection on the abstract idea of a human changing into an insect. But the expression of that idea in a particular work of authorship with its own characters, plot, mood, and setting—be it Franz Kafka’s *The Metamorphosis* or the horror movie *The Fly*—may be accorded copyright protection.

Copyright confers a number of exclusive rights to the author or, in some circumstances, to the employer of the author under the “works made for hire” principle. 17 U.S.C. § 201. The copyright proprietor has the exclusive right to make copies of the protected work and to distribute it to the public. The 1976 Act also awards copyright owners the right to control derivative works, such as translations or screenplay adaptations, that are based upon the protected work. The proprietor further enjoys the exclusive right, with respect to most kinds of works, to display and perform the protected work publicly. 17 U.S.C. § 106.

The exclusive rights of copyright owners are restricted by a number of defenses, the most important of which is the fair use privilege. The fair use privilege allows the unauthorized use of copyrighted works in such contexts as educational activities, literary and social criticism, parody and news reporting. 17 U.S.C. § 107.

Each copyright ordinarily enjoys a term of the life of the author plus seventy years. 17 U.S.C. § 302(a). The copyright proprietor may

file a suit in federal court in order to enjoin infringers and obtain monetary remedies. 17 U.S.C. §§ 501–505. Criminal penalties may also apply to copyright infringers. 17 U.S.C. § 506. A copyright, or any of the exclusive rights under a copyright, may be assigned or licensed to others. 17 U.S.C. § 201(d). Individual authors possess the right to terminate such transfers after 35 years, although the transferee may continue to exploit derivative works produced under the transfer prior to its termination. 17 U.S.C. § 203.

§ 1.6[c] SEMICONDUCTOR CHIP PROTECTION

Semiconductor chip products, including microprocessors and memories, consist of often vast electronic circuits fabricated onto a single piece of semiconductor substrate. Designers of these products quickly learned that their work were not considered a work of authorship eligible for copyright protection. Similarly, patent protection was largely unavailable due to the nonobviousness requirement—although these products required considerable investment of time and design resources, they were usually the result of ordinary labors of skilled engineers, rather than invention within the meaning of the patent laws. The Semiconductor Chip Protection Act of 1984, Pub. L. 98–620, remedied this situation by allowing designers of new semiconductor chip products to register them at the Copyright Office, obtaining the exclusive right to manufacture and distribute them in the United States for ten years. The Chip Act, which is codified in chapter 9 of title 17 of the U.S. Code, has not been heavily employed and only rarely the subject of litigation. It nonetheless serves as an interesting model of an alternative scheme of protection, with similarities to both patent and copyright law, designed to encompass a new technology.

§ 1.6[d] TRADE SECRETS

Trade secret law protects secret, valuable business information from misappropriation by others. Subject matter ranging from marketing data to manufacturing know-how may be protected under the trade secret laws. Trade secret status is not limited to a fixed number of years, but endures so long as the information is valuable and maintained as a secret. *See United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 186 (1933). A trade secret is misappropriated when it has been obtained through the abuse of a confidential relationship or improper means of acquisition. Unlike the Patent Act, trade secret law does not provide a cause of action against an individual who independently developed or reverse engineered the subject matter of the trade secret.

Trade secrecy serves as the chief alternative to the patent system and, as such, is worthy of more detailed review here. An inventor must either maintain a technology as a trade secret, seek patent protection

from the PTO, or allow it to enter the public domain. The regime of trade secrets is broader than this, however, for trade secret law may also be used to protect subject matter that is unpatentable. For example, although a list of valued customers does not constitute patent eligible subject matter, it is amenable to protection as a trade secret.

Judicial opinions evince two distinct conceptions of the trade secret law. Some courts focus on trade secrecy as an intellectual property discipline. Under this view, trade secret law creates a proprietary interest just like a copyright, patent, or mark. In deciding whether to grant relief for misappropriation of trade secrets, these courts stress the value and secrecy of the subject matter for which trade secret status is claimed. Other courts have viewed trade secret law as less concerned with creating property than in ensuring proper conduct. In resolving trade secret cases, these courts stress whether the accused misappropriator acquired the information at issue in a fair and ethical manner.

As Judge Posner noted in the leading opinion of *Rockwell Graphic Systems, Inc. v. DEV Industries, Inc.*, 925 F.2d 174 (7th Cir.1991), these conceptions are entirely complementary. The trade secret law encourages industry actors to develop valuable informational resources by protecting them from improper acquisition by others. As well, potential liability for trade secret misappropriation discourages individuals from engaging in activities that do not create wealth, but merely redistribute wealth from one individual to another.

§ 1.6[d][1] SOURCES OF LAW

The modern U.S. law of trade secrets arises from the common law tradition. The English equity courts of the early nineteenth century considered the misappropriation of such secret subject matter as the composition of medical compounds and dyes. Many of these cases involved breaches of confidence between partners, family members, or a master and apprentice. The U.S. courts turned to this early precedent while considering the increasingly complex commercial relationships of an industrial society. Trade secret law continues as an adaptive discipline that has responded to changing technology, increasing employee mobility and heightened entrepreneurial activity.

The American Law Institute's 1939 Restatement of Torts included two sections that defined the subject matter of trade secrets and the misappropriation cause of action. Although this treatment was succinct, these definitions proved influential in the courts. However, trade secrets were not addressed in the 1978 Second Restatement of Torts. The American Law Institute concluded that trade secret law had grown "no more dependent on Tort law than it is on many other general fields of law and upon broad statutory developments," and opted not to house trade secrets there.

The Uniform Trade Secrets Act filled this breach in 1979. 14 U.L.A. 438 (1990). Published by the National Conference of Commissioners on

Uniform State Law, the Uniform Act has been enacted in the majority of states. The Uniform Act generally follows the Restatement of Torts, but also relies upon subsequent case law to provide more useful and definitive legal standards.

The American Law Institute was not content to rest, however. A distinct Restatement (Third) of Unfair Competition was promulgated in 1993 with a thorough treatment of trade secrets in sections 39–45. The remainder of the work is devoted to trademarks, misappropriation, deceptive marking, the right of publicity, and related doctrines. Like the Restatement of Torts and the Uniform Act, the Restatement of Unfair Competition remains faithful to the case law and does not presume to be an instrument of radical legal reform.

Trade secrets have traditionally been the subject of state law. However, the federal government firmly engaged the law of trade secrets in the Economic Espionage Act of 1996. Pub. L. No. 104–294, §§ 1831–1839, 110 Stat. 3488 (codified at 18 U.S.C. §§ 1831–39). That statute renders the misappropriation of trade secrets a federal crime. Housed in Title 18 of the United States Code, the Economic Espionage Act provides for substantial fines and imprisonment penalties, as well as criminal forfeiture of property and court order preserving confidentiality of trade secrets. Stiffer penalties are available when trade secrets are misappropriated for the benefit of a foreign government, instrumentality, or agent.

That the common law has been supplemented by these four accounts of trade secrets law may seem to hold tremendous possibility for confusion. However, the substantive law of trade secrets provided in the Restatements, Uniform Act, and Economic Espionage Act is largely consistent. The later sources are marked by more familiar language and a greater level of detail than their predecessors. Although judicial opinions may cite to different authorities, the core precepts of trade secret law remain intact.

§ 1.6[d][2] ELIGIBLE SUBJECT MATTER

Perhaps due to its origins in the courts of equity, the trade secret law has never overly concerned itself with achieving an exact definition of the sorts of information that may be subjected to trade secret protection. The authorities do agree that there are two principle requirements for maintaining information as a trade secret. First and foremost, the information must have been the subject of reasonable efforts to maintain secrecy. Second, the information must derive commercial value from not being generally known or readily ascertainable by others. RESTATEMENT THIRD, UNFAIR COMPETITION § 39 (1995).

Subject to these overriding requirements of secrecy and value, the Restatements provide that formulae, patterns, devices, or compilations of information may be protected as trade secrets. The case law reveals an enormous variety of information subject to the trade secret laws. This

subject matter include lists of customers, marketing data, bid price information, technical designs, manufacturing know-how, computer programs, and chemical formulae. In sum, any distinct, clearly identifiable information may become a trade secret provided that it has value and has been kept secret.

§ 1.6[d][3] **SECRECY**

The principal gatekeeper to trade secret status is that the information must have been subjected to reasonable efforts to maintain its secrecy. Uniform Trade Secrets Act § 2, 14 U.L.A. 438 (1990). The case law provides no precise standard as to the efforts necessary to qualify the protected subject matter as a trade secret. A would-be trade secret holder need not erect an utterly impenetrable fortress around the information. On the other hand, the owner must make satisfactory efforts to identify the secret subject matter, notify others that it regards the subject matter as proprietary, and protect against reasonably foreseeable intrusions.

In deciding whether reasonable efforts have been made to maintain secrecy, courts will balance the costs of the efforts made against the benefits obtained. *See Rockwell Graphic Sys., Inc. v. DEV Industries, Inc.*, 925 F.2d 174 (7th Cir.1991). The courts do not require costly, burdensome safeguards that would overly disrupt the owner's usual commercial practices. However, if the owner did not engage in prudent precautions that would have yielded security benefits greater than their costs, the case for reasonable secrecy efforts is diminished.

The precautions the holder of commercially valuable information might take to maintain secrecy are legion. For example, employees, visitors, and joint venturers could be required to sign confidentiality agreements. Signs, stamps, and legends may declare that certain subject matter is proprietary. Locked doors, alarms, and guards might deny access to individuals who do not need to know the information. Exit interviews may remind departing employees of their obligations to maintain the protected subject matter in confidence. Pertinent documents and laboratory samples could be destroyed on the premises. Although numerous other measures should be apparent, no absolute rule governs the degree of vigilance that the putative trade secret holder must maintain. Whether a court will find the existence of a trade secret depends upon an overall balancing of the equities of particular cases.

A number of circumstances may negate secrecy. Knowledge that may be readily gained from an inspection of a commercially available product is not secret. Similarly, information that may be found in publicly available journals, texts, or other published materials may not be kept as a trade secret. Issuance of a U.S. patent or publication of a pending patent application also destroys the secrecy of any information claimed within. This result holds even if the published application does not mature into a granted patent, or if the patent is later held invalid. RESTATEMENT THIRD, UNFAIR COMPETITION § 39 cmt. c (1995).

§ 1.6[d][4] COMMERCIAL VALUE

Information must be sufficiently valuable to provide an actual or potential economic advantage over others to qualify for trade secret protection. RESTATEMENT THIRD, UNFAIR COMPETITION § 39 cmt e (1995). Ordinarily the putative trade secret holder demonstrates value through direct evidence of the significance of the subject matter to its business, or its superiority as compared to public domain alternatives. Courts have also accepted evidence of the cost of developing the information and the extent of the pains taken to protect its secrecy as evidence of value.

Value is seldom a practical issue in trade secret cases. The high cost of enforcing intellectual property rights suggests that plaintiffs will only commence litigation concerning information of considerable value. One decision that did deny a claim for trade secret misappropriation based upon the value requirement was *Religious Technology Center v. Wollersheim*, 796 F.2d 1076 (9th Cir.1986). There, the Church of Scientology accused a former practitioner of misappropriating scriptural materials that addressed a person's spiritual well-being. The Court of Appeals for the Ninth Circuit denied the Church's trade secret claim, concluding that the value of the confidential materials were religious rather than commercial in character.

§ 1.6[d][5] MISAPPROPRIATION

An enterprise possessing trade secrets will be protected against misappropriation of those trade secrets by others. Some trade secret cases involve parties who initially learn of the trade secret through voluntary disclosure by the trade secret holder, and thereafter either use the secret for their commercial advantage or disclose it to others. Courts will grant relief in this latter class of cases where the defendant violated either an express or implied obligation of confidentiality.

An individual may owe another a duty of confidence through an express promise of confidentiality. Such promises are most typically made by employees, prospective buyers, visitors to a facility, or joint venturers. A duty of confidence may also be implied from the relationship of the parties, even where no express contractual provision exists. If the trade secret holder was reasonable in inferring that the other person consented to an obligation of confidentiality, and the other knew or should have known the disclosure was made in confidence, the court will infer that an obligation of confidentiality existed.

A representative case implying a duty of confidentiality is *Smith v. Dravo Corp.*, 203 F.2d 369 (7th Cir.1953). Smith was in the cargo and freight container business. Dravo expressed an interest in buying Smith's business, and the two entered into negotiations. As part of these discussions Smith showed Dravo secret blueprints and patent applications concerning its innovative cargo containers. The deal fell through and shortly thereafter Dravo began to market freight containers similar to Smith's. Smith sued Dravo for trade secret misappropriation. Al-

though the Court of Appeals for the Seventh Circuit observed that “no express promise of trust was exacted from the defendant,” it held that a relationship of trust should be implied from the facts and granted relief.

Other trade secrets cases concern instances where individuals with no relationship to the trade secret holder have acquired the protected subject matter. In those cases, the dispositive legal issue is whether the trade secret was acquired by improper means. A trade secret owner may claim misappropriation if the defendant acquired the trade secret by performing illegal acts. Wiretapping, bribery, fraud, and theft of personal property are exemplary of the industrial espionage condemned under the trade secret law. However, trade secret protection is not limited to acts that are themselves violations of other laws. As demonstrated by the following decision, the courts have also condemned activities that amount to calculated attempts to overcome reasonable efforts to maintain secrecy.

E.I. duPONT deNEMOURS & CO. v. CHRISTOPHER

United States Court of Appeals, Fifth Circuit, 1970
431 F.2d 1012

Before Wisdom, Goldberg, and Ingraham, Circuit Judges.

GOLDBERG, CIRCUIT JUDGE:

This is a case of industrial espionage in which an airplane is the cloak and a camera the dagger. The defendants-appellants, Rolfe and Gary Christopher, are photographers in Beaumont, Texas. The Christophers were hired by an unknown third party to take aerial photographs of new construction at the Beaumont plant of E. I. duPont deNemours & Company, Inc. Sixteen photographs of the DuPont facility were taken from the air on March 19, 1969, and these photographs were later developed and delivered to the third party.

DuPont employees apparently noticed the airplane on March 19 and immediately began an investigation to determine why the craft was circling over the plant. By that afternoon the investigation had disclosed that the craft was involved in a photographic expedition and that the Christophers were the photographers. DuPont contacted the Christophers that same afternoon and asked them to reveal the name of the person or corporation requesting the photographs. The Christophers refused to disclose this information, giving as their reason the client's desire to remain anonymous.

Having reached a dead end in the investigation, DuPont subsequently filed suit against the Christophers, alleging that the Christophers had wrongfully obtained photographs revealing DuPont's trade secrets which they then sold to the undisclosed third party. DuPont contended that it had developed a highly secret but unpatented process for producing methanol, a process which gave DuPont a competitive advantage over other producers. This process, DuPont alleged, was a trade secret developed after much expensive and time-consuming re-

search, and a secret which the company had taken special precautions to safeguard. The area photographed by the Christophers was the plant designed to produce methanol by this secret process, and because the plant was still under construction parts of the process were exposed to view from directly above the construction area. Photographs of that area, DuPont alleged, would enable a skilled person to deduce the secret process for making methanol. DuPont thus contended that the Christophers had wrongfully appropriated DuPont trade secrets by taking the photographs and delivering them to the undisclosed third party. In its suit DuPont asked for damages to cover the loss it had already sustained as a result of the wrongful disclosure of the trade secret and sought temporary and permanent injunctions prohibiting any further circulation of the photographs already taken and prohibiting any additional photographing of the methanol plant.

The Christophers answered with motions to dismiss for lack of jurisdiction and failure to state a claim upon which relief could be granted. Depositions were taken during which the Christophers again refused to disclose the name of the person to whom they had delivered the photographs. DuPont then filed a motion to compel an answer to this question and all related questions.

On June 5, 1969, the trial court held a hearing on all pending motions and an additional motion by the Christophers for summary judgment. The court denied the Christophers' motions to dismiss for want of jurisdiction and failure to state a claim and also denied their motion for summary judgment. The court granted DuPont's motion to compel the Christophers to divulge the name of their client. Having made these rulings, the court then granted the Christophers' motion for an interlocutory appeal under 28 U.S.C.A. § 1292(b) to allow the Christophers to obtain immediate appellate review of the court's finding that DuPont had stated a claim upon which relief could be granted. Agreeing with the trial court's determination that DuPont had stated a valid claim, we affirm the decision of that court.

This is a case of first impression, for the Texas courts have not faced this precise factual issue, and sitting as a diversity court we must sensitize our *Erie* antennae to divine what the Texas courts would do if such a situation were presented to them. The only question involved in this interlocutory appeal is whether DuPont has asserted a claim upon which relief can be granted. The Christophers argued both at trial and before this court that they committed no "actionable wrong" in photographing the DuPont facility and passing these photographs on to their client because they conducted all of their activities in public airspace, violated no government aviation standard, did not breach any confidential relation, and did not engage in any fraudulent or illegal conduct. In short, the Christophers argue that for an appropriation of trade secrets to be wrongful there must be a trespass, other illegal conduct, or breach of a confidential relationship. We disagree.

It is true, as the Christophers assert, that the previous trade secret cases have contained one or more of these elements. However, we do not think that the Texas courts would limit the trade secret protection exclusively to these elements. On the contrary, in *Hyde Corporation v. Huffines*, 1958, 314 S.W.2d 763, the Texas Supreme Court specifically adopted the rule found in the Restatement of Torts which provides:

“One who discloses or uses another’s trade secret, without a privilege to do so, is liable to the other if (a) he discovered the secret by improper means, or (b) his disclosure or use constitutes a breach of confidence reposed in him by the other in disclosing the secret to him * * *.”

RESTATEMENT OF TORTS § 757 (1939).

Thus, although the previous cases have dealt with a breach of a confidential relationship, a trespass, or other illegal conduct, the rule is much broader than the cases heretofore encountered. Not limiting itself to specific wrongs, Texas adopted subsection (a) of the Restatement which recognizes a cause of action for the discovery of a trade secret by any ‘improper’ means.

The defendants, however, read *Furr’s Inc. v. United Specialty Advertising Co.*, Tex.Civ.App.1960, 338 S.W.2d 762, as limiting the Texas rule to breach of a confidential relationship. The court in *Furr’s* did make the statement that

“The use of someone else’s idea is not automatically a violation of the law. It must be something that meets the requirements of a ‘trade secret’ and has been obtained through a breach of confidence in order to entitle the injured party to damages and/or injunction.”
338 S.W.2d at 766.

We think, however, that the exclusive rule which defendants have extracted from this statement is unwarranted. In the first place, in *Furr’s* the court specifically found that there was no trade secret involved because the entire advertising scheme claimed to be the trade secret had been completely divulged to the public. Secondly, the court found that the plaintiff in the course of selling the scheme to the defendant had voluntarily divulged the entire scheme. Thus the court was dealing only with a possible breach of confidence concerning a properly discovered secret; there was never a question of any impropriety in the discovery or any other improper conduct on the part of the defendant. The court merely held that under those circumstances the defendant had not acted improperly if no breach of confidence occurred. We do not read *Furr’s* as limiting the trade secret protection to a breach of confidential relationship when the facts of the case do raise the issue of some other wrongful conduct on the part of one discovering the trade secrets of another. If breach of confidence were meant to encompass the entire panoply of commercial improprieties, subsection (a) of the Restatement would be either surplusage or persiflage, an interpretation abhorrent to the traditional precision of the Restatement. We therefore find meaning

in subsection (a) and think that the Texas Supreme Court clearly indicated by its adoption that there is a cause of action for the discovery of a trade secret by any "improper means."

The question remaining, therefore, is whether aerial photography of plant construction is an improper means of obtaining another's trade secret. We conclude that it is and that the Texas courts would so hold. The Supreme Court of that state has declared that "the undoubted tendency of the law has been to recognize and enforce higher standards of commercial morality in the business world." *Hyde Corporation v. Huffines*, *supra* 314 S.W.2d at 773. That court has quoted with approval articles indicating that the proper means of gaining possession of a competitor's secret process is "through inspection and analysis" of the product in order to create a duplicate. *K & G Tool & Service Co. v. G & G Fishing Tool Service*, 1958, 314 S.W.2d 782, 783, 788. Later another Texas court explained:

"The means by which the discovery is made may be obvious, and the experimentation leading from known factors to presently unknown results may be simple and lying in the public domain. But these facts do not destroy the value of the discovery and will not advantage a competitor who by unfair means obtains the knowledge without paying the price expended by the discoverer."

Brown v. Fowler, Tex.Civ.App.1958, 316 S.W.2d 111, 114.

We think, therefore, that the Texas rule is clear. One may use his competitor's secret process if he discovers the process by reverse engineering applied to the finished product; one may use a competitor's process if he discovers it by his own independent research; but one may not avoid these labors by taking the process from the discoverer without his permission at a time when he is taking reasonable precautions to maintain its secrecy. To obtain knowledge of a process without spending the time and money to discover it independently is improper unless the holder voluntarily discloses it or fails to take reasonable precautions to ensure its secrecy.

In the instant case the Christophers deliberately flew over the Du Pont plant to get pictures of a process which Du Pont had attempted to keep secret. The Christophers delivered their pictures to a third party who was certainly aware of the means by which they had been acquired and who may be planning to use the information contained therein to manufacture methanol by the Du Pont process. The third party has a right to use this process only if he obtains this knowledge through his own research efforts, but thus far all information indicates that the third party has gained this knowledge solely by taking it from Du Pont at a time when Du Pont was making reasonable efforts to preserve its secrecy. In such a situation Du Pont has a valid cause of action to prohibit the Christophers from improperly discovering its trade secret and to prohibit the undisclosed third party from using the improperly obtained information.

We note that this view is in perfect accord with the position taken by the authors of the Restatement. In commenting on improper means of discovery the savants of the Restatement said:

“f. Improper means of discovery. The discovery of another’s trade secret by improper means subjects the actor to liability independently of the harm to the interest in the secret. Thus, if one uses physical force to take a secret formula from another’s pocket, or breaks into another’s office to steal the formula, his conduct is wrongful and subjects him to liability apart from the rule stated in this Section. Such conduct is also an improper means of procuring the secret under this rule. But means may be improper under this rule even though they do not cause any other harm than that to the interest in the trade secret. Examples of such means are fraudulent misrepresentations to induce disclosure, tapping of telephone wires, eavesdropping or other espionage. A complete catalogue of improper means is not possible. In general they are means which fall below the generally accepted standards of commercial morality and reasonable conduct.”

RESTATEMENT OF TORTS § 757, comment f at 10 (1939).

In taking this position we realize that industrial espionage of the sort here perpetrated has become a popular sport in some segments of our industrial community. However, our devotion to free wheeling industrial competition must not force us into accepting the law of the jungle as the standard of morality expected in our commercial relations. Our tolerance of the espionage game must cease when the protections required to prevent another’s spying cost so much that the spirit of inventiveness is dampened. Commercial privacy must be protected from espionage which could not have been reasonably anticipated or prevented. We do not mean to imply, however, that everything not in plain view is within the protected vale, nor that all information obtained through every extra optical extension is forbidden. Indeed, for our industrial competition to remain healthy there must be breathing room for observing a competing industrialist. A competitor can and must shop his competition for pricing and examine his products for quality, components, and methods of manufacture. Perhaps ordinary fences and roofs must be built to shut out incursive eyes, but we need not require the discoverer of a trade secret to guard against the unanticipated, the undetectable, or the unpreventable methods of espionage now available.

In the instant case Du Pont was in the midst of constructing a plant. Although after construction the finished plant would have protected much of the process from view, during the period of construction the trade secret was exposed to view from the air. To require Du Pont to put a roof over the unfinished plant to guard its secret would impose an enormous expense to prevent nothing more than a school boy’s trick. We introduce here no new or radical ethic since our ethos has never given moral sanction to piracy. The market place must not deviate far

from our mores. We should not require a person or corporation to take unreasonable precautions to prevent another from doing that which he ought not do in the first place. Reasonable precautions against predatory eyes we may require, but an impenetrable fortress is an unreasonable requirement, and we are not disposed to burden industrial inventors with such a duty in order to protect the fruits of their efforts. "Improper" will always be a word of many nuances, determined by time, place, and circumstances. We therefore need not proclaim a catalogue of commercial improprieties. Clearly, however, one of its commandments does say "thou shall not appropriate a trade secret through deviousness under circumstances in which countervailing defenses are not reasonably available."

Having concluded that aerial photography, from whatever altitude, is an improper method of discovering the trade secrets exposed during construction of the Du Pont plant, we need not worry about whether the flight pattern chosen by the Christophers violated any federal aviation regulations. Regardless of whether the flight was legal or illegal in that sense, the espionage was an improper means of discovering Du Pont's trade secret.

The decision of the trial court is affirmed and the case remanded to that court for proceedings on the merits.

NOTES

1. Remedies. An adjudicated trade secret misappropriator may be enjoined and found liable for damages. The modern rule is that injunctions are appropriate only for the period of time that the subject matter of the trade secret would have remained unavailable to the defendant but for the misappropriation. This principle offers a compromise between two more extreme positions established in the case law. Some courts have followed the holding in *Shellmar Products Co. v. Allen-Qualley Co.*, 87 F.2d 104 (7th Cir.1937), and concluded that permanent injunctions were an appropriate remedy for trade secret misappropriation on the ground that trade secrets have no set duration. Other opinions found more favor in Judge Learned Hand's opinion in *Conmar Products Corp. v. Universal Slide Fastener Co.*, 172 F.2d 150 (2d Cir. 1949), to the effect that once a trade secret entered into the public domain, the plaintiff could obtain no injunctive relief whatsoever.

Each of these extreme positions is now in disfavor. Contemporary courts have reasoned that the draconian *Shellmar* rule is punitive in character and undermines the public interest in legitimate competition. On the other hand, the *Conmar* rule leads to hard results in cases where the defendant engaged in egregious conduct, particularly where he exposed the trade secret to the public himself. The compromise position of the Uniform Trade Secrets Act states that "an injunction shall be terminated when the trade secret has ceased to exist, but the injunction may be continued for an additional reasonable period of time in order to eliminate commercial advantage that otherwise would be derived from the misappropriation." § 2(a), 14 U.L.A. 438 (1990).

As a result, successful plaintiffs in trade secret proceedings may obtain injunctions limited to the lead time advantage inappropriately gained by the misappropriator. In determining the length of this "head start," courts will weigh evidence as to the amount of time a person of ordinary skill would have required to discover independently or reverse engineer the subject matter of the trade secret. If the misappropriator can demonstrate that the trade secret holder's competitors have legitimately acquired the protected knowledge, then the court will likely decline to award an injunction at all.

Courts have demonstrated flexibility in fashioning monetary remedies for trade secret misappropriation. They will typically award an amount equal to either the loss suffered by the trade secret holder, or the gain realized by misappropriator, whichever is greater. Monetary damages are ordinarily limited to the time that the misappropriated information would not have been available otherwise to the defendant. *See, e.g., Engelhard Industries, Inc. v. Research Instrumental Corp.*, 324 F.2d 347 (9th Cir.1963).

2. Trade Secrets and Patents. Trade secrets and patents coexist in what can be described as an uneasy relationship. A principal purpose of the patent law is the dissemination of knowledge. This goal is realized through the publication of patent instruments that fully disclose the patented invention such that skilled artisans could practice it without undue experimentation. 35 U.S.C. § 112. A law of trade secrets that encourages the withholding of patentable inventions appears fundamentally at odds with this fundamental precept.

This tension results in a patent law that does not favor trade secret holders. One patent law principle that deleteriously impacts trade secret holders is that a later, independent inventor may patent the subject matter of an earlier inventor's trade secret. A first inventor may quickly transition from the status of a trade secret holder to an adjudicated patent infringer. *See Albert C. Smith & Jared A. Stosberg, Beware! Trade Secret Software May Be Patented By a Later Inventor*, 7 *COMPUTER LAWYER* no. 11 at 15 (Nov. 1990). The First Inventor Defense Act of 1999 did soften this traditional principle somewhat, allowing earlier inventors an infringement defense against subsequent patentees of methods of doing business. *See* 35 U.S.C. § 273.

Trade secrets perform a valuable role in the U.S. intellectual property scheme, however. Although patent law is an increasingly capacious regime, its subject matter does not extend to the full array of valuable information that may be the subject of a trade secret. Patent rights too must be affirmatively sought, and their acquisition usually entails significant costs and delays. Some inventors are not well schooled in the rather rarefied patent law regime and may wait overly long before filing a patent application. Even sophisticated enterprises may not recognize the value of an invention until they too have performed acts that defeat its patentability. The trade secret law fills these gaps by providing a modicum of protection for those who take prudent measures to protect valuable information.

Inventors who do not wish to dedicate their technologies to the public domain must choose between maintaining the technology as a trade secret or pursuing patent protection. A number of factors inform this decision. Whether

the inventor can keep the technology secret is the most obvious. Many mechanical inventions betray their design upon inspection, while the composition of a chemical compound may be much easier to conceal. The costs associated with acquiring and maintaining patents are another element. A U.S. patent provides rights only within the United States, but discloses its subject matter for anyone in the world to see. Inventors should therefore also consider the expenses of obtaining a patent in each jurisdiction in which he does or wishes to do business.

The product cycle associated with the invention is also of importance. Products with a very short lifespan may be unmarketable by the time a patent issues. Inventors should also consider whether the industry in which they act is patent-intensive. If industry actors tend to invest heavily in maintaining their patent portfolios, then the inventor may well wish to patent for defense purposes or to have a bargaining chip available if he is accused of infringement himself. Legislative enactment of the First Inventor Defense Act of 1999 introduced another element into this calculation. If the invention concerns a "method of doing business" within the meaning of the Act, then the inventor may gain an infringement defense effective against the patents of others the claim that method. 35 U.S.C. § 273.

The publication of a patent application or issuance of a patent will destroy trade secret status for the subject matter that it properly discloses. Nothing prevents a patentee from maintaining an invention as a trade secret until such time, however. This strategy requires the applicant to preserve secrecy until the first of two events: (1) the publication of the application eighteen months following its filing date; or (2) when the PTO issues the patent, for those applications exempted from the publication requirement.

3. Federal Preemption. The tensions between the patent and trade secret laws have sometimes erupted into arguments that the patent statute preempts state trade secret laws. In addition to asserting that trade secrecy discourages disclosure of new inventions, commentators have also observed that the patent law reflects the policy that only new and nonobvious inventions merit proprietary patent rights. Although the requirement that a trade secret not be public knowledge has been equated to the patent law's novelty requirement, the trade secret laws do not demand that the secret subject matter be nonobvious. *See* Gale R. Peterson, *Trade Secrets in an Information Age*, 32 HOUSTON L. REV. 385 (1995).

Despite these apparent conflicts, the courts have ruled that trade secret protection may coexist alongside the patent and other intellectual property laws. In *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470 (1974), the Supreme Court observed that trade secret laws also serve a principal purpose of the patent laws, the promotion of innovation. The Court also considered the patent law a far more attractive option for inventors of patentable subject matter and reasoned that most inventors would opt for the patent system. The Court also noted that, as an historical matter, the two bodies of law had been in place since the earliest days of the Republic.

Trade Secrets Exercise

You work as a patent attorney in a major metropolitan area. One day, a Mr. Boulanger comes to your office seeking advice. You recognize him as the proprietor of a local bakery shop.

"I need your assistance," Mr. Boulanger says, with obvious concern in his voice. "About two years ago, I developed a formula for low-fat chocolate chip cookies. My products have a homemade taste—that is, they have a crunchy exterior, but a chewy center—but only a fraction of the calories of traditional chocolate chip cookies. I'm selling more cookies than ever before and I want to maintain our unique taste. My trouble is with my former employee, Ms. Cynthia Sisyphus. She left my company a few months ago to start her own bakery shop. Now she has begun to market her own cookies under the trade name 'Infamous Sisyphus.' The cookies taste just like mine! I'm certain that she stole my secret recipe!"

"Once I tasted one of Sisyphus' cookies, I immediately called her." Mr. Boulanger explains. "She claimed that my recipe was simply part of the general knowledge and skills associated with her employment. Her precise words were: 'I'm a baker. My entire set of professional skills consists of knowing various recipes. The only way you would get me to forget how to make chocolate chip cookies would be to perform brain surgery.'"

You ask Mr. Boulanger about the conditions surrounding his cookie recipe. He explains, "Well, I've written the recipe on an index card in my office. The card has the legend TOP SECRET written at the top. I store the index card in my desk, which is ordinarily locked. However, I have other files in my desk, so my accountant, bakers, and other employees need access. Right now I guess about five of my top people have a key to that desk. We're a small company, and I'm usually too busy tinkering with the ovens to stand guard by my desk."

Next, you ask Mr. Boulanger about the terms of the employment contract between his company and Ms. Sisyphus. He responds, "Well, we didn't have a formal contract. I think you lawyers call this arrangement 'employment-at-will' or something like that. But everyone in the bakery business should know that our recipes are confidential. That's how we distinguish ourselves from our competitors. No honest baker would walk out and take a proprietary recipe with him!"

Finally, you inquire as to the details of Mr. Boulanger's secret recipe. After swearing you to secrecy, Mr. Boulanger details a complex set of ingredients and cooking instructions. In essence, he substitutes fructose syrup, polydextrose, guar gum, and various bulking agents for a portion of the more traditional cookie ingredients such as shortening and sugar. These ingredients are then mixed in a precise order and then baked at steadily increasing temperatures until the cookies are complete. "In this way, I can maintain a wonderful taste yet cut the calories and fat by nearly 20%."

"We may seem like a small company now," Mr. Boulanger continues, "but I've got big plans for us. We want to establish retail outlets to sell our cookies domestically and abroad. My market analyst has predicted that our chocolate

chip cookies could generate sales of \$15 million annually. We could base our entire business on it! Sales of our cookies could continue for ten years or more! Plus . . . nobody could ever guess the secret ingredients that make my cookies special! I'm wondering—is this the kind of thing I can get a patent on? And if so, should I try to get a patent on my recipe or keep it as my own secret?"

"But the most important point is my problem with Ms. Sisyphus," Mr. Boulanger concludes. "Will I be able to stop losing a lot of dough to her bakery . . . or is that just the way the cookie crumbles?"

How would you advise Mr. Boulanger concerning his chocolate chip cookie recipe?